CATÁLOGO DC SWISS SA

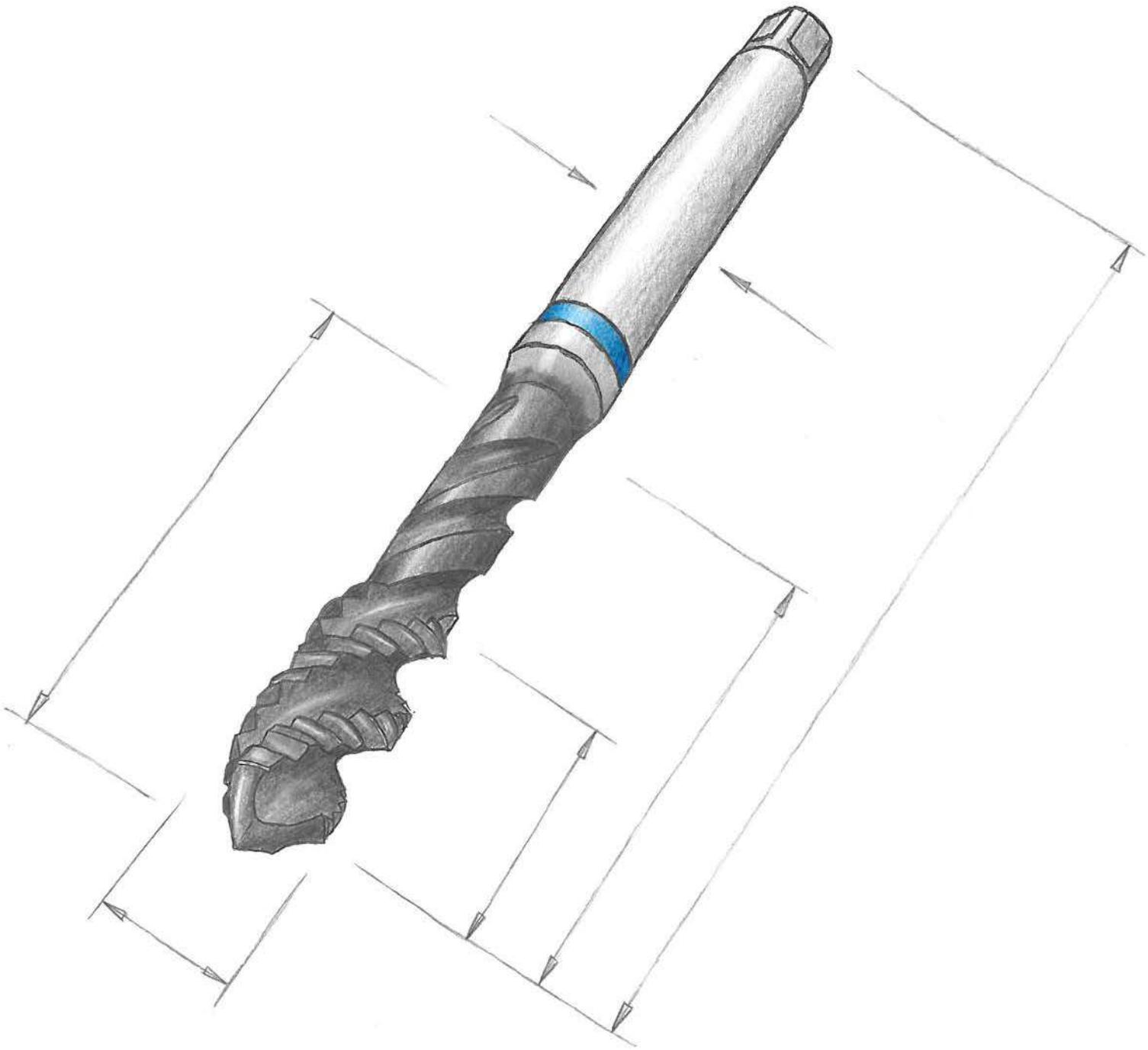
CATALOGUE DC SWISS SA

ES-EN-ID TC.1

Catálogo
Catalogue

ES-EN-ID TC.1


DC
DC
DC



DISPONIBILIDAD DE LOS ARTICULOS

- ● ID *Artículos disponibles de stock*
- ● ID *Disponible a corto plazo*
- * ID *Artículos disponibles de stock hasta agotamiento*

AVAILABILITY OF THE ARTICLES

- ● ID Stock item
- ● ID Available at short notice
- * ID Available from stock, while stock lasts

Nuestra innovadora empresa está situada en el cantón de Berna en Suiza, entre la cadena montañosa del Jura y al borde del rio que atraviesa nuestro valle, la Birse. Es ahí que desde 1940 nuestras herramientas de roscado de alto rendimiento se desarrollan, fabrican y se mandan a través del mundo.

Desde la fundación de nuestra empresa nos hemos centrado en optimizar todas las gamas de machos de corte y de deformación en HSSE / HSSE-PM de nuestro programa, a fin de satisfacer las necesidades de nuestros clientes, desarrollando nuevos tipos de geometrías adaptándolas a las últimas tecnologías y materiales.

En el año 2000, creamos la nueva división de producción "ONE STEP", equipada con las últimas tecnologías para el desarrollo y la producción de fresas de roscar en metal duro. En ese mismo tiempo nuestro programa "CAR" (metal duro) se desarrolló y amplio fuertemente poniendo el focus en las fresas torbellino.

Desde 2010, se ha prestado especial atención al desarrollo de nuestras micro herramientas. El resultado es un amplio programa "NANO", que incluye torbellinos, machos de corte, machos de deformación, calibres, contra-calibres en una gama de dimensión de 0.3 a 2.75 mm. Y con la acreditación ISO 17025:2017, siendo DC Nano Tools SA un especialista en este mercado.

Hoy día nuestros productos de alto nivel son utilizados en el mundo entero y en todas las industrias donde ***calidad***, ***rendimiento*** *y* ***fiabilidad*** *son primordiales.*

Si no encuentra lo que necesita en nuestra amplia gama de productos estándar, podemos modificar las herramientas para satisfacer sus necesidades o fabricar artículos especiales específicos, basados en sus descripciones y dibujos.

Para las preguntas a las que no puedes encontrar respuestas en nuestro catálogo, estamos encantado de estar a su entera disposición.

"Al principio, estaba buscando las mejores herramientas, entonces decidí de producirlas yo mismo"

Daniel Charpilloz – 1940

Our innovative SME is at home in the Berner Jura in Switzerland, idyllically nestled between hills and on the banks of the still young river called Birs. This is where since 1940 the high-performance threading tools of our brand DC are developed, manufactured and supplied all over the world.

Since the foundation of our company, we have focused on expanding our range of HSSE / HSSE-PM taps and thread formers in order to optimally meet our customers' needs and on constantly developing new tool types for the latest technologies and materials.

In 2000, we created the new "ONE STEP" production division, equipped with the latest production technologies, for the development and manufacture of reliable and powerful solid carbide thread milling cutters. In the meantime, our CAR programme has been greatly developed and expanded, with a focus on thread whirling cutters.

Since 2010, special attention has been paid to the development of our micro tools. The result is our in the meantime really broad "nano" programme, which includes thread whirlers, taps, thread formers, thread gauges and check thread gauges in the diameter range from 0.3 - 2.75 mm. As an ISO 17025:2017 accredited company, DC Nano Tools SA is your specialist in this field.

Today, our high performance threading tools are used worldwide and in all industries where **quality**, **performance** and **reliability** of the products are paramount.

If you do not find what you need in our wide range of standard products, we can modify tools to suit your needs or manufacture specific special items, based on your specifications and drawings.

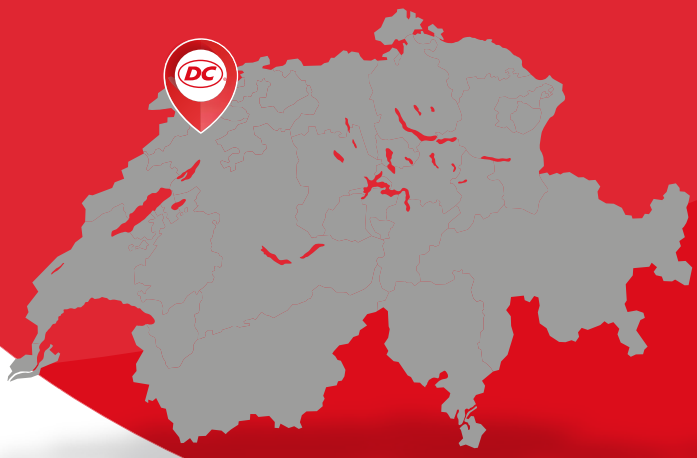
For questions, to which you cannot find an answer in our catalogue, we are of course gladly at your entire disposal.

"In the beginning, I was looking for the best tools, then I decided to produce them myself"

Daniel Charpilloz – 1940

DC SWISS EN EL MUNDO ENTERO

Y SIEMPRE A SU LADO

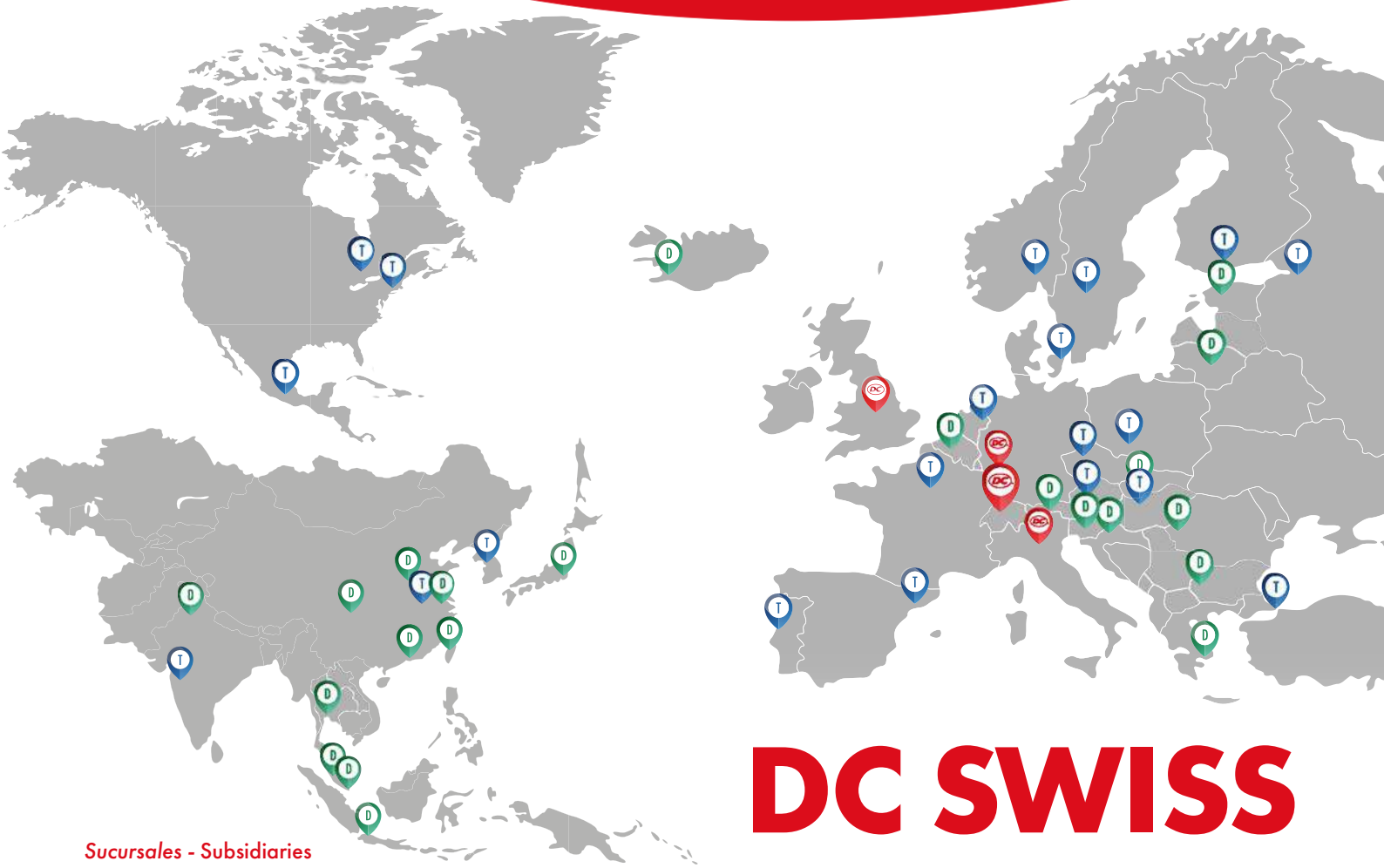


PROXIMIDAD A LOS CLIENTES

Encontrareís siempre un interlocutor competente, ya sea en la oficina central en Suiza, en una de sus sucursales de Alemania, Italia o Inglaterra o a traves de sus numerosos partners tecnológicos o distribuidores alrededor del mundo.

CUSTOMER PROXIMITY

You will always find a competent contact person, whether at our main site in Switzerland, at one of our subsidiaries in Germany, Italy and England, or at one of our many representatives or resellers worldwide.



Sucursales - Subsidiaries
Partners tecnológicos - Technology Partners
Agencias - Distributors

DC SWISS WORLDWIDE

AND ALWAYS CLOSE TO YOU

Para los otros paises: dcswiss.com/es/red-de-ventas
For further countries: dcswiss.com/en/sales-network

SWISS QUALITY

100 % made by DC SWISS *- Garantía desde el desarollo de la herramienta a su fabricación y control final, gracia a nuestra peritación y a nuestra competencia en todos los dominios de producción de herramientas.*

100 % made by DC SWISS - guaranteed from the development of the tool to its production and straight through to the end control, thanks to our know-how and competencies in the whole field of threading tool manufacturing.

NUESTROS VALORES

RESULTADO

El resultado esta al centro de nuestras preocupaciones para el desarollo de soluciones personalizadas y mejoras de nuestros productos estándar a las necesidades del cliente. Damos gran importancia en ofrecer la mejor relación calidad/precio como base de una relación de confianza con nuestros clientes.

OUR VALUES

PERFORMANCE

We make every effort to develop new high-performance threading tools and to adapt the performance of our standard tools to the current needs of our customers. We attach great importance to a constant price/performance ratio as the basis for a trusting relationship with our customers.

AUTOMOCIÓN
AUTOMOTIVE

INDUSTRIA RELOJERA
WATCHMAKING

AVIACIÓN Y AEROESPACIAL
AEROSPACE

TECNOLOGÍA MEDICAL
MEDICAL

SOLUCIONES PERSONALIZADAS
CUSTOMISED SOLUTIONS

CONOCIMIENTO

El valor de nuestro Saber Hacer se traduce por una manera unica de resolver problemas y de asociar el conjunto de conocimientos, experiencias y competencia acumuladas desde 1940.

FIABILIDAD

Relaciones a largo plazo se construyen unicamente sobre base de confianza, transparencia y compromisos quotidiano de cada uno de nuestros colaboradores a suministrar a nuestros clientes herramientas y servicios de maxima calidad.

KNOW-HOW

The value of our know-how represents in a unique way the solving of problems and articulates, implements and associates the whole knowledge, experiences and competences accumulated since 1940.

RELIABILITY

We know that lasting relationships can only be built on the basic of confidence, transparency and the daily efforts of each of our employees to provide our customers with tools and services of an excellent quality.

PERFIL DE LA COMPAÑÍA

EMPRESA FORMADORA

*DC SWISS SA participa activamente en la formación de jóvenes y en el perfeccionamiento de especialistas ya experimentados. Como poseedor de la etiqueta "**Empresa de formación**", es un honor para nosotros formar nuevos aprendices cada año.*

Es importante para nosotros asegurar la próxima generación de profesionales y ofrecerles las oportunidades de desarrollo y perfeccionamiento en un campo de gran potencial.

COMPANY PROFILE

TRAINING COMPANY

DC SWISS SA is actively involved in the training of young people and the further education of already experienced professionals. As holder of the "**Training company**" label, it is a matter of honour for us to train new apprentices every year.

It is important to us to ensure the next generation of professionals and to offer them opportunities for development and further training in a field with high potential.

Filière de formation POLYMÉCANICIEN

También somos miembros del programa de aprendizaje de polimecánica; una red de 6 empresas cuyo objetivo es formar aprendices de polimecánica.

We are also a member of the polymechanic apprenticeship programme; a network of 6 companies whose aim is to train polymechanic apprentices.

NOUS FORMONS DES PROS. ENTREPRISE FORMATRICE

Polimecánico(a) CFC - Polymechanic FCC
Mecánico(a) de producción de CFC - Production mechanic FCC
Logística CFC - Logistics specialist FCC
Empleado(a) comercial CFC - Commercial employee FCC

CFC = Certificado Federal de Competencia
FCC = Federal Certificate of Competence

Reducir nuestras emisiones de CO2
y mejorar nuestra eficiencia energética
Reducing our CO2 emissions
and improving our energy efficiency

Favorecer el uso de ***materiales reciclados o reciclables***
We favour the use of **recycled or recyclable materials**

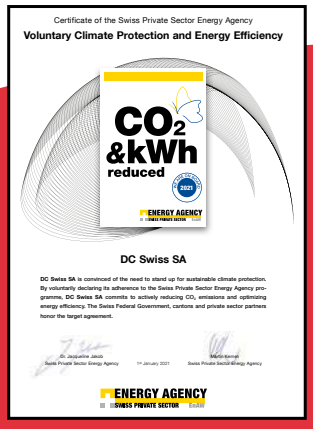
Clasificando nuestros residuos
Sorting our waste

PROTECCIÓN DEL MEDIO AMBIENTE

Estamos activamente comprometidos con la protección del medio ambiente y el clima, reduciendo nuestro consumo de agua y electricidad y limitando los viajes de negocios de nuestros empleados a lo estrictamente necesario. Al hacerlo, utilizamos los recursos de una manera altamente responsable.

PROTECTION OF THE ENVIRONMENT

We are actively committed to protecting the environment and the climate, to reducing our consumption of water and electricity and to limiting the business travel of our employees to the bare essentials. In doing so, we use resources in a highly responsible manner.


Certificate of the Swiss Private Sector Energy Agency
Voluntary Climate Protection and Energy Efficiency
CO_2 &kWh reduced
2021
ENERGY AGENCY
DC Swiss SA
DC Swiss SA is convinced of the need to stand up for sustainable climate protection. By voluntarily declaring its adherence to the Swiss Private Sector Energy Agency programme, DC Swiss SA commits to actively reducing CO_2 emissions and optimizing energy efficiency. The Swiss Federal Government, cantons and private sector partners honor the target agreement.
Dr. Jacqueline Jakob
Swiss Private Sector Energy Agency
1st January 2021
Martin Kennel
Swiss Private Sector Energy Agency
ENERGY AGENCY
SWISS PRIVATE SECTOR

¿Sabías que? *DC SWISS SA ha celebrado un acuerdo con la Agencia de Energía para la Industria y la Confederación Suiza?*

Did you know that DC SWISS SA has concluded an agreement with the Energy Agency for the Economy and the Swiss Confederation?

ROSCADO CLÁSICO
THREAD CUTTING

ROSCADO POR LAMINACIÓN
THREAD FORMING

AVIACIÓN Y AEROESPACIAL
AEROSPACE

ROSCADO POR INTERPOLACIÓN
THREAD MILLING

AUTOMOCIÓN
AUTOMOTIVE

TECNOLOGÍA MEDICAL
MEDICAL

SOLUCIONES PERSONALIZADAS
CUSTOMISED SOLUTIONS

PRODUCCIÓN DE ENERGÍA
POWER GENERATION

INDUSTRIA RELOJERA
WATCHMAKING

MECÁNICA GENERAL
GENERAL ENGINEERING

TORBELLINO
THREAD WHIRLING

CALIBRES DE CONTROL
THREAD GAUGES

MANDRIL DE ROSCAR
TAPPING CHUCKS

COJINETES DE ROSCAR
DIES

NUESTRAS COMPETENCIAS
SERVICIO DE MEDICIÓN Y DE METROLOGÍA

DC SWISS dispone de un laboratorio metrológico acreditado por el Servicio Suizo de Acreditación como laboratorio de calibración de dimensiones.

DC SWISS está capacitada para ofrecer servicios de calibración y metrología para conexiones roscadas.

Un certificado es la confirmación por escrito de la calidad del equipo metrológico de una empresa. DC NANO TOOLS SA (acreditación SCS 0143), miembro del Grupo DC SWISS, puede inspeccionar y calibrar calibres tampón, así como los Masters para medición de anillos de rosca de acuerdo con la norma internacional ISO 17025.

Nuestras herramientas son el resultado de numerosos estudios. Los diseñamos usando todo el conocimiento que hemos adquirido durante muchos años, siempre poniéndolos a prueba hasta sus máximos límites. Compartimos todo este conocimiento con usted gracias a los diferentes servicios que les ofrecemos. Nuestro objetivo es proporcionar la solución más adecuada en cada caso, desde el estudio de viabilidad hasta la producción en serie.

Somos expertos en todos los aspectos del proceso de roscado y somos capaces de ofrecerle nuestra experiencia de montaje desde el diseño, mecanizado e inspección metrológica a través de las diversas etapas de la creación de conexiones roscadas.

Expertos en diseños
Cada diseño es único pero a menudo hay múltiples soluciones. Podemos asesorarle sobre qué tipo de fijación elegir, por ejemplo, ajustable, auto bloqueo, o roscados de alta calidad. Durante la fase de elaboración, podemos ayudar a sus ingenieros a identificar y decidir la mejor conexión roscada en términos de dimensiones, practicidad, costes de producción y montaje.

Experiencia en mecanizado
Cada herramienta requiere una programación especial con numerosos parámetros. Podemos ayudarle a sacar lo mejor de sus máquinas y herramientas para lograr el máximo rendimiento a través de una programación personalizada. Y si una herramienta lo precisa, podemos hacerlo para que cumpla con todos sus requisitos. A menudo, un enfoque particular del ajuste permite resolver un problema causado por geometría compleja o posicionamiento inusual.

Experiencia en metrología
Suministramos un gran número de medidores y también asesoramiento sobre cómo utilizarlos e inspeccionarlos para garantizar que la calidad requerida se alcanza de manera adecuada. Otras medidas más específicas están disponibles, como la concentricidad así como todas las medidas de certificación. Podemos ayudarle a establecer procedimientos de control. Este servicio está disponible para diámetros de flanco de 0.1 à 3.0 mm, y diámetros externos de 0.1 à 3.5 mm. Confíe en la experiencia de DC NANO TOOLS SA para calibrar sus herramientas de medición.

Formación
En nuestro centro de aplicación y laboratorio, distribuimos información completa y asesoramiento sobre las mejores prácticas a todos nuestros clientes en el diseño, la fabricación y el funcionamento de fijaciones roscadas. Podemos proporcionar formación bajo demanda en temas específicos como fijaciones seguras.

OUR EXPERTISE
CALIBRATION & METROLOGY SERVICE

DC SWISS has a metrology lab that is accredited by the Swiss Accreditation Service as a laboratory for calibrating lengths.

DC SWISS is able to offer a calibration and metrology service for screw connections.

A certificate is written confirmation of the quality of a company's metrological equipment. DC NANO TOOLS SA (SCS accreditation 0143), a member of the DC SWISS Group, can inspect and calibrate thread plug gauges as well as thread ring gauges in accordance with the ISO 17025 international standard.

Our tools are the result of numerous studies. We design them using all the knowledge we have acquired over many years, always testing them to their utmost limits. We share all this knowledge with you in the form of our services. Our aim is to provide the most appropriate solution in each case, from feasibility study right through to mass production.

We are experts in all aspects of the process of screw threading, and are able to offer you our assembly expertise from design, machining and metrological inspection through the various stages of creating screw connections.

Design expertise
Each design is unique, but there are often multiple solutions. We can advise you on which type of screw fixing to choose, for example adjustable, self-locking or high-quality screws. During the design phase, we can help your designers to identify and decide the best-performing screw fixing in terms of dimensions, practicality, production costs and assembly.

Machining expertise
Each tool calls for special programming involving numerous parameters. We can help you to get the best out of your machines and tools in order to achieve maximum performance via personalised programming. We can provide you with support in the inspection and measurement phase, so you can be sure of having produced the screw thread you were expecting. And if a tool needs to be customised, we can do this so that it meets all your requirements. Often, a particular approach to fitting makes it possible to resolve a problem caused by complex geometry or unusual positioning.

Metrological expertise
We supply a large number of measuring gauges and also advice on how to use and inspect them in order to ensure the required quality is consistently achieved. Other more specific measures are available, such as concentricity and certification measures. We can assist you in setting up control procedures. This service is available for pitch diameters of 0.1 to 3.0 mm, and external diameters of 0.1 to 3.5 mm. Don't take the risk – benefit from the expertise of DC NANO TOOLS SA to calibrate your measuring tools.

Training
In our application centre and our laboratory, we distribute full information and advice on best practice to all our customers in the design, manufacture and use of screw fixings. We can provide on-demand training in specific subjects such as secure fixings.

SWISS ACCREDITATION
sas.admin.ch SCS 0143

PERFIL DE LA COMPAÑÍA

CERTIFICACIÓN ISO 9001

Todas las áreas de la empresa tienen la certificación ISO 9001 desde 2006.

COMPANY PROFILE

ISO 9001 CERTIFICATION

All areas of the company have been ISO 9001 certified since 2006.

- *Mejora continua de la satisfacción y la fidelidad de los clientes.*
  Continuous improvement of customer satisfaction and loyalty.
- *Cumplir con las normas de producto en nuestros procesos y procedimientos y optimizarlos.*
  Adherence to product standards in our processes and procedures and their optimisation.
- *Reducción de los costes relacionados con la calidad (rechazos, retoques, ...).*
  Reduction of quality-related costs (rejects, retouching, etc.).
- *Mejora de la eficiencia organizativa y estructural.*
  Improvement of organisational and structural efficiency.
- *Mayor capacidad d'adaptación al cambio.*
  Increased ability to adapt to change.
- *Participación del personal en el proceso de mejora continua.*
  Involving staff in the continuous improvement process.

Certificate CH07/0649

The management system of

DC Swiss SA

CP 363,
Grand rue 19
CH - 2735 Malleray

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

Design, development, manufacturing, marketing, sales and distribution of cutting tools. Expertise in threading technology.

This certificate is valid from 19 June 2018 until 18 June 2021
and remains valid subject to satisfactory surveillance audits
Recertification audit due before 7 June 2021
Issue 6. Certified since September 2007

Authorised by

SGS Société Générale de Surveillance SA
Technoparkstrasse 1 8005 Zurich Switzerland
t +41 (0)44 445-16-80 f +41 (0)44 445-16-88 www.sgs.com

DIMENSIONES GENERALES SEGÚN ISO / DIN
GENERAL DIMENSIONS ACCORDING TO ISO / DIN

N1120-4 ISO 529

Mango ISO corto reforzado — Short, reinforced ISO shank

N1220-4 ISO 529

Mango ISO corto pasante — Short, reduced ISO shank

N320-4 DIN 371

Mango DIN reforzado — Reinforced DIN shank

N420-4 DIN 376 / DIN 374

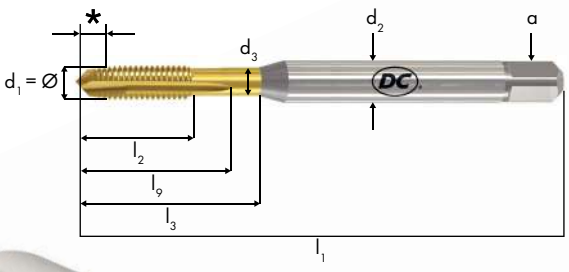
Mango DIN pasante — Reduced DIN shank

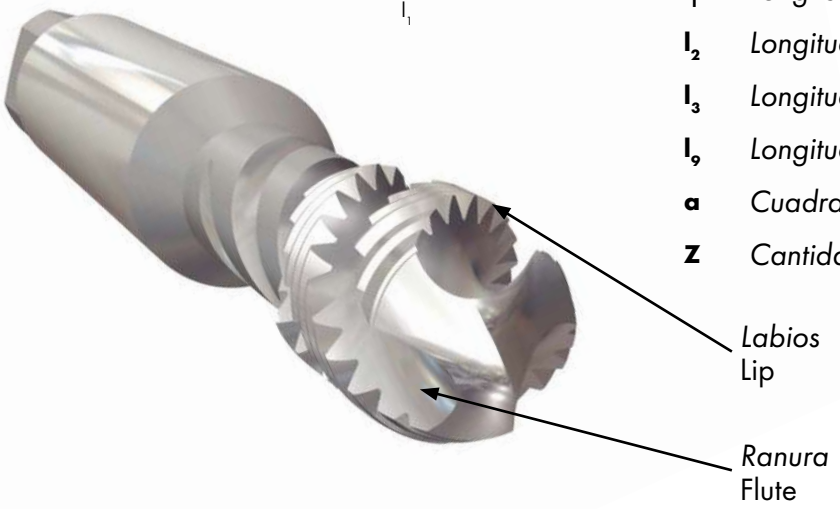
N520-4 NORM DC

Macho de roscar con mango DIN reforzado extra-largo, longitud total de acuerdo con los estandares de fábrica DC — Extra long machine tap with reinforced DIN shank; total length as per DC standards

Macho de roscar con mango DIN pasante extra-largo; longitud total de acuerdo con los estandares de fábrica DC — Extra long machine tap with reduced DIN shank; total length as per DC standards

DIMENSIONES DE LOS MACHOS PARA ROSCAR — MEASUREMENTS OF THE TAP





*	*Longitud de entrada*	Chamfer lead length
d_1	*Diámetro nominal de la rosca*	Nominal thread diameter
d_2	*Diámetro de mango*	Shank diameter
d_3	*Diámetro del cuello*	Neck diameter
l_1	*Longitud total*	Overall length
l_2	*Longitud roscada*	Thread length
l_3	*Longitud útil*	Usable length
l_9	*Longitud de la ranura*	Flute length
a	*Cuadrado*	Square
z	*Cantidad de ranuras*	Number of flutes

PUNTO DE CENTRAJE — CENTER POINTS

	Rosca	**Thread**
	*Punto central completo*	Full external center point
	*Punto central reducido*	Reduced center point
	*Punto central*	Internal center point
	Mango	**Shank**
	*Punto central completo*	Full external center point
	*Chaflán de centrado*	Centering bevel
	*Punto de centraje*	Internal center point
	La forma del centro depende del diámetro de la rosca, del tipo de herramienta y la máquina en la que se fabrica la herramienta.	The center shape depends on the thread diameter, the type of tool and the machine on which the tools are manufactured.

FORMA DE RANURAS PARA MACHOS PARA ROSCAR DC
FLUTE FORMS FOR DC TAPS

		Ejemplos para rosca derecha	**Examples for right-hand threads**
	**.10**	***Ranuras rectas*** *para agujeros pasantes y ciegos en materiales de virutas cortas*	**Straight flutes** for through and blind holes in short-chipping materials
	**.20**	***Ranuras rectas con entrada en hélice*** *para agujeros pasantes en materiales de virutas largas*	**Straight flutes with spiral point** for through holes in long-chipping materials
	**.30**	***Solamente entrada en hélice*** *para agujeros pasantes en materiales de virutas largas, para profundidades de rosca ≤ 1.5 x D; trabajo de chapa*	**Spiral point only** for through holes in long-chipping materials, for threading depth ≤ 1.5 x D; sheet metal working
	**.40**	***Ranuras helicoidales con hélice a izquierda*** *para los agujeros pasantes*	**Slow left-hand spiral flutes** for through holes
	**.50**	***Ranuras ligeramente helicoidales con hélice a ≤ 27° derecha*** *para agujeros pasantes y ciegos en materiales de virutas cortas < 2.5 x D y agujeros ciegos en materiales de virutas medio-largas y largas < 1.5 x D*	**≤ 27° slow right-hand spiral flutes** for through and blind holes in short-chipping materials ≤ 2.5 x D respectively for blind holes in middle-long and long-chipping materials ≤ 1.5 x D
	**.60**	***Ranuras fuertemente helicoidales con hélice a > 27° - ≤ 40° derecha*** *para agujeros ciegos en materiales de virutas largas ≤ 2.5 x D*	**> 27° - ≤ 40° fast right-hand spiral flutes** for blind holes in long-chipping materials ≤ 2.5 x D
	**.70**	***Ranuras fuertemente helicoidales con hélice a > 40° (R45) derecha*** *para agujeros ciegos hasta 3 x D en materiales tenaces*	**> 40° fast right-hand spiral flutes (R45)** for blind holes up to 3 x D in tough materials

FORMA DE RANURAS DE LUBRIFICACIÓN PARA MACHOS PARA ROSCADO POR LAMINACIÓN DC
LUBRICATION GROOVE FORMS FOR DC THREAD FORMERS

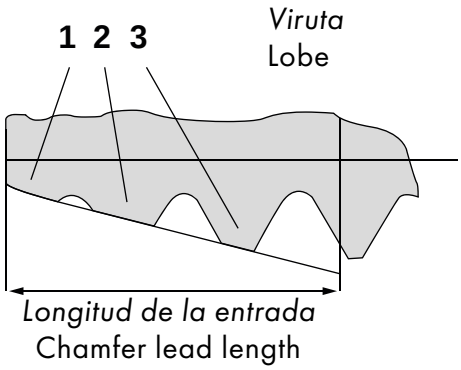
.80 ***Sin ranuras de lubrificación*** **Without lubrication grooves**

.81 ***Con ranuras de lubrificación*** **With lubrication grooves**

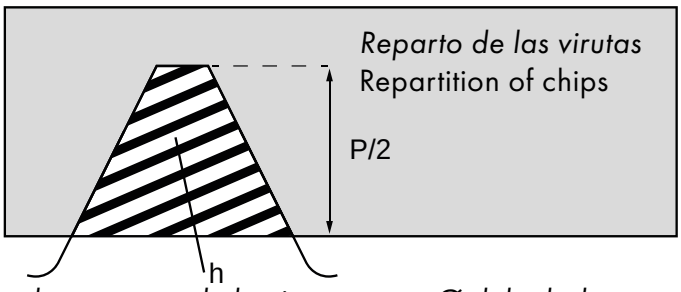
.84 ***Con ranuras de lubrificación y lubrificación interna con salidas radiales 45°*** *(la conversión a esta nueva versión está en curso)*

With lubrication grooves and internal cooling channel with lateral 45° lubricant outflow (conversion to this new version in progress)

FORMA DE ENTRADA PARA MACHOS DE CORTE Y POR LAMINACIÓN DC
CHAMFER FORMS FOR DC TAPS AND THREAD FORMERS



Formación de las virutas en la entrada
Chip formation in the chamfer



h = espesor de la viruta
h = Thickness of the chip

Ø del taladro previo
Core hole diameter

Forma y longitud de entrada para machos para roscar según la norma DIN 2197			**Chamfer forms and chamfer lead lengths for taps as per DIN 2197**	
-8		A 8 x P	*Longitud de entrada 6 - 8 hilos; para ranuras rectas*	Chamfer lead length 6 - 8 threads; for straight flutes
.20 - 4		B 4 x P	*Longitud de entrada 3.5 - 5.5 hilos; para ranuras rectas con entrada en hélice*	Chamfer lead length 3.5 - 5.5 threads; for straight flutes with spiral point
-3		C 2.5 x P	*Longitud de entrada 2 - 3 hilos; para ranuras rectas y helicoidales*	Chamfer lead length 2 - 3 threads; for straight and spiral flutes
-4		D 4 x P	*Longitud de entrada 3.5 - 5 hilos; para ranuras rectas y helicoidales*	Chamfer lead length 3.5 - 5 threads; for straight and spiral flutes
-5		E 1.5 x P	*Longitud de entrada 1.5 - 2 hilos; para ranuras rectas y helicoidales*	Chamfer lead length 1.5 - 2 threads; for straight and spiral flutes

Forma y longitud de entrada para machos para roscar por laminación según la norma DIN 2175			**Lead taper forms and lead taper lengths for thread forming taps as per DIN 2175**	
-3		C 2.5 x P	*Longitud de entrada 2 - 3 hilos*	Lead taper length 2 - 3 threads
-5		E 1.5 x P	*Longitud de entrada 1.5 - 2 hilos*	Lead taper length 1.5 - 2 threads

GEOMETRÍAS DE CORTE DC — DC CUTTING GEOMETRIES

N		***Para materiales normales*** *(aceros de decoletaje; aceros de construcción o de cementación; aceros al carbón; aceros aleados < 850 N/mm2; aceros inoxidables al azufre; fundición de grafito + esferoidal y maleable; latón (virutas largas); Al aleado Si < 10 %)*	**For normal materials** (free-cutting steels; structural, cementation steels; carbon steels; alloy steels < 850 N/mm2; free machining stainless steels; spheroidal graphite + malleable cast iron; long chip brass; Al alloyed Si < 10 %)
W		***Para materiales blandos*** *(aluminio no aleado; aluminio de baja aleación; materiales termoplásticos)*	**For soft materials** (aluminium unalloyed; low-alloyed aluminium; thermoplastics)
Z		***Para materiales tenaces*** *(materiales resistentes al óxido y a los ácidos - austeníticos; ferriticos y martensiticos < 850 N/mm2; titanio puro; aleación de níquel 1 < 850 N/mm1; cobre puro)*	**For tough materials** (rust and acid resistant materials - austenitic stainless steels; ferritic and martensitic < 850 N/mm2; pure titanium; nickel alloys 1 < 850 N/mm2; pure copper)
ZX **NEW**		***Para las aleaciones de ALU-BRONCE*** *(AMPCO® 21 / 22)*	**For ALU-BRONZE-Alloys** (AMPCO® 21 / 22)
H		***Para materiales de alta resistencia > 850 - < 1'400 N/mm2*** *((aceros aleados, aceros templados - aceros de alta resistencia);* ***latón, bronce (virutas cortas); el latón sin plomo; materiales duroplásticos; materiales plásticos reforzados por fibras de vidrio)***	**For high tensile materials > 850 - < 1'400 N/mm2** ((alloyed steels, tempered steels - high tensile alloy steels); **short chip brass + phosphor bronze + gun metal; lead-free brass; duroplastics; glass fibre reinforced plastics)**
S		***Para materiales de aleaciones especiales > 850 - < 1'150 N/mm2*** *(aceros aleados / tratados; aceros ferríticos y martensíticos, aleación de níquel 2)*	**For special alloyed materials > 850 - < 1'150 N/mm2** (alloy steels hardened / tempered; ferritic, martensitic steels; nickel alloys 2)
SA AERO **SA.20 / SA.50**		***Para materiales de aleaciones especial > 850 - < 1'150 N/mm2*** *(aleación de níquel 2; latón sin plomo)*	**For special alloyed materials > 850 - < 1'150 N/mm2** (nickel alloys 2; lead-free brass)

GEOMETRÍAS DE CORTE DC — DC CUTTING GEOMETRIES

SA AERO
SA.90

Para materiales de aleaciones especial > 1'150 - < 1'600 N/mm2
(aleación de níquel 3)

For special alloyed materials > 1'150 - < 1'600 N/mm2
(nickel alloys 3)

TL

Para las aleaciones de titanio

For titanium alloys

GG

Para fundición gris; fundición de aluminio con alto contenido en Si; aleación de magnesio

For grey cast iron; aluminium castings with high Si content; magnesium alloys

---

K

Con una geometría especial "rompevirutas"
(para materiales normales, fácilmente mecanizables hasta 1'150 N/mm2; latón sin plomo)

With special "chipbreaker cutting edge geometry"
(for normal, easily machinable materials up to 1'150 N/mm2; lead-free brass)

QTAP
NEW

El ALLROUNDER DC
(para el mecanizado de materiales universales de hasta 1'150 N/mm2, para su uso en mandriles con compensación axial y roscado sincronizado)

The DC ALLROUNDER
(for machining universal materials up to 1'150 N/mm2, for use in tapping chucks with axial compensation and for synchronous tapping)

RTS

Macho sincro DC tipo RTS
(para el mecanizado de materiales universales de hasta 1'150 N/mm2, para el roscado sincrónico "Rigid Tapping")

DC Synchro tap type RTS
(for machining universal materials up to 1'150 N/mm2, for synchronous tapping "Rigid Tapping")

FS
< Ø 3 mm

Macho de laminación DC tipo FS
(macho de laminación universal de 4 puntas de contacto para pequeñõs roscados de Ø ≥ 1 - < 3 mm para los materiales deformables a frío)

DC Thread formers type FS
(universal thread former with 4 forming lobes for small thread sizes Ø ≥ 1 - < 3 mm, in all cold forming materials)

GEOMETRÍAS DE CORTE DC — DC CUTTING GEOMETRIES

FPS
≥ Ø 3 mm

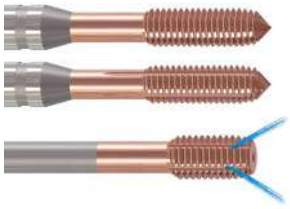
.80
.81
.84

Macho de laminación DC tipo FPS
(para Ø ≥ 3 mm, con puntas de contacto redondeadas, concebidas para una deformación progresiva de materiales abrasivos (aceros de construcción, aceros al carbón, aceros aleados, latón de virutas largas, aluminio, etc.))

DC Thread formers type FPS
(for Ø ≥ 3 mm, with large forming lobes designed for a progressive flow of materials with low elongation coefficient (structural steels, carbon steels, alloy steels, long chipping brass, aluminium, etc.))

FAS
≥ Ø 3 mm

.80
.81
.84



Macho de laminación DC tipo FAS
(para Ø ≥ 3 mm, con puntas de contacto salientes, para una deformación rápida de materiales de alto coeficiente de alargamiento (inoxidables, cobre puro, etc.))

DC Thread formers type FAS
(for Ø ≥ 3 mm, with pointed forming lobes designed for a fast flow of tough materials with high elongation coefficient (stainless steels, pure copper, etc.))

.21 / .61

Dientes alternos
(para una menor generación de calor)

Interrupted thread
(for less heat generation)

.62

Dientes truncados
(para evitar el atascamiento de la viruta y la rotura de dientes en el hilo guía)

Truncated thread
(to avoid chip jamming and tooth breakage in the guiding section of the tap)

.65

Dientes truncados y lubrificación interna con salida frontal

Truncated thread and internal coolant with frontal outflow

TRATAMIENTOS SUPERFICIALES Y RECUBRIMIENTOS
SURFACE TREATMENTS AND COATINGS

V

Tratamiento superficial DC "V" Vaporizado

El tratamiento superficial DC "V" mejora el deslizamiento del macho de roscar y evita la formación de soldaduras frías.

DC "V" surface treatment Steam tempered

The DC "V" surface treatment improves the sliding friction of the tap and prevents cold welding.

NV

Plasma Nitrurado + tratamiento superficial "V"

Los machos nitrurados por plasma tienen una mayor dureza superficial, aprox. 1100 HV, y son especialmente adecuados para el mecanizado de materiales abrasivos (fundición gris, aluminio fundido con alto contenido en Si). También tienen mejores propiedades de deslizamiento gracias al tratamiento adicional de la superficie DC "V".

Plasma nitriding + "V" surface treatment

Plasma-nitrided taps have increased surface hardness, approx. 1100 HV, and are particularly suitable for machining abrasive materials (grey cast iron, cast aluminium with high Si content). They also have improved sliding properties thanks to the additional DC "V" surface treatment.

DLC

Recubrimiento DLC

Las herramientas de roscado con recubrimiento DLC tienen una dureza superficial de aproximadamente 2500 HV, y son especialmente adecuadas para el mecanizado de metales no ferrosos y el aluminio con bajo contenido de silicio (< 9 % Si).

DLC-coating

DLC-coated threading tools have a surface hardness of approx. 2500 HV and are particularly suitable for machining non-ferrous metals and aluminium with a low silicon content (< 9 % Si).

TiN

Recubrimiento de nitruro de titanio (TiN)

La dureza del revestimiento de titanio es de aproximadamente 2400 HV. Se aconseja el uso de los machos de roscar revestidos con titanio en materiales abrasivos y en aquellos que provocan la formación de soldaduras frías. Permite aumentar las velocidades de corte y la vida del macho de roscar.

Titanium-nitride coating (TiN)

The titanium nitride coating is of a hard metal material (PVD) with a hardness of approximately 2400 HV. TiN-coated taps are particularly suitable for working abrasive and cold-welding type materials; higher cutting speeds and improved performance.

TiCN

Recubrimiento de carbonitruro de titanio (TiCN)

La dureza del revestimiento del TiCN es de aproximadamente 3000 HV. Dotados de una mayor dureza que los machos de roscar recubiertos de TiN, permite trabajar a velocidades de corte superiores.

Titanium-carbonitride coating (TiCN)

The TiCN-coating with a hardness of approx. 3000 HV is even harder than the TiN-coating, for even higher cutting speeds.

TRATAMIENTOS SUPERFICIALES Y RECUBRIMIENTOS
SURFACE TREATMENTS AND COATINGS

VS

Recubrimiento de protección contra el desgaste "VS" para uso general

Tratamiento superficial específico para utilización en inoxidables con machos de clase "Z" con emulsión; en aleaciones especiales con machos de clase "S"; en las aleaciones de titanio con machos de clase "TL".

DC "VS" wear-protective coating for general use

A special treatment for taps specifically intended for use in Inox with taps of the performance class "Z" with emulsion; in special alloys with taps of the performance class "S"; in titanium alloyed materials with taps of the performance class "TL".

VX

Recubrimiento de protección "VX" para aceros inoxidables y aleaciones de níquel

Tratamiento superficial específico especialmente adecuado para los machos para roscar de la clase de rendimiento "Z", adaptado de forma óptima para el mecanizado con emulsión de aceros inoxidables y aleaciones de níquel.

DC "VX" wear-protective coating for stainless steels and nickel alloys

Specific surface treatment, especially suitable for taps in performance class "Z", optimally adapted for machining with emulsion of stainless steels and nickel alloys.

Nota

Nuestros revestimientos estándar permiten procesar una amplia gama de materiales. Para aplicaciones específicas en materiales muy concretos, estaremos encantados de ofrecerle el recubrimiento más adecuado. Tiempo de entrega y precio sobre pedido.

Notice

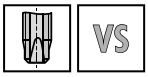
Our standard coatings allow a wide range of materials to be performed. For specific applications in very specific materials, we will be pleased to offer you the most suitable coating. Delivery time and price on request.

NEW

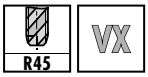
AERO

MJ
UNJC - UNJF

S320VS-4



S370VX-3



MJ
UNJC - UNJF

SA320-4

SA350-3

SA390-3

MJ
UNJC - UNJF

TL351VS-3

ZX

Para las aleaciones de ALU-BRONCE
(AMPCO® 21/22)
For ALU-BRONZE-Alloys (AMPCO® 21/22)
M

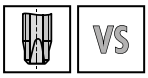
ZX320-4
ZX420-4

QTAP

Allrounder DC
DC Allrounder

M - MF - UNC
UNF - G

Q320VS-4 Q420VS-4



Q323VS-4 Q423VS-4

Q360VS-3 Q460VS-3

Q363VS-3 Q463VS-3

TABLA DE UTILIZACIÓN DE DC AMPLIADA
ENLARGED DC APPLICATION CHART

* 17 *Aceros mejorados > 44 - ≤ 54 HRC* **Alloy steels tempered > 44 - ≤ 54 HRC**	* 18 *Aceros templados > 54 - ≤ 63 HRC* **Alloy steels hardened > 54 - ≤ 63 HRC**	64 *Latón sin plomo (ECOBRASS®)* **Lead free brass (ECOBRASS®)**
> 44 - ≤ 54 HRC	> 54 - ≤ 63 HRC	CuZn21Si3P (ECOBRASS®) CuZn35 CuZn42

✱ *Ver nuestro programa de fresas de roscar y fresas torbellino en metal duro integral según el catálogo DC TM.1.*
✱ See our programme DC solid carbide thread milling cutters and solid carbide thread whirl cutters as per DC catalogue TM.1.

NEW

RTS

M 7GX

RTS362VS-3

RTS462VS-3

R40 | VS

NP

M

NP110-1 NP210-1

NP110-2 -3 NP210-2 -3

H.TC

MF - UNC - UNF

H320TC-4 H420TC-4

TiCN

H350TC-3 H450TC-3

R25 | TiCN

A PETICIÓN

- ***Para un uso específico según las necesidades del cliente:***
  Machos para roscar a máquina tipo MEGA (Ø 42 - 164 mm)

- ***Machos para roscar a máquina en metal duro integral para una mayor vida útil y una mayor fiabilidad del proceso en aplicaciones específicas.***

ON REQUEST

- **For specific applications according to customer requirements:**
  DC machine taps type MEGA (Ø 42 - 164 mm)

- **DC solid carbide machine taps for higher tool-life and improved process security in specific applications.**

MEJORAS TÉCNICAS: CONVERSIÓN A LA NUEVA VERSIÓN EN CURSO
TECHNICAL IMPROVEMENTS: CHANGE TO NEW VERSION IN PROGRESS

LUBRIFICACIÓN INTERNA CON SALIDAS RADIALES DE 45°
INTERNAL COOLANT WITH RADIAL OUTFLOW, NEW 45°

M

RTS323VS-4 RTS423VS-4
RTS523VS-4 RTS623VS-4

FPS384VS-3 FPS484VS-3
FPS584VS-3 FPS684VS-3

FAS384VS-3 FAS484VS-3
FAS584VS-3 FAS684VS-3

CON UN NUEVO ACONDICIONAMIENTO DE LOS BORDES DE CORTE
WITH NEW CONDITIONING OF THE CUTTING EDGES

M - MF - UNC - UNF
G - EG UNC - EG UNF

Z370VS-3 Z470VS-3

M

Z373VS-3 Z473VS-3

M - MF - UNC - UNF
EG M - EG UNC - EG UNF

SA320-4 SA420-4
SA350-3 SA450-3

M - MF - UNC - UNF
EG M - EG UNF

SA390-3

M

TL320VS-4 TL420VS-4

M - MF - UNC - UNF
EG M - EG UNC - EG UNF

TL351VS-3 TL451VS-3

MJ - UNJC - UNJF

S370VX-3 S470VX-3

COMING SOON:

Machos de roscar reelaborados H.20TC-4 / H.50TC-3 - nuevo recubrimiento VH para aumentar la vida útil de las herramientas hasta un 50 %, para materiales según los grupos 15 y 16 de nuestra tabla de utilización.

COMING SOON:

Reworked taps H.20TC-4 / H.50TC-3 - new VH coating to increase tool life by up to 50 %, for materials according to groups 15 and 16 of our application chart.

NANO ROSCADO CLÁSICO, ROSCADO POR LAMINACIÓN, CALIBRES DE CONTROL
NANO TAPS, THREAD FORMERS, THREAD GAUGES

M / MF / UNC / UNF
S / SF / SL

Ø 0.3 - Ø 2.74 mm

DZ04

DZ14

TAN

TAZ

FA/CFA

CMS

DN01

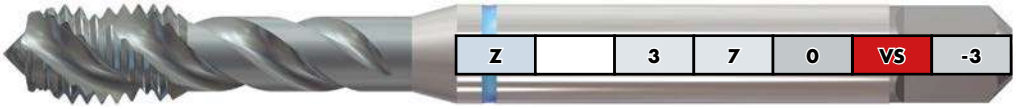
DN02

CODIFICACIÓN — CODIFICATION

Machos

Taps

Ejemplo - Example



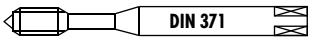
Materiales normales	Normal materials	**N**
Materiales blandos	Soft materials	**W**
Materiales tenaces	Tough materials	**Z**
Aleaciones de Alu-bronce	Alu-bronze alloys	**ZX**
Materiales de alta resistencia	High tensile materials	**H**
Aleaciones especiales	Special alloys	**S**
Aleaciones especiales (Aero)	Special alloys (Aero)	**SA**
Aleaciones al titanio (Aero)	Titanium alloys (Aero)	**TL**
Fundición gris y fundición Al	Cast iron and aluminium casting	**GG**
Allrounder	Allrounder	**QTAP**
Roscado rígido	Rigid Tapping	**RTS**
Rompe virutas	Swarf breaker	**K**
MEGA Dimensiones	MEGA tap sizes	**MA**
Fabricación especial	Special execution	**3**
DIN corto - mango reforzado	DIN short - reinforced shank	**1**
DIN corto - mango pasante	DIN short - reduced shank	**2**
DIN largo - mango reforzado	DIN long - reinforced shank	**3**
DIN largo - mango pasante	DIN long - reduced shank	**4**
DIN extra-largo - mango reforzado	DIN extra-long - reinforced shank	**5**
DIN extra-largo - mango pasante	DIN extra-long - reduced shank	**6**
Segùn norma fábrica	DC standards	**9**
ISO corto - mango reforzado	ISO short - reinforced shank	**11**
ISO corto - mango pasante	ISO short - reduced shank	**12**
Ranuras rectas	Straight flutes	**1**
Ranuras rectas con entrada en hélice	Straight flutes with spiral point	**2**
Entrada en hélice	Spiral point	**3**
< 27° helicoidales izquierda	< 27° left-hand slow spiral flutes	**4**
< 27° helicoidales derecha	< 27° right-hand slow spiral flutes	**5**
> 27° helicoidales derecha	> 27° right-hand fast spiral flutes	**6**
> 40° helicoidales derecha	> 40° right-hand fast spiral flutes	**7**
10° helicoidales derecha, entrada en hélice	10° right-hand slow spiral flutes, spiral point	**9**
Estándard	Standard	**0**
Dientes alternos	Interrupted thread	**1**
Dientes truncados	Truncated thread	**2**
Lubrificación interna	Internal coolant	**3**
Dientes alternos, lubrificación interna	Interrupted thread, internal coolant	**4**
Dientes truncados, lubrificación interna	Truncated thread, internal coolant	**5**
Tratamiento superficial "Vaporizado"	"V" surface treatment	**V**
Protec. contra el desgaste "VS" para uso general	VS wear-protective coating, general	**VS**
Protec. «VX» para aceros inoxid. y aleac. de nickel	VX coating for stainless steels and nickel alloys	**VX**
Recubierto de nitruro de titanio (TiN)	Titanium-nitride coating (TiN)	**TN**
Recubierto de carbonitruro de titanio (TiCN)	Titanium carbonitride coating (TiCN)	**TC**
Plasma nitrurado+tratamiento superficial "V"	Plasma nitriding + "V" surface treatment	**NV**
Recubrimiento DLC	DLC-coating	**DL**
Desbaste	Taper tap	**-1**
Intermedio	Second tap	**-2**
Acabado / 2 - 3 hilos de entrada	Bottoming tap / 2 - 3 chamfered threads	**-3**
3.5 - 5.5 hilos de entrada, entrada en hélice	3.5 - 5.5 chamfered threads, spiral point	**-4**
1.5 - 2 hilos de entrada	1.5 - 2 chamfered threads	**-5**
6 - 8 hilos de entrada	6 - 8 chamfered threads	**-8**
Juego de machos	Thread taps set	**-S**

PICTOGRAMAS — PICTOGRAPHS

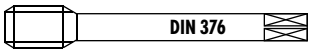
Para grupos de materiales según tabla de utilización DC.
For material groups as per DC application chart

1.0037	St37-2 (S235JR)
1.0050	St50-2 (E295)
1.0060	St60-2 (E335)
1.5919	15CrNi6
1.7131	16MnCr5

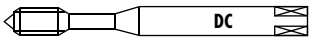
1.4301	X5CrNi18-10
1.4406	X2CrNiMoN17-12-2
1.4435	X2CrNiMo18-14-3
1.4541	X6CrNiTi18-10
1.4571	X6CrNiMoTi17-12-2



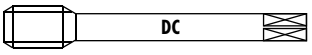
Mango reforzado DIN 371
Reinforced shank as per DIN 371



Mango pasante DIN 376
Reduced shank as per DIN 376



Mango reforzado según norma de fábrica DC
Reinforced shank as per DC standards



Mango pasante según norma de fábrica DC
Reduced shank as per DC standards

Extra-largo
Extra-long

HSSE-PM
HSSE-PM

HSSE
HSSE

Número de ranuras (Z)
Number of flutes (Z)

Ranuras rectas
Straight flutes

Ranuras rectas con entrada en hélice
Straight flutes with spiral point

Solamente entrada en hélice
Spiral point only

Ranuras helicoidales con hélice a 40° derecha
40° right-hand spiral flutes

Dientes truncados
Truncated thread

Dientes alternos
Interrupted thread

Macho de desbaste
Taper tap

Macho intermedio
Second tap

Macho de acabado
Bottoming tap

Juego de mano, 2 machos
Hand taps, set of 2 pieces

Juego de mano, 3 machos
Hand taps, set of 3 pieces

Guía lisa
Parallel pilot

Lubrificación interna con salida frontal
Internal coolant with frontal outflow

Lubrificación interna con salidas radiales, nuevo 45°
Conversión a la nueva versión en curso
Internal coolant with radial outflow, new 45°
Change to new version in progress

Agujero pasante, virutas largas
Through hole, long chipping materials

Agujero pasante < 1.5 x D, virutas cortas
Through hole < 1.5 x D, short chipping materials

Agujero ciego < 1.5 x D, virutas largas
Blind hole < 1.5 x D, long chipping materials

Agujero ciego < 2.5 x D, virutas cortas
Blind hole < 2.5 x D, short chipping materials

Agujero ciego < 2.5 x D, virutas largas
Blind hole < 2.5 x D, long chipping materials

Agujero pasante / ciego < 2.5 x D
Through / blind hole < 2.5 x D

Agujero ciego < 3 x D
Blind hole < 3 x D

Cabeza de roscar macho MEGA
MEGA thread tapping head

Macho de corona
Crown tap

Brocas-macho
Combination drill/tap

Diámetro del agujero
Core hole diameter

Radio en el diámetro exterior (J)
Radius on external diameter (J)

Rosca cónica 1:16 (NPT - NPTF - Rc)
Tapered thread 1:16 (NPT - NPTF - Rc)

Rosca EG (para insertos de rosca de alambre)
Thread EG (for wire screw thread inserts)

PICTOGRAMAS — PICTOGRAPHS

Rosca izquierda
Left-hand thread

3.5 - 5.5 hilos de entrada, forma B
3.5 - 5.5 chamfered threads, lead form B

2 - 3 hilos de entrada, forma C
2 - 3 chamfered threads, lead form C

1.5 - 2 hilos de entrada, forma E
1.5 - 2 chamfered threads, lead form E

Clase de tolerancia ISO 2 6H
Tolerance class ISO 2 6H

Clase de tolerancia ISO 2 6H + 0.1 mm
Tolerance class ISO 2 6H + 0.1 mm

Clase de tolerancia ISO 3 6G
Tolerance class ISO 3 6G

Tratamiento superficial DC "Vaporizado"
DC "V" surface treatment

Protección contra el desgaste DC "VS" para uso general
DC "VS" wear-protective coating for general use

Protección "VX" para aceros inoxidables y aleaciones de níckel
DC "VX" wear-protective coating for stainless steels and nickel alloys

Recubierto de nitruro de titanio
Titanium-nitride coating

Recubierto de carbonitruro de titanio
Titanium-carbonitride coating

Plasma nitrurado + tratamiento superficial "V"
Plasma nitriding + "V" surface treatment

Recubrimiento DLC
DLC-coating

Recubrimiento Hardlube
Hardlube-coating

Fragmentos de viruta / virutas consistentes
Swarf fragments / consistant chips

Para roscado rígido
For Rigid Tapping

Para roscado clásico
For Classic Tapping

● *Artículos disponibles de stock*
Stock item

● *Disponible a corto plazo*
Available at short notice

* *Artículos disponibles de stock hasta agotamiento*
Available from stock, while stock lasts

CLASIFICACIÓN DE LOS MATERIALES

Ejemplos prácticos de clasificación de los materiales

Referencia: DIN

11 Aceros de decoletaje

1.0711	A11
1.0715	A15X
1.0718	A20
1.0726	A30
1.0737	A35

12 Aceros de construcción o de cementación

1.0037	Ст1пс
1.0050	Ст5пс
1.0060	Ст6пс
1.5919	12ХН2А
1.7131	18ХГ

13 Aceros al carbón

1.0503	45
1.0535	50
1.0601	60
1.1545	У10А
1.2067	9Х2

14 Aceros aleados < 850 N/mm2

1.2363	Х6ВФ
1.3551	ШХ10
1.7218	38ХС
1.7220	35ХМ
1.7225	38ХМ

15 Aceros aleados/trat. > 850 - < 1150 N/mm2

1.3553	ШХ15СГ
1.6580	3Х3М3Ф
1.7220	35ХМ
1.7225	38ХМ
1.8507	38Х2МЮА

16 Aceros de alta resistencia ≤ 44 HRC

1.6582	38Х2Н2МА
1.7225	38ХМ
1.7228	38ХВ
1.8515	40ХН

17 Aceros mejorados > 44 - ≤ 54 HRC

> 44 - ≤ 54 HRC

18 Aceros templados > 54 - ≤ 63 HRC

> 54 - ≤ 63 HRC

21 Aceros inoxidables al azufre

1.4005	08Х13
1.4104	12Х13
1.4305	14Х17Н2

22 Austeníticos

1.4301	08Х18Н10Т
1.4406	03Х16Н15М3
1.4435	03Х17Н14М3
1.4541	12Х18Н10Т
1.4571	10Х17Н13М2Т

23 Ferríticos y martensíticos ≤ 850 N/mm2

1.4112	14Х17Н2
1.4540	18Х11МНФБ
1.4582	40Х10С2М
1.4762	15Х28
1.4922	20Х12ВНМФЛ

24 Ferríticos y martensíticos > 850 - ≤ 1150 N/mm2

1.4057	20Х17Н2
1.4125	95Х18
1.4542	18Х15Н3М-Ш
1.4548	55Х20Г9АН4
1.4748	20Х20Н14С2

31 Fundición gris

0.6015	СЧ15
0.6020	СЧ20
0.6025	СЧ25
0.6030	СЧ30

32 Fundición de grafito + esferoidal y maleable

0.7040	ВЧ40
0.7043	ВЧ50
0.7050	ВЧ60
0.7060	ВЧ70
0.7080	ВЧ80

41 Titanio puro

3.7024	ВТ1-00
3.7034	ВТ1-0
3.7055	ВТ1-1
3.7065	ВТ1-2

42 Aleación al titanio

3.7124	ВТ23
3.7164	ВТ5-1
3.7174	ВТ6

51 Aleación al níquel 1 ≤ 850 N/mm2

1.3912	36Н
2.4360	НМц2
2.4816	НМц5
1.4876	ХН32Т

52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm2

2.4375	ХН77ТЮР
2.4631	ХН67МВТЮ
2.4668	ХН75МВТЮ

53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm2

2.4631	ХН35ВТЮ
2.4668	ХН70ВМТЮ

61 Cobre puro (electrolítico)

2.0060	М1

62 Latón, bronce (virutas cortas)

2.0401	ЛЦ40С
2.0402	ЛС59-1
2.1030	БрОФ8-0.3
2.1096	БрОФ7-0.2

63 Latón (virutas largas)

2.0240	Л63
2.0265	Л70
2.0321	Л90

64 Latón sin plomo

CuZn21Si3P
(ECOBRASS®)
CuZn35
CuZn42

71 Al no aleado

3.0205	А98
3.0255	А99

72 Al aleado Si < 1.5 %

3.1255	Д16
3.1355	Д18
3.2315	Д1
3.3206	В95
3.4345	АМг5

73 Al aleado Si > 1.5 % - < 10 %

3.2161	АК7
3.2162	АК9
3.2341	АЛ6
3.2371	АК7ч

74 Al aleado Si > 10 %, Aleaciones de magnesio

3.2381	АК10су
3.2382	АК12
3.2581	АК12ММгН
3.2583	МЛ5

81 Materiales termoplásticos

Делрин
Тефлон
Нейлон

82 Materiales duroplásticos

Бакелит
Новопан

83 Materiales plásticos reforzados por fibras

Армированные стеклопластики
Армированные дюро- и термопластики

91 Oro amarillo

2N18
Au585AgCu205
3N18
Au917AgCu44

92 Oro rojo

4N18
5N18
Au585CuAg325
Au750AgCu
Au917Cu83

93 Oro blanco

Au750PdCu125
Au750PdCu150
Au585PdCu150
Au925Pd75

94 Plata

Ag999
Ag800Cu
Ag925Cu

APPLICATION GROUPS

Examples for application groups

Reference: AISI/ASTM/UNS

11 Free-cutting steels

1.0711	1212
1.0715	1213
1.0718	12L13
1.0726	1140
1.0737	12L14

12 Structural, cementation steels

1.0037	1015
1.0050	A570 Gr.50
1.0060	A572 Gr.55
1.5919	4617
1.7131	5115

13 Carbon steels

1.0503	1045
1.0535	1055
1.0601	1060
1.1545	W110
1.2067	L 3

14 Alloy steels < 850 N/mm2

1.2363	A2
1.3551	M50
1.7218	4130
1.7220	4135
1.7225	4140

15 Alloy steels hard./temp. > 850 - < 1150 N/mm2

1.3553	-
1.6580	4340
1.7220	4135
1.7225	4140
1.8507	A355CLD (K23510)

16 High tensile alloy steels ≤ 44 HRC

	EN-GJS-1200-2
1.6582	4340
1.7225	4140
1.7228	4150
1.8515	-

17 Alloy steels tempered > 44 - ≤ 54 HRC

> 44 - ≤ 54 HRC

18 Alloy steels hardened > 54 - ≤ 63 HRC

> 54 - ≤ 63 HRC

21 Free machining stainless steels

1.4005	416
1.4104	430F
1.4305	303

22 Austenitic stainless steels

1.4301	304
1.4406	316LN
1.4435	316L
1.4541	321
1.4571	316Ti

23 Ferritic and martensitic < 850 N/mm2

1.4112	440B
1.4540	XM12
1.4582	-
1.4762	446
1.4821	4922

24 Ferritic and martensitic > 850 - < 1150 N/mm2

1.4057	431
1.4125	440C
1.4542	630 (17-4PH)
1.4748	-

31 Cast iron

0.6015	A48-25B
0.6020	A48-30B
0.6025	A48-35B
0.6030	A48-45B

32 Spheroidal graphite + malleable cast iron

0.7040	65-45-12
0.7043	60-40-18
0.7050	80-55-06
0.7060	70-60-03
0.7080	120-90-02

41 Pure titanium

3.7024	Gr.1
3.7034	Gr.2
3.7055	Gr.3
3.7065	Gr.4

42 Titanium alloys

3.7124	Alloy 230
	F-1295
3.7164	Gr.5
3.7174	-

51 Nickel alloys 1 ≤ 850 N/mm2

1.3912	K93600
2.4360	N04400
2.4816	N06600
1.4876	N08800

52 Nickel alloys 2 > 850 - ≤ 1150 N/mm2

2.4375	N05500 (B865)
2.4631	N07080 (B637)
2.4668	N07718 (B637)

53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm2

2.4631	N07080 (B637)
2.4668	N07718 (B637)

61 Pure copper (electrolytic copper)

2.0060	C11000

62 Short chip brass, phosphor bronze, gun metal

2.0401	C38500
2.0402	C37800
2.1030	C52100
2.1096	-

63 Long chip brass

2.0240	C23000
2.0265	C26000
2.0321	C27200

64 Lead free brass

CuZn21Si3P
(ECOBRASS®)
CuZn35
CuZn42

71 Al unalloyed

3.0205	1200
3.0255	1050A

72 Al alloyed Si < 1.5 %

3.1255	2014
3.1355	2024
3.2315	6082
3.3206	6060
3.4345	7022

73 Al alloyed Si > 1.5 % - < 10 %

3.2161	327
3.2162	-
3.2341	-
3.2371	356

74 Al alloyed Si > 10 %, Mg-alloys

3.2381	A360
3.2382	-
3.2581	A413
3.2583	413.1

81 Thermoplastics

Delrin (POM)
Teflon
Nylon

82 Duroplastics

Bakelit
Novopan

83 Glass fibre reinforced plastics

Glass fibre reinforced,
Thermo and Duroplastics

91 Yellow gold

2N18
Au585AgCu205
3N18
Au917AgCu44

92 Red gold

4N18
5N18
Au585CuAg325
Au750AgCu
Au917Cu83

93 White gold

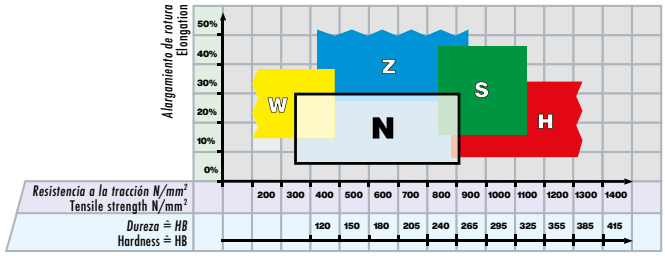
Au750PdCu125
Au750PdCu150
Au585PdCu150
Au925Pd75

94 Silver

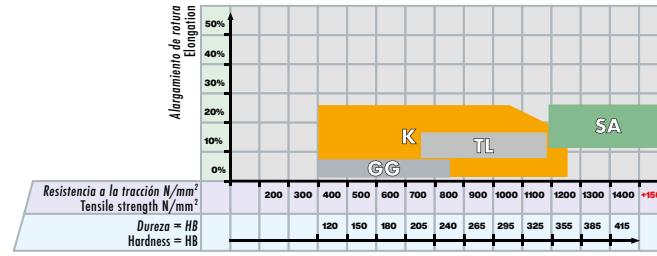
Ag999
Ag800Cu
Ag925Cu

TABLA DE UTILIZACIÓN — APPLICATION CHART

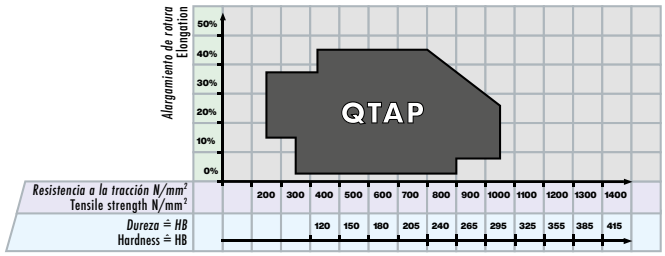
Roscado clásico
Thread cutting



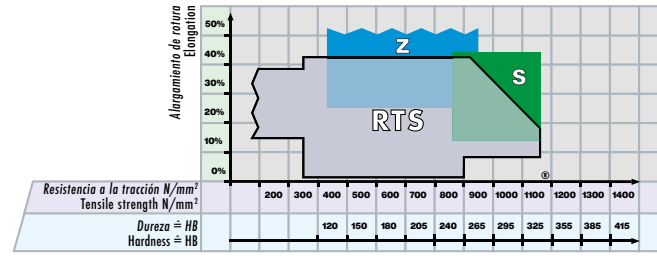
Roscado clásico
Thread cutting



Roscado clásico y roscado rígido
Thread cutting classic and rigid



Roscado rígido
Rigid Tapping



DC Clasificación de los materiales

DC Material classification

Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza Hardness (HB)	Resistencia Tensile strength Rm (N/mm²)	Alargamiento Elongation A (%)
10 Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
	12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
	13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
	14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
	15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
	16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
	17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
	18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20 Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
	22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
	23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
	24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30 Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
	32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40 Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
	42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50 Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
	52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
	53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60 Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
	62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
	63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
	64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70 Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
	72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
	73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
	74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80 Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
	82	Materiales duroplásticos	Duroplastics	-	-	-
	83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90 Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
	92	Oro rojo	Red gold	-	-	-
	93	Oro blanco	White gold	-	-	-
	94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING

CLASSIC

Desde página: From page:	N Materiales normales Normal materials											W Materiales blandos Soft materials			
MJ / M	60	62	60	64	64	72	72	74	60	74	74	86	86	87	87
MF	125	124	125	125		124		131	131	131					
UNJC / UNC / UNC(J)	154	154	154	154				156	156	156					
UNJF / UNF / UNF(J)	176	176	176	176				178	178	178					
UNEF / UN / UNS	198	198						199	199						
G / Rp / Rc / W / SV	204	205	205	205				206	206	206				207	207
NPT / NPTF	220														
PG / TR	222	222													
EG M / EG UNC / EG UNF		226	226					227	227						

	N.10	N.20	N.20V	N.20TN	N.20TC	N.50	N.50V	N.60	N.60V	N.60TN	N.60TC	W.20	W.20DL	W.60	W.60DL	
Vc (m/min) < Ø 20 mm Guide Line — Standard +V / +NV	Recub. Coated TN / TC / DL / VS															
11	10 - 15	25 - 35			O E	O E	O E		O E		O E	O E	O E	O E	O E	11
12	10 - 15	25 - 35			O E	O E	O E		O E		O E	O E	O E	O E	O E	12
13	8 - 12	16 - 24			O E	O E	O E				O E	O E	O E	O E	O E	13
14	8 - 12	16 - 24			O E	O E	O E		O		O E	O E	O E	O E	O E	14
15	3 - 5	6 - 12														15
16	3 - 5	3 - 5														16
17	2 - 4															17
18																18
21	10 - 15	20 - 30			O E	O E	O E				O E					21
22	3 - 6	6 - 12														22
23	3 - 6	6 - 12														23
24		4 - 8														24
31	10 - 15	20 - 30	E				E					E				31
32	10 - 15	20 - 30			O E	O E	O E		O E		O E	O E	O E	O E	O E	32
41	4 - 8	4 - 8														41
42	3 - 5	3 - 5														42
51		6 - 12														51
52	4 - 8	4 - 8														52
53	2 - 4															53
61	8 - 12	12 - 16						O								61
62	20 - 30	30 - 40	O E	E			O E	O E							O E	62
63	16 - 24		O	O E			O E	O E								63
64	16 - 24		O	E			O E	O E							O E	64
71	10 - 15	20 - 40		O			O	O				O E	O E	O E	O E	71
72	20 - 30	20 - 40		O E			O E	O E				O E	O E	O E	O E	72
73	10 - 15	20 - 30	E	E			E	E	E		E		O E		O E	73
74	10 - 15	20 - 30	E	E			E	E	E		E					74
81	20 - 30	30 - 50		E			E	E				E		E		81
82	8 - 16	16 - 24					E				E					82
83		8 - 16					E A				E A					83
91	20 - 30		E	O E			O E	O E								91
92		12 - 16					O				O					92
93		4 - 8														93
94		16 - 24					O				O					94

E *Aceptable con emulsión* Suitable with emulsion

A *Óptima con aire* Optimal with air

A *Aceptable con aire* Suitable with air

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING

CLASSIC

AERO

Z — Materiales tenaces / Tough materials

Z.20V	Z.20VS	Z.60V Z.62V	Z.70VS	Z.73VS
88	88	89	90	90
134	134	134	134	
158	158	159	160	
180	180	181	182	
208	208	208	209	
			231	

H — Materiales de alta resistencia / High tensile materials

H.20	H.20TC	H.50	H.50TC
94	94	96	96
136	136	137	137
161	161	162	162
184	184	185	185
		207	

S — Aleaciones especiales / Special alloys

S.20VS	S.60VS	S.70VX
46	99	46
138	138	
48	164	48
50	186	50

NEW

SA — Aleaciones especiales / Special alloys

SA.20	SA.50	SA.90
47	47	46
140	140	139
49	49	48
51	51	50
228	228	229

TL — Alea. titanio / Titan. alloys

TL.20VS TL.51VS
47
140
49
51
228

GG — Fundición gris y fund. al / Cast iron / Al casting

GG.50NV	GG.50TC GG.53TC
102	102
207	

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Limitada
Limited

Los valores indicados son orientativos.
The indicated values are a guideline.

ROSCADO CLÁSICO Y ROSCADO RÍGIDO
CLASSIC THREAD CUTTING AND RIGID TAPPING

CLASSIC SYNCHRO

Desde página: From page:	K Rompedor de virutas Swarf breaker		QTAP Allrounder Allrounder			
MJ / M	104	105	61	106	61	107
MF	142		143	143	144	144
UNJC / UNC / UNC(J)			167	167	168	168
UNJF / UNF / UNF(J)			192	192	193	193
UNEF / UN / UNS						
G / Rp / Rc / W / SV			210	210	211	211
NPT / NPTF						
PG / TR						
EG M / EG UNC / EG UNF						

NEW NEW NEW NEW

	Vc (m/min) Guide Line Ø 5 - 10.9 mm	Ø 11 - 18.9 mm	Ø 19 - 31.9 mm	Ø 32 - 42 mm	K.13TC	K.13VS	Vc (m/min) Guide Line Ø 2.8 - 20 mm	Q.20VS	Q.23VS	Q.60VS	Q.63VS	
11	30 - 40	20 - 30	20 - 30	20 - 30	E	E	20 - 40	O E	O E	O E	O E	11
12	30 - 40	20 - 30	20 - 30	20 - 30	E	E	20 - 40	O E	O E	O E	O E	12
13	30 - 40	20 - 30	20 - 30	20 - 30	E	E	16 - 24	O E	O E	O E	O E	13
14	20 - 30	15 - 25	15 - 25	15 - 25	E	E	16 - 24	O E	O E	O E	O E	14
15	15 - 20	10 - 15	8 - 12	5 - 8	E	E	6 - 12	O E	O E	O E	O E	15
16	8 - 12	5 - 8	5 - 8	5 - 8	E	E						16
17												17
18												18
21							20 - 40	O E	O E	O E	O E	21
22							6 - 12	O E	O E	O E	O E	22
23							6 - 12	O E	O E	O E	O E	23
24							4 - 8	O E	O E	O E	O E	24
31	30 - 40	30 - 40	30 - 40	30 - 40	E	E	20 - 40	O E A	O E	O E A	O E	31
32	30 - 40	20 - 30	20 - 30	20 - 30	E	E	20 - 40	O E	O E	O E	O E	32
41												41
42												42
51							6 - 12	O E	O E	O E	O E	51
52							4 - 8	O E	O E	O E	O E	52
53												53
61							12 - 16	O E	O E	O E	O E	61
62	30 - 40	30 - 40	30 - 40	30 - 40	E	E	25 - 35	O E	O E	O E	O E	62
63	30 - 40	30 - 40	30 - 40	30 - 40	E	E	20 - 40	O E	O E	O E	O E	63
64	30 - 40	20 - 30	20 - 30	20 - 30	E	E	20 - 40	O E	O E	O E	O E	64
71							20 - 40	O E	O E	O E	O E	71
72							20 - 40	O E	O E	O E	O E	72
73							20 - 40	O E	O E	O E	O E	73
74	30 - 40	30 - 40	30 - 40	30 - 40	E	E	20 - 40	O E A	O E	O E A	O E	74
81							20 - 40	O E A	O E	O E A	O E	81
82							16 - 24	O E	O E	O E	O E	82
83	30 - 40	30 - 40	30 - 40	30 - 40	E	E	8 - 16	O E A	O E	O E A	O E	83
91							20 - 40	O E	O E	O E	O E	91
92							12 - 16	O E	O E	O E	O E	92
93												93
94							12 - 16	O E	O E	O E	O E	94

E *Aceptable con emulsión* Suitable with emulsion

A *Óptima con aire* Optimal with air

A *Aceptable con aire* Suitable with air

ROSCADO RÍGIDO — RIGID TAPPING

Desde página: From page:	RTS Synchro Synchro				Z Materiales tenaces Tough materials		S Aleaciones especiales Special alloys	
MJ / M	108	108	109	109	90	90	46	On request
MF	145		145		134			
UNJC / UNC / UNC(J)	169		169		160		48	
UNJF / UNF / UNF(J)	194		194		182		50	
UNEF / UN / UNS								
G / Rp / Rc / W / SV			212		209			
NPT / NPTF								
PG / TR								
EG M / EG UNC / EG UNF					231			



NEW NEW

	Vc (m/min) Guide Line Ø 2 - 2.8 mm	Ø 2.8 - 20 mm	RTS.20VS	RTS.23VS	RTS.60VS RTS.62VS	RTS.65VS	Z.70VS	Z.73VS	S.70VX	S.73VX	
11	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			11
12	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			12
13	12 - 20	16 - 24	O E	O E	O E	O E	O E	O E			13
14	12 - 20	16 - 24	O E	O E	O E	O E	O E	O E			14
15	5 - 10	6 - 12	O E	O E	O E	O E	O E	O E	O E	O E	15
16											16
17											17
18											18
21	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			21
22	4 - 10	6 - 12	◁ ▷	◁ ▷	◁ ▷	◁ ▷	O E	O E	O E	O E	22
23	4 - 10	6 - 12	◁ ▷	◁ ▷	◁ ▷	◁ ▷	O E	O E	O E	O E	23
24	4 - 8	4 - 8	◁ ▷	◁ ▷	◁ ▷	◁ ▷	O E	O E	O E	O E	24
31	12 - 20	20 - 40	O E A	O E	O E A	O E					31
32	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			32
41											41
42											42
51	4 - 10	6 - 12	O ▷	O ▷	O ▷	O ▷	O E	O E	O E	O E	51
52		4 - 8					O	O	O	O	52
53											53
61	10 - 16	10 - 20	O E	O E	O E	O E	O E	O E			61
62											62
63	12 - 20	20 - 40	O E	O E	O E	O E					63
64	12 - 20	20 - 40	O E	O E	O E	O E					64
71	12 - 20	30 - 50	O	O	O	O					71
72	12 - 20	30 - 50	O E	O E	O E	O E					72
73	12 - 20	20 - 40	O E	O E	O E	O E					73
74	12 - 20	20 - 40	O E A	O E	O E A	O E					74
81	12 - 20	30 - 50	E A	E	E A	E					81
82	12 - 20	16 - 24	E	E	E	E					82
83	4 - 10	8 - 16	E A	E	E A	E					83
91	12 - 20	20 - 40	O E	O E	O E	O E					91
92	6 - 12	12 - 16	O E	O E	O E	O E					92
93											93
94	6 - 12	12 - 16	O E	O E	O E	O E					94

◁ ▷ ***Limitada***
Limited

Los valores indicados son orientativos.
The indicated values are a guideline.

REGISTRO — REGISTER

Roscado clásico
Classic thread cutting

MJ
S 46 SA 46/47 TL 47

UNJC
S 48 SA 48/49 TL 49

UNJF
S 50 SA 50/51 TL 51

M
N 60/62-85/114-115/118 NP 116-117 W 86-87
Z 88-91 ZX 93 H 94-97
S 98-99 SA 99-101 TL 100-101
GG 102-103

MF
N 124-133/146-148 Z 134-135 H 136-137
S 138 SA 139-141 TL 140-141

UNC, UNC(J)
N 154-157/170-171 Z 158-160 H 161-162
S 163-164 SA 165-166 TL 165

UNF, UNF(J), UNEF, UN, UNS
N 176-179/196-199 Z 180-182 H 184-185
S 186 SA 188-190 TL 188-189

G (BSP)**, Rp, Rc, W, SV Schaublin**
N 204-206/213-217 W 207 H 207
GG 207 Z 208-209

NPT, NPTF, PG, TR
N 220-223

EG M, EG UNC, EG UNF
N 226-227/230/233 Z 231/234 S 234
SA 228-229/232/234-235 TL 228/232/235

Machos de corona
Crown taps

M, MF, UN, G (BSP)
N 237-239

Brocas-machos
Combination drill/taps

M, MF, UNC, G (BSP)**, PG**
N 242-243

Roscado clásico y rígido
Classic thread cutting and Rigid Tapping

M
K 104-105 Q 61/106-107

MF
K 142 Q 143-144

UNC, UNF
Q 167-168 / 192-193

G (BSP)
Q 210-211

Roscado rígido
Rigid Tapping

M
RTS 108-112 Z.70/Z.73 90-91

MF
RTS 145 Z.70 134-135

UNC, UNC(J)
RTS 169 Z.70 160

UNF, UNF(J)
RTS 194 Z.70 182

G (BSP)
RTS 212 Z.70 209

EG UNC, EG UNF
Z 231/234

Roscado por laminación
Thread forming

M
FS 254-255 FPS 256-258 FAS 259-261

MF
FPS 262 FAS 262

UNC
FS 263 FPS 263 FAS 263

UNF
FS 264 FPS 264 FAS 264

G (BSP)
FPS 265 FAS 265

Cojinetes de roscar
Dies

Calibres de control
Thread gauges

Aparatos de roscar SRT
Tapping chucks SRT

Pinzas
Inserts

Accesorios
Accessories

Brocas de centrar en metal duro integral
Solide carbide spotting drills

Brocas de taladrar en metal duro integral
Solide carbide twist drills

Porta-cojinetes
Die stocks

Giramachos
Tap wrenches

Alargaderas para machos de roscar
Tap extension sleeves

Información técnica
Condiciones de entrega

Más información están disponibles en www.dcswiss.com

Technical information
Delivery and payment conditions

Further information are available on www.dcswiss.com

Machos para roscar a máquina nano
Machine taps nano

M

TAN	338	TAZ	339	CMS	340

MF

TAN	341	TAZ	342	CMS	343

UNC

TAN	344	TAZ	345	CMS	346

UNF

TAN	347	TAZ	348	CMS	349

S

TAN	350	TAZ	351	CMS	352

SF

TAN	353	TAZ	354	CMS	355

SL

TAN	356	TAZ	357	CMS	358

Calibres de control nano
Thread gauges nano

M

DN01	382	DN02	382	DZ04	383
DZ14	383	DN04	384	DN14	384

MF

DN01	385	DN02	385	DZ04	386
DZ14	386	DN04	387	DN14	387

UNC, UNF

DN01	388	DN02	388	DZ04	389
DZ14	389	DN04	390	DN14	390

S NIHS, **S** NIHS NT

DN01	391-392	DN02	391-392	DZ04	393
DZ14	393	DN04	394	DN14	394

SF NIHS, **SF** NIHS NT

DN01	395	DN02	395	DZ04	396
DZ14	396	DN04	397	DN14	397

SL

DN01	398	DN02	398

Todos los calibres tampón de roscar nano disponen de certificados SCS de pago, disponible sobre pedido.
All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

Todos los calibres anillos nano estan acompañados de un certificado de control, hecho con contracalibres tampons certificados SCS. El certificado de control de pago es disponible sobre pedido.
All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.

Machos para roscado por laminación nano
Machine thread formers nano

M

FA80	363	FA83	363
CFA80	370	CFA83	370

MF

FA80	364	FA83	364

UNC

FA80	365	FA83	365
CFA80	371	CFA83	371

UNF

FA80	366	FA83	366
CFA80	372	CFA83	372

S

FA80	367	FA83	367
CFA80	373	CFA83	373

SF

FA80	368	FA83	368

SL

FA80	369	FA83	369

Contra calibres nano
Testigo de desgaste WEAR nano
Patrones nano

Plug check gauges nano
Master plug gauges WEAR nano
Calibration thread plug gauges nano

M

RN05-1	399	RN15-1	399	RN05-2	400
RN15-2	400	RN05-3	401	RN15-3	401

MF

RN05-1	402	RN15-1	402	RN05-2	403
RN15-2	403	RN05-3	404	RN15-3	404

UNC, UNF

RN05-1	405	RN15-1	405	RN05-2	406
RN15-2	406				

S NIHS, **S** NIHS NT

RN05-1	407	RN15-1	407	RN05-2	408
RN15-2	408				

SF NIHS, **SF** NIHS NT

RN05-1	409	RN15-1	409	RN05-2	410
RN15-2	410				

S NIHS

EN00	411

Certificado SCS incluido.
SCS certificate included.

PARA LAS FRESAS DE ROSCAR Y LAS FRESAS DE TORBELLINO DE ROSCAR EN METAL DURO INTEGRAL, POR FAVOR, PIDA NUESTRO

CATÁLOGO TM!

FOR SOLID CARBIDE THREAD MILLING CUTTERS AND THREAD WHIRL CUTTERS PLEASE ASK FOR OUR

CATALOGUE TM!

MJ, UNJC, UNJF

Directorio — Machos para roscar a máquina MJ ISO 5855, UNJC / UNJF ISO 3161/ASME B1.15

Directory — Machine taps MJ ISO 5855, UNJC / UNJF ISO 3161/ASME B1.15

				S		SA	
Características **Characteristics**				VS	R45 VX		R15
				NEW	NEW	NEW	NEW
Tipo de agujero **Hole type**							
				S320VS-4	S370VX-3	SA320-4	SA350-3
MJ 4H6H /4H5H	ISO 5855	***DIN largo*** **DIN long**	DIN 371	46	46	47	47
UNJC 3B	ISO 3161/ASME B1.15	***DIN largo*** **DIN long**	DIN 371	48	48	49	49
UNJF 3B	ISO 3161/ASME B1.15	***DIN largo*** **DIN long**	DIN 371	50	50	51	51

Composites

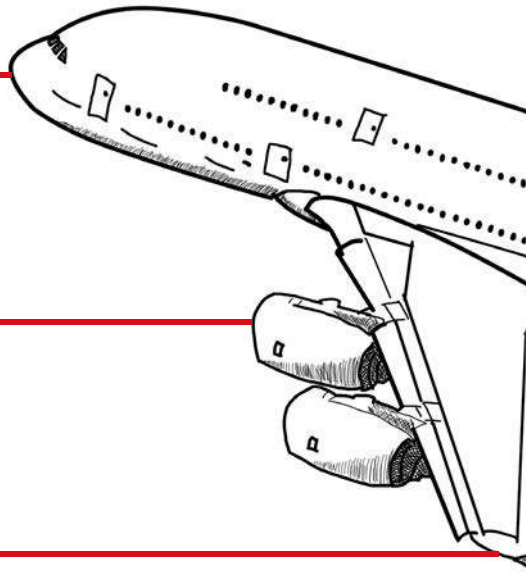
GWi3067VX

Super alloys

SA390-3

Titanium alloys

TL351VS-3

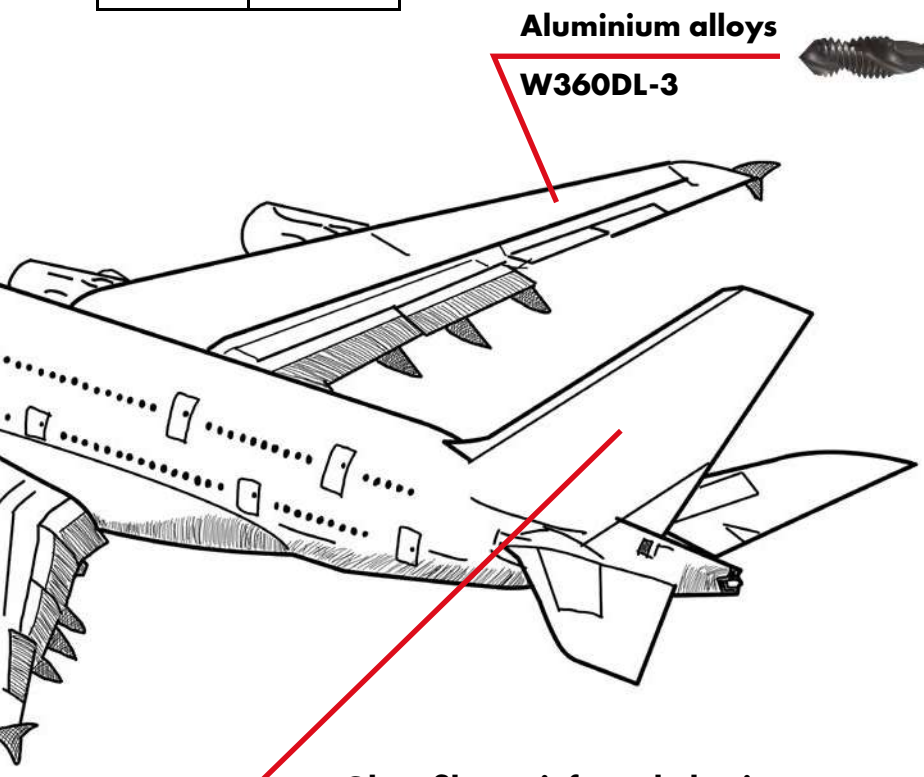


MJ, UNJC, UNJF

Directorio — Machos para roscar a máquina MJ ISO 5855, UNJC / UNJF ISO 3161/ASME B1.15

Directory — Machine taps MJ ISO 5855, UNJC / UNJF ISO 3161/ASME B1.15

SA	TL
R10	R15 VS
 NEW	 NEW
	
SA390-3	**TL351VS-3**
46	47
48	49
50	51



Aluminium alloys

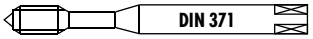
W360DL-3

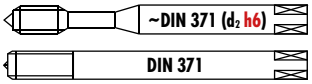
Glass fibre reinforced plastics

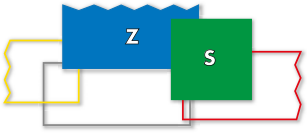
H350TC-3

MJ ISO 5855

PM







S320VS-4 — VS — 13 15 16 22 23 24 52

S370VX-3 — R45 — VX — CLASSIC — SYNCHRO — 15 22 23 24 51 52 61

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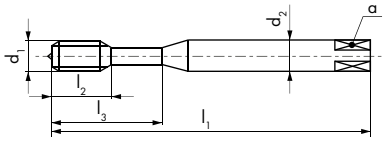
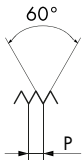
SA390-3 — R10 — 16 53

S320VS-4	S370VX-3		SA390-3
			
			
			
B 4 x P	C 2.5 x P		C 2.5 x P
4H5H	4H5H		4H5H





Ø d_1 MJ	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
3	0.5	56	12	18	3.5	2.7	3	2.55	● 198966
4	0.7	63	14	21	4.5	3.4	3	3.4	● 198967
5	0.8	70	15	25	6	4.9	3	4.3	● 198968
6	1	80	17	30	6	4.9	3	5.1	● 198969
8	1	90	20	35	8	6.2	3	7.1	● 198970
8	1.25	90	20	35	8	6.2	3	6.9	● 198971
10	1.25	100	22	39	10	8	3	8.9	● 198972
10	1.5	100	22	39	10	8	3	8.6	● 198973

Ø d_1 MJ	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.55	● 198974
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.4	● 198975
5	0.8	70	9	25	6	4.9	3	4.3	● 198976
6	1	80	11	30	6	4.9	3	5.1	● 198977
8	1	90	12.5	35	8	6.2	3	7.1	● 198978
8	1.25	90	12.5	35	8	6.2	3	6.9	● 198979
10	1.25	100	14	39	10	8	3	8.9	● 198980
10	1.5	100	14	39	10	8	3	8.6	● 198981

Ø d_1 MJ	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
3	0.5	56	12	3.5	2.7	3	2.55	● 199006
4	0.7	63	14	4.5	3.4	3	3.4	● 199007
5	0.8	70	15	6	4.9	3	4.3	● 199008
6	1	80	20	6	4.9	3	5.1	● 199009
8	1	90	25	8	6.2	3	7.1	● 199010
8	1.25	90	25	8	6.2	3	6.9	● 199011
10	1.25	100	30	10	8	3	8.9	● 199012
10	1.5	100	30	10	8	3	8.6	● 199013

≤MJ5x0.8 = 4H6H

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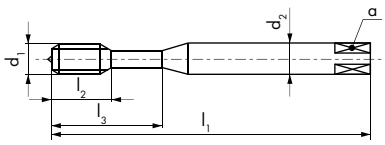
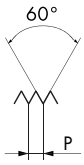
	SA320-4	SA350-3		TL351VS-3
				
				
				
				
	B 4 x P	C 2.5 x P		C 2.5 x P
	4H5H	4H5H		4H5H

SA320-4 — 15 16 52 64

SA350-3 — R15 — 15 16 52 64

TL351VS-3 — R15 — VS — 41 42



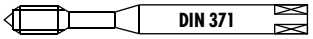


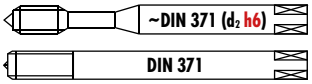
Ø d_1 MJ	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
3	0.5	56	12		3.5	2.7	3	2.55	198990	198998	198982
4	0.7	63	14		4.5	3.4	3	3.4	198991	198999	198983
5	0.8	70	15		6	4.9	3	4.3	198992	199000	198984
6	1	80	15	23	6	4.9	3	5.1	198993	199001	198985
8	1	90	18	29	8	6.2	3	7.1	198994	199002	198986
8	1.25	90	18	29	8	6.2	3	6.9	198995	199003	198987
10	1.25	100	20	33	10	8	3	8.9	198996	199004	198988
10	1.5	100	20	33	10	8	3	8.6	198997	199005	198989

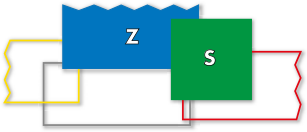
≤MJ5x0.8 = 4H6H

UNJC ISO 3161/ASME B1.15

PM







S320VS-4 — VS — 13 15 16 22 23 24 52

S370VX-3 — R45 — VX — CLASSIC — SYNCHRO — 15 22 23 24 51 52 61

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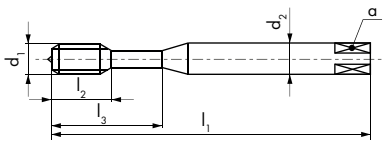
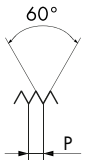
SA390-3 — R10 — 16 53

S320VS-4	S370VX-3		SA390-3
			
			 
B 4 x P	C 2.5 x P		C 2.5 x P
3B	3B		3B





Ø" d_1 UNJC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
6	32	3.5	56	13	20	4	3	3	2.8	● 199014
8	32	4.16	63	14	21	4.5	3.4	3	3.45	● 199015
10	24	4.82	70	15	25	6	4.9	3	3.9	● 199016
1/4	20	6.35	80	17	30	7	5.5	3	5.2	● 199017

Ø" d_1 UNJC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.8	● 199018
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.45	● 199019
10	24	4.82	70	9	25	6	4.9	3	3.9	● 199020
1/4	20	6.35	80	11	30	6	4.9	3	5.2	● 199021

Ø" d_1 UNJC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
6	32	3.5	56	13	4	3	3	2.8	● 199034
8	32	4.16	63	14	4.5	3.4	3	3.45	● 199035
10	24	4.82	70	15	6	4.9	3	3.9	● 199036
1/4	20	6.35	80	20	7	5.5	3	5.2	● 199037

UNJC ISO 3161/ASME B1.15

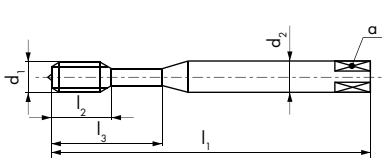
PM

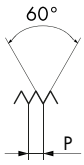
DIN 371

aero

SA320-4		15 16 52 64		
SA350-3	R15	15 16 52 64		
TL351VS-3	R15		VS	41 42

SA320-4	SA350-3		TL351VS-3
			
	< 1.5 x D		< 2 x D < 2 x D
B 4 x P	C 2.5 x P		C 2.5 x P
3B	3B		3B



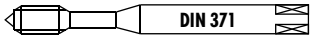


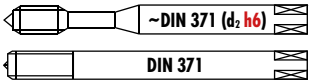
Ø" d_1 UNJC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
6	32	3.5	56	13		4	3	3	2.8	● 199026	● 199030	● 199022
8	32	4.16	63	14		4.5	3.4	3	3.45	● 199027	● 199031	● 199023
10	24	4.82	70	15		6	4.9	3	3.9	● 199028	● 199032	● 199024
1/4	20	6.35	80	15	23	7	5.5	3	5.2	● 199029	● 199033	● 199025

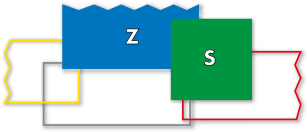
UNJF

ISO 3161/ASME B1.15

PM







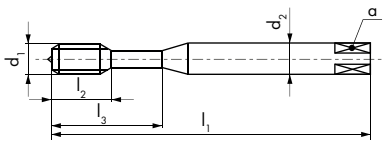
S320VS-4 — VS — 13 15 16 22 23 24 52

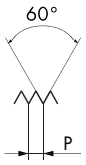
S370VX-3 — R45 — VX — CLASSIC — SYNCHRO — 15 22 23 24 51 52 61

aero

SA390-3 — R10 — 16 53

S320VS-4	S370VX-3		SA390-3
			
			 
B 4 x P	C 2.5 x P		C 2.5 x P
3B	3B		3B





Ø" d_1 UNJF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
10	32	4.82	70	15	25	6	4.9	3	4.1	● 199038
1/4	28	6.35	80	17	30	7	5.5	3	5.55	● 199039
5/16	24	7.93	90	20	35	8	6.2	3	7	● 199040
3/8	24	9.52	100	22	39	10	8	3	8.6	● 199041

Ø" d_1 UNJF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
10	32	4.82	70	9	25	6	4.9	3	4.1	● 197707
1/4	28	6.35	80	11	30	6	4.9	3	5.55	● 197708
5/16	24	7.93	90	12.5	35	8	6.2	3	7	● 197709
3/8	24	9.52	100	14	39	10	8	3	8.6	● 197710

Ø" d_1 UNJF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
10	32	4.82	70	15	6	4.9	3	4.1	● 199049
1/4	28	6.35	80	20	7	5.5	3	5.55	● 199050
5/16	24	7.93	90	25	8	6.2	3	7	● 199051
3/8	24	9.52	100	30	10	8	3	8.6	● 199052

UNJF

ISO 3161/ASME B1.15

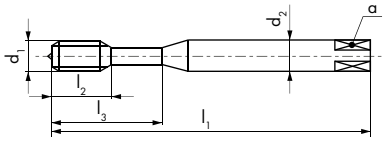
PM

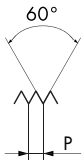
DIN 371

aero

SA320-4		15 16 52 64		
SA350-3	R15	15 16 52 64		
TL351VS-3	R15	VS	41 42	

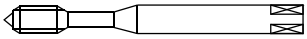
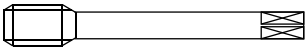
SA320-4	SA350-3		TL351VS-3
			
	< 1.5 x D		< 2 x D
			< 2 x D
B 4 x P	C 2.5 x P		C 2.5 x P
3B	3B		3B





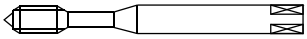
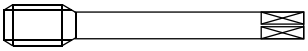
Ø" d_1 UNJF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
10	32	4.82	70	15		6	4.9	3	4.1	● 174976	● 188175	● 199042
1/4	28	6.35	80	15	23	7	5.5	3	5.55	● 175993	● 199046	● 199043
5/16	24	7.93	90	18	29	8	6.2	3	7	● 175995	● 199047	● 199044
3/8	24	9.52	100	20	33	10	8	3	8.6	● 175997	● 199048	● 199045

M *Directorio — Machos para roscar a máquina ISO DIN 13*
Directory — Machine taps ISO DIN 13

		N						
Características **Characteristics**				V	TiN TiCN			V
								
Tipo de agujero **Hole type**								
		**N310-3**	**N320-3 N320-4**	**N320V-3 N320V-4**	**N320TN-3/-4 N320TC-3/-4**	**N321-3 N321-4**	**N330-3 N330-4**	**N330V-3 N330V-4**
DIN largo **DIN long**	**DIN 371**	60 / 62	62 / 64	60 / 64	64	70	70	70
Extra-largo **Extra-long**	**DC**							
ISO corto **ISO short**	**ISO 529**							
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	60 / 62	62 / 64	60 / 64	64	70	70	70
Sobremedida **Oversize**	**ISO 3 6G**		68	68				
Sobremedida **Oversize**	**7G**		68					
Sobremedida **Oversize**	**+ 0.10 mm + 0.20 mm**		68					
Tolerancia fina **Fine tolerance**	**ISO 1 4H**		66					
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**	62	66	66				
		**N410-3**	**N420-4**	**N420V-4**	**N420TN-4 N420TC-4**	**N421-4**	**N430-4**	**N430V-4**
DIN largo **DIN long**	**DIN 376**	63	65	65	65	71	71	71
Extra-largo **Extra-long**	**DC**							
ISO corto **ISO short**	**ISO 529**							
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	63	65	65	65	71	71	71
Sobremedida **Oversize**	**ISO 3 6G**		69	69				
Sobremedida **Oversize**	**7G**		69					
Sobremedida **Oversize**	**+ 0.10 mm + 0.20 mm**		69 / 71					
Tolerancia fina **Fine tolerance**	**ISO 1 4H**		67					
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**	63	67	67				

N								
R15 V	R40	R40 V	R40 TiN TiCN	R40 V E 1.5xP	R40	R40 V		V
								
								
N350-3 N350V-3	**N360-3**	**N360V-3**	**N360TN-3 N360TC-3**	**N360-5 N360V-5**	**N361-3**	**N362V-3**	**N520-4**	**N520V-4**
72	74	60 / 74	74	80	80	80		
							82	82
72	74	60 / 74	74	80	80	80	82	82
	76	76						
	78	78						
	78	78						
	78							
	76	76						
N450-3 N450V-3	**N460-3**	**N460V-3**	**N460TN-3 N460TC-3**	**N460-5 N460V-5**	**N461-3**	**N462V-3**	**N620-4**	**N620V-4**
73	75	75	75	81	81	81		
							83	83
73	75	75	75	81	81	81	83	83
	77	77						
	79	79						
	79	79						
	79							
	77	77						

M *Directorio — Machos para roscar a máquina y a mano ISO DIN 13*
Directory — Machine and hand taps ISO DIN 13

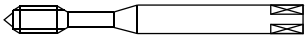
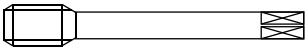
		N						
Características **Characteristics**		TiN	R40	R40 V	R40 TiN		R40	
								
Tipo de agujero **Hole type**								
		**N520TN-4**	**N560-3**	**N560V-3**	**N560TN-3**	**N1120-4**	**N1160-3**	**N1110 -1 -2 -3 -S**
DIN largo **DIN long**	**DIN 371**							
Extra-largo **Extra-long**	**DC**	82	84	84	84			
ISO corto **ISO short**	**ISO 529**					118	118	60 / 114
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	82	84	84	84	118	118	60 / 114
Sobremedida **Oversize**	**ISO 3 6G**							
Sobremedida **Oversize**	**7G**							
Sobremedida **Oversize**	**+ 0.10 mm** **+ 0.20 mm**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							
		**N620TN-4**	**N660-3**	**N660V-3**	**N660TN-3**	**N1220-4**	**N1260-3**	**N1210 -1 -2 -3 -S**
DIN largo **DIN long**	**DIN 376**							
Extra-largo **Extra-long**	**DC**	83	85	85	85			
ISO corto **ISO short**	**ISO 529**					118	118	60 / 115
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	83	85	85	85	118	118	60 / 115
Sobremedida **Oversize**	**ISO 3 6G**							
Sobremedida **Oversize**	**7G**							
Sobremedida **Oversize**	**+ 0.10 mm** **+ 0.20 mm**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							

M

Directorio — Machos para roscar a máquina y a mano ISO DIN 13
Directory — Machine and hand taps ISO DIN 13

N	W				Z			
		DLC	R40	R40 DLC	V	VS	R40 V	R40 VS
								
								
NP110-S -1 -2 -3 -S	**W320-3 W320-4**	**W320DL-3 W320DL-4**	**W360-3**	**W360DL-3**	**Z320V-3 Z320V-4**	**Z320VS-4**	**Z360V-3 Z362V-3**	**Z360VS-3 Z362VS-3**
	86	86	87	87	88	88	89	90
116								
116	86	86	87	87	88	88	89	90
NP210-S -1 -2 -3 -S	**W420-4**	**W420DL-4**	**W460-3**	**W460DL-3**	**Z420V-4**	**Z420VS-4**	**Z462V-3**	**Z462VS-3**
	86	86	87	87	88	88	89	91
117								
117	86	86	87	87	88	88	89	91

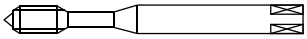
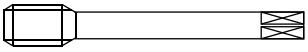
M *Directorio — Machos para roscar a máquina ISO DIN 13*
Directory — Machine taps ISO DIN 13

	Z		ZX	H		S	
Características **Characteristics**	R45 VS	R45 VS	B 4 x P	TiCN	R25 TiCN	VS	R35 VS
							
Tipo de agujero **Hole type**							
	**Z370VS-3**	**Z373VS-3**	**ZX320-4**	**H320-4 H320TC-4**	**H350-3 H350TC-3**	**S320VS-4**	**S360VS-3**
DIN largo **DIN long**	**DIN 371**	90	90	93	94	96	98	99
Extra-largo **Extra-long**	**DC**							
ISO corto **ISO short**	**ISO 529**							
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	90	90	93	94	96	98	99
Sobremedida **Oversize**	**ISO 3 6G**					96		
Sobremedida **Oversize**	**7G**							
Sobremedida **Oversize**	**+ 0.10 mm + 0.20 mm**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**	90					98	
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							
	**Z470VS-3**	**Z473VS-3**	**ZX420-4**	**H420-4 H420TC-4**	**H450-3 H450TC-3**	**S420VS-4**	**S460VS-3**
DIN largo **DIN long**	**DIN 376**	91	91	93	95	97	98	99
Extra-largo **Extra-long**	**DC**							
ISO corto **ISO short**	**ISO 529**							
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	91	91	93	95	97	98	99
Sobremedida **Oversize**	**ISO 3 6G**					97		
Sobremedida **Oversize**	**7G**							
Sobremedida **Oversize**	**+ 0.10 mm + 0.20 mm**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							

M *Directorio — Machos para roscar a máquina ISO DIN 13*
Directory — Machine taps ISO DIN 13

SA			TL		GG			
	R15	R10	VS	R15 VS	R15 NV	R15 TiCN	R15 TiCN	R15 NV
								
								
SA320-4	**SA350-3**	**SA390-3**	**TL320VS-4**	**TL351VS-3**	**GG350NV-3**	**GG350TC-3**	**GG353TC-3**	**GG550NV-3**
100	100	99	100	100	102	102	102	
								102
100	100	99	100	100	102	102	102	102
100	100	99	100	100				
SA420-4	**SA450-3**		**TL420VS-4**	**TL451VS-3**	**GG450NV-3**	**GG450TC-3**	**GG453TC-3**	**GG650NV-3**
101	101		101	101	103	103	103	
								103
101	101		101	101	103	103	103	103
101	101		101	101				

M *Directorio — Machos para roscar a máquina ISO DIN 13*
Directory — Machine taps ISO DIN 13

		K			QTAP			
Características **Characteristics**		TiCN	TiCN	VS	VS	VS	R40 VS	R40 VS
					 NEW	 NEW	 NEW	 NEW
Tipo de agujero **Hole type**								
		**K313TC-3**			**Q320VS-4**	**Q323VS-4**	**Q360VS-3**	**Q363VS-3**
DIN largo **DIN long**	**DIN 371**	104			61 / 106	106	61 / 107	107
Extra-largo **Extra-long**	**DC**							
ISO corto **ISO short**	**ISO 529**							
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	104			61 / 106	106	61 / 107	107
Sobremedida **Oversize**	**ISO 3 6G**							
Sobremedida **Oversize**	**7G**							
Sobremedida **Oversize**	**+ 0.10 mm** **+ 0.20 mm**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							
		**K413TC-3**	**K613TC-3**	**K613VS-3**	**Q420VS-4**	**Q423VS-4**	**Q460VS-3**	**Q463VS-3**
DIN largo **DIN long**	**DIN 376**	104			106	106	107	107
Extra-largo **Extra-long**	**DC**		105	105				
ISO corto **ISO short**	**ISO 529**							
DIN corto **DIN short**	**DIN 352**							
Tolerancia **Tolerance**	**ISO 2 6H**	104	105	105	106	106	107	107
Sobremedida **Oversize**	**ISO 3 6G**							
Sobremedida **Oversize**	**7G**							
Sobremedida **Oversize**	**+ 0.10 mm** **+ 0.20 mm**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							

M *Directorio — Machos para roscar a máquina ISO DIN 13*
Directory — Machine taps ISO DIN 13

RTS							
VS	VS	R40 VS	R40 VS	R40 E 1.5xP VS	R40 E 1.5xP VS	VS	R40 VS
							
							
RTS320VS-4	**RTS323VS-4**	**RTS360VS-3 RTS362VS-3**	**RTS365VS-3**	**RTS362VS-5**	**RTS365VS-5**	**RTS523VS-4**	**RTS565VS-3**
108	108	109	109	111	111		
						112	112
108	108	109	109	111	111	112	112
		110					
		110					
RTS420VS-4	**RTS423VS-4**	**RTS462VS-3**	**RTS465VS-3**			**RTS623VS-4**	**RTS665VS-3**
108	108	109	109				
						112	112
108	108	109	109			112	112
		110					
		110					

Juegos de machos de roscar
Tap assortments

BOXSET				D5855	D5860	D5891
D5855	ISO 2 6H	N1110-S N1210-S	M3, M4, M5, M6, M8, M10, M12			
D5860	ISO 2 6H	N1110-S N1210-S	M3, M4, M5, M6, M8, M10, M12			
	HSS	FO DIN 338 FO DIN 338	D2.5, 3.3, 4.2, 5.0, 6.8, 8.5, 10.2			
D5891	ISO 2 6H	N310-3 N410-3	M3, M4, M5, M6, M8, M10, M12			
No D5855 / D5860 / D5891				ID	ID	ID
M3 - M12				● 118728	● 118733	● 170922

BOXSET				D5892
D5892	V ISO 2 6H	N320V-4	M3, M4, M5, M6, M8, M10	
No D5892				ID
M3 - M10				● 170921

BOXSET				D5896
D5896	R40 V < 2.5 x D ISO 2 6H	N360V-3	M3, M4, M5, M6, M8, M10	
No D5896				ID
M3 - M10				● 167599

Juegos de machos de roscar — QTAP
Tap assortments — QTAP

CLASSIC | SYNCHRO | PM | DIN 371

BOXSET	D5893
Q320VS-4 VS B 4 x P ISO 2 6H M3, M4, M5 M6, M8, M10	 NEW
No D5893	ID
M3 - M10	● 197104

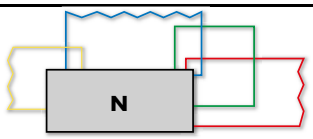
BOXSET	D5897
Q360VS-3 VS R40 < 2.5 x D C 2.5 x P ISO 2 6H M3, M4, M5 M6, M8, M10	 NEW
No D5897	ID
M3 - M10	● 197105

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

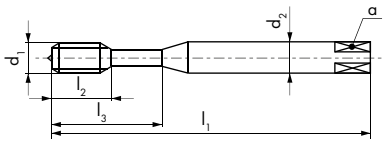
PM | HSSE

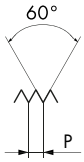
DIN 371



N310-3			31	62	73	74	91
N310-3 LH		LH	31	62	73	74	91
N320-3			62	63	64	72	73	74	81	91

N310-3	N310-3 LH	N320-3	
			
 < 1.5 x D	 < 1.5 x D		
C 2.5 x P	C 2.5 x P	2.5 x P	
ISO 2 6H	ISO 2 6H	ISO 2 6H	





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
1	0.25	40	5.5		2.5	2.1	3	0.75	● 150167		
1.1	0.25	40	5.5		2.5	2.1	3	0.85	● 174745		
1.2	0.25	40	5.5		2.5	2.1	3	0.95	● 150168		
1.4	0.3	40	7		2.5	2.1	3	1.1	● 150169		
1.5	0.3	40	7		2.5	2.1	3	1.2	● 174752		
1.6	0.35	40	8		2.5	2.1	3	1.25	● 174753		
1.7	0.35	40	8		2.5	2.1	3	1.35	● 174754		
1.8	0.35	40	8		2.5	2.1	3	1.45	● 174755		
2	0.4	45	8		2.8	2.1	3	1.6	● 101439	● 111460	
2.2	0.45	45	9		2.8	2.1	3	1.75	● 174756		
2.3	0.4	45	9		2.8	2.1	3	1.9	● 174757		
2.5	0.45	50	10		2.8	2.1	3	2.05	● 101440	● 111461	
2.6	0.45	50	10		2.8	2.1	3	2.15	● 101441		
3	0.5	56	12	18	3.5	2.7	3	2.5	● 101442	● 111462	
3.5	0.6	56	13	20	4	3	3	2.9	● 101443		
4	0.7	63	14	21	4.5	3.4	3	3.3	● 101444	● 111464	
5	0.8	70	15	25	6	4.9	* 3	4.2	● 101445	● 111465	* 101465
6	1	80	17	30	6	4.9	* 3	5	● 101446	● 111466	* 101466
8	1.25	90	20	35	8	6.2	3	6.8	● 101447		
10	1.5	100	22	39	10	8	3	8.5	● 101438		

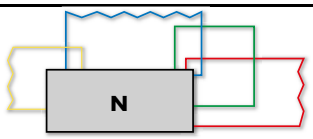
*N320-3 = 2

≤M1.5 ISO 1 4H

M ISO DIN 13

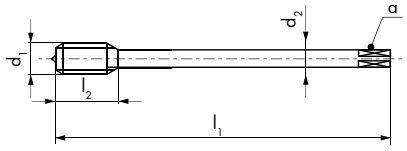
HSSE

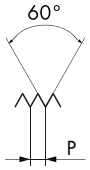
DIN 376



N410-3		31	62	73	74	91
N410-3 LH	LH	31	62	73	74	91

N410-3	N410-3 LH		
			
< 1.5 x D	< 1.5 x D		
C 2.5 x P	C 2.5 x P		
ISO 2 6H	ISO 2 6H		





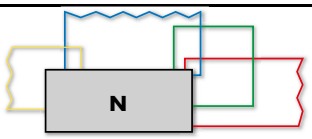
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
3	0.5	56	12	2.2	1.8	3	2.5	● 101897	
4	0.7	63	14	2.8	2.1	3	3.3	● 101924	
5	0.8	70	15	3.5	2.7	3	4.2	● 101942	
6	1	80	17	4.5	3.4	3	5	● 101953	
7	1	80	17	5.5	4.3	3	6	● 142645	● 111491
8	1.25	90	20	6	4.9	3	6.8	● 101958	● 111492
10	1.5	100	22	7	5.5	3	8.5	● 101866	● 111478
12	1.75	110	24	9	7	3	10.2	● 101870	● 111479
14	2	110	28	11	9	3	12	● 101874	● 111480
16	2	110	30	12	9	3	14	● 101880	● 111481
18	2.5	125	33	14	11	3	15.5	● 101883	● 111482
20	2.5	140	36	16	12	3	17.5	● 101885	● 125530
22	2.5	140	36	18	14.5	3	19.5	* 101888	
24	3	160	39	18	14.5	4	21	● 101891	● 111485
27	3	160	42	20	16	4	24	● 101895	● 111486
30	3.5	180	45	22	18	4	26.5	● 101901	● 111487
33	3.5	180	48	25	20	4	29.5	* 101907	
36	4	200	51	28	22	4	32	● 101915	● 111488
39	4	200	55	32	24	4	35	● 101922	
42	4.5	200	55	32	24	4	37.5	● 101932	
48	5	250	63	36	29	4	43	● 111489	
56	5.5	280	71	45	35	5	50.5	● 111447	

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

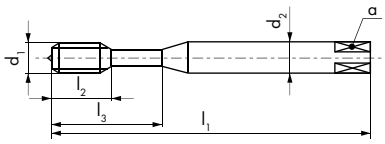
PM | HSSE

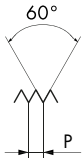
DIN 371



N320-4		62 63 64 72 73 74 81 91	
N320V-4	V	11 12 31 32	
N320TN-4	TiN	11 12 13 14 32	
N320TC-4	TiCN	11 12 13 14 21 31 32 62 64 73 74 82 83	

N320-4	N320V-4	N320TN-4	N320TC-4
			
			
B 4 x P	B 4 x P	B 4 x P	B 4 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
* 1	0.25	40	5.5		2.5	2.1	2	0.75	● 111467			
* 1.1	0.25	40	5.5		2.5	2.1	2	0.85	● 111468			
* 1.2	0.25	40	5.5		2.5	2.1	2	0.95	● 111469			
* 1.4	0.3	40	7		2.5	2.1	2	1.1	● 111470			
* 1.5	0.3	40	7		2.5	2.1	2	1.2	● 111471			
* 1.6	0.35	40	8		2.5	2.1	2	1.25	● 101454			
* 1.7	0.35	40	8		2.5	2.1	2	1.35	● 101455			
* 1.8	0.35	40	8		2.5	2.1	2	1.45	● 101456			
* 2	0.4	45	8		2.8	2.1	2	1.6	● 101458	● 101536	● 101528	● 152900
* 2.2	0.45	45	9		2.8	2.1	2	1.75	● 101459			
* 2.3	0.4	45	9		2.8	2.1	2	1.9	● 101460			
2.5	0.45	50	10		2.8	2.1	3	2.05	● 101483	● 101545	● 101530	● 101522
2.6	0.45	50	10		2.8	2.1	3	2.15	● 101484			
3	0.5	56	12	18	3.5	2.7	3	2.5	● 101485	● 101546	● 101531	● 101523
3.5	0.6	56	13	20	4	3	3	2.9	● 101491	● 101547		
4	0.7	63	14	21	4.5	3.4	3	3.3	● 101495	● 101548	● 101532	● 101524
5	0.8	70	15	25	6	4.9	3	4.2	● 101499	● 101549	● 101533	● 101525
6	1	80	17	30	6	4.9	3	5	● 101503	● 101550	● 101534	● 101526
8	1.25	90	20	35	8	6.2	3	6.8	● 101506	● 101551	● 101535	● 101527
10	1.5	100	22	39	10	8	3	8.5	● 101481	● 101544	● 101529	● 101521

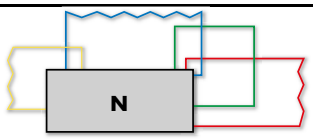
*N320-3 / N320V-3
N320TN-3 / N320TC-3 — 2.5 x P

≤M1.5 — ISO 1 4H

M ISO DIN 13

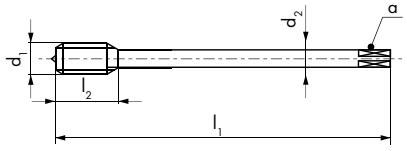
HSSE

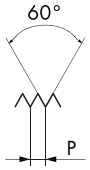
DIN 376



N420-4		62 63 64 72 73 74 81 91	
N420V-4	V	11 12 31 32	
N420TN-4	TiN	11 12 13 14 32	
N420TC-4	TiCN	11 12 13 14 21 31 32 62 64 73 74 82 83	

N420-4	N420V-4	N420TN-4	N420TC-4
			
			
B 4xP ISO 2 6H	B 4xP ISO 2 6H	B 4xP ISO 2 6H	B 4xP ISO 2 6H





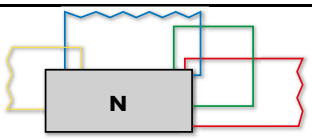
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
3	0.5	56	12	2.2	1.8	3	2.5	● 102119	● 143418		
4	0.7	63	14	2.8	2.1	3	3.3	● 102146	● 102279		
5	0.8	70	15	3.5	2.7	3	4.2	● 102171	● 102280	● 146297	
6	1	80	17	4.5	3.4	3	5	● 102182	● 102282	● 147439	
7	1	80	17	5.5	4.3	3	6	● 102189	● 144713		
8	1.25	90	20	6	4.9	3	6.8	● 102195	● 102285	● 102251	● 102233
9	1.25	90	20	7	5.5	3	7.8	● 102202			
10	1.5	100	22	7	5.5	3	8.5	● 102061	● 102263	● 102240	● 102228
11	1.5	100	19	8	6.2	3	9.5	● 162770			
12	1.75	110	24	9	7	3	10.2	● 102072	● 102265	● 102243	● 102229
14	2	110	28	11	9	3	12	● 102081	● 102267	● 102245	
16	2	110	30	12	9	3	14	● 102090	● 102269	● 102247	● 102231
18	2.5	125	33	14	11	3	15.5	● 102097	● 102271		
20	2.5	140	36	16	12	3	17.5	● 102101	● 102273	● 102248	● 102232
22	2.5	140	36	18	14.5	3	19.5	● 102106	● 102275		
24	3	160	39	18	14.5	4	21	● 102110	● 102278	● 144220	● 163736
27	3	160	42	20	16	4	24	● 102117	● 143856		
30	3.5	180	45	22	18	4	26.5	● 102124	● 105124		
33	3.5	180	48	25	20	4	29.5	● 102130	● 146968		
36	4	200	51	28	22	4	32	● 102137	● 143430		
39	4	200	55	32	24	4	35	● 102144	● 158724		
42	4.5	200	55	32	24	4	37.5	● 102158	● 143107		
45	4.5	220	59	36	29	4	40.5	● 110225	● 159565		
48	5	250	63	36	29	4	43	● 110226	● 157517		
56	5.5	280	71	45	35	5	50.5	● 110229	● 158178		

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

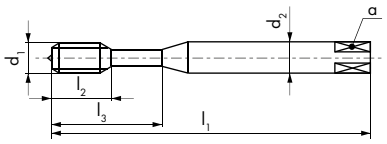
PM | HSSE

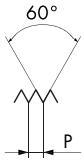
DIN 371



N320-4		62 63 64 72 73 74 81 91	
N320-4 LH	LH	62 63 64 72 73 74 81 91	
N320V-4 LH	V	LH	11 12 31 32

N320-4	N320-4 LH	N320V-4 LH
		
		





B 4xP	B 4xP	B 4xP
ISO 1 4H	ISO 2 6H	ISO 2 6H

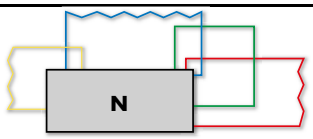
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
* 2	0.4	45	8		2.8	2.1	2	1.6	● 162503	● 111472	● 162771
2.5	0.45	50	10		2.8	2.1	3	2.05	● 159345		
3	0.5	56	12	18	3.5	2.7	3	2.5	● 101487	● 111473	● 162772
4	0.7	63	14	21	4.5	3.4	3	3.3	● 101493	● 111474	● 162773
5	0.8	70	15	25	6	4.9	3	4.2	● 101497	● 111475	● 162774
6	1	80	17	30	6	4.9	3	5	● 101501	● 111476	● 162775
10	1.5	100	22	39	10	8	3	8.5	★ 146484		

*N320-3 / N320V-3 2.5 x P

M ISO DIN 13

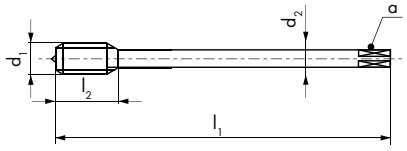
HSSE

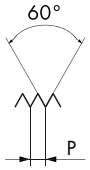
DIN 376



N420-4		62 63 64 72 73 74 81 91	
N420-4 LH	LH	62 63 64 72 73 74 81 91	
N420V-4 LH	V	LH	11 12 31 32

N420-4	N420-4 LH	N420V-4 LH
		
		





	B 4xP	B 4xP	B 4xP
	ISO 1 4H	ISO 2 6H	ISO 2 6H

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
8	1.25	90	20	6	4.9	3	Δ6.8	● 102193	● 102198	● 142621
10	1.5	100	22	7	5.5	3	8.5	● 102059	● 102064	● 143287
12	1.75	110	24	9	7	3	10.2	● 102070	● 102040	● 146583
14	2	110	28	11	9	3	12		● 102084	● 146563
16	2	110	30	12	9	3	14		● 102093	● 143108
20	2.5	140	36	16	12	3	17.5		● 102103	● 145579
24	3	160	39	18	14.5	4	21		● 111493	● 145578

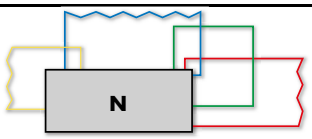
Δ ISO 1 4H = 6.70

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

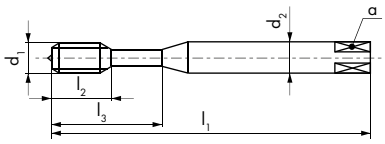
PM | HSSE

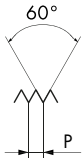
DIN 371



N320-4		62	63	64	72	73	74
		81	91				
N320V-4	V	11	12	31	32		

N320-4	N320V-4	N320-4	N320-4
			
			
B 4 x P	B 4 x P	B 4 x P	B 4 x P
ISO 3 6G	ISO 3 6G	7G	6H +0.1 mm





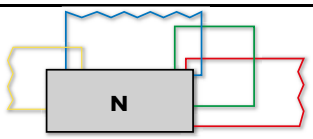
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H	ID	6H + mm	ID	6H + mm	ID	6H + mm	ID
* 2	0.4	45	8		2.8	2.1	2	1.6	● 101457	0.019	● 143584	0.019			
2.5	0.45	50	10		2.8	2.1	3	2.05	● 101482	0.020	● 150522	0.020			
3	0.5	56	12	18	3.5	2.7	3	2.5	● 101486	0.020	● 143116	0.020	● 101489	0.036	● 101488
3.5	0.6	56	13	20	4	3	3	2.95	● 101490	0.021					
4	0.7	63	14	21	4.5	3.4	3	3.35	● 101494	0.022	● 143087	0.022	● 101496	0.041	● 111522
5	0.8	70	15	25	6	4.9	3	4.25	● 101498	0.024	● 143088	0.024	● 101500	0.044	● 111523
6	1	80	17	30	6	4.9	3	5	● 101502	0.026	● 143089	0.026	● 101504	0.050	● 111524
8	1.25	90	20	35	8	6.2	3	6.8	● 101505	0.028	● 143604	0.028			

*N320-3 / N320V-3 2.5 x P

M ISO DIN 13

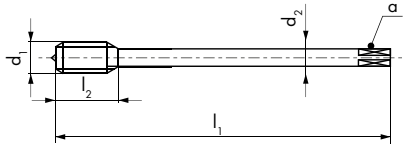
HSSE

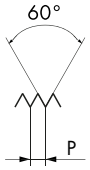
DIN 376



N420-4		62 63 64 72 73 74 81 91	
N420V-4	V	11 12 31 32	

N420-4	N420V-4	N420-4	N420-4
			
			
B 4 x P	B 4 x P	B 4 x P	B 4 x P
ISO 3 6G	ISO 3 6G	7G	6H +0.1 mm





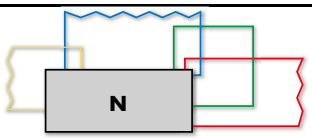
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	6H + mm	ID	6H + mm	ID	6H + mm	ID
8	1.25	90	20	6	4.9	3	6.8	● 102194	0.028	● 145246	0.028	● 102199	0.052	● 102196
10	1.5	100	22	7	5.5	3	8.5	● 102060	0.032	● 143726	0.032	● 102065	0.060	● 102062
12	1.75	110	24	9	7	3	10.3	● 102071	0.034	● 145655	0.034	● 102076	0.066	● 102073
16	2	110	30	12	9	3	14	● 135531	0.038	● 162795	0.038	● 102094	0.072	● 102091

M ISO DIN 13

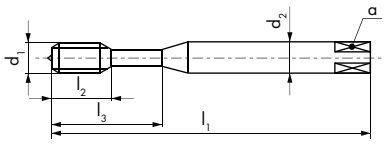
≤ Ø 2.8 > Ø 2.8

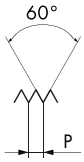
PM | HSSE

DIN 371



	N321-4	N330-4	N330V-4
			
	61 62 63 64 71 72 73 74 81 91	63 72	11 12
			
			
			
	ISO 2 6H	ISO 2 6H	ISO 2 6H





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H	ID	ID	ID
* 1	0.25	40	5.5		2.5	2.1	2	0.75		● 101558	
* 1.1	0.25	40	5.5		2.5	2.1	2	0.85		* 101559	
* 1.2	0.25	40	5.5		2.5	2.1	2	0.95		● 101560	
* 1.4	0.3	40	7		2.5	2.1	2	1.1		● 101561	
* 1.6	0.35	40	8		2.5	2.1	2	1.25		● 101562	● 151246
* 2	0.4	45	8		2.8	2.1	2	1.6	● 101552	● 105125	● 101572
2.5	0.45	50	10		2.8	2.1	* 3	2.05	● 101553	● 101565	● 101573
3	0.5	56	12	18	3.5	2.7	* 3	2.5	● 101555	● 101567	● 101574
3.5	0.6	56	13	20	4	3	2	2.9		● 101568	
4	0.7	63	14	21	4.5	3.4	3	3.3	● 101557	● 101569	● 101576
5	0.8	70	15	25	6	4.9	3	4.2		● 101570	● 101577
6	1	80	17	30	6	4.9	3	5		● 101571	● 101578

*N320-3 / N320V-3 / N330V-3 2.5 x P

* N330-4 = 2

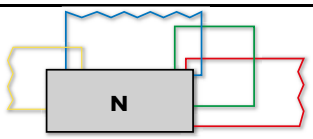
* N330V-4 = 2

≤M1.5 ISO 1 4H

M ISO DIN 13

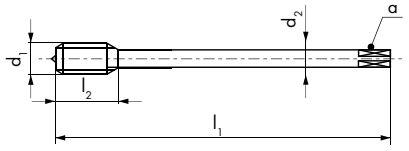
HSSE

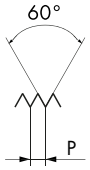
DIN 376



N420-4			62 63 64 72 73 74 81 91
N421-4			61 62 63 64 71 72 73 74 81 91
N430-4			63 72
N430V-4		V	11 12

N420-4	N421-4	N430-4	N430V-4
			
			
			
B 4 x P	B 4 x P	B 4 x P	B 4 x P
6H +0.2mm	ISO 2 6H	ISO 2 6H	ISO 2 6H





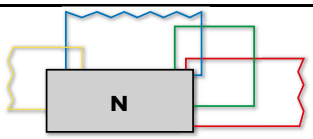
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	ID	ID	ID
4	0.7	63	14	2.8	2.1	3	3.3		● 102293		
5	0.8	70	15	3.5	2.7	3	4.2		● 102294		
6	1	80	17	4.5	3.4	3	5		● 102295		
8	1.25	90	20	6	4.9	3	6.8	● 102197	● 102296	● 102301	● 102306
10	1.5	100	22	7	5.5	3	8.5	● 102063	● 102286	● 102297	● 102302
12	1.75	110	24	9	7	3	10.2	● 102074	● 102287	● 102298	● 102303
16	2	110	30	12	9	3	14	● 102092	● 102289		

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

PM | HSSE

DIN 371



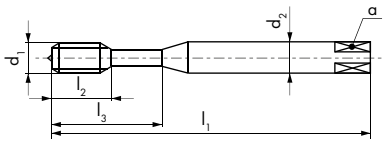
	N350-3	N350V-3		
				

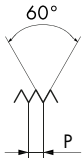
N350-3

62 63 64 72 73 74 81 91

N350V-3

11 12 31 32

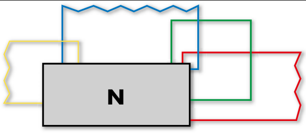




Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
2	0.4	45	8		2.8	2.1	2	1.6	101580	101593
2.3	0.4	45	9		2.8	2.1	2	1.9	101581	
2.5	0.45	50	10		2.8	2.1	2	2.05	101582	101594
2.6	0.45	50	10		2.8	2.1	2	2.15	101583	
3	0.5	56	12	18	3.5	2.7	2	2.5	101584	101595
3.5	0.6	56	13	20	4	3	2	2.9	101585	
4	0.7	63	14	21	4.5	3.4	2	3.3	101587	101596
5	0.8	70	15	25	6	4.9	3	4.2	101589	101597
6	1	80	17	30	6	4.9	3	5	101591	101598
8	1.25	90	20	35	8	6.2	3	6.8	101592	146810
10	1.5	100	22	39	10	8	3	8.5	101579	147217

HSSE

DIN 376



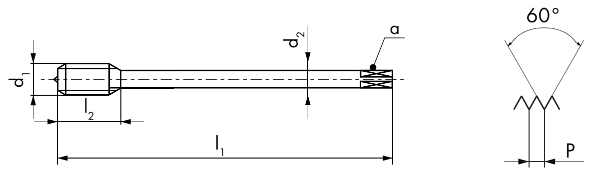
	N450-3	N450V-3

N450-3 — R15 — 62, 63, 64, 72, 73, 74, 81, 91

N450V-3 — R15 — V — 11, 12, 31, 32

N450-3: < 1.5 x D, < 2.5 x D; C 2.5 x P; ISO 2 6H

N450V-3: < 1.5 x D; C 2.5 x P; ISO 2 6H

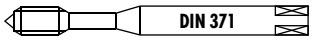


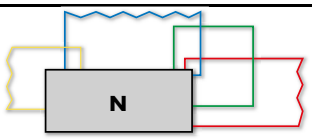
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID N450-3	ID N450V-3
8	1.25	90	20	6	4.9	3	6.8	● 102327	● 102334
10	1.5	100	22	7	5.5	3	8.5	● 102314	● 102329
12	1.75	110	24	9	7	3	10.2	● 102317	● 102330
14	2	110	28	11	9	3	12	● 102319	● 145487
16	2	110	30	12	9	3	14	● 102321	● 102331
20	2.5	140	36	16	12	4	17.5	● 102324	● 102332
24	3	160	39	18	14.5	4	21	● 102325	● 102333

M ISO DIN 13

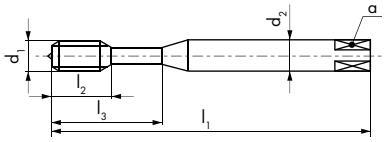
≤ Ø 2.8 > Ø 2.8

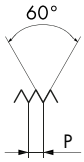
PM | HSSE





	N360-3	N360V-3	N360TN-3	N360TC-3
				
				
				
	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H
N360-3			63 72 73 74 81 91	
N360V-3	 		11 12 32	
N360TN-3	 		11 12 13 14 32	
N360TC-3	 		11 12 13 14 21 31 32 62 64 73 74 82 83	



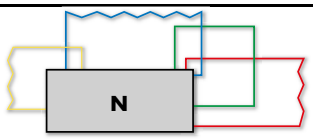


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	0.4	45	7		2.8	2.1	2	1.6	● 101618	● 101708	● 101697	● 146842
2.2	0.45	45	8		2.8	2.1	2	1.75	● 101619			
2.3	0.4	45	8		2.8	2.1	2	1.9	● 101620			
2.5	0.45	50	9		2.8	2.1	2	2.05	● 101622	● 101709	● 101698	● 101689
2.6	0.45	50	9		2.8	2.1	2	2.15	● 101623	● 101710		
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 101626	● 101711	● 101699	● 101690
3.5	0.6	56	6.5	20	4	3	3	2.9	● 101630	● 142625		
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 101635	● 101713	● 101700	● 101691
4.5	0.75	70	9	25	6	4.9	3	3.75	● 101639			
5	0.8	70	9	25	6	4.9	3	4.2	● 101644	● 101715	● 101701	● 101692
6	1	80	11	30	6	4.9	3	5	● 101652	● 101717	● 101703	● 101693
7	1	80	11	30	7	5.5	3	6	● 101656	● 101718		
8	1.25	90	12.5	35	8	6.2	3	6.8	● 101663	● 101721	● 101705	● 101694
9	1.25	90	12.5	35	9	7	3	7.8	● 101668			
10	1.5	100	14	39	10	8	3	8.5	● 101612	● 101707	● 101696	● 101688

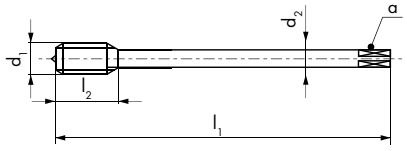
M ISO DIN 13

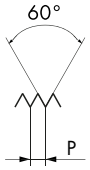
HSSE

DIN 376



	N460-3	N460V-3	N460TN-3	N460TC-3
				
	< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
	R40	R40 V	R40 TiN	R40 TiCN
	63 72 73 74 81 91	11 12 32	11 12 13 14 32	11 12 13 14 21 31 32 62 64 73 74 82 83
	C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





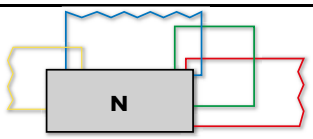
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
5	0.8	70	9	3.5	2.7	3	4.2	● 102410	● 102489	● 160682	
6	1	80	11	4.5	3.4	3	5	● 102411	● 102491	● 152850	
8	1.25	90	12.5	6	4.9	3	6.8	● 102412	● 102492	● 152849	
10	1.5	100	14	7	5.5	3	8.5	● 102351	● 102461	● 150242	● 158687
12	1.75	110	14	9	7	3	10.2	● 102359	● 102465	● 102449	● 102438
14	2	110	14	11	9	3	12	● 102369	● 102468	● 102451	● 111615
16	2	110	18	12	9	3	14	● 102376	● 102471	● 102453	● 102440
18	2.5	125	21	14	11	3	15.5	● 102383	● 102473		
20	2.5	140	24	16	12	4	17.5	● 102389	● 102475	● 102454	● 143280
22	2.5	140	24	18	14.5	4	19.5	● 102394	● 102477		
24	3	160	27	18	14.5	4	21	● 102398	● 102480	● 143119	● 150018
27	3	160	27	20	16	4	24	● 175423	● 102481		
30	3.5	180	30	22	18	4	26.5	● 150246	● 102482		
33	3.5	180	33	25	20	4	29.5	● 167621	● 102483		
36	4	200	36	28	22	5	32	● 143914	● 102484		
39	4	200	40	32	24	5	35	● 175424	● 102485		
42	4.5	200	40	32	24	5	37.5	● 169122	● 102486		
45	4.5	220	44	36	29	5	40.5		● 102487		
48	5	250	48	36	29	5	43		● 102488		
52	5	250	52	40	32	5	47		● 110228		
56	5.5	280	56	45	35	6	50.5		● 102490		
64	6	315	64	50	39	6	58		● 143805		

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

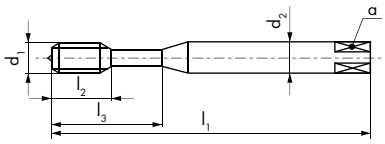
PM | HSSE

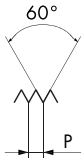
DIN 371



N360-3 LH	L40	LH	63 72 73 74 81 91
N360V-3 LH	L40	V	LH 11 12 32
N360-3	R40		63 72 73 74 81 91
N360V-3	R40	V	11 12 32

N360-3 LH	N360V-3 LH	N360-3	N360V-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 3 6G	ISO 3 6G



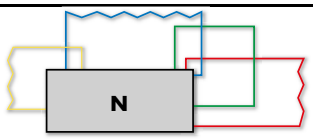


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H	ID	ID	ID 6H + mm	ID 6H + mm
2	0.4	45	7		2.8	2.1	2	1.6			● 101617 0.019	● 146000 0.019
2.5	0.45	50	9		2.8	2.1	2	2.05			● 101621 0.020	● 143294 0.020
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 101627	● 146811	● 101625 0.020	● 104816 0.020
3.5	0.6	56	6.5	20	4	3	3	2.95			● 101629 0.021	● 125829 0.021
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 101637	● 162540	● 101634 0.022	● 104817 0.022
5	0.8	70	9	25	6	4.9	3	4.2	● 101646	● 144003	● 101643 0.024	● 104818 0.024
6	1	80	11	30	6	4.9	3	5	● 101654	● 144004	● 101669 0.026	● 104819 0.026
8	1.25	90	12.5	35	8	6.2	3	6.8	● 101666	● 143925	● 101662 0.028	● 104820 0.028
10	1.5	100	14	39	10	8	3	8.5	● 101615	● 143587	● 101611 0.032	● 104821 0.032

M ISO DIN 13

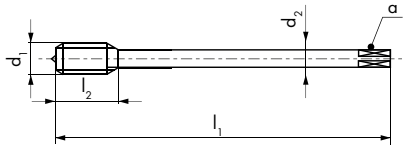
HSSE

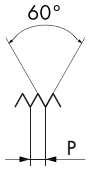
DIN 376



N460-3 LH	L40	LH	63	72	73	74	81	91
N460V-3 LH	L40	V	LH	11	12	32		
N460-3	R40		63	72	73	74	81	91
N460V-3	R40	V	11	12	32			

N460-3 LH	N460V-3 LH	N460-3	N460V-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 3 6G	ISO 3 6G



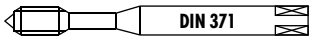


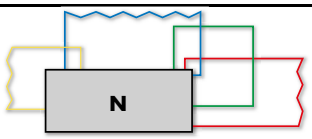
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	ID	ID	6H + mm	ID	6H + mm
12	1.75	110	14	9	7	3	10.2	● 102362	● 146354	● 102358	0.034	● 143602	0.034
14	2	110	14	11	9	3	12			● 102368	0.038	● 144712	0.038
16	2	110	18	12	9	3	14	● 102378	● 143439	● 102375	0.038	● 150197	0.038
20	2.5	140	24	16	12	4	17.5	● 102390	● 146564	● 102388	0.042	● 145420	0.042

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

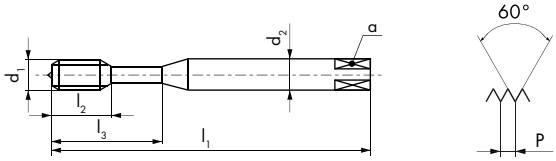
PM | HSSE





N360-3 R40 — 63 | 72 | 73 | 74 | 81 | 91

N360V-3 R40 | V — 11 | 12 | 32



	N360-3	N360-3	N360V-3
			
	< 2.5 x D	< 2.5 x D	< 2.5 x D
	C 2.5 x P	C 2.5 x P	C 2.5 x P
	ISO 1 4H	7G	7G

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H	ID	ID	6H + mm	ID	6H + mm
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 101624	● 101628	0.036	● 144311	0.036
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 101633	● 101638	0.041	● 144192	0.041
5	0.8	70	9	25	6	4.9	3	4.2	● 101642	● 101647	0.044	● 143208	0.044
6	1	80	11	30	6	4.9	3	5	● 101651	● 101655	0.050	● 146709	0.050
8	1.25	90	12.5	35	8	6.2	3	Δ6.8	● 101661	● 101667	0.052	● 146267	0.052
10	1.5	100	14	39	10	8	3	8.5	● 101610	● 101616	0.060	● 142547	0.060

									6H +0.1 mm	6H +0.1 mm

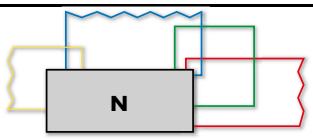
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H +0.1	ID	ID
3	0.5	56	5.5	18	3.5	2.7	3	2.6	● 160847	
4	0.7	63	7.5	21	4.5	3.4	3	3.4	● 101636	● 146513
5	0.8	70	9	25	6	4.9	3	4.3	● 101645	● 146046
6	1	80	11	30	6	4.9	3	5.1	● 101653	● 145559
8	1.25	90	12.5	35	8	6.2	3	6.9	● 101664	● 143415
10	1.5	100	14	39	10	8	3	8.6	● 101613	● 124917

Δ ISO 1 4H = 6.70

M ISO DIN 13

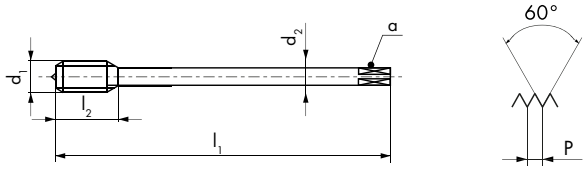
HSSE

DIN 376



N460-3	R40		63 72 73 74 81 91
N460V-3	R40	V	11 12 32

N460-3	N460-3	N460V-3	
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	



C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 1 4H	7G	7G

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	ID	6H + mm	ID	6H + mm
12	1.75	110	14	9	7	3	10.2	★ 124987	● 102363	0.066	● 142532	0.066
16	2	110	18	12	9	3	14		● 102379	0.072	● 144956	0.072

	6H +0.1 mm	6H +0.1 mm

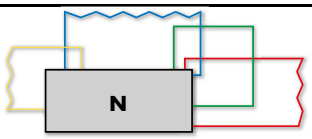
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H +0.1	ID	ID
12	1.75	110	14	9	7	3	10.3	● 102360	● 125044
16	2	110	18	12	9	3	14.1	● 102377	● 145311

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

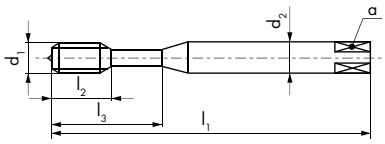
PM | HSSE

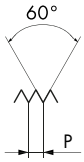
DIN 371



N360-5	R40		63 72 73 74 81 91
N360V-5	R40	V	11 12 32
N361-3	R40		61 63 71 72 73 74 81 91
N362V-3	R40	V	11 12 32

N360-5	N360V-5	N361-3	N362V-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
E 1.5 x P	E 1.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H



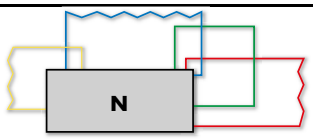


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	0.4	45	7		2.8	2.1	2	1.6	158079	150058		
3	0.5	56	5.5	18	3.5	2.7	3	2.5	104809	142646	101735	
4	0.7	63	7.5	21	4.5	3.4	3	3.3	104810	142647	101736	101741
5	0.8	70	9	25	6	4.9	3	4.2	104811	142648	101737	101742
6	1	80	11	30	6	4.9	3	5	104812	142649	101738	101743
8	1.25	90	12.5	35	8	6.2	3	6.8	104813	142650	101739	101744
10	1.5	100	14	39	10	8	3	8.5	104814	124899	101734	101740

M ISO DIN 13

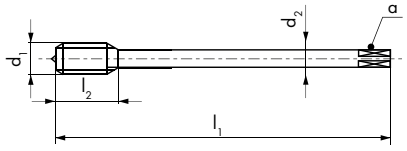
HSSE

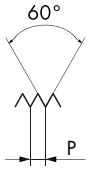
DIN 376



N460-5	R40		63 72 73 74 81 91
N460V-5	R40	V	11 12 32
N461-3	R40		61 63 71 72 73 74 81 91
N462V-3	R40	V	11 12 32

N460-5	N460V-5	N461-3	N462V-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
E 1.5 x P	E 1.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H



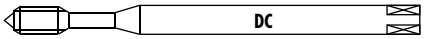


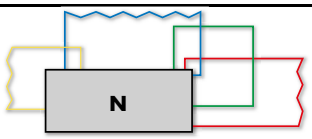
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
12	1.75	110	14	9	7	3	10.2	● 104815	● 142651	● 102506	● 102512
14	2	110	14	11	9	3	12				● 102513
16	2	110	18	12	9	3	14				● 102514
18	2.5	125	21	14	11	3	15.5			✶ 111614	● 102515
20	2.5	140	24	16	12	4	17.5				● 102516
24	3	160	27	18	14.5	4	21				● 102517
27	3	160	27	20	16	4	24				● 159244
30	3.5	180	30	22	18	4	26.5				● 143090

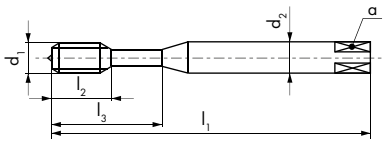
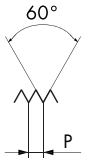
M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

PM | HSSE



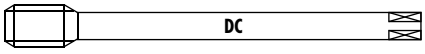


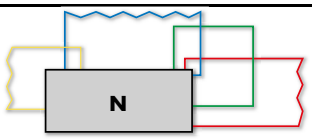
	N520-4	N520V-4	N520TN-4
	N	N V	N TiN
	62 63 64 72 73 74 81 91	11 12 31 32	11 12 13 14 32
			
			
			B 4xP
			ISO 2 6H

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
2.5	0.45	100	10		2.8	2.1	3	2.05	102594	142623	
3	0.5	112	12	18	3.5	2.7	3	2.5	102595	143399	162790
4	0.7	112	14	21	4.5	3.4	3	3.3	102596	143400	146837
5	0.8	125	15	25	6	4.9	3	4.2	102597	142654	150113
6	1	125	17	30	6	4.9	3	5	102598	143137	148821

M ISO DIN 13

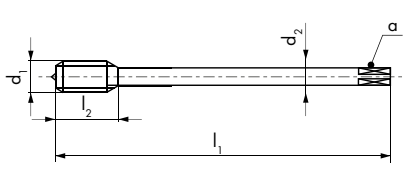
HSSE

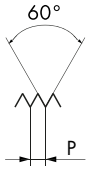




N620-4			62 63 64 72 73 74 81 91
N620V-4		V	11 12 31 32
N620TN-4		TiN	11 12 13 14 32

N620-4	N620V-4	N620TN-4
		
		





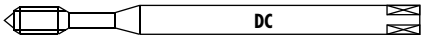
B 4xP			
ISO 2 6H			

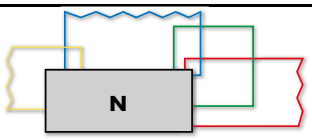
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
4	0.7	112	14	2.8	2.1	3	3.3	● 102619	● 142582	● 146442
5	0.8	125	15	3.5	2.7	3	4.2	● 102620	● 142657	● 146443
6	1	125	17	4.5	3.4	3	5	● 102621	● 142658	● 144591
8	1.25	140	20	6	4.9	3	6.8	● 102622	● 143401	● 146262
10	1.5	160	22	7	5.5	3	8.5	● 102614	● 142660	● 146849
12	1.75	180	24	9	7	3	10.2	● 102615	● 143127	● 146295
14	2	180	28	11	9	3	12	● 102616	● 151905	
16	2	200	30	12	9	3	14	● 102617	● 143106	● 143574
20	2.5	224	36	16	12	3	17.5	● 102618	● 143596	● 174317

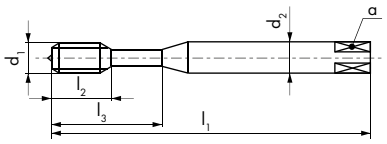
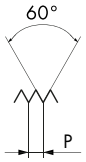
M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

PM HSSE



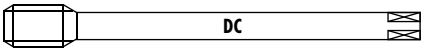


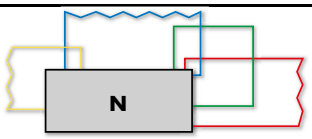
	N560-3	N560V-3	N560TN-3	
	R40	R40 V	R40 TiN	
	63 72 73 74 81 91	11 12 32	11 12 13 14 32	
				
	<2.5 x D	<2.5 x D	<2.5 x D	
				
	C 2.5 x P	C 2.5 x P	C 2.5 x P	
	ISO 2 6H	ISO 2 6H	ISO 2 6H	

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
2.5	0.45	100	9		2.8	2.1	2	2.05	102600	102607	
3	0.5	112	5.5	18	3.5	2.7	3	2.5	102601	102608	142663
4	0.7	112	7.5	21	4.5	3.4	3	3.3	102602	102609	142664
5	0.8	125	9	25	6	4.9	3	4.2	102603	102610	142665
6	1	125	11	30	6	4.9	3	5	102604	102611	142666
8	1.25	140	12.5	35	8	6.2	3	6.8	102605	102612	142667
10	1.5	160	14	39	10	8	3	8.5	102599	102606	142668

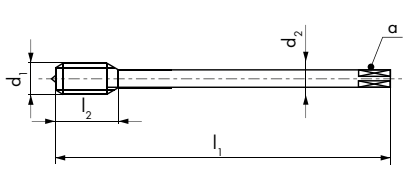
M ISO DIN 13

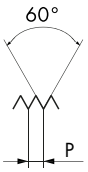
HSSE





	N660-3	N660V-3	N660TN-3
	R40	R40 V	R40 TiN
	63 72 73 74 81 91	11 12 32	11 12 13 14 32

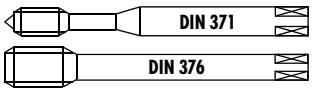


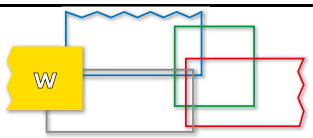


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
6	1	125	11	4.5	3.4	3	5	● 162792	● 115657	
8	1.25	140	12.5	6	4.9	3	6.8	● 162793	● 115544	
10	1.5	160	14	7	5.5	3	8.5	● 162794	● 135539	● 173484
12	1.75	180	14	9	7	3	10.2	● 102623	● 102626	● 142669
14	2	180	14	11	9	3	12	● 162253	● 147500	
16	2	200	18	12	9	3	14	● 102624	● 102627	● 142670
20	2.5	224	24	16	12	4	17.5	● 102625	● 102628	● 178003

M ISO DIN 13

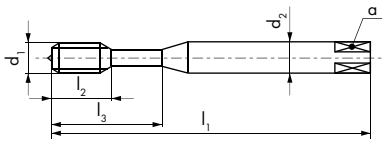
PM

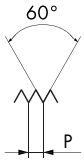




W320-4			71 72 81	
W420-4			71 72 81	
W320DL-4		DLC	71 72 73	
W420DL-4		DLC	71 72 73	

W320-4	W420-4	W320DL-4	W420DL-4
			
			
B 4 x P	B 4 x P	B 4 x P	B 4 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





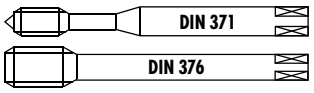
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
* 2	0.4	45	8		2.8	2.1	2	1.6	• 104612		• 176688	
2.5	0.45	50	10		2.8	2.1	2	2.05	• 104613		• 176689	
3	0.5	56	12	18	3.5	2.7	2	2.5	• 104615		• 176690	
4	0.7	63	14	21	4.5	3.4	2	3.3	• 104617		• 176691	
5	0.8	70	15	25	6	4.9	2	4.2	• 104618		• 176354	
6	1	80	17	30	6	4.9	2	5	• 104619		• 175590	
8	1.25	90	20		6	4.9	2	6.8		• 104636		• 176692
10	1.5	100	22		7	5.5	2	8.5		• 104632		• 176693
12	1.75	110	24		9	7	3	10.2		• 104633		• 176694
16	2	110	30		12	9	3	14		• 104634		• 176695

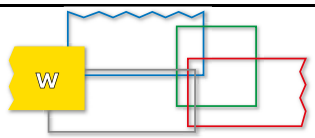
*W320-3
*W320DL-3 2.5 x P

M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

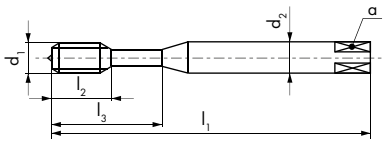
PM | HSSE

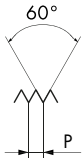




W360-3	R40		71 72 81	
W460-3	R40		71 72 81	
W360DL-3	R40	DLC	71 72 73	
W460DL-3	R40	DLC	71 72 73	

W360-3	W460-3	W360DL-3	W460DL-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	0.4	45	7		2.8	2.1	2	1.6	● 104625		● 176719	
2.5	0.45	50	9		2.8	2.1	2	2.05	● 104626		● 176720	
3	0.5	56	5.5	18	3.5	2.7	2	2.5	● 104627		● 176721	
4	0.7	63	7.5	21	4.5	3.4	2	3.3	● 104628		● 176722	
5	0.8	70	9	25	6	4.9	2	4.2	● 104629		● 176723	
6	1	80	11	30	6	4.9	2	5	● 104630		● 176355	
8	1.25	90	12.5	35	8	6.2	2	6.8	● 104631		● 176724	
10	1.5	100	14	39	10	8	2	8.5	● 104624		● 176725	
12	1.75	110	14		9	7	3	10.2		● 104640		● 176726
16	2	110	18		12	9	3	14		● 104641		● 176727

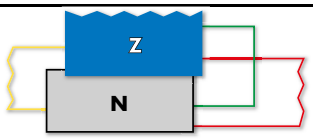
M ISO DIN 13

≤ Ø 25.4 > Ø 25.4

PM | HSSE

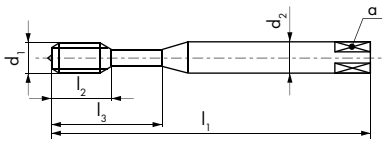
DIN 371

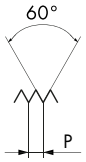
DIN 376



Z320V-4	V	11 12 13 21 32	
Z420V-4	V	11 12 13 21 32	
Z320VS-4	VS	11 12 13 14 21 22 23 32 61 63 94	
Z420VS-4	VS	11 12 13 14 21 22 23 32 61 63 94	

Z320V-4	Z420V-4	Z320VS-4	Z420VS-4
			
			





B 4 x P	B 4 x P	B 4 x P	B 4 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
* 1.6	0.35	40	8		2.5	2.1	2	1.25	● 142671			
* 2	0.4	45	8		2.8	2.1	2	1.6	● 111613			
2.5	0.45	50	10		2.8	2.1	3	2.05	● 111455		● 143683	
2.6	0.45	50	10		2.8	2.1	3	2.15	● 142672			
3	0.5	56	12	18	3.5	2.7	3	2.5	● 104669		● 104830	
4	0.7	63	14	21	4.5	3.4	3	3.3	● 104670		● 104831	
5	0.8	70	15	25	6	4.9	3	4.2	● 104671		● 104832	
6	1	80	17	30	6	4.9	3	5	● 104672		● 104833	
8	1.25	90	20	35	8	6.2	3	6.8	● 104673		● 104834	
10	1.5	100	22	39	10	8	3	8.5	● 104668		● 104835	
12	1.75	110	24		9	7	3	10.2		● 104723		● 104836
14	2	110	28		11	9	3	12		● 142673		● 143684
16	2	110	30		12	9	3	14		● 105068		● 111569
18	2.5	125	33		14	11	4	15.5		● 142674		
20	2.5	140	36		16	12	4	17.5		● 105069		● 111570
22	2.5	140	36		18	14.5	4	19.5		● 146003		
24	3	160	39		18	14.5	4	21		● 142675		● 150017
30	3.5	180	45		22	18	4	26.5		● 142676		

*Z320V-3 2.5 x P

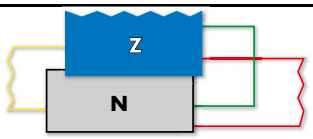
M ISO DIN 13

≤ Ø 2.8 > Ø 2.8

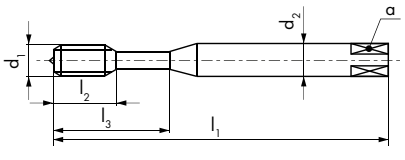
PM | HSSE

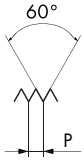
DIN 371

DIN 376



	Z360V-3	Z362V-3	Z462V-3
			
R40	●	●	●
V	●	●	●
Z		●	●
12 / 21 / 32	●	●	●
< 2.5 x D	●	●	●
C 2.5 x P		●	●
ISO 2 6H		●	●

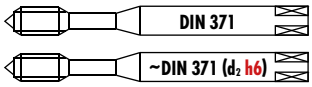


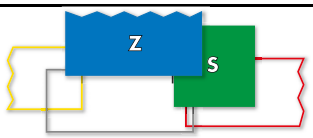


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
2	0.4	45	7		2.8	2.1	2	1.6	● 104684		
2.5	0.45	50	9		2.8	2.1	2	2.05	● 104685		
2.6	0.45	50	9		2.8	2.1	2	2.15	● 104686		
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 104687		
3.5	0.6	56	6.5	20	4	3	3	2.9		● 104688	
4	0.7	63	7.5	21	4.5	3.4	3	3.3		● 104689	
5	0.8	70	9	25	6	4.9	3	4.2		● 104690	
6	1	80	11	30	6	4.9	3	5		● 104691	
8	1.25	90	12.5	35	8	6.2	3	6.8		● 104692	
10	1.5	100	14	39	10	8	3	8.5		● 104683	
12	1.75	110	14		9	7	3	10.2			● 104742
14	2	110	14		11	9	3	12			● 104743
16	2	110	18		12	9	3	14			● 104744
18	2.5	125	21		14	11	3	15.5			● 104745
20	2.5	140	24		16	12	3	17.5			● 104746
22	2.5	140	24		18	14.5	3	19.5			● 104752
24	3	160	27		18	14.5	4	21			● 104747
27	3	160	27		20	16	4	24			● 104748
30	3.5	180	30		22	18	4	26.5			● 104749
36	4	200	36		28	22	4	32			● 104750
42	4.5	200	40		32	24	4	37.5			● 104751

M ISO DIN 13

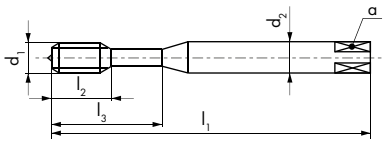
HSSE

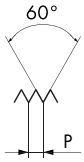




Z362VS-3	R40		VS	12 14 21 22 23 32 61 63	
Z370VS-3	R45	VS	CLASSIC	14 15 21 22 23 24 51 61	
Z373VS-3	R45		VS	CLASSIC	94
Z370VS-3	R45	VS	SYNCHRO	13 14 15 21 22 23 24 51	
Z373VS-3	R45		VS	SYNCHRO	52

Z362VS-3	Z370VS-3	Z370VS-3	Z373VS-3
			
< 2.5 x D	< 3 x D	< 3 x D	< 3 x D
	PM	PM	PM
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	4HX	6HX





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
* 3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 111504
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 111505
5	0.8	70	9	25	6	4.9	3	4.2	● 111506
6	1	80	11	30	6	4.9	3	5	● 111507
8	1.25	90	12.5	35	8	6.2	3	6.8	● 111508
10	1.5	100	14	39	10	8	3	8.5	● 111509

*Z360VS-3

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID	ID
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5	● 162776	● 165324	● 165236
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.3	● 162777	● 165325	● 165237
5	0.8	70	9	25	6	4.9	3	4.2	● 162778	● 165326	● 165238
6	1	80	11	30	6	4.9	3	5	● 162779	● 165327	● 165239
8	1.25	90	12.5	35	8	6.2	3	Δ 6.8	● 162780	● 165328	● 165240
10	1.5	100	14	39	10	8	3	8.5	● 162781	● 165438	● 165241

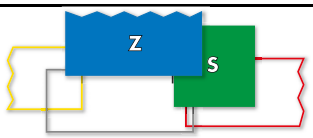
Δ 4HX = 6.7

M ISO DIN 13

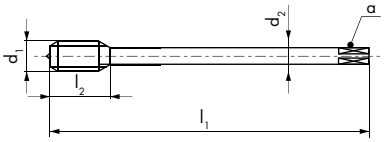
HSSE

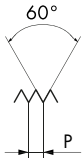
DIN 376

~DIN 376 (d_2 h6)



	Z462VS-3	Z470VS-3	Z473VS-3	
				
	R40 · VS	R45 · VS · CLASSIC	R45 · VS · CLASSIC	R45 · VS · SYNCHRO
	12 14 21 22 23 32 61 63	14 15 21 22 23 24 51 61 94	13 14 15 21 22 23 24 51 52	
	< 2.5 x D	< 3 x D	< 3 x D	
		PM	PM	
	C 2.5 x P	C 2.5 x P	C 2.5 x P	
	6HX	6HX	6HX	





Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
12	1.75	110	14	9	7	4	10.2	● 111510
14	2	110	14	11	9	4	12	★ 148169
16	2	110	18	12	9	4	14	● 111511
20	2.5	140	24	16	12	4	17.5	● 111512
24	3	160	27	18	14.5	4	21	★ 111620

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm			ID	ID
12	1.75	110	14	* 10	* 8	4	10.2	● 162782	● 165242
14	2	110	14	* 12	* 9	4	12	● 162783	
16	2	110	18	12	9	4	14	● 162784	● 165244
18	2.5	125	21	14	11	4	15.5	● 170643	
20	2.5	140	24	16	12	4	17.5	● 162785	● 165234
22	2.5	140	24	16	12	4	19.5	● 175190	
24	3	160	27	16	12	4	21	● 162786	● 165235

* Norme DC / * DC Norm/ * Norma DC

ZX AMPCO®
ALEACIÓN ALUMINIO-BRONCE
ALU-BRONZE-ALLOYS

ZX - Machos para roscar a máquina DC con una geometría de corte especialmente adaptada

Para los agujeros pasantes y ciegos < 1.5 x D

Óptima
para AMPCO® 21 / 22
Dureza HB > 280 - < 330

Aceptable
para AMPCO® 18
Dureza HB < 420

Aceptable
para AMPCO® 25 / 26
Dureza HB < 420

Recomendación
Para AMPCO® 25 / 26: *Ø del núcleo + 0.2 mm*

ZX - DC machine taps with specially adapted cutting geometry

For through and blind holes < 1.5 x D

Optimal
for AMPCO® 21 / 22
Hardness Brinell HB > 280 - < 330

Suitable
for AMPCO® 18
Hardness Brinell HB < 420

Suitable
for AMPCO® 25 / 26
Hardness Brinell HB < 420

Recommendation
For AMPCO® 25 / 26: Core hole diameter + 0.2 mm

Otras opciones para la procesamiento del AMPCO®:

Óptima
Para los agujeros pasantes

Machos para roscar a máquina DC tipo H320-4 / H420-4
para AMPCO® 18
Dureza HB < 200

Óptima
Para los agujeros pasantes y ciegos < 2 x D

per AMPCO® 25 / 26
Dureza HB > 380 - < 420
Lubrificante: aceite de corte / emulsión

Fresa de roscar en metal duro integral, tipo DC GF6165VS
Velocidad de corte Vc: 30 - 50 m/min
Avance fresado fz: 0.01 - 0.05 mm/denti

Óptima
Para los agujeros pasantes y ciegos < 4 x D

per AMPCO® 25 / 26
Dureza HB > 380 - < 420
Lubrificante: aceite de corte / emulsión

Fresa torbellino en metal duro integral,
tipo DC GW301.VS / GWi306.VS
Velocidad de corte Vc: 30 - 50 m/min
Avance fresado fz: 0.01 - 0.08 mm/denti

Alternative AMPCO® threading solutions:

Optimal
For through holes

DC machine taps type H320-4 / H420-4
for AMPCO® 18
Hardness Brinell HB < 200

Optimal
For through and blind holes < 2 x D

for AMPCO® 25 / 26
Hardness Brinell HB > 380 - < 420
Lubricant: cutting oil / emulsion

DC solid carbide thread milling cutter type GF6165VS
Cutting speed Vc: 30 - 50 m/min
Feed rate fz: 0.01 - 0.05 mm/tooth

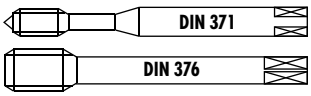
Optimal
For through and blind holes < 4 x D

for AMPCO® 25 / 26
Hardness Brinell HB > 380 - < 420
Lubricant: cutting oil / emulsion

DC solid carbide thread whirl cutter
type GW301.VS / GWi306.VS
Cutting speed Vc: 30 - 50 m/min
Feed rate fz: 0.01 - 0.08 mm/tooth

M ISO DIN 13

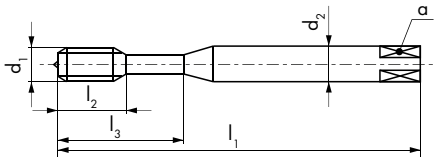
PM

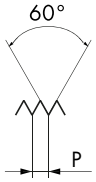


ZX

ZX320-4			AMPCO® 21 22
ZX420-4			AMPCO® 21 22
ZX320-4			AMPCO® 18 25 26
ZX420-4			AMPCO® 18 25 26

ZX320-4	ZX420-4		
			
< 1.5 x D	< 1.5 x D		
B 4 x P	B 4 x P		
6HX	6HX		





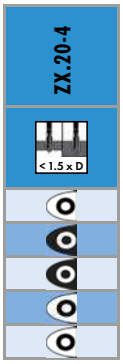
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
4	0.7	63	14	21	4.5	3.4	3	* 3.3	● 143599
5	0.8	70	15	25	6	4.9	3	* 4.2	● 145458
6	1	80	17	30	6	4.9	3	* 5	● 110232
8	1.25	90	20	35	8	6.2	3	* 6.8	● 110233
10	1.5	100	22	39	10	8	3	* 8.5	● 124905

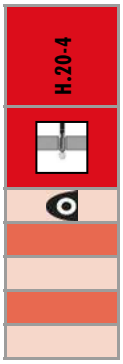
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
12	1.75	110	24	9	7	3	* 10.2	● 110208
16	2	110	30	12	9	3	* 14	● 110207

*Ampco® 25 / Ampco® 26 + 0.2 mm

TABLA DE UTILIZACIÓN PARA ALEACIÓN-ALUMINIO-BRONCE
APPLICATION CHART FOR ALU-BRONZE-ALLOYS

Clasificación de los materiales Material designation	*Dureza* Hardness Brinell (HB)	*Velocidad de corte* Cutting speed Vc (m/min) Guide Line
AMPCO® 18	< 290	6 - 10
AMPCO® 21	> 280 - < 330	2 - 3
AMPCO® 22	> 280 - < 330	2 - 3
AMPCO® 25	< 420	2 - 3
AMPCO® 26	< 420	2 - 3



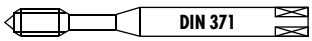


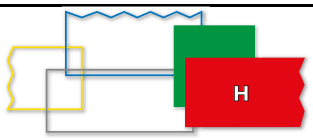
Óptima con aceite de corte
Optimal with cutting oil

Aceptable con aceite de corte
Suitable with cutting oil

M ISO DIN 13

PM

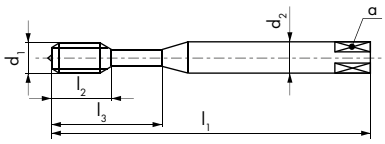


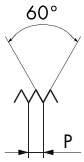


	H320-4	H320TC-4		
				
				
	B 4xP	B 4xP		
	ISO 2 6H	ISO 2 6H		

H320-4 — 15 16 62 64 82

H320TC-4 — TiCN — 15 16 24 31 82 83 92 93





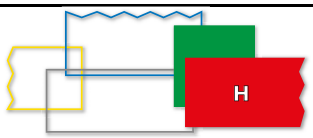
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
2	0.4	45	8		2.8	2.1	2	1.6	101206	151836
2.2	0.45	45	9		2.8	2.1	2	1.75	111801	
2.5	0.45	50	10		2.8	2.1	3	2.05	101207	148603
3	0.5	56	12	18	3.5	2.7	3	2.5	101209	111836
3.5	0.6	56	13	20	4	3	3	2.9	101210	
4	0.7	63	14	21	4.5	3.4	3	3.3	101211	111502
4.5	0.75	70	15	25	6	4.9	3	3.75	101212	
5	0.8	70	15	25	6	4.9	3	4.2	101213	111458
6	1	80	17	30	6	4.9	3	5	101215	111456
8	1.25	90	20	35	8	6.2	3	6.8	101218	111453
10	1.5	100	22	39	10	8	3	8.5	101205	110911

M ISO DIN 13

≤ Ø 25.4 > Ø 25.4

PM | HSSE

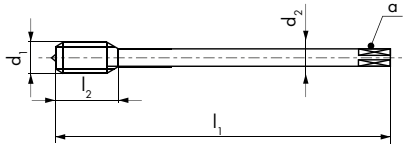
DIN 376

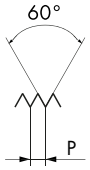


	H420-4	H420TC-4		
				
				
	B 4xP	B 4xP		
	ISO 2 6H	ISO 2 6H		

H420-4  15 16 62 64 82

H420TC-4  TiCN 15 16 24 31 82 83 92 93

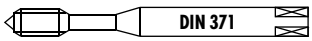


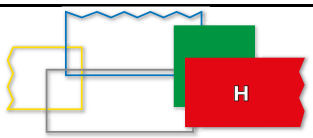


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
12	1.75	110	24	9	7	4	10.2	● 101275	● 110912
14	2	110	28	11	9	4	12	● 101277	● 145461
16	2	110	30	12	9	4	14	● 101279	● 111612
18	2.5	125	33	14	11	4	15.5	● 101281	
20	2.5	140	36	16	12	4	17.5	● 101284	● 144606
22	2.5	140	36	18	14.5	4	19.5	● 157752	
24	3	160	39	18	14.5	4	21	● 101286	● 143588
27	3	160	42	20	16	4	24	● 101287	
30	3.5	180	45	22	18	4	26.5	● 101288	
36	4	200	51	28	22	4	32	● 101289	

M ISO DIN 13

PM

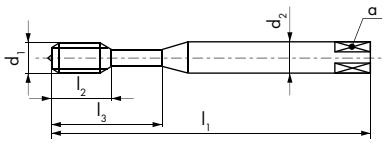


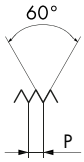


	H350-3	H350-3	H350TC-3	
				
	< 1.5 x D	< 1.5 x D	< 1.5 x D	
	C 2.5 x P	C 2.5 x P	C 2.5 x P	
	ISO 2 6H	ISO 3 6G	ISO 2 6H	

H350-3 R25 — 15 16 62 64 82

H350TC-3 R25 TiCN — 15 16 24 31 82 83 92 93





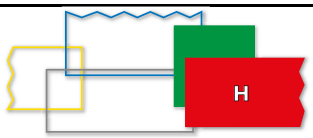
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H	ID	ID	6H + mm	ID
2	0.4	45	7		2.8	2.1	2	1.6	● 101238			● 146451
2.5	0.45	50	9		2.8	2.1	3	2.05	● 101239			● 144957
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 101242	● 101241	0.020	● 111835
3.5	0.6	56	6.5	20	4	3	3	2.9	● 101243			
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 101245	● 101244	0.022	● 111607
4.5	0.75	70	9	25	6	4.9	3	3.75	● 101246			
5	0.8	70	9	25	6	4.9	3	4.2	● 101248	● 101247	0.024	● 111610
6	1	80	11	30	6	4.9	3	5	● 101251	● 101250	0.026	● 111500
8	1.25	90	12.5	35	8	6.2	3	6.8	● 101255	● 101254	0.028	● 110963
10	1.5	100	14	39	10	8	3	8.5	● 101237	● 101236	0.032	● 111454

M ISO DIN 13

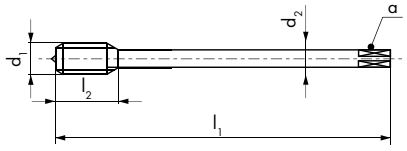
≤ Ø 25.4 > Ø 25.4

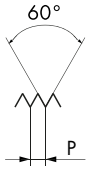
PM | HSSE

DIN 376



	H450-3	H450-3	H450TC-3	
				
	R25	R25	R25	
			TiCN	
	15 16 62 64 82	15 16 62 64 82	15 16 24 31 82 83 92 93	
	< 1.5 x D	< 1.5 x D	< 1.5 x D	
	C 2.5 x P	C 2.5 x P	C 2.5 x P	
	ISO 2 6H	ISO 3 6G	ISO 2 6H	

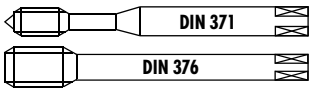


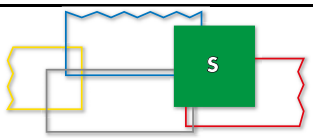


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	ID	6H + mm	ID
12	1.75	110	14	9	7	4	10.2	● 101305	✱ 101304	0.034	● 111501
14	2	110	14	11	9	4	12	● 101307			● 146151
16	2	110	18	12	9	4	14	● 101309			● 111605
18	2.5	125	21	14	11	4	15.5	● 101311			
20	2.5	140	24	16	12	4	17.5	● 101313			● 144986
22	2.5	140	24	18	14.5	4	19.5	● 101315			
24	3	160	27	18	14.5	4	21	● 101318			● 144987
27	3	160	27	20	16	4	24	● 101320			
30	3.5	180	30	22	18	4	26.5	● 101323			
36	4	200	36	28	22	4	32	● 101324			
42	4.5	200	40	32	24	4	37.5	● 101325			

M ISO DIN 13

PM

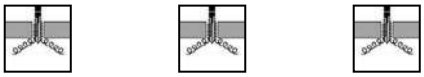


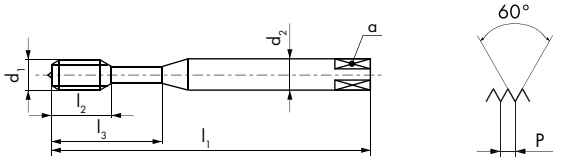


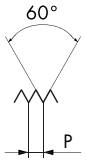
S320VS-4 VS 13 15 16 22 23 24 52

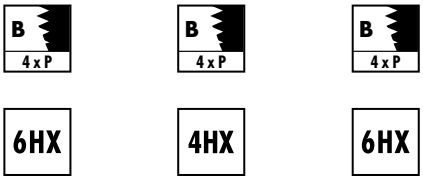
S420VS-4 VS 13 15 16 22 23 24 52

S320VS-4	S320VS-4	S420VS-4







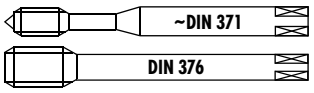


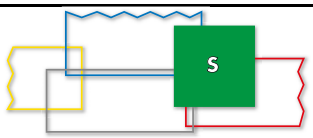
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
3	0.5	56	12	18	3.5	2.7	3	2.5	● 111596	✱ 165318	
4	0.7	63	14	21	4.5	3.4	3	3.3	● 111597	✱ 165319	
5	0.8	70	15	25	6	4.9	3	4.2	● 111598	✱ 165320	
6	1	80	17	30	6	4.9	3	5	● 111599	✱ 165321	
8	1.25	90	20	35	8	6.2	3	△ 6.8	● 111600	✱ 165322	
10	1.5	100	22	39	10	8	3	8.5	● 111601	✱ 165323	
12	1.75	110	24		9	7	4	10.2			● 111602
16	2	110	30		12	9	4	14			● 111603
20	2.5	140	36		16	12	4	17.5			● 111604

△ 4HX = 6.7

M ISO DIN 13

PM



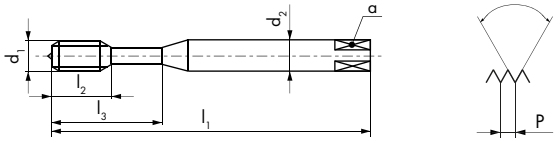


S360VS-3 R35 VS — 13 15 16 22 23 24 52

S460VS-3 R35 VS — 13 15 16 22 23 24 52

aero

SA390-3 R10 — 16 53



S360VS-3	S460VS-3	SA390-3	SA390-3
			
< 2 x D	< 2 x D	< 1.5 x D < 1.5 x D	< 1.5 x D < 1.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	4HX	6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 111513	
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 111514	
5	0.8	70	9	25	6	4.9	3	4.2	● 111515	
6	1	80	11	30	6	4.9	3	5	● 111516	
8	1.25	90	12.5	35	8	6.2	3	6.8	● 111517	
10	1.5	100	14	39	10	8	3	8.5	● 111518	
12	1.75	110	14		9	7	4	10.2		● 111519
14	2	110	14		11	9	4	12		✶ 148171
16	2	110	18		12	9	4	14		● 111520
20	2.5	140	24		16	12	4	17.5		● 111521
24	3	160	27		18	14.5	4	21		● 111606

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
4	0.7	63	14	4.5	3.4	3	3.3	● 149673	● 149674
5	0.8	70	15	6	4.9	3	4.2	● 149693	● 149694
6	1	80	20	6	4.9	3	5	● 149707	● 149708
8	1.25	90	25	8	6.2	3	△ 6.8	● 149736	● 149737
10	1.5	100	30	10	8	3	8.5	✶ 149754	● 149755
12	1.75	110	35	12	9	4	10.2		● 149775
14	2	110	40	16	12	4	12		✶ 149792

△ 4HX = 6.7

M ISO DIN 13

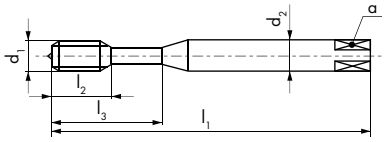
PM

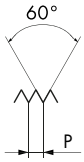
~DIN 371

aero

SA320-4		15 16 52 64	
SA350-3	R15	15 16 52 64	
TL320VS-4	VS	41 42	
TL351VS-3	R15	VS	41 42

SA320-4	SA350-3	TL320VS-4	TL351VS-3
			
	< 1.5 x D		< 2 x D
			< 2 x D
B 4 x P	C 2.5 x P	B 4 x P	C 2.5 x P
4HX	4HX	4HX	4HX





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			SA320-4 ID	SA350-3 ID	TL320VS-4 ID	TL351VS-3 ID
3	0.5	56	12		3.5	2.7	3	2.5	147975	147987	152006	152012
4	0.7	63	14		4.5	3.4	3	3.3	147976	147988	152007	152013
5	0.8	70	15		6	4.9	3	4.2	147977	147989	152008	152014
6	1	80	15	23	6	4.9	3	5	147978	147990	152009	152015
8	1.25	90	18	29	8	6.2	3	6.7	147979	147991	152010	152016
10	1.5	100	20	33	10	8	3	8.5	147980	147992	152011	152017

SA320-4	SA350-3	TL320VS-4	TL351VS-3
6HX	6HX	6HX	6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			SA320-4 ID	SA350-3 ID	TL320VS-4 ID	TL351VS-3 ID
3	0.5	56	12		3.5	2.7	3	2.5	147981	147993	148001	148000
4	0.7	63	14		4.5	3.4	3	3.3	147982	147994	148003	148002
5	0.8	70	15		6	4.9	3	4.2	147983	147995	148007	148006
6	1	80	15	23	6	4.9	3	5	147984	147996	148011	148010
8	1.25	90	18	29	8	6.2	3	6.8	147985	147997	148020	148018
10	1.5	100	20	33	10	8	3	8.5	147986	147998	148027	148025

M ISO DIN 13

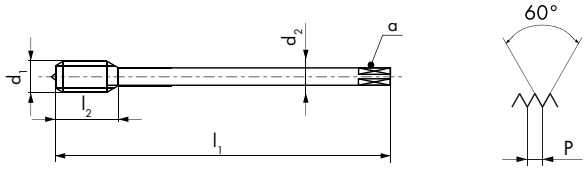
PM

DIN 376

aero

SA420-4		15 16 52 64			
SA450-3	R15	15 16 52 64			
TL420VS-4		41 42	VS		
TL451VS-3	R15	41 42		VS	

SA420-4	SA450-3	TL420VS-4	TL451VS-3
			
	< 1.5 x D		< 2 x D
			< 2 x D



B 4 x P	C 2.5 x P	B 4 x P	C 2.5 x P
4HX	4HX	4HX	4HX

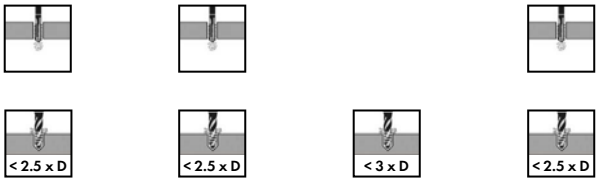
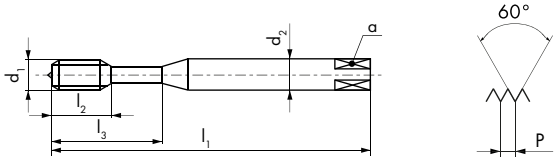
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			SA420-4 ID	SA450-3 ID	TL420VS-4 ID	TL451VS-3 ID
12	1.75	110	24	9	7	4	10.2	✱ 148096	✱ 152189	✱ 152192	✱ 152195
14	2	110	28	11	9	4	12	✱ 152187			
16	2	110	30	12	9	4	14	✱ 152188			✱ 152197

6HX	6HX	6HX	6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			SA420-4 ID	SA450-3 ID	TL420VS-4 ID	TL451VS-3 ID
12	1.75	110	24	9	7	4	10.2	✱ 152198	✱ 152201	✱ 152204	● 148028
14	2	110	28	11	9	4	12	✱ 152199			● 152207
16	2	110	30	12	9	4	14		✱ 152203		● 148029

M ISO DIN 13

PM — DIN 371 — HSSE — DC

	GG350NV-3	GG350TC-3	GG353TC-3	GG550NV-3
				
Coating	NV	TiCN	TiCN	NV
Substrate	R15	R15	R15	R15
Geometry	31	31 / 62 / 74	31 / 62 / 74	31
				
	< 2.5 x D	< 2.5 x D	< 3 x D	< 2.5 x D
				
	C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
	6HX	6HX	6HX	6HX

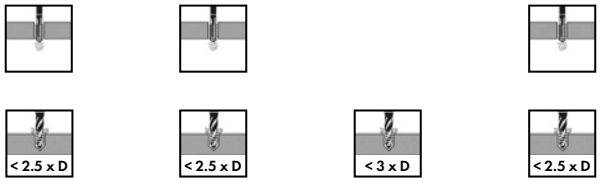
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
3	0.5	56	12	18	3.5	2.7	3	2.5	● 101172	● 101178
4	0.7	63	14	21	4.5	3.4	3	3.3	● 101173	● 101179
5	0.8	70	15	25	6	4.9	3	4.2	● 101174	● 101180
6	1	80	17	30	6	4.9	3	5	● 101175	● 101181
8	1.25	90	20	35	8	6.2	4	6.8	● 101076	● 101182
10	1.5	100	22	39	10	8	4	8.5	● 101171	● 101177

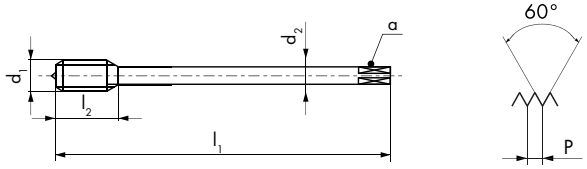
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
5	0.8	70	15	25	6	4.9	3	4.2	● 144947
6	1	80	17	30	6	4.9	3	5	● 147710
8	1.25	90	20	35	8	6.2	4	6.8	● 147711
10	1.5	100	22	39	10	8	4	8.5	● 146708

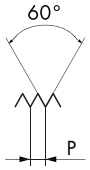
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
4	0.7	112	14	21	4.5	3.4	3	3.3	● 101196
5	0.8	125	15	25	6	4.9	3	4.2	● 101197
6	1	125	17	30	6	4.9	3	5	● 101198

M ISO DIN 13

PM — DIN 376 — HSSE — DC

	GG450NV-3	GG450TC-3	GG453TC-3	GG650NV-3
				
R15	●	●	●	●
NV	●			●
TiCN		●	●	
31	●	●	●	●
62		●	●	
74		●	●	
				
< 2.5 x D	●	●		●
< 3 x D			●	
C 2.5 x P	●	●	●	●
6HX	●	●	●	●





Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
8	1.25	90	20	6	4.9	4	6.8	● 101189	● 101194
10	1.5	100	22	7	5.5	4	8.5	● 101183	● 101195
12	1.75	110	24	9	7	4	10.2	● 101184	● 101190
14	2	110	28	11	9	4	12	● 101185	● 101191
16	2	110	30	12	9	4	14	● 101186	● 101192
20	2.5	140	36	16	12	4	17.5	● 101187	● 101193
24	3	160	39	18	14.5	4	21	● 101188	

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm			ID
12	1.75	110	24	* 10	* 8	4	10.2	● 146707
16	2	110	30	12	9	4	14	● 162796

* Norme DC / * DC Norm/ * Norma DC

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
8	1.25	140	20	6	4.9	4	6.8	● 101203
10	1.5	160	22	7	5.5	4	8.5	● 101199
12	1.75	180	24	9	7	4	10.2	● 101200
16	2	200	30	12	9	4	14	● 101201
20	2.5	224	36	16	12	4	17.5	● 101202

M ISO DIN 13

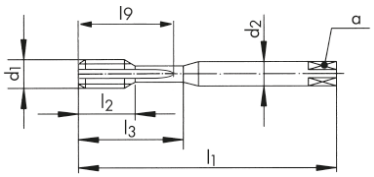
CLASSIC SYNCHRO

PM

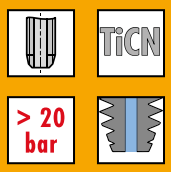
DIN 371

DIN 376

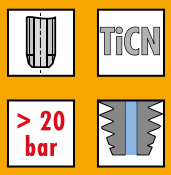
K

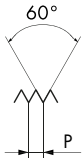
	K313TC-3	K413TC-3		
				
				
				
				

K313TC-3

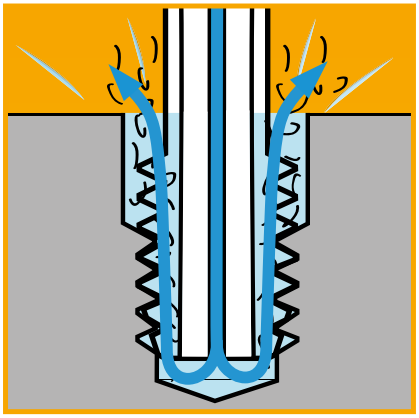


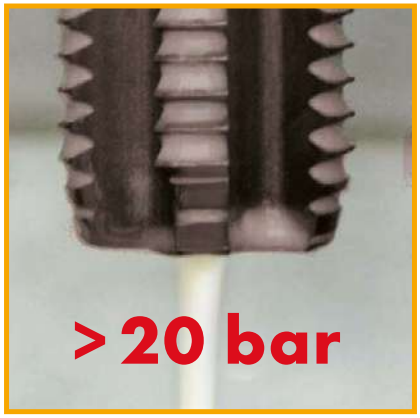
K413TC-3





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	l_9 mm	d_2 mm	a mm			ID	ID
5	0.8	70	15	25	23	6	4.9	3	4.2	● 175961	
6	1	80	17	30	28	6	4.9	3	5	● 170766	
8	1.25	90	20	35	33	8	6.2	3	6.8	● 170769	
10	1.5	100	22	39	37	10	8	3	8.5	● 170772	
12	1.75	110	24		42	9	7	3	10.2		● 165838
14	2	110	28		49	11	9	3	12		● 170778
16	2	110	30		56	12	9	4	14		● 170783
20	2.5	140	36		70	16	12	5	17.5		● 170786
24	3	160	39		84	18	14.5	5	21		● 170775



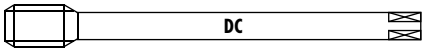


M ISO DIN 13

CLASSIC | SYNCHRO

≤ Ø 25.4 > Ø 25.4

PM | HSSE



K

	K613TC-3	K613VS-3		
				
				

K613TC-3

TiCN

> 20 bar

11 12 13 14 15 16 31 32 62 63 64 74 83

K613VS-3

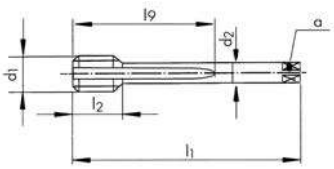
VS

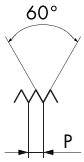
> 20 bar

11 12 13 14 15 16 31 32 62 63 64 74 83

< 4 x D

< 4 x D





C 2.5 x P

C 2.5 x P

6HX

6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_9 mm	d_2 mm	a mm			ID	ID
6	1	110	17	30	4.5	3.4	3	5	• 170646	• 172699
8	1.25	110	20	40	6	4.9	3	6.8	• 170649	• 172700
10	1.5	125	22	50	7	5.5	3	8.5	• 170652	• 172701
12	1.75	140	24	60	9	7	3	10.2	• 167982	• 172702
14	2	140	28	70	11	9	4	12	• 167983	
16	2	160	30	80	12	9	4	14	• 167984	• 170573
20	2.5	180	36	100	16	12	5	17.5	• 167985	• 170576
24	3	200	39	120	18	14.5	5	21	• 167986	• 172704
27	3	225	42	135	20	16	5	24	• 167987	
30	3.5	250	45	150	22	18	5	26.5	• 165542	
33	3.5	280	48	165	25	20	5	29.5	• 167988	
36	4	300	51	180	28	22	6	32	• 167989	
39	4	300	55	195	32	24	6	35	• 167990	
42	4.5	355	55	210	32	24	6	37.5	• 167999	

Vc (m/min) Guide Line

	M5 - M10	M12 - M16	M20 - M30	M33 - M42
11 12 13 32 64	30 - 40	20 - 30	20 - 30	20 - 30
31 62 63 74 83	30 - 40	30 - 40	30 - 40	30 - 40
14	20 - 30	15 - 25	15 - 25	15 - 25
15	15 - 20	10 - 15	8 - 12	5 - 8
16	8 - 12	5 - 8	5 - 8	5 - 8

M ISO DIN 13

CLASSIC SYNCHRO

PM

DIN 371

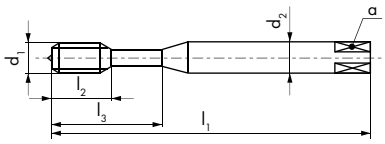
DIN 376

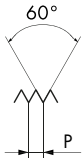
QTAP

Q320VS-4	VS		
Q420VS-4	VS		
Q323VS-4			VS
Q423VS-4			VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q320VS-4	Q420VS-4	Q323VS-4	Q423VS-4
			
NEW	NEW	NEW	NEW
			
B 4xP	B 4xP	B 4xP	B 4xP
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
3	0.5	56	12	18	3.5	2.7	3	2.5	● 195494		● 195505	
4	0.7	63	14	21	4.5	3.4	3	3.3	● 195495		● 195506	
5	0.8	70	15	25	6	4.9	3	4.2	● 195496		● 195507	
6	1	80	17	30	6	4.9	3	5	● 195497		● 195508	
8	1.25	90	20	35	8	6.2	3	6.8	● 195498		● 195509	
10	1.5	100	22	39	10	8	3	8.5	● 195499		● 195510	
12	1.75	110	24		9	7	3	10.2		● 195500		● 195511
14	2	110	28		11	9	3	12		● 195501		● 195512
16	2	110	30		12	9	3	14		● 195502		● 195513
20	2.5	140	36		16	12	4	17.5		● 195503		● 195514
24	3	160	39		18	14.5	4	21		● 195504		● 195515

M ISO DIN 13

CLASSIC | SYNCHRO

≤ Ø 16 | > Ø 16

PM | HSSE

DIN 371

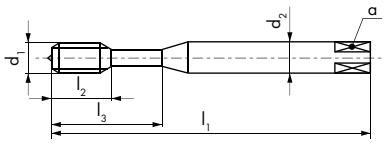
DIN 376

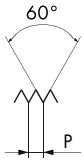
QTAP

Q360VS-3	R40	VS	
Q460VS-3	R40	VS	
Q363VS-3	R40		VS
Q463VS-3	R40		VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
			
NEW	NEW	NEW	NEW
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D





Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			Q360VS-3 ID	Q460VS-3 ID	Q363VS-3 ID	Q463VS-3 ID
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 195516		● 195527	
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 195517		● 195528	
5	0.8	70	9	25	6	4.9	3	4.2	● 195518		● 195529	
6	1	80	11	30	6	4.9	3	5	● 195519		● 195530	
8	1.25	90	12.5	35	8	6.2	3	6.8	● 195520		● 195531	
10	1.5	100	14	39	10	8	3	8.5	● 195521		● 195532	
12	1.75	110	14		9	7	3	10.2		● 195522		● 195533
14	2	110	14		11	9	3	12		● 195523		● 195534
16	2	110	18		12	9	3	14		● 195524		● 195535
20	2.5	140	24		16	12	3	17.5		● 195525		● 195536
24	3	160	27		18	14.5	4	21		● 195526		● 195537

M ISO DIN 13

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Synchronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

PM

~DIN 371 (d_2 h6)

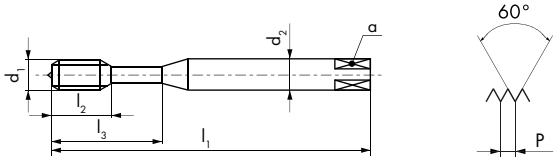
~DIN 376 (d_2 h6)

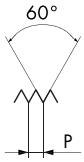
RTS
Rigid Tapping Synchro

RTS320VS-4	RTS420VS-4	RTS323VS-4	RTS423VS-4

RTS320VS-4, RTS420VS-4: VS — 11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94

RTS323VS-4, RTS423VS-4: VS — 11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94





B 4xP — 6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID	ID	ID
* 2	0.4	45	8		2.8(h9)	2.1	2	1.6	● 143532			
2.5	0.45	50	10		2.8(h9)	2.1	3	2.05	● 143534			
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5	● 150601			
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.3	● 150603			
5	0.8	70	9	25	6	4.9	3	4.2	● 150605		● 150606	
6	1	80	11	30	6	4.9	3	5	● 150610		● 150611	
8	1.25	90	12.5	35	8	6.2	3	6.8	● 150620		● 150621	
10	1.5	100	14	39	10	8	3	8.5	● 150635		● 150636	
12	1.75	110	14		* 10	* 8	3	10.2		● 151863		● 151864
14	2	110	14		* 12	* 9	3	12		● 162535		
16	2	110	18		12	9	3	14		● 150670		● 150671
20	2.5	140	24		16	12	4	17.5		● 150679		
24	3	160	27		16	12	4	21		● 162787		

* Norme DC / * DC Norm/ * Norma DC

*RTS320VS-3 — 2.5 x P

≥ Ø 6 mm — sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

SYNCHRO

Uniquement pour taraudage synchrone
Nur für Sychronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado
Только для ridgid tapping

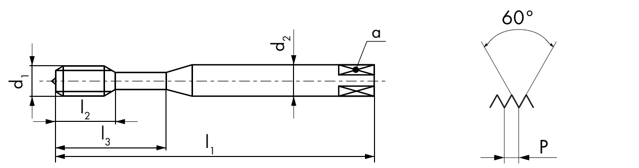
PM

~DIN 371 (d₂ h6)
~DIN 376 (d₂ h6)

RTS
Rigid Tapping Synchro

RTS362VS-3	R40		VS	11, 12, 13, 14, 15, 21, 31, 32, 51, 61, 63, 64, 72, 73, 74, 81, 82, 83, 91, 92, 94
RTS462VS-3	R40		VS	
RTS365VS-3	R40			VS	11, 12, 13, 14, 15, 21, 31, 32, 51, 61, 63, 64, 72, 73, 74, 81, 82, 83, 91, 92, 94
RTS465VS-3	R40			VS	

RTS362VS-3	RTS462VS-3	RTS365VS-3	RTS465VS-3
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	6HX	6HX



Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID RTS362VS-3	ID RTS462VS-3	ID RTS365VS-3	ID RTS465VS-3
* 2	0.4	45	7		2.8(h9)	2.1	3	1.6	● 143536			
* 2.5	0.45	50	9		2.8(h9)	2.1	3	2.05	● 143538			
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5	● 150602		● 160477	
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.3	● 150604		● 160478	
5	0.8	70	9	25	6	4.9	3	4.2	● 150607		● 150608	
6	1	80	11	30	6	4.9	3	5	● 150612		● 150613	
8	1.25	90	12.5	35	8	6.2	3	6.8	● 150622		● 150623	
10	1.5	100	14	39	10	8	3	8.5	● 150637		● 150638	
12	1.75	110	14		* 10	* 8	3	10.2		● 151865		● 151866
14	2	110	14		* 12	* 9	3	12		● 151870		● 150663
16	2	110	18		12	9	3	14		● 150672		● 150673
20	2.5	140	24		16	12	4	17.5		● 150681		● 150682
24	3	160	27		16	12	4	21		● 151873		● 150690

* Norme DC / * DC Norm/ * Norma DC

*RTS360VS-3

≥ Ø 6 mm

sur demande
auf Anfrage
on request
su richiesta
sobre pedido
по запросу

M ISO DIN 13

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Sychronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

PM

~DIN 371 (d_2 h6)

~DIN 376 (d_2 h6)

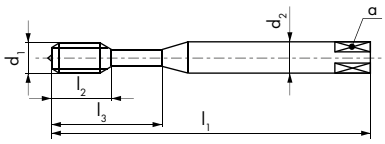
RTS
Rigid Tapping Synchro

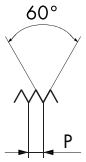
	RTS362VS-3	RTS462VS-3	RTS362VS-3	RTS462VS-3
				
			NEW	NEW
	 < 2.5 x D	 < 2.5 x D	 < 2.5 x D	 < 2.5 x D
	C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
	6GX	6GX	7GX	7GX

RTS362VS-3 — R40 — VS

RTS462VS-3 — R40 — VS

11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		6G	ID	6H + mm	ID	6H + mm	ID	6H + mm	ID	6H + mm
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5	● 162797	0.020			● 184689	0.036		
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.35	● 162798	0.022			● 184691	0.041		
5	0.8	70	9	25	6	4.9	3	4.25	● 162799	0.024			● 184693	0.044		
6	1	80	11	30	6	4.9	3	5	● 162800	0.026			● 184695	0.050		
8	1.25	90	12.5	35	8	6.2	3	6.8	● 162801	0.028			● 184697	0.052		
10	1.5	100	14	39	10	8	3	8.5	● 162802	0.032			● 184699	0.060		
12	1.75	110	14		* 10	* 8	3	10.3			● 163253	0.034			● 184701	0.066
16	2	110	18		12	9	3	14			● 172037	0.038			● 184703	0.072

* Norme DC / * DC Norm/ * Norma DC

≥ Ø 6 mm — sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

M ISO DIN 13

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Synchronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

PM

~DIN 371 (d_2 h6)

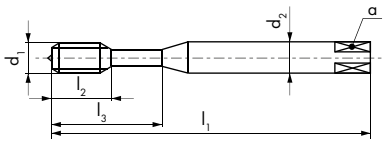
RTS
Rigid Tapping Synchro

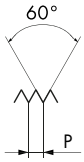
	RTS362VS-5	RTS365VS-5		
				
				
				
				
	6HX	6HX		

RTS362VS-5 — R40 — VS

RTS365VS-5 — R40 — VS

11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94





Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5	● 157648	
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.3	● 157650	
5	0.8	70	9	25	6	4.9	3	4.2	● 157652	● 162791
6	1	80	11	30	6	4.9	3	5	● 158074	● 151803
8	1.25	90	12.5	35	8	6.2	3	6.8	● 158076	● 157821
10	1.5	100	14	39	10	8	3	8.5	● 153286	● 157823

sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

M ISO DIN 13

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Sychronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

PM

DC ~DIN 371 (d_2 h6)

DC ~DIN 376 (d_2 h6)

RTS
Rigid Tapping Synchro

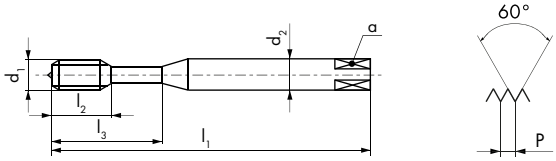
	RTS523VS-4	RTS623VS-4	RTS565VS-3	RTS665VS-3
				
				
				
	6HX	6HX	6HX	6HX

RTS523VS-4 / RTS623VS-4

11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94

RTS565VS-3 / RTS665VS-3

11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94



Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
5	0.8	125	9	25	6	4.9	3	4.2	● 161038	
6	1	125	11	30	6	4.9	3	5	● 161041	
8	1.25	140	12.5	35	8	6.2	3	6.8	● 161044	
10	1.5	160	14	39	10	8	3	8.5	● 161047	
12	1.75	180	14		* 10	* 8	3	10.2		● 161050
16	2	200	18		12	9	3	14		● 161053

* Norme DC / * DC Norm/ * Norma DC

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
6	1	125	11	30	6	4.9	3	5	● 150614	
8	1.25	140	12.5	35	8	6.2	3	6.8	● 150624	
10	1.5	160	14	39	10	8	3	8.5	● 150639	
12	1.75	180	14		* 10	* 8	3	10.2		● 151867
16	2	200	18		12	9	3	14		● 150674

* Norme DC / * DC Norm/ * Norma DC

sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

ROSCADO POR LAMINACIÓN

En este catálogo encontrará el programa de machos para roscado por laminación FS - FPS - FAS en un capítulo separado que comienza en la página 244.

THREAD FORMING

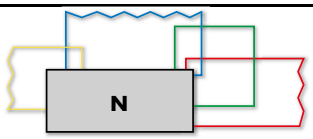
In this catalogue you will find the FS - FPS - FAS thread former programme in a separate chapter starting on page 244.

M ISO DIN 13

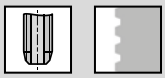
≤ Ø 2.8 > Ø 2.8

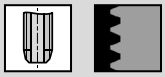
PM | HSS

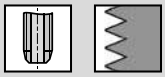
~ISO 529

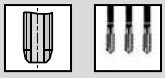


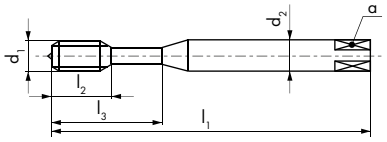
	N1110-1	N1110-2	N1110-3	N1110-S
				
				
				
			ISO 2 6H	ISO 2 6H

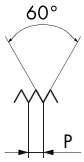
N1110-1 

N1110-2 

N1110-3  31 62 73 74 91

N1110-S 





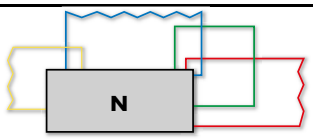
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
1	0.25	40	5.5		2.5	2.1	3	0.75	● 102744	● 102844	● 102917	● 111015
1.2	0.25	40	5.5		2.5	2.1	3	0.95	● 102746	● 102846	● 102919	● 111017
1.4	0.3	40	7		2.5	2.1	3	1.1	● 102747	● 102847	● 102920	● 111018
1.6	0.35	40	8		2.5	2.1	3	1.25	● 102749	● 102849	● 102922	● 111020
1.7	0.35	40	8		2.5	2.1	3	1.35	● 102750	● 102850	● 102923	● 111021
1.8	0.35	40	8		2.5	2.1	3	1.45	● 102751	● 102851	● 102924	● 111022
2	0.4	45	8		2.8	2.1	3	1.6	● 102759	● 102854	● 102934	● 111028
2.2	0.45	45	9.5		2.8	2.1	3	1.75	● 102761	● 102856	● 102937	● 111030
2.5	0.45	45	9.5		2.8	2.1	3	2.05	● 102763	● 102858	● 102941	● 111032
2.6	0.45	45	9.5		2.8	2.1	3	2.15	● 102765	● 102860	● 102944	● 111034
3	0.5	48	11	18	3.15	2.5	3	2.5	● 102766	● 102861	● 102947	● 111036
3.5	0.6	50	13	20	3.55	2.8	3	2.9	● 102769	● 102864	● 102950	● 111038
4	0.7	53	13	21	4	3.15	3	3.3	● 102771	● 102866	● 102956	● 111042
4.5	0.75	53	13	21	4.5	3.55	3	3.75	★ 102775	★ 102869	★ 102959	★ 111044
5	0.8	58	16	25	5	4	3	4.2	● 102776	● 102870	● 102965	● 111047
6	1	66	19	30	6.3	5	3	5	● 102781	● 102874	● 102973	● 111053
7	1	66	19	30	7.1	5.6	3	6	★ 102786	★ 102876	★ 102978	★ 111055
8	1.25	72	22	35	8	6.3	3	6.8	● 102788	● 102878	● 102986	● 111059
9	1.25	72	22	36	9	7.1	3	7.8	★ 102792	★ 102880	★ 102991	★ 111061
10	1.5	80	24	39	10	8	3	8.5	● 102752	● 102852	● 102931	● 111026

≤M1.5 ISO 1 4H

M ISO DIN 13

HSS

ISO 529



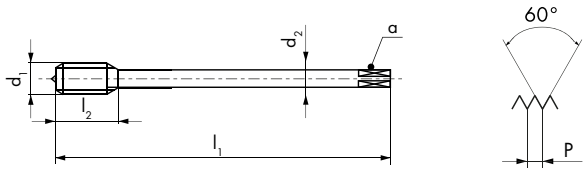
	N1210-1	N1210-2	N1210-3	N1210-S
				
				
				
			ISO 2 6H	ISO 2 6H

N1210-1

N1210-2

N1210-3 31 62 73 74 91

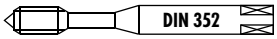
N1210-S

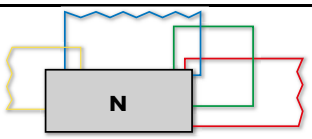


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
11	1.5	85	22	8	6.3	3	9.5	✶ 103302	✶ 103427	● 103489	✶ 111168
12	1.75	89	24	9	7.1	3	10.2	● 103303	● 103428	● 103499	● 111173
14	2	95	24	11.2	9	3	12	● 103310	● 103430	● 103510	● 111179
16	2	102	32	12.5	10	3	14	● 103319	● 103432	● 103522	● 111185
18	2.5	112	30	14	11.2	3	15.5	● 103324	● 103434	● 103534	● 111191
20	2.5	112	37	14	11.2	3	17.5	● 103330	● 103436	● 103543	● 111196
22	2.5	115	32	16	12.5	3	19.5	✶ 103337	✶ 103438	✶ 103550	✶ 125567
24	3	130	45	18	14	4	21	● 103341	● 103440	● 103557	● 111204
27	3	135	45	20	16	4	24	✶ 103347	✶ 103442	✶ 103568	✶ 111211
30	3.5	138	48	20	16	4	26.5	● 103353	● 103444	● 103579	● 111216
33	3.5	151	51	22.4	18	4	29.5	✶ 103357	✶ 103446	✶ 103581	✶ 111218
36	4	162	57	25	20	4	32	✶ 103359	✶ 103448	✶ 103583	✶ 111220

M ISO DIN 13

HSSE





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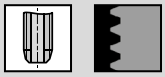
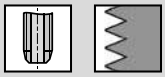
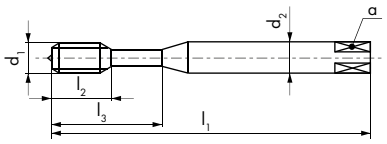
	NEW	NEW	NEW	NEW
				
				
			ISO 2 6H	ISO 2 6H

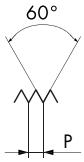
NP110-1 

NP110-2 

NP110-3  31 62 73 74 91

NP110-S 





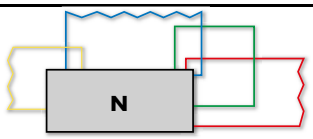
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
3	0.5	40	11	18	3.5	2.7	3	2.5
4	0.7	45	13	21	4.5	3.4	3	3.3
5	0.8	50	16	24	6	4.9	3	4.2
6	1	56	19	27	6	4.9	3	5

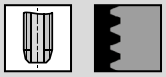
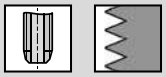
ID	ID	ID	ID
• 174678	• 174687	• 174696	• 173676
• 174679	• 174688	• 174697	• 173644
• 174680	• 174689	• 174698	• 173677
• 174681	• 174690	• 174699	• 173394

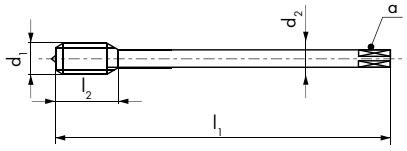
M ISO DIN 13

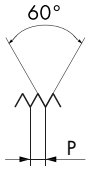
HSSE

DIN 352



	NP210-1	NP210-2	NP210-3	NP210-S
			 31 62 73 74 91	
	 NEW	 NEW	 NEW	 NEW
			 < 1.5 x D	 < 2.5 x D
	 3 x P	 3 x P	 C 3 x P	
			ISO 2 6H	ISO 2 6H

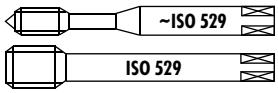


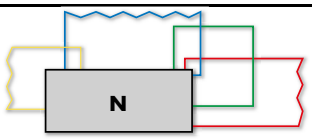


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
8	1.25	63	22	6	4.9	3	6.8	● 174682	● 174691	● 174700	● 173645
10	1.5	70	24	7	5.5	3	8.5	● 174683	● 174692	● 174701	● 173646
12	1.75	75	28	9	7	3	10.2	● 174684	● 174693	● 174702	● 173647
14	2	80	30	11	9	3	12	● 174685	● 174694	● 174703	● 173648
16	2	80	32	12	9	3	14	● 180705	● 180706	● 180707	● 174677

M ISO DIN 13

HSS





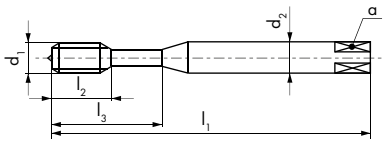
	N1120-4	N1220-4	N1160-3	N1260-3
				
				
				
	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

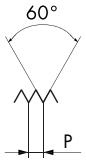
N1120-4  62 63 64 72 73 74 81 91

N1220-4  62 63 64 72 73 74 81 91

N1160-3  63 72 73 74 81 91

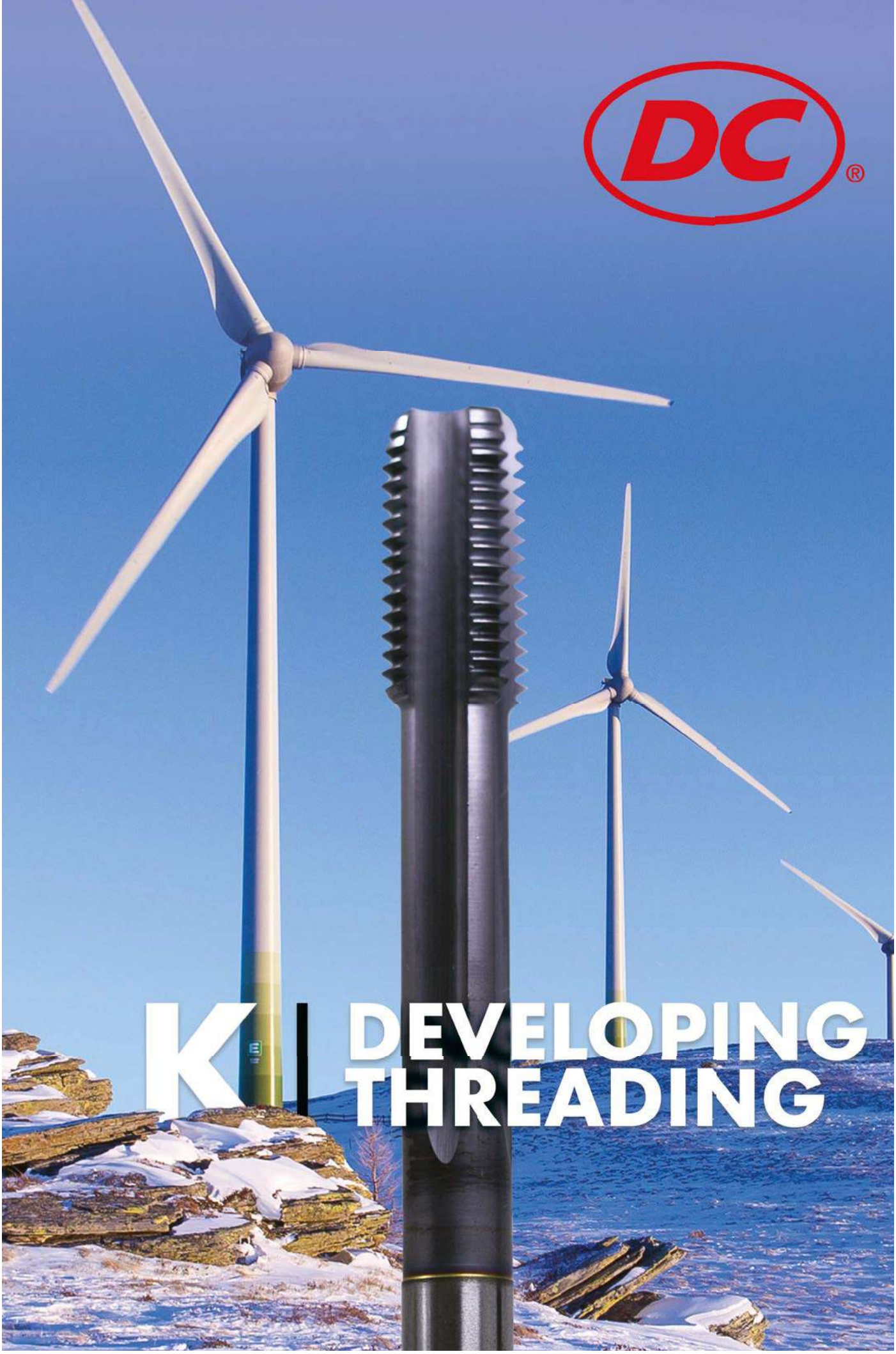
N1260-3  63 72 73 74 81 91





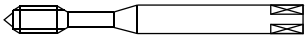
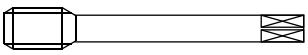
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
3	0.5	48	11	18	3.15	2.5	3	2.5	● 103068	
4	0.7	53	13	21	4	3.15	3	3.3	● 103075	
5	0.8	58	16	25	5	4	3	4.2	● 103082	
6	1	66	19	30	6.3	5	3	5	● 103090	
8	1.25	72	22	35	8	6.3	3	6.8	● 103102	
10	1.5	80	24	39	10	8	3	8.5	● 103060	
12	1.75	89	24		9	7.1	3	10.2		● 103670
14	2	95	24		11.2	9	3	12		● 103680
16	2	102	32		12.5	10	3	14		● 103690

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
3	0.5	48	5.5	18	3.15	2.5	3	2.5	✱ 103177	
4	0.7	53	7.5	21	4	3.15	3	3.3	✱ 103178	
5	0.8	58	9	25	5	4	3	4.2	✱ 103179	
6	1	66	11	30	6.3	5	3	5	✱ 103180	
8	1.25	72	12.5	35	8	6.3	3	6.8	✱ 103181	
10	1.5	80	14	39	10	8	3	8.5	✱ 103174	
12	1.75	89	14		9	7.1	3	10.2		✱ 103781
16	2	102	18		12.5	10	3	14		✱ 103782


DC
DEVELOPING
THREADING

MF

Directorio — Machos para roscar a máquina ISO DIN 13
Directory — Machine taps ISO DIN 13

	N						
Características **Characteristics**				V	TiN	R15	R40
							
Tipo de agujero **Hole type**							
		**N320-3**				**N350-3**	**N360-3**
DIN largo **DIN long**	**DIN 371**		124				124	131
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**ISO 2 6H**		124				124	131
Sobremedida **Oversize**	**ISO 3 6G**							131
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							
		**N410-3**	**N420-3**	**N420-4**	**N420V-4**	**N420TN-4**	**N450-3**	**N460-3**
DIN largo **DIN long**	**DIN 374/~DIN 376**	125 - 130		125 - 130	125 - 128	125 - 127	124	132 - 133
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**ISO 2 6H**	125 - 129		125 - 129	125 - 128	125 - 127	124	132 - 133
Sobremedida **Oversize**	**ISO 3 6G**							132
Tolerancia fina **Fine tolerance**	**ISO 1 4H**							
Tolerancia **Tolerance**	**7H (EN 60423)**		128 - 129					
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**	130		130				

MF

Directorio — Machos para roscar a máquina y a mano ISO DIN 13
Directory — Machine and hand taps ISO DIN 13

N					Z			
R40 V	R40 TiN				V	VS	R40 V	R45 VS
								
								
N360V-3	**N360TN-3**	**N1110-1**	**N1110-3**	**N1110-S**	**Z320V-3 Z320V-4**	**Z320VS-4**	**Z360V-3**	**Z370VS-3**
131	131				134	134	134	134
		146	146	146				
131	131	146	146	146	134	134	134	134
N460V-3	**N460TN-3**	**N1210-1**	**N1210-3**	**N1210-S**	**Z420V-4**	**Z420VS-4**	**Z460V-3**	**Z470VS-3**
132 - 133	132				135	135	135	135
		147 - 148	147 - 148	147 - 148				
132 - 133	132	147 - 148	147 - 148	147 - 148	135	135	135	135

MF

Directorio — Machos para roscar a máquina ISO DIN 13
Directory — Machine taps ISO DIN 13

		H		S		SA		
Características **Characteristics**		TiCN	R25 TiCN	VS	R35 VS		R15	R10
		NEW	NEW					
Tipo de agujero **Hole type**								
		H320-4 H320TC-4	**H350-3 H350TC-3**	**S320VS-4**	**S360VS-3**	**SA320-4**	**SA350-3**	**SA390-3**
DIN largo **DIN long**	**DIN 371**	136	137	138	138	140	140	139
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**ISO 2 6H**	136	137	138	138	140	140	139
Sobremedida **Oversize**	**ISO 3 6G**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**					140	140	
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							
		H420-4 H420TC-4	**H450-3 H450TC-3**	**S420VS-4**	**S460VS-3**	**SA420-4**	**SA450-3**	
DIN largo **DIN long**	**DIN 374/~DIN 376**	136	137	138	138	141	141	
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**ISO 2 6H**	136	137	138	138	141	141	
Sobremedida **Oversize**	**ISO 3 6G**							
Tolerancia fina **Fine tolerance**	**ISO 1 4H**					141	141	
Tolerancia **Tolerance**	**7H (EN 60423)**							
LH Rosca izquierda **LH Left-hand thread**	**ISO 2 6H**							

MF

Directorio — Machos para roscar a máquina ISO DIN 13

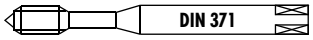
Directory — Machine taps ISO DIN 13

TL		K	QTAP				RTS	
VS	R15 VS	TiCN	VS	VS	R40 VS	R40 VS	VS	R40 VS
			 NEW	 NEW	 NEW	 NEW		
								
TL320VS-4	**TL351VS-3**	**K313TC-3**	**Q320VS-4**	**Q323VS-4**	**Q360VS-3**	**Q363VS-3**	**RTS320VS-4**	**RTS362VS-3**
140	140	142	143	143	144	144	145	145
140	140	142	143	143	144	144	145	145
140	140							
TL420VS-4	**TL451VS-3**	**K413TC-3**	**Q420VS-4**	**Q423VS-4**	**Q460VS-3**	**Q463VS-3**	**RTS420VS-4**	**RTS462VS-3**
141	141	142	143	143	144	144	145	145
141	141	142	143	143	144	144	145	145
141	141							

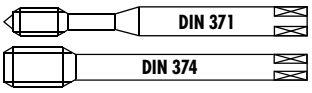
MF ISO DIN 13

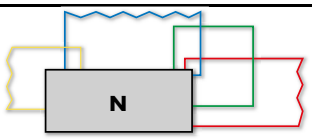
≤ Ø 2.8 > Ø 2.8

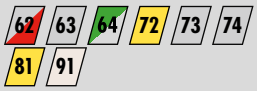
PM | HSSE

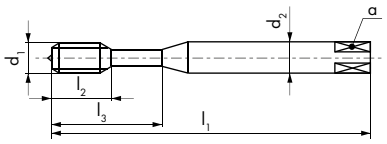


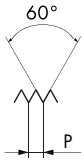
HSSE





	N320-3		N350-3	N450-3
				
			 	 
				
				
N320-3				
N350-3				
N450-3				





Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
2	0.25	45	8		2.8	2.1	2	1.75	● 142689
2.5	0.35	50	10		2.8	2.1	3	2.15	● 142691
2.6	0.35	50	10		2.8	2.1	3	2.25	★ 142692
3	0.35	56	12	18	3.5	2.7	3	2.65	● 142693
3.5	0.35	56	13	20	4	3	3	3.15	● 142694

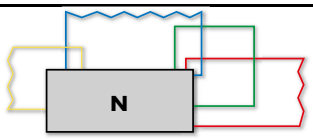
Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
4	0.5	63	14	21	4.5	3.4	2	3.5	● 101586	
5	0.5	70	15	25	6	4.9	3	4.5	● 101588	
6	0.75	80	17	30	6	4.9	3	5.25	● 101590	
8	1	90	20		6	4.9	3	7		● 102326
9	0.75	90	20		7	5.5	3	8.25		● 102328
10	1	100	22		7	5.5	3	9		● 102313
18	1.5	110	26		14	11	4	16.5		★ 102322

P 0.25 ISO 1 4H

MF ISO DIN 13

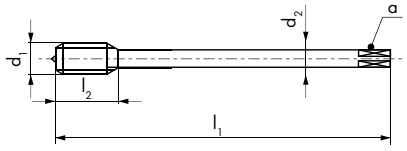
HSSE

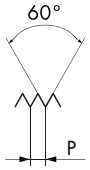
DIN 374



N410-3			31 62 73 74 91
N420-4			62 63 64 72 73 74 81 91
N420V-4		V	11 12 31 32
N420TN-4		TiN	11 12 13 14 32

N410-3	N420-4	N420V-4	N420TN-4
			
< 1.5 x D			
C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





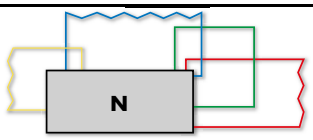
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
* 4	0.35	63	14	2.8	2.1	3	3.65		● 142695		
4	0.5	63	14	2.8	2.1	3	3.5	● 101923	● 102145	● 142715	
4.5	0.5	70	15	3.5	2.7	3	4		● 102150		
5	0.5	70	15	3.5	2.7	3	4.5	● 101941	● 102167	● 142716	
5	0.75	70	15	3.5	2.7	3	4.25		● 102168		
5.5	0.5	80	17	4	3	3	5		● 142696		
6	0.5	80	17	4.5	3.4	3	5.5	● 101951	● 102178	● 142717	
6	0.75	80	17	4.5	3.4	3	5.25	● 101952	● 102179	● 102281	● 102249
7	0.5	80	17	5.5	4.3	3	6.5		● 102187		
7	0.75	80	17	5.5	4.3	3	6.25	● 101954	● 102188		
8	0.5	90	20	6	4.9	3	7.5	● 101955	● 102190	● 142718	
8	0.75	90	20	6	4.9	3	7.25	● 101956	● 102191	● 102283	
8	1	90	20	6	4.9	3	7	● 101957	● 102192	● 102284	● 102250
9	0.5	90	20	7	5.5	3	8.5		● 142697		
9	0.75	90	20	7	5.5	3	8.25		● 102200		
9	1	90	20	7	5.5	3	8		● 102201	● 143935	
10	0.5	100	22	7	5.5	3	9.5		● 142698		
10	0.75	100	22	7	5.5	3	9.25	● 101863	● 102056		
10	1	100	22	7	5.5	3	9	● 101864	● 102057	● 102262	● 102239
10	1.25	100	22	7	5.5	3	8.8	● 101865	● 102058	● 142719	● 148108

*N420-3 2.5 x P

MF ISO DIN 13

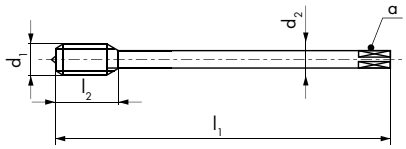
HSSE

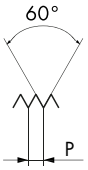
DIN 374



N410-3			31 62 73 74 91
N420-4			62 63 64 72 73 74 81 91
N420V-4		V	11 12 31 32
N420TN-4		TiN	11 12 13 14 32

N410-3	N420-4	N420V-4	N420TN-4
			
 < 1.5 x D			
C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H





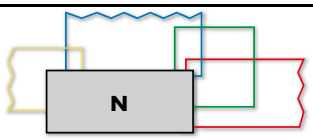
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
11	0.5	100	19	8	6.2	3	10.5		● 142699		
11	0.75	100	19	8	6.2	3	10.25		● 142700		
11	1	100	19	8	6.2	3	10		● 142701		
11	1.25	100	19	8	6.2	3	9.8		● 142702		
12	0.5	100	14	9	7	3	11.5		● 102066		
12	0.75	100	24	9	7	3	11.25		● 142703		
12	1	100	24	9	7	3	11	● 101867	● 102067	● 142345	● 102241
12	1.25	100	24	9	7	3	10.8	● 101868	● 102068	● 142721	
12	1.5	100	24	9	7	3	10.5	● 101869	● 102069	● 102264	● 102242
13	1	100	21	11	9	3	12	● 158401	● 142704		
14	0.5	100	14	11	9	3	13.5		● 142705		
14	0.75	100	24	11	9	3	13.25		● 142706		
14	1	100	24	11	9	3	13	● 101871	● 102077		
14	1.25	100	24	11	9	3	12.8	● 101872	● 102078		
14	1.5	100	24	11	9	3	12.5	● 101873	● 102079	● 102266	● 102244
15	1	100	26	12	9	3	14	● 101875	● 102085		
15	1.5	100	26	12	9	3	13.5	● 101876	● 102086		
16	0.75	100	26	12	9	3	15.25		● 142708		
16	1	100	26	12	9	* 3	15	● 101877	● 102087		
16	1.25	100	26	12	9	* 3	14.8	● 101878	● 102088		
16	1.5	100	26	12	9	* 3	14.5	● 101879	● 102089	● 102268	● 102246
17	1	100	26	12	9	3	16		● 142709		
17	1.5	100	26	12	9	3	15.5		● 142710		
18	0.75	110	26	14	11	4	17.25		● 142711		
18	1	110	26	14	11	4	17	● 101881	● 102095		
18	1.5	110	26	14	11	4	16.5	● 101882	● 102096	● 102270	● 145350
18	2	125	33	14	11	3	16		● 142712		

* N410-3 = 4

MF ISO DIN 13

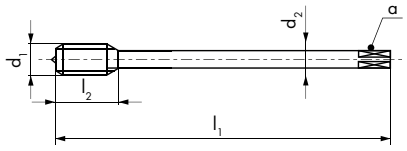
HSSE

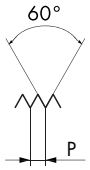
DIN 374



N410-3			31 62 73 74 91
N420-4			62 63 64 72 73 74 81 91
N420V-4		V	11 12 31 32
N420TN-4		TiN	11 12 13 14 32

N410-3	N420-4	N420V-4	N420TN-4
			
			
C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H



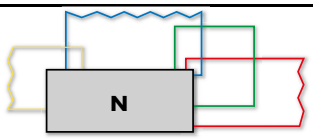


Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
20	1	125	28	16	12	4	19		● 102098		
20	1.5	125	28	16	12	4	18.5	● 101884	● 102099	● 102272	● 143932
20	2	140	36	16	12	3	18	● 105130	● 102100		
22	1	125	28	18	14.5	4	21		● 102104		
22	1.5	125	28	18	14.5	4	20.5	● 101886	● 102105	● 102274	
22	2	140	36	18	14.5	3	20	● 101887	● 142714		
24	1	140	30	18	14.5	4	23		● 102107		
24	1.5	140	30	18	14.5	4	22.5	● 101889	● 102108	● 102276	
24	2	140	34	18	14.5	4	22	● 101890	● 102109	● 102277	
25	1	140	30	18	14.5	4	24		● 142722		
25	1.5	140	30	18	14.5	4	23.5	● 101892	● 102112		
25	2	140	34	18	14.5	4	23		● 142723		
26	1	140	30	18	14.5	4	25		● 102113		
26	1.5	140	30	18	14.5	4	24.5	● 101893	● 102114	● 145896	
27	1.5	140	34	20	16	4	25.5		● 102115		
27	2	140	34	20	16	4	25	● 101894	● 102116		
28	1	140	30	20	16	4	27		● 142725		
28	1.5	140	30	20	16	4	26.5	● 101896	● 102118		
28	2	140	30	20	16	4	26	● 122023			

MF ISO DIN 13

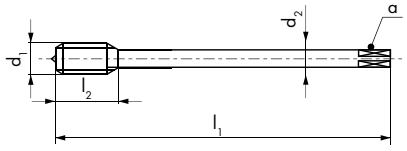
HSSE

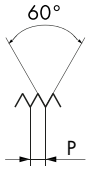
DIN 374



N410-3		31 62 73 74 91
N420-4		62 63 64 72 73 74 81 91
N420V-4	V	11 12 31 32
N420-3		62 63 64 72 73 74 81 91

N410-3	N420-4	N420V-4	N420-3
			
 < 1.5 x D			
C 2.5 x P	B 4 x P	B 4 x P	2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 3 7H



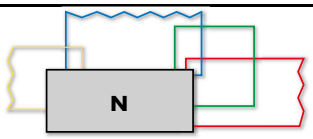


Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	ID	ID	ID
30	1	150	32	22	18	4	29	● 101898	● 102121		
30	1.5	150	32	22	18	4	28.5	● 101899	● 102122	● 143978	
30	2	150	32	22	18	4	28	● 101900	● 102123	● 143766	
32	1	150	32	22	18	4	31	● 101902			
32	1.5	150	32	22	18	4	30.5	● 101903	● 102126		● 143812
32	2	150	32	22	18	4	30	● 101904	● 102127		
33	1.5	160	32	25	20	4	31.5	● 101905	● 102128		
33	2	160	32	25	20	4	31	● 101906	● 102129		
34	1.5	170	32	28	22	4	32.5	● 101909			
35	1.5	170	32	28	22	4	33.5	● 101910	● 102132		
35	2	170	32	28	22	4	33	● 101911			
36	1.5	170	34	28	22	4	34.5	● 101912	● 102134		
36	2	170	34	28	22	4	34	● 101913	● 102135		
36	3	200	45	28	22	4	33	● 101914	● 102136		
38	1.5	170	34	28	22	4	36.5	● 101917	● 102139		
38	2	170	34	28	22	4	36	● 101918			
39	2	170	34	32	24	4	37	● 101920			
39	3	200	45	32	24	4	36	● 101921			

MF ISO DIN 13

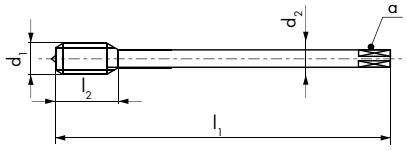
HSSE

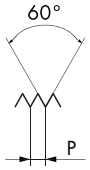
DIN 374



N410-3		31 62 73 74 91
N420-4		62 63 64 72 73 74 81 91
N420-3		62 63 64 72 73 74 81 91

N410-3	N420-4	N420-3
		
 < 1.5 x D		





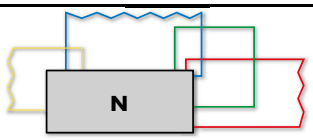
 C 2.5 x P	 B 4 x P	 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 3 7H

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	N410-3 ID	N420-4 ID	N420-3 ID
40	1	170	34	32	24	5	39	● 101925		
40	1.5	170	34	32	24	5	38.5	● 101926	● 102152	● 143813
40	2	170	34	32	24	5	38	● 101927	● 102153	
40	3	200	45	32	24	4	37	✱ 101928		
42	1.5	170	34	32	24	5	40.5	● 101929	● 102155	
42	2	170	34	32	24	5	40	● 101930	● 102156	
42	3	200	45	32	24	4	39	● 101931	● 102157	
45	1.5	180	34	36	29	5	43.5	● 101933	● 102159	
45	2	180	34	36	29	5	43	● 101934		
45	3	200	45	36	29	4	42	● 101935		
48	1.5	190	36	36	29	5	46.5	● 101937	● 102163	
48	2	190	36	36	29	5	46	● 101938	● 102164	
48	3	220	48	36	29	5	45	● 101939	● 102165	
50	1.5	190	36	36	29	5	48.5	● 101943	● 102176	● 143814
50	2	190	36	36	29	5	48	● 101944	✱ 102177	
52	2	190	36	40	32	5	50	● 101947		
60	2	220	42	45	35	5	58	● 105132		
63	1.5	220	38	45	35	5	61.5			● 143815

MF ISO DIN 13

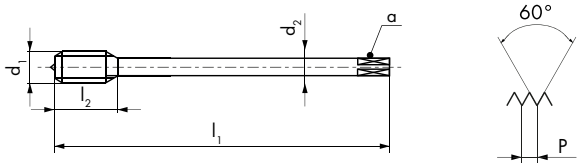
HSSE

DIN 374



N410-3 LH | LH | 31 62 73 74 91

N420-4 LH | LH | 62 63 64 72 73 74 81 91



C 2.5 x P | B 4 x P

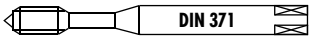
ISO 2 6H | ISO 2 6H

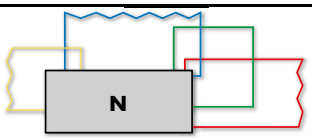
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			N410-3 LH ID	N420-4 LH ID
4	0.5	63	14	2.8	2.1	3	3.5	● 104844	
5	0.5	70	15	3.5	2.7	3	4.5	● 104845	
6	0.5	80	17	4.5	3.4	3	5.5	● 104846	● 104870
6	0.75	80	17	4.5	3.4	3	5.25	● 104847	● 105133
7	0.75	80	17	5.5	4.3	3	6.25	● 104848	
8	0.5	90	20	6	4.9	3	7.5	● 104849	
8	0.75	90	20	6	4.9	3	7.25	● 104850	● 104871
8	1	90	20	6	4.9	3	7	● 104851	● 104872
10	0.75	100	22	7	5.5	3	9.25	● 104852	
10	1	100	22	7	5.5	3	9	● 104853	● 104873
10	1.25	100	22	7	5.5	3	8.8		● 104874
12	1	100	24	9	7	3	11	● 104854	● 104875
12	1.25	100	24	9	7	3	10.8	● 104855	● 104876
12	1.5	100	24	9	7	3	10.5	● 104856	● 104877
14	1	100	24	11	9	3	13	● 104857	● 104878
14	1.25	100	24	11	9	3	12.8	● 104858	
14	1.5	100	24	11	9	3	12.5	● 104859	● 104879
16	1	100	26	12	9	* 3	15	● 104860	● 104880
16	1.5	100	26	12	9	* 3	14.5	● 104861	● 104881
18	1	110	26	14	11	4	17	● 104862	
18	1.5	110	26	14	11	4	16.5	● 104863	● 104882
20	1	125	28	16	12	4	19	● 104864	
20	1.5	125	28	16	12	4	18.5	● 104865	● 104883
22	1.5	125	28	18	14.5	4	20.5	● 104866	● 104884
24	1.5	140	30	18	14.5	4	22.5	● 104867	● 104885
24	2	140	34	18	14.5	4	22	● 104868	● 104886
28	1.5	140	30	20	16	4	26.5	● 105166	
30	1.5	150	32	22	18	4	28.5	● 105167	● 105165
30	2	150	32	22	18	4	28	● 105168	

* N410-3 LH = 4

MF ISO DIN 13

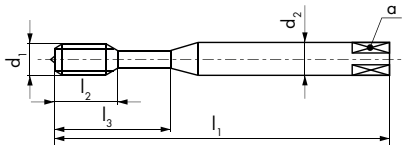
HSSE

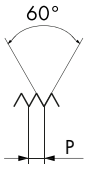




N360-3	R40		63 / 72 / 73 / 74 / 81 / 91
N360V-3	R40	V	11 / 12 / 32
N360TN-3	R40	TiN	11 / 12 / 13 / 14 / 32

N360-3	N360V-3	N360TN-3	N360-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 3 6G

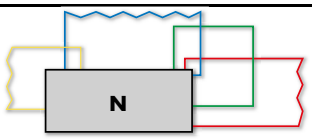




Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		6H	ID	ID	ID	ID 6H + mm
4	0.5	63	7.5	21	4.5	3.4	3	3.5	● 101632	● 101712	● 111618	● 101631 0.020
5	0.5	70	9	25	6	4.9	3	4.5	● 101641	● 101714	● 111617	● 101640 0.020
6	0.5	80	11	30	6	4.9	3	5.5	● 101648	● 143990		
6	0.75	80	11	30	6	4.9	3	5.25	● 101650	● 101716	● 101702	● 101649 0.022
8	0.75	90	12.5	35	8	6.2	3	7.25	● 101658	● 101719		● 101657 0.022
8	1	90	12.5	35	8	6.2	3	7	● 101660	● 101720	● 101704	● 101659 0.026
10	0.75	100	14	39	10	8	3	9.25	● 101606	● 144401		
10	1	100	14	39	10	8	3	9	● 101608	● 101706	● 101695	● 101607 0.026
10	1.25	100	14	39	10	8	3	8.8	● 101609	● 105134	● 110965	

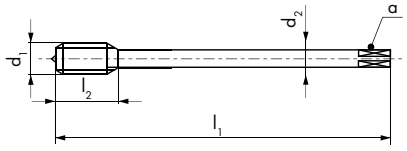
MF ISO DIN 13

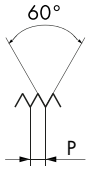
HSSE



N460-3	R40	63 72 73 74 81 91	
N460V-3	R40	V	11 12 32
N460TN-3	R40	TiN	11 12 13 14 32

N460-3	N460V-3	N460TN-3	N460-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D





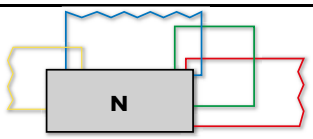
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 3 6G

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		6H	ID	ID	ID	ID 6H + mm
12	1	100	14	9	7	3	11	● 102353	● 102462	● 102447	● 102352 0.026
12	1.25	100	14	9	7	3	10.8	● 102354	● 102463	● 144202	
12	1.5	100	14	9	7	3	10.5	● 102356	● 102464	● 102448	● 102355 0.032
13	1	100	14	11	9	3	12	● 102364			
14	1	100	14	11	9	3	13	● 102365	● 102466		
14	1.5	100	14	11	9	3	12.5	● 102367	● 102467	● 102450	● 102366 0.032
15	1	100	14	12	9	3	14	● 102370			
15	1.5	100	18	12	9	3	13.5	● 102371			
16	1	100	14	12	9	4	15	● 102372	● 102469		
16	1.5	100	14	12	9	4	14.5	● 102374	● 102470	● 102452	● 102373 0.032
18	1	110	18	14	11	4	17	● 102380	● 143926		
18	1.5	110	18	14	11	4	16.5	● 102382	● 102472	● 145346	● 102381 0.032
20	1	125	20	16	12	4	19	● 102384	● 146377		
20	1.5	125	20	16	12	4	18.5	● 102386	● 102474	● 148780	
20	2	140	24	16	12	4	18	● 102387	● 143566		
22	1	125	20	18	14.5	4	21	● 102392	● 147702		
22	1.5	125	20	18	14.5	4	20.5	● 102393	● 102476		
24	1.5	140	22	18	14.5	4	22.5	● 102396	● 102478		
24	2	140	22	18	14.5	4	22	● 102397	● 102479		
25	1.5	140	22	18	14.5	4	23.5	● 102399	● 143810		
26	1.5	140	22	18	14.5	4	24.5	● 102400	● 143952		
27	1.5	140	22	20	16	4	25.5	● 102401	● 143965		
27	2	140	22	20	16	4	25	● 102402	● 144201		
28	1.5	140	22	20	16	4	26.5	● 102403	● 144997		

MF ISO DIN 13

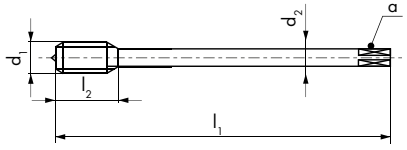
HSSE

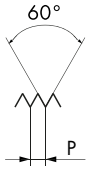
DIN 374



N460-3	R40		63	72	73	74	81	91
N460V-3	R40	V	11	12	32			

N460-3	N460V-3		
			
< 2.5 x D	< 2.5 x D		
C 2.5 x P	C 2.5 x P		
ISO 2 6H	ISO 2 6H		





Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
30	1.5	150	24	22	18	4	28.5	102404	142524
30	2	150	24	22	18	4	28	102405	142581
32	1.5	150	24	22	18	4	30.5	102406	143605
33	2	160	26	25	20	4	31	102407	147604
33	3	180	33	25	20	4	30	175437	150448
35	1.5	170	24	28	22	5	33.5	102408	146846
36	1.5	170	24	28	22	5	34.5	102409	143824
36	2	170	28	28	22	5	34	175436	164870
36	3	200	36	28	22	4	33	115072	150453
39	3	200	40	32	24	5	36	174995	122669
42	3	200	40	32	24	5	39	174996	150436

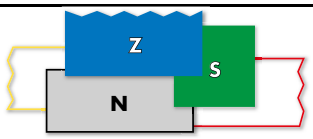
MF ISO DIN 13

Z320 Z360

PM HSSE

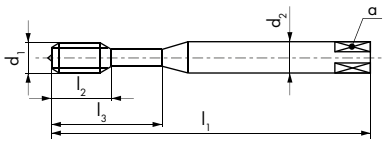
DIN 371

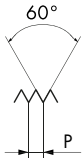
~DIN 371 (d_2 h6)



Z320V-4	V		11 12 13 21 32	
Z320VS-4	VS		11 12 13 14 21 22 23 32 61 63 94	
Z360V-3	R40 V		12 21 32	
Z370VS-3	R45 VS	CLASSIC	14 15 21 22 23 24 51 61 94	
Z370VS-3	R45 VS	SYNCHRO	13 14 15 21 22 23 24 51 52	

Z320V-4	Z320VS-4	Z360V-3	Z370VS-3
			
		 < 2.5 x D	 < 3 x D
			PM
 B 4 x P	 B 4 x P	 C 2.5 x P	 C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	6HX





Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
* 3	0.35	56	12	18	3.5	2.7	3	2.65	● 115468	
6	0.75	80	17	30	6	4.9	3	5.25	● 142726	● 123691
8	1	90	20	35	8	6.2	3	7	● 142727	● 124289
10	1	100	22	39	10	8	3	9	● 142728	● 120060
10	1.25	100	22	39	10	8	3	8.8	● 196023	● 196024

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
4	0.5	63	7.5	21	4.5	3.4	3	3.5	● 104675
5	0.5	70	9	25	6	4.9	3	4.5	● 104676
6	0.75	80	11	30	6	4.9	3	5.25	● 104677
8	1	90	12.5	35	8	6.2	3	7	● 104678
10	1	100	14	39	10	8	3	9	● 104674

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
6	0.75	80	11	30	6	4.9	3	5.25	● 166117
8	1	90	12.5	35	8	6.2	3	7	● 166118
10	1	100	14	39	10	8	3	9	● 166119
10	1.25	100	14	39	10	8	3	8.8	● 196020

*Z320V-3 2.5 x P

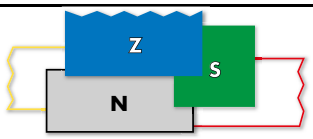
MF ISO DIN 13

Z420 Z460

PM HSSE

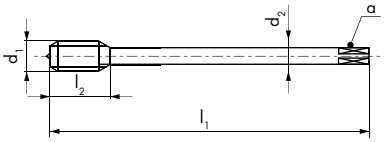
DIN 374

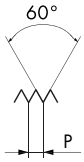
~DIN 376 (d_2 h6)



Z420V-4	V		11 12 13 21 32	
Z420VS-4	VS		11 12 13 14 21 22 23 32 61 63 94	
Z460V-3	R40 V		12 21 32	
Z470VS-3	R45 VS	CLASSIC	14 15 21 22 23 24 51 61 94	
Z470VS-3	R45 VS	SYNCHRO	13 14 15 21 22 23 24 51 52	

Z420V-4	Z420VS-4	Z460V-3	Z470VS-3
			
		< 2.5 x D	< 3 x D
			PM
B 4 x P	B 4 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	6HX





Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
12	1	100	24	9	7	3	11	● 142729	
12	1.5	100	24	9	7	3	10.5	● 142730	● 120421
14	1.5	100	24	11	9	3	12.5	● 142731	● 120688
16	1.5	100	26	12	9	3	14.5	● 142732	● 120878
18	1.5	110	26	14	11	4	16.5	● 196025	● 196027
20	1.5	125	28	16	12	4	18.5	● 163931	● 196026

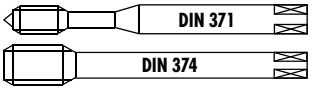
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
12	1	100	14	9	7	3	11	● 104729
12	1.5	100	14	9	7	3	10.5	● 104730
14	1.5	100	14	11	9	3	12.5	● 104731
16	1.5	100	14	12	9	4	14.5	● 104732
18	1.5	110	18	14	11	4	16.5	● 104733
20	1.5	125	20	16	12	4	18.5	● 104734
22	1.5	125	20	18	14.5	4	20.5	● 104735
24	1.5	140	22	18	14.5	4	22.5	● 104736
24	2	140	22	18	14.5	4	22	● 104737

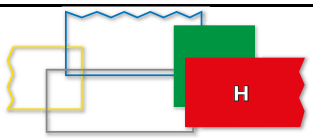
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm			ID
12	1.5	110	14	* 10	* 8	4	10.5	● 166120
14	1.5	110	14	* 12	* 9	4	12.5	● 166121
16	1.5	110	18	12	9	4	14.5	● 166122
18	1.5	125	21	14	11	4	16.5	● 196021
20	1.5	140	24	16	12	4	18.5	● 196022

* Norme DC / * DC Norm/ * Norma DC

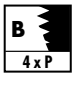
MF ISO DIN 13

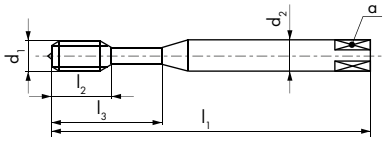
PM

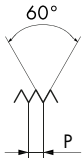




H320-4			15 16 62 64 82
H420-4			15 16 62 64 82
H320TC-4		TiCN	15 16 24 31 82 83 92 93
H420TC-4		TiCN	15 16 24 31 82 83 92 93

H320-4	H420-4	H320TC-4	H420TC-4
		 NEW	 NEW
			
			
B 4xP	B 4xP	B 4xP	B 4xP
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H



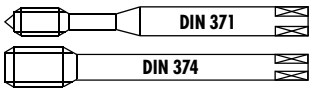


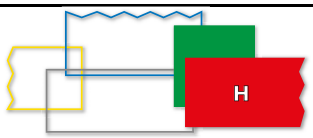
Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
6	0.75	80	17	30	6	4.9	3	5.25	● 101214		● 196035	
8	0.75	90	20	35	8	6.2	3	7.25	● 101216			
8	1	90	20	35	8	6.2	3	7	● 101217		● 196036	
10	1	100	22	39	10	8	3	9	● 101204		● 172963	
10	1.25	100	22	39	10	8	3	8.8	● 175213		● 173079	
12	1.25	100	24		9	7	4	10.8		● 101273		
12	1.5	100	24		9	7	4	10.5		● 101274		● 196037
14	1.5	100	24		11	9	4	12.5		● 101276		● 164053
16	1.5	100	26		12	9	4	14.5		● 101278		● 196038
18	1.5	110	26		14	11	4	16.5		● 101280		● 196039
20	1.5	125	28		16	12	4	18.5		● 101282		● 148362
24	2	140	34		18	14.5	4	22		● 101285		

MF ISO DIN 13

≤ Ø 25.4 > Ø 25.4

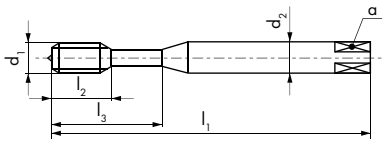
PM | HSSE

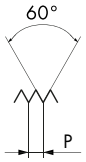




H350-3	R25		15 16 62 64 82
H450-3	R25		15 16 62 64 82
H350TC-3	R25	TiCN	15 16 24 31 82 83 92 93
H450TC-3	R25	TiCN	15 16 24 31 82 83 92 93

H350-3	H450-3	H350TC-3	H450TC-3
		 NEW	 NEW
< 1.5 x D	< 1.5 x D	< 1.5 x D	< 1.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

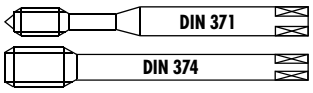


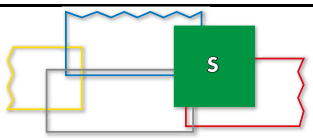


Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
6	0.75	80	11	30	6	4.9	3	5.25	• 101249		• 196033	
8	0.75	90	12.5	35	8	6.2	3	7.25	• 101252			
8	1	90	12.5	35	8	6.2	3	7	• 101253		• 150356	
10	1	100	14	39	10	8	3	9	• 101235		• 148753	
10	1.25	100	14	39	10	8	3	8.8	• 145590		• 196034	
12	1	100	14		9	7	4	11		• 101302		
12	1.5	100	14		9	7	4	10.5		• 101303		• 145561
14	1.5	100	14		11	9	4	12.5		• 101306		• 184003
16	1.5	100	14		12	9	4	14.5		• 101308		• 176013
18	1.5	110	18		14	11	4	16.5		• 101310		• 160146
20	1.5	125	20		16	12	4	18.5		• 101312		• 160147
22	1.5	125	20		18	14.5	4	20.5		• 101314		
24	1.5	140	22		18	14.5	4	22.5		• 101316		
24	2	140	22		18	14.5	4	22		• 101317		
27	2	140	22		20	16	4	25		• 101319		
30	1.5	150	24		22	18	4	28.5		• 101321		
30	2	150	24		22	18	4	28		• 101322		

MF ISO DIN 13

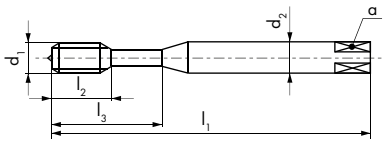
PM

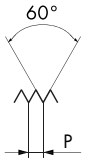




S320VS-4	VS	13 15 16 22 23 24 52	
S420VS-4	VS	13 15 16 22 23 24 52	
S360VS-3	R35 VS	13 15 16 22 23 24 52	
S460VS-3	R35 VS	13 15 16 22 23 24 52	

S320VS-4	S420VS-4	S360VS-3	S460VS-3
			
			
B 4 x P	B 4 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	6HX	6HX





Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
6	0.75	80	17	30	6	4.9	3	5.25	* 123690	
8	1	90	20	35	8	6.2	3	7	● 124288	
10	1	100	22	39	10	8	3	9	● 120059	
12	1.5	100	24		9	7	4	10.5		● 120420
14	1.5	100	24		11	9	4	12.5		● 120687
16	1.5	100	26		12	9	4	14.5		● 120877

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
8	1	90	12.5	35	8	6.2	3	7	● 111528	
10	1	100	14	39	10	8	3	9	● 111529	
12	1.5	100	14		9	7	4	10.5		● 111540
14	1.5	100	14		11	9	4	12.5		● 111541
16	1.5	100	14		12	9	4	14.5		● 111542

MF ISO DIN 13

PM

~DIN 371

aero

SA390-3

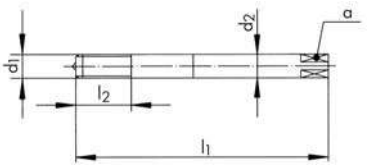
R10

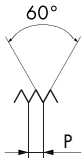
16 / 53

SA390-3			

< 1.5 x D

< 1.5 x D





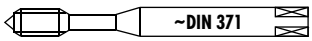
C
2.5 x P

6HX

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
10	1	100	30	10	8	3	9	* 149751
12	1	110	35	12	9	4	11	* 149769
12	1.5	110	35	12	9	4	10.5	* 149773
14	1.5	110	40	16	12	4	12.5	* 149790

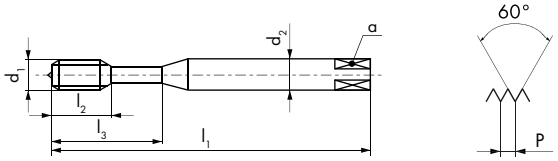
MF ISO DIN 13

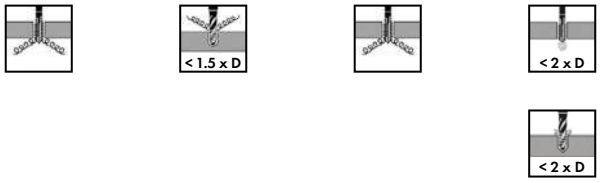
PM

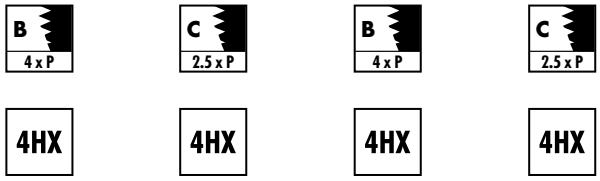


aero

SA320-4		15 16 52 64	SA320-4	SA350-3	TL320VS-4	TL351VS-3
SA350-3	R15	15 16 52 64				
TL320VS-4	VS	41 42				
TL351VS-3	R15	VS 41 42				







Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			4HX ID	4HX ID	4HX ID	4HX ID
4	0.5	63	14		4.5	3.4	3	3.5		✱ 149079		● 152033
5	0.5	70	15		6	4.9	3	4.5		● 149144		● 152049
6	0.5	80	15	23	6	4.9	3	5.5	✱ 149193		✱ 152058	● 152059
8	1	90	18	29	8	6.2	3	7	● 149304	● 149306		● 152080
10	1	100	20	33	10	8	3	9	● 149362	● 149364		● 152093

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			6HX ID	6HX ID	6HX ID	6HX ID
4	0.5	63	14		4.5	3.4	3	3.5	● 149081	● 149083		● 152035
5	0.5	70	15		6	4.9	3	4.5	● 149146	● 149148		● 152051
6	0.5	80	15	23	6	4.9	3	5.5		✱ 149199		● 152061
8	1	90	18	29	8	6.2	3	7	● 149308	● 149310		● 148019
10	1	100	20	33	10	8	3	9	● 149366	● 149368	✱ 152094	● 148026

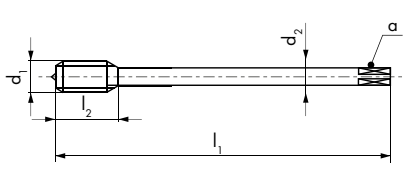
MF ISO DIN 13

PM

~DIN 374

aero

SA420-4		15 16 52 64	
SA450-3	R15	15 16 52 64	
TL420VS-4	VS	41 42	
TL451VS-3	R15	VS	41 42



	SA420-4	SA450-3	TL420VS-4	TL451VS-3
				
		< 1.5 x D		< 2 x D
				< 2 x D
	B 4 x P	C 2.5 x P	B 4 x P	C 2.5 x P
	4HX	4HX	4HX	4HX

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			SA420-4 ID	SA450-3 ID	TL420VS-4 ID	TL451VS-3 ID
12	1	100	19	9	7	4	11	* 152209		* 152218	
12	1.5	100	24	9	7	4	10.5		* 152213		
16	1.5	100	26	12	9	4	14.5		* 152216		* 152226

	SA420-4	SA450-3	TL420VS-4	TL451VS-3
	6HX	6HX	6HX	6HX

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			SA420-4 ID	SA450-3 ID	TL420VS-4 ID	TL451VS-3 ID
12	1	100	19	9	7	4	11	* 152228		* 152237	
12	1.5	100	24	9	7	4	10.5	* 152227			
14	1.5	100	24	11	9	4	12.5		* 152233	* 152238	
16	1	100	23	12	9	4	15				* 152244
16	1.5	100	26	12	9	4	14.5		* 152235		

MF ISO DIN 13

CLASSIC SYNCHRO

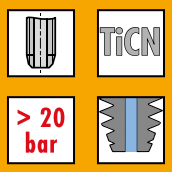
PM

DIN 371
DIN 376

K

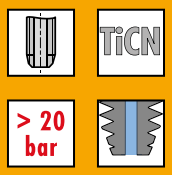
	K313TC-3	K413TC-3		
				
				
	C 2.5 x P	C 2.5 x P		
	6HX	6HX		

K313TC-3

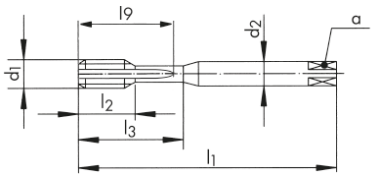


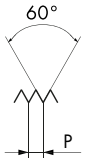
11 12 13 14 15 16 31 32 62 63 64 74 83

K413TC-3

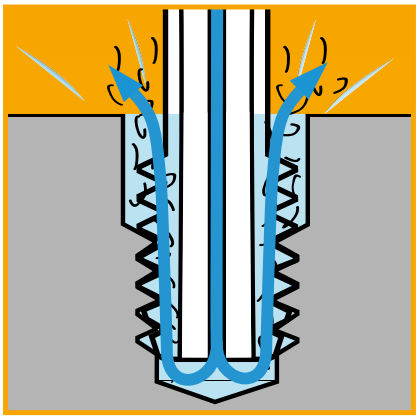


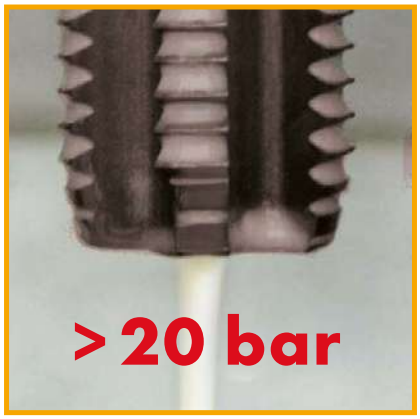
11 12 13 14 15 16 31 32 62 63 64 74 83





Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	l_9 mm	d_2 mm	a mm			ID	ID
10	1	100	22	39	37	10	8	3	9	● 175729	
10	1.25	100	22	39	37	10	8	3	8.8	● 196067	
12	1	110	24		42	9	7	3	11		● 175731
12	1.25	110	24		42	9	7	3	10.8		● 175733
12	1.5	110	24		42	9	7	3	10.5		● 175735
14	1.5	110	28		49	11	9	3	12.5		● 175737
16	1.5	110	30		56	12	9	3	14.5		● 175739
20	1.5	140	36		70	16	12	5	18.5		● 171205

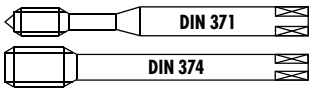




MF ISO DIN 13

CLASSIC SYNCHRO

PM

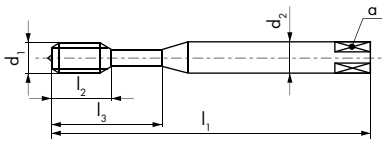


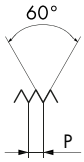
QTAP

Q320VS-4	VS		
Q420VS-4	VS		
Q323VS-4			VS
Q423VS-4			VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q320VS-4	Q420VS-4	Q323VS-4	Q423VS-4
 NEW	 NEW	 NEW	 NEW
			





Q320VS-4	Q420VS-4	Q323VS-4	Q423VS-4
B 4xP	B 4xP	B 4xP	B 4xP
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
6	0.75	80	17	30	6	4.9	3	5.25	● 197661		● 197684	
8	1	90	20	35	8	6.2	3	7	● 197662		● 197685	
10	1	100	22	39	10	8	3	9	● 197663		● 197686	
12	1	100	24		9	7	3	11		● 197664		● 197687
12	1.5	100	24		9	7	3	10.5		● 197665		● 197688
14	1.5	100	24		11	9	3	12.5		● 197666		● 197689
16	1.5	100	26		12	9	3	14.5		● 197667		● 197690
18	1.5	110	26		14	11	4	16.5		● 197668		● 197691
20	1.5	125	28		16	12	4	18.5		● 197669		● 197692

MF ISO DIN 13

CLASSIC SYNCHRO

≤ Ø 16 > Ø 16

PM HSSE

DIN 371

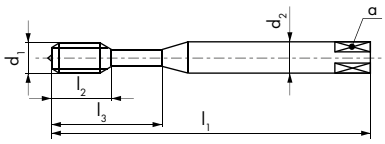
DIN 374

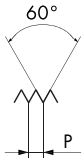
QTAP

Q360VS-3	R40	VS		
Q460VS-3	R40	VS		
Q363VS-3	R40		VS	
Q463VS-3	R40		VS	

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
			
NEW	NEW	NEW	NEW
			





Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			Q360VS-3 ID	Q460VS-3 ID	Q363VS-3 ID	Q463VS-3 ID
4	0.5	63	7.5	21	4.5	3.4	3	3.5	● 197670		● 197693	
5	0.5	70	9	25	6	4.9	3	4.5	● 197671		● 197694	
6	0.75	80	11	30	6	4.9	3	5.25	● 197672		● 197695	
8	1	90	12.5	35	8	6.2	3	7	● 197673		● 197696	
10	1	100	14	39	10	8	3	9	● 197674		● 197697	
12	1	100	14		9	7	3	11		● 197675		● 197698
12	1.5	100	14		9	7	3	10.5		● 197676		● 197699
14	1.5	100	14		11	9	3	12.5		● 197677		● 197700
16	1.5	100	14		12	9	4	14.5		● 197678		● 197701
18	1.5	110	18		14	11	4	16.5		● 197679		● 197702
20	1.5	125	20		16	12	4	18.5		● 197680		● 197703
22	1.5	125	20		18	14.5	4	20.5		● 197681		● 197704
24	1.5	140	22		18	14.5	4	22.5		● 197682		● 197705
24	2	140	22		18	14.5	4	22		● 197683		● 197706

MF ISO DIN 13

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Synchronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

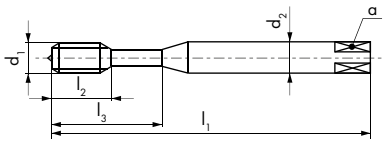
PM

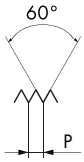
~DIN 371 (d_2 h6)

~DIN 376 (d_2 h6)

RTS
Rigid Tapping Synchro

	RTS320VS-4	RTS420VS-4	RTS362VS-3	RTS462VS-3
				
				
	VS + 11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94	VS + 11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94	R40 + VS + 11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94	R40 + VS + 11 12 13 14 / 15 21 31 32 / 51 61 63 64 / 72 73 74 81 / 82 83 91 92 / 94
	B 4 x P / 6HX	B 4 x P / 6HX	C 2.5 x P / 6HX	C 2.5 x P / 6HX





Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
8	1	90	12.5	35	8	6.2	3	7	● 150615	
10	1	100	14	39	10	8	3	9	● 150630	
12	1.5	110	14		* 10	* 8	3	10.5		● 150640
14	1.5	110	14		* 12	* 9	3	12.5		● 150655
16	1.5	110	18		12	9	3	14.5		● 150665

* Norme DC / * DC Norm/ * Norma DC

Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
8	1	90	12.5	35	8	6.2	3	7	● 150617	
10	1	100	14	39	10	8	3	9	● 150632	
12	1.5	110	14		* 10	* 8	3	10.5		● 151862
14	1.5	110	14		* 12	* 9	3	12.5		● 151869
16	1.5	110	18		12	9	3	14.5		● 151871

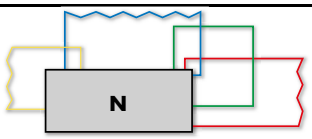
* Norme DC / * DC Norm/ * Norma DC

sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

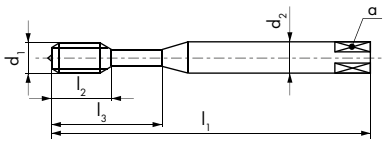
MF ISO DIN 13

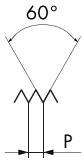
≤ Ø 2.8 > Ø 2.8

PM | HSS



	N1110-1	N1110-3	N1110-S
			
			
			
		ISO 2 6H	ISO 2 6H





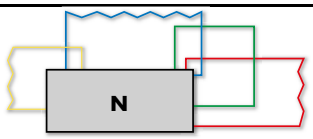
Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			N1110-1 ID	N1110-3 ID	N1110-S ID
2	0.25	45	8		2.8	2.1	3	1.75		● 102933	
2.2	0.25	45	9.5		2.8	2.1	3	1.95		● 102936	
2.5	0.35	45	9.5		2.8	2.1	3	2.15		● 102940	
3	0.35	48	11	18	3.15	2.5	3	2.65		● 102945	
3.5	0.35	50	13	20	3.55	2.8	3	3.15		● 102949	
4	0.35	53	13	21	4	3.15	3	3.65		● 102952	
4	0.5	53	13	21	4	3.15	3	3.5	● 102773	● 102953	● 111040
4.5	0.5	53	13	21	4.5	3.55	3	4		● 102958	
5	0.35	58	16	25	5	4	3	4.65		● 102960	
5	0.5	58	16	25	5	4	3	4.5	● 102778	● 102961	● 111045
5	0.75	58	16	25	5	4	3	4.25		● 102963	
5.5	0.5	62	17	26	5.6	4.5	3	5		● 102967	
6	0.5	66	19	30	6.3	5	3	5.5	● 102783	● 102969	● 111050
6	0.75	66	19	30	6.3	5	3	5.25	● 102784	● 102971	● 111051
7	0.5	66	19	30	7.1	5.6	3	6.5		● 102975	
8	0.75	72	22	35	8	6.3	3	7.25	● 102790	● 102982	● 111057
8	1	72	22	35	8	6.3	3	7	● 102791	● 102984	● 111058
9	0.5	72	22	36	9	7.1	3	8.5		● 102988	
9	0.75	72	22	36	9	7.1	3	8.25		● 102989	
9	1	72	22	36	9	7.1	3	8		● 102990	
10	0.5	80	24	39	10	8	3	9.5		● 102925	
10	1	80	24	39	10	8	3	9	● 102756	● 102928	● 111024
10	1.25	80	24	39	10	8	3	8.8	● 102758	● 102930	● 111025

P 0.25 ISO 1 4H

MF ISO DIN 13

HSS

~ISO 529



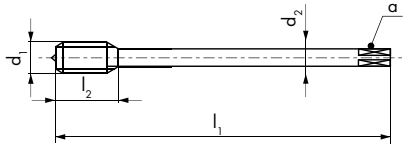
N1210-1

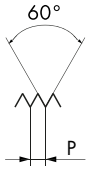
N1210-3

N1210-S

31 62 73 74 91

N1210-1	N1210-3	N1210-S
		
	< 1.5 x D	< 2.5 x D
5 x P	C 2 x P	
	ISO 2 6H	ISO 2 6H



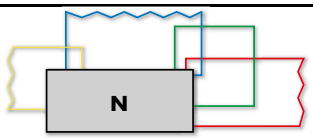


Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
11	0.5	85	22	8	6.3	3	10.5		• 103485	
11	0.75	85	22	8	6.3	3	10.25		• 103486	
11	1	85	22	8	6.3	3	10		• 103487	
11	1.25	85	22	8	6.3	3	9.8		• 103488	
12	0.5	89	24	9	7.1	3	11.5		• 103490	
12	0.75	89	24	9	7.1	3	11.25		• 103491	
12	1	89	24	9	7.1	3	11	• 103305	• 103493	• 111169
12	1.25	89	24	9	7.1	3	10.8	• 103307	• 103495	• 111171
12	1.5	89	24	9	7.1	3	10.5	• 103308	• 103497	• 111172
14	0.5	95	24	11.2	9	3	13.5		• 103502	
14	0.75	95	24	11.2	9	3	13.25		• 103503	
14	1	95	24	11.2	9	3	13	• 103312	• 103504	• 111175
14	1.25	95	24	11.2	9	3	12.8	• 103314	• 103506	• 111177
14	1.5	95	24	11.2	9	3	12.5	• 103315	• 103508	• 111178
15	0.75	90	23	11.2	9	3	14.25		• 103512	
15	1	90	23	11.2	9	3	14		• 103513	
16	0.5	102	32	12.5	10	4	15.5		• 103515	
16	0.75	102	32	12.5	10	4	15.25		• 103516	
16	1	102	32	12.5	10	4	15	• 103321	• 103517	• 111183
16	1.5	102	32	12.5	10	4	14.5	• 103322	• 103520	• 111184
17	1	95	23	12.5	10	4	16		• 103525	
18	0.75	112	30	14	11.2	4	17.25		• 103527	
18	1	112	30	14	11.2	4	17	• 103326	• 103528	• 111187
18	1.5	112	30	14	11.2	4	16.5	• 103327	• 103531	• 111188
18	2	112	30	14	11.2	3	16		• 103533	
19	1	112	33	14	11.2	4	18		• 103536	

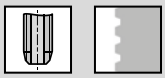
MF ISO DIN 13

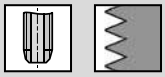
HSS

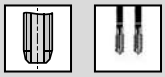
~ISO 529

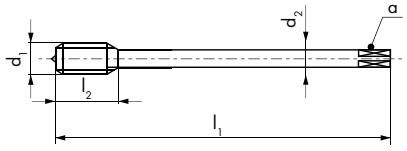


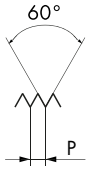
	N1210-1	N1210-3	N1210-S
			
		< 1.5 x D	< 2.5 x D
	5 x P	C 2 x P	
		ISO 2 6H	ISO 2 6H

N1210-1 

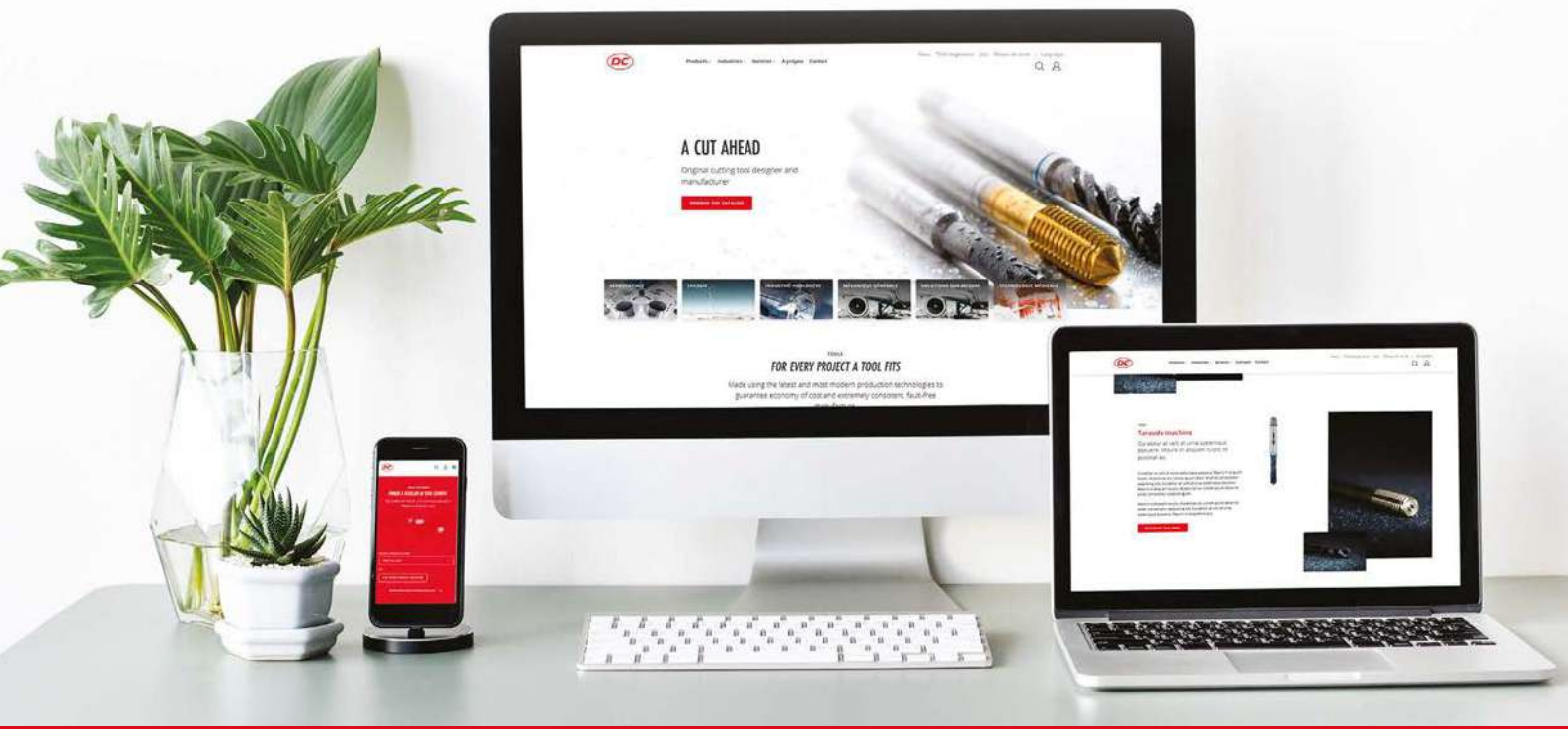
N1210-3  31 62 73 74 91

N1210-S 





Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
20	1	112	37	14	11.2	4	19	● 103332	● 103537	● 111198
20	1.25	112	37	14	11.2	4	18.8		● 103539	
20	1.5	112	37	14	11.2	4	18.5	● 103334	● 103540	● 111195
22	1	115	32	16	12.5	4	21		● 103545	
22	1.5	115	32	16	12.5	4	20.5	● 103340	● 103546	● 121669
22	2	115	32	16	12.5	3	20		● 103548	
24	1	120	30	18	14	4	23		● 103552	
24	1.5	120	30	18	14	4	22.5	● 103343	● 103553	● 111202
24	2	130	45	18	14	4	22	● 103344	● 103555	● 111203
25	1	120	30	18	14	4	24		● 103559	
25	1.5	120	30	18	14	4	23.5		● 103560	
25	2	120	30	18	14	4	23		● 103561	
26	1	120	30	18	14	4	25		● 103562	
26	1.5	120	30	18	14	4	24.5	● 103346	● 103563	● 111207
26	2	120	30	18	14	4	24		● 103564	
27	1	127	30	20	16	4	26		● 103565	
27	1.5	127	30	20	16	4	25.5		● 103566	
27	2	135	45	20	16	4	25	✱ 103351	✱ 103567	✱ 111210
28	1	127	30	20	16	4	27		● 103570	
28	1.5	127	30	20	16	4	26.5		● 103571	
30	1.5	127	32	20	16	4	28.5	● 103355	● 103575	● 111214
30	2	127	32	20	16	4	28	● 103356	● 103577	● 111215



NUEVO SITIO WEB

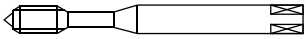
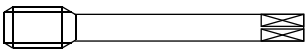
EN CONSTRUCCIÓN — SE PUBLICARÁ EN EL VERANO DE 2021.

NEW WEBSITE

UNDER CONSTRUCTION — RELEASED IN SUMMER 2021.

UNC

Directorio — Machos para roscar a máquina ASME B1.1
Directory — Machine taps ASME B1.1

		N						
Características **Characteristics**				V	TiN	R40	R40 V	R40 TiN
					 NEW			 NEW
Tipo de agujero **Hole type**								
		**N310-3**	**N320-3 N320-4**	**N320V-4**	**N320TN-4**	**N360-3**	**N360V-3**	**N360TN-3**
DIN largo **DIN long**	**DIN 371**	154	154	154	154	156	156	156
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**UNC 2B**	154	154	154	154	156	156	156
Tolerancia **Tolerance**	**UNC 3B**							
Tolerancia **Tolerance**	**UNC(J) 3B**		154			156		
		**N410-3**	**N420-4**	**N420V-4**	**N420TN-4**	**N460-3**	**N460V-3**	**N460TN-3**
DIN largo **DIN long**	**DIN 376**	155	155	155	155	157	157	157
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**UNC 2B**	155	155	155	155	157	157	157
Tolerancia **Tolerance**	**UNC 3B**							
Tolerancia **Tolerance**	**UNC(J) 3B**							

UNC

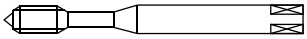
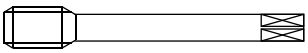
Directorio — Machos para roscar a máquina y a mano ASME B1.1

Directory — Machine and hand taps ASME B1.1

N	Z				H			
	V	VS	R40 V	R45 VS		TiCN	R25	R25 TiCN
						NEW		NEW
N1110 -1 -2 -3 -S	**Z320V-3 Z320V-4**	**Z320VS-4**	**Z360V-3 Z362V-3**	**Z370VS-3**	**H320-4**	**H320TC-4**	**H350-3**	**H350TC-3**
	158	158	159	160	161	161	162	162
170								
170	158	158	159	160	161	161	162	162
				160				
N1210 -1 -2 -3 -S	**Z420V-4**	**Z420VS-4**	**Z462V-3**	**Z470VS-3**	**H420-4**	**H420TC-4**	**H450-3**	**H450TC-3**
	158	158	159	160	161	161	162	162
171								
171	158	158	159	160	161	161	162	162

UNC

Directorio — Machos para roscar a máquina ASME B1.1
Directory — Machine taps ASME B1.1

		S		SA			TL	
Características **Characteristics**		VS	R35 VS		R15	R10	VS	R15 VS
								
Tipo de agujero **Hole type**								
		**S320VS-4**	**S360VS-3**	**SA320-4**	**SA350-3**	**SA390-3**	**TL320VS-4**	**TL351VS-3**
DIN largo **DIN long**	**DIN 371**	163	164	165	165	166	165	165
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**UNC 2B**	163	164	165	165		165	165
Tolerancia **Tolerance**	**UNC 3B**							
Tolerancia **Tolerance**	**UNC(J) 3B**	163		165	165	166	165	165
		**S420VS-4**	**S460VS-3**	**SA420-4**	**SA450-3**			
DIN largo **DIN long**	**DIN 376**	163	164	166	166			
ISO corto **ISO short**	**ISO 529**							
Tolerancia **Tolerance**	**UNC 2B**	163	164	166	166			
Tolerancia **Tolerance**	**UNC 3B**							
Tolerancia **Tolerance**	**UNC(J) 3B**							

UNC

Directorio — Machos para roscar a máquina ASME B1.1

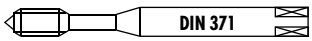
Directory — Machine taps ASME B1.1

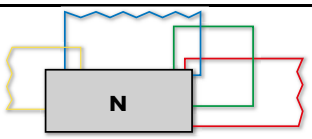
Q				RTS	
VS	VS	R40 VS	R40 VS	VS	R40 VS
 NEW	 NEW	 NEW	 NEW		
					
Q320VS-4	**Q323VS-4**	**Q360VS-3**	**Q363VS-3**	**RTS320VS-4**	**RTS362VS-3**
167	167	168	168	169	169
167	167	168	168	169	169
Q420VS-4	**Q423VS-4**	**Q460VS-3**	**Q463VS-3**	**RTS420VS-4**	**RTS462VS-3**
167	167	168	168	169	169
167	167	168	168	169	169

UNC ASME B1.1

≤ Ø 2.8 > Ø 2.8

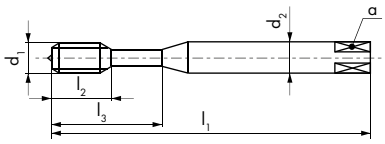
PM | HSSE

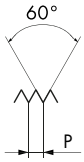




N310-3			31 62 73 74 91
N320-4			62 63 64 72 73 74 81 91
N320V-4		V	11 12 31 32
N320TN-4		TiN	11 12 13 14 32

N310-3	N320-4	N320V-4	N320TN-4
			 NEW
 < 1.5 x D			





										N310-3	N320-4	N320V-4	N320TN-4
Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm						
										C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
										2B	2B	2B	2B
										ID	ID	ID	ID
* 2	56	2.18	45	9		2.8	2.1	2	1.75		● 101469	● 143690	
* 3	48	2.51	50	10		2.8	2.1	2	2		● 101470		
4	40	2.84	56	12	18	3.5	2.7	3	2.25	● 101450	● 101511	● 142738	
5	40	3.17	56	12	18	3.5	2.7	3	2.55		● 101512		
6	32	3.5	56	13	20	4	3	3	2.75	● 101451	● 101514	● 144402	● 196003
8	32	4.16	63	14	21	4.5	3.4	3	3.4	● 101452	● 101515	● 142739	● 196004
10	24	4.82	70	15	25	6	4.9	3	3.8	● 101449	● 101508	● 142740	● 196005
12	24	5.48	80	17	30	6	4.9	3	4.4		● 101509		
1/4	20	6.35	80	17	30	7	5.5	3	5.1	● 101448	● 101507	● 142741	● 196006

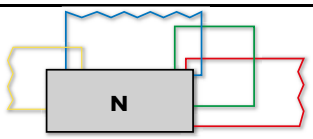
										N320-4
										3B UNC(J)
Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		UNJC	ID
4	40	2.84	56	12	18	3.5	2.7	3	2.3	● 145656
6	32	3.5	56	13	20	4	3	3	2.8	● 155317
8	32	4.16	63	14	21	4.5	3.4	3	3.45	● 155319

*N320-3 / N320V-3 2.5 x P

UNC ASME B1.1

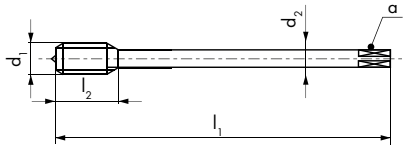
HSSE

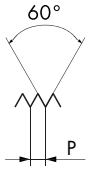
DIN 376



N410-3			31 62 73 74 91
N420-4			62 63 64 72 73 74 81 91
N420V-4		V	11 12 31 32
N420TN-4		TiN	11 12 13 14 32

N410-3	N420-4	N420V-4	N420TN-4
			 NEW
 < 1.5 x D			
C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
2B	2B	2B	2B



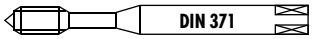


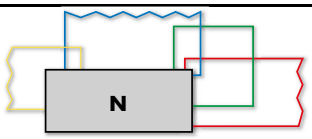
Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
5/16	18	7.93	90	20	6	4.9	3	6.5	• 101997	• 102213	• 142742	• 196007
3/8	16	9.52	100	22	7	5.5	3	8	• 101996	• 102212	• 142743	• 158317
7/16	14	11.11	100	19	8	6.2	3	9.3		• 102215	• 142744	• 196008
1/2	13	12.7	110	24	9	7	3	10.8	• 101993	• 102208	• 142745	• 143827
9/16	12	14.28	110	28	11	9	3	12.2		• 102217		
5/8	11	15.87	110	30	12	9	3	13.6	• 101998	• 102214	• 142746	• 146391
3/4	10	19.05	125	33	14	11	3	16.6	• 101995	• 102211	• 142747	• 146054
7/8	9	22.22	140	36	18	14.5	3	19.5		• 102216	• 142748	
1	8	25.4	160	39	18	14.5	4	22.3	• 101994	• 102209	• 142749	
1 1/8	7	28.57	180	45	22	18	4	25		• 102205		
1 1/4	7	31.75	180	45	22	18	4	28.2		• 102204		
1 1/2	6	38.1	200	55	32	24	4	34		• 102203		
1 3/4	5	44.45	220	59	36	29	4	39.5	* 101992	• 102206		
2	4.5	50.8	250	67	40	32	4	45.3		• 102210		

UNC ASME B1.1

≤ Ø 2.8 > Ø 2.8

PM | HSSE





	N360-3	N360V-3	N360TN-3	N360-3
				
			NEW	
				
				
				
	2B	2B	2B	3B UNC(J)

										ID	ID	ID	ID
Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm						
2	56	2.18	45	8		2.8	2.1	2	1.75	● 101673	● 148887		
3	48	2.51	50	9		2.8	2.1	2	2	● 101674			
4	40	2.84	56	5.5	18	3.5	2.7	3	[1] 2.25	● 101676	● 101725		● 155316
5	40	3.17	56	5.5	18	3.5	2.7	3	2.55	● 101677			
6	32	3.5	56	6.5	20	4	3	3	[2] 2.75	● 101679	● 101727	● 195998	● 155318
8	32	4.16	63	7.5	21	4.5	3.4	3	[3] 3.4	● 101680	● 101728	● 150558	● 155320
10	24	4.82	70	9	25	6	4.9	3	3.8	● 101671	● 101723	● 195999	
12	24	5.48	80	11	30	6	4.9	3	4.4	● 101672			
1/4	20	6.35	80	11	30	7	5.5	3	5.1	● 101670	● 101722	● 196000	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 101678	● 101726	● 196001	
3/8	16	9.52	100	14	39	10	8	3	8	● 101675	● 101724	● 164171	

UNJC

[1] 2.3

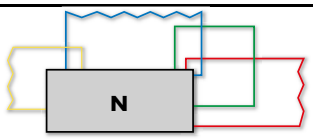
[2] 2.8

[3] 3.45

UNC ASME B1.1

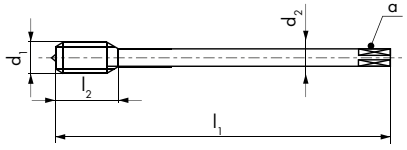
HSSE

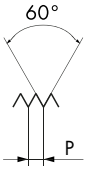
DIN 376



N460-3	R40		63 72 73 74 81 91
N460V-3	R40	V	11 12 32
N460TN-3	R40	TiN	11 12 13 14 32

N460-3	N460V-3	N460TN-3
		 NEW
< 2.5 x D	< 2.5 x D	< 2.5 x D



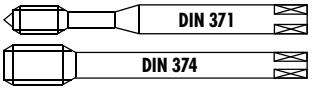


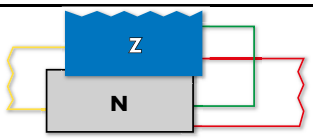
C 2.5 x P	C 2.5 x P	C 2.5 x P
2B	2B	2B

Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
7/16	14	11.11	100	14	8	6.2	3	9.3	• 102424	• 105135	• 196002
1/2	13	12.7	110	14	9	7	3	10.8	• 102420	• 102497	• 157376
9/16	12	14.28	110	14	11	9	3	12.2	• 102426	• 102502	
5/8	11	15.87	110	18	12	9	3	13.6	• 102423	• 102500	• 128252
3/4	10	19.05	125	21	14	11	3	16.6	• 102422	• 102499	• 143519
7/8	9	22.22	140	24	18	14.5	4	19.5	• 102425	• 102501	
1	8	25.4	160	27	18	14.5	4	22.3	• 102421	• 102498	
1 1/8	7	28.57	180	30	22	18	4	25	• 102418	• 102495	
1 1/4	7	31.75	180	30	22	18	4	28.2	• 102417	• 102494	
1 1/2	6	38.1	200	40	32	24	5	34	• 102416	• 102493	
1 3/4	5	44.45	220	44	36	29	5	39.5		• 128062	
2	4.5	50.8	250	52	40	32	5	45.3		• 128084	

UNC ASME B1.1

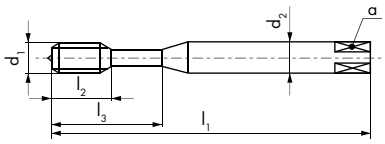
PM

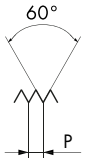




Z320V-4	V	11 12 13 21 32
Z320VS-4	VS	11 12 13 14 21 22 23 32 61 63 94
Z420V-4	V	11 12 13 21 32
Z420VS-4	VS	11 12 13 14 21 22 23 32 61 63 94

Z320V-4	Z320VS-4	Z420V-4	Z420VS-4
			
			





B 4 x P	B 4 x P	B 4 x P	B 4 x P
2B	2B	2B	2B

Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
* 2	56	2.18	45	9		2.8	2.1	2	1.75	● 142750			
4	40	2.84	56	12	18	3.5	2.7	3	2.25	● 142751			
6	32	3.5	56	13	20	4	3	3	2.75	● 142752	● 111560		
8	32	4.16	63	14	21	4.5	3.4	3	3.4	● 142753	● 111561		
10	24	4.82	70	15	25	6	4.9	3	3.8	● 142754	● 111562		
1/4	20	6.35	80	17	30	7	5.5	3	5.1	● 142755	● 111563		
5/16	18	7.93	90	20	35	8	6.2	3	6.5	● 142756	● 111564		
3/8	16	9.52	100	22	39	10	8	3	8	● 142757	● 111565		
7/16	14	11.11	100	19		8	6.2	3	9.3				● 196028
1/2	13	12.7	110	24		9	7	3	10.8			● 142758	● 111566
5/8	11	15.87	110	30		12	9	3	13.6			● 142759	● 111567
3/4	10	19.05	125	33		14	11	4	16.6			● 142760	● 111568
7/8	9	22.22	140	36		18	14.5	4	19.5			● 142761	
1	8	25.4	160	39		18	14.5	4	22.3			● 142762	

*Z320V-3 2.5 x P

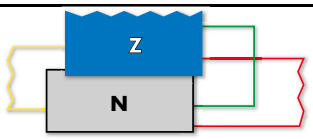
UNC ASME B1.1

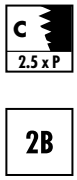
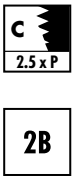
≤ Ø 2.8 > Ø 2.8

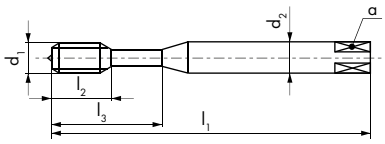
PM | HSSE

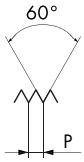
DIN 371

DIN 376



	Z362V-3	Z462V-3		
				
				
				





Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
* 2	56	2.18	45	8		2.8	2.1	2	1.75	● 104695	
* 4	40	2.84	56	5.5	18	3.5	2.7	3	2.25	● 104697	
6	32	3.5	56	6.5	20	4	3	3	2.75	● 104699	
8	32	4.16	63	7.5	21	4.5	3.4	3	3.4	● 104700	
10	24	4.82	70	9	25	6	4.9	3	3.8	● 104694	
1/4	20	6.35	80	11	30	7	5.5	3	5.1	● 104693	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 104698	
3/8	16	9.52	100	14	39	10	8	3	8	● 104696	
7/16	14	11.11	100	14		8	6.2	3	9.3		● 104757
1/2	13	12.7	110	14		9	7	3	10.8		● 104753
5/8	11	15.87	110	18		12	9	3	13.6		● 104756
3/4	10	19.05	125	21		14	11	3	16.6		● 104755
7/8	9	22.22	140	24		18	14.5	3	19.5		● 104758
1	8	25.4	160	27		18	14.5	4	22.3		● 104754

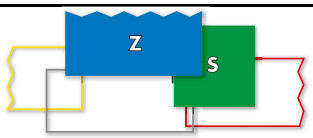
*Z360V-3

UNC ASME B1.1

PM

~DIN 371 (d_2 h6)

~DIN 376 (d_2 h6)



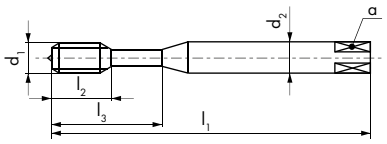
	Z370VS-3	Z470VS-3		
				
				
				
				

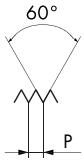
Z370VS-3 — R45 — VS — CLASSIC — 14 15 21 22 23 24 51 61 94

Z470VS-3 — R45 — VS — CLASSIC — 14 15 21 22 23 24 51 61 94

Z370VS-3 — R45 — VS — SYNCHRO — 13 14 15 21 22 23 24 51 52

Z470VS-3 — R45 — VS — SYNCHRO — 13 14 15 21 22 23 24 51 52





< 3 x D

C 2.5 x P

2BX

Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.75	● 166123	
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.4	● 166124	
10	24	4.82	70	9	25	6	4.9	3	3.8	● 166125	
1/4	20	6.35	80	11	30	* 6	* 4.9	3	5.1	● 166126	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 166127	
3/8	16	9.52	100	14	39	10	8	3	8	● 166128	
7/16	14	11.11	100	14		8	6.2	3	9.3		● 166129
1/2	13	12.7	110	14		* 10	* 8	4	10.8		● 166130
5/8	11	15.87	110	18		12	9	4	13.6		● 166131
3/4	10	19.05	125	21		14	11	4	16.6		● 166132
1	8	25.4	160	27		16	12	4	22.3		● 175703

* Norme DC / * DC Norm/ * Norma DC

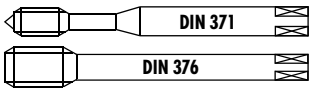
3B UNC(J)

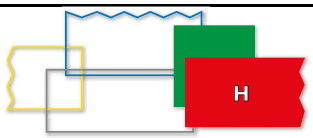
Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		UNJC	ID
4	40	2.84	56	5.5	18	3.5(h9)	2.7	3	2.3	● 165114
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.8	● 165115
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.45	● 165116
1/4	20	6.35	80	11	30	* 6	* 4.9	3	5.2	● 165117
5/16	18	7.93	90	12.5	35	8	6.2	3	6.7	● 165118

* Norme DC / * DC Norm/ * Norma DC

UNC ASME B1.1

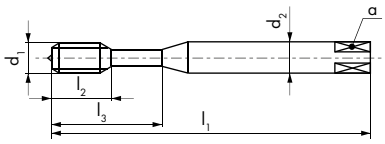
PM

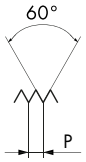




H320-4			15 16 62 64 82
H420-4			15 16 62 64 82
H320TC-4		TiCN	15 16 24 31 82 83 92 93
H420TC-4		TiCN	15 16 24 31 82 83 92 93

H320-4	H420-4	H320TC-4	H420TC-4
		 NEW	 NEW
			
B 4xP	B 4xP	B 4xP	B 4xP
2B	2B	2B	2B

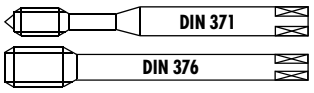


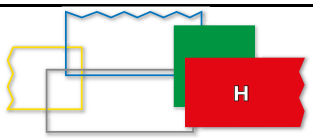


Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	56	2.18	45	8		2.8	2.1	2	1.75	● 101221			
4	40	2.84	56	10	18	3.5	2.7	3	2.25	● 101223			
6	32	3.5	56	13	20	4	3	3	2.75	● 101225		● 196046	
8	32	4.16	63	14	21	4.5	3.4	3	3.4	● 101226		● 196047	
10	24	4.82	70	15	25	6	4.9	3	3.8	● 101220		● 196048	
1/4	20	6.35	80	17	30	7	5.5	3	5.1	● 101219		● 196049	
5/16	18	7.93	90	20	35	8	6.2	3	6.5	● 101224		● 143730	
3/8	16	9.52	100	22	39	10	8	3	8	● 101222		● 196050	
7/16	14	11.11	100	19		8	6.2	3	9.3		● 196051		● 196052
1/2	13	12.7	110	24		9	7	4	10.8		● 101290		● 143731
5/8	11	15.87	110	30		12	9	4	13.6		● 163741		● 196053
3/4	10	19.05	125	33		14	11	4	16.6		● 163743		● 196054

UNC ASME B1.1

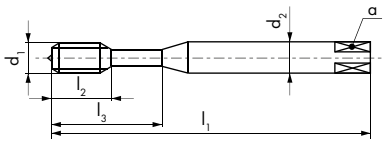
PM

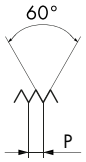




H350-3	R25		15 16 62 64 82	
H450-3	R25		15 16 62 64 82	
H350TC-3	R25	TiCN	15 16 24 31 82 83 92 93	
H450TC-3	R25	TiCN	15 16 24 31 82 83 92 93	

H350-3	H450-3	H350TC-3	H450TC-3
		 NEW	 NEW
 < 1.5 x D	 < 1.5 x D	 < 1.5 x D	 < 1.5 x D
 C 2.5 x P	 C 2.5 x P	 C 2.5 x P	 C 2.5 x P
2B	2B	2B	2B

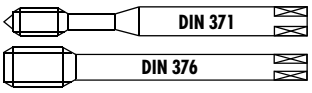


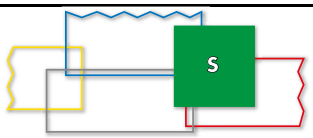


Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	56	2.18	45	8		2.8	2.1	2	1.75	● 101258			
4	40	2.84	56	5.5	18	3.5	2.7	3	2.25	● 101260			
6	32	3.5	56	6.5	20	4	3	3	2.75	● 101262		● 196040	
8	32	4.16	63	7.5	21	4.5	3.4	3	3.4	● 101263		● 196041	
10	24	4.82	70	9	25	6	4.9	3	3.8	● 101257		● 196042	
1/4	20	6.35	80	11	30	7	5.5	3	5.1	● 101256		● 160585	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 101261		● 160587	
3/8	16	9.52	100	14	39	10	8	3	8	● 101259		● 162106	
7/16	14	11.11	100	14		8	6.2	3	9.3		● 101330		● 196043
1/2	13	12.7	110	14		9	7	4	10.8		● 101326		● 160586
5/8	11	15.87	110	18		12	9	4	13.6		● 101329		● 196044
3/4	10	19.05	125	21		14	11	4	16.6		● 101328		● 196045
1	8	25.4	160	27		18	14.5	4	22.3		● 101327		

UNC ASME B1.1

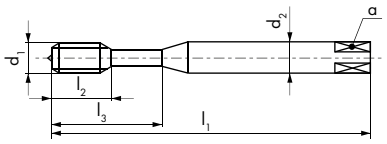
PM

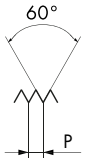




S320VS-4	VS	13 15 16 22 23 24 52	
S420VS-4	VS	13 15 16 22 23 24 52	

S320VS-4	S420VS-4		
			
			





B 4xP	B 4xP		
2B	2B		

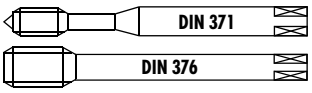
Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
6	32	3.5	56	13	20	4	3	3	2.75	● 111587	
8	32	4.16	63	14	21	4.5	3.4	3	3.4	● 111588	
1/4	20	6.35	80	17	30	7	5.5	3	5.1	● 111590	
5/16	18	7.93	90	20	35	8	6.2	3	6.5	● 111591	
3/8	16	9.52	100	22	39	10	8	3	8	● 111592	
1/2	13	12.7	110	24		9	7	4	10.8		● 111593
5/8	11	15.87	110	30		12	9	4	13.6		● 111594
3/4	10	19.05	125	33		14	11	4	16.6		● 111595

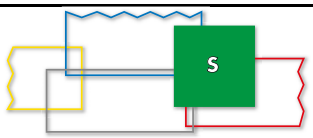
3B UNC(J)

Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
4	40	2.84	56	12	18	3.5	2.7	3	2.3	● 165314
6	32	3.5	56	13	20	4	3	3	2.8	● 165315
8	32	4.16	63	14	21	4.5	3.4	3	3.45	● 165316
1/4	20	6.35	80	17	30	7	5.5	3	5.2	● 165317
5/16	18	7.93	90	20	35	8	6.2	3	6.7	✱ 143761

UNC ASME B1.1

PM

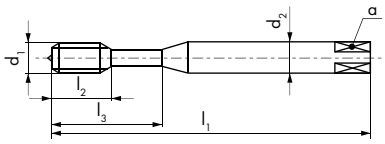


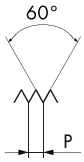


	S360VS-3	S460VS-3		
				
	<2 x D	<2 x D		
	C 2.5 x P	C 2.5 x P		
	2B	2B		

S360VS-3 — R35 — VS — 13 15 16 22 23 24 52

S460VS-3 — R35 — VS — 13 15 16 22 23 24 52





Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
6	32	3.5	56	6.5	20	4	3	3	2.75	● 111530	
8	32	4.16	63	7.5	21	4.5	3.4	3	3.4	● 111531	
1/4	20	6.35	80	11	30	7	5.5	3	5.1	● 111533	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 111534	
3/8	16	9.52	100	14	39	10	8	3	8	● 111535	
1/2	13	12.7	110	14		9	7	4	10.8		● 111537

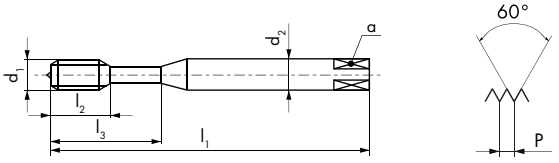
UNC ASME B1.1

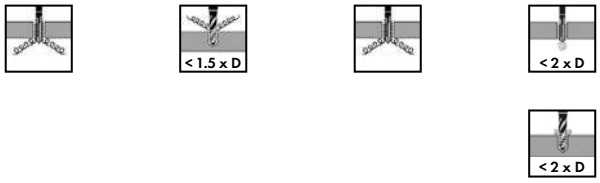
PM

DIN 371

aero

SA320-4		15 16 52 64	
SA350-3	R15	15 16 52 64	
TL320VS-4	VS	41 42	
TL351VS-3	R15	VS	41 42





	SA320-4	SA350-3	TL320VS-4	TL351VS-3
	B 4 x P	C 2.5 x P	B 4 x P	C 2.5 x P
	2B	2B	2B	2B
Ø" d1 UNC / P TPI / d1 mm / l1 mm / l2 mm / l3 mm / d2 mm / a mm /	ID	ID	ID	ID
4 / 40 / 2.84 / 56 / 12 / / 3.5 / 2.7 / 3 / 2.25	• 147271	• 149003		• 152018
5 / 40 / 3.17 / 56 / 12 / / 3.5 / 2.7 / 3 / 2.55			* 152023	* 152024
6 / 32 / 3.5 / 56 / 13 / / 4 / 3 / 3 / 2.75	• 149055	• 149057	* 152027	• 152028
8 / 32 / 4.16 / 63 / 14 / / 4.5 / 3.4 / 3 / 3.4	• 149093	• 149095		• 152037
10 / 24 / 4.82 / 70 / 15 / / 6 / 4.9 / 3 / 3.8	• 149125	* 149127		
1/4 / 20 / 6.35 / 80 / 15 / 23 / 7 / 5.5 / 3 / 5.1	• 149222	• 149224		• 127972
5/16 / 18 / 7.93 / 90 / 18 / 29 / 8 / 6.2 / 3 / 6.5	• 149269	• 149271		• 152068
3/8 / 16 / 9.52 / 100 / 20 / 33 / 10 / 8 / 3 / 8	• 149346	• 149348	* 152084	• 152085

	SA320-4	SA350-3	TL320VS-4	TL351VS-3
	3B UNC(J)	3B UNC(J)	3B UNC(J)	3B UNC(J)
Ø" d1 UNC / P TPI / d1 mm / l1 mm / l2 mm / l3 mm / d2 mm / a mm /	ID	ID	ID	ID
4 / 40 / 2.84 / 56 / 12 / / 3.5 / 2.7 / 3 / 2.3	• 149005	• 149007	* 148804	• 150194
6 / 32 / 3.5 / 56 / 13 / / 4 / 3 / 3 / 2.8	• 149059	• 149061	* 152029	• 150210
8 / 32 / 4.16 / 63 / 14 / / 4.5 / 3.4 / 3 / 3.45	• 149097	• 149099		• 152039
10 / 24 / 4.82 / 70 / 15 / / 6 / 4.9 / 3 / 3.9				* 152045
1/4 / 20 / 6.35 / 80 / 15 / 23 / 7 / 5.5 / 3 / 5.2	• 149226	• 149228	* 152063	• 152064
5/16 / 18 / 7.93 / 90 / 18 / 29 / 8 / 6.2 / 3 / 6.7	• 149273	• 149275	* 152069	• 152070
3/8 / 16 / 9.52 / 100 / 20 / 33 / 10 / 8 / 3 / 8.1	• 149350	• 149352		• 152087

UNC ASME B1.1

PM

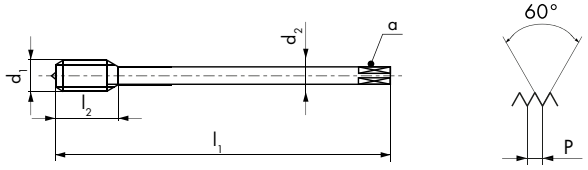
~ DIN 371

DIN 376

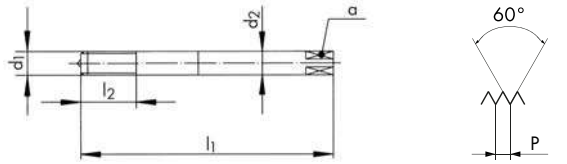
aero

SA420-4		15 16 52 64
SA450-3	R15	15 16 52 64
SA390-3	R10	16 53

SA420-4	SA450-3		SA390-3
			
	< 1.5 x D		< 1.5 x D
			< 1.5 x D
B 4 x P	C 2.5 x P		C 2.5 x P
2B	2B		



Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
1/2	13	12.7	110	24	9	7	4	10.8	● 152247	● 152252
5/8	11	15.87	110	30	12	9	4	13.6	● 152249	● 152254



3B UNC(J)

Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		UNJC	ID
4	40	2.84	56	12	3.5	2.7	3	2.3	● 149652
6	32	3.5	56	13	4	3	3	2.8	● 149666
8	32	4.16	63	14	4.5	3.4	3	3.45	● 149677
10	24	4.82	70	15	6	4.9	3	3.9	● 149685
1/4	20	6.35	80	20	7	5.5	3	5.2	● 149713
5/16	18	7.93	90	25	8	6.2	3	6.7	● 149726
3/8	16	9.52	100	30	10	8	3	8.1	● 149747

UNC ASME B1.1

CLASSIC SYNCHRO

PM

DIN 371

DIN 376

QTAP

Q320VS-4 VS

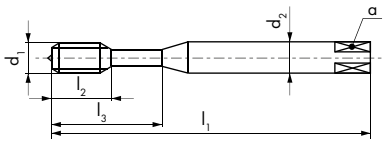
Q420VS-4 VS

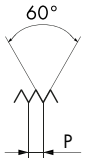
Q323VS-4 VS

Q423VS-4 VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q320VS-4	Q420VS-4	Q323VS-4	Q423VS-4
 NEW	 NEW	 NEW	 NEW
			
B 4xP	B 4xP	B 4xP	B 4xP
2B	2B	2B	2B





Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
6	32	3.5	56	13	20	4	3	3	2.75	● 196275		● 196320	
8	32	4.16	63	14	21	4.5	3.4	3	3.4	● 196276		● 196321	
10	24	4.82	70	15	25	6	4.9	3	3.8	● 196277		● 196322	
1/4	20	6.35	80	17	30	7	5.5	3	5.1	● 196278		● 196323	
5/16	18	7.93	90	20	35	8	6.2	3	6.5	● 196279		● 196324	
3/8	16	9.52	100	22	39	10	8	3	8	● 196280		● 196325	
1/2	13	12.7	110	24		9	7	3	10.8		● 196281		● 196326
5/8	11	15.87	110	30		12	9	3	13.6		● 196282		● 196327
3/4	10	19.05	125	33		14	11	4	16.6		● 196283		● 196328
7/8	9	22.22	140	36		18	14.5	4	19.5		● 196284		● 196329
1	8	25.4	160	39		18	14.5	4	22.3		● 196285		● 196330

UNC ASME B1.1

CLASSIC SYNCHRO

≤ Ø 16 > Ø 16

PM HSSE

DIN 371

DIN 376

QTAP

Q360VS-3 R40 VS

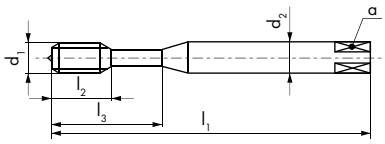
Q460VS-3 R40 VS

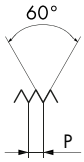
Q363VS-3 R40 VS

Q463VS-3 R40 VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
			
NEW	NEW	NEW	NEW
			
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
2B	2B	2B	2B





Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
6	32	3.5	56	6.5	20	4	3	3	2.75	● 196286		● 196331	
8	32	4.16	63	7.5	21	4.5	3.4	3	3.4	● 196287		● 196332	
10	24	4.82	70	9	25	6	4.9	3	3.8	● 196288		● 196333	
1/4	20	6.35	80	11	30	7	5.5	3	5.1	● 196289		● 197622	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 196290		● 197623	
3/8	16	9.52	100	14	39	10	8	3	8	● 196291		● 197624	
7/16	14	11.11	100	14		8	6.2	3	9.3		● 196292		● 197625
1/2	13	12.7	110	14		9	7	3	10.8		● 196293		● 197626
5/8	11	15.87	110	18		12	9	3	13.6		● 196294		● 197627
3/4	10	19.05	125	21		14	11	3	16.6		● 196295		● 197628
7/8	9	22.22	140	24		18	14.5	3	19.5		● 196296		● 197629
1	8	25.4	160	27		18	14.5	4	22.3		● 196297		● 197630

UNC ASME B1.1

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Synchronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

PM

~DIN 371 (d_2 h6)

~DIN 376 (d_2 h6)

RTS
Rigid Tapping Synchro

	RTS320VS-4	RTS420VS-4	RTS362VS-3	RTS462VS-3
				
				
				
	2BX	2BX	2BX	2BX

RTS320VS-4  VS

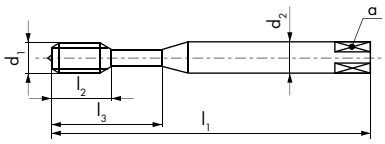
RTS420VS-4  VS

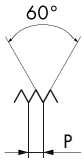
RTS362VS-3   VS

RTS462VS-3   VS

11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94

11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94





Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID	ID	ID
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.75	● 157395		● 157402	
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.4	● 157396		● 157403	
10	24	4.82	70	9	25	6	4.9	3	3.8	● 157397		● 157404	
1/4	20	6.35	80	11	30	* 6	* 4.9	3	5.1	● 157398		● 157405	
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5	● 157399		● 157406	
3/8	16	9.52	100	14	39	10	8	3	8	● 157400		● 157407	
1/2	13	12.7	110	14		* 10	* 8	3	10.8		● 157401		● 157408

* Norme DC / * DC Norm/ * Norma DC

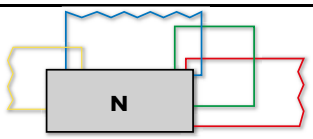
sur demande
auf Anfrage
on request
su richiesta
sobre pedido
по запросу

UNC ASME B1.1

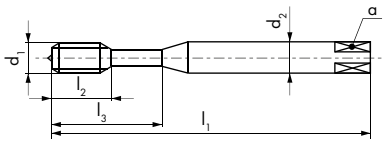
≤ Ø 2.8 > Ø 2.8

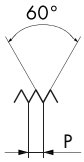
PM | HSS

~ISO 529



	N1110-1	N1110-2	N1110-3	N1110-S
				
				
				
			2B	2B



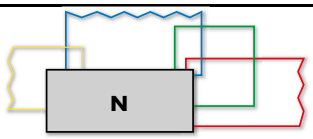


Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	56	2.18	45	9.5		2.8	2.1	3	1.75	● 102799	● 102885	● 102998	● 111067
3	48	2.51	45	9.5		2.8	2.1	3	2	✱ 102800	✱ 102886	✱ 102999	✱ 111068
4	40	2.84	48	11	18	3.15	2.5	3	2.25	● 102802	● 102888	● 103001	● 111070
5	40	3.17	48	11	18	3.15	2.5	3	2.55			● 103002	
6	32	3.5	50	13	20	3.55	2.8	3	2.75	● 102805	● 102891	● 103004	● 111073
8	32	4.16	53	13	21	4.5	3.55	3	3.4	● 102806	● 102892	● 103005	● 111074
10	24	4.82	58	16	25	5	4	3	3.8	● 102797	● 102883	● 102996	● 111065
1/4	20	6.35	66	19	30	6.3	5	3	5.1	● 102796	● 102882	● 102995	● 111064
5/16	18	7.93	72	22	35	8	6.3	3	6.5	● 102804	● 102890	● 103003	● 111072
3/8	16	9.52	80	24	39	10	8	3	8	● 102801	● 102887	● 103000	● 111069

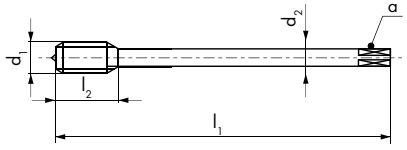
UNC ASME B1.1

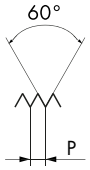
HSS

~ISO 529



	N1210-1	N1210-2	N1210-3	N1210-S
				
				
				
			2B	2B
ID	● 103392	● 103466	● 103606	● 111236
ID	● 103387	● 103461	● 103601	● 111229
ID	● 103391	● 103465	● 103605	● 111235
ID	● 103390	● 103464	● 103604	● 111234
ID	● 103388	● 103462	● 103602	● 111230

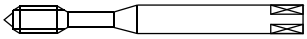
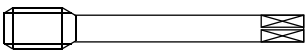




Ø" d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
7/16	14	11.11	85	22	8	6.3	3	9.3
1/2	13	12.7	89	24	9	7.1	3	10.8
5/8	11	15.87	102	32	12.5	10	3	13.6
3/4	10	19.05	112	33	14	11.2	3	16.6
1	8	25.4	130	45	18	14	4	22.3

UNF, UNEF
UNS, UN

Directorio — Machos para roscar a máquina ASME B1.1
Directory — Machine taps ASME B1.1

	N						
Características **Characteristics**			V	TiN	R40	R40 V	R40 TiN
				 NEW			 NEW
Tipo de agujero **Hole type**							
	**N310-3**	**N320-3 N320-4**	**N320V-4**	**N320TN-4**	**N360-3**	**N360V-3**	**N360TN-3**
DIN largo **DIN long** **DIN 371**	176	176	176	176	178	178	178
ISO corto **ISO short** **ISO 529**							
Tolerancia **Tolerance** **UNF 2B**	176	176	176	176	178	178	178
Tolerancia **Tolerance** **UNF(J) 3B**		176			178		
Tolerancia **Tolerance** **UNEF 2B**							
Tolerancia **Tolerance** **UNS 2B**							
Tolerancia **Tolerance** **UN 2B**							
	**N410-3**	**N420-4**	**N420V-4**	**N420TN-4**	**N460-3**	**N460V-3**	**N460TN-3**
DIN largo **DIN long** **DIN 374/~DIN 376**	177 / 199	177	177	177	179 / 199	179 / 199	179
ISO corto **ISO short** **ISO 529**							
Tolerancia **Tolerance** **UNF 2B**	177	177	177	177	179	179	179
Tolerancia **Tolerance** **UNF(J) 3B**		177			179		
Tolerancia **Tolerance** **UNEF 2B**							
Tolerancia **Tolerance** **UNS 2B**	199				199	199	
Tolerancia **Tolerance** **UN 2B**					199	199	

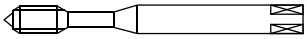
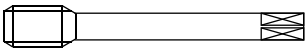
UNF, UNEF

Directorio — Machos para roscar a máquina y a mano ASME B1.1
Directory — Machine and hand taps ASME B1.1

N		Z				H		
		V	VS	R40 V	R45 VS		TiCN	R25
			 NEW				 NEW	
								
N1110 -1 -3 -S	**N1120-4**	**Z320V-4**	**Z320VS-4**	**Z360V-3**	**Z370VS-3**	**H320-4**	**H320TC-4**	**H350-3**
		180	180	181	182	184	184	185
196 / 198	198							
196		180	180	181	182	184	184	185
					182			
198	198							
N1210 -1 -3 -S	**N1220-4**	**Z420V-4**	**Z420VS-4**	**Z460V-3**	**Z470VS-3**	**H420-4**	**H420TC-4**	**H450-3**
		180	180	181	182	184	184	185
197 / 198	198							
197		180	180	181	182	184	184	185
198	198							

UNF

Directorio — Machos para roscar a máquina ASME B1.1
Directory — Machine taps ASME B1.1

	H	S		SA			TL
Características **Characteristics**	R25 TiCN	VS	R35 VS		R15	R10	R15 VS
	 NEW						
Tipo de agujero **Hole type**							
	**H350TC-3**	**S320VS-4**	**S360VS-3**	**SA320-4**	**SA350-3**	**SA390-3**	**TL351VS-3**
DIN largo **DIN long** **DIN 371**	185	186	186	188	188	190	188
ISO corto **ISO short** **ISO 529**							
Tolerancia **Tolerance** **UNF 2B**	185			188	188		188
Tolerancia **Tolerance** **UNF(J) 3B**		186	186	188	188	190	188
Tolerancia **Tolerance** **UNEF 2B**							
Tolerancia **Tolerance** **UNS 2B**							
Tolerancia **Tolerance** **UN 2B**							
	**H450TC-3**	**S420VS-4**	**S460VS-3**	**SA420-4**	**SA450-3**		**TL451VS-3**
DIN largo **DIN long** **DIN 374/~DIN 376**	185	186	186	189	189		189
ISO corto **ISO short** **ISO 529**							
Tolerancia **Tolerance** **UNF 2B**	185			189	189		
Tolerancia **Tolerance** **UNF(J) 3B**		186	186	189	189		189
Tolerancia **Tolerance** **UNEF 2B**							
Tolerancia **Tolerance** **UNS 2B**							
Tolerancia **Tolerance** **UN 2B**							

UNF

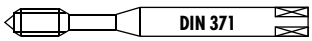
Directorio — Machos para roscar a máquina ASME B1.1
Directory — Machine taps ASME B1.1

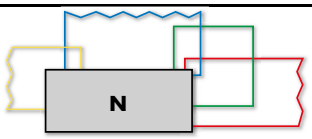
QTAP				RTS	
VS	VS	R40 VS	R40 VS	VS	R40 VS
 NEW	 NEW	 NEW	 NEW		
					
Q320VS-4	**Q323VS-4**	**Q360VS-3**	**Q363VS-3**	**RTS320VS-4**	**RTS362VS-3**
192	192	193	193	194	194
Q420VS-4	**Q423VS-4**	**Q460VS-3**	**Q463VS-3**	**RTS420VS-4**	**RTS462VS-3**
192	192	193	193	194	194

UNF ASME B1.1

≤ Ø 2.8 > Ø 2.8

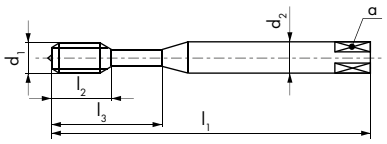
PM | HSSE

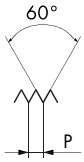




N310-3			31	62	73	74	91
N320-4			62	63	64	72	73	74	81	91
N320V-4		V	11	12	31	32
N320TN-4		TiN	11	12	13	14	32

N310-3	N320-4	N320V-4	N320TN-4
			 NEW
 < 1.5 x D			
C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
2B	2B	2B	2B





Ø" d1 UNF	P TPI	d1 mm	l1 mm	l2 mm	l3 mm	d2 mm	a mm			ID	ID	ID	ID
* 0	80	1.52	40	7		2.5	2.1	2	1.2		● 101475		
* 2	64	2.18	45	9		2.8	2.1	2	1.8		● 101477		
4	48	2.84	56	12	18	3.5	2.7	3	2.35		● 128847		
5	44	3.17	56	12	18	3.5	2.7	3	2.6		● 142764		
6	40	3.5	56	13	20	4	3	3	2.9		● 101519	● 142765	
8	36	4.16	63	14	21	4.5	3.4	3	3.5		● 101520		
10	32	4.82	70	15	25	6	4.9	3	4.05		● 101517	● 142766	● 196014
12	28	5.48	80	17	30	6	4.9	3	4.6		● 101518		
1/4	28	6.35	80	17	30	7	5.5	3	5.5	● 101453	● 101516	● 142767	● 158791

3B UNF(J)

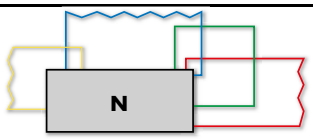
Ø" d1 UNF	P TPI	d1 mm	l1 mm	l2 mm	l3 mm	d2 mm	a mm		UNJF	ID
10	32	4.82	70	15	25	6	4.9	3	4.15	● 135506
1/4	28	6.35	80	17	30	7	5.5	3	5.55	● 155323

*N320-3 2.5 x P

UNF ASME B1.1

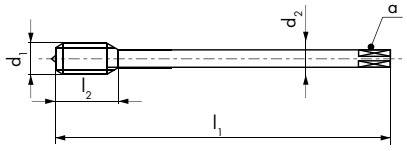
HSSE

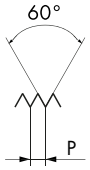
DIN 374



N410-3			31 62 73 74 91
N420-4			62 63 64 72 73 74 81 91
N420V-4		V	11 12 31 32
N420TN-4		TiN	11 12 13 14 32

N410-3	N420-4	N420V-4	N420TN-4
			 NEW
 < 1.5 x D			
C 2.5 x P	B 4 x P	B 4 x P	B 4 x P
2B	2B	2B	2B





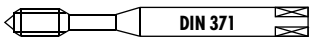
Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
5/16	24	7.93	90	20	6	4.9	3	6.9	● 102004	● 102223	● 142774	● 196015
3/8	24	9.52	100	22	7	5.5	3	8.5	● 102003	● 102222	● 142775	● 196016
7/16	20	11.11	100	19	8	6.2	3	9.8	● 102006	● 102225	● 142776	● 196017
1/2	20	12.7	100	24	9	7	3	11.4	● 102000	● 102219	● 142777	● 196018
9/16	18	14.28	100	24	11	9	3	12.9		● 102227		
5/8	18	15.87	100	26	12	9	3	14.5	● 102005	● 102224	● 142778	● 196019
3/4	16	19.05	125	33	14	11	4	17.5	● 102002	● 102221	● 142779	● 185919
7/8	14	22.22	140	36	18	14.5	4	20.4		● 102226		
1	12	25.4	160	39	18	14.5	4	23.3		● 102220	● 142780	
1 1/8	12	28.57	180	39	22	18	4	26.5		● 142773		
1 1/4	12	31.75	180	39	22	18	4	29.7		● 102218		
1 3/8	12	34.92	200	36	28	22	4	32.8		● 105137		
1 1/2	12	38.1	200	41	32	24	4	36		● 105138		

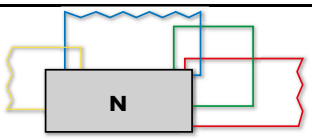
3B UNF(J)

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		UNJF	ID
5/16	24	7.93	90	20	6	4.9	3	7	● 155328
3/8	24	9.52	100	22	7	5.5	3	8.6	● 155326
7/16	20	11.11	100	19	8	6.2	3	10	● 155330
1/2	20	12.7	100	24	9	7	3	11.55	● 155321

UNF ASME B1.1

HSSE

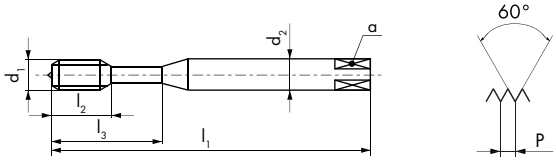




	N360-3	N360V-3	N360TN-3
	R40	R40 V	R40 TiN
	63 72 73 74 81 91	11 12 32	11 12 13 14 32

NEW

< 2.5 x D | < 2.5 x D | < 2.5 x D



C 2.5 x P | C 2.5 x P | C 2.5 x P

2B | 2B | 2B

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
6	40	3.5	56	6.5	20	4	3	3	2.9	● 101686		
10	32	4.82	70	9	25	6	4.9	3	4.05	● 101682	● 101730	● 196009
12	28	5.48	80	11	30	6	4.9	3	4.6	● 101683		
1/4	28	6.35	80	11	30	7	5.5	3	5.5	● 101681	● 101729	● 146137
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9	● 101685	● 101732	● 196010
3/8	24	9.52	100	14	39	10	8	3	8.5	● 101684	● 101731	● 196011

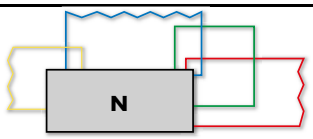
3B UNF(J)

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		UNJF	ID
10	32	4.82	70	9	25	6	4.9	3	4.15	● 155325
1/4	28	6.35	80	11	30	7	5.5	3	5.55	● 155324
5/16	24	7.93	90	12.5	35	8	6.2	3	7	● 155329
3/8	24	9.52	100	14	39	10	8	3	8.6	● 155327

UNF ASME B1.1

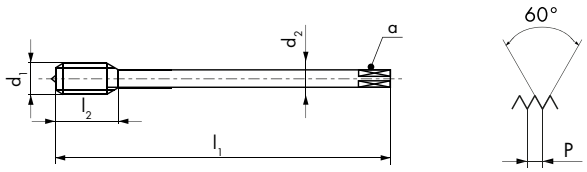
HSSE

DIN 374



N460-3	R40		63 72 73 74 81 91
N460V-3	R40	V	11 12 32
N460TN-3	R40	TiN	11 12 13 14 32

N460-3	N460V-3	N460TN-3
		 NEW
< 2.5 x D	< 2.5 x D	< 2.5 x D



C 2.5 x P	C 2.5 x P	C 2.5 x P
2B	2B	2B

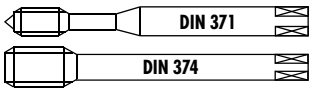
Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
7/16	20	11.11	100	14	8	6.2	3	9.8	● 102434	● 142781	● 158885
1/2	20	12.7	100	14	9	7	3	11.4	● 102430	● 102503	● 196012
9/16	18	14.28	100	14	11	9	3	12.9	● 102436	● 143422	
5/8	18	15.87	100	14	12	9	3	14.5	● 102433	● 143097	● 196013
3/4	16	19.05	125	18	14	11	4	17.5	● 102432	● 102505	● 142568
7/8	14	22.22	140	20	18	14.5	4	20.4	● 102435	● 144714	
1	12	25.4	160	27	18	14.5	4	23.3	● 102431	● 102504	
1 1/8	12	28.57	180	24	22	18	4	26.5	● 102429	● 144414	
1 1/4	12	31.75	180	24	22	18	4	29.7	● 102428	● 151709	
1 1/2	12	38.1	200	30	32	24	5	36	● 102427	● 148793	

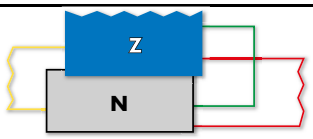
3B UNF(J)

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		UNJF	ID
7/16	20	11.11	100	14	8	6.2	3	10	● 155331
1/2	20	12.7	100	14	9	7	3	11.55	● 155322

UNF ASME B1.1

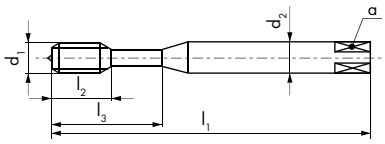
PM

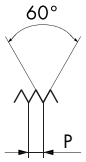




Z320V-4	V	11 12 13 21 32	
Z420V-4	V	11 12 13 21 32	
Z320VS-4	VS	11 12 13 14 21 22 23 32 61 63 94	
Z420VS-4	VS	11 12 13 14 21 22 23 32 61 63 94	

Z320V-4	Z420V-4	Z320VS-4	Z420VS-4
		 NEW	 NEW
			
B 4xP	B 4xP	B 4xP	B 4xP
2B	2B	2B	2B

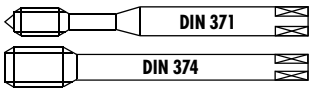


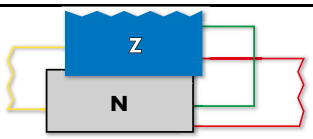


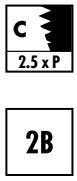
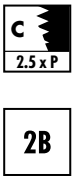
Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
10	32	4.82	70	15	25	6	4.9	3	4.05	● 142783		● 128685	
1/4	28	6.35	80	17	30	7	5.5	3	5.5	● 142784		● 128596	
5/16	24	7.93	90	20	35	8	6.2	3	6.9	● 142785		● 128869	
3/8	24	9.52	100	22	39	10	8	3	8.5	● 142786		● 128814	
7/16	20	11.11	100	19		8	6.2	3	9.8		● 142787		● 128960
1/2	20	12.7	100	24		9	7	3	11.4		● 142788		● 128556
5/8	18	15.87	100	26		12	9	3	14.5				● 196031
3/4	16	19.05	125	33		14	11	4	17.5				● 196032

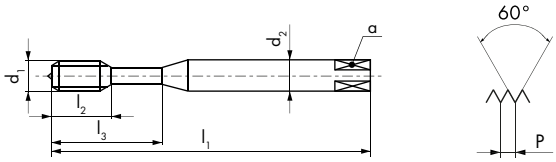
UNF ASME B1.1

HSSE



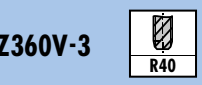


	Z360V-3	Z460V-3		
				
				
				



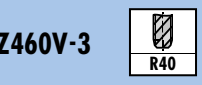
Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			Z360V-3 ID	Z460V-3 ID
10	32	4.82	70	9	25	6	4.9	3	4.05	● 104680	
1/4	28	6.35	80	11	30	7	5.5	3	5.5	● 104679	
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9	● 104682	
3/8	24	9.52	100	14	39	10	8	3	8.5	● 104681	
7/16	20	11.11	100	14		8	6.2	3	9.8		● 104741
1/2	20	12.7	100	14		9	7	3	11.4		● 104738
5/8	18	15.87	100	14		12	9	3	14.5		● 104740
3/4	16	19.05	125	18		14	11	4	17.5		● 104739

Z360V-3



12 21 32

Z460V-3

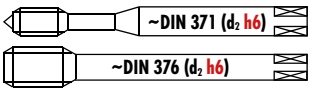


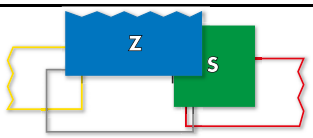
12 21 32

2B 2B

UNF ASME B1.1

PM





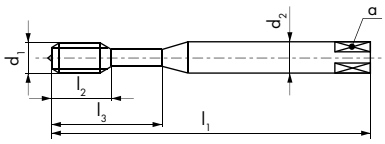
	Z370VS-3	Z470VS-3		
				
				
				
	2BX	2BX		

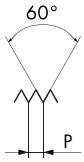
Z370VS-3 — R45 — VS — CLASSIC — 14 15 21 22 23 24 51 61 94

Z470VS-3 — R45 — VS — CLASSIC — 14 15 21 22 23 24 51 61 94

Z370VS-3 — R45 — VS — SYNCHRO — 13 14 15 21 22 23 24 51 52

Z470VS-3 — R45 — VS — SYNCHRO — 13 14 15 21 22 23 24 51 52





Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID
10	32	4.82	70	9	25	6	4.9	3	4.05	● 166136	
1/4	28	6.35	80	11	30	* 6	* 4.9	3	5.5	● 166135	
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9	● 166134	
3/8	24	9.52	100	14	39	10	8	3	8.5	● 166133	
7/16	20	11.11	100	14		8	6.2	3	9.8		● 166138
1/2	20	12.7	110	14		* 10	* 8	4	11.4		● 166137
5/8	18	15.87	110	18		12	9	4	14.5		● 196029
3/4	16	19.05	125	21		14	11	4	17.5		● 196030

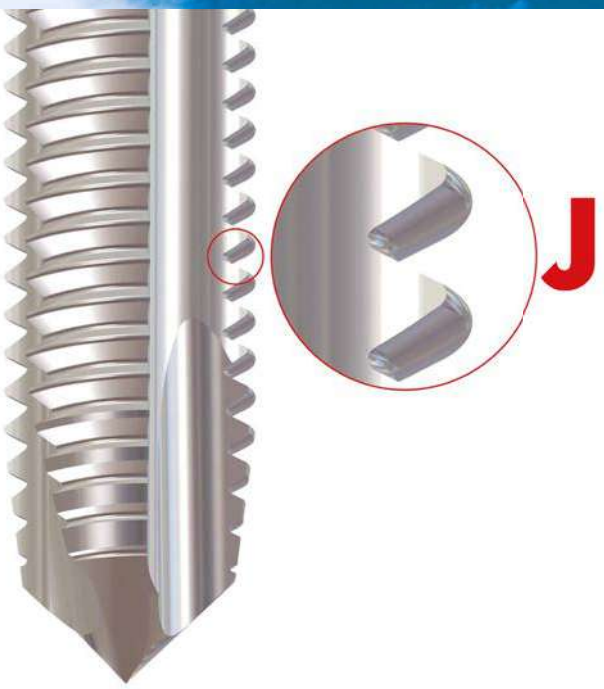
* Norme DC / * DC Norm/ * Norma DC

3B UNF(J)

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		UNJF	ID
10	32	4.82	70	9	25	6	4.9	3	4.15	● 165121
1/4	28	6.35	80	11	30	* 6	* 4.9	3	5.55	● 165122
5/16	24	7.93	90	12.5	35	8	6.2	3	7	● 165123
3/8	24	9.52	100	14	39	10	8	3	8.6	● 165124

* Norme DC / * DC Norm/ * Norma DC

MJ, UNJC, UNJF

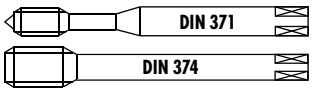


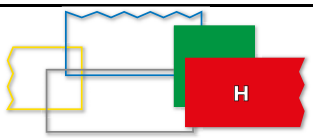
Nuestros machos para roscar a máquina con radio en el diámetro exterior resumidos en un capítulo aparte que comienza en la página 44.

Our machine taps with radius on the outside diameter summarised in a separate chapter from page 44.

UNF ASME B1.1

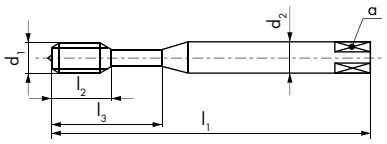
PM

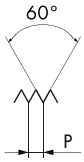




H320-4		15	16	62	64	82
H420-4		15	16	62	64	82
H320TC-4	TiCN	15	16	24	31	82	83	92	93
H420TC-4	TiCN	15	16	24	31	82	83	92	93

H320-4	H420-4	H320TC-4	H420TC-4
		 NEW	 NEW
			
			
2B	2B	2B	2B

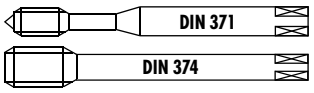


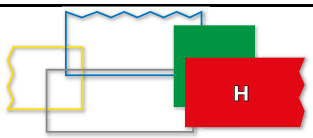


Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
10	32	4.82	70	15	25	6	4.9	3	4.05	• 101228		• 196060	
1/4	28	6.35	80	17	30	7	5.5	3	5.5	• 101227		• 142613	
5/16	24	7.93	90	20	35	8	6.2	3	6.9	• 105139		• 196061	
3/8	24	9.52	100	22	39	10	8	3	8.5	• 101229		• 196062	
7/16	20	11.11	100	19		8	6.2	3	9.8		• 147253		• 196063
1/2	20	12.7	100	24		9	7	4	11.4		• 101291		• 196064
5/8	18	15.87	100	26		12	9	4	14.5		• 101293		• 196065
3/4	16	19.05	125	33		14	11	4	17.5		• 101292		• 196066

UNF ASME B1.1

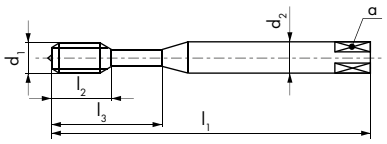
PM

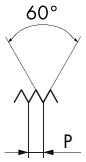




H350-3	R25		15 16 62 64 82	
H450-3	R25		15 16 62 64 82	
H350TC-3	R25	TiCN	15 16 24 31 82 83 92 93	
H450TC-3	R25	TiCN	15 16 24 31 82 83 92 93	

H350-3	H450-3	H350TC-3	H450TC-3
		 NEW	 NEW
 < 1.5 x D	 < 1.5 x D	 < 1.5 x D	 < 1.5 x D
 C 2.5 x P	 C 2.5 x P	 C 2.5 x P	 C 2.5 x P
2B	2B	2B	2B

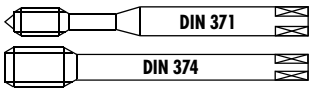


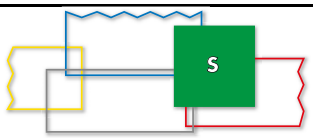


Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
10	32	4.82	70	9	25	6	4.9	3	4.05	● 101265		● 196055	
1/4	28	6.35	80	11	30	7	5.5	3	5.5	● 101264		● 146714	
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9	● 101267		● 196056	
3/8	24	9.52	100	14	39	10	8	3	8.5	● 101266		● 196057	
7/16	20	11.11	100	14		8	6.2	3	9.8		● 101334		● 196058
1/2	20	12.7	100	14		9	7	4	11.4		● 101331		● 196059
5/8	18	15.87	100	14		12	9	4	14.5		● 101333		● 174297
3/4	16	19.05	125	18		14	11	4	17.5		● 101332		● 158882

UNF ASME B1.1

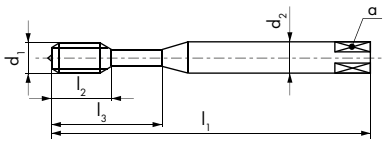
PM

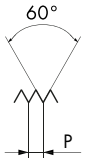




S320VS-4	VS	13 15 16 22 23 24 52	
S420VS-4	VS	13 15 16 22 23 24 52	
S360VS-3	R35 VS	13 15 16 22 23 24 52	
S460VS-3	R35 VS	13 15 16 22 23 24 52	

S320VS-4	S420VS-4	S360VS-3	S460VS-3
			
			
B 4 x P	B 4 x P	C 2.5 x P	C 2.5 x P
3B UNF(J)	3B UNF(J)		





Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		UNJF	ID	ID
10	32	4.82	70	15	25	6	4.9	3	4.15	● 111814	
1/4	28	6.35	80	17	30	7	5.5	3	5.55	● 111813	
5/16	24	7.93	90	20	35	8	6.2	3	7	● 111816	
3/8	24	9.52	100	22	39	10	8	3	8.6	● 111818	
7/16	20	11.11	100	22		8	6.2	3	10		● 111837

S360VS-3	S460VS-3
3B UNF(J)	3B UNF(J)

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		UNJF	ID	ID
10	32	4.82	70	9	25	6	4.9	3	4.15	● 111815	
1/4	28	6.35	80	11	30	7	5.5	3	5.55	● 111820	
5/16	24	7.93	90	12.5	35	8	6.2	3	7	● 111817	
3/8	24	9.52	100	14	39	10	8	3	8.6	● 111819	
7/16	20	11.11	100	14		8	6.2	3	10		● 111833


DC
RESPECTING
THREADING

UNF ASME B1.1

PM

~DIN 371

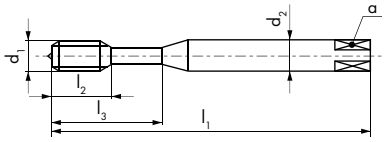
aero

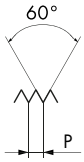
	SA320-4	SA350-3		TL351VS-3
				
				
				
	B 4 x P	C 2.5 x P		C 2.5 x P
	2B	2B		2B

SA320-4 — 15 16 52 64

SA350-3 R15 — 15 16 52 64

TL351VS-3 R15 VS — 41 42





Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			SA320-4 ID	SA350-3 ID	TL351VS-3 ID
10	32	4.82	70	15		6	4.9	3	4.05	• 149133	• 149135	• 152047
1/4	28	6.35	80	15	23	7	5.5	3	5.5	• 149230	• 149232	• 152066
5/16	24	7.93	90	18	29	8	6.2	3	6.9	• 149277	• 149279	• 152072
3/8	24	9.52	100	20	33	10	8	3	8.5	• 149339	• 149341	• 152083

										3B UNF(J)	3B UNF(J)	3B UNF(J)
Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		UNJF	ID	ID	ID
4	48	2.84	56	12		3.5	2.7	3	2.35		• 149015	
10	32	4.82	70	15		6	4.9	3	4.15	• 146098	• 149138	• 148004
1/4	28	6.35	80	15	23	7	5.5	3	5.55	• 146404	• 149235	• 148012
5/16	24	7.93	90	18	29	8	6.2	3	7	• 146393	• 149282	• 148016
3/8	24	9.52	100	20	33	10	8	3	8.6	• 147165	• 149344	• 148023

UNF ASME B1.1

PM

~DIN 374

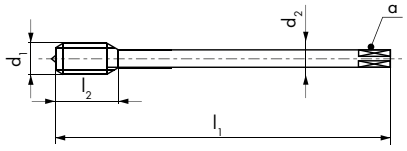
aero

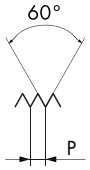
	SA420-4	SA450-3		TL451VS-3
				
		< 1.5 x D		< 2 x D
				< 2 x D
	B 4 x P	C 2.5 x P		C 2.5 x P
	2B	2B		

SA420-4 — 15 16 52 64

SA450-3 — R15 — 15 16 52 64

TL451VS-3 — R15 — VS — 41 42





Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
7/16	20	11.11	100	22	8	6.2	* 4	9.8	● 152286	● 152290
1/2	20	12.7	100	24	9	7	4	11.4	● 152287	● 152291
5/8	18	15.87	100	26	12	9	4	14.5	★ 152289	

									3B UNF(J)	3B UNF(J)	3B UNF(J)
Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		UNJF	ID	ID	ID
7/16	20	11.11	100	22	8	6.2	* 4	10	● 147187	● 152302	● 148031
1/2	20	12.7	100	24	9	7	4	11.55	● 147189	● 152303	● 152310
9/16	18	14.28	100	24	11	9	4	13.05	● 146395		
5/8	18	15.87	100	26	12	9	4	14.6	● 147169		

* SA420-4= 3

UNF ASME B1.1

PM

~DIN 371

aero

SA390-3

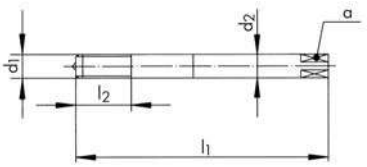
R10

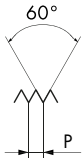
16 53

SA390-3

< 1.5 x D

< 1.5 x D





C 2.5 x P

3B UNF(J)

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		UNJF	ID
10	**32**	4.82	70	15	6	4.9	3	4.15	**149687**
1/4	**28**	6.35	80	20	7	5.5	3	5.55	**149715**
5/16	**24**	7.93	90	25	8	6.2	3	7	**149728**
3/8	**24**	9.52	100	30	10	8	3	8.6	**149745**

QTAP

NEW

EL PERFECTO "ALLROUNDER"

Disponible para las roscas M, MF, UNC, UNF y G

THE PERFECT "ALLROUNDER"

Available for M, MF, UNC, UNF and G threads

UNF ASME B1.1

CLASSIC SYNCHRO

PM

DIN 371

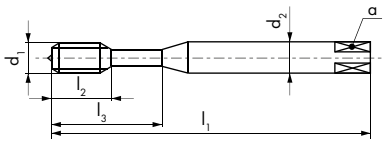
DIN 374

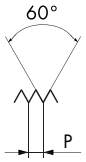
QTAP

Q320VS-4	VS		
Q420VS-4	VS		
Q323VS-4			VS
Q423VS-4			VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q320VS-4	Q420VS-4	Q323VS-4	Q423VS-4
 NEW	 NEW	 NEW	 NEW
			
B 4xP	B 4xP	B 4xP	B 4xP
2B	2B	2B	2B





Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
10	32	4.82	70	15	25	6	4.9	3	4.05	● 196298		● 197631	
1/4	28	6.35	80	17	30	7	5.5	3	5.5	● 196299		● 197632	
5/16	24	7.93	90	20	35	8	6.2	3	6.9	● 196300		● 197633	
3/8	24	9.52	100	22	39	10	8	3	8.5	● 196301		● 197634	
7/16	20	11.11	100	19		8	6.2	3	9.8		● 196302		● 197635
1/2	20	12.7	100	24		9	7	3	11.4		● 196303		● 197636

UNF ASME B1.1

CLASSIC | SYNCHRO

≤ Ø 16 | > Ø 16

PM | HSSE

DIN 371

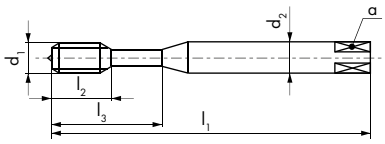
DIN 374

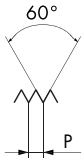
QTAP

Q360VS-3	R40	VS	
Q460VS-3	R40	VS	
Q363VS-3	R40		VS
Q463VS-3	R40		VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94

Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
			
NEW	NEW	NEW	NEW
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D





Q360VS-3	Q460VS-3	Q363VS-3	Q463VS-3
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
2B	2B	2B	2B

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
10	32	4.82	70	9	25	6	4.9	3	4.05	● 196304		● 197637	
1/4	28	6.35	80	11	30	7	5.5	3	5.5	● 196305		● 197638	
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9	● 196306		● 197639	
3/8	24	9.52	100	14	39	10	8	3	8.5	● 196307		● 197640	
7/16	20	11.11	100	14		8	6.2	3	9.8		● 196308		● 197641
1/2	20	12.7	100	14		9	7	3	11.4		● 196309		● 197642
5/8	18	15.87	100	14		12	9	3	14.5		● 196310		● 197643
3/4	16	19.05	125	18		14	11	4	17.5		● 196311		● 197644

UNF ASME B1.1

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Sychronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

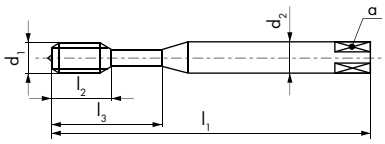
PM

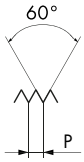
~DIN 371 (d_2 h6)

~DIN 374 (d_2 h6)

RTS
Rigid Tapping Synchro

	RTS320VS-4	RTS420VS-4	RTS362VS-3	RTS462VS-3
				
				
	B 4 x P	B 4 x P	C 2.5 x P	C 2.5 x P
	2BX	2BX	2BX	2BX
	ID	ID	ID	ID
RTS320VS-4	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94			
RTS420VS-4				
RTS362VS-3	R40 VS			
RTS462VS-3	R40 VS			

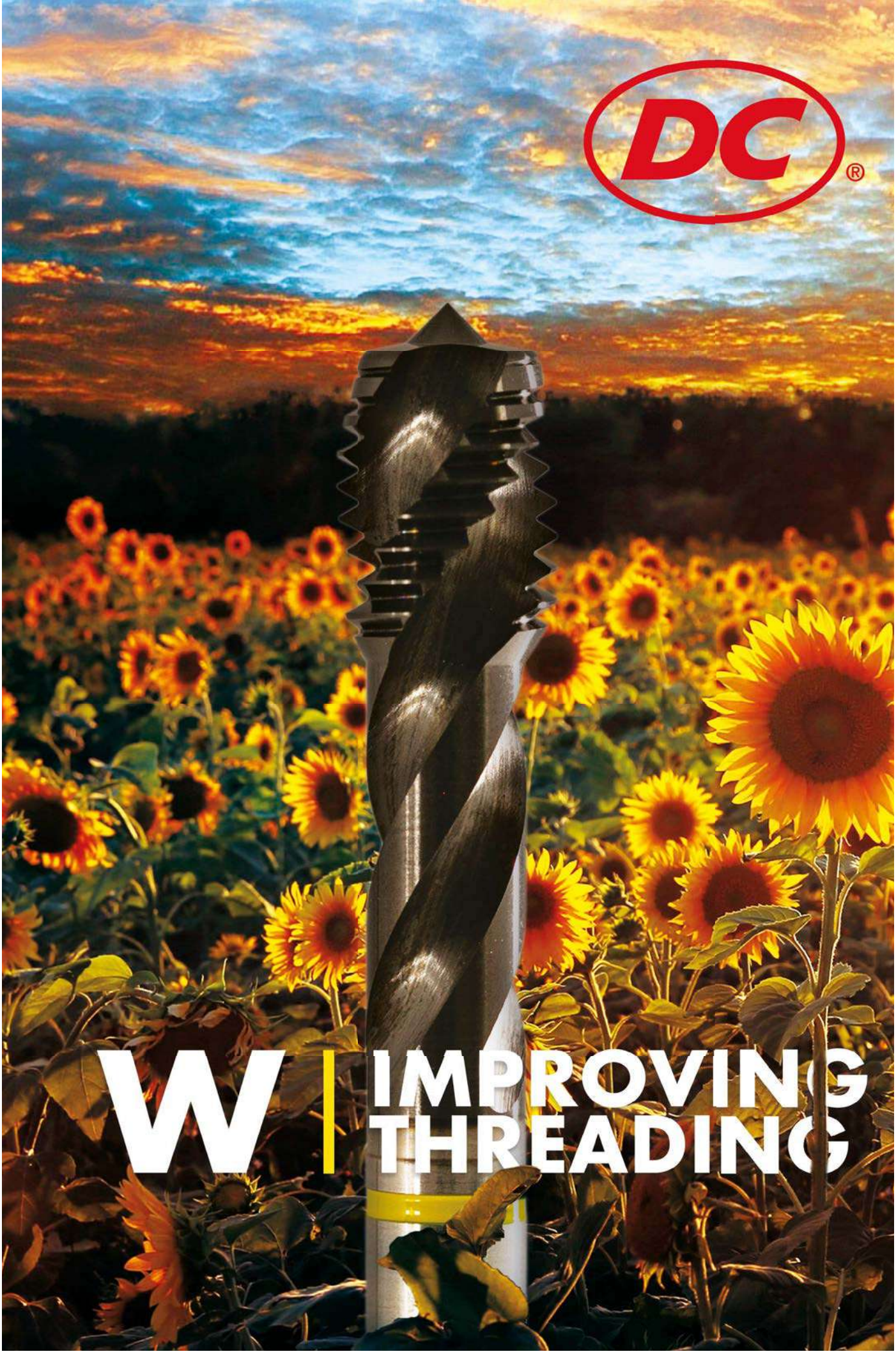




Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID	ID	ID	ID
10	32	4.82	70	9	25	6	4.9	3	4.05	● 157409		● 157413	
1/4	28	6.35	80	11	30	* 6	* 4.9	3	5.5	● 157410		● 157414	
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9	● 157411		● 157415	
3/8	24	9.52	100	14	39	10	8	3	8.5	● 157412		● 157416	
1/2	20	12.7	110	14		* 10	* 8	3	11.4		● 157417		● 157418

* Norme DC / * DC Norm/ * Norma DC

≥ Ø 6 mm — sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

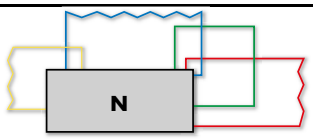

DC
W
IMPROVING
THREADING

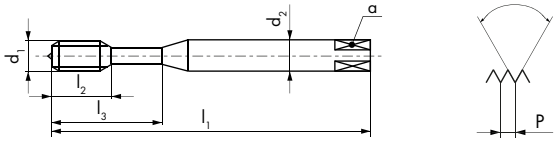
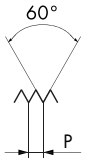
UNF ASME B1.1

≤ Ø 2.8 > Ø 2.8

PM | HSS

~ISO 529



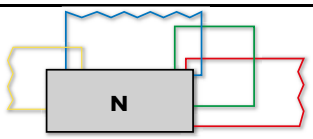
	N1110-1	N1110-3	N1110-S
			
		31 / 62 / 73 / 74 / 91	
			
			
			
		2B	2B

Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
0	80	1.52	40	7		2.5	2.1	3	1.2	● 102811	● 103010	● 111079
1	72	1.85	40	8		2.5	2.1	3	1.5	● 102812	● 103011	● 111080
8	36	4.16	53	13	21	4.5	3.55	3	3.5		* 103022	
10	32	4.82	58	16	25	5	4	3	4.05	● 102814	● 103013	● 111082
12	28	5.48	62	17	26	5.6	4.5	3	4.6		* 103014	
1/4	28	6.35	66	19	30	6.3	5	3	5.5	● 102813	● 103012	● 111081
5/16	24	7.93	72	22	35	8	6.3	3	6.9	● 102821	● 103020	● 111089
3/8	24	9.52	80	24	39	10	8	3	8.5	● 102818	● 103017	● 111086

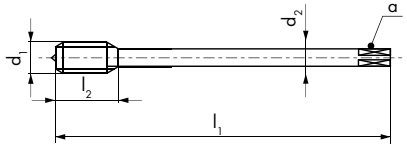
UNF ASME B1.1

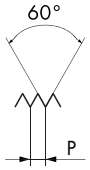
HSS

~ISO 529



	N1210-1	N1210-3	N1210-S
			
		<1.5 x D	<2.5 x D
		C 2 x P	
	5 x P	2B	2B

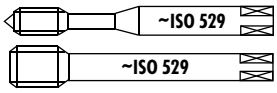


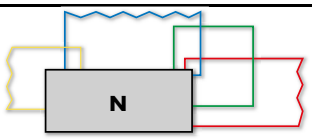


Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
7/16	20	11.11	85	22	8	6.3	3	9.8	● 103411	● 103626	● 111255
1/2	20	12.7	89	24	9	7.1	3	11.4	● 103407	● 103622	● 111251
5/8	18	15.87	102	32	12.5	10	3	14.5	● 103410	● 103625	● 111254
3/4	16	19.05	112	33	14	11.2	4	17.5	● 103409	● 103624	● 111253
7/8	14	22.22	115	32	16	12.5	4	20.4	● 103412	● 103627	● 111256
1	12	25.4	130	45	18	14	4	23.3	● 103408	● 103623	● 111252

UNEF ASME B1.1

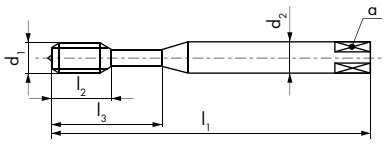
HSS

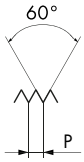




N1110-3		31 62 73 74 91
N1120-4		62 63 64 72 73 74 81 91
N1210-3		31 62 73 74 91
N1220-4		62 63 64 72 73 74 81 91

N1110-3	N1120-4	N1210-3	N1220-4
			
 < 1.5 x D		 < 1.5 x D	
C 2 x P	B 4 x P	C 2 x P	B 4 x P
2B	2B	2B	2B



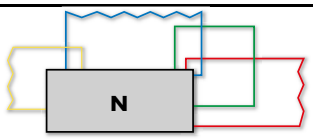


Ø" d_1 UNEF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
12	32	5.48	62	17	26	5.6	4.5	3	4.7	● 103007	● 103118		
1/4	32	6.35	66	19	30	6.3	5	3	5.6	● 103006	● 103117		
5/16	32	7.93	72	22	35	8	6.3	3	7.2	● 103009	● 103120		
3/8	32	9.52	80	24	39	10	8	3	8.75	● 103008	● 103119		
7/16	28	11.11	85	22		8	6.3	3	10.25			● 103615	● 103754
1/2	28	12.7	89	24		9	7.1	3	11.85			● 103609	● 103749
9/16	24	14.28	95	24		11.2	9	3	13.2			● 103617	● 103756
5/8	24	15.87	102	32		12.5	10	3	14.8			● 103614	● 103753
11/16	24	17.46	104	26		14	11.2	4	16.4			● 103611	
3/4	20	19.05	112	33		14	11.2	4	17.8			● 103613	
7/8	20	22.22	115	32		16	12.5	4	21			● 103616	
1	20	25.4	120	30		18	14	4	24.1			● 103610	

UNS, UN ASME B1.1

HSSE

DIN 374

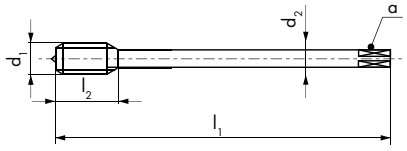


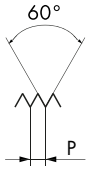
	N410-3	N460-3	N460V-3
			
			
			
	2B	2B	2B

N410-3  31 62 73 74 91

N460-3  63 72 73 74 81 91

N460V-3   11 12 32

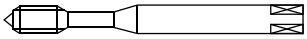
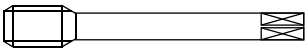




Ø" d_1 UNS	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
1/4	36	6.35	80	17	4.5	3.4	3	5.65	● 104899		
1/2	24	12.7	100	24	9	7	3	11.6	● 104900		
1	14	25.4	140	34	18	14.5	4	23.6	● 104898		
1	14	25.4	140	22	18	14.5	4	23.6		● 102437	● 142789

Ø" d_1 UN	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
1 1/8	8	28.57	180	30	22	18	4	25.5	● 102415	● 142790
1 1/4	8	31.75	180	30	22	18	4	28.7	● 102414	● 142520
1 3/8	8	34.92	200	36	28	22	5	31.8	● 104896	● 142792
1 1/2	8	38.1	200	40	32	24	5	35	● 102413	● 142793
1 3/4	8	44.45	220	44	36	29	5	41.4		● 115198
2	8	50.8	250	38	40	32	5	47.7		● 111622

G *Directorio — Machos para roscar a máquina G (gas) DIN EN ISO 228*
Directory — Machine taps G (BSP) DIN EN ISO 228

	N						
Características **Characteristics**		V	TiN	R40	R40 V	R40 TiN	R40 V
							
Tipo de agujero **Hole type**							
							
	**N410-3**	**N420-4 N420V-4**	**N420TN-4**	**N460-3**	**N460V-3**	**N460TN-3**	**N462V-3**
DIN largo **DIN long** **DIN 5156**	204	205	205	206	206	206	206
DIN largo **DIN long** **~ DIN 376**							
DIN corto **DIN short** **DIN 5157**							
LH Rosca izquierda **LH Left-hand thread** **DIN 5156**	204						

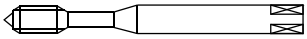
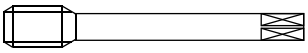
G

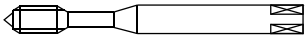
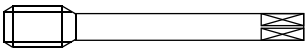
Directorio — Machos para roscar a máquina y a mano G (gas) DIN EN ISO 228
Directory — Machine and hand taps G (BSP) DIN EN ISO 228

N			W		Z			
			R40 E 1.5xP	R40 E 1.5xP DLC	V	VS	R40 V	R45 VS
								
								
N210-1	**N210-3**	**N210-S**	**W460-5**	**W460DL-5**	**Z420V-4**	**Z420VS-4**	**Z460V-3**	**Z470VS-3**
			207	207	208	208	208	
								209
213	213	213						

G

Directorio — Machos para roscar a máquina G (gas) DIN EN ISO 228
Directory — Machine taps G (BSP) DIN EN ISO 228

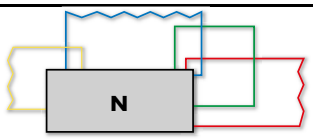
	H	GG	QTAP		RTS	
Características **Characteristics**	R25	R15 NV	VS	R40 VS	R40 VS	R40 E 1.5 x P VS
			 NEW NEW	 NEW NEW		
Tipo de agujero **Hole type**						
						
	**H450-3**	**GG450NV-3**	**Q420VS-4 Q423VS-4**	**Q460VS-3 Q463VS-3**	**RTS462VS-3**	**RTS462VS-5**
DIN largo **DIN long** **DIN 5156**	207	207	210	211		
DIN largo **DIN long** **~ DIN 376**					212	212
DIN corto **DIN short** **DIN 5157**						
LH Rosca izquierda **LH Left-hand thread** **DIN 5156**						

		N					
Características **Characteristics**			1:16	1:16			HSS 1.75 x P ≥Ø 3
							
Tipo de agujero **Hole type**							
					**N1110-3**	**N1120-4**	
ISO corto **ISO short**	**ISO 529**				216 - 217	216	
W	**ISO 529**				216 - 217	216	
SV	**ISO 529**				217		
		**N420-3**	**N410-3**	**D5800**	**N1210-3**	**N1220-4**	**N5120**
DIN largo **DIN long**	**DIN 5156**	214					
DIN largo **DIN long**	**DC**		214	215			
ISO corto **ISO short**	**ISO 529**				216 - 217	216	
Rp	**DIN 5156**	214					
Rc	**DC**		214	215			
W	**ISO 529**				216	216	
SV	**ISO 529 / DC**				217		217

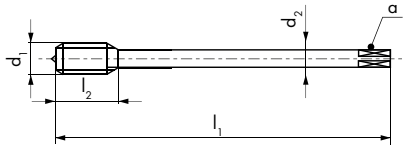
G DIN EN ISO 228 (BSP)

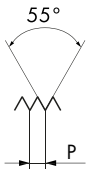
HSSE

DIN 5156



	N410-3	N410-3 LH		
				
				
N410-3		31 62 73 74 91		
N410-3 LH		LH	31 62 73 74 91	
				



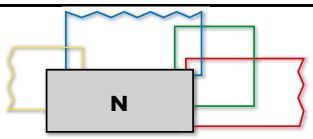


Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
1/8	28	9.72	90	22	7	5.5	3	8.75	● 101855	
1/4	19	13.15	100	20	11	9	3	11.6	● 101853	● 101854
3/8	19	16.66	100	20	12	9	4	15.2	● 101861	● 101862
1/2	14	20.95	125	22	16	12	4	18.9	● 101851	● 101852
3/4	14	26.44	140	28	20	16	4	24.4	● 101859	
1	11	33.24	160	32	25	20	4	30.7	● 101857	
1 1/4	11	41.91	170	32	32	24	5	39.3	● 101850	
1 1/2	11	47.8	190	32	36	29	5	45.2	● 101849	

G DIN EN ISO 228 (BSP)

HSSE

DIN 5156

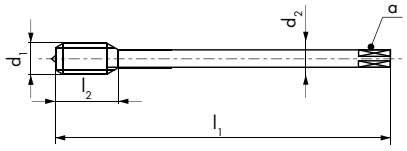


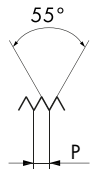
	N420-4	N420V-4	N420TN-4
			
			
	B 4xP	B 4xP	B 4xP

N420-4  62 63 64 72 73 74 81 91

N420V-4  V 11 12 31 32

N420TN-4  TiN 11 12 13 14 32



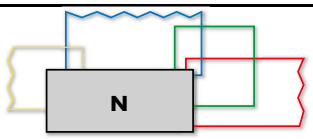


Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
1/16	28	7.72	90	18	6	4.9	3	6.75	● 102045		
1/8	28	9.72	90	22	7	5.5	3	8.75	● 102048	● 102258	● 102236
1/4	19	13.15	100	20	11	9	3	11.6	● 102047	● 102257	● 102235
3/8	19	16.66	100	20	12	9	3	15.2	● 102053	● 102261	● 102238
1/2	14	20.95	125	22	16	12	4	18.9	● 102046	● 102256	● 102234
5/8	14	22.91	125	25	18	14.5	4	20.9	● 102054	● 144722	
3/4	14	26.44	140	28	20	16	4	24.4	● 102052	● 102260	● 102237
1	11	33.24	160	32	25	20	4	30.7	● 102049	● 102259	
1 1/4	11	41.91	170	32	32	24	5	39.3	● 102043		
1 1/2	11	47.8	190	32	36	29	5	45.2	● 102042		
2	11	59.61	220	36	45	35	5	57	● 102051		
2 1/2	11	75.18	280	36	50	39	6	72.6	● 102050		

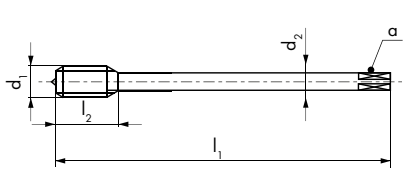
G DIN EN ISO 228 (BSP)

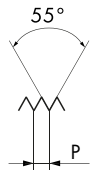
HSSE

DIN 5156



	N460-3	N460V-3	N460TN-3	N462V-3
				
				
				

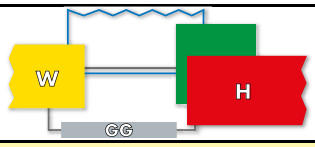




Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1/16	28	7.72	90	12.5	6	4.9	3	6.75	• 102341			
1/8	28	9.72	90	14	7	5.5	3	8.75	• 102344	• 102457	• 102444	• 143687
1/4	19	13.15	100	14	11	9	3	11.6	• 102343	• 102456	• 102443	• 143600
3/8	19	16.66	100	14	12	9	4	15.2	• 102348	• 102460	• 102446	• 143431
1/2	14	20.95	125	20	16	12	4	18.9	• 102342	• 102455	• 102442	• 143921
5/8	14	22.91	125	20	18	14.5	4	20.9	• 102349	• 143711		
3/4	14	26.44	140	22	20	16	4	24.4	• 102347	• 102459	• 102445	• 143688
1	11	33.24	160	26	25	20	4	30.7	• 102345	• 102458		
1 1/4	11	41.91	170	30	32	24	5	39.3	• 102340	• 111608		
1 1/2	11	47.8	190	35	36	29	5	45.2	• 102339	• 111609		
2	11	59.61	220	41	45	35	6	57	• 102346	• 111503		

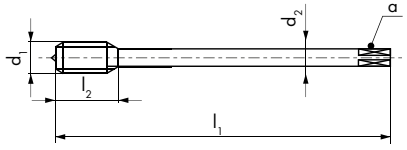
G DIN EN ISO 228 (BSP)

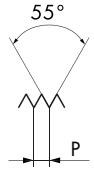
HSSE W | ≤ Ø 25.4 PM H/GG | > Ø 25.4 HSSE H/GG | DIN 5156



W460-5	R40		71 72 81
W460DL-5	R40	DLC	71 72 73
H450-3	R25		15 16 62 64 82
GG450NV-3	R15	NV	31

W460-5	W460DL-5	H450-3	GG450NV-3
			
< 2.5 x D	< 2.5 x D	< 1.5 x D	< 2.5 x D
E 1.5 x P	E 1.5 x P	C 2.5 x P	C 2.5 x P





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
1/8	28	9.72	90	14	7	5.5	3	8.75	● 119350	● 176728	● 101298
1/4	19	13.15	100	14	11	9	* 4	11.6	● 119300	● 176729	● 101297
3/8	19	16.66	100	14	12	9	4	15.2	● 119682	● 176730	● 101301
1/2	14	20.95	125	20	16	12	4	18.9	● 119199	● 176731	● 101296
3/4	14	26.44	140	22	20	16	4	24.4			● 101300
1	11	33.24	160	26	25	20	4	30.7			● 101299

* W460-5 = 3
* W460DL-5 =

Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
1/8	28	9.72	90	22	7	5.5	4	8.75	● 102309
1/4	19	13.15	100	20	11	9	4	11.6	● 102308
3/8	19	16.66	100	20	12	9	4	15.2	● 102312
1/2	14	20.95	125	22	16	12	4	18.9	● 102307
3/4	14	26.44	140	28	20	16	4	24.4	● 102311
1	11	33.24	160	32	25	20	4	30.7	● 102310

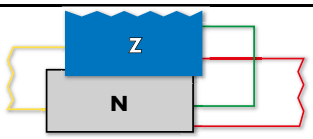
G

DIN EN ISO 228 (BSP)

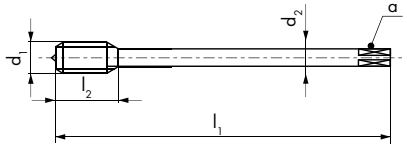
< Ø 25.4 > Ø 25.4

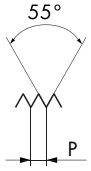
PM	HSSE	HSSE
Z420	Z420	Z460

DIN 5156



	Z420V-4	Z420VS-4	Z460V-3
			
			
			





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
1/8	28	9.72	90	22	7	5.5	3	8.75	● 142794	● 142800
1/4	19	13.15	100	20	11	9	3	11.6	● 142795	● 119303
3/8	19	16.66	100	20	12	9	3	15.2	● 142796	● 142802
1/2	14	20.95	125	22	16	12	4	18.9	● 142797	● 142803
3/4	14	26.44	140	28	20	16	4	24.4	● 142798	
1	11	33.24	160	32	25	20	4	30.7	● 142799	

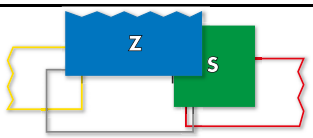
Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
1/8	28	9.72	90	14	7	5.5	3	8.75	● 104726
1/4	19	13.15	100	14	11	9	3	11.6	● 104725
3/8	19	16.66	100	14	12	9	4	15.2	● 104728
1/2	14	20.95	125	20	16	12	4	18.9	● 104724
3/4	14	26.44	140	22	20	16	4	24.4	● 104727
1	11	33.24	160	26	25	20	4	30.7	● 105142

G

DIN EN ISO 228 (BSP)

PM

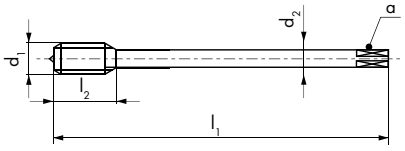
~DIN 376 (d_2 h6)

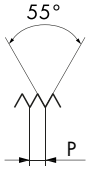


Z470VS-3 R45 VS CLASSIC — 14 15 21 22 23 24 51 61 94

Z470VS-3 R45 VS SYNCHRO — 13 14 15 21 22 23 24 51 52

Z470VS-3			





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm			ID
1/8	28	9.72	100	14	* 8	* 6.2	3	8.75	● 165198
1/4	19	13.15	110	14	* 12	* 9	4	11.6	● 165199
3/8	19	16.66	110	18	12	9	4	15.2	● 165200
1/2	14	20.95	125	20	16	12	4	18.9	● 165201

* Norme DC / * DC Norm/ * Norma DC

G DIN EN ISO 228 (BSP)

CLASSIC SYNCHRO

PM

DIN 5156

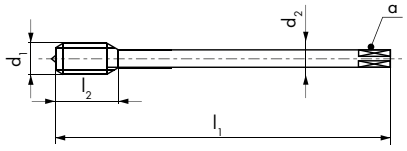
QTAP

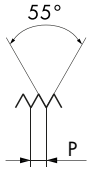
	Q420VS-4	Q423VS-4		
	 NEW	 NEW		
				
	B 4xP	B 4xP		
ID	196312	196313	196314	196315
ID	197645	197646	197647	197648

Q420VS-4  VS

Q423VS-4   VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1/8	28	9.72	90	22	7	5.5	3	8.75
1/4	19	13.15	100	20	11	9	3	11.6
3/8	19	16.66	100	20	12	9	3	15.2
1/2	14	20.95	125	22	16	12	4	18.9

G

DIN EN ISO 228 (BSP)

CLASSIC | SYNCHRO

≤ Ø 16 > Ø 16

PM | HSSE

DIN 5156

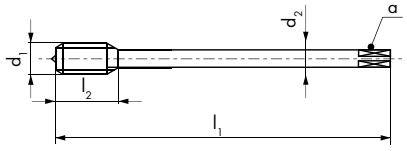
QTAP

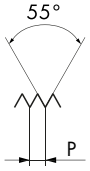
Q460VS-3	Q463VS-3		
 NEW	 NEW		
 < 2.5 x D	 < 2.5 x D		

Q460VS-3 — R40 — VS

Q463VS-3 — R40 — VS

11 12 13 14
15 21 22 23
24 31 32 51
52 61 62 63
64 71 72 73
74 81 82 83
91 92 94





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
1/8	28	9.72	90	14	7	5.5	3	8.75	● 196316	● 197649
1/4	19	13.15	100	14	11	9	3	11.6	● 196317	● 197650
3/8	19	16.66	100	14	12	9	4	15.2	● 196318	● 197651
1/2	14	20.95	125	20	16	12	4	18.9	● 196319	● 197652

G DIN EN ISO 228 (BSP)

SYNCHRO — Uniquement pour taraudage synchrone / Nur für Synchronbearbeitung / Only for rigid tapping / Solo per maschiatura sincrona / Solo para roscado sincronizado / Только для ridgid tapping

PM

~DIN 376 (d_2 h6)

RTS
Rigid Tapping Synchro

	RTS462VS-3	RTS462VS-5		

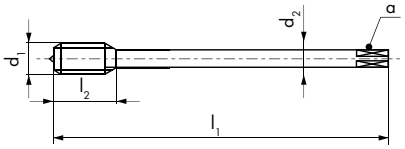
RTS462VS-3 — R40 — VS

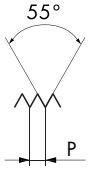
RTS462VS-5 — R40 — VS

11 12 13 14
15 21 31 32
51 61 63 64
72 73 74 81
82 83 91 92
94


< 2.5 x D

< 2.5 x D





C — 2.5 x P

E — 1.5 x P

Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm			ID	ID
1/8	28	9.72	100	14	* 8	* 6.2	3	8.75	● 151861	● 170629
1/4	19	13.15	110	14	* 12	* 9	3	11.6	● 151868	● 170631
3/8	19	16.66	110	18	12	9	4	15.2	● 151872	● 170633
1/2	14	20.95	125	20	16	12	4	18.9	● 150685	● 170635

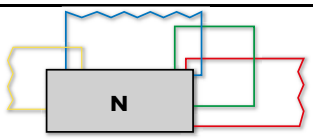
* Norme DC / * DC Norm/ * Norma DC

≥ Ø 6 mm — sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по запросу

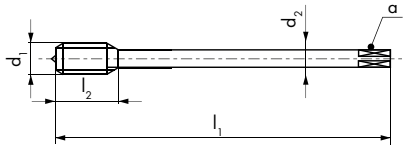
G DIN EN ISO 228 (BSP)

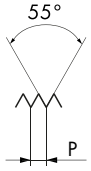
HSSE

DIN 5157



	N210-1	N210-3	N210-S
			
			
			





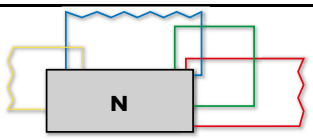
Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			N210-1 ID	N210-3 ID	N210-S ID
1/16	28	7.72	63	18	6	4.9	3	6.75		● 101418	
1/8	28	9.72	63	22	7	5.5	3	8.75	● 101404	● 101421	● 119386
1/4	19	13.15	70	20	11	9	3	11.6	● 101403	● 101420	● 119336
3/8	19	16.66	70	20	12	9	4	15.2	● 101409	● 101427	● 110938
1/2	14	20.95	80	22	16	12	4	18.9	● 101402	● 101419	● 119264
5/8	14	22.91	80	25	18	14.5	4	20.9	● 101411	● 105140	● 110940
3/4	14	26.44	90	28	20	16	4	24.4	● 101408	● 101426	● 110937
1	11	33.24	100	32	25	20	4	30.7	● 101405	● 101422	● 110933
1 1/8	11	37.89	125	32	28	22	4	35.3		● 101415	
1 1/4	11	41.91	125	32	32	24	5	39.3	● 101400	● 101414	● 111425
1 1/2	11	47.8	140	32	36	29	5	45.2	● 101399	● 101413	● 110934
2	11	59.61	160	36	45	35	5	57	● 101407	● 101425	● 110935
2 1/2	11	75.18	160	36	50	39	6	72.6		● 101423	

Rp, Rc DIN EN 10226

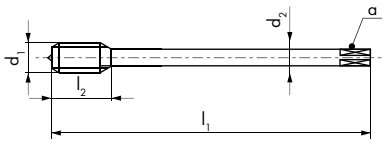
HSSE

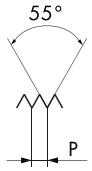
DIN 5156 (Rp)

DC (Rc)



	N420-3			N410-3
				
N420-3	 62 63 64 72 73 74 81 91			
				
N410-3	 31 62 74			 1:16
	 2.5 x P			 C 2 x P





Ø" d_1 Rp	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
1/8	28	9.72	90	22	7	5.5	3	8.6	104911
1/4	19	13.15	100	20	11	9	3	11.5	104912
3/8	19	16.66	100	20	12	9	3	15	104913
1/2	14	20.95	125	22	16	12	4	18.5	104914
3/4	14	26.44	140	28	20	16	4	24	104915
1	11	33.24	160	32	25	20	4	30.25	104916

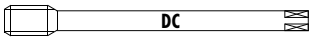
Ø" d_1 Rc	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID
1/8	28	9.72	71	13	8	6.2	5	104917
1/4	19	13.15	80	20	11	9	5	104918
3/8	19	16.66	90	20	12	9	5	104919
1/2	14	20.95	100	26	16	12	5	104920
3/4	14	26.44	110	26	20	16	5	104921
1	11	33.24	125	32	25	20	5	104922

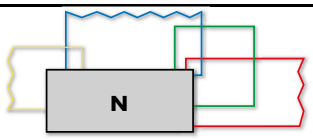
Vc (m/min) Ø d1 - Guide Line

Rc	1/16" - 1/4"	3/8" - 1/2"	3/4" - 1"	1.1/4" - 2"
31 74	10	8	7	5
62	18	15	13	10

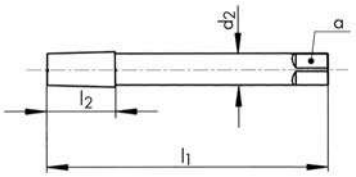
Rc DIN EN 10226

HSSE





D5800



Ø" Rc	l_1 mm	l_2 mm	d_2 mm	a mm	ID
1/16	70	17	6	4.9	● 118701
1/8	70	17	8	6.2	● 110531
1/4	80	27	10	8	● 110530
3/8	85	27	12	9	● 110535
1/2	95	35	16	12	● 110529
3/4	105	35	20	16	● 110534
1	130	43	25	20	● 110532

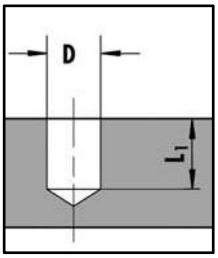
Taladros previos para roscas gas cónicas, según DIN EN 10226
Core hole diameters for tapered pipe thread to DIN EN 10226

Taladros previos cilíndricos

Desgaste más rápido del macho. A evitar

Parallel hole

Increased tap wear, not recommended

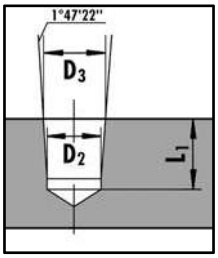


Taladros previos cónicos 1:16

Taladrar cilíndrico según Ø D_2 y escariar cónico según Ø D_3

Tapered hole 1:16

Pre-drill at Ø D_2 and taper-ream to Ø D_3

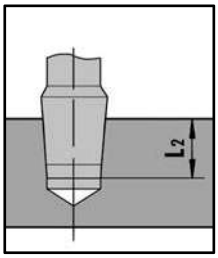


Roscar

Roscar hasta la profundidad L_2 = Ø nominal

Tapped hole

Engage tap to hole depth L_2 = nominal Ø



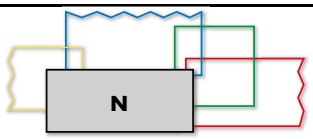
Ø" Rc	L_1 min. mm	D_1 mm	D_2 mm	D_3 mm	L_2 mm
1/16	11.9	6.2	6.1	6.56	10.6
1/8	11.9	8.2	8.1	8.57	10.6
1/4	17.7	11	10.75	11.45	15.7
3/8	18.1	14.5	14.25	14.95	16.1
1/2	24	18	17.75	18.63	21.4
3/4	25.3	23.5	23	24.12	21.5
1	30.6	29.5	29	30.29	26.3

W BS 84 (BSW)

HSS

~ISO 529

ISO 529



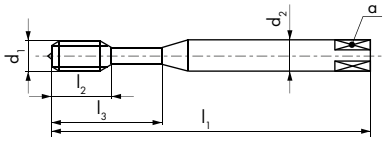
	N1110-3	N1210-3	N1120-4	N1220-4
				
				
				

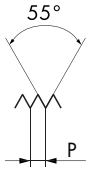
N1110-3 31 62 73 74 91

N1210-3 31 62 73 74 91

N1120-4 62 63 64 72 73 74 81 91

N1220-4 62 63 64 72 73 74 81 91

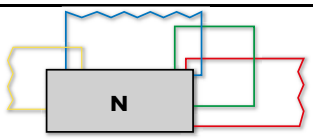




Ø" d_1 W	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
1/8	40	3.17	48	11	18	3.15	2.5	3	2.5	● 103025		● 103126	
5/32	32	3.96	53	13	21	4	3.15	3	3.1	● 103031		● 103130	
3/16	24	4.76	58	16	25	5	4	3	3.6	● 103026		● 103127	
1/4	20	6.35	66	19	30	6.3	5	3	4.9	● 103024		● 103125	
5/16	18	7.93	72	22	35	8	6.3	3	6.4	● 103030		● 103129	
3/8	16	9.52	80	24	39	10	8	3	7.7	● 103028		● 103128	
7/16	14	11.11	85	22		8	6.3	3	9.1		● 103642		● 103771
1/2	12	12.7	89	24		9	7.1	3	10.3		● 103634		● 103767
5/8	11	15.87	102	32		12.5	10	3	13.3		● 103641		● 103770
3/4	10	19.05	112	33		14	11.2	3	16.2		● 103640		● 103769

W, SV Schaublin

HSSE | ~ISO 529 / ISO 529 | HSS | DC

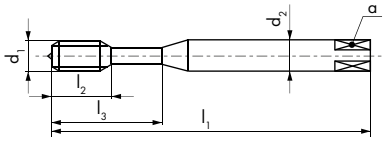


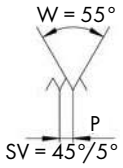
	N1110-3	N1210-3	N5120
			
			
			

N1110-3   31 | 62 | 73 | 74 | 91

N1210-3   31 | 62 | 73 | 74 | 91

N5120  11 | 12

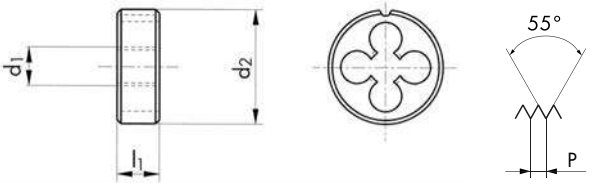




Ø d_1 W	P TPI/mm		l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
5	36/TPI/1"	B6	58	16	25	5	4	3	4.3*	● 103029
6.82	0.625	B8	66	19	30	7.1	5.6	3	6.2*	● 111143

Ø d_1 SV	P mm		l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
10	0.833	W10	80	24	39	10	8	3	* 8.9	● 130429	
12	1.25	W12	89	24		9	7.1	3	* 10.5		● 103591
15	1.25	W15	90	23		11.2	9	3	* 13.5		● 103592
20	1.666	W20	112	37		14	11.2	4	* 17.9		● 103593
25	1.693	W25	120	30		18	14	4	* 22.75		● 103594

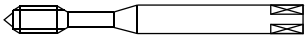
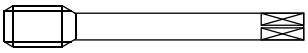
*** Tol.** $\theta^{+.1\ mm}_{0}$



Ø d_1 W	P mm		d_2 mm	l_1 mm			ID
6.82	0.625	B6	25	9	4	6.75	● 130215

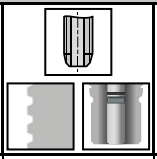
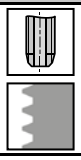
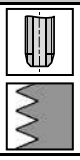
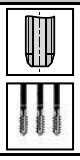
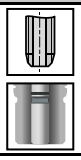
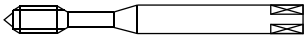
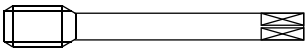
NPT, NPTF

Machos para roscar a máquina, NPT ASME B1.20.1 y NPTF ANSI B1.20.3
Machine taps, NPT ASME B1.20.1 and NPTF ANSI B1.20.3

	N			
Características **Characteristics**		V	V	1:16
				
Tipo de agujero **Hole type**				
				
	**N410-3**	**N410V-3**	**N411V-3**	**D5800**
NPT DIN largo **NPT DIN long** **DC**	220	220	220	221
NPTF DIN largo **NPTF DIN long** **DC**	220			

PG, TR

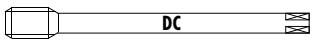
Machos para roscar a máquina y a mano, PG DIN 40430, TR ISO 2901-2904, DIN 103
Machine and hand taps, PG DIN 40430, TR ISO 2901-2904, DIN 103

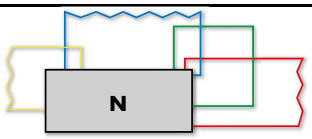
		N					
Características **Characteristics**							
							
Tipo de agujero **Hole type**							
							
		**N420-3**	**N410-1**	**N410-2**	**N410-3**	**N410-S**	**N410-8**
PG DIN largo **PG DIN long**	**DIN 40433**	222					
TR DIN largo **TR DIN long**	**DC**		223	223	223	223	222
Tolerancia **Tolerance**	**TR 7H**				223	223	222

NPT, NPTF

ASME B1.20.1, ANSI B1.20.3

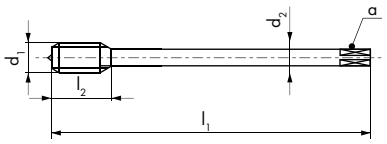
HSSE

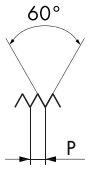




	N410-3	N410V-3	N411V-3	N410-3
				
				
				
	1:16	1:16	1:16	1:16
				
	C 2 x P	C 2 x P	C 2 x P	C 2 x P
	NPT	NPT	NPT	NPTF

N410-3						
	31	62	74			
N410V-3						
	11	12	14	21	32	
N411V-3						
	11	12	14	21	32	
N410-3						
	31	62	74			





Ø" d_1 NPT, NPTF	P TPI	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID	ID	ID
1/16	27	71	13	7	5.5	3	• 101961	• 102021	• 102031	• 101971
1/8	27	71	13	8	6.2	5	• 101964	• 102024	• 102034	• 101974
1/4	18	80	20	11	9	5	• 101963	• 102023	• 102033	• 101973
3/8	18	90	20	12	9	5	• 101968	• 102028	• 102038	• 101978
1/2	14	100	26	16	12	5	• 101962	• 102022	• 102032	• 101972
3/4	14	110	26	20	16	5	• 101967	• 102027	• 102037	• 101977
1	11.5	125	32	25	20	5	• 101965	• 102025	• 102035	• 101975
1 1/4	11.5	125	32	32	24	5	• 101960	• 102020		
1 1/2	11.5	140	32	36	29	5	• 101959	• 102019		
2	11.5	160	32	36	29	7	• 101966	• 102026		

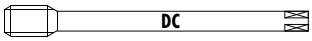
Vc (m/min) Ø d1 - Guide Line

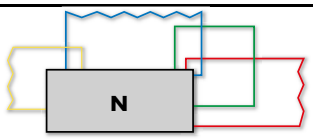
NPT, NPTF	1/16" - 1/4"	3/8" - 1/2"	3/4" - 1"	1.1/4" - 2"
11 12 14 32	6	5	4	3
21	5	4	3	2
31 74	10	8	7	5
62	18	15	13	10

NPT, NPTF

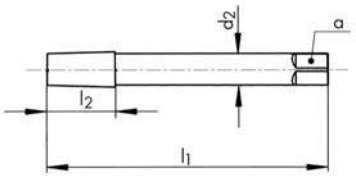
ASME B1.20.1, ANSI B1.20.3

HSSE





D5800



D5800

Ø" NPT, NPTF	l_1 mm	l_2 mm	d_2 mm	a mm	ID
1/16	70	17	6	4.9	● 118701
1/8	70	17	8	6.2	● 110531
1/4	80	27	10	8	● 110530
3/8	85	27	12	9	● 110535
1/2	95	35	16	12	● 110529
3/4	105	35	20	16	● 110534
1	130	43	25	20	● 110532

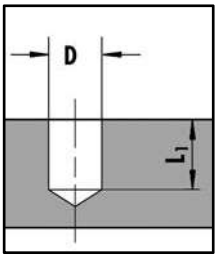
Taladros previos para roscas NPT y NPTF

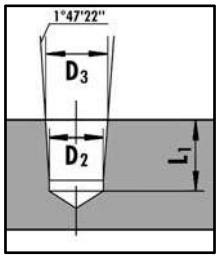
Core hole diameters for NPT and NPTF threads

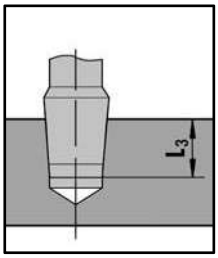
Taladros previos cilíndricos	*Taladros previos cónicos 1:16*	*Roscar*
Desgaste más rápido del macho. A evitar	*Taladrar cilíndrico según ∅ D_2 y escariar cónico según ∅ D_3*	*Roscar hasta la profundidad L_3 = ∅ nominal*
Parallel hole	**Tapered hole 1:16**	**Tapped hole**
Increased tap wear, not recommended	Pre-drill at ∅ D_2 and taper-ream to ∅ D_3	Engage tap to hole depth L_3 = nominal ∅

*Es recomendado de escariar D_3 al máximo

*Taper-ream at upper limit D_3 is recommended







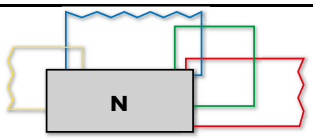
Ø" NPT, NPTF	D mm	L_1 mm	D_2 mm	NPT D_3 (+0.05) mm	NPTF D_3 (+0.05) mm	L_3 mm
1/16	6.15	12	6	6.39	6.41	10.2
1/8	8.5	12	8.3	8.74	8.76	10.3
1/4	11	17.5	10.8	11.36	11.4	15.1
3/8	14.5	17.5	14.2	14.8	14.84	15.3
1/2	17.9	23	17.5	18.32	18.33	20
3/4	23.2	23	22.8	23.67	23.68	20.5
1	29	28	28.6	29.69	29.72	24.6

PG DIN 40430 TR ISO 2901-2904, DIN 103

HSSE

DIN 40433

DC



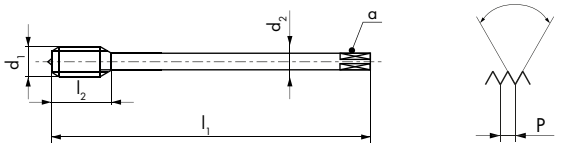
N420-3			N410-8

N420-3

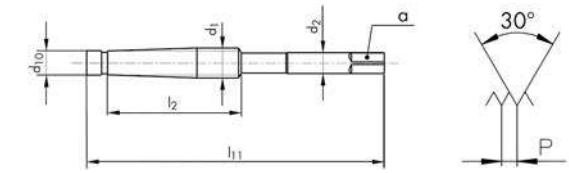
61 63 71 72 73 81

N410-8

31 62 74



Ø d_1 PG	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
7	20	12.5	100	24	9	7	3	11.3	104901
9	18	15.2	100	26	12	9	3	13.9	104902
11	18	18.6	110	26	14	11	4	17.3	104903
13.5	18	20.4	125	28	16	12	4	19.1	104904
16	18	22.5	125	28	18	14.5	4	21.2	104905
21	16	28.3	150	36	22	18	4	26.8	104906
29	16	37	170	38	28	22	4	35.5	104907
36	16	47	190	38	36	29	5	45.5	104908

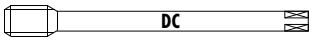


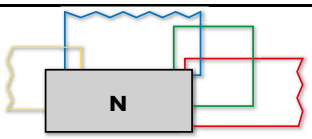
7H

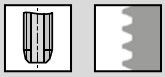
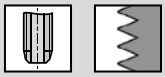
Ø d_1 TR	P mm	l_{11} mm	l_2 mm	d_{10} mm	d_2 mm	a mm			ID
10	2	100	45	8.2	7	5.5	3	8.2	102008
12	3	140	75	9.25	8	6.2	3	9.25	102009
14	3	150	75	11.25	10	8	3	11.25	102010
16	4	180	100	12.25	11	9	3	12.25	102011
18	4	180	100	14.25	12	9	3	14.25	102012
20	4	190	100	16.25	14	11	3	16.25	102013
22	5	220	110	17.25	16	12	4	17.25	111616
24	5	220	110	19.25	18	14.5	4	19.25	102015

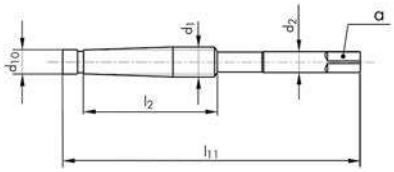
TR ISO 2901-2904, DIN 103

HSSE





	N410-1	N410-2	N410-3	N410-S
				
				
				



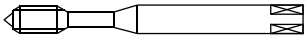
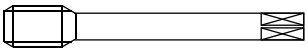
								7H	7H
Ø d_1 TR	P mm	l_{11} mm	l_2 mm	d_{10} mm	d_2 mm	a mm			
10	2	85	30	8.2	7	5.5	3	8.2	ID	ID	ID	ID
16	4	165	65	12.25	11	9	3	12.25	ID	ID	ID	ID
10	2	85	30	8.2	7	5.5	3	8.2	* 101827	* 101838	* 101979	* 110972
16	4	165	65	12.25	11	9	3	12.25	* 101830	* 101841	* 101982	* 110975

Debido a la baja demanda, ya no disponemos de los juego de machos para roscar TR en nuestra gama estándar.
A petición, estaremos encantados de ofrecerlos como productos a medida, precio y plazo de entrega a petición.

Due to low demand, we no longer keep TR tap sets in our standard programme.
On request, we will be pleased to offer these as custom-made products, price and delivery time on demand.

EG

Directorio — Machos para roscar a máquina para insertos metálicos EG M, EG UNC, EG UNF
Machine taps for wire screw thread inserts EG M, EG UNC, EG UNF

	N				Z	S	
Características **Characteristics**		V	R40	R40 V	R45 VS	VS	R35 VS
							
Tipo de agujero **Hole type**							
	**N320-4**	**N320V-4**	**N360-3**	**N360V-3**	**Z370VS-3**	**S320VS-4**	**S360VS-3**
DIN largo **DIN long** **~DIN 40435**	226	226	227	227			
DIN largo **DIN long** **~DIN 2184-1**	230 / 233		230 / 233		231 / 234	234	234
Rosca **Thread** **EG M**	226	226	227	227			
Rosca **Thread** **EG UNC**	230		230		231		
Rosca **Thread** **EG UNF**	233		233		234	234	234
	**N420-4**	**N420V-4**	**N460-3**	**N460V-3**			
DIN largo **DIN long** **~DIN 40435**	226	226	227	227			
DIN largo **DIN long** **~DIN 2184-1**	230 / 233		230 / 233				
Rosca **Thread** **EG M**	226	226	227	227			
Rosca **Thread** **EG UNC**	230		230				
Rosca **Thread** **EG UNF**	233		233				

EG

Directorio - Machos para roscar a máquina para insertos metálicos EG M, EG UNC, EG UNF
Machine taps for wire screw thread inserts EG M, EG UNC, EG UNF

SA			TL	
	R15	R10	VS	R15 VS
				
				
SA320-4	**SA350-3**	**SA390-3**	**TL320VS-4**	**TL351VS-3**
228	228	229		228
232 / 235	232 / 235	234	232	232 / 235
228	228	229		228
232	232		232	232
235	235	234		235

...MÁS INFORMACIÓN EN NUESTRO SITIO WEB
...MORE INFORMATION ON OUR WEBSITE
www.dcswiss.com

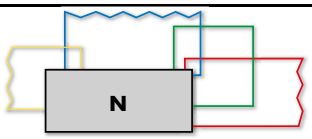
EG M ISO DIN 8140

≤ Ø 2.8 > Ø 2.8

PM | HSSE

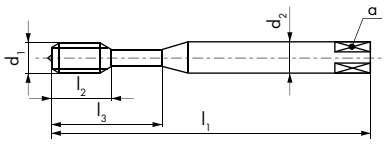
~DIN 40435

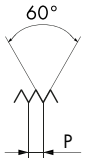
~DIN 40435



N320-4		62	63	64	72	73	74
		81	91				
N320V-4	V	11	12	31	32		
N420-4		62	63	64	72	73	74
		81	91				
N420V-4	V	11	12	31	32		

N320-4	N320V-4	N420-4	N420V-4
			
			





	N320-4	N320V-4	N420-4	N420V-4
	B 4xP	B 4xP	B 4xP	B 4xP
	6H mod	6H mod	6H mod	6H mod

Ø d_1 EG M	P mm	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	**0.4**	2.52	50	10		2.8	2.1	3	2.1	● **101537**	● **118788**		
2.5	**0.45**	3.08	56	12	18	3.5	2.7	3	2.65	● **101538**			
3	**0.5**	3.65	56	13	20	4	3	3	3.15	● **101539**	● **142804**		
4	**0.7**	4.91	70	15	25	6	4.9	3	4.2	● **101540**	● **142805**		
5	**0.8**	6.04	80	17	30	6	4.9	3	5.25	● **101541**	● **142806**		
6	**1**	7.3	80	17	30	7	5.5	3	6.3	● **101542**	● **142807**		
8	**1.25**	9.62	100	22	39	10	8	3	8.4	● **101543**	● **142808**		
10	**1.5**	11.94	100	24		9	7	3	10.4			● **102252**	● **142809**
12	**1.75**	14.27	110	28		11	9	3	12.5			● **102253**	● **142810**
16	**2**	18.59	125	33		14	11	3	16.6			● **102255**	● **142812**

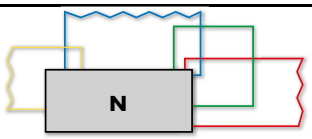
EG M ISO DIN 8140

≤ Ø 2.8 > Ø 2.8

PM | HSSE

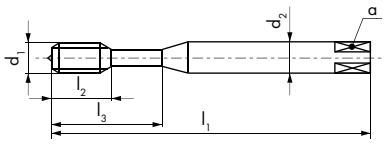
~DIN 40435

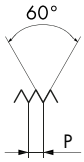
~DIN 40435



N360-3	R40		63 72 73 74 81 91
N360V-3	R40	V	11 12 32
N460-3	R40		63 72 73 74 81 91
N460V-3	R40	V	11 12 32

N360-3	N360V-3	N460-3	N460V-3
			
< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6H mod	6H mod	6H mod	6H mod





Ø d_1 EG M	P mm	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
2	0.4	2.52	50	9		2.8	2.1	2	2.1	● 101599			
2.5	0.45	3.08	56	5.5	18	3.5	2.7	3	2.65	● 101600			
3	0.5	3.65	56	6.5	20	4	3	3	3.15	● 101601	● 142813		
4	0.7	4.91	70	9	25	6	4.9	3	4.2	● 101602	● 142814		
5	0.8	6.04	80	11	30	6	4.9	3	5.25	● 101603	● 142815		
6	1	7.3	80	11	30	7	5.5	3	6.3	● 101604	● 142816		
8	1.25	9.62	100	14	39	10	8	3	8.4	● 101605	● 142817		
10	1.5	11.94	100	14		9	7	3	10.4			● 102335	● 142818
12	1.75	14.27	110	14		11	9	3	12.5			● 102336	● 142819
14	2	16.59	110	18		12	9	3	14.6			● 102337	● 142820
16	2	18.59	125	21		14	11	3	16.6			● 102338	● 142821

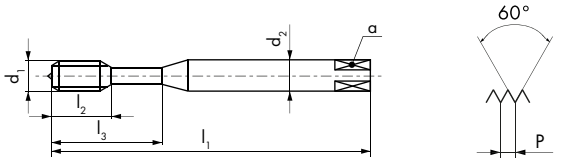
EG M ISO DIN 8140

PM

~DIN 40435

aero

	SA320-4	SA350-3		TL351VS-3
	15 16 52 64	15 16 52 64		41 42
		R15		R15 VS



Ø d_1 EG M	P mm	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
3	0.5	3.65	56	13		4	3	3	3.15	147676	147682	150478
4	0.7	4.91	70	15		6	4.9	3	4.2	147678	147684	152003
5	0.8	6.04	80	15	23	6	4.9	3	5.25	147680	147686	150184
6	1	7.3	80	15	23	7	5.5	3	6.3	147688	147692	152005
8	1.25	9.62	100	20	33	10	8	3	8.4	149354	149356	152089

EG M ISO DIN 8140

PM

~DIN 40435

aero

SA390-3

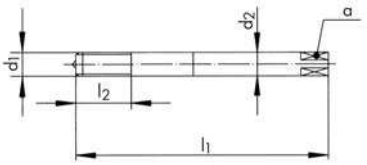
R10

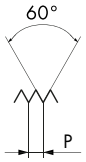
16 53

SA390-3

< 1.5 x D

< 1.5 x D





C
2.5 x P

6H
mod

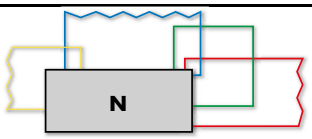
Ø d_1 EG M	P mm	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
3	0.5	3.65	56	13	4	3	3	3.15	149669
4	0.7	4.91	70	15	6	4.9	3	4.2	149688
5	0.8	6.04	80	20	6	4.9	3	5.25	149710
6	1	7.3	80	20	7	5.5	3	6.3	149723
8	1.25	9.62	100	30	10	8	3	8.4	149748
10	1.5	11.94	110	35	12	9	3	10.4	149767

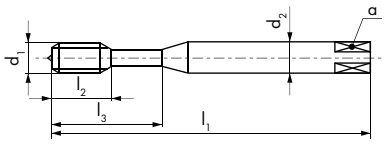
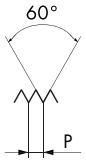
EG UNC ASME B18.29.1

HSSE

~DIN 2184-1

~DIN 2184-1



	N320-4	N420-4	N360-3	N460-3
				
	62 63 64 72 73 74 81 91	62 63 64 72 73 74 81 91	63 72 73 74 81 91	63 72 73 74 81 91
				
				
				
	B 4 x P	B 4 x P	C 2.5 x P	C 2.5 x P
	3B	3B	3B	3B

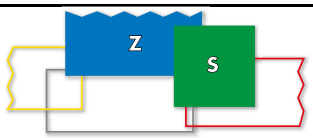
Ø" d_1 EG UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
4	40	3.67	56	13	20	4	3	3	3.05	● 110946	
6	32	4.53	70	15	25	6	4.9	3	3.75	● 110948	
8	32	5.19	70	15	25	6	4.9	3	4.45	● 110949	
1/4	20	8	90	20	35	8	6.2	3	6.7	● 110944	
5/16	18	9.77	100	22	39	10	8	3	8.4	● 110947	
3/8	16	11.58	110	24		9	7	3	10		● 110033
1/2	13	15.23	110	30		12	9	3	13.3		● 104935

Ø" d_1 EG UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID
4	40	3.67	56	6.5	20	4	3	3	3.05	● 110018	
6	32	4.53	70	9	25	6	4.9	3	3.75	● 110019	
8	32	5.19	70	9	25	6	4.9	3	4.45	● 110956	
10	24	6.2	80	11	30	7	5.5	3	5.1	● 110954	
1/4	20	8	90	12.5	35	8	6.2	3	6.7	● 110024	
5/16	18	9.77	100	14	39	10	8	3	8.4	● 111759	
3/8	16	11.58	110	14		9	7	3	10		● 111715
1/2	13	15.23	110	18		12	9	3	13.3		● 111558

EG UNC ASME B18.29.1

PM

~DIN 2184-1 (d_2 h6)



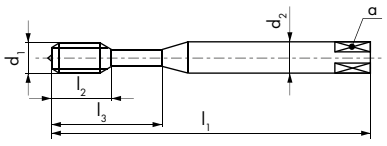
Z370VS-3			

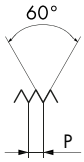
Z370VS-3 — R45 — VS — CLASSIC

14 15 21 22 23 24 51 61 94

Z370VS-3 — R45 — VS — SYNCHRO

13 14 15 21 22 23 24 51 52



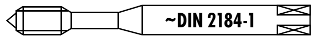


3B

Ø d_1 EG UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
4	**40**	3.67	56	6.5	20	4(h9)	3	3	3.05	● **165126**
6	**32**	4.53	70	9	25	6	4.9	3	3.75	● **165127**
8	**32**	5.19	70	9	25	6	4.9	3	4.45	● **165128**

EG UNC ASME B18.29.1

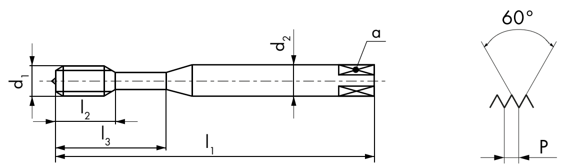
PM



aero

SA320-4		15 16 52 64
SA350-3	R15	15 16 52 64
TL320VS-4	VS	41 42
TL351VS-3	R15, VS	41 42

	SA320-4	SA350-3	TL320VS-4	TL351VS-3
		< 1.5 x D		< 2 x D < 2 x D
	B 4 x P	C 2.5 x P	B 4 x P	C 2.5 x P
	3B	3B	3B	3B



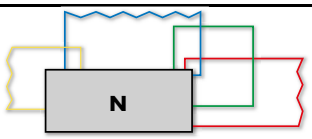
Ø" d1 EG UNC	P TPI	d1 mm	l1 mm	l2 mm	l3 mm	d2 mm	a mm			SA320-4 ID	SA350-3 ID	TL320VS-4 ID	TL351VS-3 ID
4	40	3.67	56	13		4	3	3	3.05	● 149073	● 149075		● 152031
6	32	4.53	70	15		6	4.9	3	3.75	● 149121	● 149123	⋆ 152040	● 152041
8	32	5.19	70	15		6	4.9	3	4.45	● 149170	● 149172		● 152053
1/4	20	8	90	18	29	8	6.2	3	6.7	● 149284	● 149286	⋆ 152073	● 152074
5/16	18	9.77	100	20	33	10	8	3	8.4		⋆ 149360		

EG UNF ASME B18.29.1

HSSE

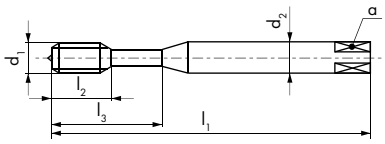
~DIN 2184-1

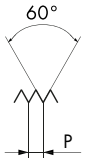
~DIN 2184-1



N320-4		62 63 64 72 73 74 81 91
N420-4		62 63 64 72 73 74 81 91
N360-3	R40	63 72 73 74 81 91
N460-3	R40	63 72 73 74 81 91

N320-4	N420-4	N360-3	N460-3
			
			
B 4 x P	B 4 x P	C 2.5 x P	C 2.5 x P
3B	3B	3B	3B





Ø" d1 EG UNF	P TPI	d1 mm	l1 mm	l2 mm	l3 mm	d2 mm	a mm			ID	ID
6	40	4.33	63	14	21	4.5	3.4	3	3.7	● 118879	
8	36	5.08	70	15	25	6	4.9	3	4.4	● 118882	
10	32	5.85	80	17	30	6	4.9	3	5.1	● 104941	
1/4	28	7.52	90	20	35	8	6.2	3	6.65	● 110234	
5/16	24	9.31	90	20	35	9	7	3	8.2	● 118876	
3/8	24	10.89	100	19		8	6.2	3	9.8		● 118873
1/2	20	14.35	100	24		11	9	3	13.1		● 118865

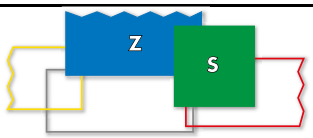
Ø" d1 EG UNF	P TPI	d1 mm	l1 mm	l2 mm	l3 mm	d2 mm	a mm			ID	ID
6	40	4.33	63	7.5	21	4.5	3.4	3	3.7	● 110959	
8	36	5.08	70	9	25	6	4.9	3	4.4	● 110960	
10	32	5.85	80	11	30	6	4.9	3	5.1	● 104946	
1/4	28	7.52	90	12.5	35	8	6.2	3	6.65	● 110020	
5/16	24	9.31	90	12.5	35	9	7	3	8.2	● 111619	
3/8	24	10.89	100	19		8	6.2	3	9.8		● 110027
1/2	20	14.35	100	14		11	9	3	13.1		● 104951

EG UNF ASME B18.29.1

PM

~DIN 2184-1 (d_2 h6)

~DIN 2184-1



	Z370VS-3	S320VS-4	S360VS-3	SA390-3
				
	 < 3 x D		 < 2 x D	 < 1.5 x D
				 < 1.5 x D
	 C 2.5 x P	 B 4 x P	 C 2.5 x P	 C 2.5 x P
	3B	3B	3B	3B

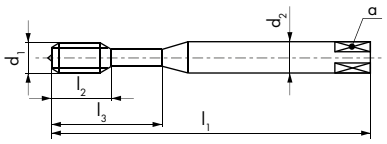
Z370VS-3 R45 VS CLASSIC — 14 15 21 22 23 24 51 61 94

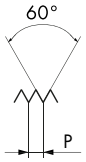
Z370VS-3 R45 VS SYNCHRO — 13 14 15 21 22 23 24 51 52

S320VS-4 VS — 13 15 16 22 23 24 52

S360VS-3 R35 VS — 13 15 16 22 23 24 52

SA390-3 R10 aero — 16 53





Ø" d_1 EG UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm			ID
10	32	5.85	80	11	30	6	4.9	3	5.1	● 165129
1/4	28	7.52	90	12.5	35	8	6.2	3	6.65	● 165130
5/16	24	9.31	90	12.5	35	* 8	* 6.2	3	8.2	● 165131

* Norme DC / * DC Norm/ * Norma DC

Ø" d_1 EG UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
10	32	5.85	80	17	30	6	4.9	3	5.1	● 111821
1/4	28	7.52	90	20	35	8	6.2	3	6.65	● 111822
5/16	24	9.31	90	20	35	9	7	3	8.2	● 111823

Ø" d_1 EG UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID
10	32	5.85	80	11	30	6	4.9	3	5.1	● 111811
1/4	28	7.52	90	12.5	35	8	6.2	3	6.65	● 111812
5/16	24	9.31	90	12.5	35	9	7	3	8.2	● 111824

Ø" d_1 EG UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
10	32	5.85	80	20	6	4.9	3	5.1	● 149702
1/4	28	7.52	90	25	8	6.2	3	6.65	● 149724

EG UNF ASME B18.29.1

PM

~DIN 2184-1

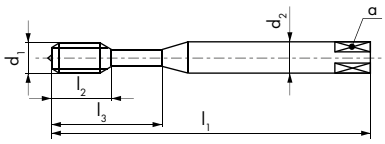
aero

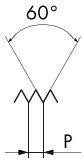
	SA320-4	SA350-3		TL351VS-3
				
		< 1.5 x D		< 2 x D
				< 2 x D
	B 4 x P	C 2.5 x P		C 2.5 x P
	3B	3B		3B

SA320-4 — 15 16 52 64

SA350-3 — R15 — 15 16 52 64

TL351VS-3 — R15 — VS — 41 42





Ø" d_1 EG UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID
10	32	5.85	80	15	23	6	4.9	3	5.1	● 149190	● 149192	● 148008
1/4	28	7.52	90	18	29	8	6.2	3	6.65	● 146099	● 149268	● 148014
5/16	24	9.31	90	20	31	9	7	3	8.2	● 149336	● 149338	● 148021

MACHO DE CORONA

Generalidad
El macho de corona DC con tratamiento superficial "V" es un útil de alto rendimiento y una calidad superficial del roscado excelente.

Campos de aplicación
El ahuecamiento delantero permite alojar las virutas. Por esta razón, el macho de corona puede ser utilizado tanto en agujeros pasantes como en agujeros ciegos. Su campo de aplicación se situa para materiales con resistencia hasta 850 N/mm² y alargamiento máximo a la rotura de 30 %.

Utilización
En caso de agujeros ciegos, para un roscado correcto, hay que adaptar la profundidad del taladro previo y seguir las siguientes instrucciones:
- *roscar hasta que la fricción del aparato de roscar patine*
- *retroceder el macho y quitar las virutas*
- *terminar de roscar hasta el fondo de agujero.*

Exigencias particulares
El funcionamiento correcto del macho de corona DC, así como la calidad de la rosca, dependen de los puntos siguientes:
- *el error de alineación no debe exceder 0.1 mm*
- *el macho debe girar perfectamente centrado, utilizar un porta-machos de roscar adecuado*
- *trabajar con una velocidad de corte correcta*
- *lubrificante adaptado al material*
- *fijar el útil en un aparato de roscar con compensación axial y embrague de seguridad*
- *reglar el embrague de seguridad sobre una posición superior al par de potencia de trabajo.*

En el momento del primer roscado, aflojar el embrague, y apretar progresivamente hasta que el macho entre en movimiento.

Virutas
La capacidad de acumulación de las virutas en el ahuecamiento es la siguiente:

Roscas	*Ø 20 - 29 mm*	*≥ Ø 30 mm*
M	*-*	*1.4 x D*
MF	*1.2 x D*	*1.4 x D*
UN-8	*-*	*1.4 x D*
G	*1.2 x D*	*1.4 x D*

CROWN TAPS

General information
The DC crown tap with "V" surface treatment to prevent cold welding is a tool of high performance, which offers a very high quality surface finish of the tapped threads.

Application rang
Thanks to the front recess providing space for the chip collection, the DC crown tap is suitable for both, through and blind hole tapping. The crown tap can be used for materials with a tensile strength up to 850 N/mm² and an elongation of maximum 30 %.

Utilization
For an optimal blind hole threading, the core hole depth must be adapted accordingly and the following application instructions must be followed:
- tap until tapping head clutch slips
- retract tap and clear chips
- tap to the full depth.

General hints
The efficient operation of DC crown taps, as well as the quality of the cut threads, depend on observation of the following rules:
- do not exceed the maximum permissible centering error of 0.1 mm
- the tap must run concentrically, use a suitable tapping head
- tap at the correct cutting speed
- select a coolant to suit the material being tapped
- use a tapping head with axial compensation and safety clutch
- set the safety clutch so that it will slip at just above the tapping torque.

When tapping the first hole, slacken the clutch until it slips, then gradually tighten it until the tap is driven.

Chip accumulation
The chip accumulation capacity of the recess is the following:

Thread diameter	Ø 20 - 29 mm	≥ Ø 30 mm
M	-	1.4 x D
MF	1.2 x D	1.4 x D
UN-8	-	1.4 x D
G	1.2 x D	1.4 x D

Velocidad de corte y revoluciones por minuto (directivas) - Cutting and spindle speeds (guide values)

M	P	V_c (m/min)	n (U/min)
30	3.5	7.9	84
33	3.5	7.7	74
36	4.0	7.5	66
39	4.0	7.3	60
42	4.5	7.1	54
45	4.5	6.9	49
48	5.0	6.6	44
52	5.0	6.4	39
56	5.5	6.1	35
60	5.5	5.8	31
64	6.0	5.5	28
68	6.0	5.2	25

MF	P	V_c (m/min)	n (U/min)
22	1.5	8.0	116
24	1.5	8.0	106
26	1.5	7.9	97
28	1.5	7.9	90
30	1.5	7.9	84
30	2.0	7.9	84
32	1.5	7.8	77
32	2.0	7.8	77
33	1.5	7.7	74
33	2.0	7.7	74
34	1.5	7.6	71
35	1.5	7.6	69
36	1.5	7.5	66
36	2.0	7.5	66
36	3.0	7.5	66
38	1.5	7.3	62
40	1.5	7.2	57
40	2.0	7.2	57
42	1.5	7.1	54
42	2.0	7.1	54
42	3.0	7.1	54
42	4.0	7.1	54

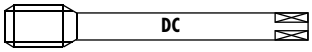
MF	P	V_c (m/min)	n (U/min)
45	1.5	6.9	49
45	2.0	6.9	49
48	1.5	6.6	44
48	2.0	6.6	44
48	3.0	6.6	44
48	4.0	6.6	44
50	1.5	6.5	41
52	1.5	6.4	39
52	3.0	6.4	39
55	1.5	6.2	36
56	4.0	6.1	35
60	2.0	5.8	31
64	4.0	5.5	28
68	4.0	5.2	25
72	6.0	5.0	22
76	6.0	4.7	20
80	2.0	4.4	18
80	4.0	4.4	18
80	6.0	4.4	18
90	6.0	3.7	13
100	6.0	3.0	10
110	6.0	2.5	7

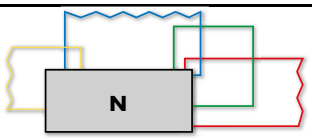
UN-8	P TPI	V_c (m/min)	n (U/min)
1 1/4″	8	7.8	77
1 3/8″	8	7.6	69
1 1/2″	8	7.3	62
1 5/8″	8	7.1	55
1 3/4″	8	6.9	49
1 7/8″	8	6.7	45
2″	8	6.4	40
2 1/8″	8	6.4	38
2 1/4″	8	6.1	34
2 1/2″	8	5.6	28

G	P TPI	V_c (m/min)	n (U/min)
3/4″	14	7.9	95
1″	11	7.7	74
1 1/4″	11	7.1	54
1 1/2″	11	6.6	44
1 3/4″	11	6.3	37
2″	11	5.8	31

M ISO DIN 13

HSSE



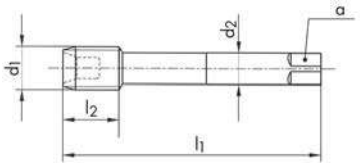


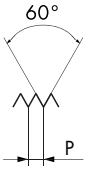
N470V-4

V

11 12 13 14 21 32

N470V-4



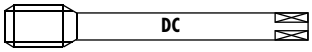


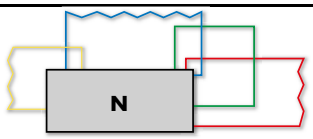
ISO 2
6H

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
30	3.5	180	39	22	18	5	26.5	● 102575
33	3.5	180	39	22	18	5	29.5	✶ 102576
36	4	200	43	25	20	5	32	● 102577
39	4	200	43	25	20	5	35	● 102578
42	4.5	220	47	28	22	5	37.5	● 102579
45	4.5	220	47	28	22	5	40.5	● 102580
48	5	240	52	32	24	5	43	● 102581
52	5	240	52	32	24	5	47	● 102582
56	5.5	260	58	36	29	6	50.5	● 102583
60	5.5	260	58	36	29	6	54.5	● 102584
64	6	290	64	40	32	6	58	● 102585
68	6	290	64	40	32	6	62	✶ 102586

MF ISO DIN 13

HSSE



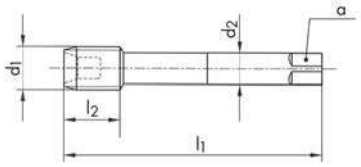


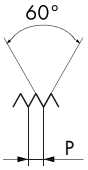
N470V-3

V

11 12 13 14 21 32

N470V-3





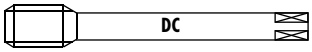
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
Δ22	1.5	125	28	18	14.5	4	20.5	✱ 102526
Δ26	1.5	140	30	18	14.5	4	24.5	✱ 102529
Δ28	1.5	140	30	20	16	4	26.5	✱ 102530
30	1.5	160	32	22	18	5	28.5	✱ 102531
34	1.5	160	26	22	18	5	32.5	✱ 102537
35	1.5	175	28	25	20	5	33.5	✱ 102538
36	2	175	35	25	20	5	34	● 102540
36	3	200	43	25	20	5	33	● 102541
38	1.5	175	28	25	20	5	36.5	✱ 102542
40	2	190	38	28	22	5	38	✱ 102544
42	2	190	38	28	22	5	40	● 102546
42	3	220	47	28	22	5	39	● 102547
48	1.5	205	34	32	24	5	46.5	✱ 102551
48	3	205	41	32	24	5	45	● 102553
52	3	205	41	32	24	5	49	● 102557
56	4	260	58	36	29	6	52	● 102559
64	4	290	64	40	32	6	60	● 102561
80	4	270	56	45	35	7	76	✱ 102564

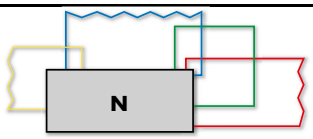
Other sizes from Ø 30 to 160 mm on request!

Δ

UN ASME B1.1 G DIN EN ISO 228 (BSP)

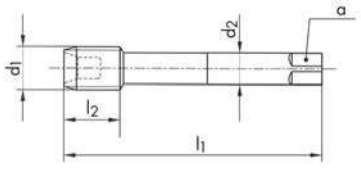
HSSE

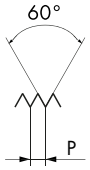




N470V-3  V 11 12 13 14 21 32

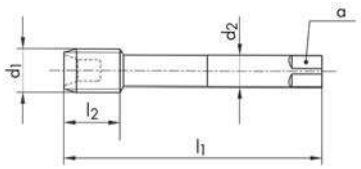
N470V-3			

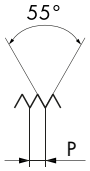




2B

Ø" d_1 UN	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
1 1/4	8	31.75	180	39	22	18	5	28.7	● 102566
1 3/8	8	34.92	180	39	22	18	5	31.8	● 102568
1 1/2	8	38.1	200	43	25	20	5	35	● 102565
1 5/8	8	41.27	220	47	28	22	5	38.2	● 102569
1 3/4	8	44.45	220	47	28	22	5	41.4	● 102567
1 7/8	8	47.62	240	52	32	24	5	44.5	● 102570
2	8	50.8	205	41	32	24	5	47.7	● 102572
2 1/8	8	53.97	205	41	32	24	5	50.9	✱ 143542
2 1/4	8	57.15	220	45	36	29	6	54.1	● 102571
2 1/2	8	63.5	220	45	36	29	6	60.4	● 111879





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
Δ 3/4	14	26.44	150	34	20	16	4	24.4	● 102525
1	11	33.24	160	32	22	18	5	30.7	● 102522
1 1/4	11	41.91	190	38	28	22	5	39.3	● 102519
1 1/2	11	47.8	205	41	32	24	5	45.2	● 102518
1 3/4	11	53.74	205	41	32	24	5	51.2	✱ 102520
2	11	59.61	220	45	36	29	6	57	● 102524

Δ 

BROCAS-MACHOS

Generalidad

Broca-macho DC es un útil que permite taladrar y roscar en una sola operación (sin cambiar de herramienta).

Su utilización es ideal para máquinas CNC, máquinas de transmisión, tornos, roscadoras.

Campos de aplicación

Los materiales adecuados para trabajar con la broca-macho DC son los situados con una resistencia hasta 750 N/mm2 como los aceros, la fundición gris, la fundición gris dúctil, el latón y el aluminio.

Exigencias particulares

- *El taladro previo debe estar terminado antes que el macho de roscar empiece a trajabar.*
- *Para los materiales de virutas cortas, la profundidad de la rosca a realizar no debe superar 1.8 x D (2 x D para N5952).*
- *Para los materiales de virutas cortas, la profundidad de la rosca a realizar no debe superar 1.2 x D.*
- *La lubrificación es la misma.*

Velocidad de corte

Si las máquinas lo permiten, es preferible trajabar con las velocidades de taladro y roscado apropiadas (ver tabla de utilización).

Sobre las máquinas donde las velocidades de taladro y de roscado no pueden ser variadas, es recomendable aplicar los valores indicados en la siguiente tabla.

Utilización

Chaflán:

Centrar y achaflanar simultáneamente.

Programación con avance y rotación, 100 % sincronizados (caso ideal):

1) Acercar la broca-macho en aceleración a su lugar de trabajo

2) Taladrar:
- *regular las vueltas*
- *regular el avance*
- *evitar las virutas largas*
- *eliminar las virutas*

3) Posicionar la broca-macho para iniciar el roscado

4) Roscar:
- *regular la velocidad del roscado*
- *el avance debe corresponder a 100 % del paso*
- *regular la profundidad*
- *el roscado debe estar libre de virutas en el momento de empezar el trabajo*

5) Volver con la broca-macho a la posición inicial.

Programación sin sincronización total del avance y de la rotación:

Importante: utilizar mandril con muelle de compresión bloqueado y extensión axial libre.

1) Acercar la broca-macho en aceleración a su lugar de trabajo

2) Taladrar:
- *regular las vueltas*
- *regular el avance*
- *evitar las virutas largas*
- *eliminar las virutas*

3) Posicionar la broca-macho para iniciar el roscado

4) Roscar:
- *regular la velocidad del roscado*
- *el avance debe corresponder a 90 - 95 % del paso*
- *regular la profundidad*

5) Volver con la broca-macho a la posición inicial.

Velocidad de corte y revoluciones por minuto (directivas)

		Ø y números de revoluciones/min										
Grupos de materiales	**Vc (m/min)**	**M3**	**M4**	**M5**	**M6**	**M8**	**M10**	**M12**	**M14**	**M16**	**M18**	**M20**
Aceros hasta 500 N/mm²	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Aceros desde 500 N/mm²	15	1600	1200	950	800	600	480	400	340	300	270	240
Fundición gris dúctil	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Fundición gris	15	1600	1200	950	800	600	480	400	340	300	270	240
Latón	25	2650	2000	1600	1330	950	800	660	570	500	450	400
Aluminio	25	2650	2000	1600	1330	950	800	660	570	500	450	400

COMBINATION DRILL/TAPS

General information

DC combination drill/taps - two tools in one, which allows the drilling and the threading of a workpiece without changing the tool.
It is the optimal solution for CNC-machines, drilling heads, turret lathes and tapping machines.

Application rang

DC combination drill/taps are recommended for use in materials with a tensile strenght up to 750 N/mm², such as certain steels, cast iron, aluminium, brass.

General hints

- The core hole must be completely drilled through before the tap starts cutting.
- In short chipping materials, the depth of thread should not exceed 1.8 x D (type N5952 up to 2 x D).
- In long chipping materials, the depth of thread should not exceed 1.2 x D.
- Lubricate as for tapping.

Cutting speeds

On drilling heads and CNC-machines, the ideal speeds for drilling and tapping are selected (see our application chart).
If the same speed is selected for both drilling and tapping, we recommend the values indicated below.

Programming instructions

Countersinking:

Center and countersink simultaneously.

Programming steps for spindle feed and rotation 100 % synchronised (ideal case):

1) Combi-drill-tap in rapid to start position
2) Drilling:
   - set speed
   - set feed
   - avoid long chips
   - clear shavings
3) Tapping section in start position
4) Tapping:
   - set speed
   - feed = 100 % pitch
   - set thread depth
   - tap must be free of swarf before starting to cut
5) Combi-drill-tap returns to start position.

Programming steps for spindle feed rotation not fully synchronised:

Important: Mount combination drill-tap in chuck with locked pressure spring, but with axial compensation on pull.

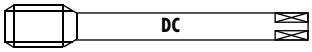
1) Combi-drill-tap in rapid to start position
2) Drilling:
   - set speed
   - set feed
   - avoid long chips
   - clear shavings
3) Tapping section in start position
4) Tapping:
   - set speed
   - feed = 90 - 95 % pitch
   - set thread depth
5) Combi-drill-tap returns to start position.

Cutting and spindle speeds (guide values)

		Speeds for different diameters										
Material groups	**Vc (m/min)**	**M3**	**M4**	**M5**	**M6**	**M8**	**M10**	**M12**	**M14**	**M16**	**M18**	**M20**
Steels up to 500 N/mm²	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Steels over 500 N/mm²	15	1600	1200	950	800	600	480	400	340	300	270	240
Cast iron, soft	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Cast iron, hard	15	1600	1200	950	800	600	480	400	340	300	270	240
Brass	25	2650	2000	1600	1330	950	800	660	570	500	450	400
Aluminium	25	2650	2000	1600	1330	950	800	660	570	500	450	400

M, MF ISO DIN 13

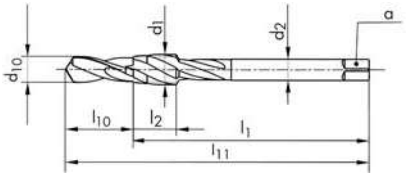
HSSE

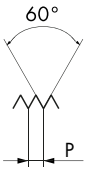


N5951  

N5952  

N5951  





N5951	N5952	N5951	
			
ISO 2 6H	ISO 2 6H	7H EN 60423	

Ø d_1 M	P mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
3	0.5	62	12.5	3.5	2.7	2.55	9	• 104578
4	0.7	66	16	4.5	3.4	3.36	10	• 104580
5	0.8	75.5	18	6	4.9	4.26	12.5	• 104583
6	1	81	20	6	4.9	5.05	14	• 104585
8	1.25	93	12	6	4.9	6.8	20	• 104588
10	1.5	99	14	7	5.5	8.55	22	• 104571
12	1.75	106	16	9	7	10.3	25	• 104573
16	2	123	20	12	9	14.1	32	• 104576
20	2.5	132	22	16	12	17.6	36	• 104577

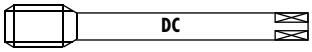
Ø d_1 M	P mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
4	0.7	77	16	4.5	3.4	3.36	21	• 104608
5	0.8	87	18	6	4.9	4.26	24	• 104609
6	1	94	20	6	4.9	5.05	27	• 104610
8	1.25	109	12	6	4.9	6.8	36	• 104611
10	1.5	118	14	7	5.5	8.55	41	• 104603

Ø d_1 MF	P mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
4	0.5	66	16	4.5	3.4	3.55	10	* 104579
5	0.75	75.5	18	6	4.9	4.31	12.5	* 123379
8	1	93	12	6	4.9	7.05	20	• 104587
10	1	99	14	7	5.5	9.05	22	• 104570

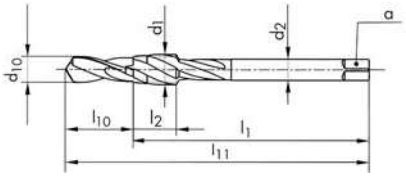
Ø d_1 MF	P mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
12	1.5	106	16	9	7	10.55	25	• 142825
16	1.5	123	16	12	9	14.55	32	• 142826
20	1.5	132	18	16	12	18.55	36	• 111844
25	1.5	155	22	18	14.5	23.55	45	• 111845
32	1.5	170	24	22	18	30.55	50	• 111846

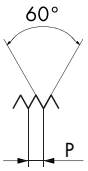
UNC ASME B1.1 G DIN EN ISO 228 PG DIN 40430

HSSE



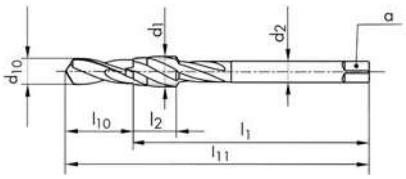
N5951

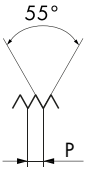




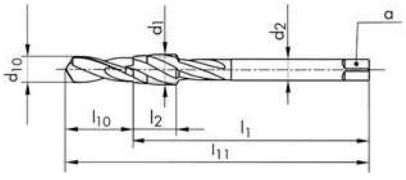
2B

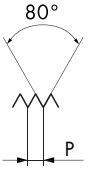
Ø" d_1 UNC	P TPI	d_1 mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
6	32	3.5	66	16	4	3	2.8	10	✶ 104601
10	24	4.82	75.5	18	4.5	3.4	3.86	12.5	● 104598
1/4	20	6.35	81	20	7	5.5	5.15	14	● 104597
1/2	13	12.7	106	16	9	7	10.85	25	✶ 104596





Ø" d_1 G	P TPI	d_1 mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
1/8	28	9.72	93	12	7	5.5	8.75	20	● 104567
1/4	19	13.15	106	14	11	9	11.75	25	● 104566
3/8	19	16.66	123	16	12	9	15.25	32	● 104569
1/2	14	20.95	132	18	16	12	19	36	● 104565





Ø d_1 PG	P TPI	d_1 mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm	ID
16	18	22.5	142	20	18	14.5	21.25	40	● 104591
29	16	37	203	28	28	22	35.65	63	● 104593

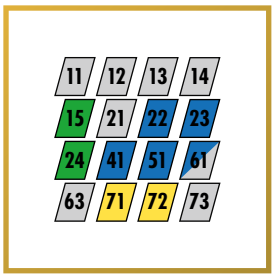
ROSCADO POR LAMINACIÓN
THREAD FORMING

A PETICIÓN

Ejecuciones especiales con lóbulos poligonales adaptados para aplicaciones específicas.

ON REQUEST

Special executions with adapted polygon lobes for specific applications.

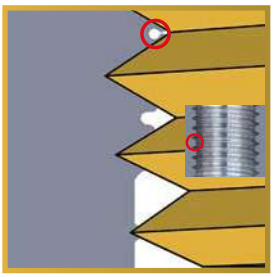


Campo de aplicación

Todos los materiales con un mínimo de 10 % de alargamiento y una resistencia a la rotura hasta 1'150 N/mm2, ej. aceros, aceros inoxidables, titanio puro, aluminio, cobre, latón de virutas largas, etc.

Range of application

All materials with a minimum of 10 % elongation and a tensile strength of up to 1'150 N/mm2, e.g. steels, stainless steels, pure titanium, aluminium, copper, long chipping brass, etc.



Proceso del laminado

Las puntas y flancos de los dientes del macho entran en la pieza a deformar y empujan el material dentro de los espacios del perfil de la herramienta. De esta manera se forma el perfil típico del roscado con la cueva en su extremidad.

Forming process

The polished points and flats of the thread former's teeth pierce the ductile material and force the material into the space in the tool profile. This creates the thread profile with its typical groove in the crest.

Ventajas

- *Mejora de la seguridad del proceso, por la falta de viruta.*
- *Una sola herramienta para agujeros ciegos y pasantes.*
- *Optimo para agujeros profundos.*
- *Roscado con una resistencia a la tracción estática y dinámica.*

Advantages

- Higher process security due to the lack of shavings.
- Only one tool for both, through and blind holes.
- Optimal for deep threads.
- Thread with higher resistance of stripping by static and dynamic load.

Restricciones

Por razones físicas, el roscado por laminación en piezas con paredes finas es posible únicamente con una máxima precaución.

Application restriction

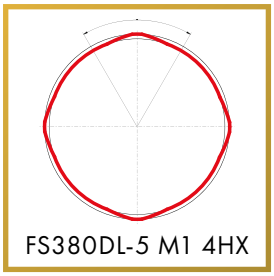
For physical reasons, thread forming in thin-walled workpieces should be carried out with due care.

Lubrificación

La laminación del material ocasiona importantes fuerzas de frotación, por este motivo se debe proteger por una película de aceite. La rotura de ésta provoca soldaduras frías que pueden provocar la rotura del macho.

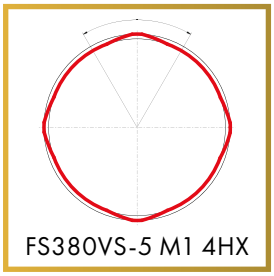
Adequate lubrication

The thread forming process generates considerable friction. Therefore the tool must be protected by a film of lubricant. If the supply of lubricant is interrupted, then cold welding will quickly occur, resulting in tool failure.


FS380DL-5 M1 4HX

Macho de laminación FS-DL
Macho de laminación universal a 4 puntas para pequeños roscados de Ø ≥ 1 - < 3 mm para los materiales deformables a frío. El recubrimiento "DLC" aporta excelentes propiedades de deslizamiento y autolubricación. Para inoxidables, cobre puro, etc.

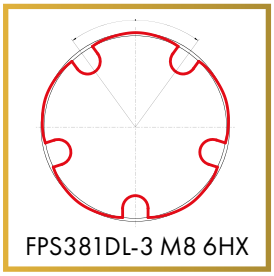
Thread former FS-DL
Universal thread former with 4 forming lobes for small thread sizes Ø ≥ 1 - < 3 mm, in all cold forming materials. With "DLC" wear-protective coating with excellent lubrication and sliding properties. For stainless steels, pure copper, etc.


FS380VS-5 M1 4HX

Macho de laminación FS-VS
Macho de laminación universal a 4 puntas para pequeños roscados de Ø ≥ 1 - < 3 mm para los materiales deformables a frío. Con un recubrimiento DC "VS" para un mejor deslizamiento y protección contra el desgaste.

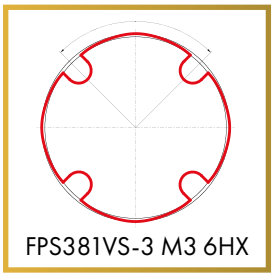
Thread former FS-VS
Universal thread former with 4 forming lobes for small thread sizes Ø ≥ 1 - < 3 mm, in all cold forming materials. With DC "VS" tool wear protective coating with high sliding properties.

NEW


FPS381DL-3 M8 6HX

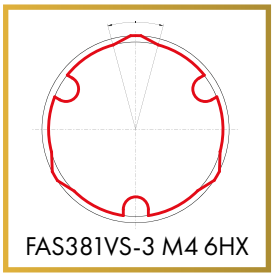
Macho de laminación FPS-DL
Para ≥ Ø 3 mm, con puntas de contactos redondeadas, concebidas para una deformación progresiva de materiales de bajo coeficiente de alargamiento. Con recubrimiento de protección contra el desgaste "DLC" para un mejor deslizamiento y una alta vida útil de la herramienta en latón de virutas largas y aluminio.

Thread former FPS-DL
For Ø ≥ 3 mm, with large forming lobes designed for a progressive flow of abrasive materials. With "DLC" wear-protective coating for better gliding and high tool life in long chipping brass and aluminium.


FPS381VS-3 M3 6HX

Macho de laminación FPS-VS
Para ≥ Ø 3 mm, con puntas de contactos redondeadas, concebidas para una deformación progresiva de materiales de bajo coeficiente de alargamiento. El recubrimiento DC "VS" tiene una fuerte resistencia al desgaste y una estabilidad térmica y química a alta temperatura. Para aceros de construcción, al carbono, aleados, etc.

Thread former FPS-VS
For Ø ≥ 3 mm, with large forming lobes designed for a progressive flow of materials with low elongation coefficient. With DC "VS" wear-protective coating with thermal and chemical properties. For structural steels, carbon steels, alloy steels, etc.


FAS381VS-3 M4 6HX

Macho de laminación FAS-VS
Para Ø ≥ 3 mm, con puntas salientes, para una deformación rápida de materiales de alto coeficiente de alargamiento. El recubrimiento DC "VS" aporta excelentes propiedades de deslizamiento y autolubricación. Para inoxidables, cobre puro, etc.

Thread former FAS-VS
For Ø ≥ 3 mm, with pointed forming lobes designed for a fast flow of tough materials with high elongation coefficient. With DC "VS" wear-protective coating with excellent lubrication and sliding properties. For stainless steels, pure copper, etc.

Ranuras de lubrificatión desde Ø 3 mm
El lubricante esta guiado hacia las superficies de la herramienta directamente en contacto con el material.

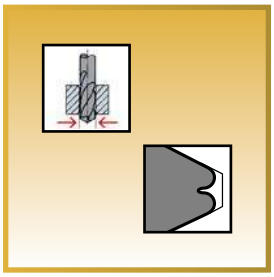
Lubrication grooves from Ø 3 mm
Lubricant will be guided to the surface of the tool which is directly in contact with the material.

Sin ranuras de lubrificatión
Particularmente recomendado para materiales blandos y agujeros pasante en chapa.

Without lubrication grooves
Especially recommended for forming soft materials and for through holes in thin parts (e.g. for sheet metal working).

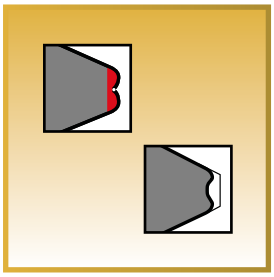
Con *lubrificatión interna*
Recomendado particularmente para agujeros profundos y trabajos en horizontal.

With internal coolant supply
Highly recommended for deeper threads and for horizontal working.



Perfil del roscado correcto
Un taladro previo preciso es fundamental para realizar un roscado conforme a las normas. Para materiales con fuerte coeficiente de alargamiento o roscado profundo > 2 x D, un taladro previo de 0.02 a 0.05 mm es recomendado.

Correct thread profile
Accurate core hole is required in order to form a thread according to the norm. For materials with a very high elongation coefficient and threading depth > 2 x D, we recommend increasing the core hole Ø by 0.02 to 0.05 mm.



Perfil incorrecto
Perfil muy alto *consecuencia de un taladro previo pequeño, genera un par de potencia demasiado elevado.*
Perfil incompleto *consecuencia de un taladro previo muy grande.*

Incorrect thread profile
Too big profile due to the too small core hole diameter. The required torque is higher.
Incomplete profile caused by the core hole diameter being too big.

CODIFICACIÓN — CODIFICATION

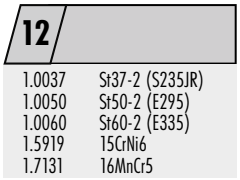
Machos de laminación — Thread formers

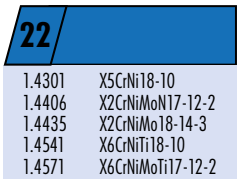
Ejemplo - Example

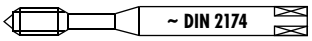
Poligono estándard < Ø 3 mm	Standard polygon form < Ø 3 mm	**FS**
Poligono pasivo ≥ Ø 3 mm	Passive polygon form ≥ Ø 3 mm	**FPS**
Poligono activo ≥ Ø 3 mm	Active polygon form ≥ Ø 3 mm	**FAS**
Fabricación especial	Special execution	**3**
DIN largo - mango reforzado	DIN long - reinforced shank	**3**
DIN largo - mango pasante	DIN long - reduced shank	**4**
DIN extra-largo - mango reforzado	DIN extra-long - reinforced shank	**5**
DIN extra-largo - mango pasante	DIN extra-long - reduced shank	**6**
Macho de laminación	Thread former	**8**
Sin ranuras de lubrificación	Without lubrication grooves	**0**
Con ranuras de lubrificación	With lubrication grooves	**1**
Lubrificación interna, salidas radiales	Internal coolant with radial outflow	**4**
Protec. contra el desgaste "VS" para uso general	VS wear-protective coating, general	**VS**
Recubrimiento DLC	DLC-coating	**DL**
2 - 3 hilos de entrada	2 - 3 chamfered threads	**-3**
1.5 - 2 hilos de entrada	1.5 - 2 chamfered threads	**-5**

PICTOGRAMAS — PICTOGRAPHS

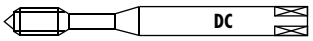
Para grupos de materiales según tabla de utilización DC.
For material groups as per DC application chart





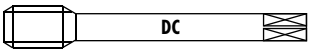


Mango reforzado ~ DIN 2174
Reinforced shank as per ~ DIN 2174



Mango reforzado según norma de fábrica DC
Reinforced shank as per DC standards

Mango pasante ~ DIN 2174
Reduced shank as per ~ DIN 2174



Mango pasante según norma de fábrica DC
Reduced shank as per DC standards

Extra-largo
Extra-long

HSSE-PM
HSSE-PM

Macho de roscar por laminación
Thread former

Macho de roscar por laminación con ranuras de lubrificación
Thread former with lubrication grooves

Lubrificación interna con salida frontal, sobre pedido
Internal coolant with frontal outflow, on request

Lubrificación interna con salidas radiales, nuevo 45°
Conversión a la nueva versión en curso
Internal coolant with radial outflow, new 45°
Change to new version in progress

Diámetro del agujero
Core hole diameter

Rosca izquierda sobre pedido
Left-hand thread on request

2 - 3 hilos de entrada, forma C
2 - 3 chamfered threads, form C

1.5 - 2 hilos de entrada, forma E
1.5 - 2 chamfered threads, form E

Clase de tolerancia ISO 2 6HX
Tolerance class ISO 2 6HX

Clase de tolerancia ISO 3 6GX
Tolerance class ISO 3 6GX

Agujero pasante / ciego < 1 x D
Through / blind holes < 1 x D

Agujero pasante / ciego < 1.5 x D
Through / blind holes < 1.5 x D

Agujero pasante / ciego < 2.5 x D
Through / blind holes < 2.5 x D

Agujero pasante / ciego > 2.5 x D
Through / blind holes > 2.5 x D

Agujero pasante / ciego < 3 x D
Through / blind holes < 3 x D

Recubrimiento DLC
DLC-coating

Recubrimiento de protección contra el desgaste "VS" para uso general
DC "VS" wear-protective coating for general use

Para roscado rígido
For Rigid Tapping

Para roscado clásico
For Classic Tapping

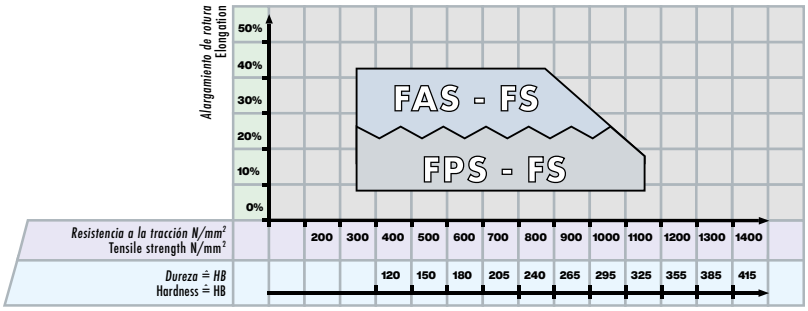
● *Artículos disponibles de stock*
Stock item

● *Disponible a corto plazo*
Available at short notice

* *Artículos disponibles de stock hasta agotamiento*
Available from stock, while stock lasts

TABLA DE UTILIZACIÓN — APPLICATION CHART

Roscado por laminación
Thread forming



Clasificación de los materiales — Material classification

	Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10	Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
		12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
		13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
		14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
		15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
		16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
		22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
		23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
		24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30	Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
		32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
		42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50	Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
		52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
		53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60	Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
		62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
		64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70	Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
		72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
		82	Materiales duroplásticos	Duroplastics	-	-	-
		83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90	Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
		92	Oro rojo	Red gold	-	-	-
		93	Oro blanco	White gold	-	-	-
		94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

ROSCADO POR LAMINACIÓN — THREAD FORMING

Desde paginá: From page:	FS		FPS					FAS		
M	254	255	256	256	256	256	258	259	259	260
MF						262			262	
UNC	263					263			263	
UNF	264					264			264	
G						265			265	

	FS.80VS	FS.80DL	FPS.80DL	FPS.81DL	FPS.80VS	FPS.81VS	FPS.84VS	FAS.80VS	FAS.81VS	FAS.84VS	
Vc (m/min) Guide Line — Ø 1 - 2.8 mm / Ø 2.8 - 20 mm											
11	12 - 20	20 - 40	O E			O E	O E	O E				11
12	12 - 20	20 - 40	O E			O E	O E	O E				12
13	12 - 20	20 - 30	O E			O E	O E	O E				13
14	12 - 20	20 - 30	O E			O E	O E	O E				14
15	6 - 12	10 - 15	O				O	O				15
16												16
17												17
18												18
21	12 - 20	10 - 20	O E	O E				O E	O E	O E		21
22	6 - 12	10 - 15	O	O E				O E	O E	O E		22
23	6 - 12	6 - 12	O	O E				O	O E	O E		23
24	6 - 12	6 - 12		O				O	O E	O E		24
31												31
32												32
41	12 - 20	10 - 20		◁					◁	◁		41
42												42
51	6 - 12	10 - 15		O					O E	O E		51
52												52
53												53
61	12 - 20	10 - 20		O E				O	O E	O E		61
62												62
63	12 - 20	20 - 30		O E	O E	O E						63
64	12 - 20	20 - 30		O E	O E	O E						64
71	12 - 20	20 - 40		O E	O E	O E						71
72	12 - 20	20 - 40		O E	O E	O E						72
73	12 - 20	20 - 40		O E	O E	O E						73
74												74
81												81
82												82
83												83
91	12 - 20	20 - 40		O E	O	O E						91
92	12 - 20	20 - 40		O E	O E	O E						92
93	12 - 20	20 - 40		◁ ▷	◁	◁ ▷						93
94	12 - 20	20 - 40		O E	O E	O E						94

A *Óptima con aire* **Optimal with air**

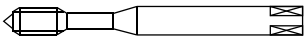
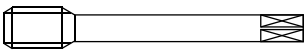
A *Aceptable con aire* **Suitable with air**

◁ ▷ *Limitada* **Limited**

Los valores indicados son orientativos.
The indicated values are a guideline.

Directorio — Machos para roscado por laminación
Directory — Machine thread formers

CLASSIC SYNCHRO

					FS		FPS	
Características **Characteristics**					VS E 1.5 x P / VS C 2.5 x P	DLC E 1.5 x P / DLC C 2.5 x P	DLC	VS
							 NEW	
Tipo de agujero **Hole type**								
					**FS380VS-5 FS380VS-3**	**FS380DL-5 FS380DL-3**	**FPS380DL-3 FPS381DL-3**	**FPS380VS-3 FPS381VS-3**
M	**6HX**	**ISO DIN 13**	***DIN largo*** **DIN long**	**~DIN 2174**	254	255	256	256
M	**6GX**	**ISO DIN 13**	***DIN largo*** **DIN long**	**~DIN 2174**	254	255		256
M	**6HX**	**ISO DIN 13**	***Extra-largo*** **Extra-long**	**DC**				
MF	**6HX**	**ISO DIN 13**	***DIN largo*** **DIN long**	**~DIN 2174**				262
UNC	**2BX**	**ASME B1.1**	***DIN largo*** **DIN long**	**~DIN 2184-1**	263			263
UNF	**2BX**	**ASME B1.1**	***DIN largo*** **DIN long**	**~DIN 2184-1**	264			264
								**FPS481VS-3**
M	**6HX**	**ISO DIN 13**	***DIN largo*** **DIN long**	**~DIN 2174**				257
M	**6GX**	**ISO DIN 13**	***DIN largo*** **DIN long**	**~DIN 2174**				
M	**6HX**	**ISO DIN 13**	***Extra-largo*** **Extra-long**	**DC**				
MF	**6HX**	**ISO DIN 13**	***DIN largo*** **DIN long**	**~DIN 2174**				262
UNC	**2BX**	**ASME B1.1**	***DIN largo*** **DIN long**	**~DIN 2184-1**				
UNF	**2BX**	**ASME B1.1**	***DIN largo*** **DIN long**	**~DIN 2184-1**				
G (BSP)		**DIN EN ISO 228**	***DIN largo*** **DIN long**	**~DIN 2189**				265

CLASSIC SYNCHRO

FPS			FAS			
VS	VS	VS	VS	VS	VS	VS
						
						
FPS384VS-3	**FPS581VS-3**	**FPS584VS-3**	**FAS380VS-3** **FAS381VS-3**	**FAS384VS-3**	**FAS581VS-3**	**FAS584VS-3**
258			259	260		
			259			
	257	258			261	261
			262			
			263			
			264			
FPS484VS-3	**FPS681VS-3**	**FPS684VS-3**	**FAS481VS-3**	**FAS484VS-3**	**FAS681VS-3**	**FAS684VS-3**
258			259	260		
			259			
	257	258			261	261
			262			
			265			

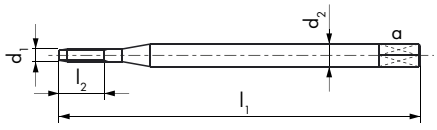
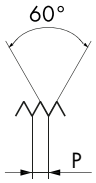
M ISO DIN 13

PM

~DIN 2174

FS FORMING

FS380VS-5	VS	11 12 13 14 21	
FS380VS-3	VS	11 12 13 14 21	

FS380VS-5	FS380VS-3	FS380VS-3	FS380VS-3
			
			
			
	E 1.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
	6HX	6HX	6HX	6GX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	4HX 6HX	Tol.	ID	ID	ID	ID 6H + mm
1	0.25	40	3	2.5		0.88	+0.02	● 157171	● 173452		
1.2	0.25	40	3.6	2.5		1.08	+0.02	● 157172	● 173455		
1.4	0.3	40	4.2	2.5		1.25	+0.02	● 157173	● 173458		
1.6	0.35	40	4.8	2.5		1.45	+0.02	● 157174	● 169779		
1.7	0.35	40	5.1	2.5		1.55	+0.02		● 169782		
1.8	0.35	40	5.4	2.5		1.65	+0.02	● 157175	● 169785		
2	0.4	45	8	2.8	2.1	1.8	+0.02			● 157176	● 157180 0.019
2.5	0.45	50	10	2.8	2.1	2.3	+0.02			● 157178	● 157181 0.020
2.6	0.45	50	10	2.8	2.1	2.4	+0.02			● 157179	

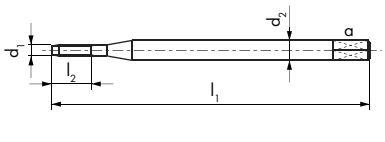
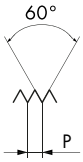
≤M1.5 4HX

M ISO DIN 13

PM

~DIN 2174

FS FORMING

	FS380DL-5	FS380DL-3	FS380DL-3	FS380DL-3
	DLC	DLC		
	21 22 23 51 61 63 64 71 72 73 91 92 94	21 22 23 51 61 63 64 71 72 73 91 92 94		
				
	 < 2.5 x D	 < 2.5 x D	 < 2.5 x D	 < 2.5 x D
	 	E 1.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
		6HX	6HX	6HX	6GX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	4HX 6HX	Tol.	ID	ID	ID	ID 6H + mm
1	0.25	40	3	2.5		0.88	+0.02	● 172839	● 173461		
1.2	0.25	40	3.6	2.5		1.08	+0.02	● 172840	● 173464		
1.4	0.3	40	4.2	2.5		1.25	+0.02	● 172841	● 173467		
1.6	0.35	40	4.8	2.5		1.45	+0.02	● 170585	● 170916		
1.7	0.35	40	5.1	2.5		1.55	+0.02		● 172843		
1.8	0.35	40	5.4	2.5		1.65	+0.02	● 172842	● 172844		
2	0.4	45	8	2.8	2.1	1.8	+0.02			● 158814	● 172849 0.019
2.5	0.45	50	10	2.8	2.1	2.3	+0.02			● 172845	● 173246 0.020
2.6	0.45	50	10	2.8	2.1	2.4	+0.02			● 172846	

≤M1.5 4HX

M ISO DIN 13

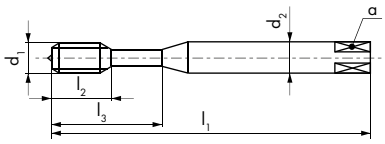
PM

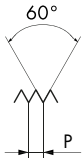
~DIN 2174

FPS FORMING

FPS380DL-3	DLC	63 64 71 72 73 91 92 94	
FPS381DL-3	DLC	63 64 71 72 73 91 92 94	
FPS380VS-3	VS	11 12 13 14	
FPS381VS-3	VS	11 12 13 14 15	

FPS380DL-3	FPS381DL-3	FPS380VS-3	FPS381VS-3
			
 < 1.5 x D	 < 2.5 x D	 < 1.5 x D	 < 2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	6HX	6HX



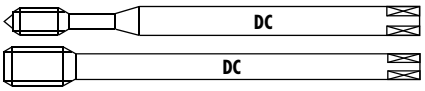


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	ID	ID	ID	ID
3	0.5	56	12	18	3.5	2.7	2.8	+0.03	● 170553	● 182038	● 166614	● 166616
3.5	0.6	56	13	20	4	3	3.25	+0.03	● 175347	● 182623	● 166620	● 166622
4	0.7	63	14	21	4.5	3.4	3.7	+0.03	● 170554	● 182039	● 166627	● 166629
5	0.8	70	15	25	6	4.9	4.65	+0.03	● 182619	● 178343	● 166635	● 166637
6	1	80	17	30	6	4.9	5.55	+0.05	● 182620	● 171112	● 166644	● 166646
8	1.25	90	20	35	8	6.2	7.4	+0.05	● 182621	● 179144	● 166654	● 166656
10	1.5	100	22	39	10	8	9.3	+0.05	● 182622	● 171113	● 166664	● 166666

											6GX		6GX	
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.			ID	6H + mm	ID	6H + mm
3	0.5	56	12	18	3.5	2.7	2.8	+0.03			● 166697	0.020	● 166617	0.020
3.5	0.6	56	13	20	4	3	3.25	+0.03			● 166687	0.021	● 166623	0.021
4	0.7	63	14	21	4.5	3.4	3.7	+0.03			● 166688	0.022	● 166630	0.022
5	0.8	70	15	25	6	4.9	4.65	+0.03			● 166689	0.024	● 166638	0.024
6	1	80	17	30	6	4.9	5.55	+0.05			● 166686	0.026	● 166647	0.026
8	1.25	90	20	35	8	6.2	7.4	+0.05			● 166740	0.028	● 166657	0.028
10	1.5	100	22	39	10	8	9.3	+0.05			● 166739	0.032	● 166667	0.032

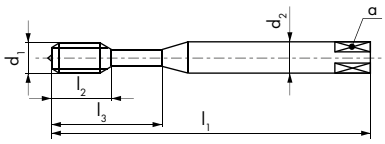
M ISO DIN 13

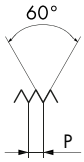
PM



FPS FORMING

	FPS481VS-3		FPS581VS-3	FPS681VS-3
				
				
FPS481VS-3	VS	11 12 13 14 15		
FPS581VS-3	EL VS	11 12 13 14 15		
FPS681VS-3	EL VS	11 12 13 14 15		
				
	6HX		6HX	6HX



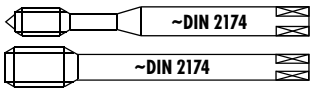


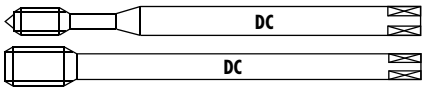
Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	6HX	Tol.	ID
12	1.75	110	24	9	7	11.2	+0.05	● 166673
14	2	110	28	11	9	13.1	+0.05	● 166678
16	2	110	30	12	9	15.1	+0.05	● 166683
20	2.5	140	36	16	12	18.85	+0.05	● 168713

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	ID	ID
3	0.5	100	12	18	3.5	2.7	2.8	+0.03	● 172824	
4	0.7	125	14	21	4.5	3.4	3.7	+0.03	● 172826	
5	0.8	140	15	25	6	4.9	4.65	+0.03	● 172828	
6	1	160	17	30	6	4.9	5.55	+0.05	● 172830	
8	1.25	180	20	35	8	6.2	7.4	+0.05	● 172832	
10	1.5	200	22	39	10	8	9.3	+0.05	● 172834	
12	1.75	224	24		9	7	11.2	+0.05		● 172836

M ISO DIN 13

PM

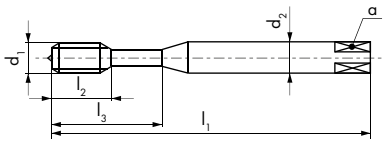


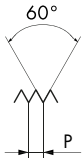


FPS FORMING

FPS384VS-3			VS		11 12 13 14 15
FPS484VS-3			VS		11 12 13 14 15
FPS584VS-3			EL	VS	11 12 13 14 15
FPS684VS-3			EL	VS	11 12 13 14 15

FPS384VS-3	FPS484VS-3	FPS584VS-3	FPS684VS-3
			
< 3 x D	< 3 x D	< 3 x D	< 3 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	6HX	6HX



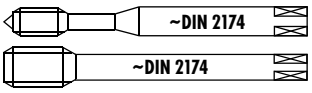


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	ID	ID
3	0.5	56	12	18	3.5	2.7	2.8	+0.03	● 166737	
4	0.7	63	14	21	4.5	3.4	3.7	+0.03	● 166738	
5	0.8	70	15	25	6	4.9	4.65	+0.03	● 166640	
6	1	80	17	30	6	4.9	5.55	+0.05	● 166650	
8	1.25	90	20	35	8	6.2	7.4	+0.05	● 166660	
10	1.5	100	22	39	10	8	9.3	+0.05	● 166670	
12	1.75	110	24		9	7	11.2	+0.05		● 166675
14	2	110	28		11	9	13.1	+0.05		● 166680
16	2	110	30		12	9	15.1	+0.05		● 166685

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	ID	ID
3	0.5	100	12	18	3.5	2.7	2.8	+0.03	● 172763	
4	0.7	125	14	21	4.5	3.4	3.7	+0.03	● 172766	
5	0.8	140	15	25	6	4.9	4.65	+0.03	● 172769	
6	1	160	17	30	6	4.9	5.55	+0.05	● 172772	
8	1.25	180	20	35	8	6.2	7.4	+0.05	● 172775	
10	1.5	200	22	39	10	8	9.3	+0.05	● 172778	
12	1.75	224	24		9	7	11.2	+0.05		● 172781

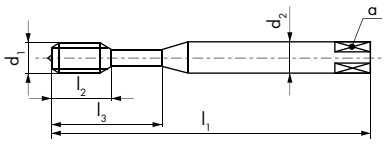
M ISO DIN 13

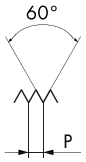
PM



FAS FORMING

	FAS380VS-3		FAS381VS-3	FAS481VS-3
				
				
FAS380VS-3	 VS	21 22 23 24 61		
FAS381VS-3	 VS	21 22 23 24 41 51 61		
FAS481VS-3	 VS	21 22 23 24 41 51 61		





	FAS380VS-3		FAS381VS-3	FAS481VS-3
	C 2.5 x P		C 2.5 x P	C 2.5 x P
	6HX		6HX	6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	FAS380VS-3 ID	FAS381VS-3 ID	FAS481VS-3 ID
3	0.5	56	12	18	3.5	2.7	2.8	+0.03	● 170603	● 166612	
3.5	0.6	56	13	20	4	3	3.25	+0.03	● 170605	● 166618	
4	0.7	63	14	21	4.5	3.4	3.7	+0.03	● 170607	● 166624	
5	0.8	70	15	25	6	4.9	4.65	+0.03	● 170609	● 166632	
6	1	80	17	30	6	4.9	5.55	+0.05	● 170611	● 166641	
8	1.25	90	20	35	8	6.2	7.4	+0.05	● 170616	● 166651	
10	1.5	100	22	39	10	8	9.3	+0.05	● 170618	● 166661	
12	1.75	110	24		9	7	11.2	+0.05			● 166671
14	2	110	28		11	9	13.1	+0.05			● 166676
16	2	110	30		12	9	15.1	+0.05			● 166681
20	2.5	140	36		16	12	18.85	+0.05			● 168711

										6GX		6GX	
Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.		ID	6H + mm	ID	6H + mm
3	0.5	56	12	18	3.5	2.7	2.8	+0.03		● 166703	0.020		
3.5	0.6	56	13	20	4	3	3.25	+0.03		● 166704	0.021		
4	0.7	63	14	21	4.5	3.4	3.7	+0.03		● 166705	0.022		
5	0.8	70	15	25	6	4.9	4.65	+0.03		● 166706	0.024		
6	1	80	17	30	6	4.9	5.55	+0.05		● 166707	0.026		
8	1.25	90	20	35	8	6.2	7.4	+0.05		● 166708	0.028		
10	1.5	100	22	39	10	8	9.3	+0.05		● 166709	0.032		
12	1.75	110	24		9	7	11.2	+0.05				● 166710	0.034
14	2	110	28		11	9	13.1	+0.05				★ 166711	0.038
16	2	110	30		12	9	15.1	+0.05				● 166712	0.038

M ISO DIN 13

PM

~DIN 2174

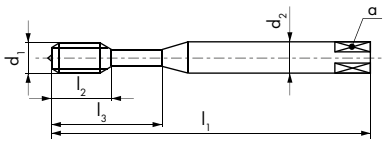
~DIN 2174

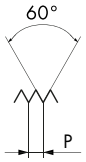
FAS FORMING

FAS384VS-3	FAS484VS-3		
			

FAS384VS-3   VS 

FAS484VS-3   VS 

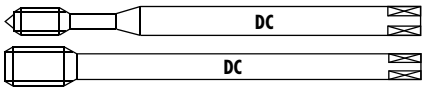




Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	ID	ID
3	0.5	56	12	18	3.5	2.7	2.8	+0.03	● 166741	
4	0.7	63	14	21	4.5	3.4	3.7	+0.03	● 166742	
5	0.8	70	15	25	6	4.9	4.65	+0.03	● 166690	
6	1	80	17	30	6	4.9	5.55	+0.05	● 166691	
8	1.25	90	20	35	8	6.2	7.4	+0.05	● 166692	
10	1.5	100	22	39	10	8	9.3	+0.05	● 166693	
12	1.75	110	24		9	7	11.2	+0.05		● 166694
14	2	110	28		11	9	13.1	+0.05		● 166695
16	2	110	30		12	9	15.1	+0.05		● 166696

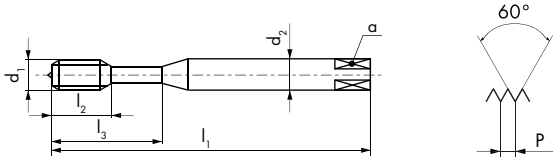
M ISO DIN 13

PM



FAS FORMING

FAS581VS-3	EL	VS	21 22 23 24 41 51 61	
FAS681VS-3	EL	VS		
FAS584VS-3	EL	VS	21 22 23 24 41 51 61	
FAS684VS-3	EL	VS		

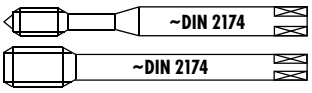


Ø d_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	FAS581VS-3 ID	FAS681VS-3 ID	FAS584VS-3 ID	FAS684VS-3 ID
3	0.5	100	12	18	3.5	2.7	2.8	+0.03	● 172784		● 172805	
4	0.7	125	14	21	4.5	3.4	3.7	+0.03	● 172787		● 172808	
5	0.8	140	15	25	6	4.9	4.65	+0.03	● 172790		● 172811	
6	1	160	17	30	6	4.9	5.55	+0.05	● 172793		● 172814	
8	1.25	180	20	35	8	6.2	7.4	+0.05	● 172796		● 172817	
10	1.5	200	22	39	10	8	9.3	+0.05	● 172799		● 172820	
12	1.75	224	24		9	7	11.2	+0.05		● 172802		● 172822

	FAS581VS-3	FAS681VS-3	FAS584VS-3	FAS684VS-3
	< 2.5 x D	< 2.5 x D	< 3 x D	< 3 x D
	C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
	6HX	6HX	6HX	6HX

MF ISO DIN 13

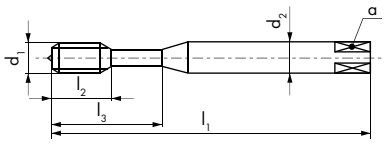
PM

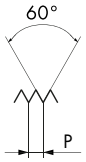


FPS FAS FORMING

FPS381VS-3	VS	11 12 13 14 15	
FPS481VS-3	VS	11 12 13 14 15	
FAS381VS-3	VS	21 22 23 24 41 51 61	
FAS481VS-3	VS	21 22 23 24 41 51 61	

FPS381VS-3	FPS481VS-3	FAS381VS-3	FAS481VS-3
			
<2.5 x D	<2.5 x D	<2.5 x D	<2.5 x D
C 2.5 x P	C 2.5 x P	C 2.5 x P	C 2.5 x P
6HX	6HX	6HX	6HX





Ø d_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX	Tol.	ID	ID	ID	ID
4	0.5	63	14	21	4.5	3.4	3.8	+0.03	● 166631		● 166625	
5	0.5	70	15	25	6	4.9	4.8	+0.03	● 166639		● 166633	
6	0.5	80	17	30	6	4.9	5.8	+0.03	● 166699		● 166698	
6	0.75	80	17	30	6	4.9	5.65	+0.03	● 166649		● 166642	
8	0.75	90	20	35	8	6.2	7.65	+0.03	● 166702		● 166700	
8	1	90	20	35	8	6.2	7.55	+0.05	● 166659		● 166652	
10	1	100	22	39	10	8	9.55	+0.05	● 166669		● 166662	
12	1	100	19		9	7	11.55	+0.05		● 166674		● 166672
14	1.5	100	24		11	9	13.3	+0.05		● 166679		● 166677
16	1.5	100	26		12	9	15.3	+0.05		● 166684		● 166682

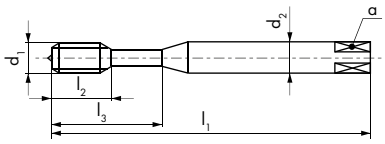
UNC ASME B1.1

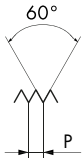
PM

~DIN 2184-1

FS FPS FAS FORMING

	FS380VS-3		FPS381VS-3	FAS381VS-3
				
FS380VS-3	VS	11 12 13 14 21		
FPS381VS-3	VS	11 12 13 14 15		
FAS381VS-3	VS	21 22 23 24 41 51 61		
	< 2.5 x D		< 2.5 x D	< 2.5 x D
	C 2.5 x P		C 2.5 x P	C 2.5 x P
	2BX		2BX	2BX





Ø" d1 UNC	P TPI	d1 mm	l1 mm	l2 mm	l3 mm	d2 mm	a mm	2BX	Tol.	ID	ID	ID
2	56	2.18	45	9		2.8	2.1	1.95	+0.02	● 157285		
4	40	2.84	56	12	18	3.5	2.7	2.55	+0.03		● 170063	● 170065
6	32	3.5	56	13	20	4	3	3.15	+0.03		● 166713	● 166725
8	32	4.16	63	14	21	4.5	3.4	3.8	+0.03		● 166714	● 166726
10	24	4.82	70	15	25	6	4.9	4.35	+0.05		● 166715	● 166727
1/4	20	6.35	80	17	30	7	5.5	5.75	+0.05		● 166716	● 166728

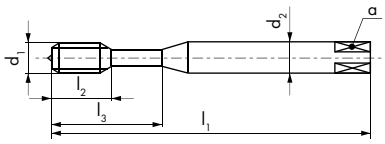
UNF ASME B1.1

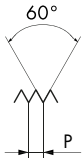
PM

~DIN 2184-1

FS FPS FAS FORMING

	FS380VS-5		FPS381VS-3	FAS381VS-3
				
	< 2.5 x D		< 2.5 x D	< 2.5 x D
FS380VS-5	VS	11 12 13 14 21		
FPS381VS-3	VS	11 12 13 14 15		
FAS381VS-3	VS	21 22 23 24 41 51 61		
	E 1.5 x P		C 2.5 x P	C 2.5 x P
	2BX		2BX	2BX





Ø" d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		Tol.	ID	ID	ID
0	80	1.52	40	4.6		2.5		1.37	+0.02	● 161498		
10	32	4.82	70	15	25	6	4.9	4.45	+0.03		● 166718	● 166730
1/4	28	6.35	80	17	30	7	5.5	5.95	+0.05		● 166719	● 166731
5/16	24	7.93	90	20	35	8	6.2	7.45	+0.05		● 166720	● 166732

G DIN EN ISO 228 (BSP)

PM

~DIN 2189

FPS FAS FORMING

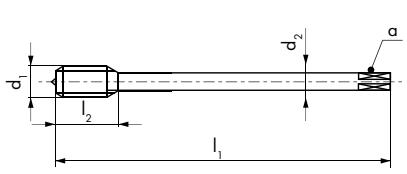
FPS481VS-3		FAS481VS-3	
			
			
			

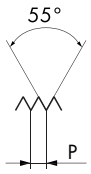
FPS481VS-3  VS

11 12 13 14 15

FAS481VS-3  VS

21 22 23 24 41 51 61





Ø" d_1 G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		Tol.	ID	ID
1/8	28	9.72	90	22	7	5.5	9.25	+0.05	● 166721	● 166733
1/4	19	13.15	100	20	11	9	12.5	+0.05	● 166722	● 166734
3/8	19	16.66	100	20	12	9	16	+0.05	● 166723	● 166735
1/2	14	20.95	125	22	16	12	20	+0.05	● 166724	● 166736

COJINETES CON ENTRADA EN HÉLICE

La entrada helicoidal hace que las virutas fluyan libremente hacia adelante y reduce el par de corte. Esto evita la acumulación de astillas en los agujeros de despeje. El resultado es una mejor calidad de la superficie de los hilos cortados y una mayor vida útil de la herramienta.

Por lo tanto, las cojinetes para uso de la máquina deben ser ordenadas con entrada en espiral.

DIES WITH SPIRAL ENTRY

A spiral entry results in a free flow of chips ahead of the die and a reduction in the cutting torque. Blocking of the clearance holes by chips is avoided. This results in an improved surface finish on the cut threads and a longer die life.

Hence dies for machine use must be ordered with spiral entry.

COJINETES DE ROSCAR DE ALTO RENDIMIENTO
HIGH PERFORMANCE THREAD CUTTING DIES

N5110/N5120

con entrada en hélice desde Ø 3 mm
with spiral entry from Ø 3 mm

Cojinetes de roscar redondos en HSS, según las normas DIN EN
para el trabajo a mano y a máquina
- *Para el mecanizado de aceros de hasta 800 N/mm2*
- *Diferentes versiones para mecanizar una amplia gama de materiales*

Round dies in HSS, as per DIN EN standards
for machine and manual use
- For machining steels up to 800 N/mm2
- Different versions for cutting a wide range of materials

Z5120

con entrada en hélice desde Ø 2 mm
with spiral entry from Ø 2 mm

Cojinetes de roscar redondos en HSSE, según las normas DIN EN
- *Astillas finas debido a más agujeros de separación y por lo tanto más bordes cortantes, y la extensión del chaflán a 2 x P*
- *Para la mecanización de aceros inoxidables, aceros termotratables, aceros de cementación, etc. hasta 1'200 N/mm2 y aleaciones de ALU de virutas cortas*

Round dies in HSSE, as per DIN EN standards
- Fine chips due to more clearance holes and thus more cutting edges, and the extension of the chamfer to 2 x P
- For machining stainless steels, heat-treatable steels, case-hardening steels etc. up to 1'200 N/mm2 and short-chipping ALU alloys

Z5120 LL Long Life

con entrada en hélice desde Ø 2 mm
with spiral entry from Ø 2 mm

Cojinetes de roscar redondos en HSSE, según las normas DIN EN
- *Virutas finas debido al máximo número de agujeros de despeje y por lo tanto aún más bordes cortantes, y la extensión del chaflán de 2.25 x P*
- *Para la elaboración de grandes series*
- *Excepcionalmente larga vida de muerte*
- *Para la mecanización de aceros inoxidables, aceros termotratables, aceros de cementación, etc. hasta 1'200 N/mm2 y aleaciones de ALU de virutas cortas*

Round dies in HSSE (ASP), as per DIN EN standards
- Very fine chips due to maximum number of clearance holes and thus still more cutting edges, and the extension of the chamfer to 2.25 x P
- For the processing of large series
- Exceptionally long die life
- For machining stainless steels, heat-treatable steels, case-hardening steels etc. up to 1'200 N/mm2 and short-chipping ALU alloys

MS5120

con entrada en hélice
with spiral entry

Cojinetes de roscar redondos en HSS, según las normas DIN EN
- *Con agujeros de despeje ampliados para evitar que las virutas se amontonen*
- *Para el mecanizado de latón de virutas cortas*

Round dies in HSS, as per DIN EN standards
- With enlarged clearance holes to prevent chips crowding
- For the machining of short-chipping brass

N5220 Z5220 MS5220

con entrada en hélice
with spiral entry

Cojinetes para tornos automáticos en HSS (Z = HSSE), con 2 agujeros de fijación
- *Área de aplicación según N5120, MS5120 y Z5120*
- *Ventaja: debido a la menor inercia de masa del portamuestras, son posibles mayores velocidades / vida útil de la herramienta*

Button dies for Swiss automatics, in HSS (Z = HSSE), with 2 securing holes
- Application area according to type N5120, MS5120 and Z5120
- Advantage: the low inertia of the die holder permits higher spindle speeds and extends die life

N5310

Cojinetes hexagonales en HSS, *dimensiones generales según DIN 382*
- *Para volver a cortar y reparar los hilos dañados o para cortar en lugares de difícil acceso*

Hexagon die nuts in HSS, general dimensions as per DIN 382
- For recutting and reclaiming damaged threads or for cutting threads in difficult locations

N5420

con entrada en hélice desde Ø 3 mm
with spiral entry from Ø 3 mm

Cojinetes de campana en HSS
- *Ventaja: libre flujo de virutas y mejor suministro de lubricante refrigerante a través de espacios abiertos de virutas, incluso cuando se corta cerca del cuello*

Bell form type thread cutting dies in HSS
- Advantage: free chip flow and improved coolant supply thanks to the open clearance holes, even when cutting threads close to shoulders

TABLA DE UTILIZACIÓN POR COJINETES DE ROSCAR
APPLICATION CHART FOR CUTTING DIES

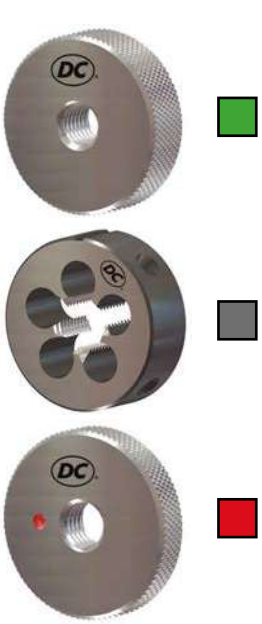
Clasificación de los materiales	*Referencia*	*Velocidad de corte Vc m/min (guide line)*	*Lubrificante*	*Typo de cojinete*	*Ángulo de desprendimiento de las virutas*
Aceros de construcción	St37-2, St50-2	8 - 12	*Aceite de corte*	17 - 22°	N5...
Aceros de decoletaje	9SMn28, 9SMnPb28	10 - 14	*Aceite de corte*	17 - 22°	N5...
Aceros de cementación	C15, Ck15, 16MnCr5	6 - 10	*Aceite de corte / Ac. de corte especial*	17 - 22°	Z5... / Z5... LL
Aceros al carbón	C35Pb, C45	5 - 8	*Aceite de corte / Ac. de corte especial*	13 - 18°	Z5... / Z5... LL
Aceros inoxidables al azufre	X12CrMoS17, X12CrNiS188	4 - 6	*Aceite de corte especial*	13 - 18°	Z5... / Z5... LL
Latón, virutas cortas, Ms 58	CuZn39Pb2, CuZn40Pb2	20 - 30	*Aceite de corte*	6 - 11°	MS5...
Latón, virutas largas, Ms 60	CuZn20, CuZn37	12 - 18	*Aceite de corte*	10 - 15°	N5...
Aleación de aluminio, de virutas cortas	GD-AlSi8Cu3, GD-AlSi12	8 - 12	*Aceite de corte especial, Pétroleo*	18 - 23°	Z5...
Titanio puro	Ti2	5 - 8	*Aceite de corte especial*	19 - 24°	Z5... / Z5... LL

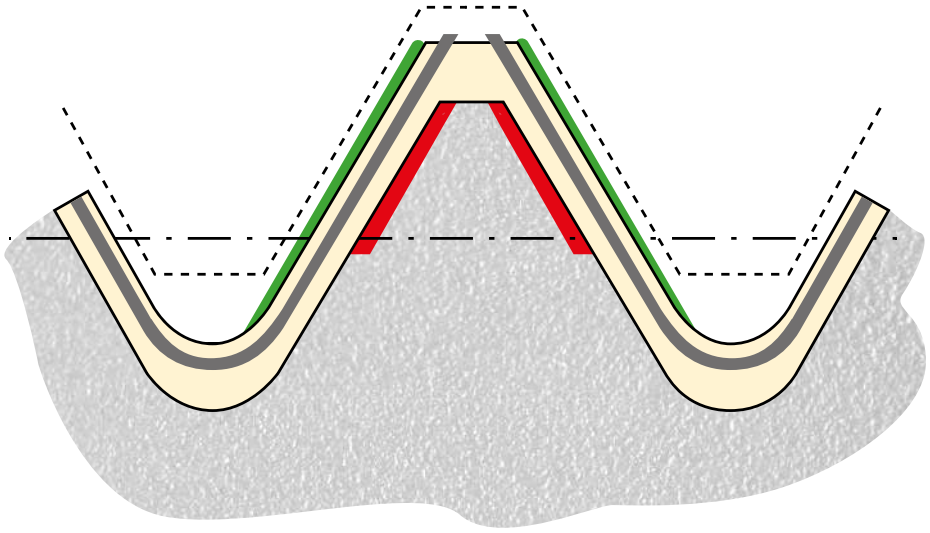
Cojinetes con ángulo de desprendimiento des las virutas especialmente adaptado para hierro fundido gris, latón sin plomo, bronce, bronce de cañón, cobre, aleaciones de aluminio con virutas largas están disponibles como diseño especial.
A petición, también podemos suministrar cojinetes en versión recubierta. Precio y plazo de entrega a petición.

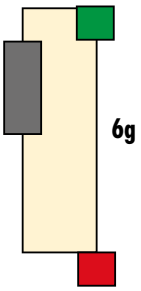
Material designation	**Material Number**	**Cutting speed m/min (guide line)**	**Cutting fluid**	**Rake angle**	**Type of die**
General engineering steels	St37-2, St50-2	8 - 12	Cutting oil	17 - 22°	N5...
Free-cutting steels	9SMn28, 9SMnPb28	10 - 14	Cutting oil	17 - 22°	N5...
Case hardening steels	C15, Ck15, 16MnCr5	6 - 10	Cutting oil / Special cutting oil	17 - 22°	Z5... / Z5... LL
Heat-treatable steels	C35Pb, C45	5 - 8	Cutting oil / Special cutting oil	13 - 18°	Z5... / Z5... LL
Stainless steels	X12CrMoS17, X12CrNiS188	4 - 6	Special cutting oil	13 - 18°	Z5... / Z5... LL
Short chip brass Ms 58	CuZn39Pb2, CuZn40Pb2	20 - 30	Cutting oil	6 - 11°	MS5...
Long chip brass Ms 60	CuZn20, CuZn37	12 - 18	Cutting oil	10 - 15°	N5...
Al-alloyed, short-chipping	GD-AlSi8Cu3, GD-AlSi12	8 - 12	Spezial cutting oil, Paraffin	18 - 23°	Z5...
Pure titanium	Ti2	5 - 8	Special cutting oil	19 - 24°	Z5... / Z5... LL

Cutting dies with specially adapted rake angle for grey cast iron, lead-free brass, bronze, gunmetal, copper and long-chipping aluminium alloys are available as special execution.
On request, we can also supply dies in a coated version. Price and delivery time on request.

TOLERANCIAS DE LAS ROSCAS M Y MF
TOLERANCES FOR M AND MF THREADS







CODIFICACIÓN — CODIFICATION

Cojinetes de roscar

Ejemplo

Z	51	20	LL	SP

Materiales normales	**N**
Latón con virutas cortas	**MS**
Materiales tenaces	**Z**
*Cojinetes de roscar redondos**	**51**
Cojinetes para tornos automáticos, con 2 agujeros de fijación	**52**
Cojinetes hexagonales	**53**
Cojinetes de campana	**54**
Cerrados, forma B	**10**
Cerrados, forma B, con entrada en hélice	**20**
Máxima vida - Cojinetes de alto rendimiento	**LL**
Fabricación especial	**SP**

**Para trabajar a máquina, utilizar el cojinete con entrada en hélice (corte gun).*

Dies

Example

Z	51	20	LL	SP

Normal materials	**N**
Short chip brass	**MS**
Tough materials	**Z**
Round dies*	**51**
Button dies for automatic lathes, with 2 securing holes	**52**
Hexagon die nuts	**53**
Bell form dies	**54**
Solid, form B	**10**
Solid, form B, with spiral entry	**20**
Long Life - High performance dies	**LL**
Special execution	**SP**

*For production, use dies with spiral entry.

Cojinetes de roscar redondos en HSS, según las normas DIN EN

DIN EN 22568: para roscas M, MF, UNC, UNF, UNEF, UN, UNS y W (BSW)
≈ DIN EN 22568: para roscas cónicas americanas NPT según ASME B1.20.1 y NPTF según ANSI B1.20.3
≈ DIN EN 22568: para roscas TR según DIN 103
DIN EN 24231: para roscas G (BSP) según DIN EN ISO 228
≈ DIN EN 24230: para roscas cónicas Whitworth R según DIN EN 10226, ISO 7-1
≈ DIN 40434 y DIN EN 22568: para roscas PG (rosca para conductos de acero) según DIN 40430

Round dies in HSS, as per DIN EN standards

DIN EN 22568: for M-, MF-, UNC-, UNF-, UNEF, UN-, UNS- and W (BSW) threads
≈ DIN EN 22568: for Amercian standard taper pipe thread NPT as per ASME B1.20.1 and NPTF as per ANSI B1.20.3
≈ DIN EN 22568: for TR threads as per DIN 103
DIN EN 24231: for G threads (BSP) as per DIN EN ISO 228
≈ DIN EN 24230: for Tapered Whitworth pipe thread R as per DIN EN 10226, ISO 7-1
≈ DIN 40434 and DIN EN 22568: for PG threads (steel conduit thread) as per DIN 40430

N: *HSS, longitud de entrada 1.75 x P*
MS: *HSS, finamente lapeada, longitud de entrada 1.25 x P*
Z: *HSSE, nitrurados desde Ø 3 mm (P = 0.5 mm) longitud de entrada 2 x P, con entrada en hélice desde Ø 2 mm*
Z-LL: *ASP, nitrurados desde Ø 3 mm (P = 0.5 mm), longitud de entrada 2.25 x P, con entrada en hélice desde Ø 2 mm*

N: HSS, chamfer length 1.75 x P
MS: HSS, lapped, chamfer length 1.25 x P
Z: HSSE, nitrided from Ø 3 mm (P = 0.5 mm), chamfer length 2 x P, with spiral entry from Ø 2 mm
Z-LL: ASP, nitrided from Ø 3 mm (P = 0.5 mm), chamfer length 2.25 x P, with spiral entry from Ø 2 mm

Directorio - Cojinetes redondos, para tornos automáticos, hexagonales y de campana
Directory — Round dies, button dies for Swiss automatics, hexagon die nuts and bell form dies

		N		MS	Z		N	Z
Características **Characteristics**		HSS 1.75 x P	HSS 1.75 x P ≥ Ø 3	HSS 1.25 x P ≥ Ø 3	HSSE 2 x P ≥ Ø 2 NI	HSSE 2.25 x P ≥ Ø 2 NI	HSS 1.75 x P ≥ Ø 3	HSSE 2 x P ≥ Ø 2 NI
								
Tipo **Type**		**N5110**	**N5120**	**MS5120**	**Z5120**	**Z5120LL**	**N5220**	**Z5220**
M 6g	**ISO DIN 13**	272	272		273	273	286	286
M 6e	**ISO DIN 13**		272				286	
M 6g LH	**ISO DIN 13**		272					
MF 6g	**ISO DIN 13**	274	274 - 276		274 - 275		287	
MF 6e	**ISO DIN 13**		274					
MF 6g LH	**ISO DIN 13**		274 - 276					
UNC	**ASME B1.1**	277	277					
UNF	**ASME B1.1**	278	278					
UNEF	**ASME B1.1**		279					
UN	**ASME B1.1**		279					
UNS	**ASME B1.1**		279					
G (BSP)	**DIN EN ISO 228**		280	281	281			
G (BSP) LH	**DIN EN ISO 228**		280					
G (BSP) -0.1mm	**DIN EN ISO 228**			281				
R (BSPT)	**DIN EN 10226**		282					
NPT	**ASME B1.20.1**		283					
NPTF	**ANSI B1.20.3**		283					
PG	**DIN 40430**		284					
TR	**DIN 103**		284					
W (BSW)	**BS 84**		285					
W (BSW) LH	**BS 84**		285					

N	
HSS 1.75 x P	HSS 1.75 x P ≥ Ø 3
	
N5310	**N5420**
288	289
288	
289	
289	

Pictogramas - Pictographs

HSS
HSS
HSS

HSSE
HSSE
HSSE

1.25 x P
1.25 hilos de entrada
1.25 chamfered threads

1.75 x P
1.75 hilos de entrada
1.75 chamfered threads

2 x P
2 hilos de entrada
2 chamfered threads

≥ Ø 3
Entrada en hélice desde Ø 3 mm
Spiral entry from Ø 3 mm

≥ Ø 3
Entrada en hélice de los 2 lados desde Ø 3 mm
Spiral entry on both sides from Ø 3 mm

Números de ranuras
Number of flutes

Diámetro del torneado
Turned diameters

NI
Nitruración (d1 ≥ 3 mm, P ≥ 0.5 mm)
Nitrided (d1 ≥ 3 mm, P ≥ 0.5 mm)

Cojinete con 2 agujeros de fijación
Die with 2 securing holes

6g
Tolerancia 6g
Tolerance 6g

6e
Tolerancia 6e
Tolerance 6e

MC
Tolerancia "Medium Class"
Tolerance "Medium Class"

A
Tolerancia A
Tolerance A

1:16
Rosca cónica 1:16 (NPT - NPTF - R)
Tapered thread 1:16 (NPT - NPTF - R)

LH
Rosca izquierda
Left-hand thread

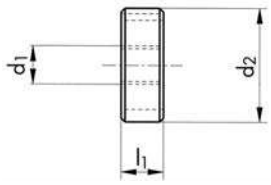
M ISO DIN 13

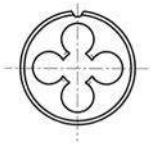
HSS

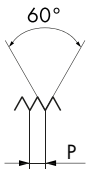
DIN EN 22568

N5110		11 / 12	
N5120	≥Ø3	11 / 12	
N5120 LH	≥Ø3	LH	11 / 12
N5120	≥Ø3	11 / 12	

N5110	N5120	N5120 LH	N5120
			







	1.75 x P	1.75 x P	1.75 x P	1.75 x P
	6g	6g	6g	6e

Ø d_1 M	P mm	d_2 mm	l_1 mm	6g	LH / 6e	→6g←	→6e←	ID	ID	ID	ID 6g - mm
1	0.25	16	5	3		0.97		• 103851			
1.1	0.25	16	5	3		1.07		• 124659			
1.2	0.25	16	5	3		1.17		• 103852			
1.4	0.3	16	5	3		1.36		• 103853			
1.6	0.35	16	5	3		1.54		• 103855			
1.7	0.35	16	5	3		1.64		• 103856			
1.8	0.35	16	5	3		1.74		• 103857			
2	0.4	16	5	3		1.93		• 103864			
2.2	0.45	16	5	3		2.13		• 103867			
2.3	0.4	16	5	3		2.23		• 103869			
2.5	0.45	16	5	3		2.43		• 103872			
2.6	0.45	16	5	3		2.53		• 103876			
3	0.5	20	5	3	4	2.92	2.9	• 103879	• 104067	• 104068	• 104066 0.030
3.5	0.6	20	5	3	4	3.41		• 103880	• 104071	• 104072	
4	0.7	20	5	3	4	3.91	3.87	• 103881	• 104114	• 104115	• 104113 0.035
4.5	0.75	20	7	4		4.4		* 103882	• 104117		
5	0.8	20	7	4	4	4.9	4.87	• 103883	• 104146	• 104147	• 104145 0.035
5.5	0.9	20	7	4		5.4		* 103884			
6	1	20	7	4	4	5.88	5.85	• 103885	• 104165	• 104166	• 104164 0.035
7	1	25	9	4	4	6.88		• 103886	• 104174	• 104175	
8	1.25	25	9	4	4	7.87	7.83	• 103887	• 104186	• 104187	• 104185 0.035
9	1.25	25	9	4		8.87		* 103888	• 104191		
10	1.5	30	11	4	4	9.85	9.82	• 103858	• 103953	• 103954	• 103952 0.035
12	1.75	38	14	4	4	11.83	11.8	• 103859	• 103973	• 103974	• 103972 0.035
14	2	38	14	4	4	13.82		• 103860	• 103989	• 103990	
16	2	45	18	4	4	15.82		• 103861	• 104003	• 104004	
18	2.5	45	18	5		17.79			• 104015		
20	2.5	45	18	5	5	19.79		• 103878	• 104028	• 104029	
22	2.5	55	22	5		21.79			• 104035		
24	3	55	22	5	5	23.76			• 104043	• 104044	
27	3	65	25	5		26.76			• 104058		
30	3.5	65	25	6	6	29.73			• 104079	• 104080	
33	3.5	65	25	6		32.73			• 104089		
36	4	65	25	7		35.7			• 104100		

≤M1.4 6h

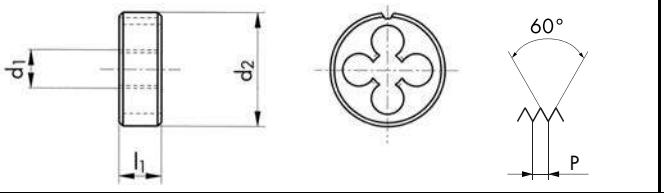
M ISO DIN 13

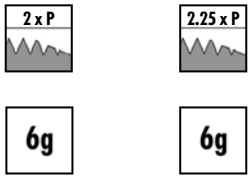
HSSE

DIN EN 22568

Z5120 ≥Ø2 NI 13 14 21

Z5120 LL ≥Ø2 NI 13 14 15 21



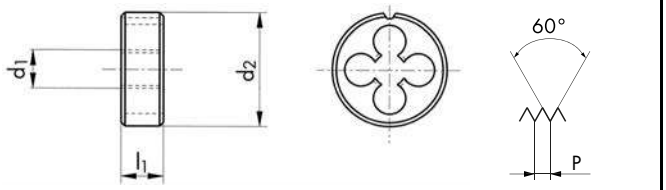


Ø d_1 M	P mm	d_2 mm	l_1 mm	Z5120	Z5120LL	→6g←	Z5120 ID	Z5120LL ID
2	0.4	16	3.5	4	4	1.93	• 125269	• 105115
2.5	0.45	16	5	4	4	2.43	• 104779	• 105116
2.6	0.45	16	5	4		2.53	* 104780	
3	0.5	20	5	4	5	2.92	• 104788	• 105117
3.5	0.6	20	5	4		3.41	• 104789	
4	0.7	20	5	4	5	3.91	• 104790	• 105118
5	0.8	20	7	4	5	4.9	• 104792	• 105119
6	1	20	7	4	5	5.88	• 104795	• 105120
7	1	25	9	4		6.88	* 111424	
8	1.25	25	9	5	6	7.87	• 104798	• 105121
10	1.5	30	11	5	6	9.85	• 104767	• 105122
12	1.75	38	14	5	6	11.83	• 104770	• 105123
14	2	38	14	5		13.82	• 104773	
16	2	45	18	5		15.82	• 104776	
18	2.5	45	18	5		17.79	• 104778	
20	2.5	45	18	5		19.79	• 104783	
24	3	55	22	6		23.76	• 104787	

MF ISO DIN 13

N HSS | Z HSSE | DIN EN 22568

N5120	≥Ø3		11 / 12
N5120 LH	≥Ø3	LH	11 / 12
N5120	≥Ø3		11 / 12
Z5120	≥Ø2	NI	13 / 14 / 21



	N5120	N5120 LH	N5120	Z5120
	1.75 x P	1.75 x P	1.75 x P	2 x P
	6g	6g	6e	6g

Ø d_1 MF	P mm	d_2 mm	l_1 mm	N	Z	→6g←	→6e←	ID	ID	ID	6g - mm	ID
*2	0.25	16	5	4		1.93		● 103863				
*2.5	0.35	16	5	4		2.44		● 103871				
3	0.35	20	5	4		2.94		● 104064				
3.5	0.35	20	5	4		3.44		● 104069				
4	0.35	20	5	4		3.94		● 104108				
4	0.5	20	5	4		3.93		● 104110				
4.5	0.5	20	5	4		4.43		● 104116				
5	0.5	20	5	4	4	4.93	4.9	● 104141	● 104142	● 104140	0.030	● 104791
5	0.75	20	7	4		4.9		● 104143				
5.5	0.5	20	5	4		5.43		● 104148				
6	0.5	20	5	4	4	5.93		● 104159	● 104160			● 104793
6	0.75	20	7	4	4	5.9		● 104162	● 104163			● 104794
7	0.5	25	9	4		6.93		● 104169				
7	0.75	25	9	4		6.9		● 104171				
8	0.5	25	9	5		7.93		● 104177				
8	0.75	25	9	4	4	7.9		● 104180				● 104796
8	1	25	9	4	4	7.88	7.85	● 104183	● 104184	● 104182	0.035	● 104797
9	0.5	25	9	5		8.93		● 104188				
9	0.75	25	9	5		8.9		● 104189				
9	1	25	9	5		8.88		● 104190				
10	0.5	30	11	5		9.93		● 103942				
10	0.75	30	11	5	5	9.9		● 103945				● 104765
10	1	30	11	5	5	9.88	9.85	● 103948	● 103949	● 103947	0.035	● 104766
10	1.25	30	11	4		9.86		● 103950	● 103951			
11	0.75	30	11	5		10.9		● 103956				
11	1	30	11	5		10.88		● 103957				
11	1.25	30	11	5		10.86		● 103958				
12	0.5	38	10	5		11.93		● 103960				
12	0.75	38	10	5		11.9		● 103962				
12	1	38	10	5	5	11.88	11.85	● 103965	● 103966	● 103964	0.035	● 104768
12	1.25	38	10	4		11.86		● 103967	● 103968			
12	1.5	38	10	4	5	11.85		● 103970	● 103971			● 104769
13	1	38	10	5		12.88		● 103976				

P 0.25 — 6h

* N5110

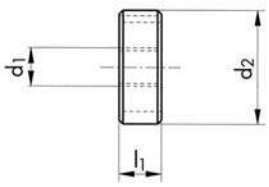
MF ISO DIN 13

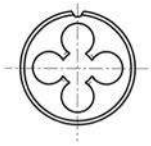
N HSS | Z HSSE | DIN EN 22568

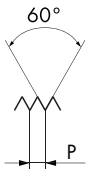
N5120 ≥Ø3 — 11 / 12

N5120 LH ≥Ø3 — LH — 11 / 12

Z5120 ≥Ø2 — NI — 13 / 14 / 21







Ø d_1 MF	P mm	d_2 mm	l_1 mm	N	Z	→6g←	N5120 ID	N5120 LH ID	Z5120 ID
								1.75 x P / 6g	2 x P / 6g
14	0.5	38	10	5		13.93	● 103977		
14	0.75	38	10	5		13.9	● 103979		
14	1	38	10	5	5	13.88	● 103981	● 103982	● 104771
14	1.25	38	10	5		13.86	● 103983		
14	1.5	38	10	5	5	13.85	● 103986	● 103987	● 104772
15	1	38	10	5		14.88	● 103991		
15	1.5	38	10	5		14.85	● 103992		
16	1	45	14	5	5	15.88	● 103996	● 103997	● 104774
16	1.25	45	14	5		15.86	● 103998		
16	1.5	45	14	5	5	15.85	● 104000	● 104001	● 104775
17	1	45	14	5		16.88	● 104005		
18	1	45	14	5		17.88	● 104008		
18	1.5	45	14	5		17.85	● 104011	● 104012	
18	2	45	14	5		17.82	● 104013		
19	1	45	14	6		18.88	● 104017		
20	1	45	14	6	6	19.88	● 104021	● 104022	● 104781
20	1.5	45	14	6	6	19.85	● 104024	● 104025	● 104782
20	2	45	14	6		19.82	● 104026		
21	1	45	14	7		20.88	● 111386		
22	1	55	16	6		21.88	● 104030		
22	1.5	55	16	5		21.85	● 104032		
22	2	55	16	5		21.82	● 104034		
23	1	55	16	6		22.88	● 121704		
24	1	55	16	6		23.88	● 104037		
24	1.5	55	16	6		23.85	● 104039		
24	2	55	16	6		23.82	● 104041	● 104042	
25	1	55	16	6		24.88	● 104045		
25	1.5	55	16	6		24.85	● 104046		
26	1	55	16	7		25.88	● 104049		
26	1.5	55	16	6		25.85	● 104050		
26	2	55	16	6		25.82	● 104052		
27	1	65	18	6		26.88	● 104053		
27	1.5	65	18	6		26.85	● 104054		
27	2	65	18	6		26.82	● 104056		

MF ISO DIN 13

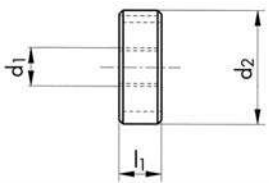
HSS

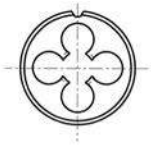
DIN EN 22568

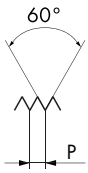
N5120 ≥Ø3 11/12

N5120 LH ≥Ø3 LH 11/12

N5120	N5120 LH		







1.75 x P — 6g

1.75 x P — 6g

Ø d_1 MF	P mm	d_2 mm	l_1 mm		→6g←	ID	ID
28	1	65	18	6	27.88	● 104060	
28	1.5	65	18	6	27.85	● 104061	
30	1	65	18	7	29.88	● 104073	
30	1.5	65	18	6	29.85	● 104074	
30	2	65	18	6	29.82	● 104076	
32	1.5	65	18	7	31.85	● 104082	* 104083
33	1.5	65	18	7	32.85	● 104085	
33	2	65	18	7	32.82	● 104086	
34	1.5	65	18	7	33.85	● 104091	
35	1.5	65	18	8	34.85	● 104092	
36	1.5	65	18	8	35.85	● 104095	
36	2	65	18	8	35.82	● 104097	
36	3	65	25	7	35.76	● 104099	
38	1.5	75	20	7	37.85	● 104101	
39	1.5	75	20	7	38.85	● 104104	
40	1.5	75	20	8	39.85	● 104118	
40	2	75	20	7	39.82	● 104120	
42	1.5	75	20	8	41.85	● 104122	
42	3	75	20	8	41.76	● 104125	
45	1.5	90	22	7	44.85	● 104127	
45	2	90	22	7	44.82	● 104129	
48	1.5	90	22	8	47.85	● 104133	* 104134
48	2	90	22	8	47.82	● 104135	
48	3	90	22	7	47.76	● 104137	
50	1.5	90	22	8	49.85	● 104150	
60	2	105	22	9	59.82	● 104168	

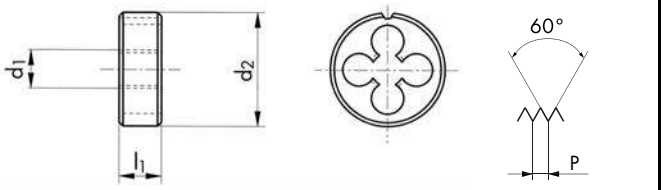
UNC ASME B1.1

HSS

DIN EN 22568

N5110 11 / 12

N5120 ≥Ø3 11 / 12



1.75 x P — 2A

1.75 x P — 2A

Ø" d_1 UNC	P TPI	d_1 mm	d_2 mm	l_1 mm		→2A←	N5110 ID	N5120 ID
1	64	1.85	16	5	3	1.79	• 103893	
2	56	2.18	16	5	4	2.12	• 103894	
3	48	2.51	16	5	4	2.44	• 103895	
4	40	2.84	16	5	4	2.76	• 103896	
5	40	3.17	20	5	4	3.09		• 104263
6	32	3.5	20	7	4	3.41		• 104266
8	32	4.16	20	7	4	4.07		• 104269
10	24	4.82	20	7	4	4.71		• 104258
12	24	5.48	20	7	4	5.37		• 104259
1/4	20	6.35	20	7	4	6.22		• 104256
5/16	18	7.93	25	9	4	7.8		• 104264
3/8	16	9.52	30	11	4	9.37		• 104262
7/16	14	11.11	30	11	4	10.95		• 104267
1/2	13	12.7	38	14	4	12.52		• 111387
9/16	12	14.28	38	14	4	14.1		• 104270
5/8	11	15.87	45	18	4	15.68		• 104265
3/4	10	19.05	45	18	5	18.84		• 104261
7/8	9	22.22	55	22	5	22		• 104268
1	8	25.4	55	22	5	25.16		• 104257
1 1/4	7	31.75	65	25	6	31.49		• 104251
1 1/2	6	38.1	75	30	6	37.81		• 104250
2	4.5	50.8	90	36	7	50.45		* 104260

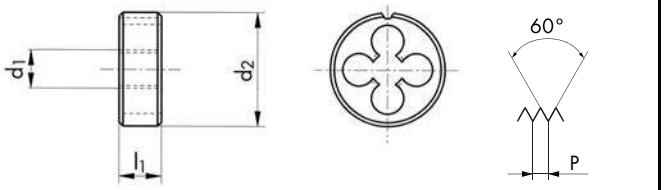
UNF ASME B1.1

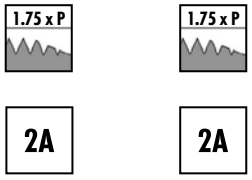
HSS

DIN EN 22568

N5110		11 / 12
N5120	≥ Ø 3	11 / 12

N5110	N5120		





Ø" d_1 UNF	P TPI	d_1 mm	d_2 mm	l_1 mm		→2A←	ID	ID
0	80	1.52	16	5	3	1.47	• 103897	
1	72	1.85	16	5	3	1.79	• 103898	
2	64	2.18	16	5	4	2.12	• 103899	
3	56	2.51	16	5	4	2.44	• 103900	
4	48	2.84	16	5	4	2.77	• 103901	
5	44	3.17	20	5	4	3.1		• 104299
6	40	3.5	20	5	4	3.42		• 104302
8	36	4.16	20	7	4	4.08		• 104305
10	32	4.82	20	7	4	4.73		• 104295
12	28	5.48	20	7	4	5.38		• 104296
1/4	28	6.35	20	7	4	6.24		• 104293
5/16	24	7.93	25	9	4	7.82		• 104300
3/8	24	9.52	30	11	4	9.41		• 104298
7/16	20	11.11	30	11	5	10.98		• 104303
1/2	20	12.7	38	10	5	12.56		• 104292
9/16	18	14.28	38	10	5	14.14		• 104306
5/8	18	15.87	45	14	5	15.73		• 104301
3/4	16	19.05	45	14	6	18.89		• 104297
7/8	14	22.22	55	16	5	22.05		• 104304
1	12	25.4	55	16	6	25.21		• 104294
1 1/4	12	31.75	65	18	7	31.56		• 104289
1 1/2	12	38.1	75	20	7	37.91		• 111390

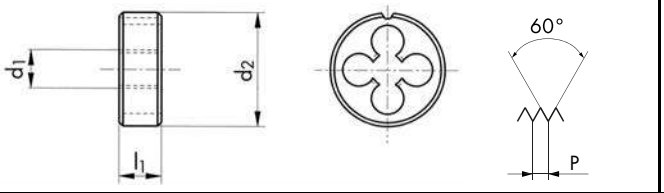
UNEF, UNS, UN ASME B1.1

HSS

DIN EN 22568

N5120 ≥ Ø 3 — 11 / 12

N5120



1.75 x P

2A

Ø" d_1 UNEF	P TPI	d_1 mm	d_2 mm	l_1 mm		→2A←	ID
12	32	5.48	20	7	4	5.39	● 104278
1/4	32	6.35	20	7	4	6.25	● 104275
5/16	32	7.93	25	9	4	7.84	● 104283
3/8	32	9.52	30	11	4	9.42	● 104282
7/16	28	11.11	30	11	5	11	● 104285
1/2	28	12.7	38	10	5	12.59	● 104274
9/16	24	14.28	38	10	5	14.17	● 104287
5/8	24	15.87	45	14	5	15.75	● 104284
3/4	20	19.05	45	14	6	18.91	● 104281

Ø" d_1 UNS	P TPI	d_1 mm	d_2 mm	l_1 mm		→2A←	ID
1/4	40	6.35	20	5	4	6.26	● 104309
1/4	36	6.35	20	5	4	6.26	● 104308
7/16	24	11.11	30	11	5	10.99	● 104311
1/2	24	12.7	38	10	5	12.58	● 104307
1	14	25.4	55	16	6	25.23	● 104310

Ø" d_1 UN	P TPI	d_1 mm	d_2 mm	l_1 mm		→2A←	ID
1 1/8	8	28.57	65	25	5	28.33	● 104246
1 1/4	8	31.75	65	25	6	31.51	● 104245
1 1/2	8	38.1	75	20	7	37.85	● 104244
1 3/4	8	44.45	90	22	7	44.2	● 104247

G DIN EN ISO 228 (BSP)

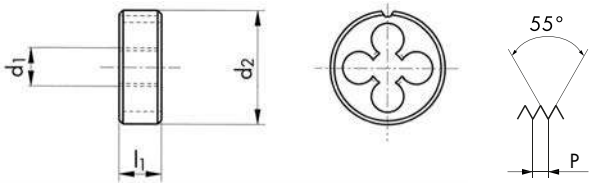
HSS

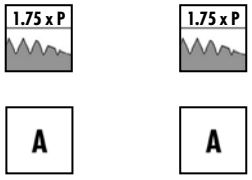
DIN EN 24231

N5120 ≥Ø3 11/12

N5120 LH ≥Ø3 LH 11/12

N5120	N5120 LH		



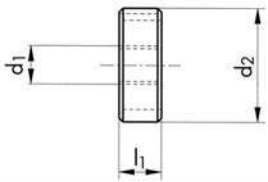


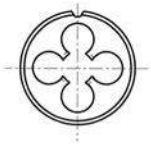
Ø" d_1 G	P TPI	d_1 mm	d_2 mm	l_1 mm		→A←	ID	ID
1/8	28	9.7	30	11	5	9.62	• 103926	
1/4	19	13.15	38	10	5	13.03	• 103924	• 103925
3/8	19	16.66	45	14	5	16.54	• 103935	• 103936
1/2	14	20.95	45	14	6	20.81	• 103922	• 103923
5/8	14	22.91	55	16	5	22.77	• 103938	
3/4	14	26.44	55	16	6	26.3	• 103933	• 103934
7/8	14	30.2	65	18	6	30.06	• 103940	
1	11	33.24	65	18	7	33.07	• 103928	
1 1/4	11	41.91	75	20	8	41.73	• 103918	
1 1/2	11	47.8	90	22	8	47.62	• 103917	
2	11	59.61	105	22	9	59.43	• 103932	
2 1/2	11	75.18	120	22	10	74.97	• 103930	

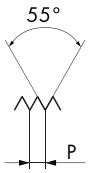
G DIN EN ISO 228 (BSP)

Z HSSE | MS HSS | DIN EN 24231

Z5120	≥ Ø 2	NI	13 / 14 / 21
MS5120	≥ Ø 3		62
MS5120	≥ Ø 3		62







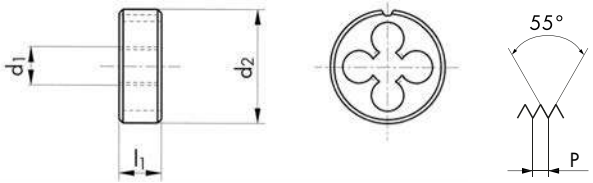
								Z5120	MS5120	MS5120
								2 x P	1.25 x P	1.25 x P
								A	A	A -0.1 mm
Ø" d_1 G	P TPI	d_1 mm	d_2 mm	l_1 mm	Z	MS	→A←	ID	ID	ID
1/8	28	9.72	30	11	5	5	9.62	● 104761		* 142831
1/4	19	13.15	38	10	5	5	13.03	● 104760	● 101338	* 142832
3/8	19	16.66	45	14	5	5	16.54	● 104764	● 101342	● 119716
1/2	14	20.95	45	14	6	6	20.81	● 104759	● 101337	● 119243
3/4	14	26.44	55	16	6	6	26.3	● 104763	● 101341	● 119648
1	11	33.24	65	18	8	7	33.07	● 104762	● 101340	● 135186

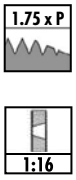
R DIN EN 10226, ISO 7-1

HSS ~DIN EN 24230

N5120 ≥ Ø 3 11 12

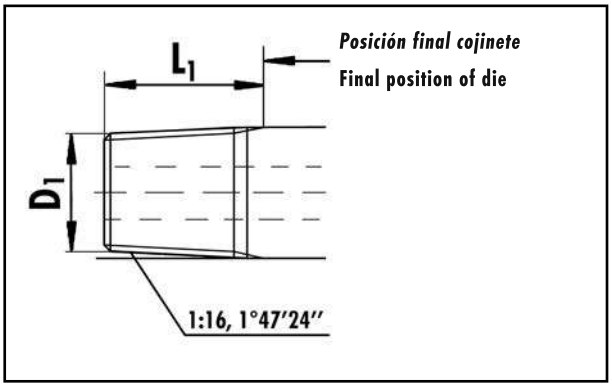
N5120





Ø" R	P TPI	d_2 mm	l_1 mm		ID
1/8	28	30	11	5	104226
1/4	19	38	14	5	104225
3/8	19	45	14	5	104230
1/2	14	45	18	6	104224
3/4	14	55	22	6	104229
1	11	65	25	7	104227

Valores orientativos de los diámetros de giro para las roscas R (en mm)
Guide values for turning diameters for R-threads (in mm)



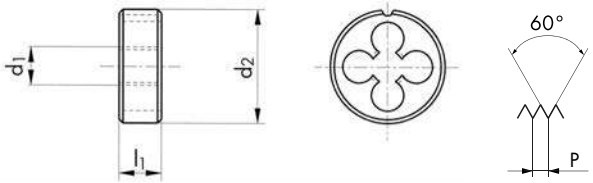
Ø" R	D_1 mini mm	D_1 maxi mm	D_1 (guide line) mm	L_1 (guide line) mm
1/8	9.422	9.534	9.48	8.2
1/4	12.700	12.863	12.78	12.1
3/8	16.181	16.343	16.26	12.5
1/2	20.330	20.555	20.44	16.4
3/4	25.735	25.960	25.85	17.7
1	32.455	32.743	32.60	20.9

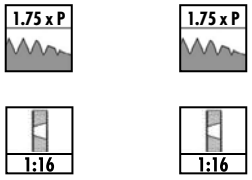
NPT ASME B1.20.1 NPTF ANSI B1.20.3

HSS ~DIN EN 22568

N5120	≥ Ø 3	11 / 12
N5120	≥ Ø 3	11 / 12

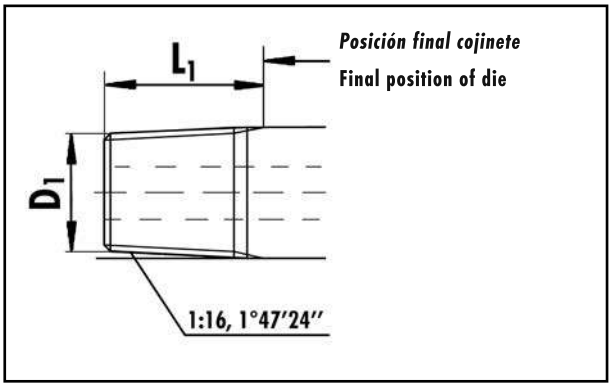
N5120	N5120		
NPT	NPTF		





Ø" d_1 NPT, NPTF	P TPI	d_2 mm	l_1 mm		ID	ID
1/16	27	25	9	4	• 104194	
1/8	27	30	11	5	• 104197	
1/4	18	38	14	5	• 104196	
3/8	18	45	14	5	• 104201	
1/2	14	45	18	6	• 104195	* 104205
3/4	14	55	22	6	• 104200	
1	11.5	65	25	7	• 104198	* 104208
1 1/4	11.5	75	26	8	• 104193	

Valores orientativos de los diámetros de giro para las roscas NPT y NPTF (en mm)
Guide values for turning diameters for NPT and NPTF-threads (in mm)



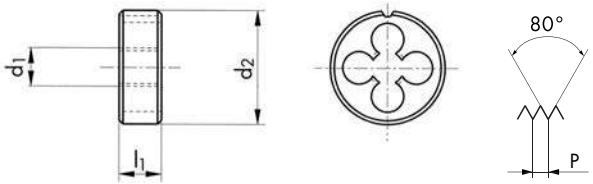
Ø" NPT	D_1 mini mm	D_1 maxi mm	D_1 (guide line) mm	L_1 (guide line) mm	Ø" NPTF	D_1 mini mm	D_1 maxi mm	D_1 (guide line) mm	L_1 (guide line) mm
1/16	7.521	7.643	7.58	8.4	1/16	7.525	7.617	7.57	8.4
1/8	9.866	9.988	9.93	8.5	1/8	9.870	9.962	9.92	8.5
1/4	13.099	13.255	13.18	12.7	1/4	13.129	13.215	13.17	12.7
3/8	16.518	16.674	16.60	12.9	3/8	16.548	16.634	16.59	12.9
1/2	20.551	20.713	20.63	16.8	1/2	20.617	20.703	20.66	16.8
3/4	25.866	26.028	25.95	17.1	3/4	25.932	26.018	25.98	17.1
1	32.419	32.591	32.51	21.3	1	32.475	32.561	32.52	21.3
1 1/4	41.144	41.316	41.23	21.9					

PG DIN 40430 TR DIN 103

HSS | DIN EN 40434 | ~DIN EN 22568

N5120	≥ Ø 3	11 / 12	N5120	N5120	
N5120	≥ Ø 3	11 / 12			

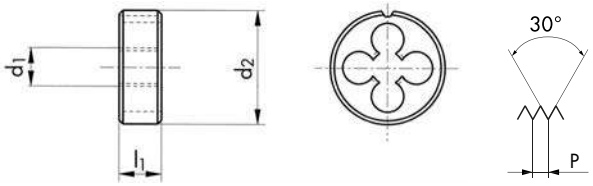
PG TR



1.75 x P

Ø d_1 PG	P TPI	d_1 mm	d_2 mm	l_1 mm			ID
7	20	12.5	38	10	5	12.4	● 104220
9	18	15.2	38	10	5	15.1	● 104221
11	18	18.6	45	14	5	18.5	● 104212
13.5	18	20.4	45	14	6	20.3	● 104213
16	18	22.5	55	16	5	22.4	● 104214
42	16	54	90	22	10	53.85	✱ 104218
48	16	59.3	105	22	9	59.15	✱ 104219

Other sizes on request!



1.75 x P

7e

Ø d_1 TR	P mm	d_2 mm	l_1 mm		→7e←	ID
28	5	65	25	5	27.83	✱ 104240
32	6	65	25	6	31.81	✱ 104242

Other sizes on request!

W BS 84 (BSW)

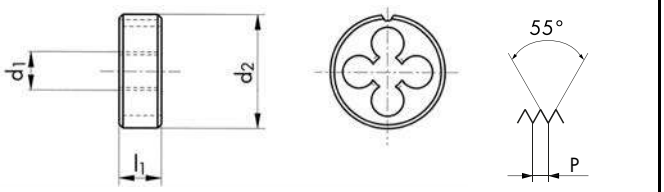
HSS

DIN EN 22568

N5120 ≥Ø3 11/12

N5120 LH ≥Ø3 LH 11/12

N5120	N5120 LH		



1.75 x P MC

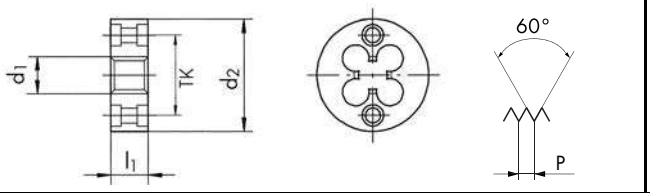
1.75 x P MC

Ø" d_1 W	P TPI	d_1 mm	d_2 mm	l_1 mm		→MC←	ID	ID
1/8	40	3.17	20	5	4	3.09	● 104320	
5/32	32	3.96	20	7	4	3.88	● 104333	
3/16	24	4.76	20	7	4	4.66	● 104325	
1/4	20	6.35	20	7	4	6.24	● 104318	
5/16	18	7.93	25	9	4	7.82	● 104331	
3/8	16	9.52	30	11	4	9.4	● 104329	
7/16	14	11.11	30	11	4	10.98	● 104336	
1/2	12	12.7	38	14	4	12.56	● 104316	
5/8	11	15.87	45	18	4	15.72	● 104334	
3/4	10	19.05	45	18	5	18.89	● 104327	✱ 104328
1	8	25.4	55	22	5	25.27	● 104322	
1 3/8	6	34.92	65	25	6	34.77	✱ 104315	

M ISO DIN 13

N HSS | Z HSSE

N5220	≥Ø3			11 / 12
N5220	≥Ø3			11 / 12
Z5220	≥Ø2		NI	13 / 14 / 21



	N5220	N5220	Z5220	
	1.75 x P	1.75 x P	2 x P	
	6g	6e	6g	

Ø d_1 M	P mm	d_2 mm	l_1 mm		TK mm	→6g←	→6e←	ID	ID	6g - mm	ID
1.4	0.3	16	2.6	4	12.2	1.36		● 104346			
1.6	0.35	16	2.6	4	12.2	1.54		● 104347			
2	0.4	16	3.5	4	12.2	1.93		● 104367			
2.3	0.4	16	3.5	4	12.2	2.23		● 104369			
2.5	0.45	16	3.5	4	12.2	2.43		● 104371			● 104803
2.6	0.45	16	3.5	4	12.2	2.53		● 104372			
3	0.5	16	3.5	4	12.2	2.92	2.9	● 104375	● 104374	0.030	● 104804
3.5	0.6	16	4	4	12.2	3.41		● 104376			
4	0.7	16	5	4	12.2	3.91	3.87	● 104380	● 104379	0.035	● 104805
5	0.8	20	7	4	15	4.9	4.87	● 104384	● 104383	0.035	● 104806
6	1	20	7	4	15	5.88	5.85	● 104388	● 104387	0.035	● 104807
8	1.25	25	9	4	19	7.87	7.83	● 104397	● 104396	0.035	● 104808
10	1.5	30	11	6	23	9.85	9.82	● 104354	● 104353	0.035	
12	1.75	30	11	6	23	11.83		● 104358			

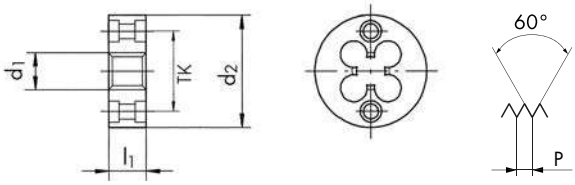
≤M1.4 6h

MF ISO DIN 13

HSS

N5220 | ≥ Ø 3 | 11 / 12

N5220



1.75 x P

6g

Ø d_1 MF	P mm	d_2 mm	l_1 mm		TK mm	→6g←	ID
3	0.35	16	3	4	12.2	2.94	● 104373
4	0.5	16	4	4	12.2	3.93	● 104378
5	0.5	20	5	4	15	4.93	● 104382
6	0.5	20	5	4	15	5.93	● 104385
6	0.75	20	7	4	15	5.9	● 104386
7	0.5	25	7	4	19	6.93	* 104389
7	0.75	25	7	4	19	6.9	* 104390
10	0.75	30	7	6	23	9.9	* 104350
10	1.25	25	9	6	19	9.86	* 104352

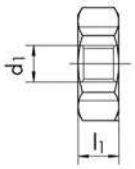
M ISO DIN 13, MF ISO DIN 13

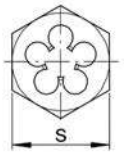
HSS

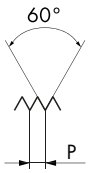
DIN 382

N5310 11 12

N5310







6g

Ø d_1 M	P mm	s mm	l_1 mm		→6g←	ID
3	0.5	18	5	3	2.92	● 104464
3.5	0.6	18	5	3	3.41	✱ 104465
4	0.7	18	5	3	3.91	● 104478
4.5	0.75	18	7	3	4.41	✱ 104479
5	0.8	18	7	4	4.9	● 104487
6	1	18	7	4	5.88	● 104493
8	1.25	21	9	4	7.87	● 104502
9	1.25	21	9	5	8.87	✱ 104503
10	1.5	27	11	4	9.85	● 104438
12	1.75	36	14	4	11.83	● 104443
14	2	36	14	4	13.82	● 104445
16	2	41	18	4	15.82	● 104447
18	2.5	41	18	5	17.79	● 104450
20	2.5	41	18	5	19.79	● 104453
22	2.5	50	22	5	21.79	● 104456
24	3	50	22	5	23.76	● 104459
30	3.5	60	25	5	29.73	● 104468

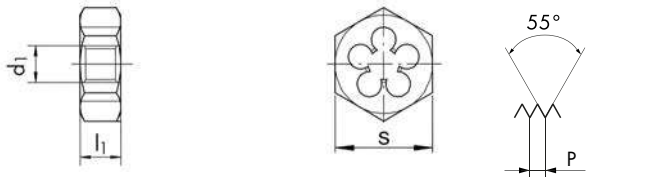
Ø d_1 MF	P mm	s mm	l_1 mm		→6g←	ID
6	0.75	18	7	4	5.9	✱ 104492
8	0.75	21	9	4	7.9	✱ 104500
8	1	21	9	4	7.88	✱ 104501
12	1	36	10	4	11.88	✱ 104440
27	1.5	60	18	6	26.85	✱ 104461
33	1.5	60	18	7	32.85	✱ 104469
39	1.5	70	20	8	38.85	✱ 104476

G DIN EN ISO 228 (BSP) W BS 84 (BSW) M ISO DIN 13

HSS | DIN 382 | DC

N5310	11 / 12	
N5310	11 / 12	
N5420	≥ Ø 3	11 / 12

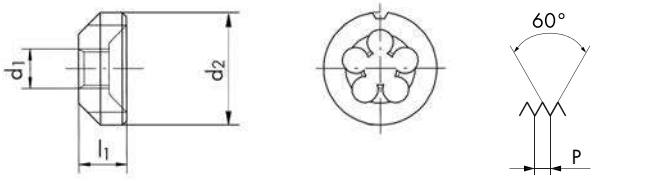
N5310	N5310		N5420



1.75 x P	1.75 x P		1.75 x P
A	MC		6g

Ø" d_1 G	P TPI	d_1 mm	s mm	l_1 mm		→A←	ID
1/4	19	13.15	36	10	5	13.03	● 104428
3/8	19	16.66	41	14	5	16.54	● 104433
1/2	14	20.95	41	14	6	20.81	● 104427
5/8	14	22.91	50	16	6	22.77	* 104434
3/4	14	26.44	50	16	6	26.3	● 104432
7/8	14	30.2	60	18	6	30.06	* 104435
1	11	33.24	60	18	7	33.07	● 104430
1 3/8	11	44.32	85	22	7	44.14	* 104426
1 3/4	11	53.74	100	22	8	53.57	* 104425

Ø" d_1 W	P TPI	d_1 mm	s mm	l_1 mm		→MC←	ID
1/8	40	3.17	18	5	3	3.09	* 104512
3/16	24	4.76	18	7	3	4.66	* 104515
9/16	12	14.28	36	14	4	14.14	* 104522
1 3/8	6	34.92	60	25	6	34.77	* 104508
1 1/2	6	38.1	70	30	6	37.95	* 104504
1 3/4	5	44.45	85	36	6	44.28	* 104507
2	4.5	50.8	85	36	7	50.63	* 104514



Ø d_1 M	P mm	d_2 mm	l_1 mm		→6g←	ID
2.5	0.45	16	8	4	2.43	* 104527
3.5	0.6	16	9.5	4	3.41	* 104530
8	1.25	25	14	5	7.86	* 104535

CALIBRES DE ROSCAS DE PRECISIÓN — PRECISION THREAD GAUGES

D5703

Tampones de roscas DC "Pasa" / "No pasa"
dimensiones según DIN 2280 hasta un diámetro nominal de 40 mm

DC "Go" / "No-Go" thread plug gauge
Dimensions according to DIN 2280 till nominal diameter 40 mm

D5701-1

Tampones de roscas DC "Pasa"
dimensiones según DIN 2281-1;
a partir de un diámetro nominal de 40 mm según la norma DIN 2281-2

DC "Go" thread plug gauge
dimensions according to DIN 2281-1;
above nominal diameter of 40 mm as per DIN 2281-2

D5701-2

Tampones de roscas DC "No pasa"
dimensiones según DIN 2283-1;
a partir de un diámetro nominal de 40 mm según la norma DIN 2283-2

DC "No-Go" thread plug gauge
dimensions according to DIN 2283-1;
above nominal diameter of 40 mm as per DIN 2283-2

D5720

Tampones de roscas DC "Pasa" / "No pasa" cónico
con escalón de medida

DC "Go" / "No-Go" thread plug gauge conical
with step limit

Información importante
DC SWISS SA se especializa en la fabricación de tampones de roscas con pase de rosca extremadamente fino, como los que se utilizan con frecuencia en la industria relojera, especialmente para comprobar las roscas interiores de las cajas de los relojes. Si lo solicita, estaremos encantados de hacerle una oferta adecuada.

Important note
DC SWISS SA is specialised in the manufacture of thread plug gauges with extremely fine threads, such as those frequently used in the watchmaking industry, especially for checking internal threads in watch cases.
On request, we will be pleased to submit you an appropriate quotation.

CALIBRES DE ROSCAS DE PRECISIÓN — PRECISION THREAD GAUGES

D5704

Calibres anillos de roscas DC "Pasa"
dimensiones según DIN 2285-1

DC "Go" thread ring gauge
dimensions according to DIN 2285-1

D5714

Calibres anillos de roscas DC "No pasa"
dimensiones según DIN 2299-1

DC "No-Go" thread ring gauge
dimensions according to DIN 2299-1

D5721

Calibres anillos de roscas DC "Pasa" / "No pasa" para rosca externa cónico
con escalón de medida

DC "Go" / "No-Go" thread ring gauge for tapered external thread
with step limit

Calibres de entrega inmediata sin certificado de control.
Sobre pedido, los calibres pueden ser entregados con certificado en breve, servicio de pago.
Para nuevos calibres de roscas / incertidumbre de medida U95.
Al certificar, los calibres son marcados con el n° de identificación de los certificados correspondientes.

Thread gauges available from stock without test certificate.
However, all gauges can be delivered in short time with test certificate on demand, price for the certificate on request.
For new ordered thread gauges / measuring uncertainty U95.
All "certified" thread gauges will be marked with the identity number of the corresponding test certificate.

Características Characteristics							
							
Tipo Type		**D5701-1**	**D5701-2**	**D5703**	**D5720**	**D5722**	**D5725**
M 6H / 6g	**ISO DIN 13**	294	294	294			
M 6G / 6e	**ISO DIN 13**			294			
M 6H / 6g LH	**ISO DIN 13**			294			
MF 6H / 6g	**ISO DIN 13**	296 - 297	297	296 - 297			
MF 6G / 6e	**ISO DIN 13**			296			
MF 6H / 6g LH	**ISO DIN 13**			296			
UNC	**ASME B1.1**	300		300			
UNF	**ASME B1.1**	301		301			
UNEF	**ASME B1.1**			301			
NPT	**ASME B1.20.1**				303		
NPTF	**ANSI B1.20.3**				303		
G (BSP)	**DIN EN ISO 228**	302	302	302			
PG	**DIN 40430**						302
EG M	**ISO DIN 8140**			304			
EG UNC	**ASME B18.29.1**			304			
EG UNF	**ASME B18.29.1**			304			

			
D5704	**D5714**	**D5721**	**D5723**
295	295		
295	295		
295			
298 - 299	298 - 299		
298			
300	300		
301	301		
301	301		
		303	
		303	
302	302		
302			

Pictogramas - Pictographs

"Pasa"
"Go"

"No pasa"
"No-Go"

"Pasa" / "No pasa"
"Go" / "No-Go"

6H — *Tolerancia 6H, "Pasa"*
Tolerance 6H, "Go"

6G — *Tolerancia 6G, "Pasa" / "No pasa"*
Tolerance 6G, "Go" / "No-Go"

6g — *Tolerancia 6g, "No pasa"*
Tolerance 6g, "No-Go"

LH — *Rosca izquierda*
Left-hand thread

Calibres de entrega inmediata sin certificado de control.

Sobre pedido, los calibres pueden ser entregados con certificado en breve, servicio de pago.

Para nuevos calibres de roscas / incertidumbre de medida U95.

Al certificar, los calibres son marcados con el n° de identificación de los certificados correspondientes.

Thread gauges available from stock without test certificate.

However, all gauges can be delivered in short time with test certificate on demand, price for the certificate on request.

For new ordered thread gauges / measuring uncertainty U95.

All "certified" thread gauges will be marked with the identity number of the corresponding test certificate.

M ISO DIN 13
DIN ISO 1502

D5701-1 M1 - M1.4 = 5H

D5703 M1 - M1.4 = 5H

Ø d_1 M	P mm	D5701-1 ID	D5701-2 ID	D5703 ID	D5703 LH ID	D5703 ID
		6H	6H	6H	6H LH	6G
1	0.25			● 100242		
1.1	0.25			● 100243		
1.2	0.25			● 100244		
1.4	0.3			● 100245		
1.6	0.35			● 100246		
1.7	0.35			● 100247		
1.8	0.35			● 100248		
2	0.4			● 100278	● 105159	● 104982
2.2	0.45			● 100280		
2.3	0.4			● 100281		
2.5	0.45			● 100283	● 105160	● 104979
2.6	0.45			● 100285		
3	0.5			● 100310	● 104964	● 104976
3.5	0.6			● 100312		● 104977
4	0.7			● 100333	● 104966	● 104978
4.5	0.75	* 100114				
5	0.8			● 100348	● 104967	● 104980
6	1			● 100363	● 104968	● 104981
7	1			● 100369		
8	1.25			● 100373	● 104969	● 104983
9	1.25			● 100375		
10	1.5			● 100253	● 104970	● 104984
11	1.5			* 100256		
12	1.75			● 100261	● 104971	● 104985
14	2	* 100045		● 100266		● 104986
16	2			● 100271	● 104973	● 104987
18	2.5	* 100055		● 100276		* 104988
20	2.5	* 100068		● 100289	● 104975	● 104989
22	2.5	* 100072		● 100293	* 110178	
24	3	* 100076		● 100297	● 110179	
27	3			● 100305		
30	3.5			● 100316		
33	3.5	* 100101		● 100322		
36	4	* 100107		● 100328		
39	4	* 100109		● 100330		
42	4.5	● 100119	● 142843			
45	4.5	● 100122	● 142844			
48	5	● 100125	● 142845			
52	5	● 100132	● 142846			
56	5.5	● 100137	● 142847			

M ISO DIN 13
DIN ISO 1502

D5704 M1 - M1.4 = 6h

D5714 M1 - M1.4 = 6h

Ø d_1 M	P mm	D5704 6g ID	D5704 LH 6g LH ID	D5704 6e ID	D5714 6g ID	D5714 6e ID
1	0.25	• 100480			• 110419	
1.2	0.25	• 100481			• 110420	
1.4	0.3	• 100482			• 110421	
1.6	0.35	• 100483			• 110422	
1.7	0.35	• 100484			• 111439	
1.8	0.35	• 100485			• 110423	
2	0.4	• 100515	• 105006		• 100734	
2.2	0.45	• 100517			• 100735	
2.3	0.4	• 100518			• 100736	
2.5	0.45	• 100520			• 100737	
2.6	0.45	• 100522			• 100738	
3	0.5	• 100547	• 105001		• 100763	
3.5	0.6	• 100549	• 110302	* 110301	• 100765	* 142836
4	0.7	• 100570	• 105003		• 100774	
5	0.8	• 100585	• 105004	* 104993	• 100778	* 143406
6	1	• 100600	• 105005	* 104994	• 100781	* 135556
7	1	• 100605		* 104995	• 100783	
8	1.25	• 100611	• 105007		• 100786	
9	1.25	• 100610			• 100788	
10	1.5	• 100490	• 105008		• 100711	* 142842
11	1.5				* 100713	
12	1.75	• 100498	• 105009		• 100718	
14	2	• 100503	• 105010		• 100723	
16	2	• 100508	• 105011		• 100728	
18	2.5	• 100513	• 105012		• 100733	
20	2.5	• 100526	• 105013		• 100742	
22	2.5	• 100530	• 110298		• 100746	
24	3	• 100534			• 100750	
27	3	• 100542			• 100758	
30	3.5	• 100553			• 100769	
33	3.5	* 100559			* 100770	
39	4				* 110440	
45	4.5				* 110448	
56	5.5	* 100595			* 110461	

MF ISO DIN 13
DIN ISO 1502

		D5701-1	D5703	D5703 LH	D5703		
							
		6H	6H	6H LH	6G		
Ø d_1 MF	P mm	ID	ID	ID	ID		
2.5	0.35		● 100282				
3	0.35		● 100309				
4	0.35		● 100331				
4	0.5		● 100332				
5	0.5		● 100347	● 105016	● 105045		
6	0.5	* 100140	● 100361	● 110184			
6	0.75		● 100362		● 105046		
7	0.5		● 100367				
7	0.75	* 100147	● 100368				
8	0.5	* 100149	● 100370				
8	0.75		● 100371	● 105018	● 105047		
8	1	* 100151	● 100372	● 105019	● 105048		
9	1		● 100374				
10	0.5		● 100249				
10	0.75		● 100250				
10	1		● 100251	● 105020	● 105049		
10	1.25	* 100031	● 100252				
11	1	* 100034	● 100255				
12	0.75	* 100036	● 100257				
12	1		● 100258	● 105021	● 105050		
12	1.25		● 100259				
12	1.5		● 100260	● 105022			
14	1		● 100263	● 110171			
14	1.25		● 100264				
14	1.5		● 100265	● 105023	● 105052		
15	1		● 100267				
15	1.5		● 100268				
16	1		● 100269	● 110172			
16	1.5		● 100270	● 105024	● 105053		
17	1		● 100272				
18	1		● 100273				
18	1.5		● 100274	● 105025	● 105054		
18	2	* 100054	● 100275				
20	1	* 100065	● 100286				
20	1.5		● 100287	● 105026			
20	2	* 100067	● 100288		* 110176		
22	1		● 100290				
22	1.5		● 100291	● 110177			
22	2		● 100292				
24	1		● 100294				
24	1.5		● 100295				
24	2		● 100296				

MF ISO DIN 13
DIN ISO 1502

	D5701-1	D5701-2	D5703			
						
	6H	6H	6H			
Ø d_1 MF	P mm	ID	ID	ID		
25	1			● 100298		
25	1.5			● 100299		
25	2			● 100300		
26	1			● 100301		
26	1.5	* 100081		● 100302		
27	1.5	* 100082		● 100303		
27	2	* 100083		● 100304		
28	1			● 100306		
28	1.5	* 100086		● 100307		
28	2	* 100087		● 100308		
30	1	* 100092		● 100313		
30	1.5			● 100314		
30	2			● 100315		
32	1			● 100317		
32	1.5			● 100318		
32	2			● 100319		
33	1.5			● 100320		
33	2			● 100321		
35	1.5			● 100323		
36	1.5			● 100325		
36	2			● 100326		
36	3			● 100327		
38	1.5	* 100108		● 100329		
40	1.5			● 100336		
40	2			● 100337		
42	1.5	● 100117	● 142848			
42	2	● 100118	● 142849			
45	1.5	● 100120	● 110127			
45	2	● 100121	● 142851			
48	1.5	● 100123	● 123180			
48	2	● 100124	● 142853			
50	1.5	● 100128	● 142854			
50	2	● 100129	● 142855			
52	1.5	● 100130	● 123428			
52	2	● 100131	● 142857			
55	1.5		● 123468			
55	2	● 100134	● 142859			
56	1.5	● 100135	● 142860			
56	2	● 100136	● 142861			
58	1.5	● 100138	● 142862			
58	2	● 100139	● 142863			
60	1.5	● 100143	● 142864			
60	2	● 100144	● 142865			

MF ISO DIN 13
DIN ISO 1502

	D5704	D5704 LH	D5714			
						
	6g	6g LH	6g			
Ø d_1 MF / P mm	ID	ID	ID			
2.5 / 0.35	● 100519		● 110427			
3 / 0.35	● 100546		● 100762			
3.5 / 0.35	● 100548		● 100764			
4 / 0.35	● 100568		● 100772			
4 / 0.5	● 100569		● 100773			
4.5 / 0.5	● 100571		● 100775			
5 / 0.5	● 100584	● 105057	● 100777			
6 / 0.5	● 100598	● 110307	● 100779			
6 / 0.75	● 100599	● 105058	● 100780			
7 / 0.5	● 100603		● 110467			
7 / 0.75	● 100604		● 100782			
8 / 0.5	● 100606					
8 / 0.75	● 100607	* 105059	● 100784			
8 / 1	● 100608	● 105060	● 100785			
9 / 1	● 100609		● 100787			
10 / 0.5	● 100486		● 100707			
10 / 0.75	● 100487		● 100708			
10 / 1	● 100488	● 105061	● 100709			
10 / 1.25	● 100489		● 100710			
11 / 1	● 100492		● 100712			
12 / 0.75	● 100494		● 100714			
12 / 1	● 100495	● 105062	● 100715			
12 / 1.25	● 100496		● 100716			
12 / 1.5	● 100497	● 105063	● 100717			
13 / 1	● 100499		● 100719			
14 / 1	● 100500	● 110290	● 100720			
14 / 1.25	● 100501		● 100721			
14 / 1.5	● 100502	● 105064	● 100722			
15 / 1	● 100504		● 100724			
15 / 1.5	● 100505		● 100725			
16 / 1	● 100506	● 110292	● 100726			
16 / 1.5	● 100507	● 105065	● 100727			
17 / 1	● 100509		● 100729			
18 / 1	● 100510		● 100730			
18 / 1.5	● 100511	● 105066	● 100731			
20 / 1	● 100523	● 110295	● 100739			
20 / 1.5	● 100524	● 105067	● 100740			
20 / 2	● 100525		● 100741			
22 / 1	● 100527		● 100743			
22 / 1.5	● 100528		● 100744			
22 / 2	● 100529		● 100745			
24 / 1	● 100531		● 100747			
24 / 1.5	● 100532		● 100748			
24 / 2	● 100533					

MF ISO DIN 13
DIN ISO 1502

	D5704	D5714				
						
	6g	6g				
Ø d_1 MF	P mm	ID	ID			
25	1	● 100535				
25	1.5	● 100536				
26	1	● 100538				
26	1.5	● 100539				
27	1.5	● 100540				
27	2	● 100541	* 100757			
28	1	● 100543				
28	1.5	● 100544	* 100760			
30	1	● 100550				
30	1.5	● 100551				
30	2	● 100552				
32	1	● 100554				
32	1.5	● 100555				
32	2	● 100556				
33	1.5	● 100557				
33	2	● 100558	* 110433			
35	1.5	● 100560				
36	1.5	● 100562				
36	2	● 100563				
36	3	● 100564				
38	1.5	● 100566				
40	1.5	● 100573				
42	1.5	● 100575				
42	2	● 100576				
45	1.5	● 100578				
45	2	● 100579				
48	1.5	● 100581	* 110449			
48	2	● 100582				
50	1.5	● 100586				
50	2	● 100587	* 110453			
52	1.5		* 110454			
52	2	● 100589				
55	1.5	● 100591				
55	2	● 100592	* 110458			
56	1.5	● 100593	* 110459			
56	2		* 110460			
58	1.5	● 100596				
58	2	● 100597	* 110463			
60	1.5	● 100601				
60	2	● 105014				

UNC ASME B1.1
ANSI / ASME B1.2

		D5701-1	D5703	D5704	D5714		
							
		2B	2B	2A	2A		
Ø" d_1 UNC	P TPI	ID	ID	ID	ID		
1	64		● 100408	● 110347	● 110473		
2	56		● 100414	● 110353	● 110479		
3	48		● 100416				
4	40	* 110080	● 110224	●110357	● 110483		
5	40		● 100420				
6	32	* 110084	● 100423	●110361	● 110487		
8	32		● 100426	●110364	● 110490		
10	24	* 110074	● 100412	●110351	● 110477		
12	24		● 100413				
1/4	20		● 100410	● 110349	● 110475		
5/16	18	* 110082	● 100421	● 110359	● 110485		
3/8	16	* 110079	● 100418	● 110356	● 110482		
7/16	14	* 110085	● 100424	● 110362	● 110488		
1/2	13	* 110071	● 100409	● 110348	● 110474		
9/16	12		● 100427	● 110365	* 110491		
5/8	11		● 100422	● 110360			
3/4	10	* 110078	● 100417	● 110355	* 110481		
7/8	9		● 100425	● 110363	* 110489		
1	8	* 110073	● 100411	● 110350	* 110476		
1 1/8	7	* 110068	● 100405	* 110345	* 110471		
1 1/4	7	* 110067	● 100404	* 110344	* 110470		
1 3/8	6	* 110069	● 100407	* 110346	* 110472		
1 1/2	6	* 110066	● 100403	* 110343	* 110469		

UNF, UNEF

ASME B1.1
ANSI / ASME B1.2

		D5701-1	D5703	D5704	D5714		
							
		2B	2B	2A	2A		
Ø" d_1 UNF	P TPI	ID	ID	ID	ID		
0	80		• 110246				
1	72		• 110251	• 110383	• 110508		
2	64		• 110256	• 110389	• 110514		
3	56		• 110257	• 110390	• 110515		
4	48		• 110260	• 110393	• 110518		
5	44	* 110116					
6	40		• 110264				
8	36	* 110122	• 110267				
10	32		• 110254	• 110387	• 110512		
12	28		• 110255	• 110388	• 110513		
1/4	28	* 110107	• 110006	• 110385	• 110510		
5/16	24	* 110117	• 110262	• 110395	• 110520		
3/8	24	* 110114	• 110259	• 110392	• 110517		
7/16	20	* 110120	• 110265	• 110398	• 111440		
1/2	20	* 110106	• 110252	• 110384	• 110509		
9/16	18		• 110268	• 110401			
5/8	18		• 110263	• 110396			
3/4	16		• 110258	• 110391			
7/8	14		• 110266	• 110399			
1	12		• 128646	• 110386			
1 1/8	12	* 110103	• 110249	• 110381			
1 1/4	12		• 110248	• 110380	* 110505		
1 3/8	12	* 110104	• 110250		* 110507		
1 1/2	12		• 110247	• 110379			

Ø" d_1 UNEF	P TPI		ID	ID	ID		
12	32		• 110238				
1/4	32		• 110236	• 110368	• 110493		
5/16	32		• 110241	• 110373	• 110498		
3/8	32		• 110240	• 110372	• 110497		
7/16	28		• 110243	• 110375	• 110500		
1/2	28		• 110235	• 110367	• 110492		
9/16	24		• 110245	• 110377	• 110502		
5/8	24		• 110242	• 110374	• 110499		
3/4	20		• 110239	• 110371	• 110496		
7/8	20		• 110244				
1	20		• 110253	• 110369	• 110494		

G DIN EN ISO 228 (BSP) DIN EN ISO 228-2

PG DIN 40430 DIN 40431

Ø" d_1 G	P TPI	D5701-1	D5701-2	D5703	D5704	D5714	D5725
							
							
		ID	ID	ID	ID	ID	
1/8	28	* 110044		● 110009	● 110277	● 110408	
1/4	19			● 110003	● 110276	● 110407	
3/8	19	* 110052		● 110162	● 110284	● 110415	
1/2	14			● 110001	● 110275	● 110406	
5/8	14			● 110164	● 110286	● 110417	
3/4	14			● 110161	● 110283	● 110414	
7/8	14	* 110054		● 110165			
1	11			● 110156	● 110278	● 110409	
1 1/8	11			● 110154		* 110404	
1 1/4	11	● 110041	● 119459		● 110272		
1 1/2	11	● 110040	● 119429		● 110271		
1 3/4	11	● 110043	● 142868		● 110274	* 110405	
2	11	● 110050	● 110126		● 110282		
2 1/4	11					* 110411	
2 1/2	11		* 110125				
2 3/4	11					* 110412	

Ø d_1 PG	P TPI	ID	ID
7	20		● 110216
9	18		● 110217
11	18		● 110205
13.5	18		● 110209
16	18		● 110210
21	16	* 110331	● 110211
29	16		● 110212

NPT ASME B1.20.1
ASME B1.20.1

NPTF ANSI B1.20.3
ASA B2.2

		D5720	D5721				
							
Ø" d_1 NPT	P TPI	ID	ID				
1/16	27	• 110190	• 110313				
1/8	27	• 110193	• 110316				
1/4	18	• 110192	• 110315				
3/8	18	• 110197	• 110320				
1/2	14	• 110191	• 110314				
3/4	14	• 110196	• 110319				
1	11.5	• 110194	• 110317				
1 1/4	11.5	• 110189	• 110312				
1 1/2	11.5	• 110188	• 110311				
2	11.5	• 110195	• 110318				
Ø" d_1 NPTF	P TPI	ID	ID				
1/8	27	• 110201					
1/4	18	• 110200	* 110323				
3/8	18	• 110204					
1/2	14	• 110199	* 110322				
3/4	14	• 110203	* 110326				
1	11.5	• 110202	* 110325				

EG M ISO DIN 8140-2 DIN ISO 1502 EG UNC, EG UNF ASME B18.29.1 ~ ISO 1502

	D5703	D5703	D5703			
						
	6H$_{mod}$	3B	3B			
Ø d_1 EG M / P mm	ID					
2.5 / 0.45	● 110132					
3 / 0.5	● 110133					
4 / 0.7	● 110134					
5 / 0.8	● 110135					
6 / 1	● 110136					
8 / 1.25	● 110137					
10 / 1.5	● 110128					
12 / 1.75	● 110129					
16 / 2	● 110131					
Ø" d_1 EG UNC / P TPI	ID					
4 / 40	● 170252					
6 / 32	● 170253					
8 / 32	● 170254					
10 / 24	● 170255					
1/4 / 20	● 170256					
5/16 / 18	● 170257					
3/8 / 16	● 170258					
Ø" d_1 EG UNF / P TPI	ID					
6 / 40	● 170259					
8 / 36	● 170260					
10 / 32	● 161020					
1/4 / 28	● 151790					
5/16 / 24	● 170261					
3/8 / 24	● 160134					

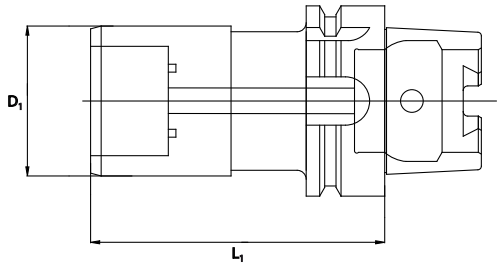

SRT 312 DC SYNCHR

SRT *Mandril de roscar con amortiguador axial*
Tapping chucks with axial shock absorber

SYNCHRO
Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado
Только для ridgid tapping

DIN 69 893 A

HSK

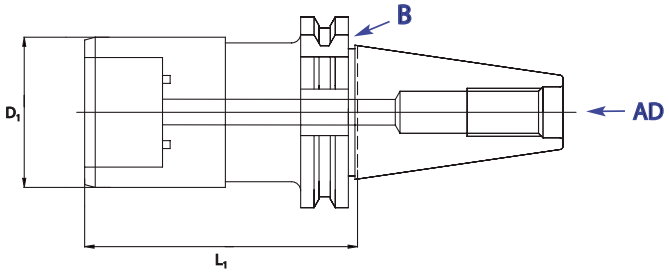


		SRT-HSK63-312	SRT-HSK63-820	SRT-HSK63-1433
				
		 < 50 bar	 < 50 bar	 < 50 bar

	D_1 mm	L_1 mm			310	ID	ID	ID
M3 - M12	36	72	HSK A 63	S1		● 170111		
M8 - M20	53	89	HSK A 63	S2			● 170112	
M14 - M33	78	121	HSK A 63	S3				● 170114

MAS/BT Form AD + B

BT



		SRT-BT40-312	SRT-BT40-820	SRT-BT40-1433
				
		 < 50 bar	 < 50 bar	 < 50 bar

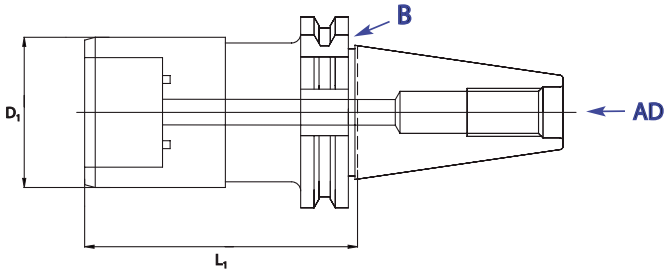
	D_1 mm	L_1 mm			310	ID	ID	ID
M3 - M12	36	71	BT40	S1		● 170133		
M8 - M20	53	85	BT40	S2			● 170134	
M14 - M33	78	121	BT40	S3				● 170135

SRT *Mandril de roscar con amortiguador axial*
Tapping chucks with axial shock absorber

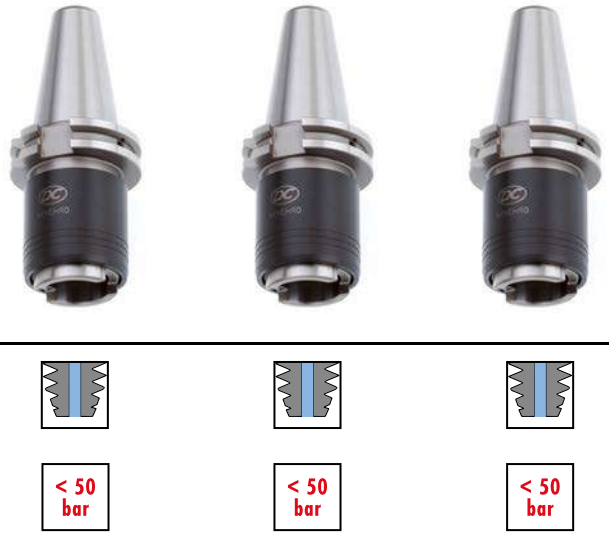
SYNCHRO
Uniquement pour taraudage synchrone
Nur für Sychronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado
Только для ridgid tapping

DIN 69 871 Form AD + B

SK



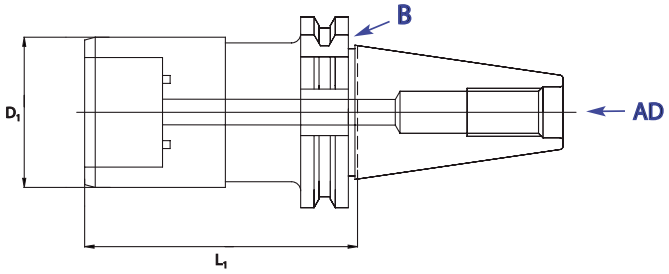
	D1 mm	L1 mm			310	SRT-SK40-312 ID	SRT-SK40-820 ID	SRT-SK40-1433 ID
M3 - M12	36	65	SK40	S1		● 170124		
M8 - M20	53	79	SK40	S2			● 170125	
M14 - M33	78	115	SK40	S3				● 170126



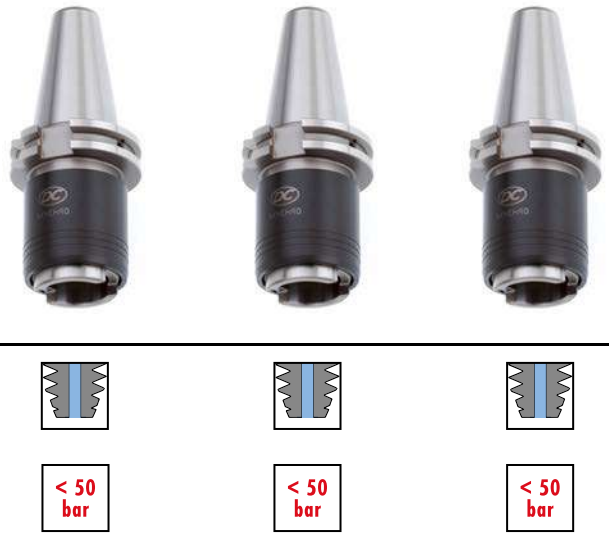
< 50 bar

DIN 69 871 Form AD + B

SK



	D1 mm	L1 mm			310	SRT-SK50-820 ID	SRT-SK50-1433 ID	SRT-SK50-2248 ID
M8 - M20	53	79	SK50	S2		● 170128		
M14 - M33	78	115	SK50	S3			● 170129	
M22 - M48	96	170	SK50	S4				● 170130



< 50 bar

SRT *Mandril de roscar con amortiguador axial*
Tapping chucks with axial shock absorber

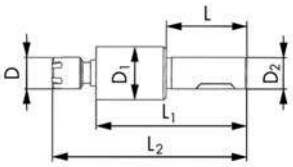
SYNCHRO
Uniquement pour taraudage synchrone
Nur für Sychronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado
Только для ridgid tapping

DIN 1835 B

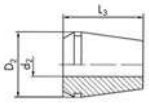
	SRT032-D6	SRT054-D12	ER8

SRT nano

SRT032 / SRT054



D9865-



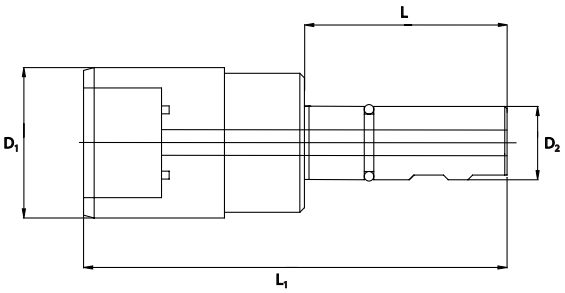
	D mm	D1 mm	D2 mm	L mm	L1 mm	L2 mm	ID	ID
M0.3 - M2	12	11	6	25	40	56	• 157610	
M0.5 - M4	12	20	12	33	59	75		• 127413

No	D2 mm	L3 mm	d2 mm	ID
ER8-0100	8.5	13.5	1	• 179401
ER8-0150	8.5	13.5	1.5	• 179400
ER8-0200	8.5	13.5	2	• 118895
ER8-0250	8.5	13.5	2.5	• 118896
ER8-0300	8.5	13.5	3	• 118897
ER8-0350	8.5	13.5	3.5	• 118898
ER8-0400	8.5	13.5	4	• 118899
ER8-0450	8.5	13.5	4.5	• 118900

DIN 1835 B

	SRT312-D20	SRT312-D25	SRT520-D25

SRT short




< 30 bar


< 30 bar


< 30 bar

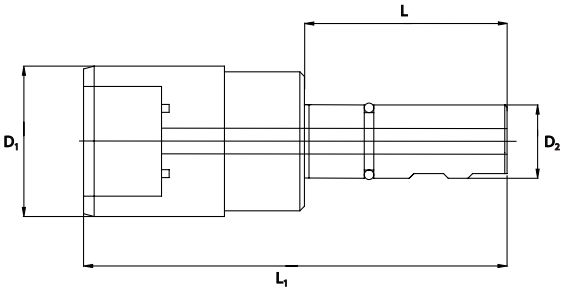
	D1 mm	D2 mm	L mm	L1 mm		310	ID	ID	ID
M3 - M12	39	20	47	86	S1		• 162832		
M3 - M12	39	25	53	90	S1			• 162831	
M5 - M20	56	25	53	110	S2				• 162833

SRT *Mandril de roscar con amortiguador axial*
Tapping chucks with axial shock absorber

SYNCHRO
Uniquement pour taraudage synchrone
Nur für Sychronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado
Только для ridgid tapping

DIN 1835 B

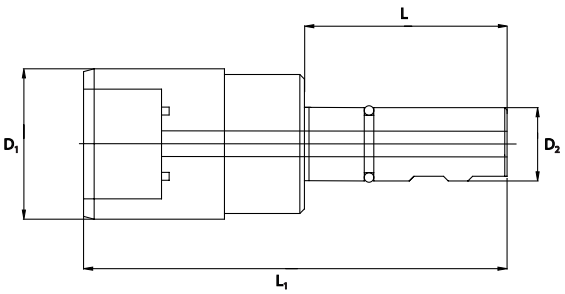
	SRT-1D20-312	SRT-1D25-312	SRT-2D25-820
			
			
	< 50 bar	< 50 bar	< 50 bar



	D1 mm	D2 mm	L mm	L1 mm		310	ID	ID	ID
M3 - M12	36	20	51	97	S1		● 170140		
M3 - M12	36	25	57	103	S1			● 170020	
M8 - M20	53	25	57	131	S2				● 170141

DIN 1835 B

	SRT-2D32-820	SRT-3D25-1433	SRT-3D32-1433
			
			
	< 50 bar	< 50 bar	< 50 bar

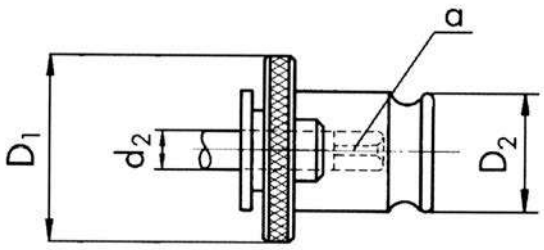


	D1 mm	D2 mm	L mm	L1 mm		310	ID	ID	ID
M8 - M20	53	32	61.5	135.5	S2		● 170142		
M14 - M33	78	25	57	164.5	S3			● 170143	
M14 - M33	78	32	61.5	169	S3				● 170144

SRT *Pinza sin embrague de seguridad*
Inserts without slipping clutch

SYNCHRO
Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado
Только для ridgid tapping

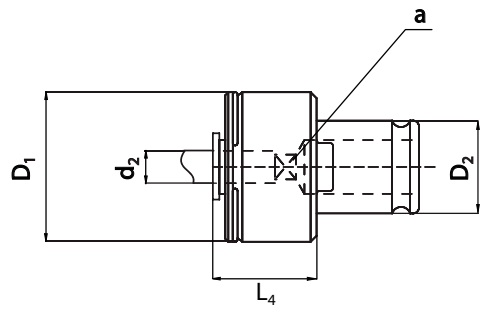
SRT



No	D_1 mm	D_2 mm	d_2 mm	a mm	S1- ID	S2- ID	S3- ID	S4- ID
S1-0028	30	19	2.8	2.1	• 129915			
S1-0035	30	19	3.5	2.7	• 129916			
S1-0045	30	19	4.5	3.4	• 129918			
S1-0060	30	19	6	4.9	• 129920			
S1-0070	30	19	7	5.5	• 129921			
S1-0080	30	19	8	6.2	• 129922			
S1-0090	30	19	9	7	• 129923			
S1-0100	30	19	10	8	• 129924			
S1-0110	30	19	11	9	• 129925			
S2-0060	48	31	6	4.9		• 129927		
S2-0070	48	31	7	5.5		• 129928		
S2-0080	48	31	8	6.2		• 129929		
S2-0090	48	31	9	7		• 129930		
S2-0100	48	31	10	8		• 129931		
S2-0110	48	31	11	9		• 148303		
S2-0120	48	31	12	9		• 129932		
S2-0140	48	31	14	11		• 129933		
S2-0160	48	31	16	12		• 129934		
S2-0180	48	31	18	14.5		• 151355		
S3-0110	70	48	11	9			• 170145	
S3-0120	70	48	12	9			• 170146	
S3-0140	70	48	14	11			• 170147	
S3-0160	70	48	16	12			• 170148	
S3-0180	70	48	18	14.5			• 170149	
S3-0200	70	48	20	16			• 170150	
S3-0220	70	48	22	18			• 170151	
S3-0250	70	48	25	20			• 170152	
S4-0180	96	60	18	14.5				• 170153
S4-0200	96	60	20	16				• 170154
S4-0220	96	60	22	18				• 170155
S4-0250	96	60	25	20				• 170156
S4-0280	96	60	28	22				• 170157
S4-0320	96	60	32	24				• 170158
S4-0360	96	60	36	29				• 170159

Pinza con embrague de seguridad
Inserts with slipping clutch

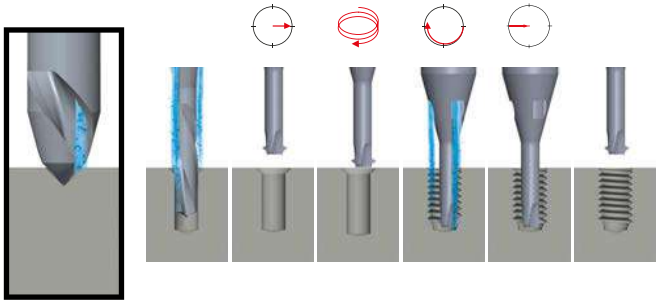
CLASSIC



No	D_1 mm	D_2 mm	d_2 mm	a mm	L_4 mm	SC1- ID	SC2- ID	SC3- ID	SC4- ID
SC1-0028	32	19	2.8	2.1	25	• 170160			
SC1-0035	32	19	3.5	2.7	25	• 170161			
SC1-0045	32	19	4.5	3.4	25	• 170162			
SC1-0060	32	19	6	4.9	25	• 170163			
SC1-0070	32	19	7	5.5	25	• 170164			
SC1-0080	32	19	8	6.2	25	• 170165			
SC1-0090	32	19	9	7	25	• 170166			
SC1-0100	32	19	10	8	25	• 170167			
SC2-0060	50	31	6	4.9	34		• 170168		
SC2-0070	50	31	7	5.5	34		• 170169		
SC2-0080	50	31	8	6.2	34		• 170170		
SC2-0090	50	31	9	7	34		• 170171		
SC2-0100	50	31	10	8	34		• 170172		
SC2-0110	50	31	11	9	34		• 170173		
SC2-0120	50	31	12	9	34		• 170174		
SC2-0140	50	31	14	11	34		• 170175		
SC2-0160	50	31	16	12	34		• 170176		
SC2-0180	50	31	18	14.5	34		• 170177		
SC3-0110	72	48	11	9	45			• 170178	
SC3-0120	72	48	12	9	45			• 170179	
SC3-0140	72	48	14	11	45			• 170180	
SC3-0160	72	48	16	12	45			• 170181	
SC3-0180	72	48	18	14.5	45			• 170182	
SC3-0200	72	48	20	16	45			• 170183	
SC3-0220	72	48	22	18	45			• 170184	
SC3-0250	72	48	25	20	45			• 170185	
SC4-0180	96	60	18	14.5	68				• 170186
SC4-0200	96	60	20	16	68				• 170187
SC4-0220	96	60	22	18	68				• 170188
SC4-0250	96	60	25	20	68				• 170189
SC4-0280	96	60	28	22	68				• 170190
SC4-0320	96	60	32	24	68				• 170191
SC4-0360	96	60	36	29	68				• 170192

TABLA DE UTILIZACIÓN — APPLICATION CHART

Ciclo de programación para broca de centrar C315VS
Programming cycle for spotting drills C315VS



DC *Clasificación de los materiales* — DC Material classification

	Grupos de materiales Material groups		*Clasificación de los materiales*	Material designation	*Dureza* Hardness (HB)	*Resistencia* Tensile strength Rm (N/mm²)	*Lubricante* Lubricant / *Recubrimiento* Coated
10	*Aceros* Steels	11	*Aceros de decoletaje*	Free-cutting steels	< 200	< 700	O E
		12	*Aceros de construcción / cementación*	Structural, cementation steels	< 200	< 700	O E
		13	*Aceros al carbón*	Carbon steels	< 300	< 1000	O E
		14	*Aceros aleados < 850 N/mm²*	Alloy steels < 850 N/mm²	< 250	< 850	O E
		15	*Aceros aleados / tratados > 850 - < 1150 N/mm²*	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	O E
		16	*Aceros de alta resistencia ≤ 44 HRC*	High tensile alloy steels ≤ 44 HRC	> 250	> 850	O E
		17	*Aceros mejorados > 44 - ≤ 54 HRC*	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	O E
		18	*Aceros templados > 54 - ≤ 63 HRC*	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	
20	*Aceros inoxidables* Stainless steels	21	*Aceros inoxidables al azufre*	Free machining stainless steels	< 250	< 850	O E
		22	*Austeníticos*	Austenitic stainless steels	< 250	< 850	O E
		23	*Ferríticos y martensíticos < 850 N/mm²*	Ferritic and martensitic < 850 N/mm²	< 250	< 850	O E
		24	*Ferríticos y martensíticos > 850 - < 1150 N/mm²*	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	O E
30	*Fundición* Cast iron	31	*Fundición gris*	Cast iron	< 250	< 850	O E
		32	*Fundición de grafito + esferoidal y maleable*	Spheroidal graphite + malleable cast iron	< 250	< 850	O E
40	*Titanio* Titanium	41	*Titanio puro*	Pure titanium	< 250	< 850	O E
		42	*Aleación al titanio*	Titanium alloys	> 250	> 850	O E
50	*Níquel* Nickel	51	*Aleación al níquel 1 ≤ 850 N/mm²*	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	O E
		52	*Aleación al níquel 2 > 850 - ≤ 1150 N/mm²*	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	O E
		53	*Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²*	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	O E
60	*Cobre* Copper	61	*Cobre puro (electrolítico)*	Pure copper (electrolytic copper)	< 120	< 400	O E
		62	*Latón, bronce (virutas cortas)*	Short chip brass, phosphor bronze, gun metal	< 200	< 700	O E
		63	*Latón (virutas largas)*	Long chip brass	< 200	< 700	O E
		64	*Latón sin plomo*	Lead free brass	< 220	< 700	O E
70	*Aluminio Magnesio* Aluminium Magnesium	71	*Al no aleado*	Al unalloyed	< 100	< 350	O E
		72	*Al aleado Si < 1.5 %*	Al alloyed Si < 1.5 %	< 150	< 500	O E
		73	*Al aleado Si > 1.5 % - < 10 %*	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	O E
		74	*Al aleado Si > 10 %, Aleaciones de magnesio*	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	O E
80	*Materiales plásticos* Plastic compounds	81	*Materiales termoplásticos*	Thermoplastics	-	-	E
		82	*Materiales duroplásticos*	Duroplastics	-	-	E
		83	*Materiales plásticos reforzados con fibras*	Glass fibre reinforced plastics	-	-	E
90	*Metales preciosos* Precious metals	91	*Oro amarillo*	Yellow gold	-	-	O E
		92	*Oro rojo*	Red gold	-	-	O E
		93	*Oro blanco*	White gold	-	-	O E
		94	*Plata*	Silver	-	-	O E

O *Óptima con aceite de corte* Optimal with cutting oil

O *Aceptable con aceite de corte* Suitable with cutting oil

E *Óptima con emulsión* Optimal with emulsion

E *Aceptable con emulsión* Suitable with emulsion

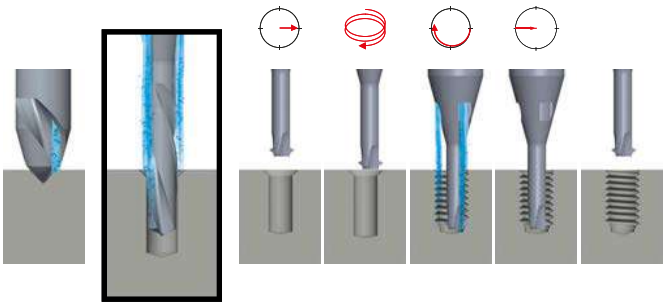
BROCA DE CENTRAR C315VS — SPOTTING DRILLS C315VS

	Vc (m/min) Guide Line / *Recubrimiento* Coated	C315VS						
								
		VS	VS	VS	VS	VS	VS	
		Avance f (mm/rev.) / Feed rate f (mm/rev.)						
		Ø 1.40	Ø 2.00	Ø 3.00	Ø 4.00	Ø 6.00	Ø 8.00	
11	120	0.05	0.08	0.10	0.12	0.15	0.20	11
12	120	0.05	0.08	0.10	0.12	0.15	0.20	12
13	120	0.05	0.08	0.10	0.12	0.15	0.20	13
14	80	0.05	0.08	0.10	0.12	0.15	0.20	14
15	60	0.03	0.04	0.06	0.08	0.12	0.18	15
16	40	0.02	0.03	0.04	0.05	0.06	0.07	16
17	40	0.02	0.03	0.04	0.05	0.06	0.07	17
18								18
21	60	0.03	0.04	0.06	0.08	0.12	0.18	21
22	50	0.03	0.04	0.06	0.07	0.09	0.11	22
23	50	0.03	0.04	0.06	0.07	0.09	0.11	23
24	50	0.03	0.04	0.06	0.07	0.09	0.11	24
31	100	0.04	0.05	0.07	0.09	0.11	0.15	31
32	100	0.04	0.05	0.07	0.09	0.11	0.15	32
41	25	0.03	0.04	0.06	0.07	0.09	0.11	41
42	25	0.04	0.07	0.09	0.11	0.14	0.18	42
51	25	0.025	0.03	0.04	0.05	0.07	0.09	51
52	20	0.025	0.03	0.04	0.05	0.07	0.09	52
53	10	0.025	0.03	0.04	0.05	0.07	0.09	53
61	100	0.06	0.09	0.11	0.13	0.18	0.23	61
62	100	0.06	0.09	0.11	0.13	0.16	0.18	62
63	80	0.06	0.09	0.11	0.13	0.16	0.18	63
64	80	0.06	0.09	0.11	0.13	0.16	0.18	64
71	150	0.06	0.09	0.11	0.13	0.18	0.23	71
72	150	0.06	0.09	0.11	0.13	0.18	0.23	72
73	100	0.06	0.09	0.11	0.13	0.18	0.23	73
74	100	0.06	0.09	0.11	0.13	0.18	0.23	74
81	200	0.08	0.11	0.13	0.15	0.20	0.25	81
82	200	0.08	0.11	0.13	0.15	0.20	0.25	82
83	100	0.08	0.11	0.13	0.15	0.20	0.25	83
91	200	0.08	0.11	0.13	0.15	0.20	0.25	91
92	150	0.08	0.11	0.13	0.15	0.20	0.25	92
93	100	0.08	0.11	0.13	0.15	0.20	0.25	93
94	100	0.08	0.11	0.13	0.15	0.20	0.25	94

Los valores indicados son orientativos.
The indicated values are a guideline.

TABLA DE UTILIZACIÓN — APPLICATION CHART

Ciclo de programación para brocas de taladrar FZ315VS
Programming cycle for twist drills FZ315VS



DC *Clasificación de los materiales* — DC Material classification

	Grupos de materiales Material groups		*Clasificación de los materiales*	Material designation	*Dureza* Hardness (HB)	*Resistencia* Tensile strength Rm (N/mm²)	*Lubricante* Lubricant / *Recubrimiento* Coated
10	*Aceros* Steels	11	*Aceros de decoletaje*	Free-cutting steels	< 200	< 700	O E
		12	*Aceros de construcción / cementación*	Structural, cementation steels	< 200	< 700	O E
		13	*Aceros al carbón*	Carbon steels	< 300	< 1000	O E
		14	*Aceros aleados < 850 N/mm²*	Alloy steels < 850 N/mm²	< 250	< 850	O E
		15	*Aceros aleados / tratados > 850 - < 1150 N/mm²*	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	O E
		16	*Aceros de alta resistencia ≤ 44 HRC*	High tensile alloy steels ≤ 44 HRC	> 250	> 850	O E
		17	*Aceros mejorados > 44 - ≤ 54 HRC*	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	O E
		18	*Aceros templados > 54 - ≤ 63 HRC*	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	
20	*Aceros inoxidables* Stainless steels	21	*Aceros inoxidables al azufre*	Free machining stainless steels	< 250	< 850	O E
		22	*Austeníticos*	Austenitic stainless steels	< 250	< 850	O E
		23	*Ferríticos y martensíticos < 850 N/mm²*	Ferritic and martensitic < 850 N/mm²	< 250	< 850	O E
		24	*Ferríticos y martensíticos > 850 - < 1150 N/mm²*	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	O E
30	*Fundición* Cast iron	31	*Fundición gris*	Cast iron	< 250	< 850	O E
		32	*Fundición de grafito + esferoidal y maleable*	Spheroidal graphite + malleable cast iron	< 250	< 850	O E
40	*Titanio* Titanium	41	*Titanio puro*	Pure titanium	< 250	< 850	O E
		42	*Aleación al titanio*	Titanium alloys	> 250	> 850	O E
50	*Níquel* Nickel	51	*Aleación al níquel 1 ≤ 850 N/mm²*	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	O E
		52	*Aleación al níquel 2 > 850 - ≤ 1150 N/mm²*	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	O E
		53	*Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²*	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	O E
60	*Cobre* Copper	61	*Cobre puro (electrolítico)*	Pure copper (electrolytic copper)	< 120	< 400	O E
		62	*Latón, bronce (virutas cortas)*	Short chip brass, phosphor bronze, gun metal	< 200	< 700	O E
		63	*Latón (virutas largas)*	Long chip brass	< 200	< 700	O E
		64	*Latón sin plomo*	Lead free brass	< 220	< 700	O E
70	*Aluminio Magnesio* Aluminium Magnesium	71	*Al no aleado*	Al unalloyed	< 100	< 350	O E
		72	*Al aleado Si < 1.5 %*	Al alloyed Si < 1.5 %	< 150	< 500	O E
		73	*Al aleado Si > 1.5 % - < 10 %*	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	O E
		74	*Al aleado Si > 10 %, Aleaciones de magnesio*	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	O E
80	*Materiales plásticos* Plastic compounds	81	*Materiales termoplásticos*	Thermoplastics	-	-	E
		82	*Materiales duroplásticos*	Duroplastics	-	-	E
		83	*Materiales plásticos reforzados con fibras*	Glass fibre reinforced plastics	-	-	E
90	*Metales preciosos* Precious metals	91	*Oro amarillo*	Yellow gold	-	-	O E
		92	*Oro rojo*	Red gold	-	-	O E
		93	*Oro blanco*	White gold	-	-	O E
		94	*Plata*	Silver	-	-	O E

O *Óptima con aceite de corte* Optimal with cutting oil

O *Aceptable con aceite de corte* Suitable with cutting oil

E *Óptima con emulsión* Optimal with emulsion

E *Aceptable con emulsión* Suitable with emulsion

BROCAS DE TALADRAR FZ315VS — TWIST DRILLS FZ315VS

FZ315VS

	Vc (m/min) Guide Line Ø 0.58 - 2.0	Avance f (mm/rev.)				Feed rate f (mm/rev.)	
	Recubrimiento Coated	Ø0.58-0.82	Ø0.83-1.07	Ø1.08-1.46	Ø1.47-2.0	Q1	Qx
11	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
12	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
13	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
14	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
15	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
16	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
17	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
18							
21	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
22	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	$1xd_1$-4xd1	$1xd_1$-$2xd_1$
23	35 - 50	0.02-0.025	0.025-0.035	0.04-0.05	0.05-0.065	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
24	35 - 50	0.02-0.025	0.025-0.035	0.04-0.05	0.05-0.065	$1xd_1$-$4xd_1$	$1xd_1$-$2xd_1$
31	50 - 80	0.025-0.045	0.045-0.065	0.065-0.085	0.085-0.10	$4xd_1$-$8xd_1$	$4xd_1$
32	40 - 70	0.025-0.045	0.045-0.065	0.065-0.085	0.085-0.10	$4xd_1$-$8xd_1$	$4xd_1$
41	15 - 25	0.005-0.02	0.015-0.045	0.04-0.06	0.055-0.07	$1/2xd_1$-$1xd_1$	$1/4xd_1$-$1/2xd_1$
42	15 - 25	0.005-0.02	0.015-0.045	0.04-0.06	0.055-0.07	$1/2xd_1$-$1xd_1$	$1/4xd_1$-$1/2xd_1$
51	15 - 25	0.005-0.02	0.02-0.025	0.025-0.035	0.035-0.05	$1/2xd_1$-$1xd_1$	$1/2xd_1$
52	15 - 25	0.015-0.02	0.02-0.025	0.025-0.035	0.035-0.05	$1/2xd_1$-$1xd_1$	$1/2xd_1$
53	15 - 25	0.005-0.01	0.01-0.02	0.02-0.03	0.03-0.04	$1/2xd_1$-$1xd_1$	$1/2xd_1$
61	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$4xd_1$-$8xd_1$	$4xd_1$
62	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$4xd_1$-$8xd_1$	$4xd_1$
63	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$4xd_1$-$8xd_1$	$4xd_1$
64	50 - 80	0.05-0.08	0.06-0.1	0.08-0.12	0.12-0.15	$4xd_1$-$8xd_1$	$4xd_1$
71	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$2xd_1$-$3xd_1$	$3xd_1$
72	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$2xd_1$-$3xd_1$	$3xd_1$
73	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$2xd_1$-$3xd_1$	$3xd_1$
74	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$2xd_1$-$3xd_1$	$3xd_1$
81	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$4xd_1$-$8xd_1$	$4xd_1$
82	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	$4xd_1$-$8xd_1$	$4xd_1$
83	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$2xd_1$-$3xd_1$	$3xd_1$
91	50 - 80	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$2xd_1$-$3xd_1$	$3xd_1$
92	50 - 80	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$2xd_1$-$3xd_1$	$3xd_1$
93	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$2xd_1$-$3xd_1$	$3xd_1$
94	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	$2xd_1$-$3xd_1$	$3xd_1$

FZ315VS

	Vc (m/min) Guide Line Ø 2.01 - 5.4	Avance f (mm/rev.)			Feed rate f (mm/rev.)	
	Recubrimiento Coated	Ø2.01-3.05	Ø3.06-4.5	Ø4.51-5.4	Qx	
11	80 - 110	0.07-0.12	0.12-0.18	0.18-0.23		11
12	80 - 110	0.07-0.12	0.12-0.17	0.17-0.22		12
13	70 - 100	0.07-0.12	0.12-0.17	0.17-0.22		13
14	70 - 100	0.07-0.12	0.12-0.17	0.17-0.22		14
15	70 - 100	0.07-0.12	0.12-0.17	0.17-0.22		15
16	70 - 100	0.07-0.10	0.10-0.14	0.14-0.17		16
17	60 - 80	0.07-0.10	0.10-0.15	0.14-0.18		17
18						18
21	60 - 80	0.045-0.055	0.055-0.07	0.07-0.10		21
22	60 - 80	0.045-0.055	0.055-0.07	0.07-0.10		22
23	60 - 80	0.05-0.065	0.05-0.065	0.06-0.09		23
24	60 - 80	0.05-0.065	0.05-0.065	0.06-0.09		24
31	90 - 130	0.10-0.15	0.15-0.20	0.20-0.25		31
32	80 - 120	0.10-0.14	0.14-0.18	0.18-0.23		32
41	30 - 40	0.055-0.07	0.055-0.07	0.055-0.07	$1/3xd_1$-$1/2xd_1$	41
42	30 - 40	0.055-0.07	0.055-0.07	0.055-0.07	$1/3xd_1$-$1/2xd_1$	42
51	30 - 40	0.035-0.05	0.035-0.05	0.05-0.08		51
52	30 - 40	0.035-0.05	0.035-0.05	0.05-0.08		52
53	30 - 40	0.03-0.04	0.03-0.04	0.04-0.06		53
61	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25		61
62	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25		62
63	80 - 110	0.12-0.15	0.14-0.18	0.18-0.23		63
64	80 - 110	0.12-0.15	0.14-0.18	0.18-0.23		64
71	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25		71
72	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25		72
73	100 - 130	0.12-0.15	0.14-0.18	0.18-0.23		73
74	100 - 130	0.12-0.15	0.14-0.18	0.18-0.23		74
81	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25		81
82	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25		82
83	80 - 120	0.07-0.12	0.12-0.18	0.18-0.23		83
91	130 - 180	0.07-0.12	0.12-0.17	0.17-0.22		91
92	130 - 180	0.07-0.12	0.12-0.17	0.17-0.22		92
93	80 - 110	0.07-0.12	0.12-0.17	0.17-0.22		93
94	80 - 110	0.07-0.12	0.12-0.17	0.17-0.22		94

Los valores indicados son orientativos.
The indicated values are a guideline.

TABLA DE UTILIZACIÓN — APPLICATION CHART

Clasificación de los materiales — Material classification

Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Lubricante / Lubricant — Recubrimiento / Coated
10 Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	O E
	12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	O E
	13	Aceros al carbón	Carbon steels	< 300	< 1000	O E
	14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	O E
	15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	O E
	16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	
	17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	
	18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	
20 Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	O E
	22	Austeníticos	Austenitic stainless steels	< 250	< 850	O E
	23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	O E
	24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	O E
30 Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	
	32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	
40 Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	O E
	42	Aleación al titanio	Titanium alloys	> 250	> 850	
50 Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	O E
	52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	
	53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	
60 Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	O E
	62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	
	63	Latón (virutas largas)	Long chip brass	< 200	< 700	O E
	64	Latón sin plomo	Lead free brass	< 220	< 700	O E
70 Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	O E
	72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	O E
	73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	O E
	74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	
80 Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	
	82	Materiales duroplásticos	Duroplastics	-	-	
	83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	
90 Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	
	92	Oro rojo	Red gold	-	-	
	93	Oro blanco	White gold	-	-	O E
	94	Plata	Silver	-	-	O E

O Óptima con aceite de corte / Optimal with cutting oil

O Aceptable con aceite de corte / Suitable with cutting oil

E Óptima con emulsión / Optimal with emulsion

E Aceptable con emulsión / Suitable with emulsion

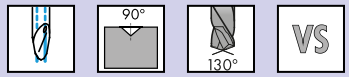
F286VS — F286VS

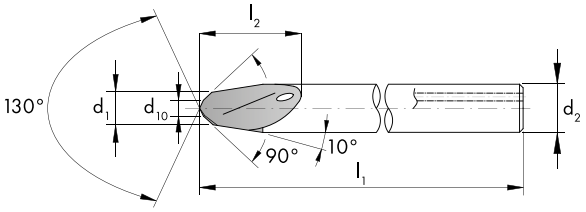
	Vc (m/min) Guide Line *Recubrimiento* Coated	F286VS						
								
		VS	VS	VS	VS	VS	VS	
		Avance f (mm/rev.)			Feed rate f (mm/rev.)			
		Ø 0.8 - 1.2	Ø 1.21 - 3.0	Ø 3.01 - 6.0	Ø 6.01 - 8.5	Ø 8.51 - 11.0	Ø 11.02 - 14.0	
11	70 - 90	0.015-0.025	0.015-0.025	0.035-0.045	0.11-0.13	0.15-0.17	0.18-0.22	11
12	70 - 90	0.10-0.20	0.015-0.025	0.035-0.045	0.11-0.13	0.15-0.17	0.18-0.22	12
13	70 - 90	0.10-0.20	0.015-0.025	0.035-0.045	0.11-0.13	0.15-0.17	0.18-0.22	13
14	70 - 90	0.10-0.20	0.015-0.025	0.035-0.045	0.11-0.13	0.15-0.17	0.18-0.22	14
15	60 - 80	0.10-0.20	0.015-0.025	0.035-0.045	0.07-0.09	0.11-0.13	0.15-0.17	15
16								16
17								17
18								18
21	40 - 60	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.15-0.16	21
22	40 - 60	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.15-0.16	22
23	40 - 60	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.15-0.16	23
24	40 - 60	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.15-0.16	24
31								31
32								32
41	40 - 80	0.003-0.006	0.008-0.012	0.01-0.018	0.025-0.03	0.055-0.06	0.075-0.085	41
42								42
51	30 - 50	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.11-0.13	51
52								52
53								53
61	70 - 150	0.15-0.25	0.035-0.045	0.055-0.065	0.11-0.13	0.15-0.17	0.18-0.22	61
62								62
63	70 - 150	0.15-0.25	0.035-0.045	0.055-0.065	0.11-0.13	0.15-0.17	0.18-0.22	63
64	70 - 150	0.15-0.25	0.035-0.045	0.055-0.065	0.11-0.13	0.15-0.17	0.18-0.22	64
71	100 - 160	0.025-0.035	0.045-0.055	0.075-0.085	0.15-0.17	0.22-0.26	0.30-0.34	71
72	100 - 160	0.025-0.035	0.045-0.055	0.075-0.085	0.15-0.17	0.22-0.26	0.30-0.34	72
73	60 - 130	0.02-0.03	0.035-0.045	0.055-0.065	0.11-0.13	0.16-0.20	0.22-0.26	73
74								74
81								81
82								82
83								83
91								91
92								92
93	40 - 60	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.15-0.16	93
94	40 - 60	0.008-0.012	0.015-0.02	0.035-0.04	0.075-0.085	0.095-0.105	0.15-0.16	94

Los valores indicados son orientativos.
The indicated values are a guideline.

C

C315VS



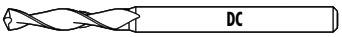


C315VS

Ø d_1	l_1 mm	l_2 mm	d_2 h6 mm	d_{10} mm		ID
1.4	40	6	3	0.5	2	● 182872
2	40	6.2	3	1	2	● 182873
3	40	6.3	3	1.5	2	● 182874
4	50	8	4	2	2	● 190331
6	60	12	6	3	2	● 190332
8	70	16	8	4	2	● 190333

Brocas de taladrar en metal duro integral
Solid carbide twist drills

VHM CAR



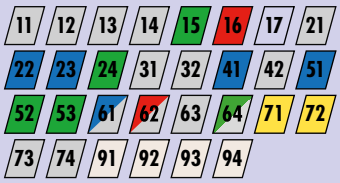
h6

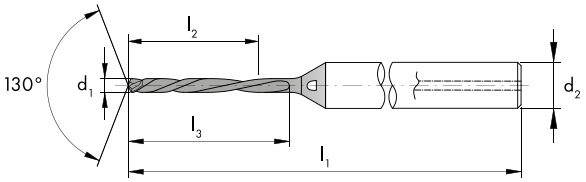
FZ

FZ315VS


FZ315VS







FZ315VS	FZ315VS		
			

Ø d_1	D_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm		ID
0.58	M0.8	42	4.6	5.7	3	2	● 182863
0.59	S0.8	42	4.7	5.8	3	2	● 188023
0.65	M0.9	45	5.2	6.4	3	2	● 182864
0.67	S0.9	45	5.4	6.6	3	2	● 188024
0.7	M1	45	5.6	6.9	3	2	● 182865
0.74	S1	45	5.9	7.3	3	2	● 188025
0.9	M1.2	45	7.2	8.8	3	2	● 182866
0.94	S1.2	48	7.5	9.2	3	2	● 188026
1.05	M1.4	48	8.4	10.3	3	2	● 182867
1.09	S1.4	48	8.7	10.7	3	2	● 188027
1.19	M1.6	48	9.5	11.7	3	2	● 182868
1.39	M1.8	52	11.1	13.6	4	2	● 182869
1.54	M2	55	12.3	15.1	4	2	● 182870
1.98	M2.5	55	15.8	19.4	4	2	● 182871

Ø d_1	D_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm		ID
2.15	UNC4	63	12.9	19.4	4	2	● 190326
2.45	M3	65	14.7	22.1	4	2	● 190321
2.65	UNC6	68	15.9	23.9	4	2	● 190327
2.85	M3.5	68	17.1	25.7	4	2	● 190322
3.25	M4	74	19.5	29.3	6	2	● 190323
3.95	UNF10	78	23.7	35.6	6	2	● 190329
4.1	M5	80	24.6	36.9	6	2	● 190324
4.9	M6	84	29.4	44.1	6	2	● 190325
5	UNC1/4	84	30	45	6	2	● 190328
5.4	UNF1/4	88	32.4	48.6	6	2	● 190330

Brocas de taladrar en metal duro integral
Solid carbide twist drills

VHM CAR — DC — DIN 6537 HAK — HBK HEK — sur demande / auf Anfrage / on request / su richiesta / sobre pedido / по заказу

F313VS

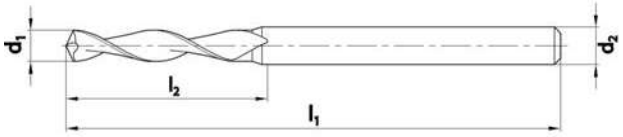
R30 | 130° | VS

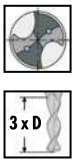
11 12 13 14 15
21 22 23 24 41
61 63 71 72 73
74

F285VS
F286VS

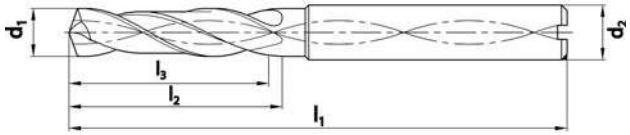
R30 | 140° | VS

11 12 13 14 15
21 22 23 24 41
51 61 71 72 73
74 93 94



	F313VS	F285VS	F286VS
			
			

Ø d_1 (h_7)	d_2 (h_6) mm	l_1 mm	l_2 mm			ID		
0.88	3	38	8	2	M1	● 158515		
0.9	3	38	10	2	*M1.2	● 159419		
1.08	3	38	10	2	M1.2	● 158516		
1.25	3	38	12	2	M1.4	● 158517		
1.45	3	38	12	2	M1.6	● 158518		
1.65	3	38	12	2	M1.8	● 158519		
1.8	3	38	12	2	M2	● 158520		
1.95	3	38	12	2	UNC2-56	● 158521		
2.3	3	38	16	2	M2.5	● 158522		
2.55	3	38	16	2	UNC4-40	● 158523		
2.8	3	38	16	2	M3	● 158524		
					*GWi5000			



Ø d_1 (m_7)	d_2 (h_6) mm	l_1 mm	l_2 mm	l_3 mm			ID		
3.25	6	62	20	14	2	M3.5	● 158527		
3.7	6	62	20	14	2	M4	● 158528		
4.65	6	66	24	17	2	M5	● 158532		
5.55	6	66	28	20	2	M6	● 158534		
7.4	8	79	41	29	2	M8	● 158540		
9.3	10	89	47	35	2	M10	● 158544		
11.2	12	102	55	40	2	M12	● 158546		

Ø d_1 (m_7)	d_2 (h_6) mm	l_1 mm	l_2 mm	l_3 mm			ID		
3.3	6	66	28	23	2	M4	● 160989		
4.2	6	74	36	29	2	M5	● 160990		
5	6	82	44	35	2	M6	● 160991		
6.8	8	91	53	43	2	M8	● 160992		
8.5	10	103	61	49	2	M10	● 160993		
10.2	12	118	71	56	2	M12	● 160994		


DC
Z | CHALLENGING THREADING

Porta-cojinetes y giramachos
Die stocks and tap wrenches

D5810- *Porta-cojinete para cojinetes redondos según DIN EN 22568, DIN EN 24230, DIN EN 24231, DIN EN 40434*
Die stocks for round dies to DIN EN 22568, DIN EN 24230, DIN EN 24231, DIN EN 40434

D5820- *Giramacho regulable DIN 1814*
Tap wrenches, adjustable DIN 1814

D5810-

D5820-

DIN EN No D5810-	∅	M ∅	MF ∅	UNC ∅	UNF ∅	UNEF UNS UN ∅	W ∅	G (BSP) ∅	NPT NPTF R (BSPT) ∅	ID
1	16 x 5	1 - 2.6	2 - 2.6	No. 1 - 4	No. 1 - 4		1/16" - 3/32"			• 170712
2	20 x 5	3 - 4	3 - 6	No 5	No 5 - 6		1/8"			• 170713
3	20 x 7	4.5 - 6		No 6 - 1/4"	No 8 - 1/4"	No 12 - 1/4"	5/32" - 1/4"			• 170714
4	25 x 9	7 - 9	7 - 9	5/16"	5/16"	5/16"	5/16"		1/16"	• 170715
5	30 x 11	10 - 11	10 - 11	3/8" - 7/16"	3/8" - 7/16"	3/8" - 7/16"	3/8" - 7/16"	1/8"	1/8"	• 170716
6	38 x 10		12 - 15		1/2" - 9/16"	1/2" - 9/16"		1/4"		• 170717
7	38 x 14	12 - 14		1/2" - 9/16"			1/2" - 9/16"		1/4"	• 170718
8	45 x 14		16 - 20		5/8" - 3/4"	5/8" - 13/16"		3/8" - 1/2"	3/8"	• 170719
9	45 x 18	16 - 20		5/8" - 3/4"			5/8" - 3/4"		1/2"	• 170720
10	55 x 16		22 - 26		7/8" - 1"	7/8" - 1"		5/8" - 3/4"		• 170721
11	55 x 22	22 - 24		7/8" - 1"			7/8" - 1"		3/4"	• 170722
12	65 x 18		*27 - 36		1 1/8" - 1 3/8"	1 1/16" - 1 3/8"		7/8" - 1"		• 170723
13	65 x 25	27 - 36		1 1/8" - 1 3/8"			1 1/8" - 1 3/8"		1"	• 170724
14	75 x 20		38 - 42		1 1/2"	1 7/16" - 1 1/2"		1 1/8" - 1 1/4"		• 170725
15	75 x 30	39 - 42		1 1/2"			1 1/2" - 1 5/8"			• 170726
16	90 x 22		45 - 52			1 3/4" - 2"		1 3/8" - 1 3/4"		• 170727
17	90 x 36	45 - 52		1 3/4" - 2"			1 3/4" - 2"			• 170728
18	105 x 22		55 - 65					2" - 2 1/4"		• 170729

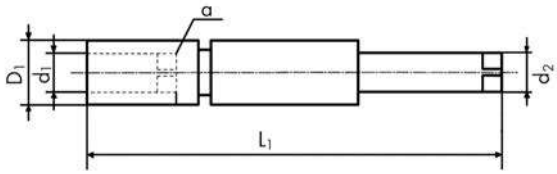
***Excepto el paso de 3 mm (utilizar el Nº 13).**
For 3 mm pitches use No. 13.

No D5820-	a mm	ID
0	1.9 - 3	• 170730
1	2.5 - 5.5	• 170731
2	4.3 - 8	• 170732
3	5.5 - 12	• 170733
4	9.5 - 15.5	• 170734
5	12.5 - 22.4	• 170735

Alargaderas para machos de roscar
Tap extension sleeves

D5830- *Alargadera para machos de roscar, ~DIN 377*
Tap extension sleeves ~DIN 377

D5840- *Alargadera para machos de roscar*
Tap extension sleeves



D5830-	D5840-
	

No D5830-	a mm	L_1 mm	D_1 mm	ID
1	2.1	60	6	● 110571
2	2.24	70	6	● 110572
3	2.4	70	6	● 110573
4	2.5	80	7	● 110574
5	2.8	90	7	● 110575
6	3	90	7	● 110579
7	3.15	95	7	● 110580
8	3.4	95	8	● 110581
9	3.55	100	8	● 118706
10	3.8	100	9	● 118707
11	4	105	10	● 118708
12	4.3	105	10	● 118709
13	4.5	105	10	● 118710
14	4.9	110	10	● 118711
15	5	110	11	● 118712
16	5.5	115	12	● 118713
17	5.6	110	12	● 118714
18	6.2	120	14	● 118715
19	6.3	120	14	● 118716
20	7	125	15	● 118717
21	7.1	120	15	● 118718
22	7.5	120	15	● 118719
23	8	125	17	● 118720
24	9	130	19	● 118721
25	10	140	21	● 110562
26	11	150	23	● 110563
27	11.2	145	23	● 110564
28	12	155	25	● 110565
29	12.5	160	25	● 110566
30	14	165	28	● 110567
31	14.5	175	29	● 110568
32	16	180	30	● 110569
33	18	200	33	● 110570
34	20	220	36	● 110576
35	22	220	40	● 110577
36	22.4	240	40	● 110578

No D5840-	a mm	L_1 mm	d_2 mm	d_1 mm	D_1 mm	ID
10	2.7	130	6	3.5	7.5	● 169928
11	3.4	130	6	4.5	8.5	● 169929
1	4.9	130	6	6	12	● 142137
2	5.5	130	7	7	13	● 142138
3	6.2	130	8	8	13	● 142139
4	7	130	9	9	17	● 142140
5	8	130	10	10	17	● 142141
6	9	130	11	11	17	● 142142
7	9	130	12	12	20	● 142143
8	11	130	14	14	20	● 142144
9	12	130	16	16	25	● 142145

DOMINAR LAS CONEXIONES ROSCADAS MÁS PEQUEÑAS Y PRECISAS

MASTER THE SMALLEST AND MOST PRECISE THREADED CONNECTIONS

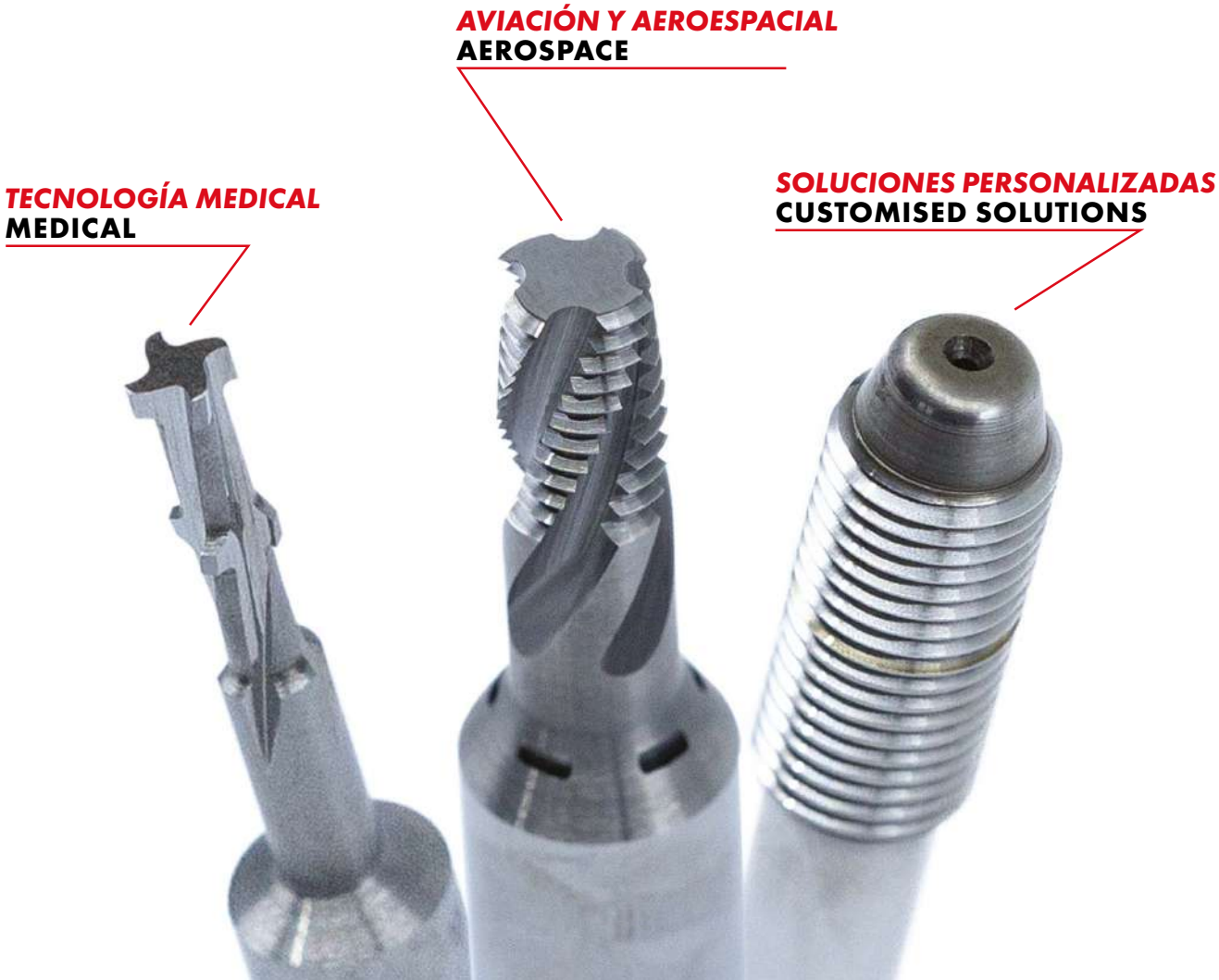
nano

HERRAMIENTAS ESPECIALES A PEDIDO

Algunos procesos requieren herramientas especiales a demanda. DC SWISS puede crear herramientas de roscado a medida para satisfacer sus necesidades.

Con nuestra experienca, podemos crear herramientas a medida que cumplen los requisitos más exigentes.

Para que pueda crear los conjuntos más complejos y variados que mejor se adapten a cada situación, DC SWISS le ofrece el acceso a su amplia experiencia. Las herramientas son, al fin y al cabo, elementos esenciales. Deben adaptarse a cada configuración, a cada material y a todas las técnicas de producción. Las formas y tamaños ya no son factores limitantes. DC SWISS desarrolla herramientas de forma natural, ya que los pedidos a medida son cada vez más habituales.

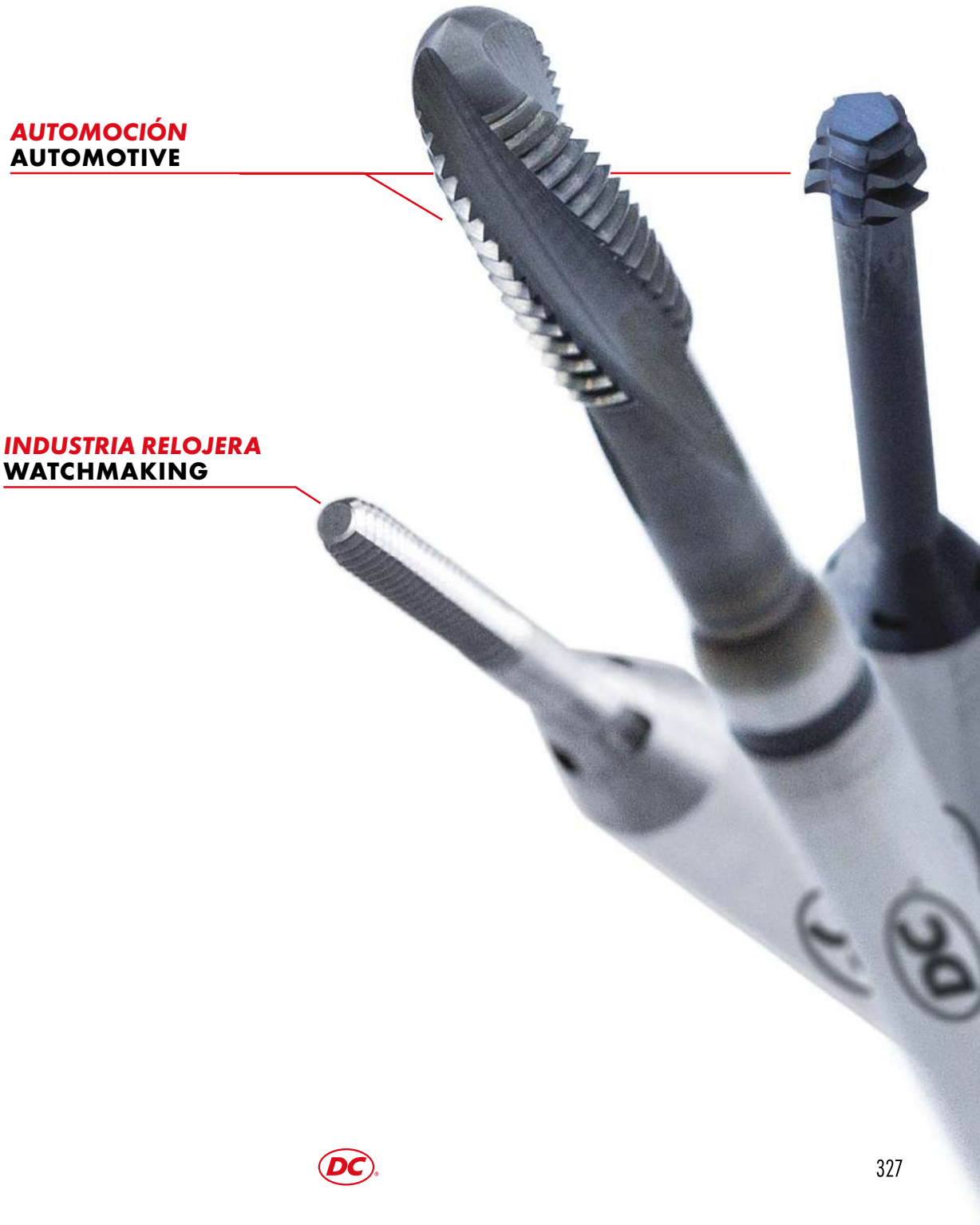


SPECIAL TOOLS ON DEMAND

Some processes require special on demand tools. DC SWISS can create custom-made threading tools to meet your requirements.

With our expertise, we can create on demand tools that meet the highest market requirements.

To enable you to create the most audacious and varied assemblies that are best suited to every situation, DC SWISS offers you access to its extensive expertise. Tools are, after all, essential items. They need to adapt to every configuration, every material and all production techniques. Shapes and sizes are no longer constraining factors. DC SWISS develops tools as a matter of course, because custom-made orders are becoming increasingly commonplace.




TAN
TAZ
FA/CFA
CMS

ESPECIFICACIONES — SPECIFICATIONS

TAN

TAZ

FA

- *Materia prima de primera calidad HSSE-PM*
- *La precisión y la repetibilidad de la herramienta al fabricar en una sola cogida*
- *Limpiar, cepillar o pulir el 100 % de las herramientas*
- *Recubrimiento óptimo adaptado a cada geometría*

- Top quality HSSE-PM raw material
- Accuracy and repeatability of the tool by manufacturing in a single clamping operation
- Cleaning, brushing or polishing of 100 % of the tools
- Optimal coating adapted to each geometry

TAN40

- *Para los agujeros pasantes < 2 x D*

- For through holes < 2 x D

TAN50

- *Para los agujeros ciegos < 2 x D*

- For blind holes < 2 x D

Aplicación
Para materiales fáciles de mecanizar, aceros, latón, oro amarillo, plata

Application
For easy-to-machine materials, steels, brass, yellow gold, silver

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TAN40VS

TAN50VS

- *Recubrimiento versátil de protección contra el desgaste "VS" para una larga vida útil en la producción en serie*

- Versatile "VS" wear-protective coating for long tool life in series production

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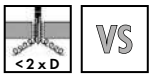
TAZ40VS



- *Para los agujeros pasantes < 2 x D*
- *Con una larga entrada adaptada al paso, para una mejor penetración en el material*

- For through holes < 2 x D
- With a long chamfer adapted to the pitch, for a better penetration into the material

TAZ50VS

- *Para los agujeros ciegos < 2 x D*

- For blind holes < 2 x D

Aplicación
Por materiales tenaces como aleaciones de níquel, aleaciones de titanio, materiales preciosos aleados

Application
For tough materials such as nickel alloys, titanium alloys, alloyed precious materials

- *Recubrimiento específico "VS" de última generación adaptado a la geometría de la herramienta*

- Specific "VS" coating of the latest generation adapted to the geometry of the tool

ESPECIFICACIONES — SPECIFICATIONS

FA80VS

- *Para los agujeros pasantes y ciegos < 2.5 x D*
- *Con una entrada extra corta de 1.5 x P (para los hilos cercanos al fondo del agujero)*

- For through and blind holes < 2.5 x D
- With extra-short chamfer 1.5 x P (for threads close to the bottom of the core hole)

FA83VS

- *Para los agujeros pasantes y ciegos < 2.5 x D*
- *Con una entrada corta 2.5 x P*

- For through and blind holes < 2.5 x D
- With short chamfer 2.5 x P

Aplicación

- *Para cualquier tipo de material con una elongación > 5 %.*
- *Polígono hecho de 4 puntas de contacto de Ø 0.5 mm*
- *Mejora de la resistencia a la tensión del hilo*

Application

- For any type of material with an elongation > 5 %
- Polygon made up of 4 lobes from Ø 0.5 mm
- Improved thread tensile strength

VS

- *Recubrimiento versátil de protección contra el desgaste "VS" para una larga vida útil en la producción en serie*

- Versatile "VS" wear-protective coating for long tool life in series production

ESPECIFICACIONES — SPECIFICATIONS

CMS

CFA

VHM
CAR

- *El grado de metal duro adaptado para la dureza y la resistencia a la torsión*
- *La precisión y la repetibilidad de la herramienta al fabricar en una sola cogida*
- *Calidad de superficie insuperable*

- Hard Metal grade suitable for its hardness and torsional strength
- Precision and repeatability of the tool by manufacturing in a single clamping operation
- Unsurpassed surface quality

CMS50

CMS50VS

- *Para los agujeros pasantes y ciegos < 3 x D*
- *Con una revolucionaria geometría de entrada para una óptima penetración del material*

- For through and blind holes < 3 x D
- With a revolutionary chamfer geometry for optimal material penetration

Aplicación

- *Para materiales frágiles, latón (virutas cortas), hierro fundido gris, Cube2, aleación de aluminio con Si > 5 %.*

Application

- For brittle materials like short chip brass, grey cast iron, Cube2, aluminium alloy with Si > 5 %

VS

- *Recubrimiento específico "VS" de última generación adaptado a la geometría de la herramienta*

- Specific "VS" coating of the latest generation adapted to the geometry of the tool

---

CFA80VS

- *Para los agujeros pasantes y ciegos < 2.5 x D*
- *Con una entrada extra corta de 1.5 x P (para los hilos cercanos al fondo del agujero)*

- For through and blind holes < 2.5 x D
- With extra-short chamfer 1.5 x P (for threads close to the bottom of the core hole)

CFA83VS

- *Para los agujeros pasantes y ciegos < 2.5 x D*
- *Con una entrada corta 2.5 x P*

- For through and blind holes < 2.5 x D
- With short chamfer 2.5 x P

Aplicación

- *Para cualquier tipo de material no ferroso con una elongación > 3 %*
- *Para materiales como: aleaciones de aluminio y cobre, oro amarillo y rojo, plata, etc.*

Application

- For any type of non-ferrous material with an elongation > 3 %
- For materials such as: aluminium and copper alloys, yellow and red gold, silver, etc

VS

- *Versátil revestimiento de protección contra el desgaste "VS" para una larga vida útil en la producción en serie*

- Versatile "VS" wear-protective coating for long tool life in series production

CODIFICACIÓN — CODIFICATION

Machos para roscar a máquina nano

Machine taps nano

Ejemplo - Example

Materiales normales	Normal materials	**TAN**
Materiales tenaces	Tough materials	**TAZ**
Láton	Brass	**CMS**
Ranuras helicoidales con hélice < 27° izquierda	< 27° left-hand spiral flutes	**40**
Ranuras helicoidales con hélice < 27° derecha	< 27° right-hand spiral flutes	**50**
Protección contra el desgaste "VS" para uso general	VS wear-protective coating, general	**VS**
Ejecución especial	Special execution	**SP**

Dimensiones de construcción según las normas de fábricación DC

Para la aplicación de acuerdo con la tabla de utilización DC para los machos DC tipo nano

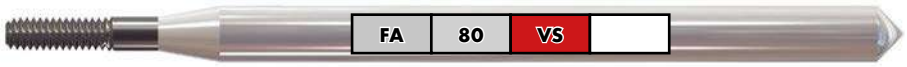
General dimensions as per DC standards

For use as per DC application chart for DC taps nano

Machos para roscado por laminación nano

Machine thread formers nano

Ejemplo - Example



Machos para roscado por laminación nano en PM	Thread formers nano in PM	**FA**
Machos para roscado por laminación nano en metal duro integral	Thread formers nano in solid carbide	**CFA**
Entrada forma E (1.5 - 2 hilos)	Lead form E (1.5 - 2 chamfered threads)	**80**
Entrada forma C (2 - 3 hilos)	Lead form C (2 - 3 chamfered threads)	**83**
Protección contra el desgaste "VS" para uso general	VS wear-protective coating, general	**VS**
Ejecución especial	Special execution	**SP**

Dimensiones de construcción según las normas de fábricación DC

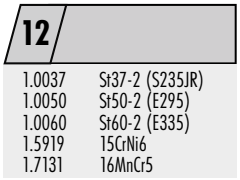
Para la aplicación de acuerdo con la tabla de utilización DC para los machos para roscado por laminación DC tipo nano

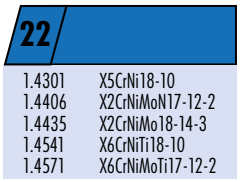
General dimensions as per DC standards

For use as per DC application chart for DC thread formers nano

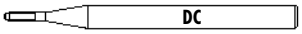
PICTOGRAMAS NANO — PICTOGRAPHS NANO

Para grupos de materiales según tabla de utilización DC.
For material groups as per DC. application chart





Mango reforzado DIN 371
Reinforced shank as per DIN 371



Mango reforzado según norma de fábrica DC
Reinforced shank as per DC standards

PM — *HSSE-PM*
HSSE-PM

VHM CAR — *Metal duro integral*
Solid Carbide

Número de ranuras (Z)
Number of flutes (Z)

Ranuras helicoidales con hélice a 20° izquierda
20° left-hand spiral flutes

Ranuras helicoidales con hélice a 25° derecha
25° right-hand spiral flutes

Macho de roscar por laminación
Thread former

Agujero pasante < 2 x D, virutas largas
Through hole < 2 x D, long chipping materials

Agujero ciego < 2 x D, virutas largas
Blind hole < 2 x D, long chipping materials

Agujero pasante / ciego < 2.5 x D, virutas cortas
Through / blind hole < 2.5 x D, short chipping materials

Agujero pasante / ciego < 3 x D, virutas cortas
Through / blind hole < 3 x D, short chipping materials

2 - 3 hilos de entrada, forma C
2 - 3 chamfered threads, form C

3.5 - 5 hilos de entrada, forma D
3.5 - 5 chamfered threads, form D

1.5 - 2 hilos de entrada, forma E
1.5 - 2 chamfered threads, form E

4H — *Clase de tolerancia 4H*
Tolerance class 4H

ISO 2 6H — *Clase de tolerancia ISO 2 6H*
Tolerance class ISO 2 6H

VS — *Recubrimiento de protección contra el desgaste "VS" para uso general*
DC "VS" wear-protective coating for general use

VX — *Recubrimiento de protección "VX" para aceros inoxidables y aleaciones de níckel*
DC "VX" wear-protective coating for stainless steels and nickel alloys

● *Artículos disponibles de stock*
Stock item

● *Disponible a corto plazo*
Available at short notice

* *Artículos disponibles de stock hasta agotamiento*
Available from stock, while stock lasts

MACHOS PARA ROSCAR NANO
THREAD TAPS NANO

Clasificación de los materiales — Material classification

	Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10	Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
		12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
		13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
		14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
		15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
		16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
		22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
		23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
		24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30	Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
		32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
		42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50	Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
		52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
		53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60	Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
		62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
		64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70	Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
		72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
		82	Materiales duroplásticos	Duroplastics	-	-	-
		83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90	Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
		92	Oro rojo	Red gold	-	-	-
		93	Oro blanco	White gold	-	-	-
		94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

MACHOS PARA ROSCAR NANO — THREAD TAPS NANO

CLASSIC SYNCHRO

Desde página: From page:	TAN Materiales normales Normal materials				TAZ Materiales tenaces Tough materials				CMS Materiales frágiles Brittle materials	
M	338	338	338	338	339	339	339	339	340	340
MF	341	341	341	341	342	342	342	342	343	343
UNC	344	344	344	344	345	345	345	345	346	346
UNF	347	347	347	347	348	348	348	348	349	349
S	350	350	350	350	351	351	351	351	352	352
SF	353	353	353	353	354	354	354	354	355	355
SL	356	356	356	356	357	357	357	357	358	358

	Vc (m/min) Guide Line Ø 0.3 - 1.4 mm		Ø 1.4 - 2.8 mm		TAN40	TAN40VS	TAN50	TAN50VS	TAZ40	TAZ40VS	TAZ50	TAZ50VS	CMS50	CMS50VS	
	Estándar Standard	Recubrimiento Coated	Estándar Standard	Recubrimiento Coated											
11		4 - 10		12 - 20		O E		O E							11
12		4 - 10		12 - 20		O E		O E							12
13		4 - 10		12 - 20		O E		O E							13
14		4 - 10		12 - 20		O E		O E							14
15															15
16															16
17															17
18															18
21		4 - 10		12 - 20						O E		O E			21
22		4 - 10		12 - 20						O E		O E			22
23		3 - 6		6 - 12						O		O			23
24		3 - 6		6 - 12											24
31		4 - 10		12 - 20										O E	31
32		4 - 10		12 - 20		O E		O E							32
41	2 - 4	2 - 4	4 - 8	4 - 8						O		O			41
42	2 - 4	2 - 4	4 - 8	4 - 8						O		O			42
51															51
52															52
53															53
61		4 - 10		12 - 20						O E		O E			61
62	4 - 10	4 - 10	12 - 20	12 - 20	O E	O E	O E	O E					O E A	O E A	62
63	4 - 10	4 - 10	12 - 20	12 - 20	O E	O E	O E	O E					O E	O E	63
64		4 - 10		12 - 20						O E		O E			64
71		4 - 10		12 - 20		O E		O E							71
72		4 - 10		12 - 20		O E		O E							72
73		4 - 10		12 - 20		O E		O E						O	73
74		4 - 10		12 - 20		O E		O E						O E	74
81		4 - 10		12 - 20		O E		O E							81
82															82
83		4 - 10		12 - 20										E A	83
91	4 - 10		12 - 20		O E		O E								91
92		4 - 10		12 - 20		O		O							92
93		4 - 10		12 - 20		O E		O E					O E	O E	93
94		4 - 10		12 - 20		O		O							94

A **Óptima con aire** Optimal with air

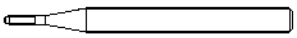
A **Aceptable con aire** Suitable with air

Limitada Limited

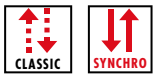
Los valores indicados son orientativos.
The indicated values are a guideline.

Directorio — Machos para roscar a máquina nano
Directory — Machine taps nano

CLASSIC SYNCHRO

				TAN				TAZ	
Características **Characteristics**				L20	L20 VS	R25	R25 VS	L20	L20 VS
									
Tipo de agujero **Hole type**									
				TAN40	TAN40VS	TAN50	TAN50VS	TAZ40	TAZ40VS
M	**4H / 6H**	**ISO DIN 14 ISO DIN 13**	**DC ~DIN 371**	338	338	338	338	339	339
MF	**4H / 6H**	**ISO DIN 13**	**DC ~DIN 371**	341	341	341	341	342	342
UNC	**2B**	**ASME B1.1**	**DC ~DIN 371**	344	344	344	344	345	345
	3B	**ASME B1.1**	**DC ~DIN 371**	344	344	344	344	345	345
UNF	**2B**	**ASME B1.1**	**DC ~DIN 371**	347	347	347	347	348	348
	3B	**ASME B1.1**	**DC ~DIN 371**	347	347	347	347	348	348
S	**NIHS**	**NIHS 06 - 10**	**DC**	350	350	350	350	351	351
SF	**NIHS**	**NIHS 06-10 Fine Thread**	**DC**	353	353	353	353	354	354
SL	**Safelock**	**SL 15 - 01**	**DC**	356	356	356	356	357	357

Directorio — Machos para roscar a máquina nano
Directory — Machine taps nano



TAZ		CMS	
R25	R25 VS	R12	R12 VS
			
			
TAZ50	**TAZ50VS**	**CMS50**	**CMS50VS**
339	339	340	340
342	342	343	343
345	345	346	346
345	345	346	346
348	348	349	349
348	348	349	349
351	351	352	352
354	354	355	355
357	357	358	358

M ISO DIN 13 ISO DIN 14

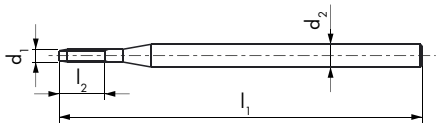
CLASSIC SYNCHRO

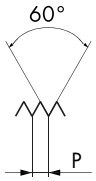
PM

TAN

TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93

TAN40	TAN40VS	TAN50	TAN50VS
			
<2xD	<2xD	<2xD	<2xD
C 2xP	C 2xP	C 2xP	C 2xP
4H	4H	4H	4H

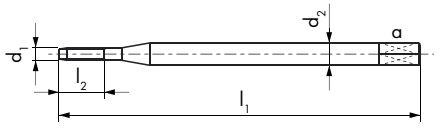


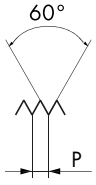


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm			ID	ID	ID	ID
0.5	0.125	25	1.5	2	3	Δ0.41	161817	161748	161818	161749
0.6	0.15	25	1.8	2	3	Δ0.5	152512	152511	152545	151766
0.7	0.175	25	2.1	2	3	Δ0.58	152516	152515	152548	152547
0.8	0.2	25	2.4	2	3	Δ0.66	152520	152519	152552	152551
0.9	0.225	25	2.7	2	3	Δ0.74	152524	152523	152555	152554
1	0.25	40	3.0	2.5	3	0.75	152528	152527	152558	151557
1.2	0.25	40	3.6	2.5	3	0.95	152531	151463	152562	152561
1.4	0.3	40	4.2	2.5	3	1.1	152534	151756	152565	151757

Δ 4H5H → 4H6H = +0.02 mm

Δ 4H5H → 4H6H = +0.02 mm





Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1.6	0.35	40	4.8	2.5		3	1.25	152538	152537	152569	152568
1.8	0.35	40	5.4	2.5		3	1.45	193841	151461	193915	193952
2	0.4	45	8	2.8	2.1	3	1.6	152542	152541	152573	152572
2.3	0.4	45	9	2.8	2.1	3	1.9	193842	193878	193916	193953
2.5	0.45	50	10	2.8	2.1	3	2.05	193843	193879	193917	193954
2.6	0.45	50	10	2.8	2.1	3	2.15	193844	193880	193918	193955

ISO 2 6H

M ISO DIN 13 ISO DIN 14

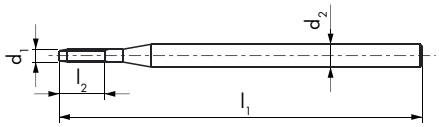
CLASSIC SYNCHRO

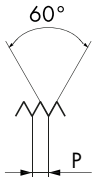
PM

TAZ

TAZ40	L20		
TAZ40VS	L20	VS	21 22 23 41 42 61 64
TAZ50	R25		
TAZ50VS	R25	VS	21 22 23 41 42 61 64

TAZ40	TAZ40VS	TAZ50	TAZ50VS
			
<2xD	<2xD	<2xD	<2xD
D 4xP	D 4xP	C 2xP	C 2xP
4H	4H	4H	4H

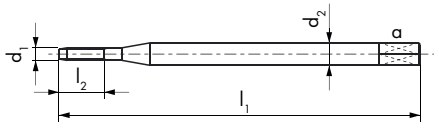


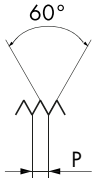


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm			TAZ40 ID	TAZ40VS ID	TAZ50 ID	TAZ50VS ID
0.5	0.125	25	1.5	2	3	Δ0.41	193994	194059	194119	194182
0.6	0.15	25	1.8	2	3	Δ0.5	193995	194060	194120	194183
0.7	0.175	25	2.1	2	3	Δ0.58	193996	194061	194121	194184
0.8	0.2	25	2.4	2	3	Δ0.66	193997	194062	194122	194185
0.9	0.225	25	2.7	2	3	Δ0.74	193998	194063	194123	194186
1	0.25	40	3	2.5	3	0.75	193999	194064	194124	183753
1.2	0.25	40	3.6	2.5	3	0.95	194000	194065	194125	194187
1.4	0.3	40	4.2	2.5	3	1.1	194001	194066	194126	194188

Δ 4H5H → 4H6H = +0.02 mm

Δ 4H5H → 4H6H = +0.02 mm





Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			TAZ40 ID	TAZ40VS ID	TAZ50 ID	TAZ50VS ID
1.6	0.35	40	4.8	2.5		3	1.25	194002	194067	194127	194189
1.8	0.35	40	5.4	2.5		3	1.45	194003	194068	194128	194190
2	0.4	45	8	2.8	2.1	3	1.6	194004	194947	194129	179266
2.3	0.4	45	9	2.8	2.1	3	1.9	194005	194069	194130	194191
2.5	0.45	50	10	2.8	2.1	3	2.05	194006	194070	194131	194192
2.6	0.45	50	10	2.8	2.1	3	2.15	194007	194071	194132	194193

ISO 2 6H | ISO 2 6H | ISO 2 6H | ISO 2 6H

M ISO DIN 13 ISO DIN 14

CLASSIC SYNCHRO

VHM CAR

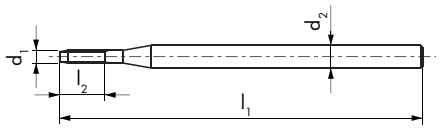
DC

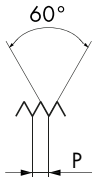
CMS

	CMS50	CMS50VS
		
	 <3 x D	 <3 x D
	 C 2.5 x P	 C 2.5 x P
	4H	4H

CMS50 R12 62 63 93

CMS50VS R12 VS 31 62 63 73 74 83 93

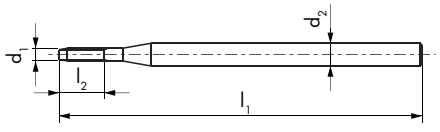


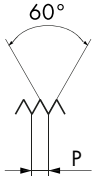


Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
0.3	0.08	32	1.1	1.5	3	0.23	193639	193702
0.35	0.09	32	1.3	1.5	3	0.28	193640	193703
0.4	0.1	32	1.5	1.5	3	Δ0.32	193641	193704
0.5	0.125	32	1.8	1.5	3	Δ0.41	193642	193705
0.6	0.15	32	2.2	1.5	3	Δ0.5	193643	193706
0.7	0.175	32	2.6	1.5	3	Δ0.58	193644	193707
0.8	0.2	32	3	1.5	3	Δ0.66	193645	193708
0.9	0.225	32	3.3	1.5	3	Δ0.74	193646	193709
1	0.25	32	3.7	2	3	0.75	193647	193710
1.2	0.25	32	4.5	2	3	0.95	193648	193711
1.4	0.3	32	5.2	2	3	1.1	193649	193712

Δ 4H5H → 4H6H = +0.02 mm

≥ M1 - ≤ M1.4 ISO 1 4H





ISO 2 6H ISO 2 6H

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
1.6	0.35	32	6	2	3	1.25	193650	193713
1.8	0.35	32	6.7	2	3	1.45	193651	193714
2	0.4	39	7.5	3	3	1.6	193652	193715
2.3	0.4	39	8.6	3	3	1.9	193653	193716
2.5	0.45	39	9.3	3	3	2.05	193654	193717
2.6	0.45	39	9.7	3	3	2.15	193655	193718

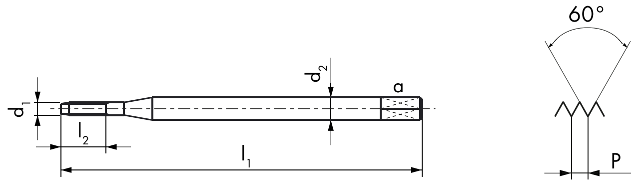
MF ISO DIN 13

CLASSIC | SYNCHRO | PM

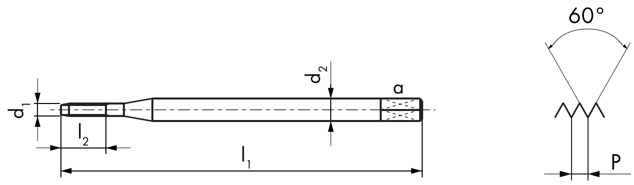
TAN

Type			Materials
TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93

	TAN40	TAN40VS	TAN50	TAN50VS
	< 2 x D	< 2 x D	< 2 x D	< 2 x D
	C 2 x P	C 2 x P	C 2 x P	C 2 x P
	ISO 1 4H	ISO 1 4H	ISO 1 4H	ISO 1 4H



Ø d1 MF	P mm	l1 mm	l2 mm	d2 mm	a mm			ID TAN40	ID TAN40VS	ID TAN50	ID TAN50VS
1.4	0.2	40	4.2	2.5		3	1.2	170390	193881	170393	156730
1.6	0.2	40	4.8	2.5		3	1.4	193845	193882	193919	193956
1.8	0.2	40	5.4	2.5		3	1.6	193846	193883	193920	180810
2	0.2	45	6	2.8	2.1	3	1.8	193847	193884	193921	184999
2	0.25	45	6	2.8	2.1	3	1.75	193848	193885	193922	182944
2.2	0.2	45	6.6	2.8	2.1	3	2	193849	193886	193923	179593
2.2	0.25	45	6.6	2.8	2.1	3	1.95	193850	193887	193924	193957
2.3	0.2	45	6.9	2.8	2.1	3	2.1	193851	193888	193925	193958
2.3	0.25	45	6.9	2.8	2.1	3	2.05	193852	193889	193926	193959
2.5	0.2	50	7.5	2.8	2.1	3	2.3	193853	193890	193927	193960
2.5	0.25	50	7.5	2.8	2.1	3	2.25	193854	193891	193928	193961



	TAN40	TAN40VS	TAN50	TAN50VS
	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d1 MF	P mm	l1 mm	l2 mm	d2 mm	a mm			ID TAN40	ID TAN40VS	ID TAN50	ID TAN50VS
2.5	0.35	50	7.5	2.8	2.1	3	2.15	193855	193892	193929	193962
2.6	0.35	50	7.8	2.8	2.1	3	2.25	193856	193893	193930	193963

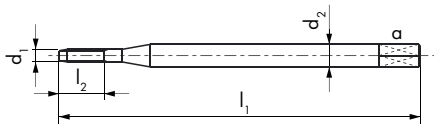
MF ISO DIN 13

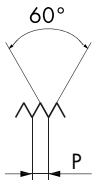
CLASSIC SYNCHRO

PM

TAZ

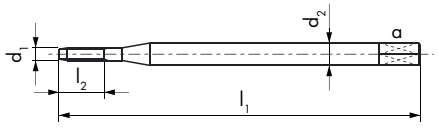
	TAZ40	TAZ40VS	TAZ50	TAZ50VS
	L20	L20 VS	R25	R25 VS
		21 22 23 41 42 61 64		21 22 23 41 42 61 64

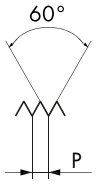




	TAZ40	TAZ40VS	TAZ50	TAZ50VS
	D 4 x P	D 4 x P	C 2 x P	C 2 x P
	ISO 1 4H	ISO 1 4H	ISO 1 4H	ISO 1 4H

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			TAZ40 ID	TAZ40VS ID	TAZ50 ID	TAZ50VS ID
1.4	0.2	40	4.2	2.5		3	1.2	194008	194950	194133	194194
1.6	0.2	40	4.8	2.5		3	1.4	194009	194072	194134	181665
1.8	0.2	40	5.4	2.5		3	1.6	194010	194073	194135	190047
2	0.2	45	6	2.8	2.1	3	1.8	194011	194949	194136	194195
2	0.25	45	6	2.8	2.1	3	1.75	194012	194948	194137	185307
2.2	0.2	45	6.6	2.8	2.1	3	2	194013	194074	194138	194196
2.2	0.25	45	6.6	2.8	2.1	3	1.95	194014	194075	194139	194197
2.3	0.2	45	6.9	2.8	2.1	3	2.1	194015	194076	194140	194198
2.3	0.25	45	6.9	2.8	2.1	3	2.05	194016	194077	194141	194199
2.5	0.2	50	7.5	2.8	2.1	3	2.3	194017	194078	194142	194200
2.5	0.25	50	7.5	2.8	2.1	3	2.25	194018	194951	194143	194201





	TAZ40	TAZ40VS	TAZ50	TAZ50VS
	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			TAZ40 ID	TAZ40VS ID	TAZ50 ID	TAZ50VS ID
2.5	0.35	50	7.5	2.8	2.1	3	2.15	194019	194079	194144	194202
2.6	0.35	50	7.8	2.8	2.1	3	2.25	194020	194080	194145	194203

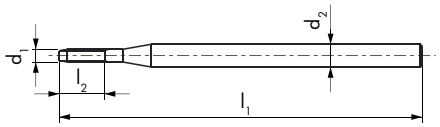
MF ISO DIN 13

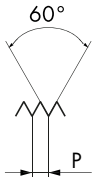
CLASSIC | SYNCHRO | VHM CAR | DC

CMS

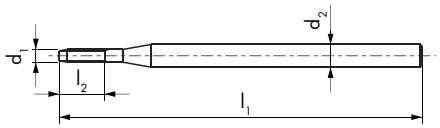
CMS50	R12		62 63 93		
CMS50VS	R12	VS	31 62 63 73 74 83 93		

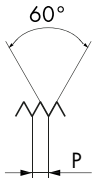
CMS50	CMS50VS		
			
			





							CMS50	CMS50VS
							C 2.5 x P	C 2.5 x P
							ISO 1 4H	ISO 1 4H
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
1.4	0.2	32	5.2	2	3	1.2	• 193656	• 193719
1.6	0.2	32	6	2	3	1.4	• 193657	• 193720
1.8	0.2	32	6.7	2	3	1.6	• 193658	• 193721
2	0.2	39	7.5	3	3	1.8	• 193659	• 193722
2	0.25	39	7.5	3	3	1.75	• 193660	• 193723
2.2	0.2	39	8.2	3	3	2	• 193661	• 193724
2.2	0.25	39	8.2	3	3	1.95	• 193662	• 193725
2.3	0.2	39	8.6	3	3	2.1	• 193663	• 193726
2.3	0.25	39	8.6	3	3	2.05	• 193664	• 193727
2.5	0.2	39	9.3	3	3	2.3	• 193665	• 193728
2.5	0.25	39	9.3	3	3	2.25	• 193666	• 193729





							ISO 2 6H	ISO 2 6H
Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
2.5	0.35	39	9.3	3	3	2.15	• 193667	• 193730
2.6	0.35	39	9.7	3	3	2.25	• 193668	• 193731

UNC ASME B1.1

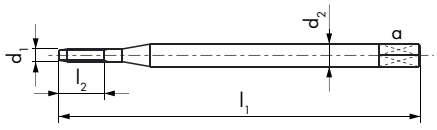
CLASSIC SYNCHRO

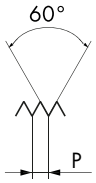
PM

TAN

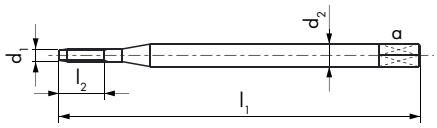
TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93

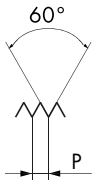
TAN40	TAN40VS	TAN50	TAN50VS
			
 <2 x D	 <2 x D	 <2 x D	 <2 x D
 C 2 x P	 C 2 x P	 C 2 x P	 C 2 x P
2B	2B	2B	2B





Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1	64	1.85	40	5.6	2.5		3	1.45	● 193857	● 193894	● 193931	● 193964
2	56	2.18	45	9	2.8	2.1	3	1.75	● 193858	● 193895	● 193932	● 193965
3	48	2.51	50	10	2.8	2.1	3	2	● 193859	● 193896	● 193933	● 193966





									3B	3B	3B	3B
Ø d_1 UNC(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1	64	1.85	40	5.6	2.5		3	1.45	● 193860	● 193897	● 193934	● 193967
2	56	2.18	45	9	2.8	2.1	3	1.75	● 193861	● 193898	● 193935	● 193968
3	48	2.51	50	10	2.8	2.1	3	2	● 193862	● 193899	● 193936	● 193969

UNC ASME B1.1

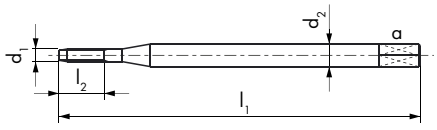
CLASSIC SYNCHRO

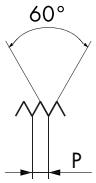
PM

TAZ

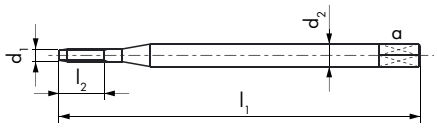
TAZ40	L20		
TAZ40VS	L20	VS	21 22 23 41 42 61 64
TAZ50	R25		
TAZ50VS	R25	VS	21 22 23 41 42 61 64

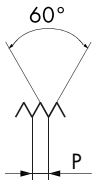
TAZ40	TAZ40VS	TAZ50	TAZ50VS
			
<2xD	<2xD	<2xD	<2xD
D 4xP	D 4xP	C 2xP	C 2xP
2B	2B	2B	2B





Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1	64	1.85	40	5.6	2.5		3	1.45	194021	194081	194146	194204
2	56	2.18	45	9	2.8	2.1	3	1.75	194022	194082	194147	194205
3	48	2.51	50	10	2.8	2.1	3	2	194023	194083	194148	194206





									3B	3B	3B	3B
Ø d_1 UNC(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1	64	1.85	40	5.6	2.5		3	1.45	194024	194084	194149	194207
2	56	2.18	45	9	2.8	2.1	3	1.75	194025	194085	194150	194208
3	48	2.51	50	10	2.8	2.1	3	2	194026	194086	194151	194209

UNC ASME B1.1

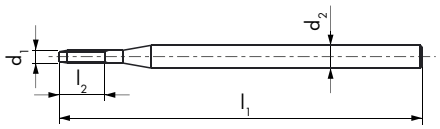
CLASSIC | SYNCHRO | VHM CAR | DC

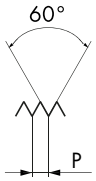
CMS

	CMS50	CMS50VS		
				
				

CMS50 — R12 — 62 / 63 / 93

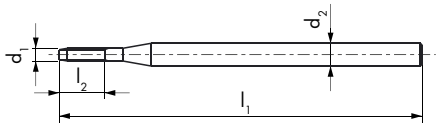
CMS50VS — R12 — VS — 31 / 62 / 63 / 73 / 74 / 83 / 93

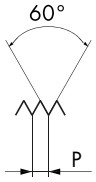




C 2.5 x P — 2B

Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
1	64	1.85	32	6.9	2	3	1.45	● 193669	● 193732
2	56	2.18	39	8.1	3	3	1.75	● 193670	● 193733
3	48	2.51	39	9.4	3	3	2	● 193671	● 193734





3B

Ø d_1 UNC(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
1	64	1.85	32	6.9	2	3	1.45	● 193672	● 193735
2	56	2.18	39	8.1	3	3	1.75	● 193673	● 193736
3	48	2.51	39	9.4	3	3	2	● 193674	● 193737

UNF ASME B1.1

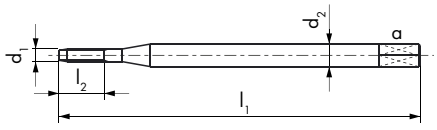
CLASSIC SYNCHRO

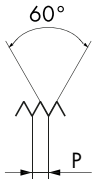
PM

TAN

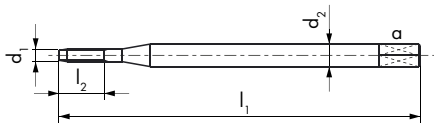
TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93

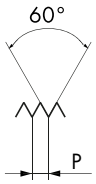
TAN40	TAN40VS	TAN50	TAN50VS
			
<2xD	<2xD	<2xD	<2xD
C 2xP	C 2xP	C 2xP	C 2xP
2B	2B	2B	2B





Ø d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
0	80	1.52	40	4.6	2.5		3	1.2	● 193863	● 193900	● 193937	● 193970
1	72	1.85	40	5.6	2.5		3	1.5	● 193864	● 193901	● 193938	● 193971
2	64	2.18	45	9	2.8	2.1	3	1.8	● 193865	● 193902	● 193939	● 193972
3	56	2.51	50	10	2.8	2.1	3	2.1	● 193866	● 193903	● 193940	● 193973





									3B	3B	3B	3B
Ø d_1 UNF(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
0	80	1.52	40	4.6	2.5		3	1.2	● 193867	● 193904	● 193941	● 193974
1	72	1.85	40	5.6	2.5		3	1.5	● 193868	● 193905	● 193942	● 193975
2	64	2.18	45	9	2.8	2.1	3	1.8	● 193869	● 193906	● 193943	● 193976
3	56	2.51	50	10	2.8	2.1	3	2.1	● 193870	● 193907	● 193944	● 193977

UNF ASME B1.1

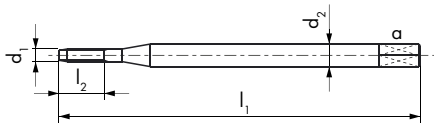
CLASSIC SYNCHRO

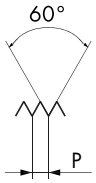
PM

TAZ

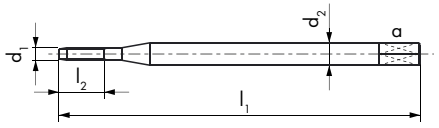
TAZ40	L20		
TAZ40VS	L20	VS	21 22 23 41 42 61 64
TAZ50	R25		
TAZ50VS	R25	VS	21 22 23 41 42 61 64

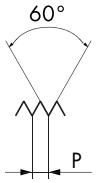
TAZ40	TAZ40VS	TAZ50	TAZ50VS
			
<2xD	<2xD	<2xD	<2xD
4xP	4xP	2xP	2xP
2B	2B	2B	2B





Ø d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
0	80	1.52	40	4.6	2.5		3	1.2	194027	194087	194152	194210
1	72	1.85	40	5.6	2.5		3	1.5	194028	194088	194153	194211
2	64	2.18	45	9	2.8	2.1	3	1.8	194029	194089	194154	194212
3	56	2.51	50	10	2.8	2.1	3	2.1	194030	194090	194155	194213





									3B	3B	3B	3B
Ø d_1 UNF(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
0	80	1.52	40	4.6	2.5		3	1.2	194031	194091	194156	194214
1	72	1.85	40	5.6	2.5		3	1.5	194032	194092	194157	194215
2	64	2.18	45	9	2.8	2.1	3	1.8	194033	194093	194158	194216
3	56	2.51	50	10	2.8	2.1	3	2.1	194034	194094	194159	194217

UNF ASME B1.1

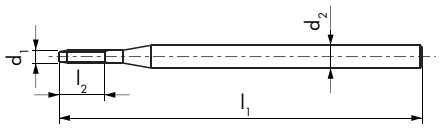
CLASSIC | SYNCHRO | VHM CAR | DC

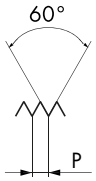
CMS

	CMS50	CMS50VS		
				
				

CMS50 R12 — 62 / 63 / 93

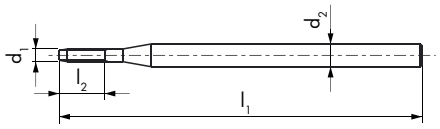
CMS50VS R12 VS — 31 / 62 / 63 / 73 / 74 / 83 / 93

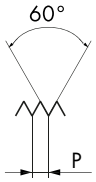




C 2.5 x P — 2B

Ø d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
0	80	1.52	32	5.7	2	3	1.2	● 193675	● 193738
1	72	1.85	32	6.9	2	3	1.5	● 193676	● 193739
2	64	2.18	39	8.1	3	3	1.8	● 193677	● 193740
3	56	2.51	39	9.4	3	3	2.1	● 193678	● 193741





3B

Ø d_1 UNF(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
0	80	1.52	32	5.7	2	3	1.2	● 193679	● 193742
1	72	1.85	32	6.9	2	3	1.5	● 193680	● 193743
2	64	2.18	39	8.1	3	3	1.8	● 193681	● 193744
3	56	2.51	39	9.4	3	3	2.1	● 193682	● 193745

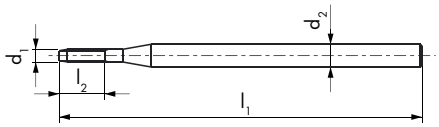
S NIHS 06-10

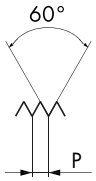
CLASSIC SYNCHRO PM DC

TAN

TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93

TAN40	TAN40VS	TAN50	TAN50VS
			
 <2xD	 <2xD	 <2xD	 <2xD
C 2xP NIHS	C 2xP NIHS	C 2xP NIHS	C 2xP NIHS





Ø d_1 S	P mm	l_1 mm	l_2 mm	d_2 mm			TAN40 ID	TAN40VS ID	TAN50 ID	TAN50VS ID
0.5	0.125	25	1.5	2	3	Δ0.41	161816	157021	159301	158384
0.6	0.15	25	1.8	2	3	Δ0.5	152510	152509	151567	152544
0.7	0.175	25	2.1	2	3	Δ0.58	152514	152513	151768	152546
0.8	0.2	25	2.4	2	3	Δ0.66	152518	152517	152550	152549
0.9	0.225	25	2.7	2	3	Δ0.74	152522	152521	152553	151563
1	0.25	40	3	2.5	3	Δ0.82	152526	152525	152557	152556
1.2	0.25	40	3.6	2.5	3	Δ1.02	152530	152529	152560	152559
1.4	0.3	40	4.2	2.5	3	Δ1.18	152533	152532	152564	152563

Δ 4H5H → 4H6H = +0.02 mm

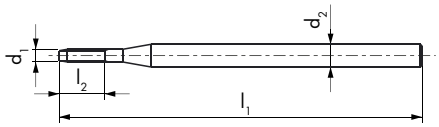
S NIHS 06-10

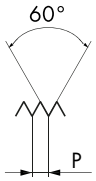
CLASSIC SYNCHRO PM DC

TAZ

TAZ40	L20		
TAZ40VS	L20	VS	21 22 23 41 42 61 64
TAZ50	R25		
TAZ50VS	R25	VS	21 22 23 41 42 61 64

TAZ40	TAZ40VS	TAZ50	TAZ50VS
			
<2 x D	<2 x D	<2 x D	<2 x D
D 4 x P	D 4 x P	C 2 x P	C 2 x P
NIHS	NIHS	NIHS	NIHS





Ø d_1 S	P mm	l_1 mm	l_2 mm	d_2 mm			ID	ID	ID	ID
0.5	0.125	25	1.5	2	3	Δ0.41	193978	194043	194103	194168
0.6	0.15	25	1.8	2	3	Δ0.5	193979	194044	194104	194169
0.7	0.175	25	2.1	2	3	Δ0.58	193980	194045	194105	194170
0.8	0.2	25	2.4	2	3	Δ0.66	193981	194046	194106	188515
0.9	0.225	25	2.7	2	3	Δ0.74	193982	194047	194107	188521
1	0.25	40	3	2.5	3	Δ0.82	193983	194048	194108	194171
1.2	0.25	40	3.6	2.5	3	Δ1.02	193984	194049	194109	194172
1.4	0.3	40	4.2	2.5	3	Δ1.18	193985	194050	194110	194173

Δ 4H5H → 4H6H = +0.02 mm

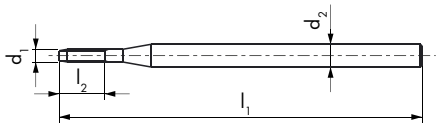
S NIHS 06-10

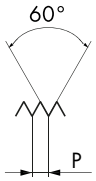
CLASSIC SYNCHRO VHM CAR DC

CMS

CMS50	R12		62 63 93
CMS50VS	R12 VS		31 62 63 73 74 83 93

CMS50	CMS50VS		
			
<3 x D	<3 x D		





C 2.5 x P	C 2.5 x P		
NIHS	NIHS		

Ø d_1 S	P mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
0.3	0.08	32	1.1	1.5	3	0.23	● 178257	● 193683
0.35	0.09	32	1.3	1.5	3	0.28	● 178260	● 193684
0.4	0.1	32	1.5	1.5	3	Δ0.32	● 178263	● 193685
0.5	0.125	32	1.8	1.5	3	Δ0.41	● 178266	● 193686
0.6	0.15	32	2.2	1.5	3	Δ0.5	● 178269	● 193687
0.7	0.175	32	2.6	1.5	3	Δ0.58	● 178272	● 193688
0.8	0.2	32	3	1.5	3	Δ0.66	● 178275	● 193689
0.9	0.225	32	3.3	1.5	3	Δ0.74	● 178278	● 193690
1	0.25	32	3.7	2	3	Δ0.82	● 178281	● 193691
1.2	0.25	32	4.5	2	3	Δ1.02	● 178284	● 193692
1.4	0.3	32	5.2	2	3	Δ1.18	● 178287	● 193693

Δ 4H5H → 4H6H = +0.02 mm

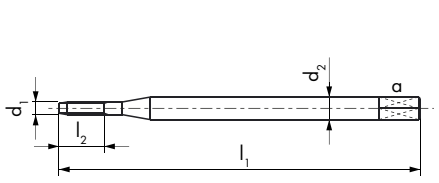
SF

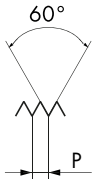
NIHS 06-10 Fine Thread

CLASSIC | SYNCHRO | PM

TAN

TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93





TAN40	TAN40VS	TAN50	TAN50VS
			
			
C 2 x P	C 2 x P	C 2 x P	C 2 x P
NIHS	NIHS	NIHS	NIHS

Ø d_1 SF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			TAN40 ID	TAN40VS ID	TAN50 ID	TAN50VS ID
1.4	0.2	40	4.2	2.5		3	Δ1.26	193833	170491	169767	170492
1.6	0.2	40	4.8	2.5		3	Δ1.46	193834	193871	193908	193945
1.8	0.2	40	5.4	2.5		3	Δ1.66	193835	193872	193909	193946
2	0.2	45	6	2.8	2.1	3	Δ1.86	193836	193873	193910	193947
2.2	0.2	45	6.6	2.8	2.1	3	Δ2.06	193837	193874	193911	193948
2.2	0.25	45	6.6	2.8	2.1	3	Δ2.02	193838	193875	193912	193949
2.5	0.2	50	7.5	2.8	2.1	3	Δ2.36	193839	193876	193913	193950
2.5	0.25	50	7.5	2.8	2.1	3	Δ2.32	193840	193877	193914	193951

Δ 4H5H → 4H6H = +0.02 mm

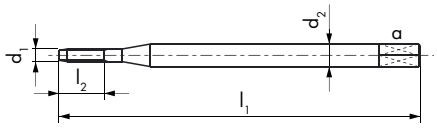
SF

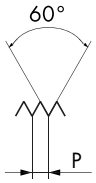
NIHS 06-10 Fine Thread

CLASSIC | SYNCHRO | PM | DC – DIN 371

TAZ

	TAZ40	TAZ40VS	TAZ50	TAZ50VS
	L20	L20 VS	R25	R25 VS
		21 22 23 41 42 61 64		21 22 23 41 42 61 64





	TAZ40	TAZ40VS	TAZ50	TAZ50VS
	D 4 x P	D 4 x P	C 2 x P	C 2 x P
	NIHS	NIHS	NIHS	NIHS

Ø d_1 SF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID
1.4	0.2	40	4.2	2.5		3	Δ1.26	193986	194051	194111	194174
1.6	0.2	40	4.8	2.5		3	Δ1.46	193987	194052	194112	194175
1.8	0.2	40	5.4	2.5		3	Δ1.66	193988	194053	194113	194176
2	0.2	45	6	2.8	2.1	3	Δ1.86	193989	194054	194114	194177
2.2	0.2	45	6.6	2.8	2.1	3	Δ2.06	193990	194055	194115	194178
2.2	0.25	45	6.6	2.8	2.1	3	Δ2.02	193991	194056	194116	194179
2.5	0.2	50	7.5	2.8	2.1	3	Δ2.36	193992	194057	194117	194180
2.5	0.25	50	7.5	2.8	2.1	3	Δ2.32	193993	194058	194118	194181

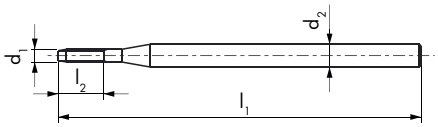
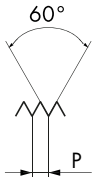
Δ 4H5H → 4H6H = +0.02 mm

SF

NIHS 06-10 Fine Thread

CLASSIC | SYNCHRO | VHM CAR | DC

CMS

	CMS50	CMS50VS		
				
				
				
				

CMS50 — R12 — 62 / 63 / 93

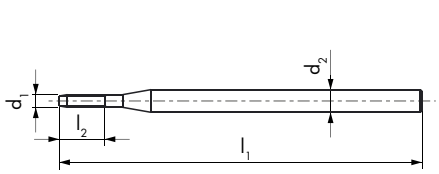
CMS50VS — R12 — VS — 31 / 62 / 63 / 73 / 74 / 83 / 93

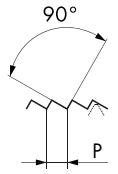
Ø d_1 SF	P mm	l_1 mm	l_2 mm	d_2 h5 mm			CMS50 ID	CMS50VS ID
1.4	0.2	32	5.2	2	3	Δ1.26	180329	193694
1.6	0.2	32	6	2	3	Δ1.46	193632	193695
1.8	0.2	32	6.7	2	3	Δ1.66	193633	193696
2	0.2	39	7.5	3	3	Δ1.86	193634	193697
2.2	0.2	39	8.2	3	3	Δ2.06	193635	193698
2.2	0.25	39	8.2	3	3	Δ2.02	193636	193699
2.5	0.2	39	9.3	3	3	Δ2.36	193637	193700
2.5	0.25	39	9.3	3	3	Δ2.32	193638	193701

Δ 4H5H → 4H6H = +0.02 mm

TAN

TAN40	L20		62 63 91
TAN40VS	L20	VS	11 12 13 14 32 62 63 71 72 73 74 81 93
TAN50	R25		62 63 91
TAN50VS	R25	VS	11 12 13 14 32 62 63 71 72 73 74 81 93





TAN40	TAN40VS	TAN50	TAN50VS
			
			
			

Ø d_1 SL	P mm	l_1 mm	l_2 mm	d_2 mm			TAN40 ID	TAN40VS ID	TAN50 ID	TAN50VS ID
0.5	0.1	25	1.5	2	3	0.46	600065	600073	600081	600089
0.6	0.125	25	1.8	2	3	0.55	600066	600074	600082	600090
0.7	0.15	25	2.1	2	3	0.64	600067	600075	600083	600091
0.8	0.15	25	2.4	2	3	0.74	600068	600076	600084	600092
0.9	0.175	25	2.7	2	3	0.83	600069	600077	600085	600093
1	0.2	40	3	2.5	3	0.92	600070	600078	600086	600094
1.2	0.2	40	3.6	2.5	3	1.12	600071	600079	600087	600095
1.4	0.25	40	4.2	2.5	3	1.3	600072	600080	600088	600096

SL

SL 15-01

Micro Safelock®

CLASSIC | SYNCHRO

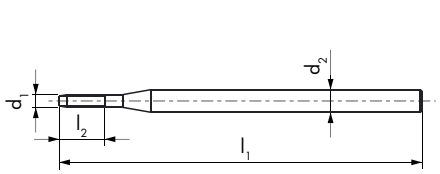
PM

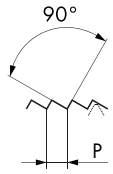
DC

TAZ

TAZ40	L20		
TAZ40VS	L20	VS	21 22 23 41 42 61 64
TAZ50	R25		
TAZ50VS	R25	VS	21 22 23 41 42 61 64

TAZ40	TAZ40VS	TAZ50	TAZ50VS
			
<2xD	<2xD	<2xD	<2xD
D 4xP	D 4xP	C 2xP	C 2xP





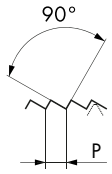
Ø d_1 SL	P mm	l_1 mm	l_2 mm	d_2 mm			ID	ID	ID	ID
0.5	0.1	25	1.5	2	3	0.46	600210	600218	600194	600202
0.6	0.125	25	1.8	2	3	0.55	600211	600219	600195	600203
0.7	0.15	25	2.1	2	3	0.64	600212	600220	600196	600204
0.8	0.15	25	2.4	2	3	0.74	600213	600221	600197	600205
0.9	0.175	25	2.7	2	3	0.83	600214	600222	600198	600206
1	0.2	40	3	2.5	3	0.92	600215	600223	600199	600207
1.2	0.2	40	3.6	2.5	3	1.12	600216	600224	600200	600208
1.4	0.25	40	4.2	2.5	3	1.3	600217	600225	600201	600209

CMS

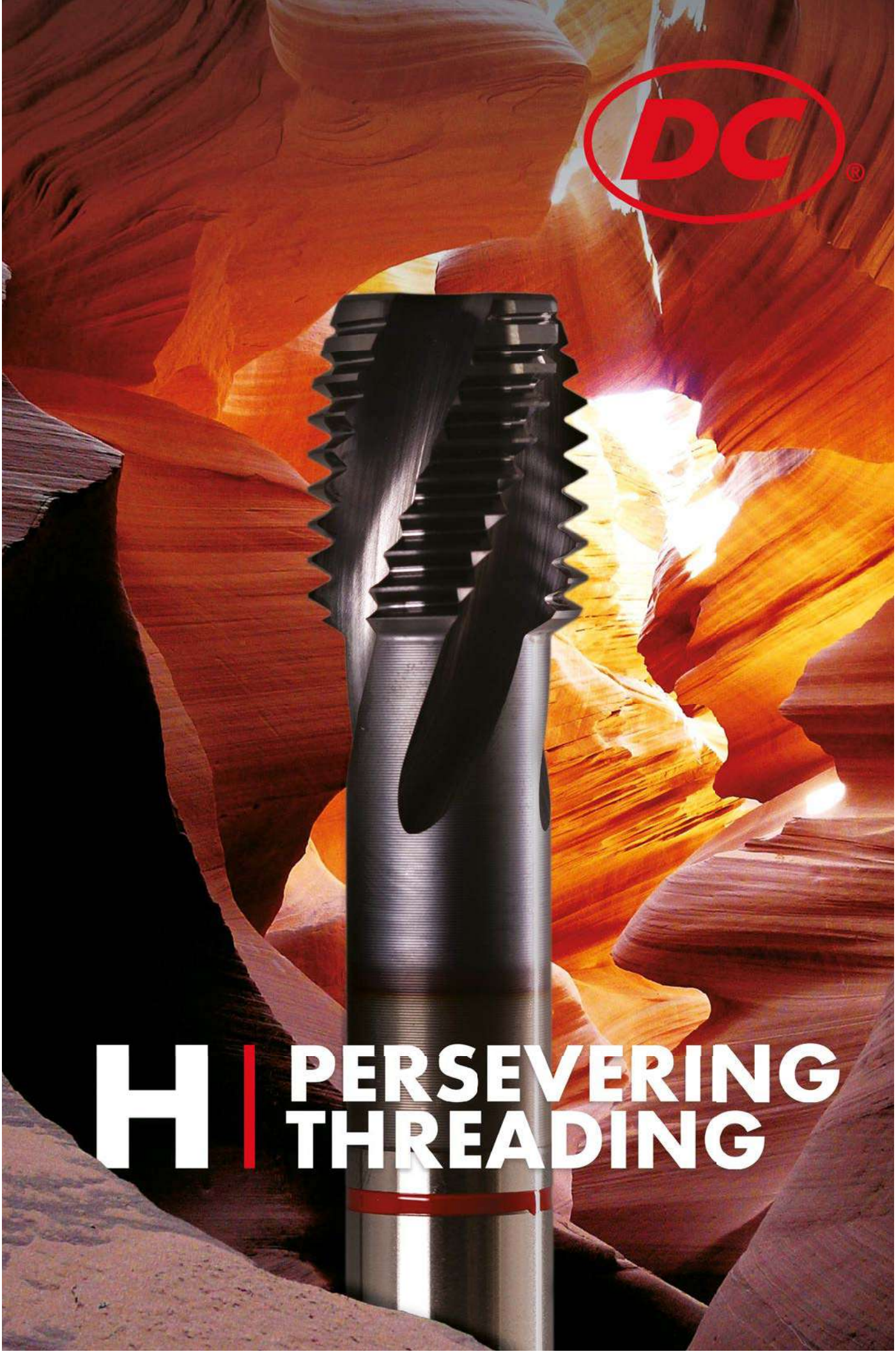
	CMS50	CMS50VS		
				
				
				

CMS50 R12 — 62 63 93

CMS50VS R12 VS — 31 62 63 73 74 83 93



Ø d_1 SL	P mm	l_1 mm	l_2 mm	d_2 h5 mm			ID	ID
0.3	0.06	32	1.1	1.5	3	0.27	600097	600226
0.35	0.06	32	1.3	1.5	3	0.32	600098	600227
0.4	0.08	32	1.5	1.5	3	0.36	600099	600228
0.5	0.1	32	1.8	1.5	3	0.46	600039	600229
0.6	0.125	32	2.2	1.5	3	0.55	600040	600230
0.7	0.15	32	2.6	1.5	3	0.64	600041	600231
0.8	0.15	32	3	1.5	3	0.74	600042	600232
0.9	0.175	32	3.3	1.5	3	0.83	600043	600233
1	0.2	32	3.7	2	3	0.92	600044	600234
1.2	0.2	32	4.5	2	3	1.12	600045	600235
1.4	0.25	32	5.2	2	3	1.3	600046	600236


DC
H | PERSEVERING THREADING

MACHOS PARA ROSCADO POR LAMINACIÓN NANO
THREAD FORMERS NANO

Clasificación de los materiales — Material classification

Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10 Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
	12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
	13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
	14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
	15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
	16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
	17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
	18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20 Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
	22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
	23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
	24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30 Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
	32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40 Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
	42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50 Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
	52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
	53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60 Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
	62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
	63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
	64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70 Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
	72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
	73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
	74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80 Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
	82	Materiales duroplásticos	Duroplastics	-	-	-
	83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90 Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
	92	Oro rojo	Red gold	-	-	-
	93	Oro blanco	White gold	-	-	-
	94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

MACHOS PARA ROSCADO POR LAMINACIÓN NANO
THREAD FORMERS NANO

CLASSIC SYNCHRO

Desde página: From page:
M
MF
UNC
UNF
S
SF
SL

	Vc (m/min) Guide Line Ø 0.3 - 1.4 mm *Recubrimiento* Coated	Vc (m/min) Guide Line Ø 1.4 - 2.8 mm *Recubrimiento* Coated	FA *Materiales normales* Normal materials FA80VS	FA *Materiales normales* Normal materials FA83VS	CFA *Materiales no ferrosos* Non-ferrous materials CFA80VS	CFA *Materiales no ferrosos* Non-ferrous materials CFA83VS	
			363	363	370	370	
			364	364			
			365	365	371	371	
			366	366	372	372	
			367	367	373	373	
			368	368			
			369	369			
							
11	4 - 10	12 - 20	O E	O E			11
12	4 - 10	12 - 20	O E	O E			12
13	4 - 10	12 - 20	O E	O E			13
14	4 - 10	12 - 20	O E	O E			14
15	3 - 6	6 - 12	O	O			15
16							16
17							17
18							18
21	4 - 10	12 - 20	O E	O E			21
22	3 - 6	6 - 12	O E	O E			22
23	3 - 6	6 - 12	O E	O E			23
24	3 - 6	6 - 12	O	O			24
31							31
32							32
41							41
42							42
51	3 - 6	6 - 12	O	O			51
52							52
53							53
61	4 - 10	12 - 20	O E	O E			61
62	4 - 10	12 - 20			O E	O E	62
63	4 - 10	12 - 20	O E	O E	O E	O E	63
64	4 - 10	12 - 20	O E	O E			64
71	4 - 10	12 - 20	O E	O E			71
72	4 - 10	12 - 20	O E	O E			72
73	4 - 10	12 - 20	O E	O E			73
74							74
81							81
82							82
83							83
91	4 - 10	12 - 20	O E	O E	O E	O E	91
92	4 - 10	12 - 20	O E	O E	O E	O E	92
93	4 - 10	12 - 20					93
94	4 - 10	12 - 20	O E	O E	O E	O E	94

A ***Óptima con aire*** **Optimal with air**

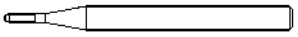
A ***Aceptable con aire*** **Suitable with air**

Limitada **Limited**

Los valores indicados son orientativos.
The indicated values are a guideline.

Directorio — Machos para roscado por laminación nano
Directory — Machine thread formers nano

CLASSIC SYNCHRO

				FA		CFA	
Características **Characteristics**				VS E 1.5 x P	VS C 2.5 x P	VS E 1.5 x P	VS C 2.5 x P
							
Tipo de agujero **Hole type**				< 2.5 x D	< 2.5 x D	< 2.5 x D	< 2.5 x D
				**FA80VS**	**FA83VS**	**CFA80VS**	**CFA83VS**
M	**4HX / 6HX**	**ISO DIN 14 ISO DIN 13**	**DC ~DIN 371**	363	363	370	370
MF	**4HX / 6HX**	**ISO DIN 13**	**DC ~DIN 371**	364	364		
UNC	**2BX**	**ASME B1.1**	**DC ~DIN 371**	365	365	371	371
	3BX	**ASME B1.1**	**DC ~DIN 371**	365	365		
UNF	**2BX**	**ASME B1.1**	**DC ~DIN 371**	366	366	372	372
	3BX	**ASME B1.1**	**DC ~DIN 371**	366	366		
S	**NIHS**	**NIHS 06 - 10**	**DC**	367	367	373	373
SF	**NIHS**	**NIHS 06-10 Fine Thread**	**DC**	368	368		
SL	**Safelock**	**SL 15 - 01**	**DC**	369	369		

M ISO DIN 13 ISO DIN 14

CLASSIC SYNCHRO

PM

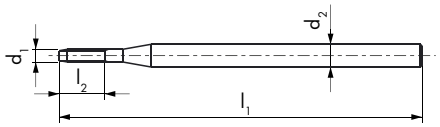
FA

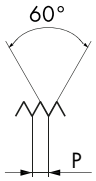
FA80VS	FA83VS		

FA80VS — VS

FA83VS — VS

11 12 13 14 15
21 22 23 24 51
61 63 64 71 72
73 91 92 94



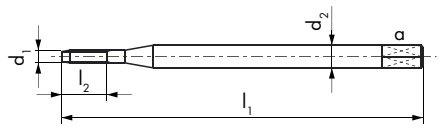


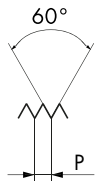
E 1.5 x P — C 2.5 x P

4HX — 4HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm		ID	ID
0.5	0.125	25	1.5	2	Δ 0.44	● 161750	● 173719
0.6	0.15	25	1.8	2	Δ 0.53	● 152412	● 173720
0.7	0.175	25	2.1	2	Δ 0.62	● 152415	● 173721
0.8	0.2	25	2.4	2	Δ 0.71	● 152418	● 173722
0.9	0.225	25	2.7	2	Δ 0.8	● 152421	● 173723
1	0.25	40	3	2.5	Δ 0.88	● 151559	● 173729
1.2	0.25	40	3.6	2.5	Δ 1.08	● 151565	● 173730
1.4	0.3	40	4.2	2.5	Δ 1.25	● 152429	● 173731

Δ Tol. = +0/0.02 mm





6HX — 6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
1.6	0.35	40	4.8	2.5		Δ 1.45	● 152433	● 193801
1.8	0.35	40	5.4	2.5		Δ 1.65	● 193764	● 193802
2	0.4	45	8	2.8	2.1	Δ 1.8	● 151566	● 193803
2.3	0.4	45	9	2.8	2.1	Δ 2.1	● 193765	● 193804
2.5	0.45	50	10	2.8	2.1	Δ 2.3	● 193766	● 193805
2.6	0.45	50	10	2.8	2.1	Δ 2.4	● 193767	● 193806

Δ Tol. = +0/0.02 mm

MF ISO DIN 13

CLASSIC SYNCHRO PM

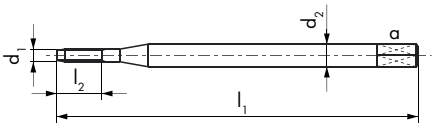
FA

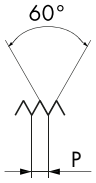
FA80VS	FA83VS		
			
			

FA80VS  VS

FA83VS  VS

11 12 13 14 15
21 22 23 24 51
61 63 64 71 72
73 91 92 94



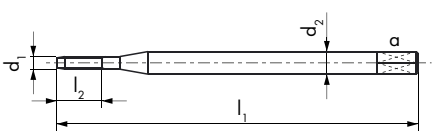


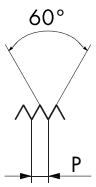
E 1.5 x P — 4HX

C 2.5 x P — 4HX

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
1.4	0.2	40	4.2	2.5		Δ 1.31	155928	180436
1.6	0.2	40	4.8	2.5		Δ 1.51	156480	193807
1.8	0.2	40	5.4	2.5		Δ 1.71	193768	193808
2	0.2	45	6	2.8	2.1	Δ 1.91	193769	193809
2	0.25	45	6	2.8	2.1	Δ 1.88	193770	193810
2.2	0.2	45	6.6	2.8	2.1	Δ 2.11	193771	193811
2.2	0.25	45	6.6	2.8	2.1	Δ 2.08	193772	193812
2.3	0.2	45	6.9	2.8	2.1	Δ 2.21	193773	193813
2.3	0.25	45	6.9	2.8	2.1	Δ 2.18	193774	193814
2.5	0.2	50	7.5	2.8	2.1	Δ 2.41	193775	193815
2.5	0.25	50	7.5	2.8	2.1	Δ 2.38	193776	193816

Δ Tol. = +0/0.02 mm





6HX — 6HX

Ø d_1 MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
2.5	0.35	50	7.5	2.8	2.1	Δ 2.35	193777	193817
2.6	0.35	50	7.8	2.8	2.1	Δ 2.45	193778	193818

Δ Tol. = +0/0.02 mm

UNC ASME B1.1

CLASSIC SYNCHRO

PM

FA

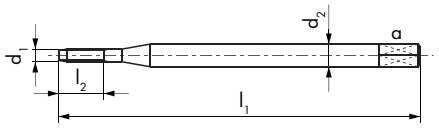
FA80VS	FA83VS		

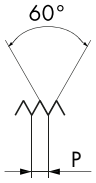
FA80VS — VS

FA83VS — VS

11 12 13 14 15
21 22 23 24 51
61 63 64 71 72
73 91 92 94

< 2.5 x D | < 2.5 x D



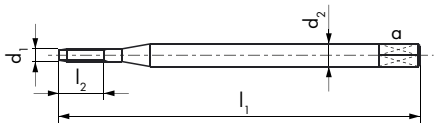


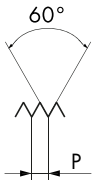
E 1.5 x P | C 2.5 x P

2BX | 2BX

Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
1	64	1.85	40	5.6	2.5		Δ1.65	● 193779	● 193819
2	56	2.18	45	9	2.8	2.1	Δ2	● 193780	● 193820
3	48	2.51	50	10	2.8	2.1	Δ2.25	● 193781	● 193821

Δ Tol. = +0/0.02 mm





3BX | 3BX

Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
1	64	1.85	40	5.6	2.5		Δ1.65	● 193782	● 193822
2	56	2.18	45	9	2.8	2.1	Δ2	● 193783	● 193823
3	48	2.51	50	10	2.8	2.1	Δ2.25	● 193784	● 193824

Δ Tol. = +0/0.02 mm

UNF ASME B1.1

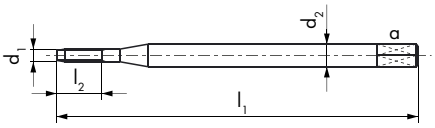
CLASSIC SYNCHRO PM

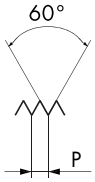
FA

FA80VS	FA83VS		
			
			

FA80VS  VS

FA83VS  VS



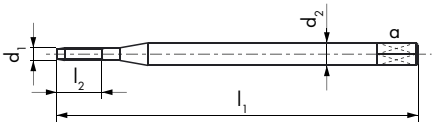


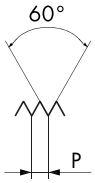
E 1.5 x P — C 2.5 x P

2BX — 2BX

Ø d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
0	80	1.52	40	4.6	2.5		Δ1.4	● 193785	● 193825
1	72	1.85	40	5.6	2.5		Δ1.7	● 193786	● 193826
2	64	2.18	45	9	2.8	2.1	Δ2	● 193787	● 193827
3	56	2.51	50	10	2.8	2.1	Δ2.3	● 193788	● 193828

Δ Tol. = +0/0.02 mm





3BX — 3BX

Ø d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
0	80	1.52	40	4.6	2.5		Δ1.4	● 193789	● 193829
1	72	1.85	40	5.6	2.5		Δ1.7	● 193790	● 193830
2	64	2.18	45	9	2.8	2.1	Δ2	● 193791	● 193831
3	56	2.51	50	10	2.8	2.1	Δ2.3	● 193792	● 193832

Δ Tol. = +0/0.02 mm

S NIHS 06-10

CLASSIC SYNCHRO PM DC

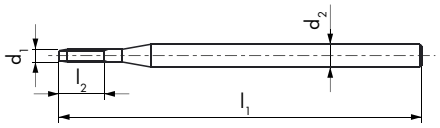
FA

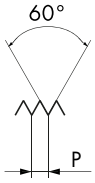
FA80VS	FA83VS		

FA80VS VS

FA83VS VS

11 12 13 14 15
21 22 23 24 51
61 63 64 71 72
73 91 92 94





E 1.5 x P

C 2.5 x P

NIHS

NIHS

Ø d_1 S	P mm	l_1 mm	l_2 mm	d_2 mm		ID	ID
0.5	0.125	25	1.5	2	Δ 0.44	● 158977	● 173724
0.6	0.15	25	1.8	2	Δ 0.53	● 151561	● 173725
0.7	0.175	25	2.1	2	Δ 0.62	● 151742	● 173726
0.8	0.2	25	2.4	2	Δ 0.71	● 151564	● 173727
0.9	0.225	25	2.7	2	Δ 0.8	● 151562	● 173728
1	0.25	40	3.0	2.5	Δ 0.88	● 151542	● 173732
1.2	0.25	40	3.6	2.5	Δ 1.08	● 151543	● 173733
1.4	0.3	40	4.2	2.5	Δ 1.25	● 152427	● 173734

Δ **Tol. =** +0/0.02 mm

SF

NIHS 06-10 Fine Thread

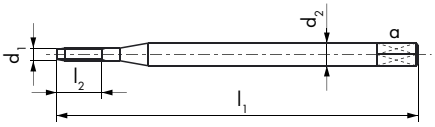
CLASSIC | SYNCHRO | PM

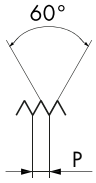
FA

	FA80VS	FA83VS		
				
				
				
	E 1.5 x P	C 2.5 x P		
	NIHS	NIHS		

FA80VS  VS

FA83VS  VS





Ø d_1 SF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		ID	ID
1.4	0.2	40	4.2	2.5		Δ 1.31	● 176180	● 193793
1.6	0.2	40	4.8	2.5		Δ 1.51	● 193757	● 193794
1.8	0.2	40	5.4	2.5		Δ 1.71	● 193758	● 193795
2	0.2	45	6	2.8	2.1	Δ 1.91	● 193759	● 193796
2.2	0.2	45	6.6	2.8	2.1	Δ 2.11	● 193760	● 193797
2.2	0.25	45	6.6	2.8	2.1	Δ 2.08	● 193761	● 193798
2.5	0.2	50	7.5	2.8	2.1	Δ 2.41	● 193762	● 193799
2.5	0.25	50	7.5	2.8	2.1	Δ 2.38	● 193763	● 193800

Δ Tol. = +0/0.02 mm

SL

SL 15-01

Micro Safelock

CLASSIC | SYNCHRO

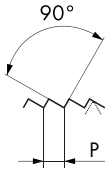
PM

DC

FA

FA80VS		VS
FA83VS		VS

FA80VS	FA83VS		
			



Ø d_1 SL	P mm	l_1 mm	l_2 mm	d_2 mm	ID	ID
0.5	0.1	25	1.5	2	600049	600100
0.6	0.125	25	1.8	2	600050	600101
0.7	0.15	25	2.1	2	600051	600102
0.8	0.15	25	2.4	2	600052	600103
0.9	0.175	25	2.7	2	600053	600104
1	0.2	40	3	2.5	600054	600105
1.2	0.2	40	3.6	2.5	600055	600106
1.4	0.25	40	4.2	2.5	600056	600107

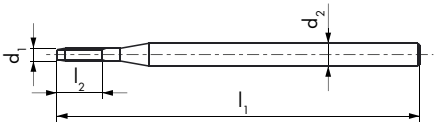
CFA

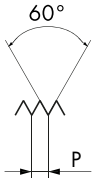
CFA80VS	CFA83VS		

CFA80VS VS

62 63 91 92 94

CFA83VS VS

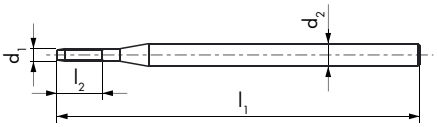



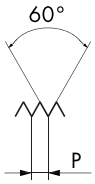


4HX 4HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2h5 mm		CFA80VS ID	CFA83VS ID
0.5	0.125	32	1.5	1.5	Δ0.44	● 171771	● 193611
0.6	0.15	32	1.8	1.5	Δ0.53	● 171773	● 193612
0.7	0.175	32	2.1	1.5	Δ0.62	● 171775	● 193613
0.8	0.2	32	2.4	1.5	Δ0.71	● 171777	● 193614
0.9	0.225	32	2.7	1.5	Δ0.8	● 171779	● 193615
1	0.25	32	3	2	Δ0.88	● 171782	● 193616
1.2	0.25	32	3.6	2	Δ1.08	● 171783	● 193617
1.4	0.3	32	4.2	2	Δ1.25	● 171785	● 193618

Δ Tol. = +0/0.02 mm





6HX 6HX

Ø d_1 M	P mm	l_1 mm	l_2 mm	d_2h5 mm		CFA80VS ID	CFA83VS ID
1.6	0.35	32	4.8	2	Δ1.45	● 193590	● 193619
1.8	0.35	32	5.4	2	Δ1.65	● 193591	● 193620
2	0.4	39	8	3	Δ1.8	● 193592	● 193621
2.3	0.4	39	9	3	Δ2.1	● 193593	● 193622
2.5	0.45	39	10	3	Δ2.3	● 193594	● 193623
2.6	0.45	39	10	3	Δ2.4	● 193595	● 193624

Δ Tol. = +0/0.02 mm

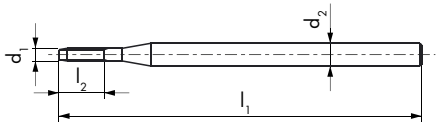
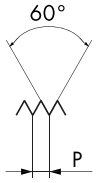
UNC ASME B1.1

CLASSIC SYNCHRO

VHM CAR

DC

CFA

	CFA80VS	CFA83VS		
				
				
	 			
	E 1.5 x P	C 2.5 x P		
	2BX	2BX		

CFA80VS  VS

62 63 91 92 94

CFA83VS  VS

Ø d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2h5 mm		ID	ID
1	64	1.85	32	5.5	2	Δ 1.65	● 193596	● 193625
2	56	2.18	39	8.6	3	Δ 2	● 193597	● 193626
3	48	2.51	39	10	3	Δ 2.25	● 193598	● 193627

Δ Tol. = +0/0.02 mm

UNF ASME B1.1

CLASSIC SYNCHRO VHM CAR DC

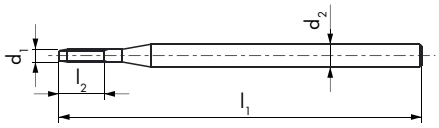
CFA

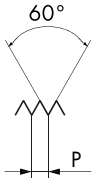
CFA80VS	CFA83VS		

CFA80VS  VS

62 63 91 92 94

CFA83VS  VS



2BX 2BX

Ø d_1 UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2h5 mm		ID	ID
0	80	1.52	32	4.5	2	Δ1.4	● 193599	● 193628
1	72	1.85	32	5.5	2	Δ1.7	● 193600	● 193629
2	64	2.18	39	8.6	3	Δ2	● 193601	● 193630
3	56	2.51	39	10	3	Δ2.3	● 193602	● 193631

Δ Tol. = +0/0.02 mm

S NIHS 06-10

CLASSIC SYNCHRO

VHM CAR

DC

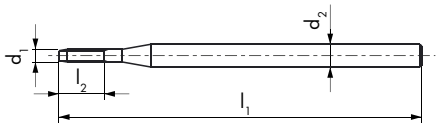
CFA

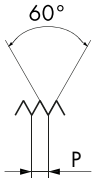
CFA80VS	CFA83VS		

CFA80VS  VS

62 63 91 92 94

CFA83VS  VS





NIHS NIHS

Ø d_1 S	P mm	l_1 mm	l_2 mm	d_2 h5 mm		ID	ID
0.5	0.125	32	1.5	1.5	Δ 0.44	● 171770	● 193603
0.6	0.15	32	1.8	1.5	Δ 0.53	● 171772	● 193604
0.7	0.175	32	2.1	1.5	Δ 0.62	● 171774	● 193605
0.8	0.2	32	2.4	1.5	Δ 0.71	● 171776	● 193606
0.9	0.225	32	2.7	1.5	Δ 0.8	● 171778	● 193607
1	0.25	32	3	2	Δ 0.88	● 171780	● 193608
1.2	0.25	32	3.6	2	Δ 1.08	● 171781	● 193609
1.4	0.3	32	4.2	2	Δ 1.25	● 171784	● 193610

Δ **Tol. =** +0/0.02 mm

CALIBRES PARA ROSCAS NANO — NANO THREAD GAUGES

CALIBRES TAMPÓN — THREAD PLUG GAUGES

METROLOGÍA — METROLOGY

GO

NO-GO

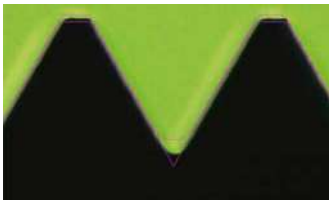
PRODUCCIÓN — PRODUCTION

GO

< 2.74 mm

UTILIZACIÓN

El hecho de que el giro inicial de la rosca y la punta del calibrador hayan sido aplanados asegura que la herramienta se enganche óptimamente en la rosca, lo cual es esencial para garantizar una medición correcta. Eso permite al calibre de comprobar la rosca a su máxima profundidad.



CONTROL DE PERFIL

Nuestra experiencia en el campo de la rectificación nos asegura un control perfecto de las tolerancias, de la forma del perfil y la calidad superficial.

ANILLOS DE CONTROL NO PASA

El corte en el diámetro exterior de nuestros medidores de anillo NO-GO asegura que los lados del tornillo se pueden comprobar óptimamente, eliminando el riesgo de cualquier inspección incorrecta causada por un bloqueo en el diámetro exterior del medidor.

SISTEMA MODULAR

Un tornillo de acoplamiento permite conectar el calibre GO a la sección NO-GO según sea necesario. La caja rígida protege los medidores durante el transporte. Su interior moldeado mantiene el producto limpio y lo protege de los impactos.

CONTRA CALIBRES — PLUG CHECK GAUGES

El contra calibre NO-GO sirve para qualificar el calibre anillo nuevo.

The NO-GO plug check gauge is the foolproofing device for the new ring gauge.

El contra calibre GO sirve para qualificar el calibre anillo.

The GO plug check gauge is used to check the quality of your ring gauge.

El testigo de desgaste WEAR extenderá la vida útil del calibre anillo hasta el límite de tolerancia dado por la norma.

The master plug gauge WEAR will extend the service life of your ring gauge up to a certain tolerance limit.

UTILISATION

The fact that the initial turn of the screw thread and also the tip of the gauge have been ground flat ensures that the tool engages optimally in the thread, which is essential for ensuring a correct measurement.
This enables the gauge to check the thread at its maximum depth.

PROFILE CONTROL

Our expertise in the field of rectification ensures we have perfect control of tolerances for the shape of the profile and for surface textures.

NO-GO RING GAUGE

The cut-away on the exterior diameter of our NO-GO ring gauges ensures the sides of the screw can be optimally checked, eliminating the risk of any incorrect inspection caused by a blockage on the exterior diameter of the gauge.

MODULAR SYSTEM

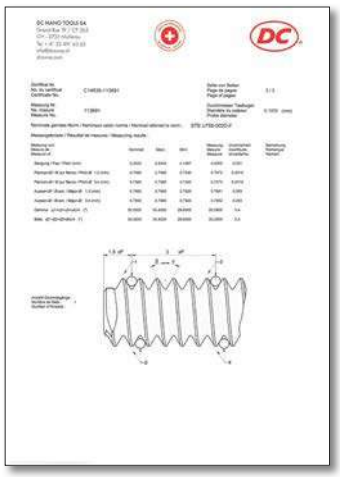
A coupling screw enables the GO gauge to be connected to the NO-GO section as required. The rigid box protects the gauges during transportation. Its moulded interior keeps the product clean and protects it from impacts.

SCS CERTIFICADO DE MEDICIÓN

Un certificado es la confirmación por escrito de la calidad del equipo metrológico de una empresa. DC NANO TOOLS SA (acreditación SCS 0143), miembro del Grupo DC SWISS, puede inspeccionar y calibrar medidores de rosca para usted de acuerdo con la norma internacional ISO 17025. Ese servicio de pago está disponible para diámetros de flanco de 0.1 à 3.0 mm, y diámetros externos de 0.1 à 3.5 mm.

La totalidad de los calibres tienen certificado SCS.

ISO 17025:2017 ACCREDITED © DC NANO TOOLS SA



SCS MEASUREMENT CERTIFICATE

A certificate is written confirmation of the quality of a company's metrological equipment. DC NANO TOOLS SA (SCS accreditation 0143), a member of the DC SWISS Group, can inspect and calibrate thread gauges for you in accordance with the ISO 17025 international standard.
This chargeable service is available for pitch diameters of 0.1 to 3.0 mm and external diameters of 0.1 to 3.5 mm.

All plug thread gauges are SCS certified.

ISO 17025:2017 accredited © DC NANO TOOLS SA

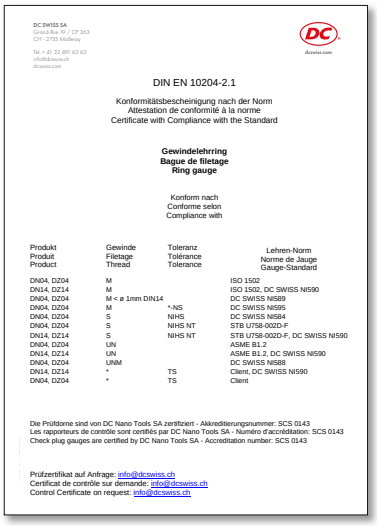
DESCARGUE SU CONFIRMACIÓN DE CUMPLIMIENTO

Ahora puede acceder a su confirmación de conformidad en cualquier momento, en cualquier lugar desde su teléfono. Simplemente escanee el código QR en la tarjeta acompañando la caja y descargue el archivo pdf asociado.

La confirmación de conformidad que acompaña a cada caja confirma que la calidad ha seguido escrupulosamente el proceso de seguimiento posterior a la producción.

DC SWISS SA quality control

DOWNLOAD YOUR DC ATTESTATION



DC SWISS SA

DIN EN 10204-2.1

Konformitätsbescheinigung nach der Norm
Attestation de conformité à la norme
Certificate with Compliance with the Standard

Gewindelehrring
Bague de filetage
Ring gauge

Konform nach
Conforme selon
Compliance with

Produkt Produit Product	Gewinde Filetage Thread	Toleranz Tolérance Tolerance	Lehren-Norm Norme de Jauge Gauge-Standard
DN04, DZ04	M		ISO 1502
DN14, DZ14	M		ISO 1502, DC SWISS NI590
DN04, DZ04	M < ø 1mm DIN14		DC SWISS NI589
DN04, DZ04	M	*-NS	DC SWISS NI595
DN04, DZ04	S	NIHS	DC SWISS NI584
DN04, DZ04	S	NIHS NT	STB U758-002D-F
DN14, DZ14	S	NIHS NT	STB U758-002D-F, DC SWISS NI590
DN04, DZ04	UN		ASME B1.2
DN14, DZ14	UN		ASME B1.2, DC SWISS NI590
DN04, DZ04	UNM		DC SWISS NI588
DN14, DZ14	*	TS	Client, DC SWISS NI590
DN04, DZ04	*	TS	Client

Die Prüfdorne sind von DC Nano Tools SA zertifiziert - Akkreditierungsnummer: SCS 0143
Les rapporteurs de contrôle sont certifiés par DC Nano Tools SA - Numéro d'accréditation: SCS 0143
Check plug gauges are certified by DC Nano Tools SA - Accreditation number: SCS 0143

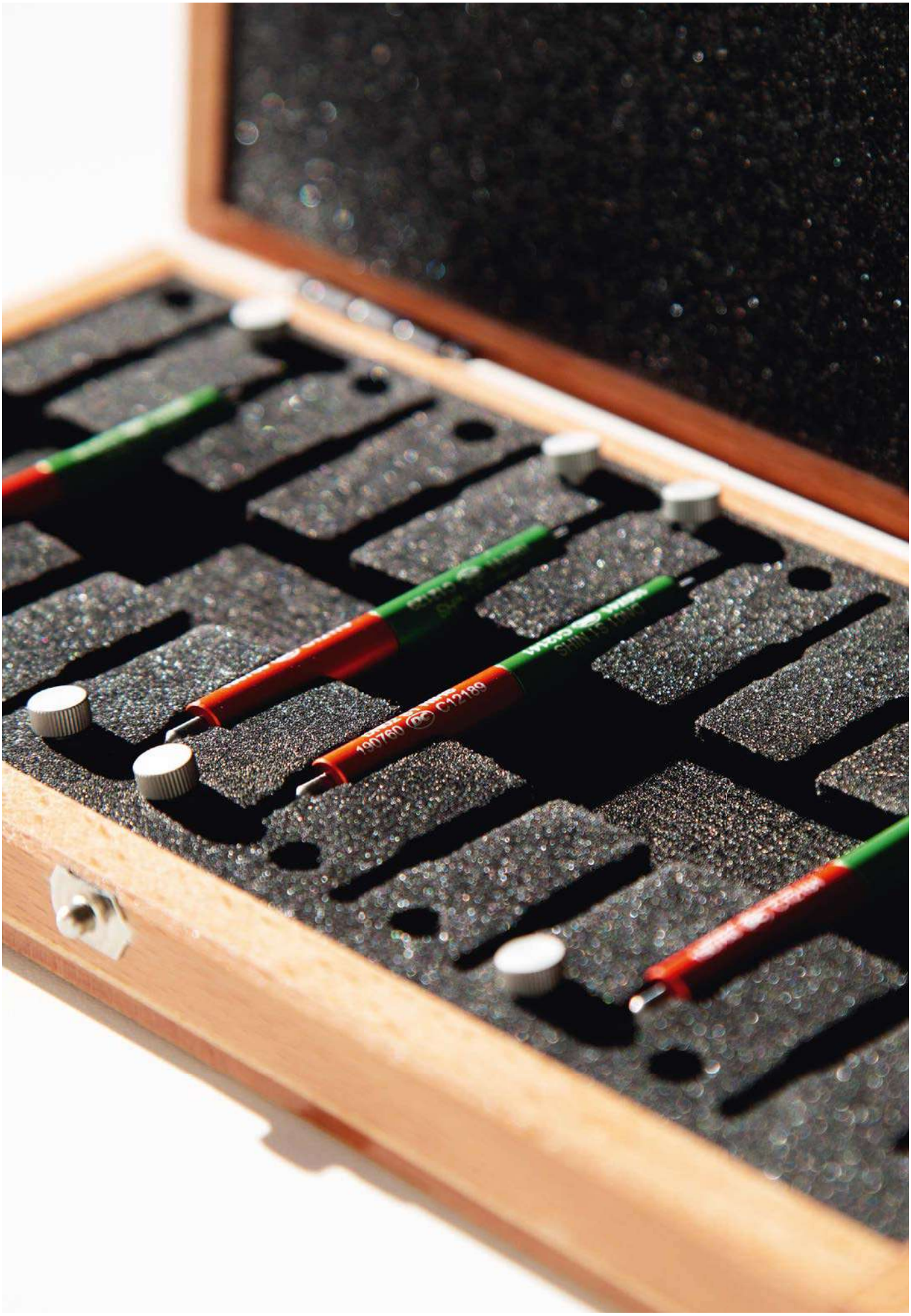
Prüfzertifikat auf Anfrage: info@dcswiss.ch
Certificat de contrôle sur demande: info@dcswiss.ch
Control Certificate on request: info@dcswiss.ch

DOWNLOAD YOUR CONFIRMATION OF COMPLIANCE

You can now access your confirmation of compliance any time, at any place on your phone. Simply scan the QR code on the card inside the box and download the associated pdf file.

The confirmation of compliance accompanying each box confirms that the factory has scrupulously followed the post-production monitoring process.

DC SWISS SA quality control


190760
C12189

JUEGOS DISPONIBLES — AVAILABLE SETS

CALIBRES TAMPONES Y ANILLOS DN
THREAD PLUG GAUGES & RING GAUGES DN

JUEGO UNITARIO — SINGLE SET

CALIBRES ANILLOS DZ
THREAD RING GAUGES DZ

JUEGO UNITARIO — SINGLE SET

CALIBRES TAMPONES / ANILLOS DN
PLUG GAUGES DN / RING GAUGES DN

JUEGOS DE 10 O 20 PIEZAS
SET OF 10 OR 20 ITEMS

Para cada juego, podeis seleccionar el numero exacto de calibres GO / NO-GO.

Contactarnos para sus composiciones personal.

You can select the exact number of GO / NO-GO thread gauges for each set.

Contact us for any other set compositions.

dcswiss.com / info@dcswiss.ch / +41 32 491 63 63

PEDIR CALIBRES NANO — NANO THREAD GAUGES ORDER

TIPO DE HERRAMIENTA — TOOL TYPE

☐
☐
☐

☐
☐
☐
☐

☐
☐
☐
☐

CARACTERÍSTICAS — CHARACTERISTICS

DIMENSIÓN DIMENSION	*TOLERANCIA* TOLERANCE	*NORMA* NORM	*CANTIDAD* QUANTITY	*ESPECIALES* SPECIFICS

OBSERVACIONES — REMARKS

INFORMACIÓN DE ENVÍO — DELIVERY INFORMATION

Por favor, dirija su pedido.
Thank you for initialing your order.

dcswiss.com / info@dcswiss.ch / +41 32 491 63 63

Directorio — Calibres de control NANO para micromecánica y relojeria
Directory — Thread gauges NANO for micromechanics and watchmaking

		Calibres tampon Thread plug gauges			*Calibres anillos* Thread ring gauges				*Contra calibres* Plug check gauges			
Características Characteristics												
												
Tipo Type		**DN01 GO**	**DN01 GO**	**DN02 NO-GO**	**DZ04 GO**	**DZ14 NO-GO**	**DN04 GO**	**DN14 NO-GO**	**RN05-1 GO**	**RN15-1 GO**	**RN05-2 NO-GO**	**RN15-2 NO-GO**
M 4H / 5h	ISO DIN 14 ISO DIN 13		382	382	383	383	384	384	399	399	400	400
M 6H / 6g	ISO DIN 13		382	382	383	383	384	384	399	399	400	400
M 5H / 6h	ISO DIN 13		382	382	383	383	384	384	399	399	400	400
MF 4H / 4h	ISO DIN 13		385	385	386	386	387	387	402	402	403	403
MF 6H / 6g	ISO DIN 13		385	385	386	386	387	387	402	402	403	403
MF 6h	ISO DIN 13				386	386	387	387	402	402	403	403
UNC 2B / 2A	ASME B1.1		388	388	389	389	390	390	405	405	406	406
UNC 3B / 3A	ASME B1.1		388	388	389	389	390	390	405	405	406	406
UNF 2B / 2A	ASME B1.1		388	388	389	389	390	390	405	405	406	406
UNF 3B / 3A	ASME B1.1		388	388	389	389	390	390	405	405	406	406
S NIHS 3G	NIHS	391										
S NIHS 4H	NIHS		391									
S NIHS 4H / 3G	NIHS			391								
S NIHS	NIHS				393	393	394	394	407	407	408	408
S NIHS NT	NIHS		392	392	393	393	394	394	407	407	408	408
SF NIHS 3G	NIHS	395										
SF NIHS 4H	NIHS		395									
SF NIHS 4H / 3G	NIHS			395								
SF NIHS	NIHS				396	396	397	397	409	409	410	410
SF NIHS NT	NIHS								409	409	410	410
SL	SL 15-01		398	398								

Directorio — Calibres de control NANO para micromecánica y relojeria
Directory — Thread gauges NANO for micromechanics and watchmaking

		Testigo de desgaste WEAR Master plug gauges WEAR		*Patrones* Calibration thread plug gauges
Características **Characteristics**				
				
Tipo **Type**		**RN05-3 WEAR**	**RN15-3 WEAR**	**EN00**
M 4H / 5h	ISO DIN 14 ISO DIN 13			
M 6H / 6g	ISO DIN 14 ISO DIN 13	401	401	
M 5H / 6h	ISO DIN 13	401	401	
MF 4H / 4h	ISO DIN 13	404	404	
MF 6H / 6g	ISO DIN 13	404	404	
MF 6h	ISO DIN 13	404	404	
S NIHS	NIHS			411

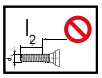
Pictogramas - Pictographs

"Pasa"
"Go"

"No pasa"
"No-Go"

6H — *Tolerancia 6H, "Pasa"*
Tolerance 6H, "Go"

6g — *Tolerancia 6g, "No pasa"*
Tolerance 6g, "No-Go"



No debe superarse la longitud máxima de medición l2
Max. measuring length l2 must not be exceeded

PHYN. KL — *Phynox KL*
Phynox KL

LH — *Sobre pedido, todos los calibres de roscas son igualmente a la entrega para roscado a izquierda*
All gauges can be supplied with a left-hand thread upon request

Utilización — Use

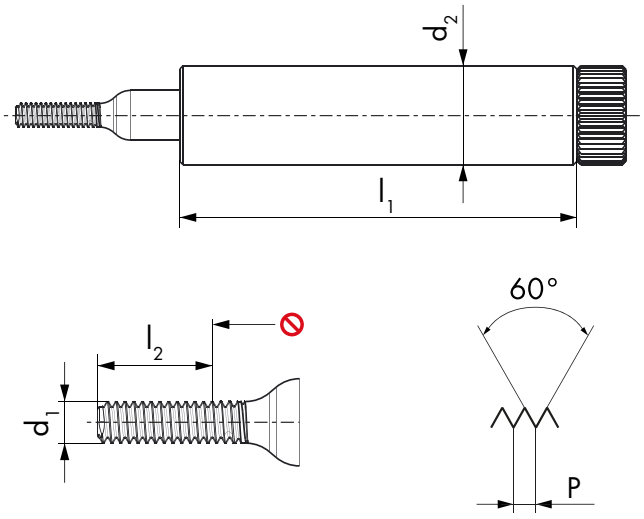
RN05-1
RN05-2

→ **DN04/DZ04**

RN15-1
RN15-2

→ **DN14/DZ14**

nano



Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	DN01 GO 4H ID	DN02 NO-GO 4H ID	DN01 GO 5H ID	DN02 NO-GO 5H ID
0.3	0.08	24	0.9	6	● 192778	● 192786		
0.35	0.09	24	1.05	6	● 192779	● 192787		
0.4	0.1	24	1.2	6	● 192780	● 192788		
0.5	0.125	24	1.5	6	● 192781	● 192789		
0.6	0.15	24	1.8	6	● 192782	● 192790		
0.7	0.175	24	2.1	6	● 192783	● 192791		
0.8	0.2	24	2.4	6	● 192784	● 192792		
0.9	0.225	24	2.7	6	● 192785	● 192793		
1	0.25	24	3	6	● 191113	● 191127	● 191421	● 191424
1.2	0.25	24	3.6	6	● 191114	● 191128	● 191422	● 191425
1.4	0.3	24	4.2	6	● 191115	● 191129	● 191423	● 191426

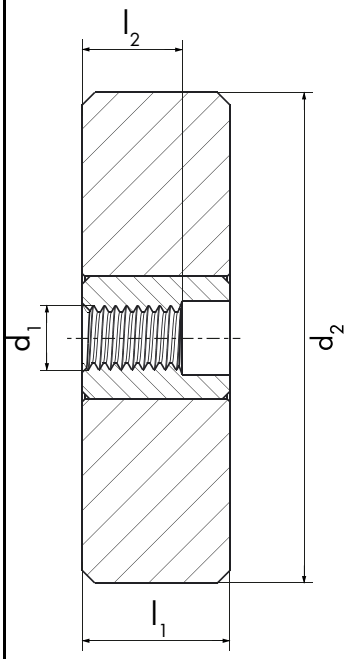
Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	6H ID	6H ID
1.6	0.35	24	4.5	6	● 191427	● 191433
1.8	0.35	24	4.5	6	● 191428	● 191434
2	0.4	24	4.5	6	● 191429	● 191435
2.3	0.4	24	4.5	6	● 191430	● 191436
2.5	0.45	24	4.5	6	● 191431	● 191437
2.6	0.45	24	4.5	6	● 191432	● 191438

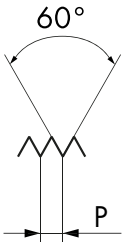
All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

M ISO DIN 14 / ISO DIN 13
DC SWISS NI589 / DZ04: ISO 1502 / DZ14: ISO 1502, DC SWISS NI590

PHYN. KL

nano





Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	DZ04 GO 5h ID	DZ14 NO-GO 5h ID	DZ04 GO 6h ID	DZ14 NO-GO 6h ID
* 0.3	0.08	6	0.45	20	● 192842	● 192850		
* 0.35	0.09	6	0.53	20	● 192843	● 192851		
0.4	0.1	6	0.6	20	● 192844	● 192852		
0.5	0.125	6	0.75	20	● 192845	● 192853		
0.6	0.15	6	0.9	20	● 192846	● 192854		
0.7	0.175	6	1.05	20	● 192847	● 192855		
0.8	0.2	6	1.2	20	● 192848	● 192856		
0.9	0.225	6	1.35	20	● 192849	● 192857		
1	0.25	6	1.5	20			● 191473	● 191476
1.2	0.25	6	1.8	20			● 191474	● 191477
1.4	0.3	6	2.1	20			● 191475	● 191478

* In development

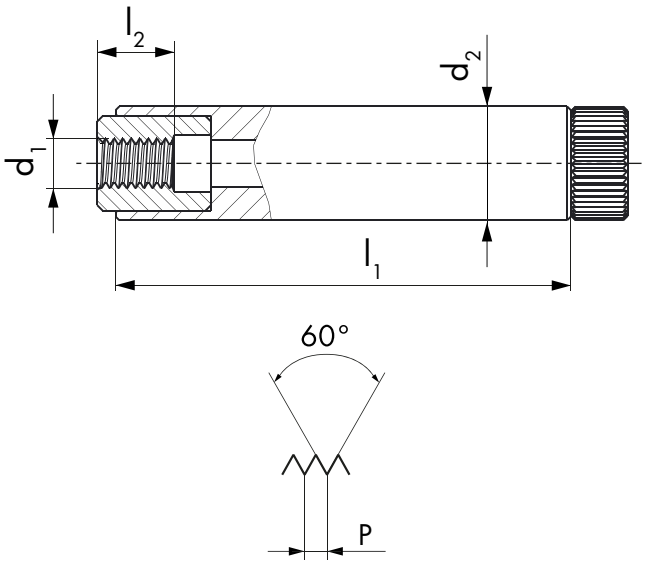
Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	DZ04 GO 6g ID	DZ14 NO-GO 6g ID
1.6	0.35	6	2.4	20	● 191479	● 191485
1.8	0.35	6	2.7	20	● 191480	● 191486
2	0.4	6	3	20	● 191481	● 191487
2.3	0.4	6	3.45	20	● 191482	● 191488
2.5	0.45	6	3.75	20	● 191483	● 191489
2.6	0.45	6	3.9	20	● 191484	● 191490

All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

M ISO DIN 14 / ISO DIN 13
DC SWISS NI589 / DN04: ISO 1502 / DN14: ISO 1502, DC SWISS NI590

PHYN. KL

nano



DN04 GO	DN14 NO-GO	DN04 GO	DN14 NO-GO
5h	5h	6h	6h

Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
* 0.3	0.08	24	0.45	6	● 192800	● 192808		
* 0.35	0.09	24	0.53	6	● 192801	● 192809		
0.4	0.1	24	0.6	6	● 192802	● 192810		
0.5	0.125	24	0.75	6	● 192803	● 192811		
0.6	0.15	24	0.9	6	● 192804	● 192812		
0.7	0.175	24	1.05	6	● 192805	● 192813		
0.8	0.2	24	1.2	6	● 192806	● 192814		
0.9	0.225	24	1.35	6	● 192807	● 192815		
1	0.25	24	1.5	6			● 191447	● 191450
1.2	0.25	24	1.8	6			● 191448	● 191451
1.4	0.3	24	2.1	6			● 191449	● 191452

* In development

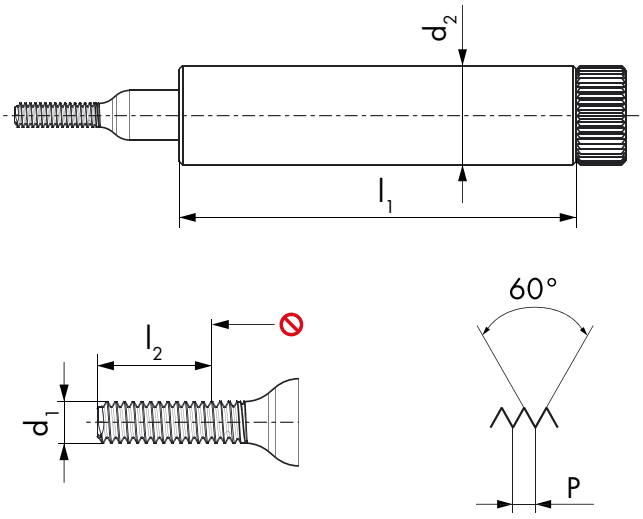
							6g	6g
Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm			ID	ID
1.6	0.35	24	2.4	6			● 191453	● 191459
1.8	0.35	24	2.7	6			● 191454	● 191460
2	0.4	24	3	6			● 191455	● 191461
2.3	0.4	24	3.45	6			● 191456	● 191462
2.5	0.45	24	3.75	6			● 191457	● 191463
2.6	0.45	24	3.9	6			● 191458	● 191464

All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

MF ISO DIN 13 ISO 1502

VHM CAR

nano



DN01 GO	DN02 NO-GO	DN01 GO	DN02 NO-GO

4H	4H	6H	6H

Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	4.2	6	● 191116	● 191130		
1.6	0.2	24	3	6	● 191117	● 191131		
1.8	0.2	24	3	6	● 191118	● 191132		
2	0.2	24	3	6	● 191119	● 191133		
2	0.25	24	3	6	● 192794	● 192797		
2.2	0.2	24	3	6	● 191120	● 191134		
2.2	0.25	24	3	6	● 191121	● 191135		
2.3	0.2	24	3	6	● 191122	● 191136		
2.3	0.25	24	3	6	● 191123	● 191137		
2.5	0.2	24	3	6	● 191124	● 191138		
2.5	0.25	24	3	6	● 191125	● 191139		
2.5	0.35	24	4.5	6			● 192795	● 192798
2.6	0.35	24	4.5	6			● 192796	● 192799

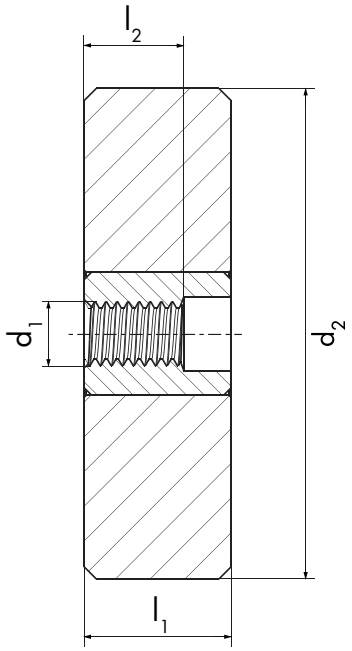
All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

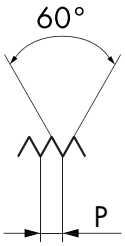
MF

ISO DIN 13
DZ04: ISO 1502 / DZ14: ISO 1502, DC SWISS NI590

PHYN. KL

nano





DZ04 GO	DZ14 NO-GO	DZ04 GO	DZ14 NO-GO

4h	4h	6g	6g

Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	6	2.1	20	● 194887	● 194888	● 192858 [1]	● 192871 [1]
1.6	0.2	6	1.8	20	● 191201	● 191215	● 191229	● 191243
1.8	0.2	6	1.8	20	● 191202	● 191216	● 191230	● 191244
2	0.2	6	1.8	20	● 190711	● 190710	● 191231	● 191245
2	0.25	6	2.25	20	● 194872	● 190690	● 194876	● 194877
2.2	0.2	6	1.8	20	● 191204	● 191218	● 191232	● 191246
2.2	0.25	6	2.25	20	● 191205	● 191219	● 191233	● 191247
2.3	0.2	6	1.8	20	● 191206	● 191220	● 191234	● 191248
2.3	0.25	6	2.25	20	● 191207	● 191221	● 191235	● 191249
2.5	0.2	6	1.8	20	● 191208	● 191222	● 191236	● 191250
2.5	0.25	6	2.25	20	● 194873	● 191223	● 191237	● 191251
2.5	0.35	6	3.75	20			● 192869	● 192882
2.6	0.35	6	3.9	20			● 192870	● 192883

[1] Tol. 6h

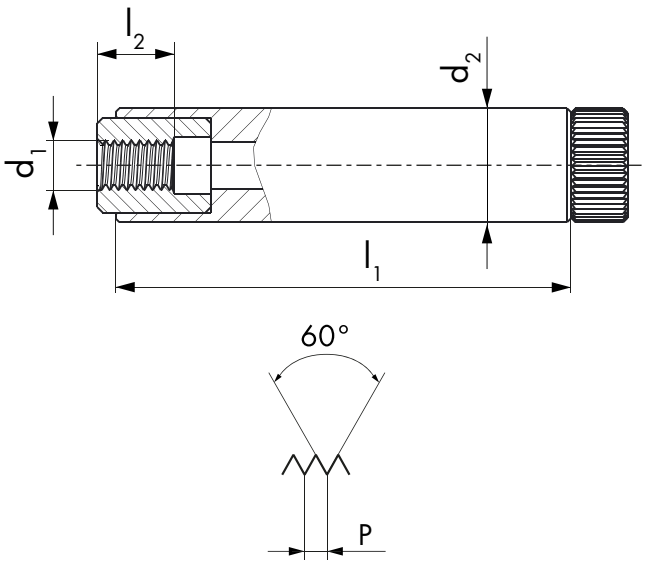
All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

MF

ISO DIN 13
DN04: ISO 1502 / DN14: ISO 1502, DC SWISS NI590

PHYN. KL

nano



DN04 GO	DN14 NO-GO	DN04 GO	DN14 NO-GO
			
4h	4h	6g	6g

Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.1	6	194885	194886	192816 [1]	192829 [1]
1.6	0.2	24	1.8	6	191145	191159	191173	191187
1.8	0.2	24	1.8	6	191146	191160	191174	191188
2	0.2	24	1.8	6	191147	191161	191175	191189
2	0.25	24	2.25	6	194870	194871	194874	194875
2.2	0.2	24	1.8	6	191148	191162	191176	191190
2.2	0.25	24	2.25	6	191149	191163	191177	191191
2.3	0.2	24	1.8	6	191150	191164	191178	191192
2.3	0.25	24	2.25	6	191151	191165	191179	191193
2.5	0.2	24	1.8	6	191152	191166	191180	191194
2.5	0.25	24	2.25	6	191153	191167	191181	191195
2.5	0.35	24	3.75	6			192827	192840
2.6	0.35	24	3.9	6			192828	192841

[1] Tol. 6h

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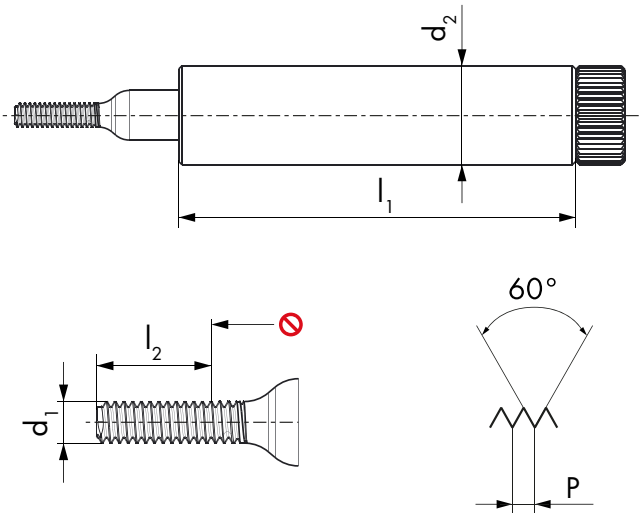
UNC, UNF ASME B1.1 ASME B1.2

VHM CAR

nano



DN01 GO	DN02 NO-GO	DN01 GO	DN02 NO-GO
2B	2B	3B	3B

Ø d_1 UNC	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1	64	1.854	24	6.35	6	● 191577	● 191580	● 191583	● 191586
2	54	2.184	24	6.35	6	● 191578	● 191581	● 191584	● 191587
3	48	2.515	24	6.35	6	● 191579	● 191582	● 191585	● 191588

Ø d_1 UNF	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0	80	1.524	24	4.76	6	● 191637	● 191641	● 191645	● 191649
1	72	1.854	24	4.76	6	● 191638	● 191642	● 191646	● 191650
2	64	2.184	24	4.76	6	● 191639	● 191643	● 191647	● 191651
3	56	2.515	24	4.76	6	● 191640	● 191644	● 191648	● 191652

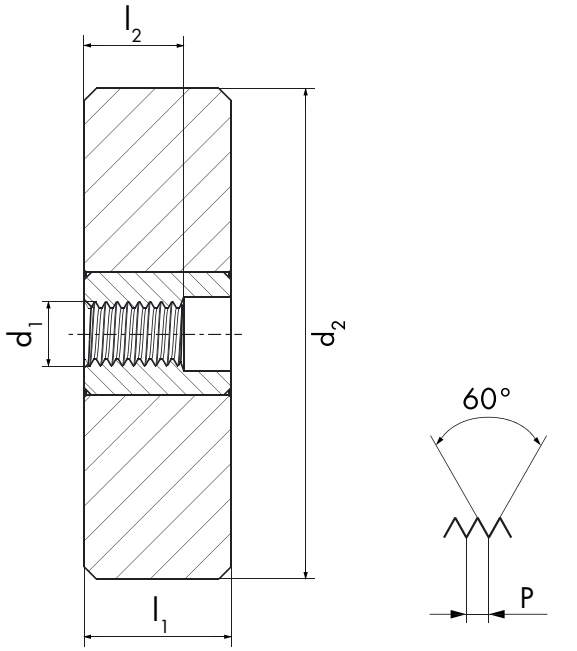
All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

UNC, UNF

ASME B1.1
DZ04: ASME B1.2 / DZ14: ASME B1.2, DC SWISS NI590

PHYN. KL

nano



DZ04 GO	DZ14 NO-GO	DZ04 GO	DZ14 NO-GO

2A	2A	3A	3A

Ø d_1 UNC	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1	64	1.854	6	2.78	20	● 191601	● 191604	● 191607	● 191610
2	56	2.184	6	3.28	20	● 191602	● 191605	● 191608	● 191611
3	48	2.515	6	3.77	20	● 191603	● 191606	● 191609	● 191612

Ø d_1 UNF	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0	80	1.524	6	2.29	20	● 191669	● 191673	● 191677	● 191681
1	72	1.854	6	2.78	20	● 191670	● 191674	● 191678	● 191682
2	64	2.184	6	3.28	20	● 191671	● 191675	● 191679	● 191683
3	56	2.515	6	3.77	20	● 191672	● 191676	● 191680	● 191684

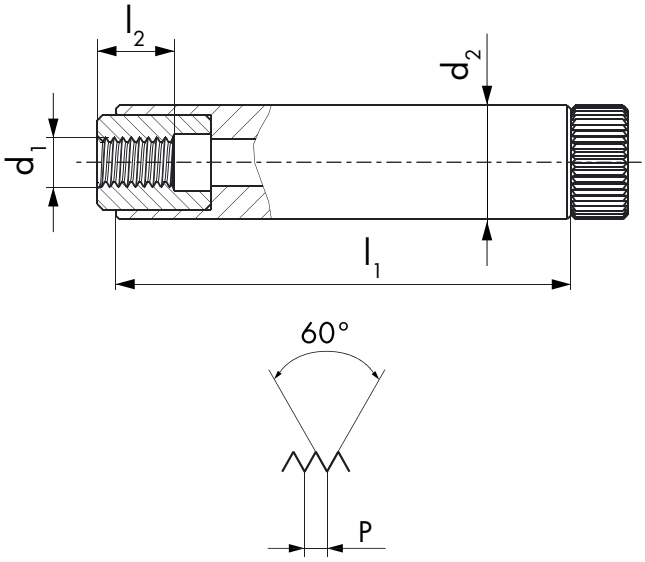
All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

UNC, UNF

ASME B1.1
DN04: ASME B1.2 / DN14: ASME B1.2, DC SWISS NI590

PHYN. KL

nano



DN04 GO	DN14 NO-GO	DN04 GO	DN14 NO-GO

2A	2A	3A	3A

Ø d_1 UNC	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1	64	1.854	24	2.78	6	● 191589	● 191592	● 191595	● 191598
2	56	2.184	24	3.28	6	● 191590	● 191593	● 191596	● 191599
3	48	2.515	24	3.77	6	● 191591	● 191594	● 191597	● 191600

Ø d_1 UNF	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0	80	1.524	24	2.29	6	● 191653	● 191657	● 191661	● 191665
1	72	1.854	24	2.78	6	● 191654	● 191658	● 191662	● 191666
2	64	2.184	24	3.28	6	● 191655	● 191659	● 191663	● 191667
3	56	2.515	24	3.77	6	● 191656	● 191660	● 191664	● 191668

All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
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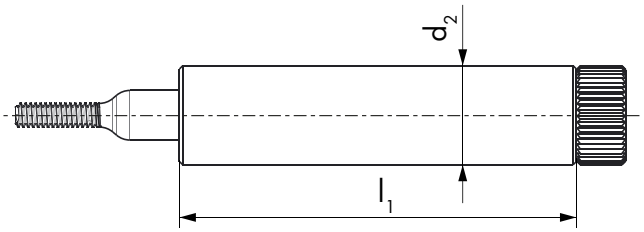
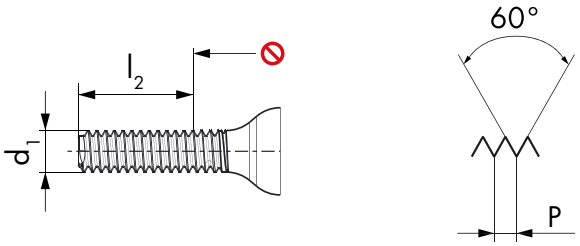
nano



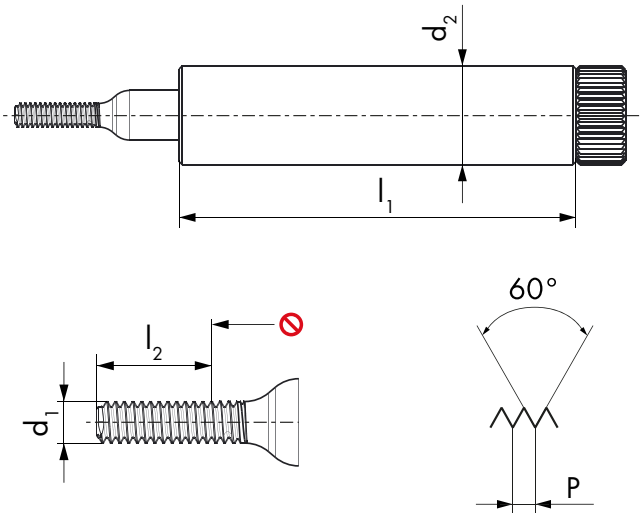


DN01 GO	DN01 GO	DN02 NO-GO	
			
NIHS 3G	NIHS 4H	NIHS 4H/3G	

Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID
0.3	0.08	24	0.9	6	● 190733	● 193242	● 190752
0.35	0.09	24	1.05	6	● 190734	● 193243	● 190753
0.4	0.1	24	1.2	6	● 190735	● 193244	● 190754
0.5	0.125	24	1.5	6	● 190736	● 193245	● 190755
0.6	0.15	24	1.8	6	● 190737	● 193246	● 190756
0.7	0.175	24	2.1	6	● 190738	● 193247	● 190757
0.8	0.2	24	2.4	6	● 190739	● 193248	● 190758
0.9	0.225	24	2.7	6	● 190740	● 193249	● 190759
1	0.25	24	3	6	● 190741	● 193250	● 190760
1.2	0.25	24	3.6	6	● 190742	● 193251	● 190761
1.4	0.3	24	4.2	6	● 190743	● 193252	● 190762

All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

nano



DN01 GO	DN02 NO-GO		

NIHS NT NIHS NT

Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID
0.3	0.08	24	0.9	6	● 190771	● 190790
0.35	0.09	24	1.05	6	● 190772	● 190791
0.4	0.1	24	1.2	6	● 190773	● 190792
0.5	0.125	24	1.5	6	● 190774	● 190793
0.6	0.15	24	1.8	6	● 190775	● 190794
0.7	0.175	24	2.1	6	● 190776	● 190795
0.8	0.2	24	2.4	6	● 190777	● 190796
0.9	0.225	24	2.7	6	● 190778	● 190797
1	0.25	24	3	6	● 190779	● 190798
1.2	0.25	24	3.6	6	● 190780	● 190799
1.4	0.3	24	4.2	6	● 190781	● 190800

All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

S NIHS / NIHS NT
DC SWISS NI584 / DZ04: STB U758-002D-F / DZ14: STB U758-002D-F, DC SWISS NI590

PHYN. KL

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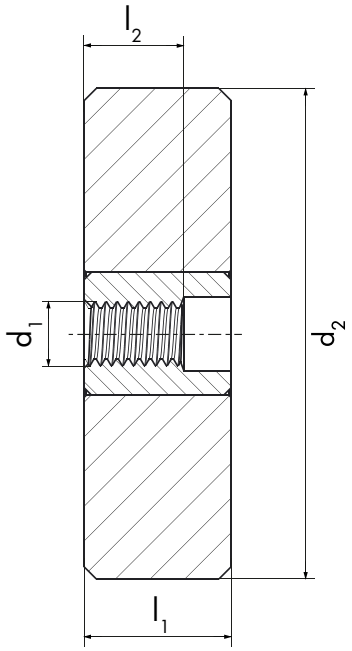
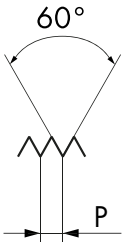




DZ04 GO	DZ14 NO-GO	DZ04 GO	DZ14 NO-GO

NIHS	NIHS	NIHS NT	NIHS NT

Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
* 0.3	0.08	6	0.45	20	● 190809	● 190828	● 190847	● 190866
* 0.35	0.09	6	0.53	20	● 190810	● 190829	● 190848	● 190867
0.4	0.1	6	0.6	20	● 190811	● 190830	● 190849	● 190868
0.5	0.125	6	0.75	20	● 190812	● 190831	● 190850	● 190869
0.6	0.15	6	0.9	20	● 190813	● 190832	● 190851	● 190870
0.7	0.175	6	1.05	20	● 190814	● 190833	● 190852	● 190871
0.8	0.2	6	1.2	20	● 190815	● 190834	● 190853	● 190872
0.9	0.225	6	1.35	20	● 190816	● 190835	● 190854	● 190873
1	0.25	6	1.5	20	● 190817	● 190836	● 190855	● 190874
1.2	0.25	6	1.8	20	● 190818	● 190837	● 190856	● 190875
1.4	0.3	6	2.1	20	● 190819	● 190838	● 190857	● 190876

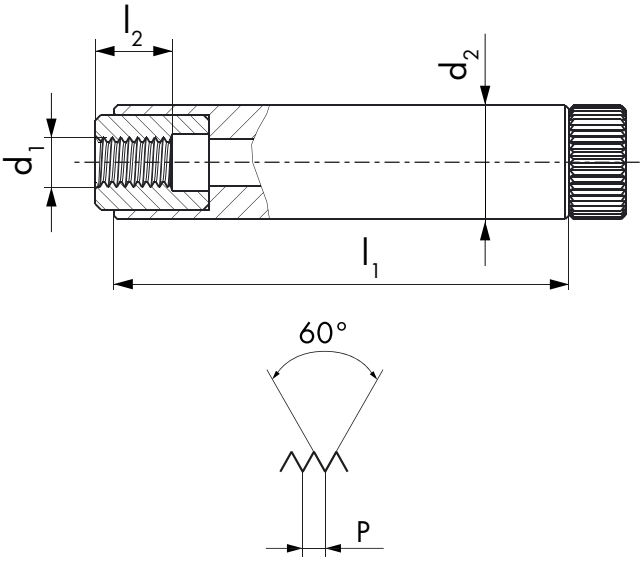
* In development

All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

S NIHS / NIHS NT
DC SWISS NI584 / DN04: STB U758-002D-F / DN14: STB U758-002D-F, DC SWISS NI590

PHYN. KL

nano



DN04 GO	DN14 NO-GO	DN04 GO	DN14 NO-GO
			
NIHS	NIHS	NIHS NT	NIHS NT

Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
* 0.3	0.08	24	0.45	6	● 190885	● 190904	● 190923	● 190942
* 0.35	0.09	24	0.53	6	● 190886	● 190905	● 190924	● 190943
0.4	0.1	24	0.6	6	● 190887	● 190906	● 190925	● 190944
0.5	0.125	24	0.75	6	● 190888	● 190907	● 190926	● 190945
0.6	0.15	24	0.9	6	● 190889	● 190908	● 190927	● 190946
0.7	0.175	24	1.05	6	● 190890	● 190909	● 190928	● 190947
0.8	0.2	24	1.2	6	● 190891	● 190910	● 190929	● 190948
0.9	0.225	24	1.35	6	● 190892	● 190911	● 190930	● 190949
1	0.25	24	1.5	6	● 190893	● 190912	● 190931	● 190950
1.2	0.25	24	1.8	6	● 190894	● 190913	● 190932	● 190951
1.4	0.3	24	2.1	6	● 190895	● 190914	● 190933	● 190952

*In development

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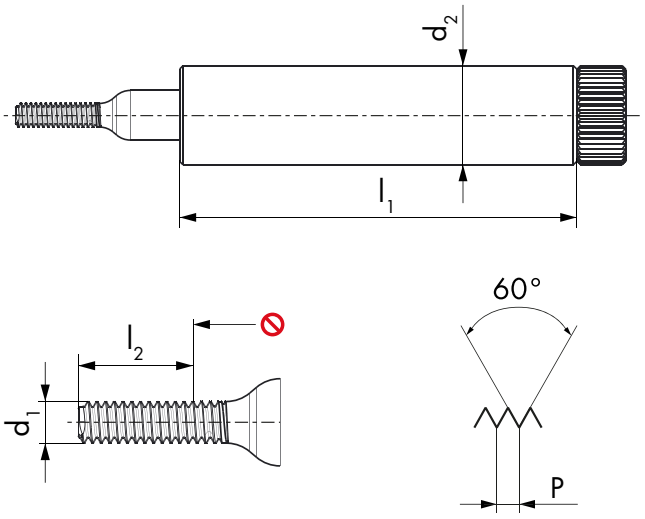
The paid certificate is available on request.

nano

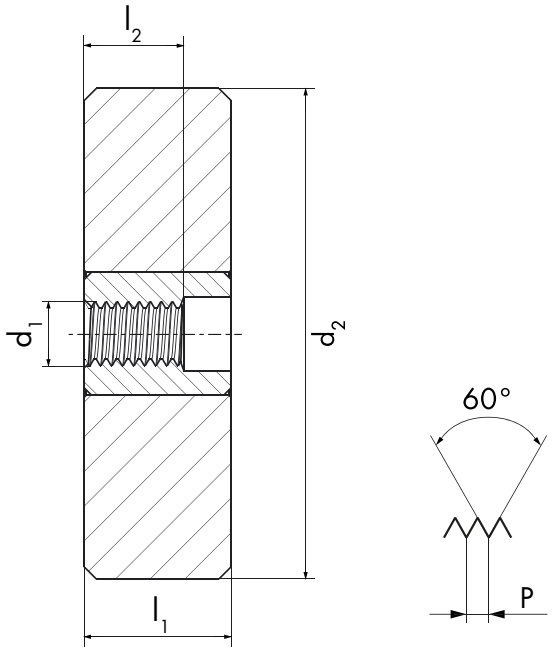


NIHS 3G | NIHS 4H | NIHS 4H/3G

Ø d_1 SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	DN01 GO ID	DN01 GO ID	DN02 NO-GO ID
1.4	0.2	24	4.2	6	● 190744	● 193256	● 190763
1.6	0.2	24	3	6	● 190745	● 193257	● 190764
1.8	0.2	24	3	6	● 190746	● 193258	● 190765
2	0.2	24	3	6	● 190747	● 193259	● 190766
2.2	0.2	24	3	6	● 190748	● 193260	● 190767
2.2	0.25	24	3	6	● 190749	● 193261	● 190768
2.5	0.2	24	3	6	● 190750	● 193262	● 190769
2.5	0.25	24	3	6	● 190751	● 193263	● 190770

All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

nano



DZ04 GO	DZ14 NO-GO		

NIHS NIHS

Ø d_1 SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID
1.4	0.2	6	2.1	20	● 190820	● 190839
1.6	0.2	6	1.8	20	● 190821	● 190840
1.8	0.2	6	1.8	20	● 190822	● 190841
2	0.2	6	1.8	20	● 190823	● 190842
2.2	0.2	6	1.8	20	● 190824	● 190843
2.2	0.25	6	2.25	20	● 190825	● 190844
2.5	0.2	6	1.8	20	● 190826	● 190845
2.5	0.25	6	2.25	20	● 190827	● 190846

All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

SF NIHS
DC SWISS NI584

PHYN. KL

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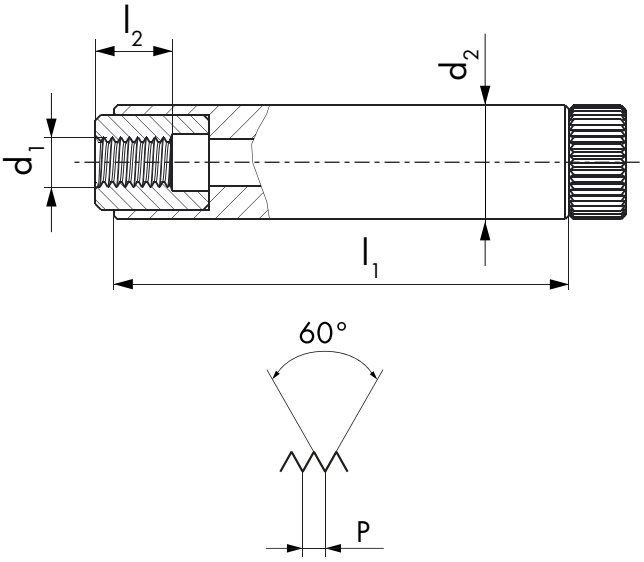


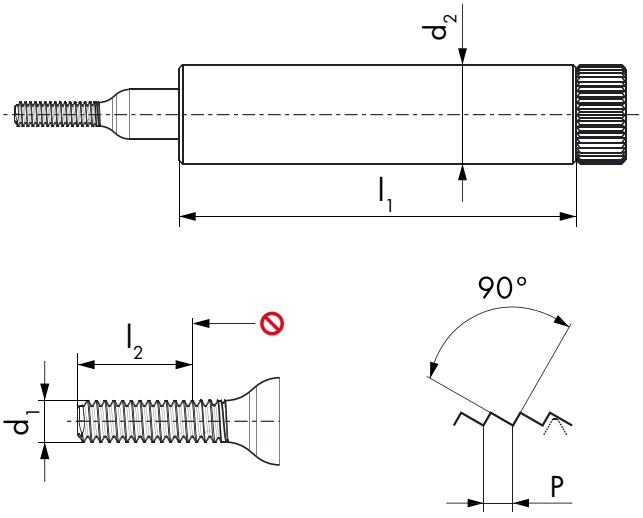
DN04 GO	DN14 NO-GO		

NIHS NIHS

Ø d_1 SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID
1.4	0.2	24	2.1	6	● 190896	● 190915
1.6	0.2	24	1.8	6	● 190897	● 190916
1.8	0.2	24	1.8	6	● 190898	● 190917
2	0.2	24	1.8	6	● 190899	● 190918
2.2	0.2	24	1.8	6	● 190900	● 190919
2.2	0.25	24	2.25	6	● 190901	● 190920
2.5	0.2	24	1.8	6	● 190902	● 190921
2.5	0.25	24	2.28	6	● 190903	● 190922

All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges.
The paid certificate is available on request.

nano

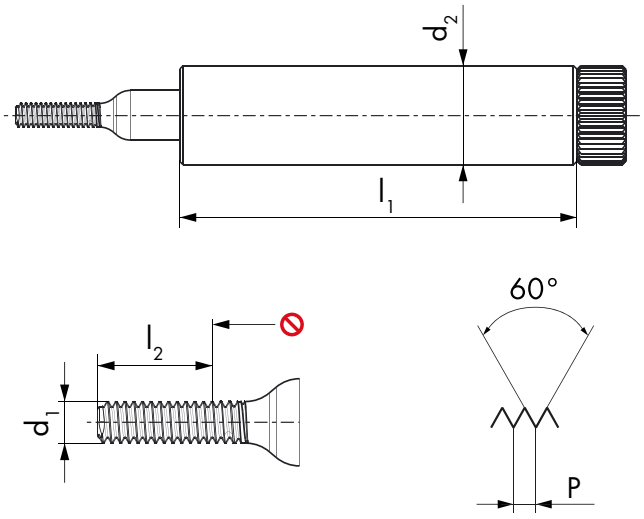


DN01 GO	DN02 NO-GO		

Ø d_1 SL	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID
0.5	0.1	24	1.5	6	• 600178	• 600186
0.6	0.125	24	1.8	6	• 600179	• 600187
0.7	0.15	24	2.1	6	• 600180	• 600188
0.8	0.15	24	2.4	6	• 600181	• 600189
0.9	0.175	24	2.7	6	• 600182	• 600190
1	0.2	24	3	6	• 600183	• 600191
1.2	0.2	24	3.6	6	• 600184	• 600192
1.4	0.25	24	4.2	6	• 600185	• 600193

All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

nano



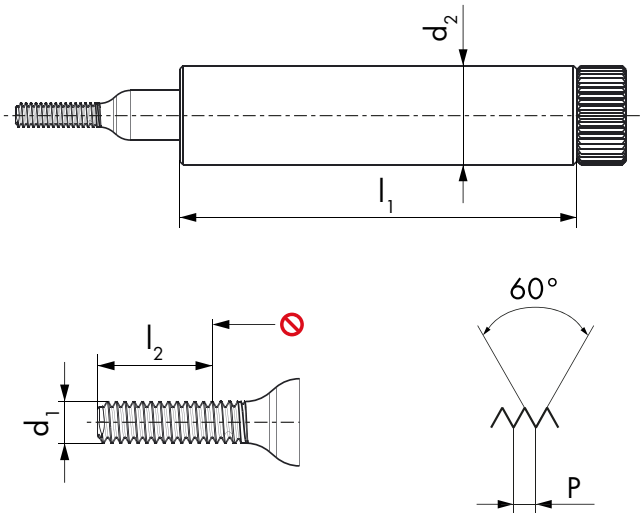
RN05-1 GO	RN15-1 GO	RN05-1 GO	RN15-1 GO

					5h	5h	6h	6h
Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.61	6	● 192884	● 192892		
0.35	0.09	24	0.71	6	● 192885	● 192893		
0.4	0.1	24	0.8	6	● 192886	● 192894		
0.5	0.125	24	1	6	● 192887	● 192895		
0.6	0.15	24	1.2	6	● 192888	● 192896		
0.7	0.175	24	1.4	6	● 192889	● 192897		
0.8	0.2	24	1.6	6	● 192890	● 192898		
0.9	0.225	24	1.8	6	● 192891	● 192899		
1	0.25	24	2	6			● 191499	● 191508
1.2	0.25	24	2.3	6			● 191500	● 191509
1.4	0.3	24	2.7	6			● 191501	● 191510

							6g	6g
Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm			ID	ID
1.6	0.35	24	3.1	6			● 191517	● 191535
1.8	0.35	24	3.4	6			● 191518	● 191536
2	0.4	24	3.8	6			● 191519	● 191537
2.3	0.4	24	4.25	6			● 191520	● 191538
2.5	0.45	24	4.65	6			● 191521	● 191539
2.6	0.45	24	4.8	6			● 191522	● 191540

SCS certificate included.

nano



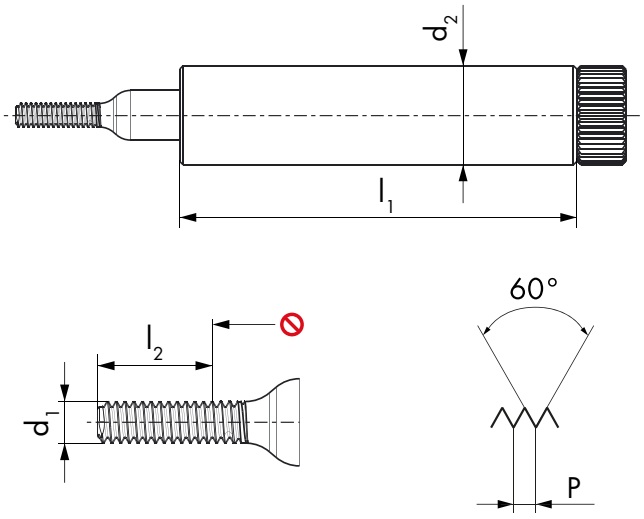
RN05-2 NO-GO	RN15-2 NO-GO	RN05-2 NO-GO	RN15-2 NO-GO
			
5h	5h	6h	6h

Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.61	6	● 192900	● 192908		
0.35	0.09	24	0.71	6	● 192901	● 192909		
0.4	0.1	24	0.8	6	● 192902	● 192910		
0.5	0.125	24	1	6	● 192903	● 192911		
0.6	0.15	24	1.2	6	● 192904	● 192912		
0.7	0.175	24	1.4	6	● 192905	● 192913		
0.8	0.2	24	1.6	6	● 192906	● 192914		
0.9	0.225	24	1.8	6	● 192907	● 192915		
1	0.25	24	2	6			● 191502	● 191511
1.2	0.25	24	2.3	6			● 191503	● 191512
1.4	0.3	24	2.7	6			● 191504	● 191513

							6g	6g
Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm			ID	ID
1.6	0.35	24	3.1	6			● 191523	● 191541
1.8	0.35	24	3.4	6			● 191524	● 191542
2	0.4	24	3.8	6			● 191525	● 191543
2.3	0.4	24	4.25	6			● 191526	● 191544
2.5	0.45	24	4.65	6			● 191527	● 191545
2.6	0.45	24	4.8	6			● 191528	● 191546

SCS certificate included.

nano



RN05-3 WEAR	RN15-3 WEAR	RN05-3 WEAR	RN15-3 WEAR
			
6h	6h	6g	6g

Ø d_1 M	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1	0.25	24	2	6	● 191505	● 191514		
1.2	0.25	24	2.3	6	● 191506	● 191515		
1.4	0.3	24	2.7	6	● 191507	● 191516		
1.6	0.35	24	3.1	6			● 191529	● 191547
1.8	0.35	24	3.4	6			● 191530	● 191548
2	0.4	24	3.8	6			● 191531	● 191549
2.3	0.4	24	4.25	6			● 191532	● 191550
2.5	0.45	24	4.65	6			● 191533	● 191551
2.6	0.45	24	4.8	6			● 191534	● 191552

SCS certificate included.

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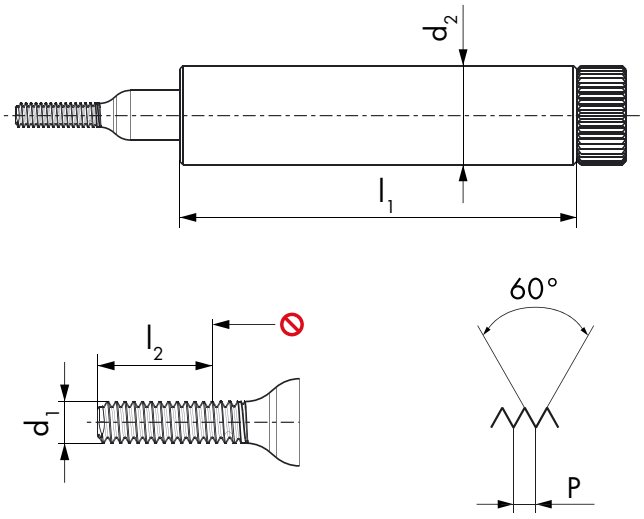

RN05-1 GO	RN15-1 GO	RN05-1 GO	RN15-1 GO
			

Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	4h ID	4h ID	6h ID	6h ID
1.4	0.2	24	2.5	6	191256	191298	192932	192945
1.6	0.2	24	2.2	6	195874	195876	192933	192946
1.8	0.2	24	2.2	6	197711	197712	192934	192947
2	0.2	24	2.2	6	197724	197725	192935	192948
2	0.25	24	2.75	6	197726	197727	192936	192949
2.2	0.2	24	2.2	6	197713	197714	192937	192950
2.2	0.25	24	2.75	6	197715	197716	192938	192951
2.3	0.2	24	2.2	6	197717	197718	192939	192952
2.3	0.25	24	2.75	6	197719	197720	192940	192953
2.5	0.2	24	2.2	6	197721	197722	192941	192954
2.5	0.25	24	2.75	6	190683	197723	192942	192955

Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	6g ID	6g ID
2.5	0.35	24	4.45	6	192943	192956
2.6	0.35	24	4.6	6	192944	192957

SCS certificate included.

MF ISO DIN 13 ISO 1502

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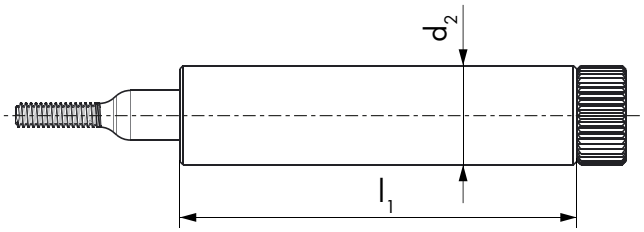

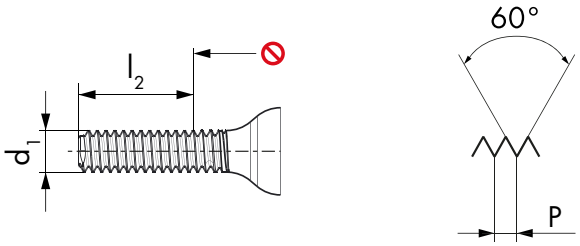

	RN05-2 NO-GO	RN15-2 NO-GO	RN05-2 NO-GO	RN15-2 NO-GO
				
	4h	4h	6h	6h
Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	● 191270	● 197728	● 192958	● 192971
1.6	0.2	24	1.6	6	● 195875	● 195877	● 192959	● 192972
1.8	0.2	24	1.6	6	● 197729	● 197730	● 192960	● 192973
2	0.2	24	1.6	6	● 199060	● 199061	● 192961	● 192974
2	0.25	24	2	6	● 199062	● 199063	● 192962	● 192975
2.2	0.2	24	1.6	6	● 197731	● 197732	● 192963	● 192976
2.2	0.25	24	2	6	● 197733	● 199364	● 192964	● 192977
2.3	0.2	24	1.6	6	● 199053	● 199054	● 192965	● 192978
2.3	0.25	24	2	6	● 199055	● 199056	● 192966	● 192979
2.5	0.2	24	1.6	6	● 199057	● 199058	● 192967	● 192980
2.5	0.25	24	2	6	● 190686	● 199059	● 192968	● 192981

							6g	6g
Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm			ID	ID
2.5	0.35	24	4.45	6			● 192969	● 192982
2.6	0.35	24	4.6	6			● 192970	● 192983

SCS certificate included.

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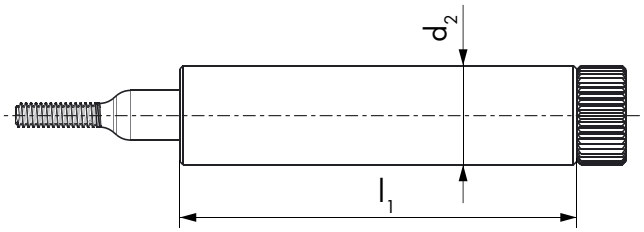

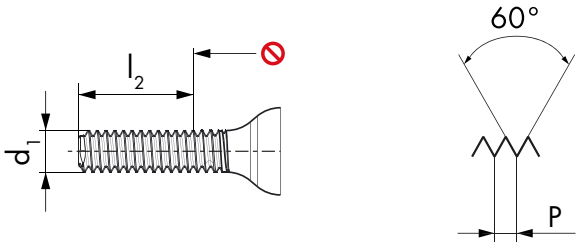

					RN05-3 WEAR	RN15-3 WEAR	RN05-3 WEAR	RN15-3 WEAR
					4h	4h	6h	6h
Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	191284	191326	192984	192997
1.6	0.2	24	1.6	6	199064	199065	192985	192998
1.8	0.2	24	1.6	6	199066	199067	192986	192999
2	0.2	24	1.6	6	199360	199361	192987	193000
2	0.25	24	2	6	199362	199363	192988	193001
2.2	0.2	24	1.6	6	199068	199069	192989	193002
2.2	0.25	24	2	6	199070	199071	192990	193003
2.3	0.2	24	1.6	6	199072	199073	192991	193004
2.3	0.25	24	2	6	199074	199075	192992	193005
2.5	0.2	24	1.6	6	199076	199077	192993	193006
2.5	0.25	24	2	6	199358	199359	192994	193007

							6g	6g
Ø d_1 MF	P mm	l_1 mm	l_2 GO mm	d_2 mm			ID	ID
2.5	0.35	24	4.45	6			192995	193008
2.6	0.35	24	4.6	6			192996	193009

SCS certificate included.

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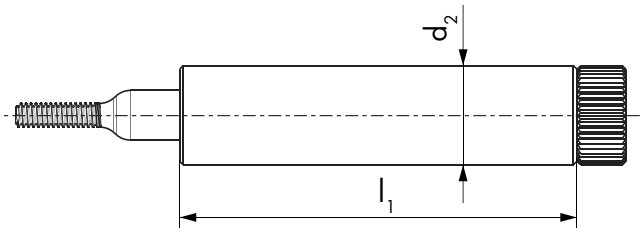

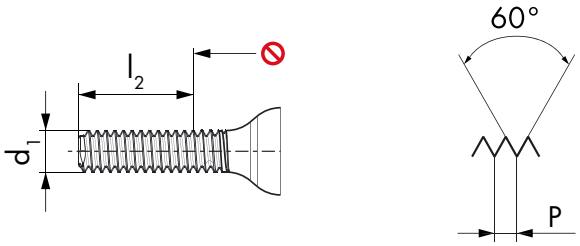

RN05-1 GO	RN15-1 GO	RN05-1 GO	RN15-1 GO

2A	2A	3A	3A

Ø d_1 UNC	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1	64	1.854	24	3.58	6	● 191613	● 191619	● 191625	● 191631
2	56	2.184	24	4.18	6	● 191614	● 191620	● 191626	● 191632
3	48	2.515	24	4.83	6	● 191615	● 191621	● 191627	● 191633

Ø d_1 UNF	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0	80	1.524	24	2.92	6	● 191685	● 191693	● 191701	● 191709
1	72	1.854	24	3.49	6	● 191686	● 191694	● 191702	● 191710
2	64	2.184	24	4.07	6	● 191687	● 191695	● 191703	● 191711
3	56	2.515	24	4.68	6	● 191688	● 191696	● 191704	● 191712

SCS certificate included.

UNC, UNF

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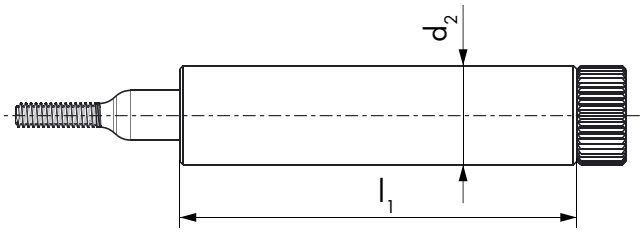
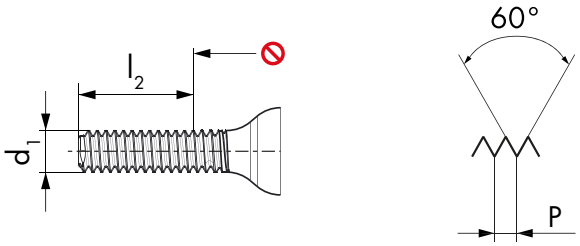
VHM CAR

nano





RN05-2 NO-GO	RN15-2 NO-GO	RN05-2 NO-GO	RN15-2 NO-GO

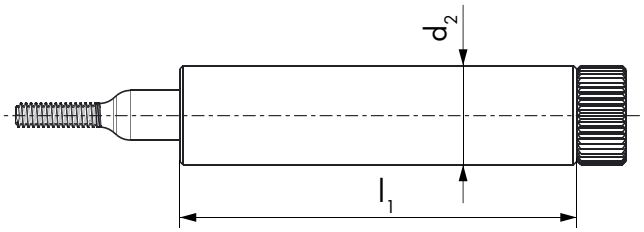
2A	2A	3A	3A

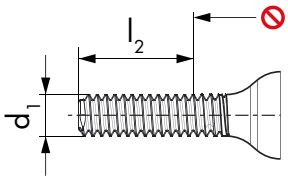
Ø d_1 UNC	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1	64	1.854	24	3.58	6	● 191616	● 191622	● 191628	● 191634
2	56	2.184	24	4.18	6	● 191617	● 191623	● 191629	● 191635
3	48	2.515	24	4.83	6	● 191618	● 191624	● 191630	● 191636

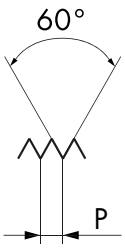
Ø d_1 UNF	P TPI	Ø d_1 mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0	80	1.524	24	2.92	6	● 191689	● 191697	● 191705	● 191713
1	72	1.854	24	3.49	6	● 191690	● 191698	● 191706	● 191714
2	64	2.184	24	4.07	6	● 191691	● 191699	● 191707	● 191715
3	56	2.515	24	4.68	6	● 191692	● 191700	● 191708	● 191716

SCS certificate included.

nano





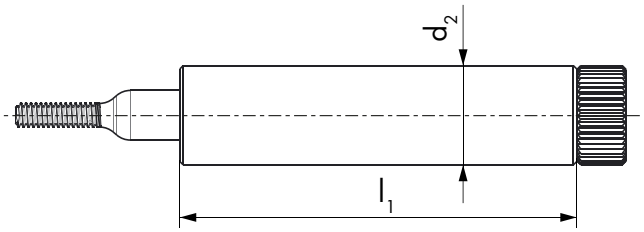


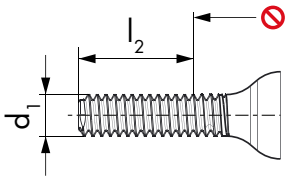
RN05-1 GO	RN15-1 GO	RN05-1 GO	RN15-1 GO
			
NIHS	NIHS	NIHS NT	NIHS NT

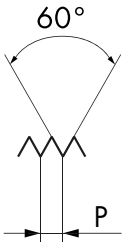
Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.61	6	• 190961	• 190999	• 191037	• 191075
0.35	0.09	24	0.71	6	• 190962	• 191000	• 191038	• 191076
0.4	0.1	24	0.8	6	• 190963	• 191001	• 191039	• 191077
0.5	0.125	24	1	6	• 190964	• 191002	• 191040	• 191078
0.6	0.15	24	1.2	6	• 190965	• 191003	• 191041	• 191079
0.7	0.175	24	1.4	6	• 190966	• 191004	• 191042	• 191080
0.8	0.2	24	1.6	6	• 190967	• 191005	• 191043	• 191081
0.9	0.225	24	1.8	6	• 190968	• 191006	• 191044	• 191082
1	0.25	24	2	6	• 190969	• 191007	• 191045	• 191083
1.2	0.25	24	2.3	6	• 190970	• 191008	• 191046	• 191084
1.4	0.3	24	2.7	6	• 190971	• 191009	• 191047	• 191085

SCS certificate included.

nano







RN05-2 NO-GO	RN15-2 NO-GO	RN05-2 NO-GO	RN15-2 NO-GO
			
NIHS	NIHS	NIHS NT	NIHS NT

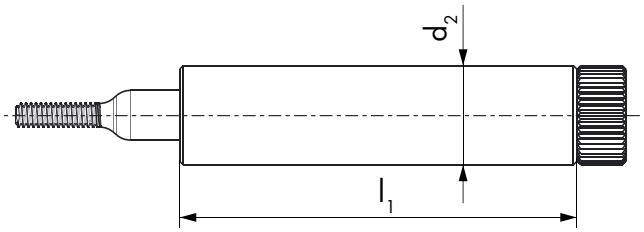
Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.61	6	190980	191018	191056	191094
0.35	0.09	24	0.71	6	190981	191019	191057	191095
0.4	0.1	24	0.8	6	190982	191020	191058	191096
0.5	0.125	24	1	6	190983	191021	191059	191097
0.6	0.15	24	1.2	6	190984	191022	191060	191098
0.7	0.175	24	1.4	6	190985	191023	191061	191099
0.8	0.2	24	1.6	6	190986	191024	191062	191100
0.9	0.225	24	1.8	6	190987	191025	191063	191101
1	0.25	24	2	6	190988	191026	191064	191102
1.2	0.25	24	2.3	6	190989	191027	191065	191103
1.4	0.3	24	2.7	6	190990	191028	191066	191104

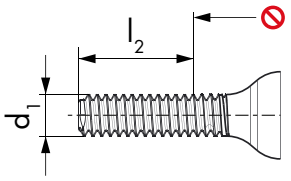
SCS certificate included.

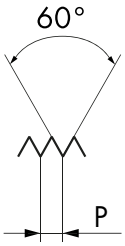
SF NIHS / NIHS NT
DC SWISS NI584 / DC SWISS NI585

VHM CAR

nano







RN05-1 GO	RN15-1 GO	RN05-1 GO	RN15-1 GO
			
NIHS	NIHS	NIHS NT	NIHS NT

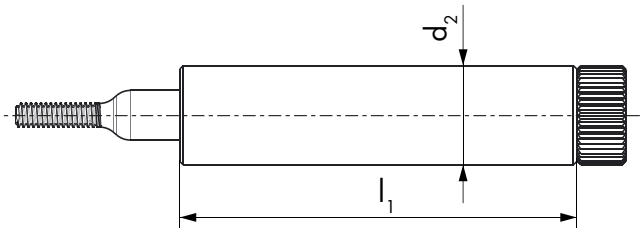
Ø d_1 SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	• 190972	• 191010	• 191048	• 191086
1.6	0.2	24	2.2	6	• 190973	• 191011	• 191049	• 191087
1.8	0.2	24	2.2	6	• 190974	• 191012	• 191050	• 191088
2	0.2	24	2.2	6	• 190975	• 191013	• 191051	• 191089
2.2	0.2	24	2.2	6	• 190976	• 191014	• 191052	• 191090
2.2	0.25	24	2.75	6	• 190977	• 191015	• 191053	• 191091
2.5	0.2	24	2.2	6	• 190978	• 191016	• 191054	• 191092
2.5	0.25	24	2.75	6	• 190979	• 191017	• 191055	• 191093

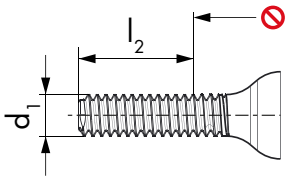
SCS certificate included.

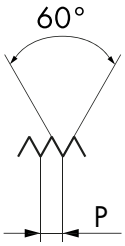
SF NIHS / NIHS NT
DC SWISS NI584 / DC SWISS NI585

VHM CAR

nano







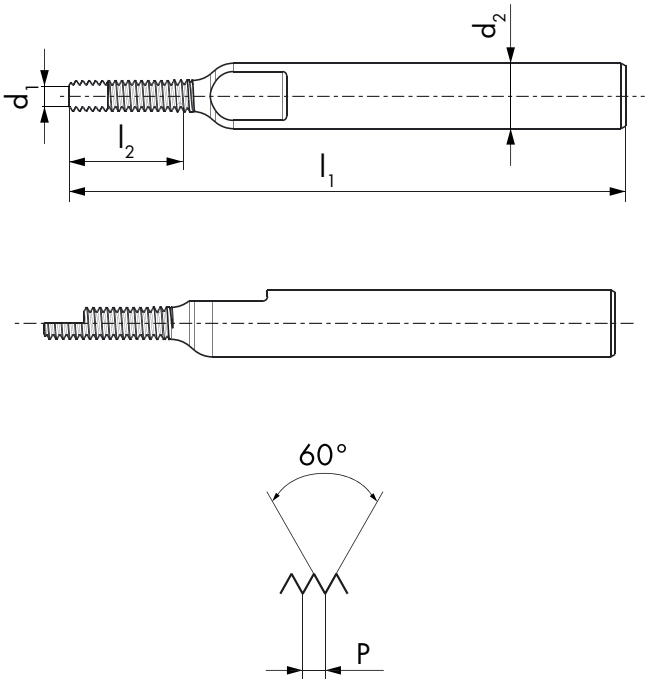
RN05-2 NO-GO	RN15-2 NO-GO	RN05-2 NO-GO	RN15-2 NO-GO
			
NIHS	NIHS	NIHS NT	NIHS NT

Ø d_1 SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	190991	191029	191067	191105
1.6	0.2	24	1.6	6	190992	191030	191068	191106
1.8	0.2	24	1.6	6	190993	191031	191069	191107
2	0.2	24	1.6	6	190994	191032	191070	191108
2.2	0.2	24	1.6	6	190995	191033	191071	191109
2.2	0.25	24	2	6	190996	191034	191072	191110
2.5	0.2	24	1.6	6	190997	191035	191073	191111
2.5	0.25	24	2	6	190998	191036	191074	191112

SCS certificate included.

nano

EN00



NIHS

Ø d_1 S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID
0.3	0.08	39	1.28	3	192747
0.35	0.09	39	1.44	3	192748
0.4	0.1	39	1.6	3	192749
0.5	0.125	39	2	3	192750
0.6	0.15	39	2.4	3	192751
0.7	0.175	39	2.8	3	192752
0.8	0.2	39	3.2	3	192753
0.9	0.225	39	3.6	3	192754
1	0.25	39	4	3	192755
1.2	0.25	39	4	3	192756
1.4	0.3	39	4.8	3	192757

El Patrón roscado DC SWISS sirve para calibrar las maquinas de medición. Todos los patrones de nuestro programa son disponibles o sobre pedido en caso de ser especifico. Son entregados con un certificado de homologación SCS que confirma que la producción a seguido estrictamente el proceso de medición al final de la fabricación según ISO 17025. Atesta de la calidad del equipo metrologíco de DC NANO TOOLS SA (SCS 0143) centro de competencia y miembro del grupo DC SWISS.

The DC SWISS calibration thread plug gauge is used for the calibration of measuring machines. The calibration gauges from our catalogue, or made to your specific requirements, are delivered with a SCS measurement certificate. This confirms that the control process during production has been conscientiously followed to ISO 17025. It attests to the quality of the metrological equipment of DC NANO TOOLS SA (SCS 0143), centre of competence and member of the DC Group.

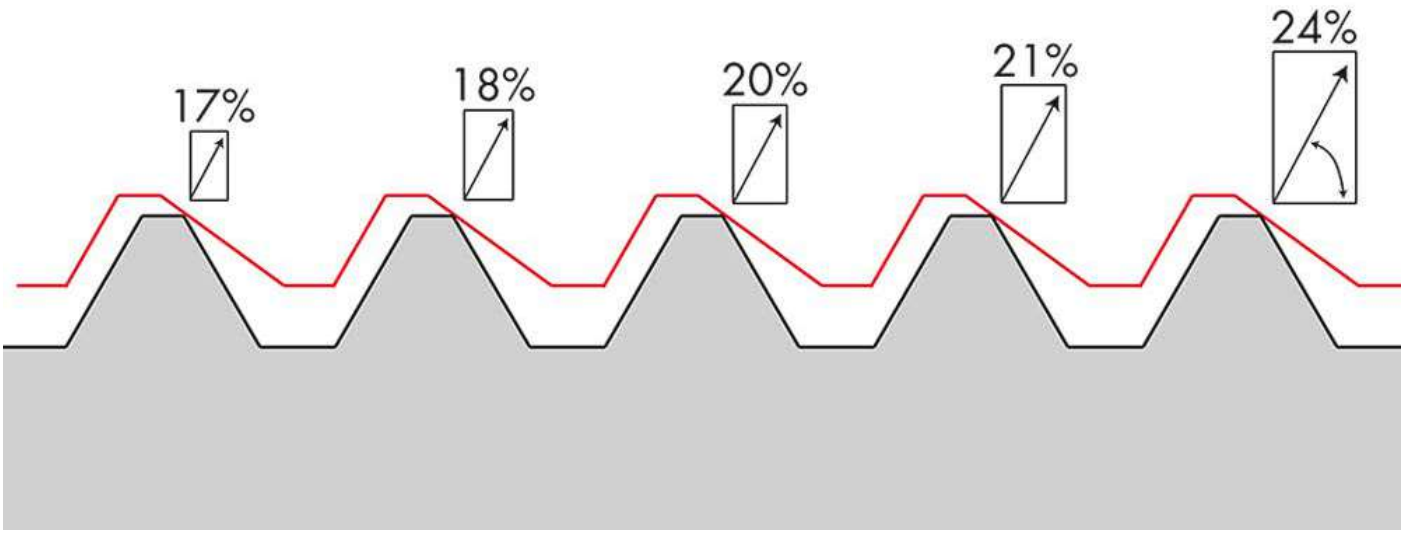
SCS certificate included.

MICRO SAFELOCK

La marca Micro-Safelock, registrada y protegida por DC SWISS, identifica las herramientas que se benefician del sistema Safelock que garantiza el conjunto de autobloqueo roscado, desarrollado y patentado por DC SWISS.

Para diámetros de menos de 1.5 mm, los requisitos para la tolerancia de roscado interior y exterior son tales que el método convencional de producción y medición no permite la producción industrial de componentes para conjuntos de tornillos asimétricos autobloqueantes convencionales.

Este microconjunto de rosca asimétrica autoblocante estándar para diámetros comprendidos entre 0.30 y 1.40 mm, que se adhiere a las tolerancias inherentes a las roscas de micro-tornillos, ha sido diseñado y patentado bajo el nombre de Micro-Safelock. Ofrece un rendimiento excepcional en cuanto a resistencia a golpes y vibraciones, basado en la tecnología utilizada para montajes de mayor escala e integrando completamente el gradiente de 30° en la rosca interior (tuerca), facilitando el montaje del tornillo.



Cuando se aplica el par de apriete, la fuerza de tracción ejercida sobre el tornillo lo fuerza a autocentrar, y los puntos del perfil del tornillo entran en contacto con los bordes del perfil asimétrico de la rosca interior del tornillo (pendiente), lo que conduce a un contacto tangencial y a una distribución regular de la carga en todos los hilos.

Reducir la carga en las primeras vueltas de la rosca y dirigir la tensión hacia la compresión del tornillo reduce significativamente la fatiga experimentada por el conjunto tornillo / tuerca, lo que permite montarlo y desmontarlo en numerosas ocasiones sin cambiar sus características.

Para corresponder a los requisitos dimensionales, el núcleo del tornillo se ha reforzado ampliamente en comparación con una rosca tipo NIHS o M de 60° de la misma dimensión.

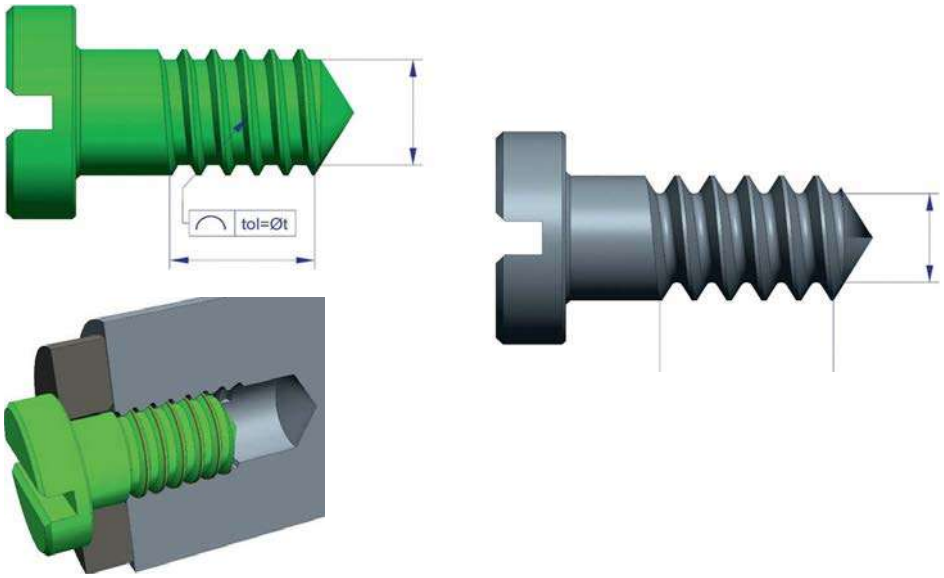
La longitud del paso se ha reducido en comparación con la norma NIHS con el fin de aumentar el área de contacto entre los dos elementos de fijación, manteniéndose igual la longitud útil. Evidentemente, esto ofrece ventajas considerables, especialmente cuando se trabaja con materiales blandos y tornillos de cabeza pequeña con una longitud de rosca reducida.

LAS VENTAJAS DEL AUTOBLOQUEO

- *Distribuye la fuerza de tracción a lo largo de toda la longitud de la rosca del tornillo*
- *Par de bloqueo nominal hasta un 25 % menor que el de un conjunto convencional*
- *Completamente mecánico, sin aditivos químicos*

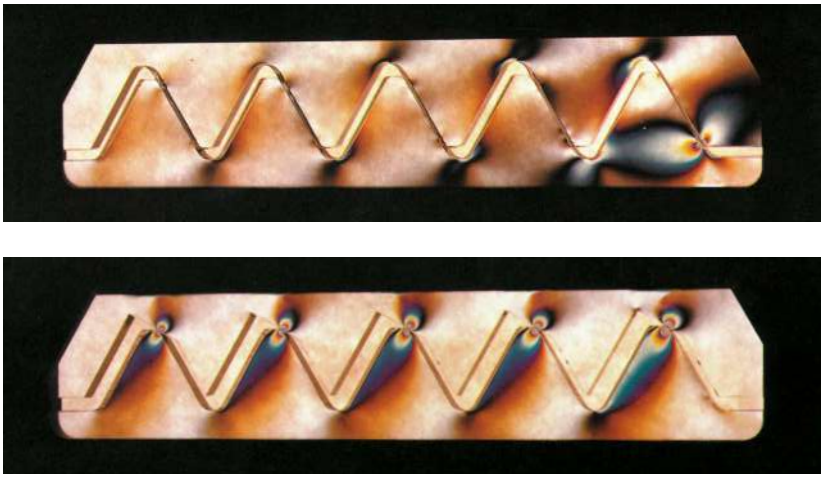
LAS VENTAJAS DEL TORNILLO

- *Rosca de tornillo con tolerancias adaptadas a los requisitos, lo que permite un contacto ininterrumpido entre tornillo y tuerca*
- *Paso fino, aumentando la superficie en contacto con la tuerca para la misma longitud de rosca*
- *Mejor resistencia a la tracción gracias a un diámetro interior del perfil un 19 % mayor (más del 40 % en sección)*
- *Múltiples montaje / desmontaje sin cambios en las propiedades mecánicas*

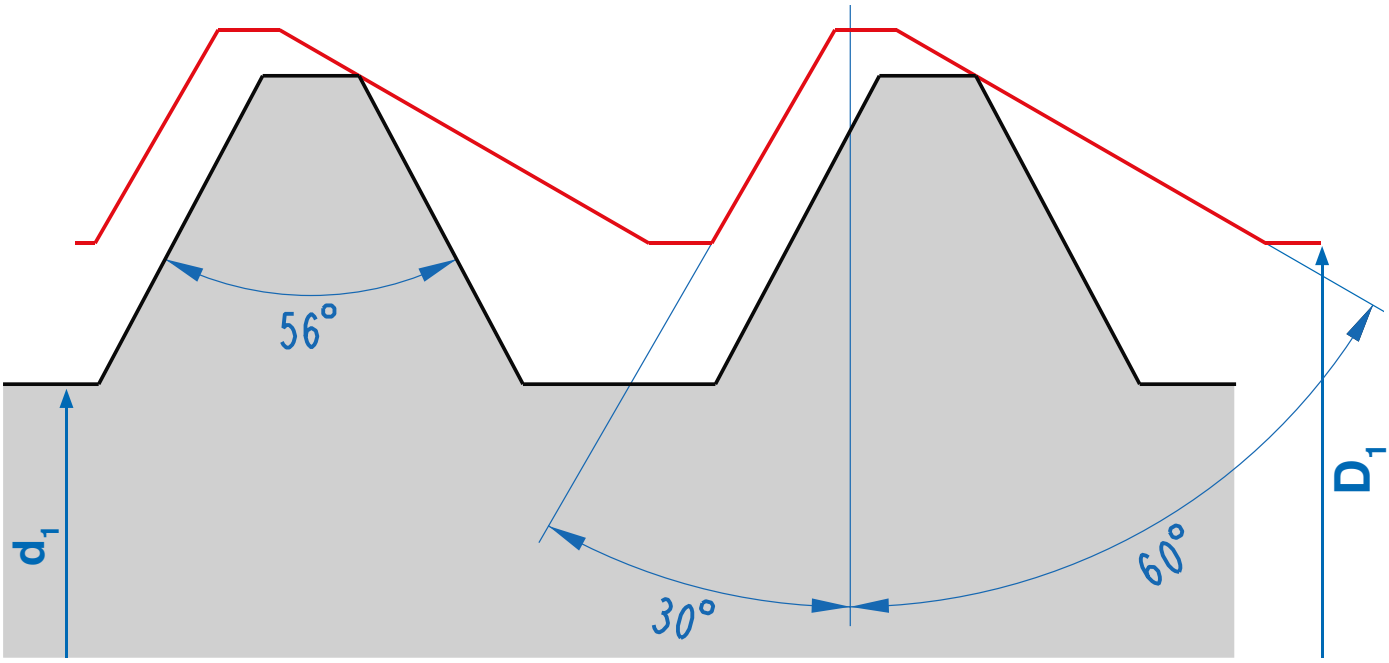


Las numerosas pruebas de resistencia al impacto que se han llevado a cabo muestran claramente que los conjuntos roscados son totalmente fiables y ahora ofrecen una respuesta creíble a los problemas que afectan a la resistencia de los tornillos.

Los pares de apriete aplicados a los tornillos muestra son un 25 % menores que los valores recomendados por los fabricantes de recubrimientos químicos para "bloqueo de roscas".



SAFELOCK DIMENSIONES Y NORMAS



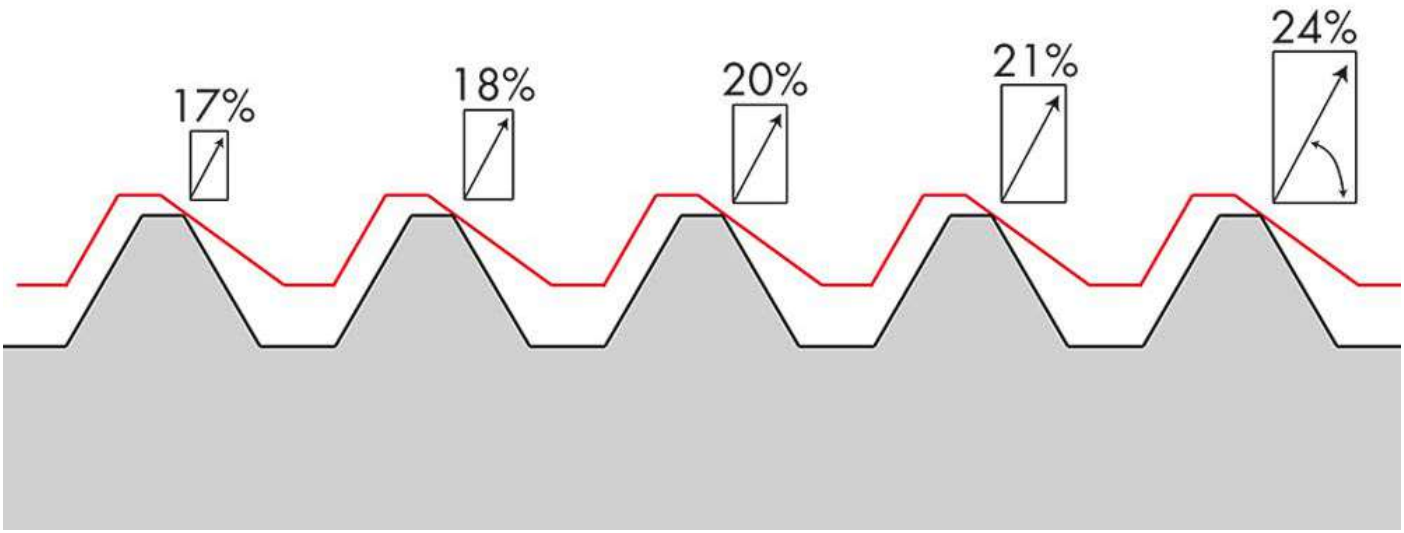
Dimensión	Paso mm	d_1 mini mm	d_1 maxi mm	Angulos de los lados de la tuerca	Angulos de los lados del tornillo	d_1
SL 0.3	0.06	0.264	0.278	30°/60°	56°	0.247
SL 0.35	0.06	0.314	0.328	30°/60°	56°	0.297
SL 0.4	0.08	0.356	0.372	30°/60°	56°	0.331
SL 0.5	0.1	0.448	0.466	30°/60°	56°	0.416
SL 0.6	0.125	0.538	0.559	30°/60°	56°	0.496
SL 0.7	0.15	0.628	0.651	30°/60°	56°	0.576
SL 0.8	0.15	0.728	0.751	30°/60°	56°	0.676
SL 0.9	0.175	0.818	0.844	30°/60°	56°	0.756
SL 1.0	0.2	0.908	0.936	30°/60°	56°	0.836
SL 1.2	0.2	1.108	1.136	30°/60°	56°	1.036
SL 1.4	0.25	1.288	1.321	30°/60°	56°	1.197

MICRO SAFELOCK

The Micro-Safelock brand, registered and protected by DC SWISS, identifies the tools benefiting from the Safelock system guaranteeing the threaded self-locking assembly, developed and patented by DC SWISS.

For diameters of less than 1.5 mm, the requirements for the interior and exterior threading tolerance are such that conventional method for production and measurement do not permit the industrial production of components for conventional self-locking asymmetrical screw assemblies.

This standard self-locking asymmetrical threaded micro-assembly for diameters ranging from 0.30 to 1.40 mm, which adheres to the tolerances inherent in micro-screw threads, has been designed and patented under the name of Micro-Safelock. It offers exceptional performance in terms of resistance to shocks and vibrations, based on the technology used for larger-scale assemblies and fully integrating the 30° gradient into the interior thread (nut), making it easier to assemble the screw.



When tightening torque is applied, the tensile force exerted on the screw forces it to auto-centre, and the profile points of the screw come into contact with the edges of the asymmetrical profile of the interior screw thread (gradient), thus leading to tangential contact and a regular distribution of load across all the turns of the thread.

Reducing the load on the first few turns of the thread and directing the stress towards compressing the screw significantly reduces the fatigue experienced by the screw/nut assembly, thereby making it possible to assemble and disassemble it numerous times without changing its characteristics.

To correspond to the dimensional requirements, the core of the screw has been amply reinforced compared with a 60° NIHS or M type thread of the same dimension.

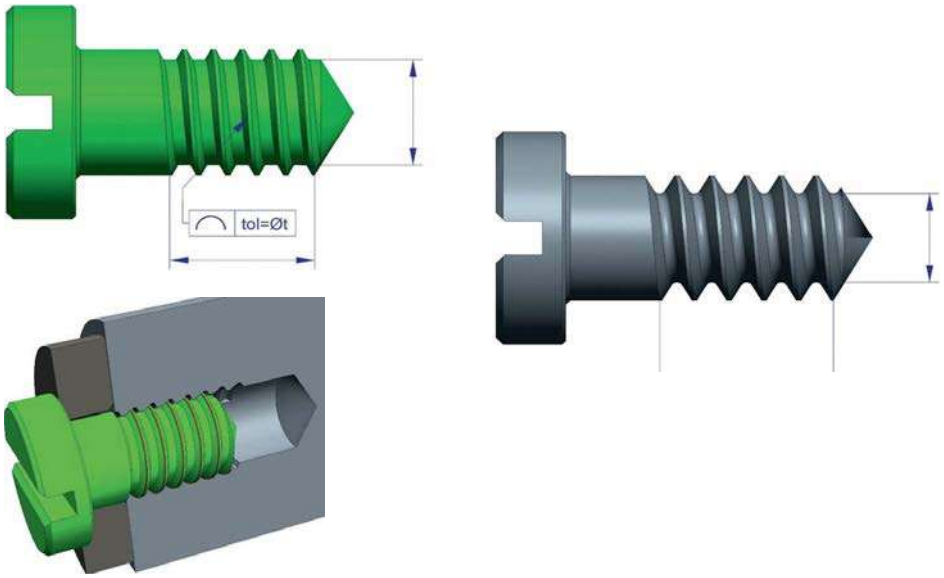
The length of the pitch has been reduced in comparison with the NIHS standard in order to increase the area of contact between the two fixing elements, with the usable length remaining the same. This obviously offers considerable advantages, particularly when working with soft materials and small-headed screws with a reduced thread length.

THE ADVANTAGES OF THE SELF-LOCKING

- Distributes the tensile force along the entire length of the screw thread
- Nominal blocking torque up to 25 % less than that of a conventional assembly
- Completely mechanical, with no chemical additives

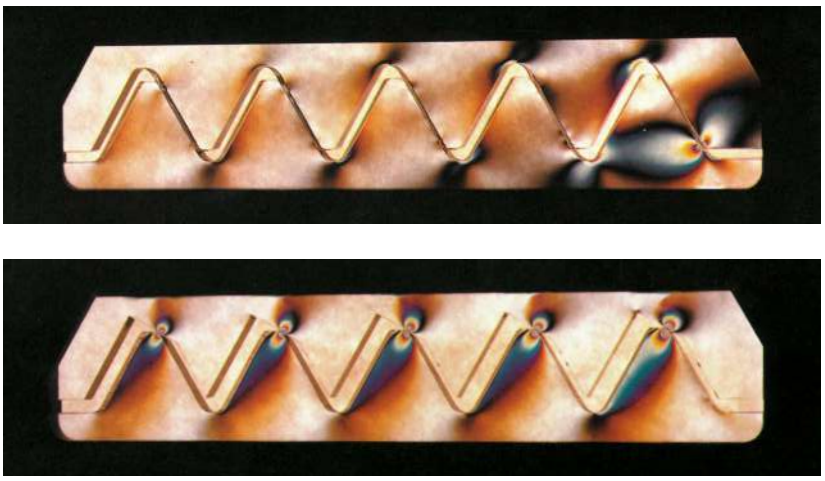
THE ADVANTAGES OF THE SCREW

- Screw thread with tolerances tailored to meet requirements, enabling uninterrupted contact between screw and nut
- Fine pitch, increasing the surface in contact with the nut for the same length of thread
- Improved tensile strength thanks to an interior diameter of the profile that is 19 % greater (more than 40 % in section)
- Multiple assembly / disassembly with no change in mechanical properties

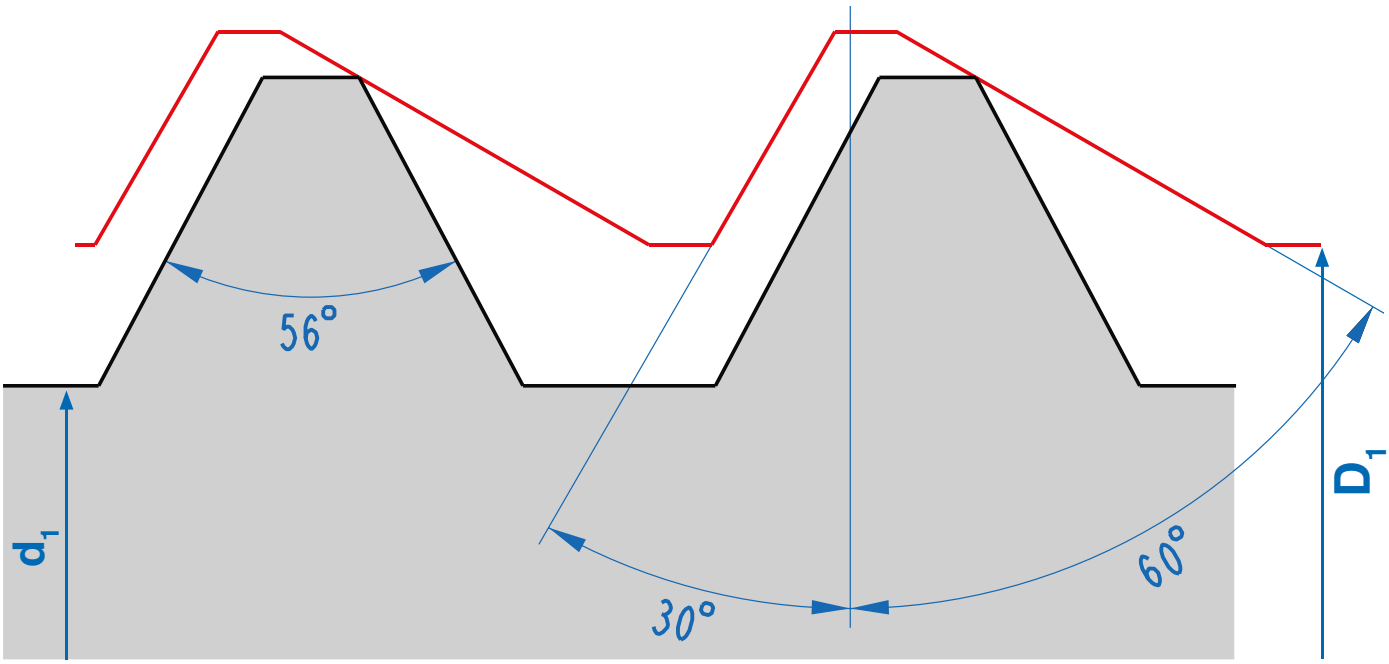


The numerous impact resistance tests that have been carried out, clearly show that the threaded assemblies are totally reliable and now offer a credible response to problems affecting screw resistance.

The tightening torques applied to specimen screws are 25 % less than the values recommended by manufacturers of chemical “threadlocking” coatings.



SAFELOCK DIMENSIONS AND STANDARDS



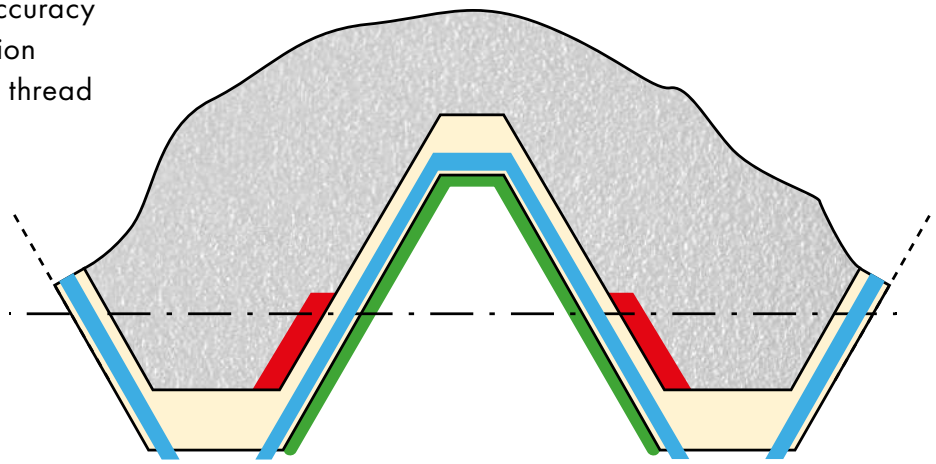
Dimension	Pitch mm	d_1 mini mm	d_1 maxi mm	Angles of sides of nut	Angles of sides of screw	d_1
SL 0.3	0.06	0.264	0.278	30°/60°	56°	0.247
SL 0.35	0.06	0.314	0.328	30°/60°	56°	0.297
SL 0.4	0.08	0.356	0.372	30°/60°	56°	0.331
SL 0.5	0.1	0.448	0.466	30°/60°	56°	0.416
SL 0.6	0.125	0.538	0.559	30°/60°	56°	0.496
SL 0.7	0.15	0.628	0.651	30°/60°	56°	0.576
SL 0.8	0.15	0.728	0.751	30°/60°	56°	0.676
SL 0.9	0.175	0.818	0.844	30°/60°	56°	0.756
SL 1.0	0.2	0.908	0.936	30°/60°	56°	0.836
SL 1.2	0.2	1.108	1.136	30°/60°	56°	1.036
SL 1.4	0.25	1.288	1.321	30°/60°	56°	1.197

TOLERANCIAS PARA LOS HILOS M Y MF
TOLERANCES FOR M AND MF THREADS

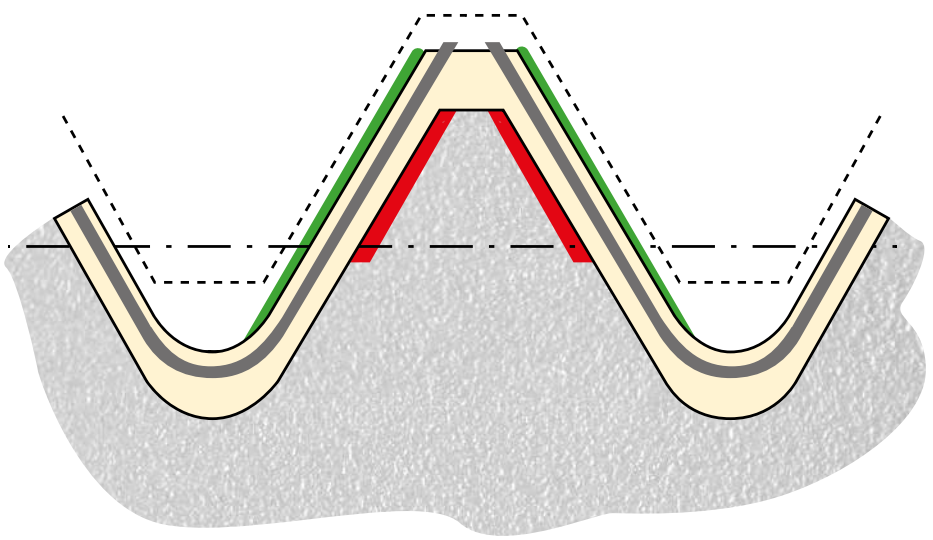
Hilo de la tuerca
Nut thread

Tolerancia 6H
—Número = grado de precisión
—Letra = posición de tolerancia
—Letra mayúscula = hilo interno

Tolerance 6H
—Number = degree of accuracy
—Letter = tolerance position
—Capital letter = internal thread



H/h=0



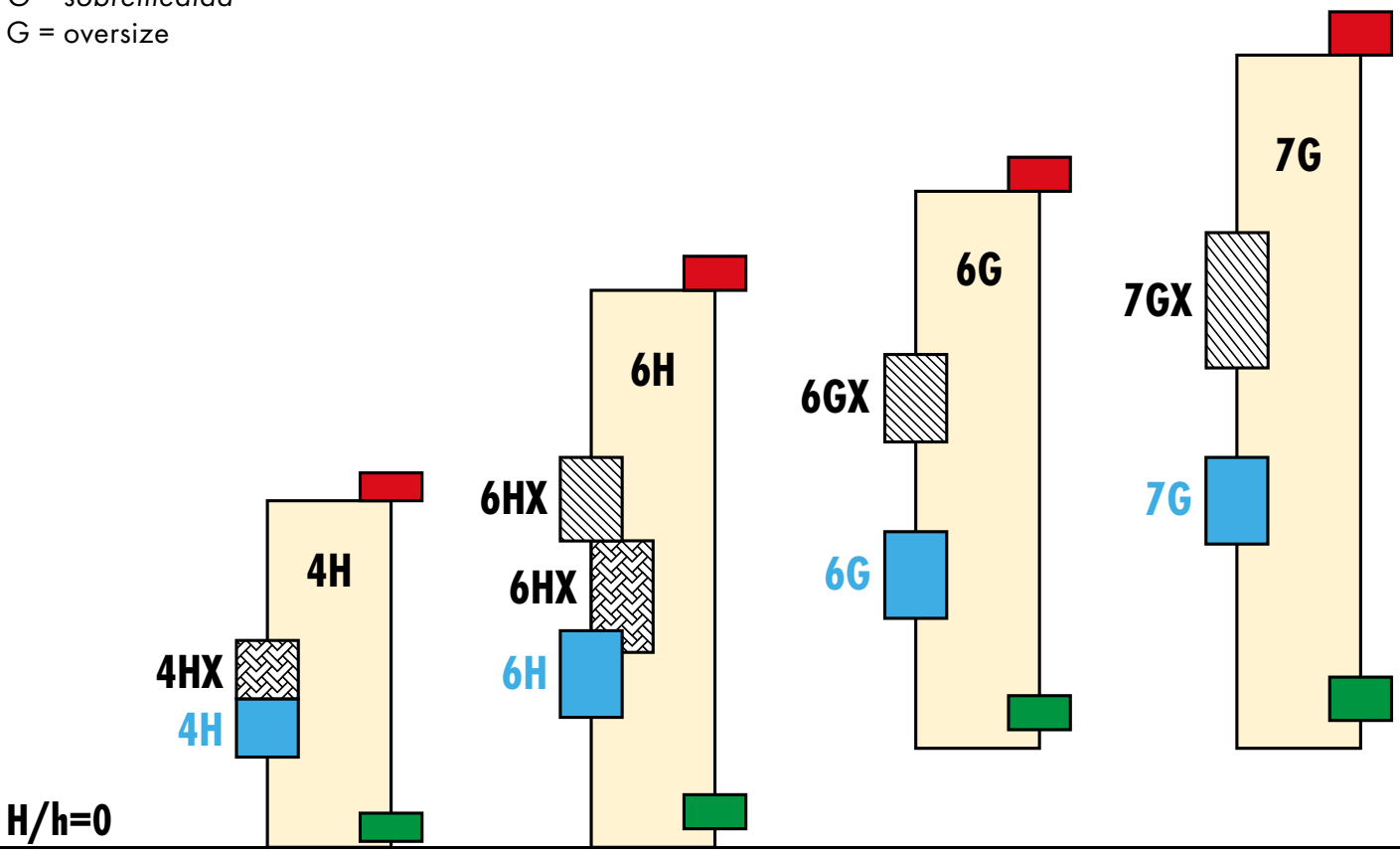
Rosca del perno
Bolt thread

Tolerancia 6g
—Número = grado de precisión
—Letra minúscula = rosca externa

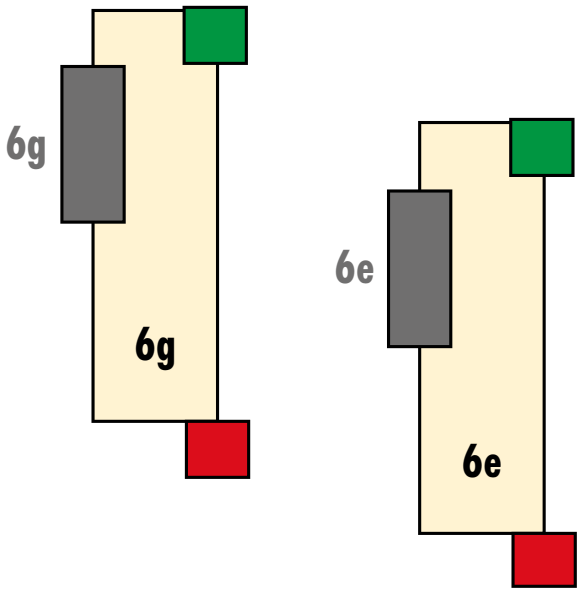
Tolerance 6g
—Number = degree of accuracy
—Lowercase letter = external thread

TOLERANCIAS PARA LOS HILOS M Y MF
TOLERANCES FOR M AND MF THREADS

G = sobremedida
G = oversize



e = subtamaño
e = undersize



DESIGNACIÓN DE LAS TOLERANCIAS SEGÚN NORMA DIN EN 22857 PARA LOS MACHOS DE ROSCA MÉTRICA ISO

La norma DIN 802, parte 1, ha sido cambiada por la norma DIN EN 22857, conforme al modelo internacional.

La tabla comparativa siguiente informa de la relación entre las normas DIN EN 22857 y DIN 802, parte 1. El cambio más significativo se situa en la zona de tolerancia que se adapta a las nuevas categorías de utilización.

Categorias de utilización de los machos según DIN EN 22857		*Antigua norma DIN 802, parte 1. Categorias de tolerancias de los machos.*	*Zonas de tolerancias de roscado sobre la pieza*				
Denominación	*Característica*						
Clase 1	**ISO 1**	4H	4H	5H	-	-	-
Clase 2	**ISO 2**	6H	4G	5G	6H	-	-
Clase 3	**ISO 3**	6G	-	-	6G	7H	8H
	-	7G	-	-	-	7G	8G

Un periodo de transición debe ser previsto antes de la introducción definitiva de esas normas.

Las designaciones de tolerancias 7G / 8G y categoría "X" no figuran en la nueva norma DIN EN 22857. Por consiguiente, atenerse a la antigua norma DIN 802, parte 1.

TOLERANCE NOTATIONS TO DIN EN 22857 FOR TAPS WITH METRIC ISO THREADS

The standard DIN 802, part 1, has been withdrawn and replaced by DIN EN 22857.

The following chart gives a comparison between the standard DIN EN 22857 and the withdrawn standard DIN 802, part 1. An important change is the re-classification from tap tolerance classes to tap application classes.

Application classes for taps to DIN EN 22857		Tolerance classes to withdrawn standard DIN 802, part 1	Allotment of the tolerance zones of the nut thread to be cut				
Name	Code						
Class 1	**ISO 1**	4H	4H	5H	-	-	-
Class 2	**ISO 2**	6H	4G	5G	6H	-	-
Class 3	**ISO 3**	6G	-	-	6G	7H	8H
-	-	7G	-	-	-	7G	8G

A suitable transition period is to be expected.

Codes for tolerance classes 7G / 8G and the "X" tolerance zones have not yet been standardised within DIN EN 22857 and the values from DIN 802 part 1 will continue to be valid.

ROSCA MÉTRICA ISO DIN 13

Diámetros nominales - Diamétros de flancos

Diámetros nominales	Paso	Tolerancia	Rosca de tuerca diámetras de flancos		Tolerancia	Rosca de tornillo diámetras de flancos	
			min.	max.		max.	min.
M 1	(x0.25)	4H	0.838	0.883	6h	0.838	0.785
M 1.4	(x0.3)	4H	1.205	1.253	6h	1.205	1.149
M 1.6	(x0.35)	6H	1.373	1.458	6g	1.354	1.291
M 2	(x0.4)	6H	1.740	1.830	6g	1.721	1.654
M 2	x0.25	4H	1.838	1.886	6h	1.838	1.782
M 2.2	(x0.45)	6H	1.908	2.003	6g	1.888	1.817
M 2.5	(x0.45)	6H	2.208	2.303	6g	2.188	2.117
M 3	(x0.5)	6H	2.675	2.775	6g	2.655	2.580
M 3	x0.35	6H	2.773	2.863	6g	2.754	2.687
M 3.5	(x0.6)	6H	3.110	3.222	6g	3.089	3.004
M 4	(x0.7)	6H	3.545	3.663	6g	3.523	3.433
M 4	x0.5	6H	3.675	3.775	6g	3.655	3.580
M 4.5	(x0.75)	6H	4.013	4.131	6g	3.991	3.901
M 5	(x0.8)	6H	4.480	4.605	6g	4.456	4.361
M 6	(x1)	6H	5.350	5.500	6g	5.324	5.212
M 6	x0.75	6H	5.513	5.645	6g	5.491	5.391
M 6	x0.5	6H	5.675	5.787	6g	5.655	5.570
M 7	(x1)	6H	6.350	6.500	6g	6.324	6.212
M 8	(x1.25)	6H	7.188	7.348	6g	7.160	7.042
M 10	(x1.5)	6H	9.026	9.206	6g	8.994	8.862
M 12	(x1.75)	6H	10.863	11.063	6g	10.829	10.679
M 12	x1.5	6H	11.026	11.216	6g	10.994	10.854
M 12	x1.25	6H	11.188	11.368	6g	11.160	11.028
M 12	x1	6H	11.350	11.510	6g	11.324	11.206
M 12	x0.75	6H	11.513	11.653	6g	11.491	11.385
M 12	x0.5	6H	11.675	11.793	6g	11.655	11.565
M 14	(x2)	6H	12.701	12.913	6g	12.663	12.503
M 16	(x2)	6H	14.701	14.913	6g	14.663	14.503
M 18	(x2.5)	6H	16.376	16.600	6g	16.334	16.164
M 20	(x2.5)	6H	18.376	18.600	6g	18.334	18.164
M 22	(x2.5)	6H	20.376	20.600	6g	20.334	20.164
M 24	(x3)	6H	22.051	22.316	6g	22.003	21.803
M 24	x2	6H	22.701	22.925	6g	22.663	22.493
M 24	x1.5	6H	23.026	23.226	6g	22.994	22.844
M 24	x1	6H	23.350	23.520	6g	23.324	23.199
M 27	(x3)	6H	25.051	25.316	6g	25.003	24.803
M 30	(x3.5)	6H	27.727	28.007	6g	27.674	27.462
M 33	(x3.5)	6H	30.727	31.007	6g	30.674	30.462
M 36	(x4)	6H	33.402	33.702	6g	33.342	33.118
M 39	(x4)	6H	36.402	36.702	6g	36.342	36.118
M 42	(x4.5)	6H	39.077	39.392	6g	39.014	38.778
M 45	(x4.5)	6H	42.077	42.392	6g	42.014	41.778
M 48	(x5)	6H	44.752	45.087	6g	44.681	44.431
M 48	x4	6H	45.402	45.717	6g	45.342	45.106
M 48	x3	6H	46.051	46.331	6g	46.003	45.791
M 48	x2	6H	46.701	46.937	6g	46.663	46.483
M 48	1.5	6H	47.026	47.238	6g	46.994	46.834
M 48	x1	6H	47.350	47.530	6g	47.324	47.184
M 52	(x5)	6H	48.752	49.087	6g	48.681	48.431
M 56	(x5.5)	6H	52.428	52.783	6g	52.353	52.088
M 60	(x5.5)	6H	56.428	56.783	6g	56.353	56.088
M 64	(x6)	6H	60.103	60.478	6g	60.023	59.743
M 68	(x6)	6H	64.103	64.478	6g	64.023	63.743

Otras combinaciones diámetro-paso

En caso de necesidad se admiten roscas con paso más pequeño que los indicados en el cuadro. Para estas roscas se calculan las medidas nominales y límites por adición o sustracción de la diferencia del diámetro nominal de esa rosca y de aquella con una rosca de paso deseada que figure en el cuadro. Por ejemplo se calculan las medidad nominales y límites de una rosca MF11 x 0.5 por adición de 5 mm a todas las medidas nominales y límites de la rosca MF6 x 0.5 del cuadro. Es ese caso las diferencias y las tolerancias no cambian. Lógicamente, para el diámetro de flancos, estas reglas son válidas solamente dentro de los límites de la gama de diámetros siguiente:

de 0.99	a 1.4 mm	de 5.6	a 11.2 mm	de 45	a 90 mm
de 1.4	a 2.8 mm	de 11.2	a 22.4 mm	de 90	a 180 mm
de 2.8	a 5.6 mm	de 22.4	a 45.0 mm	de 180	a 355 mm

METRIC THREADS ISO DIN 13

Nominal thread diameters - Pitch diameters

Nominal thread diameters	Pitch	Tol.	Nut thread Pitch diameters		Tol.	Bolt thread Pitch diameters	
			mini	maxi		maxi	mini
M 1	(x0.25)	4H	0.838	0.883	6h	0.838	0.785
M 1.4	(x0.3)	4H	1.205	1.253	6h	1.205	1.149
M 1.6	(x0.35)	6H	1.373	1.458	6g	1.354	1.291
M 2	(x0.4)	6H	1.740	1.830	6g	1.721	1.654
M 2	x0.25	4H	1.838	1.886	6h	1.838	1.782
M 2.2	(x0.45)	6H	1.908	2.003	6g	1.888	1.817
M 2.5	(x0.45)	6H	2.208	2.303	6g	2.188	2.117
M 3	(x0.5)	6H	2.675	2.775	6g	2.655	2.580
M 3	x0.35	6H	2.773	2.863	6g	2.754	2.687
M 3.5	(x0.6)	6H	3.110	3.222	6g	3.089	3.004
M 4	(x0.7)	6H	3.545	3.663	6g	3.523	3.433
M 4	x0.5	6H	3.675	3.775	6g	3.655	3.580
M 4.5	(x0.75)	6H	4.013	4.131	6g	3.991	3.901
M 5	(x0.8)	6H	4.480	4.605	6g	4.456	4.361
M 6	(x1)	6H	5.350	5.500	6g	5.324	5.212
M 6	x0.75	6H	5.513	5.645	6g	5.491	5.391
M 6	x0.5	6H	5.675	5.787	6g	5.655	5.570
M 7	(x1)	6H	6.350	6.500	6g	6.324	6.212
M 8	(x1.25)	6H	7.188	7.348	6g	7.160	7.042
M 10	(x1.5)	6H	9.026	9.206	6g	8.994	8.862
M 12	(x1.75)	6H	10.863	11.063	6g	10.829	10.679
M 12	x1.5	6H	11.026	11.216	6g	10.994	10.854
M 12	x1.25	6H	11.188	11.368	6g	11.160	11.028
M 12	x1	6H	11.350	11.510	6g	11.324	11.206
M 12	x0.75	6H	11.513	11.653	6g	11.491	11.385
M 12	x0.5	6H	11.675	11.793	6g	11.655	11.565
M 14	(x2)	6H	12.701	12.913	6g	12.663	12.503
M 16	(x2)	6H	14.701	14.913	6g	14.663	14.503
M 18	(x2.5)	6H	16.376	16.600	6g	16.334	16.164
M 20	(x2.5)	6H	18.376	18.600	6g	18.334	18.164
M 22	(x2.5)	6H	20.376	20.600	6g	20.334	20.164
M 24	(x3)	6H	22.051	22.316	6g	22.003	21.803
M 24	x2	6H	22.701	22.925	6g	22.663	22.493
M 24	x1.5	6H	23.026	23.226	6g	22.994	22.844
M 24	x1	6H	23.350	23.520	6g	23.324	23.199
M 27	(x3)	6H	25.051	25.316	6g	25.003	24.803
M 30	(x3.5)	6H	27.727	28.007	6g	27.674	27.462
M 33	(x3.5)	6H	30.727	31.007	6g	30.674	30.462
M 36	(x4)	6H	33.402	33.702	6g	33.342	33.118
M 39	(x4)	6H	36.402	36.702	6g	36.342	36.118
M 42	(x4.5)	6H	39.077	39.392	6g	39.014	38.778
M 45	(x4.5)	6H	42.077	42.392	6g	42.014	41.778
M 48	(x5)	6H	44.752	45.087	6g	44.681	44.431
M 48	x4	6H	45.402	45.717	6g	45.342	45.106
M 48	x3	6H	46.051	46.331	6g	46.003	45.791
M 48	x2	6H	46.701	46.937	6g	46.663	46.483
M 48	1.5	6H	47.026	47.238	6g	46.994	46.834
M 48	x1	6H	47.350	47.530	6g	47.324	47.184
M 52	(x5)	6H	48.752	49.087	6g	48.681	48.431
M 56	(x5.5)	6H	52.428	52.783	6g	52.353	52.088
M 60	(x5.5)	6H	56.428	56.783	6g	56.353	56.088
M 64	(x6)	6H	60.103	60.478	6g	60.023	59.743
M 68	(x6)	6H	64.103	64.478	6g	64.023	63.743

Other diameter/pitch combinations

The nominal and tolerance values of other metric ISO threads not listed in this chart can easily be established for threads of the same pitch by the addition or subtraction of the difference in the nominal diameter: E.G. the nominal and tolerance values for an MF11 x 0.5 thread are obtained by simply adding 5 mm to the values for the thread MF6 x 0.5. However, this rule only applies within the following diameter ranges:

over 0.99	to 1.4 mm	over 5.6	to 11.2 mm	over 45	to 90 mm
over 1.4	to 2.8 mm	over 11.2	to 22.4 mm	over 90	to 180 mm
over 2.8	to 5.6 mm	over 22.4	to 45.0 mm	over 180	to 355 mm

ROSCA MÉTRICA ISO

Tolerancia de la parte roscada de los machos

Diámetros nominales por encima de	*hasta*	*Paso* P	*Clase de tolerancia*	*Diferencia inferior*	*Diferencia superior*
0.99	1.4	0.2	ISO 1 / 4H	+ 5	+ 15
		0.25	ISO 1 / 4H	+ 6	+ 17
		0.3	ISO 1 / 4H	+ 6	+ 18
			ISO 2 / 6H	+ 18	+ 30
1.4	2.8	0.2	ISO 1 / 4H	+ 5	+ 15
		0.25	ISO 1 / 4H	+ 6	+ 18
		0.35	ISO 1 / 4H	+ 7	+ 20
			ISO 2 / 6H	+ 20	+ 34
		0.4	ISO 1 / 4H	+ 7	+ 21
			ISO 2 / 6H	+ 21	+ 36
		0.45	ISO 1 / 4H	+ 8	+ 23
			ISO 2 / 6H	+ 23	+ 38
2.8	5.6	0.35	ISO 1 / 4H	+ 7	+ 21
			ISO 2 / 6H	+ 21	+ 36
		0.5	ISO 1 / 4H	+ 8	+ 24
			ISO 2 / 6H	+ 24	+ 40
			ISO 3 / 6G	+ 40	+ 55
			7G	+ 55	+ 70
		0.6	ISO 1 / 4H	+ 9	+ 27
			ISO 2 / 6H	+ 27	+ 45
			ISO 3 / 6G	+ 45	+ 63
			7G	+ 63	+ 81
		0.7	ISO 1 / 4H	+ 10	+ 29
		0.75	ISO 2 / 6H	+ 29	+ 48
			ISO 3 / 6G	+ 48	+ 67
			7G	+ 67	+ 86
		0.8	ISO 1 / 4H	+ 10	+ 30
			ISO 2 / 6H	+ 30	+ 50
			ISO 3 / 6G	+ 50	+ 70
			7G	+ 70	+ 90
5.6	11.2	1	ISO 1 / 4H	+ 12	+ 35
			ISO 2 / 6H	+ 35	+ 59
			ISO 3 / 6G	+ 59	+ 83
			7G	+ 83	+ 107
		1.25	ISO 1 / 4H	+ 13	+ 38
			ISO 2 / 6H	+ 38	+ 63
			ISO 3 / 6G	+ 63	+ 88
			7G	+ 88	+ 113
		1.5	ISO 1 / 4H	+ 14	+ 42
			ISO 2 / 6H	+ 42	+ 70
			ISO 3 / 6G	+ 70	+ 98
			7G	+ 98	+ 126
11.2	22.4	1	ISO 1 / 4H	+ 13	+ 38
			ISO 2 / 6H	+ 38	+ 63
			ISO 3 / 6G	+ 63	+ 88
			7G	+ 88	+ 113
		1.25	ISO 1 / 4H	+ 14	+ 42
			ISO 2 / 6H	+ 42	+ 70
			ISO 3 / 6G	+ 70	+ 98
			7G	+ 98	+ 126
		1.5	ISO 1 / 4H	+ 15	+ 45
			ISO 2 / 6H	+ 45	+ 75
			ISO 3 / 6G	+ 75	+ 105
			7G	+ 105	+ 135
		1.75	ISO 1 / 4H	+ 16	+ 48
			ISO 2 / 6H	+ 48	+ 80
			ISO 3 / 6G	+ 80	+ 112
			7G	+ 112	+ 144
		2	ISO 1 / 4H	+ 17	+ 51
			ISO 2 / 6H	+ 51	+ 85
			ISO 3 / 6G	+ 85	+ 119
			7G	+ 119	+ 153
11.2	22.4	2.5	ISO 1 / 4H	+ 18	+ 54
			ISO 2 / 6H	+ 54	+ 90
			ISO 3 / 6G	+ 90	+ 126
			7G	+ 126	+ 162
22.4	45	1	ISO 1 / 4H	+ 13	+ 40
			ISO 2 / 6H	+ 40	+ 66
			ISO 3 / 6G	+ 66	+ 92
			7G	+ 92	+ 118
		1.5	ISO 1 / 4H	+ 16	+ 48
			ISO 2 / 6H	+ 48	+ 80
			ISO 3 / 6G	+ 80	+ 112
			7G	+ 112	+ 144
		2	ISO 1 / 4H	+ 18	+ 54
			ISO 2 / 6H	+ 54	+ 90
			ISO 3 / 6G	+ 90	+ 126
			7G	+ 126	+ 162
		3	ISO 1 / 4H	+ 21	+ 64
			ISO 2 / 6H	+ 64	+ 106
			ISO 3 / 6G	+ 106	+ 148
			7G	+ 148	+ 190
		3.5	ISO 1 / 4H	+ 22	+ 67
			ISO 2 / 6H	+ 67	+ 112
			ISO 3 / 6G	+ 112	+ 157
			7G	+ 157	+ 202
		4	ISO 1 / 4H	+ 24	+ 71
			ISO 2 / 6H	+ 71	+ 118
			ISO 3 / 6G	+ 118	+ 165
			7G	+ 165	+ 212
		4.5	ISO 1 / 4H	+ 25	+ 75
			ISO 2 / 6H	+ 75	+ 125
			ISO 3 / 6G	+ 125	+ 175
			7G	+ 175	+ 225
45	90	1.5	ISO 1 / 4H	+ 17	+ 51
			ISO 2 / 6H	+ 51	+ 85
			ISO 3 / 6G	+ 85	+ 119
			7G	+ 119	+ 153
		2	ISO 1 / 4H	+ 19	+ 57
			ISO 2 / 6H	+ 57	+ 95
			ISO 3 / 6G	+ 95	+ 133
			7G	+ 133	+ 171
		3	ISO 1 / 4H	+ 22	+ 67
			ISO 2 / 6H	+ 67	+ 112
			ISO 3 / 6G	+ 112	+ 157
			7G	+ 157	+ 202
		4	ISO 1 / 4H	+ 25	+ 75
			ISO 2 / 6H	+ 75	+ 125
			ISO 3 / 6G	+ 125	+ 175
			7G	+ 175	+ 225
		5	ISO 1 / 4H	+ 27	+ 80
			ISO 2 / 6H	+ 80	+ 133
			ISO 3 / 6G	+ 133	+ 186
			7G	+ 186	+ 239
		5.5	ISO 1 / 4H	+ 28	+ 84
			ISO 2 / 6H	+ 84	+ 140
			ISO 3 / 6G	+ 140	+ 196
			7G	+ 196	+ 252
		6	ISO 1 / 4H	+ 30	+ 90
			ISO 2 / 6H	+ 90	+ 150
			ISO 3 / 6G	+ 150	+ 210
			7G	+ 210	+ 270

METRIC ISO THREADS

Pitch diameter tolerances for taps

Nominal thread Ø over	to	Pitch P	Tolerance classes	Lower limit	Upper limit
0.99	1.4	0.2	ISO 1 / 4H	+ 5	+ 15
		0.25	ISO 1 / 4H	+ 6	+ 17
		0.3	ISO 1 / 4H	+ 6	+ 18
			ISO 2 / 6H	+ 18	+ 30
1.4	2.8	0.2	ISO 1 / 4H	+ 5	+ 15
		0.25	ISO 1 / 4H	+ 6	+ 18
		0.35	ISO 1 / 4H	+ 7	+ 20
			ISO 2 / 6H	+ 20	+ 34
		0.4	ISO 1 / 4H	+ 7	+ 21
			ISO 2 / 6H	+ 21	+ 36
		0.45	ISO 1 / 4H	+ 8	+ 23
			ISO 2 / 6H	+ 23	+ 38
2.8	5.6	0.35	ISO 1 / 4H	+ 7	+ 21
			ISO 2 / 6H	+ 21	+ 36
		0.5	ISO 1 / 4H	+ 8	+ 24
			ISO 2 / 6H	+ 24	+ 40
			ISO 3 / 6G	+ 40	+ 55
			7G	+ 55	+ 70
		0.6	ISO 1 / 4H	+ 9	+ 27
			ISO 2 / 6H	+ 27	+ 45
			ISO 3 / 6G	+ 45	+ 63
			7G	+ 63	+ 81
		0.7	ISO 1 / 4H	+ 10	+ 29
		0.75	ISO 2 / 6H	+ 29	+ 48
			ISO 3 / 6G	+ 48	+ 67
			7G	+ 67	+ 86
		0.8	ISO 1 / 4H	+ 10	+ 30
			ISO 2 / 6H	+ 30	+ 50
			ISO 3 / 6G	+ 50	+ 70
			7G	+ 70	+ 90
5.6	11.2	1	ISO 1 / 4H	+ 12	+ 35
			ISO 2 / 6H	+ 35	+ 59
			ISO 3 / 6G	+ 59	+ 83
			7G	+ 83	+ 107
		1.25	ISO 1 / 4H	+ 13	+ 38
			ISO 2 / 6H	+ 38	+ 63
			ISO 3 / 6G	+ 63	+ 88
			7G	+ 88	+ 113
		1.5	ISO 1 / 4H	+ 14	+ 42
			ISO 2 / 6H	+ 42	+ 70
			ISO 3 / 6G	+ 70	+ 98
			7G	+ 98	+ 126
11.2	22.4	1	ISO 1 / 4H	+ 13	+ 38
			ISO 2 / 6H	+ 38	+ 63
			ISO 3 / 6G	+ 63	+ 88
			7G	+ 88	+ 113
		1.25	ISO 1 / 4H	+ 14	+ 42
			ISO 2 / 6H	+ 42	+ 70
			ISO 3 / 6G	+ 70	+ 98
			7G	+ 98	+ 126
		1.5	ISO 1 / 4H	+ 15	+ 45
			ISO 2 / 6H	+ 45	+ 75
			ISO 3 / 6G	+ 75	+ 105
			7G	+ 105	+ 135
		1.75	ISO 1 / 4H	+ 16	+ 48
			ISO 2 / 6H	+ 48	+ 80
			ISO 3 / 6G	+ 80	+ 112
			7G	+ 112	+ 144
		2	ISO 1 / 4H	+ 17	+ 51
			ISO 2 / 6H	+ 51	+ 85
			ISO 3 / 6G	+ 85	+ 119
			7G	+ 119	+ 153

Nominal thread Ø over	to	Pitch P	Tolerance classes	Lower limit	Upper limit
11.2	22.4	2.5	ISO 1 / 4H	+ 18	+ 54
			ISO 2 / 6H	+ 54	+ 90
			ISO 3 / 6G	+ 90	+ 126
			7G	+ 126	+ 162
22.4	45	1	ISO 1 / 4H	+ 13	+ 40
			ISO 2 / 6H	+ 40	+ 66
			ISO 3 / 6G	+ 66	+ 92
			7G	+ 92	+ 118
		1.5	ISO 1 / 4H	+ 16	+ 48
			ISO 2 / 6H	+ 48	+ 80
			ISO 3 / 6G	+ 80	+ 112
			7G	+ 112	+ 144
		2	ISO 1 / 4H	+ 18	+ 54
			ISO 2 / 6H	+ 54	+ 90
			ISO 3 / 6G	+ 90	+ 126
			7G	+ 126	+ 162
		3	ISO 1 / 4H	+ 21	+ 64
			ISO 2 / 6H	+ 64	+ 106
			ISO 3 / 6G	+ 106	+ 148
			7G	+ 148	+ 190
		3.5	ISO 1 / 4H	+ 22	+ 67
			ISO 2 / 6H	+ 67	+ 112
			ISO 3 / 6G	+ 112	+ 157
			7G	+ 157	+ 202
		4	ISO 1 / 4H	+ 24	+ 71
			ISO 2 / 6H	+ 71	+ 118
			ISO 3 / 6G	+ 118	+ 165
			7G	+ 165	+ 212
		4.5	ISO 1 / 4H	+ 25	+ 75
			ISO 2 / 6H	+ 75	+ 125
			ISO 3 / 6G	+ 125	+ 175
			7G	+ 175	+ 225
45	90	1.5	ISO 1 / 4H	+ 17	+ 51
			ISO 2 / 6H	+ 51	+ 85
			ISO 3 / 6G	+ 85	+ 119
			7G	+ 119	+ 153
		2	ISO 1 / 4H	+ 19	+ 57
			ISO 2 / 6H	+ 57	+ 95
			ISO 3 / 6G	+ 95	+ 133
			7G	+ 133	+ 171
		3	ISO 1 / 4H	+ 22	+ 67
			ISO 2 / 6H	+ 67	+ 112
			ISO 3 / 6G	+ 112	+ 157
			7G	+ 157	+ 202
		4	ISO 1 / 4H	+ 25	+ 75
			ISO 2 / 6H	+ 75	+ 125
			ISO 3 / 6G	+ 125	+ 175
			7G	+ 175	+ 225
		5	ISO 1 / 4H	+ 27	+ 80
			ISO 2 / 6H	+ 80	+ 133
			ISO 3 / 6G	+ 133	+ 186
			7G	+ 186	+ 239
		5.5	ISO 1 / 4H	+ 28	+ 84
			ISO 2 / 6H	+ 84	+ 140
			ISO 3 / 6G	+ 140	+ 196
			7G	+ 196	+ 252
		6	ISO 1 / 4H	+ 30	+ 90
			ISO 2 / 6H	+ 90	+ 150
			ISO 3 / 6G	+ 150	+ 210
			7G	+ 210	+ 270

OBSERVACIÓNES INTERESANTES PARA ROSCAR

Las condiciones óptimas de utilización permiten reducir el tiempo de fabricación, así como optimalizar el rendimiento.

Elección eficaz del macho

La elección de un macho de roscar o de un macho de roscar por laminación es dependiente del material y de sus características.

Es admitido que los materiales con un alargamento a la rotura de minimo 10 % pueden ser deformados en frio.

Para una elección óptima de machos de roscar, ver nuestras tablas de utilización.

Taladrado

- *Los agujeros taladrados deben estar limpios y sin virutas.*
- *Los diámetros de taladro son a escoger según la norma, extraída en la parte técnica de este catálogo, y según los problemas de roscados, altenerse a la parte superior del campo de tolerancia.*

Lubrificación Centro de mecanizado

El lubrificante utilizado en un centro de mecanizado es a menudo muy flojo para el roscado. Si no es posible de aumentar la concentración, se puede resolver el problema pasando por otros caminos, por ejemplo:

Lubrificar sólamente con el aditivo de emulsión

A. *Un aparato de lubrificación, mandado por la máquina, proyecta el aditivo en el taladro previo o sobre el macho.*
B. *Una bomba mandada por la máquina trae el aditivo désde un recipiente separado en el taladro previo.*

Roscar de segunda operación

Esa solución permite la utilización de un lubrificante ideal.

Velocidad de corte machos de roscar

La velocidad de corte tiene una gran influencia sobre la evacuación de las virutas y sobre la duración de vida del macho. Es rentable determinar la velocidad ideal ensayando.

Valor indicativo: ver tablas de utilización de este catálogo. La velocidad de corte debe ser adaptada a las caracteristicas y al equipo de la máquina.

Consecuencia de una velocidad de corte inadaptada:

- *soldaduras frías*
- *rotura de la entrada provocada por sobrecarga de los dientes*
- *roscas arrancadas*
- *duración de vida del útil insuficiente*
- *roscados fuera de tolerancia*

OBSERVACIÓNES INTERESANTES PARA ROSCAR

Soldaduras frías

Cuáles son las razones que provocan las soldaduras frías?
- *Velocidad de corte muy alta o muy baja*
- *Mala elección del macho de roscar*
- *Macho de roscar con una geometria inadaptada*
- *Lubrificante inadecuado al material*
- *Lubrificante en cantidad insuficiente*
- *Presión o tracción sobre el macho de roscar*
- *Taladro previo muy pequeño*
- *Pared del taladro previo rugosa*
- *Virutas de taladrar en el agujero previo*
- *Error de alineación*
- *Agujeros ovalados*

Consecuencias de las soldaduras frías:
- *roscas arrancadas*
- *duración de vida del útil insuficiente*
- *roscado rechazado*
- *rotura del macho de roscar*
- *piezas rechazadas*

Montaje del macho

- *La fijación del macho debe estar en el mismo eje que el agujero a roscar.*
- *Si la máquina no esta perfectamente sincronizada (interpolación - avance/rotación), recomendamos utilizar un porta-machos de roscar que permita compensar la diferencia entre el avance y el paso del macho.*

Porta-machos para roscar

Si la máquina no esta perfectamente sincronizada (avance/rotación), el avance debe ser programado de 5 a 10 % inferior al paso. En ese caso se debe utilizar un porta-machos de roscar que permita compensar la diferencia entre avance y paso del macho.

Es importante que el muelle de extensión sea reglado de manera que no ejerza una fuerte tracción sobre el macho.

El muelle de compresión es reglado de manera que el macho entre comprimiendo el muelle maximo hasta 0.5 x P.

Notas importantes:
Una buena estabilidad de la máquina y del porta-machos es un factor importante para obtener un rendimiento óptimo.
Asegúrese de seleccionar la velocidad de corte correcta.
Asegúrate de que se utiliza un refrigerante lubricante amplio cuando se da un golpecito.

INTERESTING HINTS FOR TAPPING

Optimum tapping conditions reduce effective machining times and increase tap life.

Selection of the most suitable tap

Which types of tap or whether or not a thread former can be used, depends on the type of material to be machined.

As a general guide, materials with an extension of at least 10 % can be cold-formed.

To determine the most suitable tap, refer to the DC application charts.

Core holes

—Core holes should be clean and swarf-free.
—Core holes should be of the prescribed size, see chart extract in the technical part of this catalogue, and dependent on the actual application, selected towards the upper diameter limit.

Lubricant in relation to machining centers

Frequently the coolants used on machining centers are insufficient for tapping because their percentage lubricant content is too low. If it is not possible to increase the percentage of lubricant in the emulsion, the lubrication problem can be solved in other ways, i.e.:

Lubricating with concentrated emulsion

A. A lubricating unit, connected to the machine control, delivers at the required instant a specific quantity of concentrated emulsion into the core hole or onto the tap.
B. A pump in a separate tank, controlled by the machine, delivers a specific quantity of concentrate into the core hole.

Tapping in separate operations
This procedure allows the use of the ideal tapping lubricant.

Cutting speeds for taps

The cutting speed has a great influence on chip flow and the life time of the tap. It is therefore worthwhile to establish the ideal cutting speed by tapping trials. Guide values see on the DC application charts.

The cutting speed should be in relation to the characteristics of the material to be performed, the machine and its equipment.

Effects of unsuitable cutting speeds

—forced tapping
—tap lead chipping caused by overloaded cutting tooth
—torn threads
—unsatisfactory tap life
—rejected threads

INTERESTING HINTS FOR TAPPING

Cold welding

What are the causes of cold welding?
- —Cutting speed too high or too low
- —Unsuitable tap selection
- —Tap with non-adapted cutting geometry
- —Coolant unsuitable for material
- —Insufficient coolant
- —Axial pressure (pull or push) on the tap
- —Core hole too small
- —Torn core hole walls
- —Drill chips in the hole
- —Centering error
- —Concentricity error

Effects of cold welding:
- —torn threads
- —short tap life
- —rejected threads
- —tool breakage
- —scrap workpieces

Tap fitting

- —The tap must be clamped axially to the core hole.
- —On non-synchronized machines (feed/speed), we recommend the use of a tapping spindle.

Tapping heads

With non-synchronized machine spindles (feed/speed) the feed rate should, as a rule, be programmed approx. 5 - 10 % lower than the thread pitch. In these cases a tapping chuck must be used which will compensate the difference between the feed rate and the thread pitch.

It is important that the tension spring in the axial compensation is set to a light rate to avoid axially loading the tap.

The compression spring, on the other hand, should be tensioned so that the tap starts to cut by compressing the spring at the most up to one half pitch.

Important hints:
A good stability of machine and equipment is a prerequisite for optimum quality and performance.
Ensure that the correct cutting speed is selected.
Make sure that ample lubricating coolant is used when tapping.

OPTIMIZACIÓN DE RENDIMIENTO DE MACHOS

Problema	***Causas***	***Remedios***
Dientes del macho astillados	*Virutas bloqueadas*	*Comprobar la velocidad de corte. Averiguar la elección del macho (K / N.62.-3 / Z.70VS).*
	Macho tocando el fondo del agujero	*Controlar la profundidad del taladro y del roscado. Taladrar más profundo.*
	Irregularidades de las estructuras del material	*Adaptar la velocidad de corte. Mejorar la calidad del lubrificante. Usar un macho con otra geometría de corte u otro recubrimiento.*
	Afilado incorrecto	*Reafilar el macho según los valores de origen del fabricante.*

Problema	***Causas***	***Remedios***
Uso excesivo	*Velocidad de corte inadaptada*	*Elegir la velocidad correcta según el material trabajado.*
	Lubrificante inadaptado o en cantidad insuficiente	*Asegurarse de la calidad del lubrificante y averiguar que el líquido llega hasta el filo de corte.*
	Superficie el agujero endurecido	*Mejorar las condiciones de taladrar para que las paredes del agujero no estén endurecidas. Asegurarse de que la broca esté afilada.*
	Sincronización	*Comprobar el estado de la sincronización. Evite el roscado rígido en materiales con altas propiedades mecánicas.*

Problema	***Causas***	***Remedios***
El macho se rompe	*Mala elección del macho según el material trabajado*	*Verificar la elección del tipo de macho en relación con el material.*
	Virutas	*Adaptar la geometría a la profundidad de roscar. Adaptar la longitud de la ranuras si es necesario.*
	Mala alineación	*Asegurarse que el macho y agujero están perfectamente alineado en el mismo eje.*
	Macho desgastado	*Utilizar siempre los machos bien afilados. Proteja bien los machos en el momento del almacenamiento.*
	Macho tocando el fondo del agujero	*Utilizar un porta-machos con embrague (no es recomendado con máquina CNC) y compensación axial.*
	Diámetro de taladro muy pequeño	*Elegir el diámetro de taladro según tabla en la parte técnica de este catálogo.*

OPTIMIZACIÓN DE RENDIMIENTO DE MACHOS

Problema	***Causas***	***Remedios***
Roscado muy grande	*Mala elección del macho (geometría de corte no adaptada al material)*	*Verificar la elección del tipo de macho en relación con el material.*
	Mala alineación	*Asegurarse que el macho y agujero están perfectamente alineados en el mismo eje.*
	Soldaduras frías	*Asegurarse de la calidad del lubrificante y averiguar que el líquido llega hasta el filo de corte.* *Adaptar la velocidad de corte.* *Analizar si es necesario un tratamiento o recubrimiento.*
	Macho reafilado (la entrada cónica no es concéntrica)	*Reafilar la entrada del macho sobre una máquina rectificadora en perfecto estado de uso.*

Problema	***Causas***	***Remedios***
Error de paso	*Mala elección del macho (geometría de corte no adaptada al material)*	*Verificar la elección del tipo de macho en relación con el material.*
	Avance del porta-machos y velocidad de rotación mal síncronizada	*Controla la programación o el paso del husillo patrón.* *Utilizar un porta-machos de roscar con compensación axial o un mandril de roscar con amortiguador axial.*
	Sincronización	*Comprobar el estado de la sincronización.* *Evite el roscado rígido en materiales con altas propiedades mecánicas.*
	Macho con entrada en hélice utilizado con presión axial floja	*Aumentar la presión de entrada.*

Problema	***Causas***	***Remedios***
Entrada de la rosca ancha	*Avance incorrecto*	*Utilizar un porta-machos de roscar con compensación axial.*

Problema	***Causas***	***Remedios***
Mal estado superficie de la rosca	*Mala elección del macho (geometría de corte no adaptada al material)*	*Verificar la elección del tipo de macho en relación con el material.*
	Macho desgastado	*Cambiar o afilar el macho.*
	Afilado incorrecto	*Reafilar el macho verificando que la geometría de corte y el diámetro de entrada están adaptados al material trabajado.*
	Lubrificante inadaptado o en cantidad insuficiente	*Asegurarse de la calidad del lubrificante y averiguar que el líquido llega hasa el filo de corte.*

APPLICATION AND USE OF THREADING TAPS

Problem	Causes	Solutions
Partial chipping of tap	Swarf jamming	Check cutting speed. Use alternative tap type (K / N.62.-3 / Z.70VS).
	Tap hits bottom of core hole	Check hole and thread depths. Drill core hole deeper.
	Irregular workpiece material structure	Adjust cutting speed. Improve lubricating quality of coolant. Use tap with other cutting geometry / other coating.
	Tap incorrectly re-ground (lead-in diameter too small, therefore too few cutting teeth)	Ensure that original values are maintained when re-grinding.

Problem	Causes	Solutions
Excessive tap wear	Incorrect cutting speed	Adjust cutting speed to suit workpiece material. Use tap with recommended surface coating.
	Coolant lacking in lubricating qualities and / or quantity	Ensure the use of a suitable coolant and an ample supply. Check that coolant is reaching the cutting zone.
	Surface of the core hole is compacted	Check core hole drilling conditions (drill carefully to reduce risk of surface compacting). Check drill cutting edges.
	Synchronization	Check status of synchronization. Avoid rigid tapping in materials with high mechanical properties.

Problem	Causes	Solutions
Tap breakage	Incorrect tap in use (cutting geometry unsuitable for application)	Use tap from the relevant materil group.
	Bad swarf evacuation	Adapt cutting geometry to the depth to be tapped. Adapt length of flutes if necessary.
	Centering error	Ensure that axes of tap and core hole are aligned.
	Blunt tap	Re-grind tap. Ensure that taps are carefully stored.
	Tap has reached bottom of the core hole	Use tapping spindle with axial float and slipping clutch.
	Core hole too small	Select core hole as per chart in the technical part of this catalogue.

APPLICATION AND USE OF THREADING TAPS

Problem	Causes	Solutions
Tapped hole oversize	Incorrect tap in use (cutting geometry unsuitable for application)	Use tap selected from the relevant material group.
	Faulty alignment	Ensure that the tap is correctly aligned with the core hole axis.
	Cold welding	Improve lubrication and direction of coolant. Adjust cutting speed. Use taps with recommended surface treatment or coating.
	Re-ground tap (lead-in is not concentric)	Re-grind tap lead correctly on a suitable tap grinding machine.

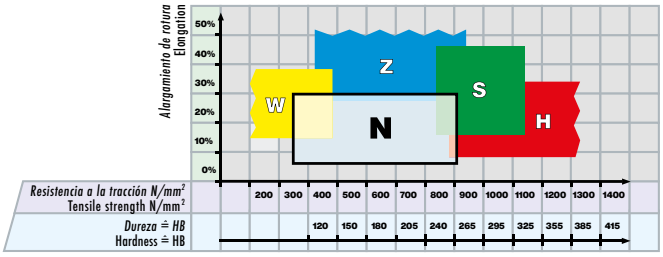
Problem	Causes	Solutions
Stripped threads	Incorrect tap in use (cutting geometry incorrect for application)	Use a tap from the relevant material group.
	Spindle speed and feed rate not synchronized	Check feed rate programming and / or pitch of leading spindle. Use a tapping spindle with axial float or a tapping chuck with axial shock absorber.
	Synchronization	Check status of synchronization. Avoid rigid tapping in materials with high mechanical properties.
	Insufficient start pressure exerted on tap with peeling-cut	Increase start pressure.

Problem	Causes	Solutions
Bell mouthed tapped hole	Incorrect start pressure applied to tap	Use a tapping spindle with axial float.

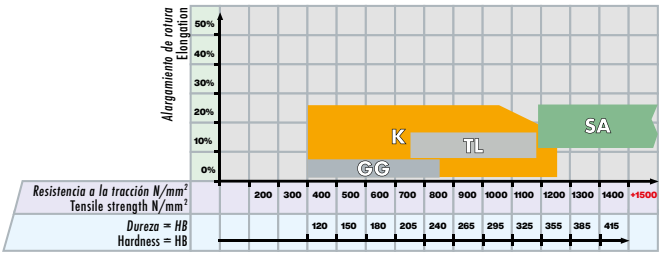
Problem	Causes	Solutions
Unsatisfactory thread surface finish	Incorrect tap in use (cutting geometry unsuitable for application)	Select tap from the relevant material group.
	The tap is blunt	Replace or re-grind tap.
	Tap badly re-ground	Re-grind tap again. Check that cutting geometry is suitable for material.
	Coolant lacking in lubricating qualities and / or quantity	Ensure the use of a suitable coolant and an ample supply.

TABLA DE UTILIZACIÓN — APPLICATION CHART

Roscado clásico
Thread cutting



Roscado clásico
Thread cutting



DC Clasificación de los materiales

DC Material classification

	Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10	Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
		12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
		13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
		14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
		15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
		16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
		22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
		23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
		24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30	Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
		32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
		42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50	Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
		52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
		53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60	Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
		62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
		64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70	Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
		72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
		82	Materiales duroplásticos	Duroplastics	-	-	-
		83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90	Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
		92	Oro rojo	Red gold	-	-	-
		93	Oro blanco	White gold	-	-	-
		94	Plata	Silver	-	-	-

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING

CLASSIC

Desde página: From page:	N Materiales normales Normal materials										
MJ / M	60	62	60	64	64	72	72	74	60	74	74
MF	125	124	125	125		124		131	131	131	
UNJC / UNC / UNC(J)	154	154	154	154				156	156	156	
UNJF / UNF / UNF(J)	176	176	176	176				178	178	178	
UNEF / UN / UNS	198	198						199	199		
G / Rp / Rc / W / SV	204	205	205	205				206	206	206	
NPT / NPTF	220										
PG / TR	222	222									
EG M / EG UNC / EG UNF		226	226					227	227		

	Vc (m/min) Guide Line						N.10	N.20	N.20V	N.20TN	N.20TC	N.50	N.50V	N.60	N.60V	N.60TN	N.60TC	
	Ø 1 - 2.8 mm		Ø 2.8 - 26 mm		Ø 26 - 60 mm													
	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated												
11	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10		◁▷		O E	O E	O E	◁▷	O E		O E	O E	O E	11
12	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10		◁▷		O E	O E	O E	◁▷	O E		O E	O E	O E	12
13	8 - 12	10 - 20	8 - 12	16 - 24	10 - 15		◁▷		◁▷	O E	O E	◁▷	◁▷		◁▷	O E	O E	13
14	8 - 12	10 - 20	8 - 12	16 - 24	4 - 8		◁▷		O ▷	O E	O E	◁▷	O ▷		O ▷	O E	O E	14
15	2 - 4	4 - 10	3 - 5	6 - 12	2 - 4	3 - 5												15
16		2 - 4	3 - 5	3 - 5	2 - 4	3 - 5												16
17			2 - 4															17
18																		18
21	4 - 10	10 - 15	10 - 15	20 - 30	5 - 10		◁		◁▷	O ▷	O E		◁▷		◁▷	O ▷	O E	21
22	3 - 6	4 - 8	3 - 6	6 - 12														22
23	3 - 6	4 - 8	3 - 6	6 - 12														23
24		3 - 5		4 - 8		3 - 5												24
31	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	15 - 25	E		▷		E ◁		▷		▷		E ◁	31
32	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10		◁▷		O E	O E	O E	◁▷	O E		O E	O E	O E	32
41	2 - 4	4 - 8	4 - 8	4 - 8														41
42	2 - 4	3 - 5	3 - 5	3 - 5														42
51		3 - 5		6 - 12														51
52			4 - 8	4 - 8														52
53			2 - 4															53
61	8 - 12		8 - 12	12 - 16	4 - 8		◁▷	O						O				61
62	6 - 12	6 - 12	20 - 30	30 - 40	15 - 25	25 - 35	O E	E			O E	O E					O E	62
63	10 - 20		16 - 24		8 - 12		O ▷	O E				O E		O E				63
64	10 - 20		16 - 24		8 - 12		O ▷	E			O E	O E					O E	64
71	10 - 15	10 - 15	10 - 15	20 - 40	5 - 10		◁	O				O		O				71
72	10 - 20	20 - 30	20 - 30	20 - 40	10 - 15		◁▷	O E				O E		O E				72
73	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10		E	E			E	E		E			E	73
74	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10		E	E			E	E		E			E	74
81	10 - 20		20 - 30	30 - 50	10 - 15		▷	E				E		E				81
82	8 - 16	16 - 24	8 - 16	16 - 24	5 - 12	10 - 15	◁▷				E						E	82
83		6 - 12		8 - 16		5 - 12					E A						E A	83
91	12 - 20		20 - 30				E	O E				O E		O E				91
92		12 - 16		12 - 16							O ▷						O ▷	92
93		4 - 8		4 - 8														93
94		12 - 20		16 - 24							O ▷						O ▷	94

O *Óptima con aceite de corte* Optimal with cutting oil

O *Aceptable con aceite de corte* Suitable with cutting oil

E *Óptima con emulsión* Optimal with emulsion

E *Aceptable con emulsión* Suitable with emulsion

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING

CLASSIC

Desde página: From page:	W Materiales blandos Soft materials				Z Materiales tenaces Tough materials					
MJ / M	86	86	87	87	88	88	89	90	90	90
MF					134	134	134		134	
UNJC / UNC / UNC(J)					158	158	159		160	
UNJF / UNF / UNF(J)					180	180	181		182	
UNEF / UN / UNS										
G / Rp / Rc / W / SV			207	207	208	208	208		209	
NPT / NPTF										
PG / TR										
EG M / EG UNC / EG UNF									231	

	Vc (m/min) Guide Line												
	Ø 1 - 2.8 mm		Ø 2.8 - 26 mm		Ø 26 - 60 mm		W.20	W.20DL	W.60	W.60DL	Z.20V	Z.20VS	Z.60V Z.62V	Z.60VS Z.62VS	Z.70VS	Z.73VS	
	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated											
11	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10						O	O E					11
12	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10						O	O E	O	O E			12
13	8 - 12	10 - 20	8 - 12	16 - 24	10 - 15						O	O E					13
14	8 - 12	10 - 20	8 - 12	16 - 24	4 - 8							O E		O E	O E	O E	14
15	2 - 4	4 - 10	3 - 5	6 - 12	2 - 4	3 - 5						O		O	O E	O E	15
16		2 - 4	3 - 5	3 - 5	2 - 4	3 - 5											16
17			2 - 4														17
18																	18
21	4 - 10	10 - 15	10 - 15	20 - 30	5 - 10						O	O E	O	O E	O E	O E	21
22	3 - 6	4 - 8	3 - 6	6 - 12							O	O E	O	O E	O E	O E	22
23	3 - 6	4 - 8	3 - 6	6 - 12							O	O E	O	O E	O E	O E	23
24		3 - 5		4 - 8		3 - 5						O		O	O E	O E	24
31	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	15 - 25											31
32	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10						O	O E	O	O E			32
41	2 - 4	4 - 8	4 - 8	4 - 8													41
42	2 - 4	3 - 5	3 - 5	3 - 5													42
51		3 - 5		6 - 12								O		O	O E	O E	51
52			4 - 8	4 - 8											O	O	52
53			2 - 4														53
61	8 - 12		8 - 12	12 - 16	4 - 8							O E		O E	O E	O E	61
62	6 - 12	6 - 12	20 - 30	30 - 40	15 - 25	25 - 35											62
63	10 - 20		16 - 24		8 - 12							O E		O E			63
64	10 - 20		16 - 24		8 - 12												64
71	10 - 15	10 - 15	10 - 15	20 - 40	5 - 10		O E	O E	O E	O E							71
72	10 - 20	20 - 30	20 - 30	20 - 40	10 - 15		O E	O E	O E	O E							72
73	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10			O E		O E							73
74	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10												74
81	10 - 20		20 - 30	30 - 50	10 - 15		E		E								81
82	8 - 16	16 - 24	8 - 16	16 - 24	5 - 12	10 - 15											82
83		6 - 12		8 - 16		5 - 12											83
91	12 - 20		20 - 30														91
92		12 - 16		12 - 16													92
93		4 - 8		4 - 8													93
94		12 - 20		16 - 24								O E			O E	O E	94

A *Óptima con aire* Optimal with air

A *Aceptable con aire* Suitable with air

Limitada Limited

Los valores indicados son orientativos.
The indicated values are a guideline.

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING

CLASSIC

Desde página: From page:	H Materiales de alta resistencia High tensile materials				S Aleaciones especiales Special alloys			
MJ / M	94	94	96	96	46	99	46	On request
MF	136	136	137	137	138	138		
UNJC / UNC / UNC(J)	161	161	162	162	48	164	48	
UNJF / UNF / UNF(J)	184	184	185	185	50	186	50	
UNEF / UN / UNS								
G / Rp / Rc / W / SV			207					
NPT / NPTF								
PG / TR								
EG M / EG UNC / EG UNF								

	Vc (m/min) Guide Line												
	Ø 1 - 2.8 mm		Ø 2.8 - 26 mm		Ø 26 - 60 mm		H.20	H.20TC	H.50	H.50TC	S.20VS	S.60VS	S.70VX	S.73VX	
	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated									
11	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10										11
12	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10										12
13	8 - 12	10 - 20	8 - 12	16 - 24	10 - 15						E	E			13
14	8 - 12	10 - 20	8 - 12	16 - 24	4 - 8										14
15	2 - 4	4 - 10	3 - 5	6 - 12	2 - 4	3 - 5	O E	O E	O E	O E	O E	O E	O E	O E	15
16		2 - 4	3 - 5	3 - 5	2 - 4	3 - 5	O	O	O	O	O	O			16
17			2 - 4												17
18															18
21	4 - 10	10 - 15	10 - 15	20 - 30	5 - 10										21
22	3 - 6	4 - 8	3 - 6	6 - 12							O E	O E	O E	O E	22
23	3 - 6	4 - 8	3 - 6	6 - 12							O E	O E	O E	O E	23
24		3 - 5		4 - 8		3 - 5		O		O	O E	O E	O E	O E	24
31	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	15 - 25		E A		E A					31
32	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10										32
41	2 - 4	4 - 8	4 - 8	4 - 8											41
42	2 - 4	3 - 5	3 - 5	3 - 5											42
51		3 - 5		6 - 12									O E	O E	51
52			4 - 8	4 - 8							O	O	O	O	52
53			2 - 4												53
61	8 - 12		8 - 12	12 - 16	4 - 8								O E	O E	61
62	6 - 12	6 - 12	20 - 30	30 - 40	15 - 25	25 - 35	O E		O E						62
63	10 - 20		16 - 24		8 - 12										63
64	10 - 20		16 - 24		8 - 12		O E		O E						64
71	10 - 15	10 - 15	10 - 15	20 - 40	5 - 10										71
72	10 - 20	20 - 30	20 - 30	20 - 40	10 - 15										72
73	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10										73
74	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10										74
81	10 - 20		20 - 30	30 - 50	10 - 15										81
82	8 - 16	16 - 24	8 - 16	16 - 24	5 - 12	10 - 15	A	A	A	A					82
83		6 - 12		8 - 16		5 - 12		A		A					83
91	12 - 20		20 - 30												91
92		12 - 16		12 - 16				O E		O E					92
93		4 - 8		4 - 8				O E		O E					93
94		12 - 20		16 - 24											94

O *Óptima con aceite de corte* Optimal with cutting oil

O *Aceptable con aceite de corte* Suitable with cutting oil

E *Óptima con emulsión* Optimal with emulsion

E *Aceptable con emulsión* Suitable with emulsion

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING

AERO

Desde página: From page:	SA Aleaciones especiales Special alloys			TL Aleaciones titanio Titan. alloys		GG Fundición gris y fundición al Cast iron / Al casting		
MJ / M	47	47	46	100	47	102	102	102
MF	140	140	139	140	140			
UNJC / UNC / UNC(J)	49	49	48	165	49			
UNJF / UNF / UNF(J)	51	51	50		51			
UNEF / UN / UNS								
G / Rp / Rc / W / SV						207		
NPT / NPTF								
PG / TR								
EG M / EG UNC / EG UNF	228	228	229	232	228			

	Vc (m/min) Guide Line												
	Ø 1 - 2.8 mm		Ø 2.8 - 26 mm		Ø 26 - 60 mm		SA.20	SA.50	SA.90	TL.20VS	TL.51VS	GG.50NV	GG.50TC	GG.53TC	
	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated									
11	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10										11
12	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10										12
13	8 - 12	10 - 20	8 - 12	16 - 24	10 - 15										13
14	8 - 12	10 - 20	8 - 12	16 - 24	4 - 8										14
15	2 - 4	4 - 10	3 - 5	6 - 12	2 - 4	3 - 5	O	O							15
16		2 - 4	3 - 5	3 - 5	2 - 4	3 - 5	O	O	O						16
17			2 - 4						◁						17
18															18
21	4 - 10	10 - 15	10 - 15	20 - 30	5 - 10										21
22	3 - 6	4 - 8	3 - 6	6 - 12											22
23	3 - 6	4 - 8	3 - 6	6 - 12											23
24		3 - 5		4 - 8		3 - 5									24
31	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	15 - 25						E A	E A	E	31
32	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10										32
41	2 - 4	4 - 8	4 - 8	4 - 8						O	O				41
42	2 - 4	3 - 5	3 - 5	3 - 5						O	O				42
51		3 - 5		6 - 12											51
52			4 - 8	4 - 8			O E	O E							52
53			2 - 4						O E						53
61	8 - 12		8 - 12	12 - 16	4 - 8										61
62	6 - 12	6 - 12	20 - 30	30 - 40	15 - 25	25 - 35							E A	E	62
63	10 - 20		16 - 24		8 - 12										63
64	10 - 20		16 - 24		8 - 12		O E	O E							64
71	10 - 15	10 - 15	10 - 15	20 - 40	5 - 10										71
72	10 - 20	20 - 30	20 - 30	20 - 40	10 - 15										72
73	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10										73
74	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10								E A	E	74
81	10 - 20		20 - 30	30 - 50	10 - 15										81
82	8 - 16	16 - 24	8 - 16	16 - 24	5 - 12	10 - 15									82
83		6 - 12		8 - 16		5 - 12									83
91	12 - 20		20 - 30												91
92		12 - 16		12 - 16											92
93		4 - 8		4 - 8											93
94		12 - 20		16 - 24											94

A **Óptima con aire** Optimal with air

A **Aceptable con aire** Suitable with air

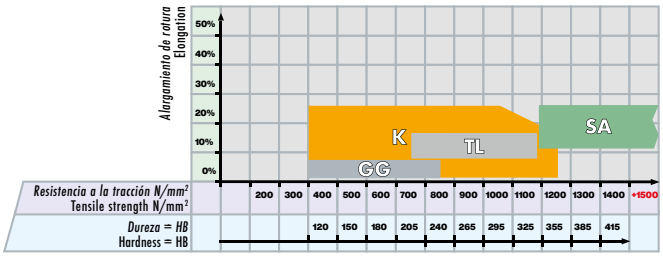
◁ **Limitada** Limited

Los valores indicados son orientativos.
The indicated values are a guideline.

ROSCADO CLÁSICO Y ROSCADO RÍGIDO
CLASSIC THREAD CUTTING AND RIGID TAPPING

CLASSIC SYNCHRO

Roscado clásico
Thread cutting



Desde página: From page:	K Rompedor de virutas Swarf breaker	
MJ / M	104	105
MF	142	
UNJC / UNC / UNC(J)		
UNJF / UNF / UNF(J)		
UNEF / UN / UNS		
G / Rp / Rc / W / SV		
NPT / NPTF		
PG / TR		
EG M / EG UNC / EG UNF		

	Vc (m/min) Guide Line						
	Ø 5 - 10.9 mm	Ø 11 - 18.9 mm	Ø 19 - 31.9 mm	Ø 32 - 42 mm	K.13TC	K.13VS	
	Recub. Coated	Recub. Coated	Recub. Coated	Recub. Coated			
11	30 - 40	20 - 30	20 - 30	20 - 30	E	E	11
12	30 - 40	20 - 30	20 - 30	20 - 30	E	E	12
13	30 - 40	20 - 30	20 - 30	20 - 30	E	E	13
14	20 - 30	15 - 25	15 - 25	15 - 25	E	E	14
15	15 - 20	10 - 15	8 - 12	5 - 8	E	E	15
16	8 - 12	5 - 8	5 - 8	5 - 8	E	E	16
17							17
18							18
21							21
22							22
23							23
24							24
31	30 - 40	30 - 40	30 - 40	30 - 40	E	E	31
32	30 - 40	20 - 30	20 - 30	20 - 30	E	E	32
41							41
42							42
51							51
52							52
53							53
61							61
62	30 - 40	30 - 40	30 - 40	30 - 40	E	E	62
63	30 - 40	30 - 40	30 - 40	30 - 40	E	E	63
64	30 - 40	20 - 30	20 - 30	20 - 30	E	E	64
71							71
72							72
73							73
74	30 - 40	30 - 40	30 - 40	30 - 40	E	E	74
81							81
82							82
83	30 - 40	30 - 40	30 - 40	30 - 40	E	E	83
91							91
92							92
93							93
94							94

Óptima con aceite de corte
Optimal with cutting oil

Aceptable con aceite de corte
Suitable with cutting oil

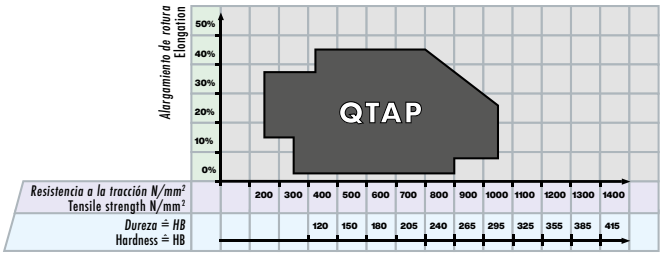
Óptima con emulsión
Optimal with emulsion

Aceptable con emulsión
Suitable with emulsion

ROSCADO CLÁSICO Y ROSCADO RÍGIDO
CLASSIC THREAD CUTTING AND RIGID TAPPING

CLASSIC SYNCHRO

Roscado clásico y roscado rígido
Thread cutting classic and rigid



Desde página: From page:	QTAP Allrounder Allrounder			
MJ / M	61	106	61	107
MF	143	143	144	144
UNJC / UNC / UNC(J)	167	167	168	168
UNJF / UNF / UNF(J)	192	192	193	193
UNEF / UN / UNS				
G / Rp / Rc / W / SV	210	210	211	211
NPT / NPTF				
PG / TR				
EG M / EG UNC / EG UNF				

	Vc (m/min) Guide Line Ø 2.8 - 20 mm	Q.20VS	Q.23VS	Q.60VS	Q.63VS	
11	20 - 40	O E	O E	O E	O E	11
12	20 - 40	O E	O E	O E	O E	12
13	16 - 24	O E	O E	O E	O E	13
14	16 - 24	O E	O E	O E	O E	14
15	6 - 12	O E	O E	O E	O E	15
16						16
17						17
18						18
21	20 - 40	O E	O E	O E	O E	21
22	6 - 12	O E	O E	O E	O E	22
23	6 - 12	O E	O E	O E	O E	23
24	4 - 8	O E	O E	O E	O E	24
31	20 - 40	O E A	O E	O E A	O E	31
32	20 - 40	O E	O E	O E	O E	32
41						41
42						42
51	6 - 12	O E	O E	O E	O E	51
52	4 - 8	O E	O E	O E	O E	52
53						53
61	12 - 16	O E	O E	O E	O E	61
62	25 - 35	O E	O E	O E	O E	62
63	20 - 40	O E	O E	O E	O E	63
64	20 - 40	O E	O E	O E	O E	64
71	20 - 40	O E	O E	O E	O E	71
72	20 - 40	O E	O E	O E	O E	72
73	20 - 40	O E	O E	O E	O E	73
74	20 - 40	O E A	O E	O E A	O E	74
81	20 - 40	O E A	O E	O E A	O E	81
82	16 - 24	O E	O E	O E	O E	82
83	8 - 16	O E A	O E	O E A	O E	83
91	20 - 40	O E	O E	O E	O E	91
92	12 - 16	O E	O E	O E	O E	92
93						93
94	12 - 16	O E	O E	O E	O E	94

A ***Óptima con aire***
Optimal with air

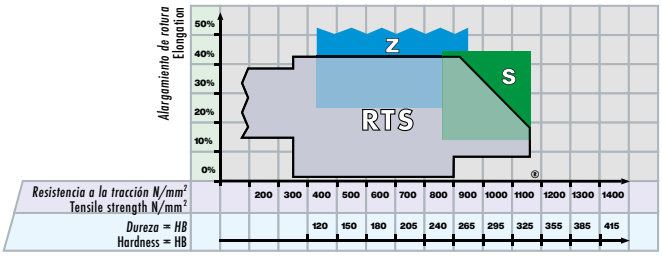
A ***Aceptable con aire***
Suitable with air

Limitada
Limited

Los valores indicados son orientativos.
The indicated values are a guideline.

TABLA DE UTILIZACIÓN — APPLICATION CHART

Roscado rígido
Rigid Tapping



Clasificación de los materiales — Material classification

	Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10	Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
		12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
		13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
		14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
		15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
		16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
		22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
		23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
		24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30	Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
		32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
		42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50	Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
		52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
		53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60	Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
		62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
		64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70	Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
		72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
		82	Materiales duroplásticos	Duroplastics	-	-	-
		83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90	Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
		92	Oro rojo	Red gold	-	-	-
		93	Oro blanco	White gold	-	-	-
		94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

ROSCADO RÍGIDO — RIGID TAPPING

SYNCHRO

Desde página: From page:	RTS Synchro Synchro				Z Materiales tenaces Tough materials		S Aleaciones especiales Special alloys	
MJ / M	108	108	109	109	90	90	46	On request
MF	145		145		134			
UNJC / UNC / UNC(J)	169		169		160		48	
UNJF / UNF / UNF(J)	194		194		182		50	
UNEF / UN / UNS								
G / Rp / Rc / W / SV			212		209			
NPT / NPTF								
PG / TR								
EG M / EG UNC / EG UNF					231			

	Vc (m/min) Guide Line Ø 2 - 2.8 mm Recub. Coated	Ø 2.8 - 20 mm Recub. Coated	RTS.20VS	RTS.23VS	RTS.60VS RTS.62VS	RTS.65VS	Z.70VS	Z.73VS	S.70VX	S.73VX	
11	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			11
12	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			12
13	12 - 20	16 - 24	O E	O E	O E	O E	O E	O E			13
14	12 - 20	16 - 24	O E	O E	O E	O E	O E	O E			14
15	5 - 10	6 - 12	O E	O E	O E	O E	O E	O E	O E	O E	15
16											16
17											17
18											18
21	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			21
22	4 - 10	6 - 12	◁ ▷	◁ ▷	◁ ▷	◁ ▷	O E	O E	O E	O E	22
23	4 - 10	6 - 12	◁ ▷	◁ ▷	◁ ▷	◁ ▷	O E	O E	O E	O E	23
24	4 - 8	4 - 8	◁ ▷	◁ ▷	◁ ▷	◁ ▷	O E	O E	O E	O E	24
31	12 - 20	20 - 40	O E A	O E	O E A	O E					31
32	12 - 20	20 - 40	O E	O E	O E	O E	O E	O E			32
41											41
42											42
51	4 - 10	6 - 12	O ▷	O ▷	O ▷	O ▷	O E	O E	O E	O E	51
52		4 - 8					O	O	O	O	52
53											53
61	10 - 16	10 - 20	O E	O E	O E	O E	O E	O E			61
62											62
63	12 - 20	20 - 40	O E	O E	O E	O E					63
64	12 - 20	20 - 40	O E	O E	O E	O E					64
71	12 - 20	30 - 50	O	O	O	O					71
72	12 - 20	30 - 50	O E	O E	O E	O E					72
73	12 - 20	20 - 40	O E	O E	O E	O E					73
74	12 - 20	20 - 40	O E A	O E	O E A	O E					74
81	12 - 20	30 - 50	E A	E	E A	E					81
82	12 - 20	16 - 24	E	E	E	E					82
83	4 - 10	8 - 16	E A	E	E A	E					83
91	12 - 20	20 - 40	O E	O E	O E	O E					91
92	6 - 12	12 - 16	O E	O E	O E	O E					92
93											93
94	6 - 12	12 - 16	O E	O E	O E	O E					94

A **Óptima con aire** / **Optimal with air**

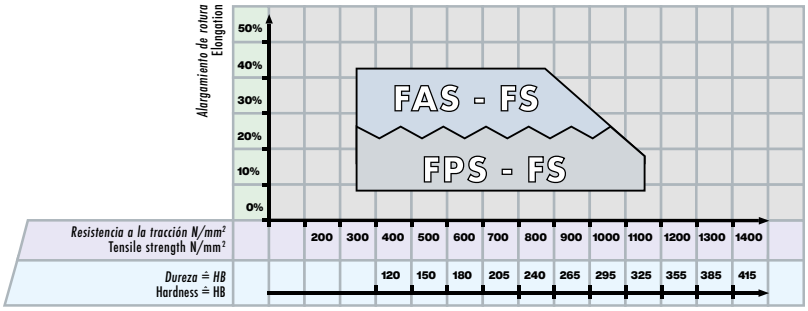
A **Aceptable con aire** / **Suitable with air**

◁ ▷ **Limitada** / **Limited**

Los valores indicados son orientativos.
The indicated values are a guideline.

TABLA DE UTILIZACIÓN — APPLICATION CHART

Roscado por laminación
Thread forming



Clasificación de los materiales — Material classification

	Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10	Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
		12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
		13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
		14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
		15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
		16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
		22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
		23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
		24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30	Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
		32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
		42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50	Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
		52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
		53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60	Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
		62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
		64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70	Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
		72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
		82	Materiales duroplásticos	Duroplastics	-	-	-
		83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90	Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
		92	Oro rojo	Red gold	-	-	-
		93	Oro blanco	White gold	-	-	-
		94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

Desde página: From page:	FS		FPS					FAS		
M	254	255	256	256	256	256	258	259	259	260
MF						262			262	
UNC	263					263			263	
UNF	264					264			264	
G						265			265	
			NEW	NEW						
	FS.80VS	FS.80DL	FPS.80DL	FPS.81DL	FPS.80VS	FPS.81VS	FPS.84VS	FAS.80VS	FAS.81VS	FAS.84VS

	Vc (m/min) Guide Line Ø 1 - 2.8 mm	Vc (m/min) Guide Line Ø 2.8 - 20 mm	FS.80VS	FS.80DL	FPS.80DL	FPS.81DL	FPS.80VS	FPS.81VS	FPS.84VS	FAS.80VS	FAS.81VS	FAS.84VS	
11	12 - 20	20 - 40	O E				O E	O E	O E				11
12	12 - 20	20 - 40	O E				O E	O E	O E				12
13	12 - 20	20 - 30	O E				O E	O E	O E				13
14	12 - 20	20 - 30	O E				O E	O E	O E				14
15	6 - 12	10 - 15	O					O	O				15
16													16
17													17
18													18
21	12 - 20	10 - 20	O E	O E						O E	O E	O E	21
22	6 - 12	10 - 15	O	O E						O E	O E	O E	22
23	6 - 12	6 - 12	O	O E						O	O E	O E	23
24	6 - 12	6 - 12		O						O	O E	O E	24
31													31
32													32
41	12 - 20	10 - 20		◁							◁	◁	41
42													42
51	6 - 12	10 - 15		O							O E	O E	51
52													52
53													53
61	12 - 20	10 - 20		O E						O	O E	O E	61
62													62
63	12 - 20	20 - 30		O E	O E	O E							63
64	12 - 20	20 - 30		O E	O E	O E							64
71	12 - 20	20 - 40		O E	O E	O E							71
72	12 - 20	20 - 40		O E	O E	O E							72
73	12 - 20	20 - 40		O E	O E	O E							73
74													74
81													81
82													82
83													83
91	12 - 20	20 - 40		O E	O	O E							91
92	12 - 20	20 - 40		O E	O E	O E							92
93	12 - 20	20 - 40		◁ ▷	◁	◁ ▷							93
94	12 - 20	20 - 40		O E	O E	O E							94

A *Óptima con aire* / Optimal with air

A *Aceptable con aire* / Suitable with air

◁ ▷ *Limitada* / Limited

Los valores indicados son orientativos.
The indicated values are a guideline.

MACHOS PARA ROSCAR NANO
THREAD TAPS NANO

Clasificación de los materiales — Material classification

	Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10	Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
		12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
		13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
		14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
		15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
		16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
		22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
		23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
		24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30	Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
		32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
		42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50	Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
		52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
		53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60	Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
		62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
		64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70	Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
		72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
		82	Materiales duroplásticos	Duroplastics	-	-	-
		83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90	Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
		92	Oro rojo	Red gold	-	-	-
		93	Oro blanco	White gold	-	-	-
		94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

MACHOS PARA ROSCAR NANO — THREAD TAPS NANO

CLASSIC SYNCHRO

Desde página: From page:	TAN Materiales normales Normal materials				TAZ Materiales tenaces Tough materials				CMS Materiales frágiles Brittle materials	
	TAN40	TAN40VS	TAN50	TAN50VS	TAZ40	TAZ40VS	TAZ50	TAZ50VS	CMS50	CMS50VS
M	338	338	338	338	339	339	339	339	340	340
MF	341	341	341	341	342	342	342	342	343	343
UNC	344	344	344	344	345	345	345	345	346	346
UNF	347	347	347	347	348	348	348	348	349	349
S	350	350	350	350	351	351	351	351	352	352
SF	353	353	353	353	354	354	354	354	355	355
SL	356	356	356	356	357	357	357	357	358	358

	Vc (m/min) Guide Line Ø 0.3 - 1.4 mm Estándar Standard	Ø 0.3 - 1.4 mm Recubrimiento Coated	Ø 1.4 - 2.8 mm Estándar Standard	Ø 1.4 - 2.8 mm Recubrimiento Coated	
11		4 - 10		12 - 20	11
12		4 - 10		12 - 20	12
13		4 - 10		12 - 20	13
14		4 - 10		12 - 20	14
15					15
16					16
17					17
18					18
21		4 - 10		12 - 20	21
22		4 - 10		12 - 20	22
23		3 - 6		6 - 12	23
24		3 - 6		6 - 12	24
31		4 - 10		12 - 20	31
32		4 - 10		12 - 20	32
41	2 - 4	2 - 4	4 - 8	4 - 8	41
42	2 - 4	2 - 4	4 - 8	4 - 8	42
51					51
52					52
53					53
61		4 - 10		12 - 20	61
62	4 - 10	4 - 10	12 - 20	12 - 20	62
63	4 - 10	4 - 10	12 - 20	12 - 20	63
64		4 - 10		12 - 20	64
71		4 - 10		12 - 20	71
72		4 - 10		12 - 20	72
73		4 - 10		12 - 20	73
74		4 - 10		12 - 20	74
81		4 - 10		12 - 20	81
82					82
83		4 - 10		12 - 20	83
91	4 - 10		12 - 20		91
92		4 - 10		12 - 20	92
93		4 - 10		12 - 20	93
94		4 - 10		12 - 20	94

A *Óptima con aire* **Optimal with air**

A *Aceptable con aire* **Suitable with air**

Limitada **Limited**

Los valores indicados son orientativos.
The indicated values are a guideline.

MACHOS PARA ROSCADO POR LAMINACIÓN NANO
THREAD FORMERS NANO

Clasificación de los materiales — Material classification

Grupos de materiales / Material groups		Clasificación de los materiales	Material designation	Dureza / Hardness (HB)	Resistencia / Tensile strength Rm (N/mm²)	Alargamiento / Elongation A (%)
10 Aceros / Steels	11	Aceros de decoletaje	Free-cutting steels	< 200	< 700	< 10
	12	Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	< 30
	13	Aceros al carbón	Carbon steels	< 300	< 1000	< 20
	14	Aceros aleados < 850 N/mm²	Alloy steels < 850 N/mm²	< 250	< 850	< 30
	15	Aceros aleados / tratados > 850 - < 1150 N/mm²	Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850	< 30
	16	Aceros de alta resistencia ≤ 44 HRC	High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
	17	Aceros mejorados > 44 - ≤ 54 HRC	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
	18	Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20 Aceros inoxidables / Stainless steels	21	Aceros inoxidables al azufre	Free machining stainless steels	< 250	< 850	< 25
	22	Austeníticos	Austenitic stainless steels	< 250	< 850	> 20
	23	Ferríticos y martensíticos < 850 N/mm²	Ferritic and martensitic < 850 N/mm²	< 250	< 850	> 20
	24	Ferríticos y martensíticos > 850 - < 1150 N/mm²	Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850	> 15
30 Fundición / Cast iron	31	Fundición gris	Cast iron	< 250	< 850	< 10
	32	Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40 Titanio / Titanium	41	Titanio puro	Pure titanium	< 250	< 850	> 20
	42	Aleación al titanio	Titanium alloys	> 250	> 850	< 20
50 Níquel / Nickel	51	Aleación al níquel 1 ≤ 850 N/mm²	Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850	> 25
	52	Aleación al níquel 2 > 850 - ≤ 1150 N/mm²	Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850	< 25
	53	Aleación al níquel 3 > 1150 - ≤ 1600 N/mm²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150	< 20
60 Cobre / Copper	61	Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	> 12
	62	Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
	63	Latón (virutas largas)	Long chip brass	< 200	< 700	> 12
	64	Latón sin plomo	Lead free brass	< 220	< 700	> 15
70 Aluminio Magnesio / Aluminium Magnesium	71	Al no aleado	Al unalloyed	< 100	< 350	> 15
	72	Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	> 15
	73	Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
	74	Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80 Materiales plásticos / Plastic compounds	81	Materiales termoplásticos	Thermoplastics	-	-	-
	82	Materiales duroplásticos	Duroplastics	-	-	-
	83	Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
90 Metales preciosos / Precious metals	91	Oro amarillo	Yellow gold	-	-	-
	92	Oro rojo	Red gold	-	-	-
	93	Oro blanco	White gold	-	-	-
	94	Plata	Silver	-	-	-

Óptima con aceite de corte / Optimal with cutting oil

Aceptable con aceite de corte / Suitable with cutting oil

Óptima con emulsión / Optimal with emulsion

Aceptable con emulsión / Suitable with emulsion

MACHOS PARA ROSCADO POR LAMINACIÓN NANO
THREAD FORMERS NANO

CLASSIC SYNCHRO

Desde página: From page:	FA *Materiales normales* Normal materials		CFA *Materiales no ferrosos* Non-ferrous materials	
M	363	363	370	370
MF	364	364		
UNC	365	365	371	371
UNF	366	366	372	372
S	367	367	373	373
SF	368	368		
SL	369	369		

	Vc (m/min) Guide Line Ø 0.3 - 1.4 mm *Recubrimiento* Coated	Ø 1.4 - 2.8 mm *Recubrimiento* Coated	FA80VS	FA83VS	CFA80VS	CFA83VS	
11	4 - 10	12 - 20	O E	O E			11
12	4 - 10	12 - 20	O E	O E			12
13	4 - 10	12 - 20	O E	O E			13
14	4 - 10	12 - 20	O E	O E			14
15	3 - 6	6 - 12	O	O			15
16							16
17							17
18							18
21	4 - 10	12 - 20	O E	O E			21
22	3 - 6	6 - 12	O E	O E			22
23	3 - 6	6 - 12	O E	O E			23
24	3 - 6	6 - 12	O	O			24
31							31
32							32
41							41
42							42
51	3 - 6	6 - 12	O	O			51
52							52
53							53
61	4 - 10	12 - 20	O E	O E			61
62	4 - 10	12 - 20			O E	O E	62
63	4 - 10	12 - 20	O E	O E	O E	O E	63
64	4 - 10	12 - 20	O E	O E			64
71	4 - 10	12 - 20	O E	O E			71
72	4 - 10	12 - 20	O E	O E			72
73	4 - 10	12 - 20	O E	O E			73
74							74
81							81
82							82
83							83
91	4 - 10	12 - 20	O E	O E	O E	O E	91
92	4 - 10	12 - 20	O E	O E	O E	O E	92
93	4 - 10	12 - 20					93
94	4 - 10	12 - 20	O E	O E	O E	O E	94

A ***Óptima con aire*** **Optimal with air**

A ***Aceptable con aire*** **Suitable with air**

Limitada **Limited**

Los valores indicados son orientativos.
The indicated values are a guideline.

DISEÑO CONSTRUCTIVO DE LOS MACHOS DE ROSCA
CONSTRUCTIONAL DESIGN OF THREADING TAPS

		Diseño según ISO / DIN Dimensiones generales	**Design according to ISO / DIN General dimensions**
ISO 529 DIN 5157 (G)	N1110-. / N1210-. N210-. (G)	*Machos para roscar a mano con diámetros escalonados en los flancos*	Hand taps with stepped pitch diameter
ISO 529 DIN 5157 (G)	N1110-3 / N1210-3 N1120-4 / N1220-4 N1160-3 / N1260-3 N210-3 / N220-4 (G)	*Machos para roscar a máquina cortos*	Short machine taps
DIN 352	NP110-S NP210-S	*Machos para roscar a mano con diámetros escalonados en los flancos, desbate -1 con espiga guía*	Hand taps with stepped pitch diameter, taper tap -1 with guiding pilot
DIN 371	N3..; W3..; Z3..; H3..; S3..; SA3..; TL3..; GG3..; K3..; Q3..; RTS3..;	*Machos para roscar a máquina con mango DIN reforzado*	Machine taps with reinforced DIN shank
DIN 376 / DIN 374 / DIN 5156 (G)	N4..; W4..; Z4..; H4..; S4..; SA4..; TL4..; GG4..; K4..; Q4..; RTS4..;	*Machos para roscar a máquina con mango DIN pasante*	Machine taps with reduced DIN shank

		Diseño según el estándar de fábrica de DC Dimensiones generales	**Design according to DC standards General dimensions**
DC	K613	*Machos para roscar a máquina extra largos con ranuras largas y con mango DIN pasante*	Extra-long machine taps with long flutes and reduced DIN shank
DC / DIN 371	N5..; GG5..; RTS5..;	*Machos para roscar a máquina extra largos con mango DIN reforzado* *Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 371*	Extra-long machine taps with reinforced DIN shank Overall length as per norm DC, shank dimensions as per DIN 371
DC / DIN 376	N6..; GG6..; RTS6..; K6..;	*Machos para roscar a máquina extra largos con mango DIN pasante* *Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 376*	Extra-long machine taps with reduced DIN shank Overall length as per norm DC, shank dimensions as per DIN 376
DC	N470V-	*Macho de corona*	Crown taps
DC	N5951 / N5952	*Brocas-Machos*	Combination drill/tap

DISEÑO CONSTRUCTIVO DE LOS MACHOS PARA ROSCADO POR LAMINACIÓN
CONSTRUCTIONAL DESIGN OF THREAD FORMING TAPS

		Diseño según DIN ***Dimensiones generales***	**Design according to DIN** **General dimensions**
~ DIN 2174 (M - MF) ~ DIN 2184-1 (UNC - UNF)	FS3..; FAS3..; FPS3..;	*Machos para roscado por laminación con mango DIN reforzado*	Machine thread formers with reinforced DIN shank
~ DIN 2174 (M - MF) ~ DIN 2184-1 (UNC - UNF) ~ DIN 2189 (G)	FAS4..; FPS4..;	*Machos para roscado por laminación con mango DIN pasante*	Machine thread formers with reduced DIN shank

		Diseño según el estándar de fábrica de DC ***Dimensiones generales***	**Design according to DC standards** **General dimensions**
DC / ~ DIN 2174	FAS5..; FPS5..;	*Machos para roscado por laminación extra largos con mango DIN reforzado* *Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 2174*	Extra-long machine thread formers with reinforced DIN shank Overall length as per norm DC, shank dimensions similar to DIN 2174
DC / ~ DIN 2174	FAS6..; FPS6..;	*Machos para roscado por laminación extra largos con mango DIN pasante* *Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 2174*	Extra-long machine thread formers with reduced DIN shank Overall length as per norm DC, shank dimensions similar to DIN 2174

TABLA DE DUREZA — HARDNESS CHART

HRC ***Dureza Rockwell*** **Hardness Rockwell**	**HB** ***Dureza Brinell*** **Hardness Brinell**	**HV** ***Dureza Vickers*** **Hardness Vickers**	**N/mm² Mpa** ***Resistencia a la tracción*** **Tensile strength**
25	253	266	854
26	259	273	873
27	265	279	897
28	272	286	919
29	279	294	944
30	287	302	970
31	295	310	995
32	303	318	1024
33	311	327	1052
34	320	336	1082
35	328	345	1111
36	337	355	1139
37	346	364	1168
38	354	373	1198
39	363	382	1227
40	373	392	1262
41	382	402	1296
42	392	412	1327
43	402	423	1362
44	413	434	1401
45	424	446	1442
46	436	459	1481
47	448	471	1524
48	460	484	1572
49	474	499	1625
50	488	513	1675
51	502	528	1733
52	518	545	1793
53	532	560	1845
54	549	578	1912
55	566	596	1979
56	585	615	2050
57	603	634	2121
58	621	654	2200
59		675	
60		698	
61		720	
62		746	
63		773	

Tabla de equivalencia de dureza, extracto de ISO EN 18265; 2003 / anteriormente DIN 50150. Valores redondeados.
Conversion chart for hardness values, extract from ISO EN 18265; 2003 / formerly DIN 50150. Rounded values.

PULGADAS-MM — INCHES-MM

Ø" d_1	Ø mm	TPI UN UNC	UNF	UNEF	4	6	8	12	16	20	28	32	W(BSW)	BSF	G (BSP) Rp	Ø mm
0	1.52		80										48			
1/16"	1.59														28	7.72
1	1.85	64	72													
2	2.18	56	64													
3/32"	2.38															
3	2.51	48	56													
4	2.84	40	48													
5	3.17	40	44													
1/8"	3.17												40		28	9.72
6	3.50	32	40													
5/32"	3.96												32			
8	4.16	32	36													
3/16"	4.76												24	32		
10	4.82	24	32													
12	5.48	24	28	32												
7/32"	5.55												24	28		
1/4"	6.35	20	28	32									20	26	19	13.15
9/32"	7.14													26		
5/16"	7.93	18	24	32						20	28					
3/8"	9.52	16	24	32						20	28		16	20	19	16.66
7/16"	11.11	14	20	28					16			32	14	18		
1/2"	12.70	13	20	28					16			32	12	16	14	20.95
9/16"	14.28	12	18	24					16	20	28	32	12	16		
5/8"	15.87	11	18	24				12	16	20	28	32	11	14	14	22.91
11/16"	17.46			24				12	16	20	28	32		14		
3/4"	19.05	10	16	20				12			28	32	10	12	14	26.44
13/16"	20.64			20				12	16		28	32		12		
7/8"	22.22	9	14	20				12	16		28	32	9	11	14	30.20
15/16"	23.81			20				12	16		28	32				
1"	25.40	8	12	20					16		28	32	8	10	11	33.24
1 1/16"	26.99			18			8	12	16	20	28					
1 1/8"	28.57	7	12	18			8		16	20	28		7	9	11	37.89
1 3/16"	30.16			18			8	12	16	20	28					
1 1/4"	31.75	7	12	18			8		16	20	28		7	9	11	41.91
1 5/16"	33.34			18			8	12	16	20	28					
1 3/8"	34.92	6	12	18			8		16	20	28		6	8	11	44.32
1 7/16"	36.51			18		6	8	12	16	20	28					
1 1/2"	38.10	6	12	18			8		16	20	28		6	8	11	47.80
1 9/16"	39.69			18		6	8	12	16	20						
1 5/8"	41.28			18		6	8	12	16	20			5	8		
1 11/16"	42.86			18		6	8	12	16	20						
1 3/4"	44.45	5				6	8	12	16	20			5	7	11	53.74
1 13/16"	46.04					6	8	12	16	20						
1 7/8"	47.63					6	8	12	16	20			4 1/2			
1 15/16"	49.21					6	8	12	16	20						
2"	50.80	4 1/2				6	8	12	16	20			4 1/2	7	11	59.61
2 1/8"	53.97					6	8	12	16	20						
2 1/4"	57.15	4 1/2				6	8	12	16	20			4	6	11	65.71
2 3/8"	60.32					6	8	12	16	20						
2 1/2"	63.50	4				6	8	12	16	20			4	6	11	75.18
2 5/8"	66.67				4	6	8	12	16	20						
2 3/4"	69.85	4				6	8	12	16	20			3 1/2	6	11	81.53
2 7/8"	73.02				4	6	8	12	16	20						
3"	76.20	4				6	8	12	16	20			3 1/2	5	11	87.88
3 1/8"	79.37				4	6	8	12	16							
3 1/4"	82.55	4				6	8	12	16				3 1/4	5	11	93.98
3 3/8"	85.72				4	6	8	12	16							
3 1/2"	88.90	4				6	8	12	16				3 1/4	4 1/2	11	100.33
3 5/8"	92.07				4	6	8	12	16							
3 3/4"	95.25	4				6	8	12	16				3	4 1/2	11	106.68
3 7/8"	98.42				4	6	8	12	16							
4"	101.60	4				6	8	12	16				3	4 1/2	11	113.03

TABLA DE CONVERSIÓN — CONVERSION TABLE

Ø d_1	Vc m/min															
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
	min^{-1}															
1	318	637	955	1273	1592	1910	2546	3183	3820	4775	6366	7958	9549	12732	15915	19099
2	159	318	477	637	796	955	1273	1592	1910	2387	3183	3979	4775	6366	7958	9549
3	106	212	318	424	531	637	849	1061	1273	1592	2122	2653	3183	4244	5305	6366
4	80	159	239	318	398	477	637	796	955	1194	1592	1989	2387	3183	3979	4775
5	64	127	191	255	318	382	509	637	764	955	1273	1592	1910	2546	3183	3820
6	53	106	159	212	265	318	424	531	637	796	1061	1326	1592	2122	2653	3183
8	40	80	119	159	199	239	318	398	477	597	796	995	1194	1592	1989	2387
10	32	64	95	127	159	191	255	318	382	477	637	796	955	1273	1592	1910
12	27	53	80	106	133	159	212	265	318	398	531	663	796	1061	1326	1592
14	23	45	68	91	114	136	182	227	273	341	455	568	682	909	1137	1364
16	20	40	60	80	99	119	159	199	239	298	398	497	597	796	995	1194
18	18	35	53	71	88	106	141	177	212	265	354	442	531	707	884	1061
20	16	32	48	64	80	95	127	159	191	239	318	398	477	637	796	955
25	13	25	38	51	64	76	102	127	153	191	255	318	382	509	637	764
30	11	21	32	42	53	64	85	106	127	159	212	265	318	424	531	637
35	9	18	27	36	45	55	73	91	109	136	182	227	273	364	455	546
40	8	16	24	32	40	48	64	80	95	119	159	199	239	318	398	477
45	7	14	21	28	35	42	57	71	85	106	141	177	212	283	354	424
50	6	13	19	25	32	38	51	64	76	95	127	159	191	255	318	382

DIÁMETRO DEL AGUJERO — CORE HOLES

M ISO DIN 14 4H5H (*recomendado / recommended*)

Ø	P	Ø *Núcleo* - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
0.3	**0.080**	0.223	0.240	0.23
0.35	**0.090**	0.264	0.286	0.28
0.4	**0.100**	0.304	0.330	0.32
0.5	**0.125**	0.380	0.415	0.41
0.6	**0.150**	0.456	0.502	0.50
0.7	**0.175**	0.532	0.585	0.58
0.8	**0.200**	0.608	0.665	0.66
0.9	**0.225**	0.684	0.745	0.74

M DIN 13, ISO 261, *5H / 6H

Ø	P	Ø *Núcleo* - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
***1**	**0.25**	0.729	0.785	0.75
***1.1**	**0.25**	0.829	0.885	0.85
***1.2**	**0.25**	0.929	0.985	0.95
***1.4**	**0.30**	1.075	1.142	1.10
1.6	**0.35**	1.221	1.321	1.25
1.7	**0.35**	1.321	1.421	1.35
1.8	**0.35**	1.421	1.521	1.45
2	**0.40**	1.567	1.679	1.60
2.2	**0.45**	1.713	1.838	1.75
2.3	**0.40**	1.867	1.979	1.90
2.5	**0.45**	2.013	2.138	2.05
2.6	**0.45**	2.113	2.238	2.15
3	**0.50**	2.459	2.599	2.50
3.5	**0.60**	2.850	3.010	2.90
4	**0.70**	3.242	3.422	3.30
4.5	**0.75**	3.688	3.878	3.75
5	**0.80**	4.134	4.334	4.20
6	**1.00**	4.917	5.153	5.00
7	**1.00**	5.917	6.153	6.00
8	**1.25**	6.647	6.912	6.80
9	**1.25**	7.647	7.912	7.80
10	**1.50**	8.376	8.676	8.50
11	**1.50**	9.376	9.676	9.50
12	**1.75**	10.106	10.441	10.20
14	**2.00**	11.835	12.210	12.00
16	**2.00**	13.835	14.210	14.00
18	**2.50**	15.294	15.744	15.50
20	**2.50**	17.294	17.744	17.50
22	**2.50**	19.294	19.744	19.50
24	**3.00**	20.752	21.252	21.00
27	**3.00**	23.752	24.252	24.00
30	**3.50**	26.211	26.771	26.50
33	**3.50**	29.211	29.771	29.50
36	**4.00**	31.670	32.270	32.00
39	**4.00**	34.670	35.270	35.00
42	**4.50**	37.129	37.799	37.50
45	**4.50**	40.129	40.799	40.50
48	**5.00**	42.587	43.297	43.00
52	**5.00**	46.587	47.297	47.00
56	**5.50**	50.046	50.796	50.50

MF DIN 13, ISO 261, *4H / 6H

Ø	P	Ø *Núcleo* - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
***1.4**	**0.20**	1.183	1.221	1.20
***1.6**	**0.20**	1.383	1.421	1.40
***1.8**	**0.20**	1.583	1.621	1.60
***2**	**0.20**	1.783	1.821	1.80
***2**	**0.25**	1.729	1.774	1.75
***2.2**	**0.20**	1.983	2.021	2.00
***2.2**	**0.25**	1.929	1.974	1.95
***2.3**	**0.20**	2.083	2.121	2.10
***2.3**	**0.25**	2.029	2.074	2.05
***2.5**	**0.20**	2.283	2.321	2.30
***2.5**	**0.25**	2.229	2.274	2.25
2.5	**0.35**	2.121	2.221	2.15
2.6	**0.35**	2.221	2.321	2.25
3	**0.35**	2.621	2.721	2.65
3.5	**0.35**	3.121	3.221	3.15
4	**0.50**	3.459	3.599	3.50
4.5	**0.50**	3.959	4.099	4.00
5	**0.50**	4.459	4.599	4.50
5.5	**0.50**	4.959	5.099	5.00
6	**0.75**	5.188	5.378	5.25
7	**0.75**	6.188	6.378	6.25
8	**0.75**	7.188	7.378	7.25
8	**1.00**	6.917	7.153	7.00
9	**0.75**	8.188	8.378	8.25
9	**1.00**	7.917	8.153	8.00
10	**0.75**	9.188	9.378	9.25
10	**1.00**	8.917	9.153	9.00
10	**1.25**	8.647	8.912	8.80
11	**0.75**	10.188	10.378	10.25
11	**1.00**	9.917	10.153	10.00
12	**1.00**	10.917	11.153	11.00
12	**1.25**	10.647	10.912	10.80
12	**1.50**	10.376	10.676	10.50
14	**1.00**	12.917	13.153	13.00
14	**1.25**	12.647	12.912	12.80
14	**1.50**	12.376	12.676	12.50
15	**1.00**	13.917	14.153	14.00
15	**1.50**	13.376	13.676	13.50
16	**1.00**	14.917	15.153	15.00
16	**1.50**	14.376	14.676	14.50
17	**1.00**	15.917	16.153	16.00
17	**1.50**	15.376	15.676	15.50
18	**1.00**	16.917	17.153	17.00
18	**1.50**	16.376	16.676	16.50
18	**2.00**	15.835	16.210	16.00
20	**1.00**	18.917	19.153	19.00
20	**1.50**	18.376	18.676	18.50
20	**2.00**	17.835	18.210	18.00
22	**1.00**	20.917	21.153	21.00
22	**1.50**	20.376	20.676	20.50
22	**2.00**	19.835	20.210	20.00
24	**1.00**	22.917	23.153	23.00
24	**1.50**	22.376	22.676	22.50
24	**2.00**	21.835	22.210	22.00
25	**1.00**	23.917	24.153	24.00
25	**1.50**	23.376	23.676	23.50
25	**2.00**	22.835	23.210	23.00

DIÁMETRO DEL AGUJERO — CORE HOLES

MF DIN 13, ISO 261, 6H

Ø	**P**	***Ø Núcleo* - Core Ø nut**		
d_1	mm	Ø mini	Ø maxi	Ø guide line
27	**1.50**	25.376	25.676	25.50
27	**2.00**	24.835	25.210	25.00
28	**1.00**	26.917	27.153	27.00
28	**1.50**	26.376	26.676	26.50
28	**2.00**	25.835	26.210	26.00
30	**1.00**	28.917	29.153	29.00
30	**1.50**	28.376	28.676	28.50
30	**2.00**	27.835	28.210	28.00
32	**1.50**	30.376	30.676	30.50
32	**2.00**	29.835	30.210	30.00
33	**1.50**	31.376	31.676	31.50
33	**2.00**	30.835	31.210	31.00
35	**1.50**	33.376	33.676	33.50
36	**1.50**	34.376	34.676	34.50
36	**2.00**	33.835	34.210	34.00
36	**3.00**	32.752	33.252	33.00
39	**1.50**	37.376	37.676	37.50
39	**2.00**	36.835	37.210	37.00
39	**3.00**	35.752	36.252	36.00
40	**1.50**	38.376	38.676	38.50
40	**2.00**	37.835	38.210	38.00
40	**3.00**	36.752	37.252	37.00
42	**1.50**	40.376	40.676	40.50
42	**2.00**	39.835	40.210	40.00
42	**3.00**	38.752	39.252	39.00
45	**1.50**	43.376	43.676	43.50
45	**2.00**	42.835	43.210	43.00
45	**3.00**	41.752	42.252	42.00
48	**1.50**	46.376	46.676	46.50
48	**2.00**	45.835	46.210	46.00
48	**3.00**	44.752	45.252	45.00
50	**1.50**	48.376	48.676	48.50
50	**2.00**	47.835	48.210	48.00
50	**3.00**	46.752	47.252	47.00
52	**1.50**	50.376	50.676	50.50
52	**2.00**	49.835	50.210	50.00
52	**3.00**	48.752	49.252	49.00
55	**2.00**	52.835	53.210	53.00
60	**2.00**	57.835	58.210	58.00

MF EN 60423:1994, 7H

Ø	**P**	***Ø Núcleo* - Core Ø nut**		
d_1	mm	Ø mini	Ø maxi	Ø guide line
8	**1.00**	6.917	7.217	7.00
10	**1.00**	8.917	9.217	9.00
12	**1.50**	10.376	10.751	10.50
16	**1.50**	14.376	14.751	14.50
20	**1.50**	18.376	18.751	18.50
25	**1.50**	23.376	23.751	23.50
32	**1.50**	30.376	30.751	30.50
40	**1.50**	38.376	38.751	38.50
63	**1.50**	61.376	61.751	61.50

UNC ASME B1.1, 2B

ø"	**P**	**P**	***Ø Núcleo* - Core Ø nut**		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
1	**64**	0.397	1.425	1.582	1.45
2	**56**	0.454	1.695	1.871	1.75
3	**48**	0.529	1.941	2.146	2.00
4	**40**	0.635	2.157	2.385	2.25
5	**40**	0.635	2.487	2.697	2.55
6	**32**	0.794	2.642	2.895	2.75
8	**32**	0.794	3.302	3.530	3.40
10	**24**	1.058	3.683	3.962	3.80
12	**24**	1.058	4.344	4.597	4.40
1/4"	**20**	1.270	4.979	5.257	5.10
5/16"	**18**	1.411	6.401	6.731	6.50
3/8"	**16**	1.588	7.798	8.153	8.00
7/16"	**14**	1.814	9.144	9.550	9.30
1/2"	**13**	1.954	10.592	11.023	10.80
9/16"	**12**	2.117	11.989	12.446	12.20
5/8"	**11**	2.309	13.386	13.868	13.60
3/4"	**10**	2.540	16.307	16.840	16.60
7/8"	**9**	2.822	19.177	19.761	19.50
1"	**8**	3.175	21.971	22.606	22.30
1 1/8"	**7**	3.629	24.638	25.349	25.00
1 1/4"	**7**	3.629	27.813	28.524	28.20
1 3/8"	**6**	4.233	30.353	31.115	30.80
1 1/2"	**6**	4.233	33.528	34.290	34.00
1 3/4"	**5**	5.080	38.964	39.827	39.50
2"	**4.5**	5.644	44.679	45.593	45.30

UNJC ISO 3161:1999, 3B

ø"	**P**	**P**	***Ø Núcleo* - Core Ø nut**		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
4	**40**	0.635	2.228	2.393	2.30
5	**40**	0.635	2.558	2.723	2.60
6	**32**	0.794	2.733	2.939	2.80
8	**32**	0.794	3.393	3.599	3.45
10	**24**	1.058	3.795	4.064	3.90
12	**24**	1.058	4.455	4.704	4.55
1/4"	**20**	1.270	5.113	5.387	5.20
5/16"	**18**	1.411	6.563	6.833	6.70
3/8"	**16**	1.588	7.978	8.255	8.10
7/16"	**14**	1.814	9.347	9.639	9.40
1/2"	**13**	1.954	10.798	11.095	10.90
9/16"	**12**	2.117	12.228	12.482	12.40
5/8"	**11**	2.309	13.627	13.904	13.80
3/4"	**10**	2.540	16.576	16.881	16.70

DIÁMETRO DEL AGUJERO — CORE HOLES

UNF ASME B1.1, 2B

ø"	P	P	*Ø Núcleo* - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
0	**80**	0.318	1.182	1.305	1.20
1	**72**	0.353	1.474	1.612	1.50
2	**64**	0.397	1.756	1.912	1.80
3	**56**	0.454	2.025	2.197	2.10
4	**48**	0.529	2.271	2.458	2.35
5	**44**	0.577	2.551	2.740	2.60
6	**40**	0.635	2.820	3.022	2.90
8	**36**	0.706	3.404	3.606	3.50
10	**32**	0.794	3.963	4.165	4.05
12	**28**	0.907	4.496	4.724	4.60
1/4"	**28**	0.907	5.360	5.588	5.50
5/16"	**24**	1.058	6.782	7.035	6.90
3/8"	**24**	1.058	8.382	8.636	8.50
7/16"	**20**	1.270	9.729	10.033	9.80
1/2"	**20**	1.270	11.329	11.607	11.40
9/16"	**18**	1.411	12.751	13.081	12.90
5/8"	**18**	1.411	14.351	14.681	14.50
3/4"	**16**	1.588	17.323	17.678	17.50
7/8"	**14**	1.814	20.270	20.675	20.40
1"	**12**	2.117	23.114	23.571	23.30
1 1/8"	**12**	2.117	26.289	26.746	26.50
1 1/4"	**12**	2.117	29.464	29.921	29.70
1 3/8"	**12**	2.117	32.639	33.096	32.80
1 1/2"	**12**	2.117	35.814	36.271	36.00

UNJF ISO 3161:1999, 3B

ø"	P	P	*Ø Núcleo* - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
0	**80**	0.318	1.217	1.298	1.25
1	**72**	0.353	1.511	1.603	1.55
2	**64**	0.397	1.798	1.902	1.85
3	**56**	0.454	2.073	2.189	2.10
4	**48**	0.529	2.329	2.466	2.35
5	**44**	0.577	2.614	2.764	2.65
6	**40**	0.635	2.888	3.053	2.95
8	**36**	0.706	3.480	3.663	3.55
10	**32**	0.794	4.054	4.255	4.10
12	**28**	0.907	4.602	4.816	4.70
1/4"	**28**	0.907	5.466	5.662	5.55
5/16"	**24**	1.058	6.906	7.109	7.00
3/8"	**24**	1.058	8.494	8.679	8.60
7/16"	**20**	1.270	9.876	10.084	10.00
1/2"	**20**	1.270	11.463	11.661	11.55
9/16"	**18**	1.411	12.913	13.122	13.05
5/8"	**18**	1.411	14.501	14.702	14.60
3/4"	**16**	1.588	17.506	17.722	17.60
7/8"	**14**	1.814	20.460	20.706	20.60
1"	**12**	2.117	23.340	23.594	23.50

UNEF ASME B1.1, 2B

ø"	P	P	*Ø Núcleo* - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
12	**32**	0.794	4.623	4.826	4.70
1/4"	**32**	0.794	5.487	5.689	5.60
5/16"	**32**	0.794	7.087	7.264	7.20
3/8"	**32**	0.794	8.662	8.864	8.75
7/16"	**28**	0.907	10.135	10.337	10.25
1/2"	**28**	0.907	11.710	11.938	11.85
9/16"	**24**	1.058	13.132	13.385	13.20
5/8"	**24**	1.058	14.732	14.986	14.80
11/16"	**24**	1.058	16.307	16.560	16.40
3/4"	**20**	1.270	17.679	17.957	17.80
13/16"	**20**	1.270	19.254	19.558	19.40
7/8"	**20**	1.270	20.854	21.132	21.00
1"	**20**	1.270	24.029	24.307	24.10

UN ASME B1.1, 2B

ø"	P	P	*Ø Núcleo* - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
5/16"	**20**	1.270	6.554	6.858	6.70
3/8"	**20**	1.270	8.154	8.432	8.30
9/16"	**20**	1.270	12.904	13.208	13.00
5/8"	**20**	1.270	14.504	14.782	14.60
1 1/8"	**8**	3.175	25.146	25.781	25.50
1 1/4"	**8**	3.175	28.321	28.956	28.70
1 3/8"	**8**	3.175	31.496	32.131	31.80
1 1/2"	**8**	3.175	34.671	35.306	35.00
1 5/8"	**8**	3.175	37.846	38.481	38.20
1 3/4"	**8**	3.175	41.021	41.656	41.40
1 7/8"	**8**	3.175	44.196	44.831	44.50
2"	**8**	3.175	47.371	48.006	47.70
2 1/4"	**8**	3.175	53.721	54.356	54.10
2 1/2"	**8**	3.175	60.071	60.706	60.40

UNS ASME B1.1, 2B

ø"	P	P	*Ø Núcleo* - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
10	**36**	0.706	4.064	4.216	4.10
10	**40**	0.635	4.141	4.292	4.20
10	**56**	0.454	4.344	4.445	4.40
1/4"	**36**	0.706	5.588	5.740	5.65
1/4"	**40**	0.635	5.665	5.816	5.70
1/4"	**48**	0.529	5.766	5.892	5.80
1/4"	**56**	0.454	5.868	5.969	5.90
5/16"	**36**	0.706	7.163	7.340	7.25
3/8"	**36**	0.706	8.763	8.940	8.80
7/16"	**24**	1.058	9.957	10.210	10.00
1/2"	**24**	1.058	11.557	11.811	11.60
1"	**14**	1.814	23.445	23.825	23.60

DIÁMETRO DEL AGUJERO — CORE HOLES

G (BSP) DIN EN ISO 228

ø"	P	P	Ø Núcleo - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
1/16"	**28**	0.907	6.561	6.843	6.75
1/8"	**28**	0.907	8.566	8.848	8.75
1/4"	**19**	1.337	11.445	11.890	11.60
3/8"	**19**	1.337	14.950	15.395	15.20
1/2"	**14**	1.814	18.631	19.172	18.90
5/8"	**14**	1.814	20.587	21.128	20.90
3/4"	**14**	1.814	24.117	24.658	24.40
7/8"	**14**	1.814	27.877	28.418	28.20
1"	**11**	2.309	30.291	30.931	30.70
1 1/8"	**11**	2.309	34.939	35.579	35.30
1 1/4"	**11**	2.309	38.952	39.592	39.30
1 3/8"	**11**	2.309	41.365	42.005	41.80
1 1/2"	**11**	2.309	44.845	45.485	45.20
1 3/4"	**11**	2.309	50.788	51.428	51.20
2"	**11**	2.309	56.656	57.296	57.00
2 1/4"	**11**	2.309	62.752	63.392	63.10
2 1/2"	**11**	2.309	72.226	72.866	72.60
3"	**11**	2.309	84.926	85.566	85.30

W (BSW) BS 84, (DIN11 - 1970)

ø"	P	P	Ø Núcleo - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
(3/32")	**48**				1.80
1/8"	**40**	0.635	2.362	2.591	2.50
(5/32")	**32**				3.10
3/16"	**24**	1.058	3.406	3.744	3.60
(7/32")	**24**				4.40
1/4"	**20**	1.270	4.724	5.156	4.90
5/16"	**18**	1.411	6.129	6.588	6.40
3/8"	**16**	1.588	7.493	7.988	7.70
7/16"	**14**	1.814	8.791	9.332	9.10
1/2"	**12**	2.117	9.987	10.589	10.30
5/8"	**11**	2.309	12.918	13.558	13.30
3/4"	**10**	2.540	15.799	16.484	16.20
7/8"	**9**	2.822	18.613	19.355	19.25
1"	**8**	3.175	21.336	22.149	21.90

TR ISO 2901-2904, DIN 103, 7H

ø	P	Ø Núcleo - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
10	**2**	8	8.236	8.20
12	**3**	9	9.315	9.25
14	**3**	11	11.315	11.25
16	**4**	12	12.375	12.25
18	**4**	14	14.375	14.25
20	**4**	16	16.375	16.25
22	**5**	17	17.450	17.25
24	**5**	19	19.450	19.25
26	**5**	21	21.450	21.25
28	**5**	23	23.450	23.25
30	**6**	24	24.500	24.25
32	**6**	26	26.500	26.25

PG DIN 40430

ø	P	P	Ø Núcleo - Core Ø nut		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
7	**20**	1.270	11.28	11.43	11.35
9	**18**	1.411	13.86	14.01	13.90
11	**18**	1.411	17.26	17.41	17.30
13.5	**18**	1.411	19.06	19.21	19.10
16	**18**	1.411	21.16	21.31	21.20
21	**16**	1.588	26.78	27.03	26.80
29	**16**	1.588	35.48	35.73	35.50
36	**16**	1.588	45.48	45.73	45.50
42	**16**	1.588	52.48	52.73	52.50
48	**16**	1.588	57.78	58.03	57.80

S NIHS 06-10, 3G5H (*Tol. estándar* - standard tol.)

ø	P	Ø Núcleo - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
0.3	**0.080**	0.223	0.240	0.23
0.35	**0.090**	0.264	0.286	0.28
0.4	**0.100**	0.304	0.330	0.32
0.5	**0.125**	0.380	0.415	0.41
0.6	**0.150**	0.456	0.502	0.50
0.7	**0.175**	0.532	0.585	0.58
0.8	**0.200**	0.608	0.665	0.66
0.9	**0.225**	0.684	0.745	0.74
1	**0.250**	0.760	0.825	0.82
1.2	**0.250**	0.960	1.025	1.02
1.4	**0.300**	1.112	1.185	1.18

SF NIHS 06-10, 3G5H (*Tol. estándar* - standard tol.)

ø	P	Ø Núcleo - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
1.4	**0.200**	1.208	1.265	1.26
1.6	**0.200**	1.408	1.465	1.46
1.8	**0.200**	1.608	1.665	1.66
2	**0.200**	1.808	1.865	1.86
2.2	**0.200**	2.008	2.065	2.06
2.2	**0.250**	1.960	2.025	2.02
2.5	**0.200**	2.308	2.365	2.36
2.5	**0.250**	2.260	2.325	2.32

SL Safelock SL 15-01

ø	P	Ø Núcleo - Core Ø nut		
d_1	mm	Ø mini	Ø maxi	Ø guide line
0.3	**0.060**	0.264	0.278	0.27
0.35	**0.060**	0.314	0.328	0.32
0.4	**0.080**	0.356	0.372	0.36
0.5	**0.100**	0.448	0.466	0.46
0.6	**0.125**	0.538	0.559	0.55
0.7	**0.150**	0.628	0.651	0.64
0.8	**0.150**	0.728	0.751	0.74
0.9	**0.175**	0.818	0.844	0.83
1	**0.200**	0.908	0.936	0.92
1.2	**0.200**	1.108	1.136	1.12
1.4	**0.250**	1.288	1.321	1.30

DIÁMETRO DE TORNEADO — TURNED DIAMETERS

M DIN 13, ISO 261, *6h / 6g

Ø	P	Ø Exterior Thread outside Ø		
d_1	mm	Ø mini	Ø maxi	Ø guide line
*1	0.25	0.933	1.000	0.97
*1.1	0.25	1.033	1.100	1.07
*1.2	0.25	1.133	1.200	1.17
*1.4	0.30	1.325	1.400	1.36
1.6	0.35	1.496	1.581	1.54
1.7	0.35	1.596	1.681	1.64
1.8	0.35	1.696	1.781	1.74
2	0.40	1.886	1.981	1.93
2.2	0.45	2.080	2.180	2.13
2.3	0.40	2.186	2.300	2.23
2.5	0.45	2.380	2.480	2.43
2.6	0.45	2.480	2.600	2.53
3	0.50	2.874	2.980	2.92
3.5	0.60	3.354	3.479	3.41
4	0.70	3.838	3.978	3.91
4.5	0.75	4.338	4.478	4.40
5	0.80	4.826	4.976	4.90
6	1.00	5.794	5.974	5.88
7	1.00	6.794	6.974	6.88
8	1.25	7.760	7.972	7.87
9	1.25	8.760	8.972	8.87
10	1.50	9.732	9.968	9.85
11	1.50	10.732	10.968	10.85
12	1.75	11.701	11.966	11.83
14	2.00	13.682	13.962	13.82
16	2.00	15.682	15.962	15.82
18	2.50	17.623	17.958	17.79
20	2.50	19.623	19.958	19.79
22	2.50	21.623	21.958	21.79
24	3.00	23.577	23.952	23.76
27	3.00	26.577	26.952	26.76
30	3.50	29.522	29.947	29.73
33	3.50	32.522	32.947	32.73
36	4.00	35.465	35.940	35.70
39	4.00	38.465	38.940	38.70
42	4.50	41.437	41.937	41.69
45	4.50	44.437	44.937	44.69
48	5.00	47.399	47.929	47.66
52	5.00	51.399	51.929	51.66
56	5.50	55.365	55.925	55.65

MF DIN 13, ISO 261, 6g

Ø	P	Ø Exterior Thread outside Ø		
d_1	mm	Ø mini	Ø maxi	Ø guide line
2.5	0.35	2.396	2.481	2.44
3	0.35	2.896	2.981	2.94
3.5	0.35	3.396	3.481	3.44
4	0.50	3.874	3.980	3.93
4.5	0.50	4.374	4.480	4.43
5	0.50	4.874	4.980	4.93
5.5	0.50	5.374	5.480	5.43
6	0.75	5.838	5.978	5.90
7	0.75	6.838	6.978	6.90
8	0.75	7.838	7.978	7.90

MF DIN 13, ISO 261, 6g

Ø	P	Ø Exterior Thread outside Ø		
d_1	mm	Ø mini	Ø maxi	Ø guide line
8	1.00	7.794	7.974	7.88
9	0.75	8.838	8.978	8.90
9	1.00	8.794	8.974	8.88
10	0.75	9.838	9.978	9.90
10	1.00	9.794	9.974	9.88
10	1.25	9.760	9.972	9.86
11	0.75	10.838	10.978	10.90
11	1.00	10.794	10.974	10.88
12	1.00	11.794	11.974	11.88
12	1.25	11.760	11.972	11.86
12	1.50	11.732	11.968	11.85
14	1.00	13.794	13.974	13.88
14	1.25	13.760	13.972	13.86
14	1.50	13.732	13.968	13.85
15	1.00	14.794	14.974	14.88
15	1.50	14.732	14.968	14.85
16	1.00	15.794	15.974	15.88
16	1.50	15.732	15.968	15.85
17	1.00	16.794	16.974	16.88
17	1.50	16.732	16.968	16.85
18	1.00	17.794	17.974	17.88
18	1.50	17.732	17.968	17.85
18	2.00	17.682	17.962	17.82
20	1.00	19.794	19.974	19.88
20	1.50	19.732	19.968	19.85
20	2.00	19.682	19.962	19.82
22	1.00	21.794	21.974	21.88
22	1.50	21.732	21.968	21.85
22	2.00	21.682	21.962	21.82
24	1.00	23.794	23.974	23.88
24	1.50	23.732	23.968	23.85
24	2.00	23.682	23.962	23.82
25	1.00	24.794	24.974	24.88
25	1.50	24.732	24.968	24.85
25	2.00	24.682	24.962	24.82
27	1.00	26.794	26.974	26.88
27	1.50	26.732	26.968	26.85
27	2.00	26.682	26.962	26.82
28	1.00	27.794	27.974	27.88
28	1.50	27.732	27.968	27.85
28	2.00	27.682	27.962	27.82
30	1.00	29.794	29.974	29.88
30	1.50	29.732	29.968	29.85
30	2.00	29.682	29.962	29.82
30	3.00	29.577	29.952	29.76
32	1.50	31.732	31.968	31.85
32	2.00	31.682	31.962	31.82
33	1.50	32.732	32.968	32.85
33	2.00	32.682	32.962	32.82
33	3.00	32.577	32.952	32.76
35	1.50	34.732	34.968	34.85
36	1.50	35.732	35.968	35.85
36	2.00	35.682	35.962	35.82
36	3.00	35.577	35.952	35.76
39	1.50	38.732	38.968	38.85
39	2.00	38.682	38.962	38.82
39	3.00	38.577	38.952	38.76

DIÁMETRO DE TORNEADO — TURNED DIAMETERS

MF DIN 13, ISO 261, 6g

Ø	P	Ø Exterior Thread outside Ø		
d_1	mm	Ø mini	Ø maxi	Ø guide line
40	**1.50**	39.732	39.968	39.85
40	**2.00**	39.682	39.962	39.82
40	**3.00**	39.577	39.952	39.76
42	**1.50**	41.732	41.968	41.85
42	**2.00**	41.682	41.962	41.82
42	**3.00**	41.577	41.952	41.76
45	**1.50**	44.732	44.968	44.85
45	**2.00**	44.682	44.962	44.82
45	**3.00**	44.577	44.952	44.76
48	**1.50**	47.732	47.968	47.85
48	**2.00**	47.682	47.962	47.82
48	**3.00**	47.577	47.952	47.76
50	**1.50**	49.732	49.968	49.85
50	**2.00**	49.682	49.962	49.82
50	**3.00**	49.577	49.952	49.76
52	**1.50**	51.732	51.968	51.85
52	**2.00**	51.682	51.962	51.82
52	**3.00**	51.577	51.952	51.76
52	**4.00**	51.465	51.940	51.70

UNC ASME B1.1, 2A

Ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
1	**64**	0.397	1.743	1.838	1.79
2	**56**	0.454	2.066	2.169	2.12
3	**48**	0.529	2.383	2.496	2.44
4	**40**	0.635	2.695	2.824	2.76
5	**40**	0.635	3.026	3.154	3.09
6	**32**	0.794	3.333	3.484	3.41
8	**32**	0.794	3.991	4.142	4.07
10	**24**	1.058	4.618	4.800	4.71
12	**24**	1.058	5.279	5.461	5.37
1/4"	**20**	1.270	6.117	6.322	6.22
5/16"	**18**	1.411	7.687	7.907	7.80
3/8"	**16**	1.588	9.254	9.491	9.37
7/16"	**14**	1.814	10.816	11.076	10.95
1/2"	**13**	1.954	12.386	12.661	12.52
9/16"	**12**	2.117	13.958	14.246	14.10
5/8"	**11**	2.309	15.528	15.834	15.68
3/4"	**10**	2.540	18.677	19.004	18.84
7/8"	**9**	2.822	21.824	22.176	22.00
1"	**8**	3.175	24.969	25.349	25.16
1 1/8"	**7**	3.629	28.103	28.519	28.31
1 1/4"	**7**	3.629	31.278	31.694	31.49
1 3/8"	**6**	4.233	34.402	34.864	34.63
1 1/2"	**6**	4.233	37.577	38.039	37.81
1 3/4"	**5**	5.080	43.860	44.381	44.12
2"	**4.5**	5.644	50.168	50.726	50.45
2 1/4"	**4.5**	5.644	56.518	57.076	56.80
2 1/2"	**4**	6.350	62.817	63.421	63.12
2 3/4"	**4**	6.350	69.165	69.768	69.47
3"	**4**	6.350	75.515	76.118	75.82
3 1/4"	**4**	6.350	81.862	82.466	82.16
3 1/2"	**4**	6.350	88.212	88.816	88.51
3 3/4"	**4**	6.350	94.560	95.163	94.86
4"	**4**	6.350	100.910	101.513	101.21

UNF ASME B1.1, 2A

Ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
0	**80**	0.318	1.431	1.511	1.47
1	**72**	0.353	1.751	1.838	1.79
2	**64**	0.397	2.073	2.169	2.12
3	**56**	0.454	2.393	2.496	2.44
4	**48**	0.529	2.713	2.827	2.77
5	**44**	0.577	3.036	3.157	3.10
6	**40**	0.635	3.356	3.484	3.42
8	**36**	0.706	4.006	4.145	4.08
10	**32**	0.794	4.651	4.803	4.73
12	**28**	0.907	5.296	5.461	5.38
1/4"	**28**	0.907	6.160	6.324	6.24
5/16"	**24**	1.058	7.727	7.909	7.82
3/8"	**24**	1.058	9.315	9.497	9.41
7/16"	**20**	1.270	10.874	11.079	10.98
1/2"	**20**	1.270	12.462	12.666	12.56
9/16"	**18**	1.411	14.031	14.251	14.14
5/8"	**18**	1.411	15.619	15.839	15.73
3/4"	**16**	1.588	18.774	19.011	18.89
7/8"	**14**	1.814	21.923	22.184	22.05
1"	**12**	2.117	25.065	25.354	25.21
1 1/8"	**12**	2.117	28.240	28.529	28.38
1 1/4"	**12**	2.117	31.415	31.704	31.56
1 3/8"	**12**	2.117	34.588	34.876	34.73
1 1/2"	**12**	2.117	37.763	38.051	37.91

UNEF ASME B1.1, 2A

Ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
12	**32**	0.794	5.312	5.463	5.39
1/4"	**32**	0.794	6.173	6.324	6.25
5/16"	**32**	0.794	7.760	7.912	7.84
3/8"	**32**	0.794	9.348	9.499	9.42
7/16"	**28**	0.907	10.920	11.084	11.00
1/2"	**28**	0.907	12.507	12.672	12.59
9/16"	**24**	1.058	14.075	14.257	14.17
5/8"	**24**	1.058	15.662	15.844	15.75
11/16"	**24**	1.058	17.250	17.432	17.34
3/4"	**20**	1.270	18.812	19.016	18.91
13/16"	**20**	1.270	20.339	20.604	20.50
7/8"	**20**	1.270	21.987	22.191	22.09
15/16"	**20**	1.270	23.572	23.776	23.67
1"	**20**	1.270	25.159	25.364	25.26
1 1/8"	**18**	1.411	28.319	28.539	28.43
1 1/4"	**18**	1.411	31.491	31.711	31.60
1 1/2"	**18**	1.411	37.841	38.061	37.95

UN ASME B1.1, 2A

Ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
5/16"	**20**	1.270	7.702	7.907	7.80
3/8"	**20**	1.270	9.289	9.494	9.39
9/16"	**20**	1.270	14.049	14.254	14.15
5/8"	**20**	1.270	15.637	15.841	15.74

DIÁMETRO DE TORNEADO — TURNED DIAMETERS

UN ASME B1.1, 2A

ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
1 1/8"	8	3.175	28.141	28.521	28.33
1 1/4"	8	3.175	31.316	31.696	31.51
1 3/8"	8	3.175	34.489	34.869	34.68
1 1/2"	8	3.175	37.664	38.044	37.85
1 5/8"	8	3.175	40.839	41.219	41.03
1 3/4"	8	3.175	44.011	44.391	44.20
1 7/8"	8	3.175	47.186	47.566	47.38
2"	8	3.175	50.361	50.741	50.55
2 1/4"	8	3.175	56.709	57.089	56.90
2 1/2"	8	3.175	63.059	63.439	63.25
2 3/4"	8	3.175	69.406	69.786	69.60
3"	8	3.175	75.753	76.133	75.94

UNS ASME B1.1, 2A

ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
10	36	0.706	4.664	4.803	4.73
10	40	0.635	4.674	4.803	4.74
10	56	0.454	4.705	4.808	4.76
1/4"	36	0.706	6.188	6.327	6.26
1/4"	40	0.635	6.198	6.327	6.26
1/4"	48	0.529	6.216	6.329	6.27
1/4"	56	0.454	6.226	6.329	6.28
5/16"	36	0.706	7.775	7.914	7.84
3/8"	36	0.706	9.360	9.499	9.43
7/16"	24	1.058	10.902	11.084	10.99
1/2"	24	1.058	12.487	12.669	12.58
1"	14	1.814	25.096	25.356	25.23

G (BSP) DIN EN ISO 228

ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
1/16"	28	0.907	7.509	7.723	7.62
1/8"	28	0.907	9.514	9.728	9.62
1/4"	19	1.337	12.907	13.157	13.03
3/8"	19	1.337	16.412	16.662	16.54
1/2"	14	1.814	20.671	20.955	20.81
5/8"	14	1.814	22.627	22.911	22.77
3/4"	14	1.814	26.157	26.441	26.30
7/8"	14	1.814	29.917	30.201	30.06
1"	11	2.309	32.889	33.249	33.07
1 1/8"	11	2.309	37.537	37.897	37.72
1 1/4"	11	2.309	41.550	41.910	41.73
1 3/8"	11	2.309	43.963	44.323	44.14
1 1/2"	11	2.309	47.443	47.803	47.62
1 3/4"	11	2.309	53.386	53.746	53.57
2"	11	2.309	59.254	59.614	59.43
2 1/4"	11	2.309	65.276	65.710	65.49
2 1/2"	11	2.309	74.750	75.184	74.97
2 3/4"	11	2.309	81.100	81.534	81.32
3"	11	2.309	87.450	87.884	87.67
3 1/2"	11	2.309	99.896	100.330	100.11

W (BSW) BS 84

ø"	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
1/4"	20	1.270	6.165	6.319	6.24
5/16"	18	1.411	7.737	7.904	7.82
3/8"	16	1.588	9.312	9.489	9.40
7/16"	14	1.814	10.884	11.074	10.98
1/2"	12	2.117	12.456	12.662	12.56
5/8"	11	2.309	15.613	15.832	15.72
3/4"	10	2.540	18.771	19.004	18.89
7/8"	9	2.822	21.979	22.225	22.10
1"	8	3.175	25.138	25.400	25.27
1 1/8"	7	3.629	28.296	28.575	28.44
1 1/4"	7	3.629	31.465	31.750	31.61
1 1/2"	6	4.233	37.793	38.100	37.95
1 3/4"	5	5.080	44.117	44.450	44.28
2"	4.5	5.644	50.449	50.800	50.62
2 1/4"	4	6.350	56.779	57.150	56.96
2 1/2"	4	6.350	63.119	63.500	63.31

TR ISO 2901-2904, DIN 103, 7e

ø	P	Ø Exterior Thread outside Ø		
d_1	mm	Ø mini	Ø maxi	Ø guide line
10	2	9.820	10.000	9.91
12	3	11.764	12.000	11.88
14	3	13.764	14.000	13.88
16	4	15.700	16.000	15.85
18	4	17.700	18.000	17.85
20	4	19.700	20.000	19.85
22	5	21.665	22.000	21.83
24	5	23.665	24.000	23.83
26	5	25.665	26.000	25.83
28	5	27.665	28.000	27.83
30	6	29.625	30.000	29.81
32	6	31.625	32.000	31.81

PG DIN 40430

ø	P	P	Ø Exterior Thread outside Ø		
d_1	TPI	mm	Ø mini	Ø maxi	Ø guide line
7	20	1.270	12.3	12.5	12.40
9	18	1.411	15.0	15.2	15.10
11	18	1.411	18.4	18.6	18.50
13. 5	18	1.411	20.2	20.4	20.30
16	18	1.411	22.3	22.5	22.40
21	16	1.588	28.0	28.3	28.15
29	16	1.588	36.7	37.0	36.85
36	16	1.588	46.7	47.0	46.85
42	16	1.588	53.7	54.0	53.85
48	16	1.588	59.0	59.3	59.15

CUESTIONARIO TÉCNICO

Roscado y roscado por laminación

Offertar ☐ *Resultado de prueba* ☐ *Reclamación* ☐

Agente: _____ *Responsable:* _____

Cliente: _____ *E-mail:* _____

Tel. o fax: _____ *Fecha:* _____

1. Tipo de herramienta: _____ *Dimensiones:* _____

Particularidad: _____ *Tolerancia:* _____

2. Referencia del material: _____

No del material: _____ *Dureza:* _____ *N/mm² / HB / HRC*

Norma: _____ *Alargamiento:* _____ *%*

3. Roscado: ☐*ciego* ☐*pasante* *Longitud roscada:* _____ *mm*

Ø taladro previo: _____ *Profundidad:* _____ *mm*

Ø previo despejado: _____ *Profundidad:* _____ *mm*

4. Velocidad de corte (Vc): _____ *m/min* _____ *1/min*

Avance (f): _____ %

5. Máquina: _____ ☐*lubrificación interior*

Posición de trabajo: ☐*horizontal* ☐*vertical*

Roscado sincronizado: ☐*"Soft Rigid Tapping"* ***Mandril:*** ☐*con compensación axial*

☐*pinza* ☐*con desbloqueo*

☐*Weldon* ☐*reversible*

☐*sujección termicá / en frío* ☐*con embrague de fricción*

6. Lubrificante: ☐*taladrina* ☐*aceite* ☐*aire* ☐*microlubrificación*

Producto: _____

7. Razón del cambio del útil: ☐*desgaste* ☐*rotura del macho*

☐*roscado incorrecto (controlado con calibre)* ☐*rotura de los dientes de entrada*

☐*error de máquina* ☐*rotura de los dientes guía*

8. Comparación de rendimiento:

Macho en prueba: _____

Rendimiento y observación: _____

Observación: _____

_____

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TECHNICAL QUESTIONNAIRE

Thread cutting and thread forming

Enquiry ☐ Test result ☐ Complaint ☐

Agency: _____ Contact: _____

Customer: _____ E-mail: _____

Phone or fax: _____ Date: _____

1. Tool type: _____ Thread size: _____

Particularity: _____ Class of tolerance: _____

2. Material group: _____

Material N°: _____ Hardness: _____ N/mm² / HB / HRC

Norm: _____ Elongation: _____ %

3. Thread: ☐blind hole ☐through hole Threaded length: _____ mm

Core hole Ø: _____ Depth: _____ mm

Counter-bore Ø: _____ Depth: _____ mm

4. Cutting speed (V_c): _____ m/min _____ 1/min

Feed (f): _____ %

5. Machine: _____ ☐internal coolant

Working position: ☐horizontal ☐vertical

Rigid Tapping: ☐"Soft Rigid Tapping" **Tapping spindle:** ☐axial compensation

☐collet ☐de-clutching

☐Weldon ☐reversible

☐hot / cold shrunk ☐sliding clutch

6. Lubricant: ☐emulsion ☐cutting oil ☐air ☐mist

Product: _____

7. Tool change reason: ☐tool wear ☐tool breakage

☐thread not correct (checked with thread plug gauge) ☐tooth breakage in the chamfer lead

☐machine error ☐tooth breakage in the guiding thread

8. Efficiency comparison:

Tool under test: _____

Performance and observations: _____

Remarks: _____

_____

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SUPLEMENTOS DE PRECIO — PRICE SUPPLEMENTS

Posibles modificaciones de los machos estándar en blanco

Precio y plazo de entrega a petición

Modificación del ángulo de desprendimiento (desde Ø 5 mm)
Acondicionamiento de vanguardia (Ø ≤ 52 mm)
Alargar la entrada (desde Ø 2.5 mm)
Acortar la entrada (desde Ø 2.5 mm)
Afilar la entrada en helice (desde Ø 5 mm)
Modificación de l3, d2, a o d4
Alargando las ranuras (Ø ≥ 5 mm - ≤ 48 mm)
Quitar la punta de centrado (Ø ≥ 1 mm - ≤ 12 mm)
Alternar los dientes (a partir de un paso de 0.5 mm)
Truncar las roscas (desde Ø 3 mm)
La superficie de Grind Weldon (Ø ≥ 6 mm - ≤ 16 mm)
Lubrificación interna con salida frontal (Ø ≥ 3 mm - ≤ 25.4 mm)
Lubrificación interna con salidas radiales (Ø ≥ 3 mm - ≤ 25.4 mm)
Plasma Nitrurado + tratamiento superficial "V"
Tratamiento superficial DC "V"
Revestimiento: TiN, TiCN, VS, CrN, HL, etc.
Marcaje suplementario
Acortando la parte de la broca espiral (N5951-SP; N5952-SP)

Por supuesto, también fabricamos herramientas de roscado específicas para el cliente según su dibujo. Precio y plazo de entrega a petición.

Possible modifications of non-coated and non-surface treated standard taps

Price and delivery time on request

Modification of cutting angle (from Ø 5 mm)
Conditioning of cutting edges (Ø ≤ 52 mm)
Lengthening of chamfer (from Ø 2.5 mm)
Shortening of chamfer (from Ø 2.5 mm)
Grinding of peeling cut (from Ø 5 mm)
Modification of l3, d2, a or d4
Lengthening of flutes (Ø ≥ 5 mm - ≤ 48 mm)
Removal of center point (Ø ≥ 1 mm - ≤ 12 mm)
Interrupted thread (from pitch 0.5 mm)
Truncated thread (from Ø 3 mm)
Grinding the Weldon Surface (Ø ≥ 6 mm - ≤ 16 mm)
Internal coolant, with frontal outflow (Ø ≥ 3 mm - ≤ 25.4 mm)
Internal coolant, with radial outflow (Ø ≥ 3 mm - ≤ 25.4 mm)
NV-Plasma nitriding + "V" surface treatment
DC "V" surface treatment
Coatings: TiN, TiCN, VS, CrN, HL, etc.
Additional marking
Shortening of drill section (N5951-SP; N5952-SP)

Of course we also produce customised threading tools as per your drawings.
Price and delivery time on request.

CONDICIONES DE ENTREGA

Pedidos	*Los pedidos que no puedan ser entregados de stock serán confirmados. Los artículos que ya no están en stock, pero todavía mencionados en el catálogo serán considerados como ejecuciones especiales y facturados como tales. Toda anulación de pedido debe ser aceptada por las dos partes y formulada por escrito.*
Ofertas y confirmaciones de pedidos	*Dado el constante desarrollo en la materia, las descripciones que figuran en nuestras ofertas, los documentos que las acompañan, las indicaciones de peso, medidas, ilustraciones y dibujos tienen carácter de indicaciones aproximadas. Estas informaciones tienen carácter obligatorio solamente en caso que éste último se especifique expresamente.*
Precios	*Nuestros precios implican entregas libres de gastos salida de fabrica o punto de venta y no comprenden gastos de embalaje, flete, portes ni seguros. En caso de aumento de precios, nos reservamos el derecho de facturar las herramientas confirmadas a los nuevos precios.*
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Reserva de propiedad	*El material queda de nuestra entera propiedad hasta el pago íntegro del precio total, gastos complementarios incluidos.*
Envíos	*Las mercancías se remiten por cuenta y riesgo del cliente.*
Plazos de entrega	*Los plazos de entrega se calculan lo más justo posible pero a título indicativo. En caso de demora, ninguna reclamación será aceptada ni los pedidos podrán cancelarse por este motivo.*
Fabricaciones especiales	*Por razones técnicas de fabricación, nos reservamos el derecho de entregar un 15 % de más o de menos sobre las cantidades de herramientas especiales pedidas, o en pequeñas cantidades por 1 o 2 piezas.*
Garantía	*Las herramientas reconocidas por nosotros como defectuosas son reemplazadas, sin ninguna clase de compensación.*
Reclamaciones	*Toda reclamación deberá llegarnos en un plazo máximo de 2 semanas después de recibir la mercancía.*
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Condiciones especiales	*En caso de fuerza mayor, interrupción parcial o total de nuestra explotación, nos reconocemos el derecho a rescindir todos o parte de nuestros compromisos de entrega.*
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DC PROGRAMME OVERVIEW

THREAD CUTTING

THREAD FORMING

RIGID TAPPING

TAPPING CHUCKS

THREAD WHIRLING

THREAD MILLING

THREAD DIES

THREAD GAUGES

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO
Swiss Accreditation Service SAS

Based on the Accreditation and Designation Ordinance dated 17 June 1996 and on the advice of the Federal Accreditation Commission, the Swiss Accreditation Service (SAS) grants to

DC NANO TOOLS SA
Métrologie
Grand-rue 19
2735 Malleray

Period of accreditation:
06.01.2021 until 05.01.2026
(1st accreditation: 06.01.2016)

the accreditation as

Calibration laboratory for Length

International standard: ISO/IEC 17025:2017
Swiss standard: SN EN ISO/IEC 17025:2018

3003 Berne, 17.11.2020
Swiss Accreditation Service SAS

Head of SAS
Konrad Flück

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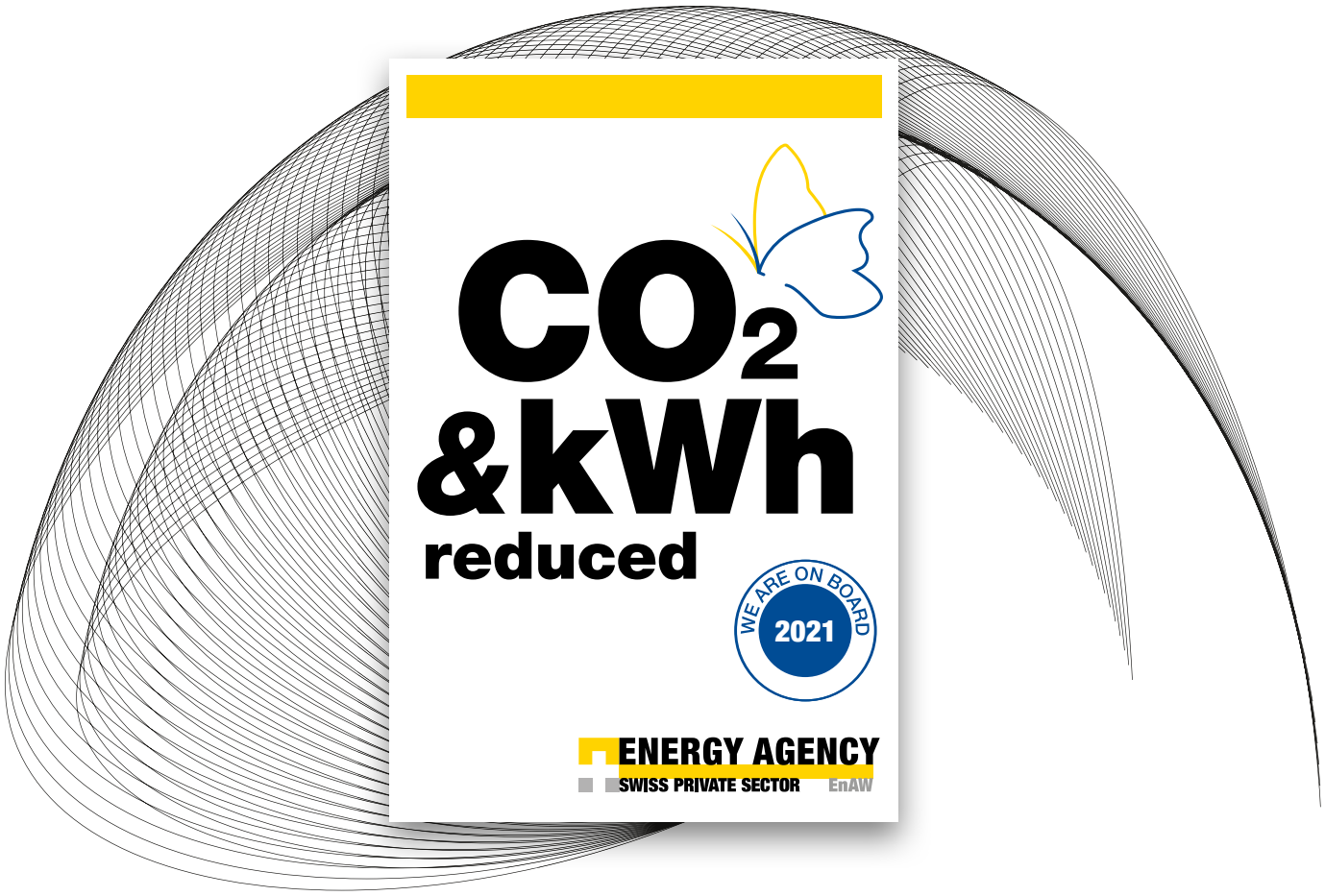
Certificate of the Swiss Private Sector Energy Agency

Voluntary Climate Protection and Energy Efficiency



DC Swiss SA

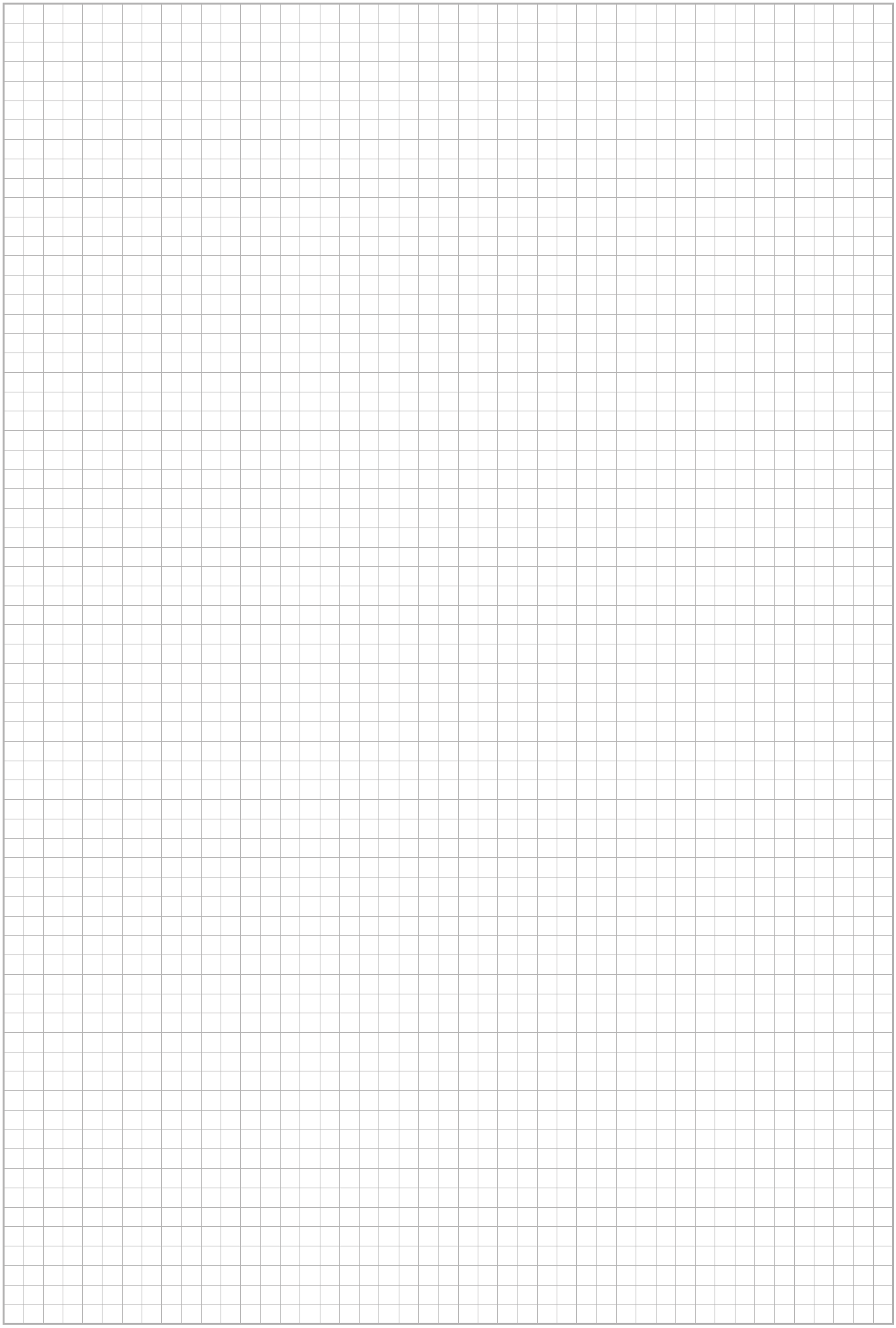
DC Swiss SA is convinced of the need to stand up for sustainable climate protection. By voluntarily declaring its adherence to the Swiss Private Sector Energy Agency programme, **DC Swiss SA** commits to actively reducing CO_2 emissions and optimizing energy efficiency. The Swiss Federal Government, cantons and private sector partners honor the target agreement.

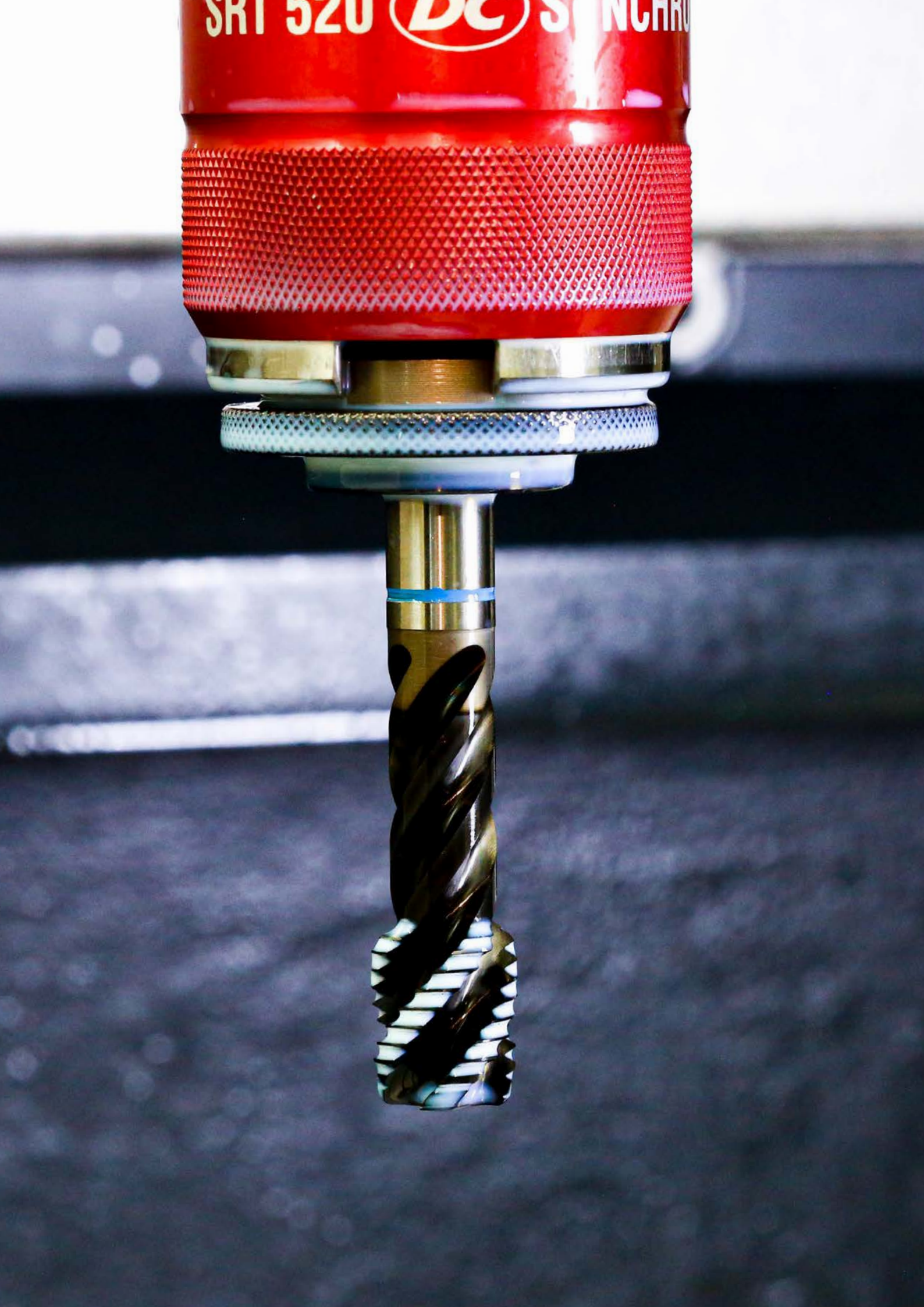
Dr. Jacqueline Jakob
Swiss Private Sector Energy Agency

1st January 2021

Martin Kernen
Swiss Private Sector Energy Agency

ENERGY AGENCY
SWISS PRIVATE SECTOR EnAW

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DC SWISS SA
Grand-Rue 19
CH-2735 Malleray
Tel. + 41 32 491 63 63
info@dcswiss.ch

SWISSQUALITY

DC Nano Tools SA
Grand-Rue 19
CH-2735 Malleray
Tel. + 41 32 491 63 63
info@dcswiss.ch

DC Swiss GmbH
Graseggerstrasse 125
DE-50737 Köln
Tel. + 49 221 995 532 0
info@dcswiss.de

DC Swiss s.r.l
Via Canova 10
IT-20017 Rho
Tel. + 39 02 669 40 41
info@dcswiss.it

DC Swiss UK Ltd
9 Orgreave Road
GB-Sheffield S13 9LQ
Tel. + 44 114 293 90 13
info@dcswiss.co.uk

dcswiss.com

SWISSQUALITY

ATENCIÓN

Un problema tecnico o una negligencia pueden ser el origen que un herramienta se rompa parcial o totalmente, pudiendo afectar a la integridad física del operario. Es de obligado cumplimiento seguir escrupulosamente las normativas de seguridad y de salud de las empresas activas en el tratamiento de los metales. El uso de gafas de protección es indispensable.

El reafilado de utiles de roscado provoca partículas peligrosas para la salud y debe ser ejecutado según las instrucciones de seguridad necesarias.

WARNING

Thread tools can break or shatter either through technical failure or negligence, and can endanger the health of the operator. Always obey the safety and health regulations, also the wearing of safety glasses is compulsory.

The grinding of threading tools causes hazardous particles, and must be performed only under most rigorous safety standards.

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La publicación de este nuevo catálogo anula y reemplaza todas las ediciones anteriores (excepto el catálogo TM.1)!

The publication of this catalogue renders all previous editions obsolete (exception: catalogue TM.1)!

Translated, proofread and validated by our Spanish agent.

DC SWISS SA
Grand-Rue 19
CH-2735 Malleray
Tel. + 41 32 491 63 63
info@dcswiss.ch

DC Nano Tools SA
Grand-Rue 19
CH-2735 Malleray
Tel. + 41 32 491 63 63
info@dcswiss.ch

SWISSQUALITY

DC Swiss GmbH
Graseggerstrasse 125
DE-50737 Köln
Tel. + 49 221 995 532 0
info@dcswiss.de

DC Swiss s.r.l
Via Canova 10
IT-20017 Rho
Tel. + 39 02 669 40 41
info@dcswiss.it

DC Swiss UK Ltd
9 Orgreave Road
GB-Sheffield S13 9LQ
Tel. + 44 114 293 90 13
info@dcswiss.co.uk