



Catálogo **Catalogue**

ES-EN-ID TC.1





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 río 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 amplió 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

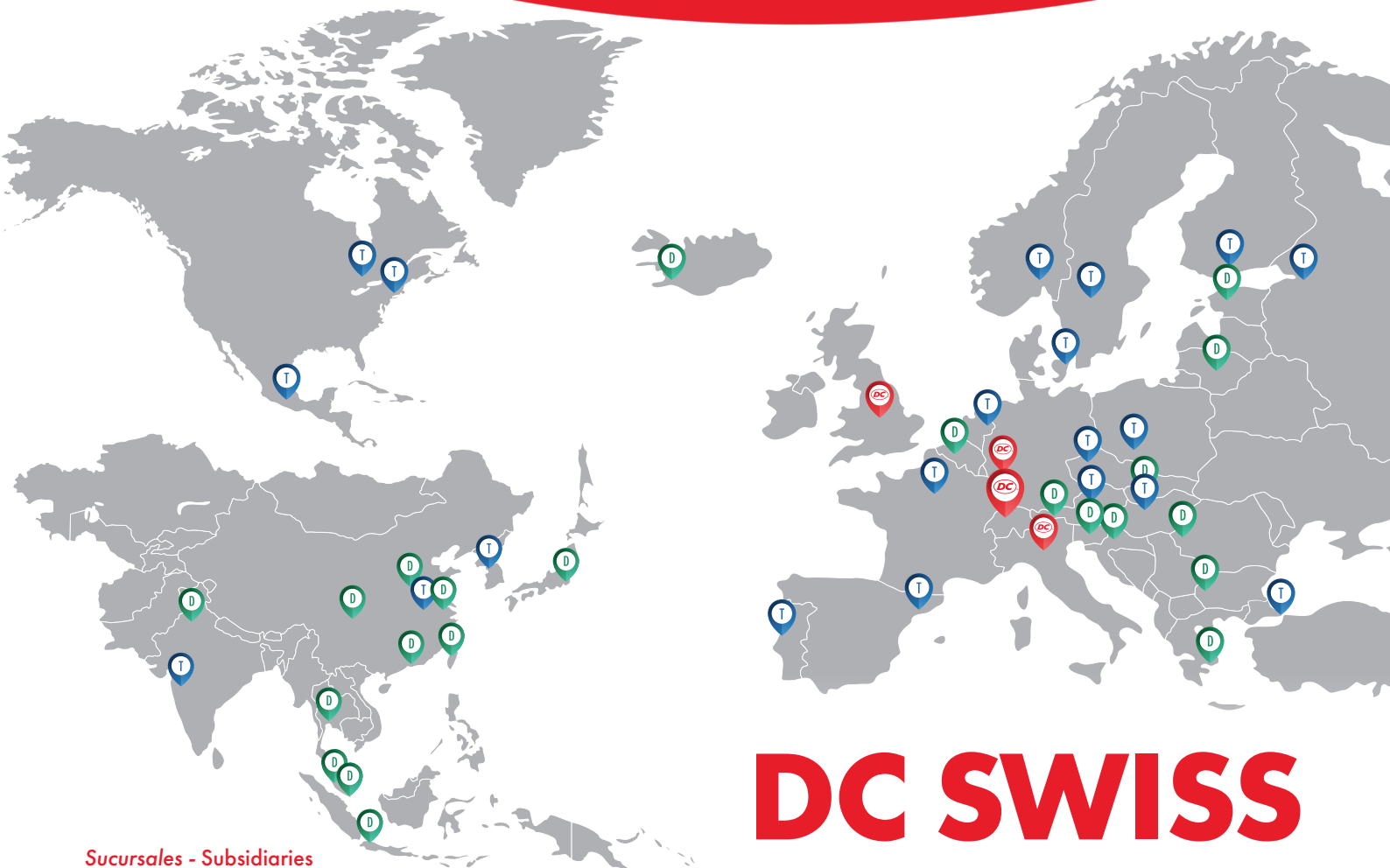


PROXIMIDAD A LOS CLIENTES

Encontrareis siempre un interlocutor competente, ya sea en la oficina central en Suiza, en una de sus sucursales de Alemania, Italia o Inglaterra o a través 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

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

DC SWISS WORLDWIDE

AND ALWAYS CLOSE TO YOU

SWISS QUALITY



100 % made by DC SWISS -
Garantía desde el desarrollo 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

OUR VALUES

RESULTADO

El resultado esta al centro de nuestras preocupaciones para el desarrollo 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.

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.

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.

FIABILIDAD

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

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 polymechnic apprenticeship programme; a network of 6 companies whose aim is to train polymechnic apprentices.



Polimecánico(a) CFC - Polymechnic FCC
Mecánico(a) de producción de CFC - Production mechnic 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.



¿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 AEROSPAECIAL
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 también, 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

Suminramos 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 funcionamiento 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.



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.

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
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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



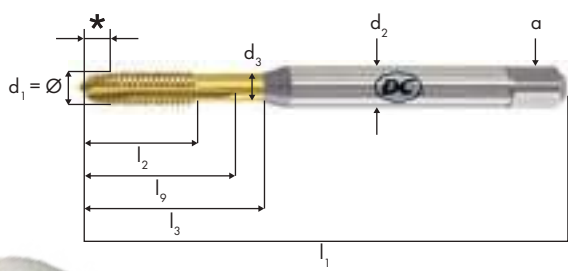
N520-4 NORM DC

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

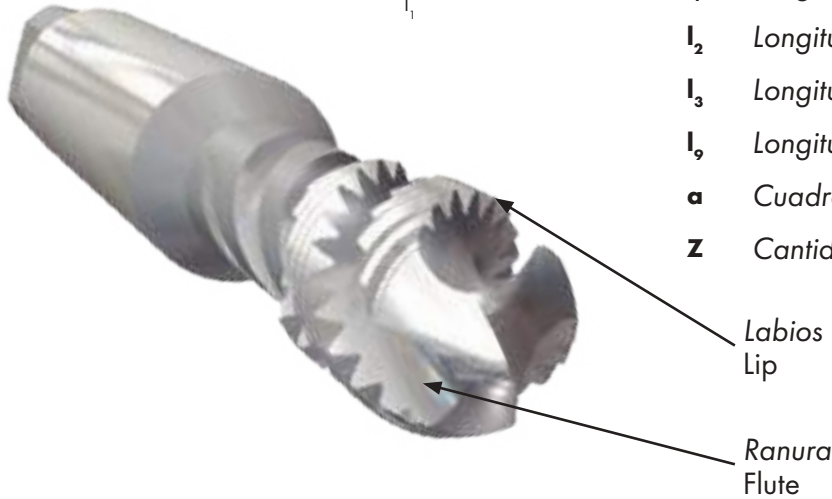


Macho de roscar con mango DIN pasante extra-largo; longitud total de acuerdo con los estándares de fábrica DC — Extra long machine tap with reduced DIN shank; total length as per DC standards

DIMENSIONES DE LOS MACHOS PARA ROSCAR — MEASUREMENTS OF THE TAP



*	<i>Longitud de entrada</i>	Chamfer lead length
d₁	<i>Diámetro nominal de la rosca</i>	Nominal thread diameter
d₂	<i>Diámetro de mango</i>	Shank diameter
d₃	<i>Diámetro del cuello</i>	Neck diameter
l₁	<i>Longitud total</i>	Overall length
l₂	<i>Longitud roscada</i>	Thread length
l₃	<i>Longitud útil</i>	Usable length
l_φ	<i>Longitud de la ranura</i>	Flute length
a	<i>Cuadrado</i>	Square
Z	<i>Cantidad de ranuras</i>	Number of flutes



PUNTO DE CENTRAJE — CENTER POINTS








	Rosca	Thread
	<i>Punto central completo</i>	Full external center point
	<i>Punto central reducido</i>	Reduced center point
	<i>Punto central</i>	Internal center point
	Mango	Shank
	<i>Punto central completo</i>	Full external center point
	<i>Chaflán de centrado</i>	Centering bevel
	<i>Punto de centrado</i>	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 $\leq 1.5 \times D$; trabajo de chapa	Spiral point only for through holes in long-chipping materials, for threading depth $\leq 1.5 \times D$; 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 $\alpha \leq 27^\circ$ derecha para agujeros pasantes y ciegos en materiales de virutas cortas $< 2.5 \times D$ y agujeros ciegos en materiales de virutas medio-largas y largas $< 1.5 \times D$	$\leq 27^\circ$ slow right-hand spiral flutes for through and blind holes in short-chipping materials $\leq 2.5 \times D$ respectively for blind holes in middle-long and long-chipping materials $\leq 1.5 \times D$
	.60 Ranuras fuertemente helicoidales con hélice $\alpha > 27^\circ - \leq 40^\circ$ derecha para agujeros ciegos en materiales de virutas largas $\leq 2.5 \times D$	$> 27^\circ - \leq 40^\circ$ fast right-hand spiral flutes for blind holes in long-chipping materials $\leq 2.5 \times D$
	.70 Ranuras fuertemente helicoidales con hélice $\alpha > 40^\circ$ (R45) derecha para agujeros ciegos hasta $3 \times D$ en materiales tenaces	$> 40^\circ$ fast right-hand spiral flutes (R45) for blind holes up to $3 \times D$ 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 lubricación

Without lubrication grooves



.81

Con ranuras de lubricación

With lubrication grooves

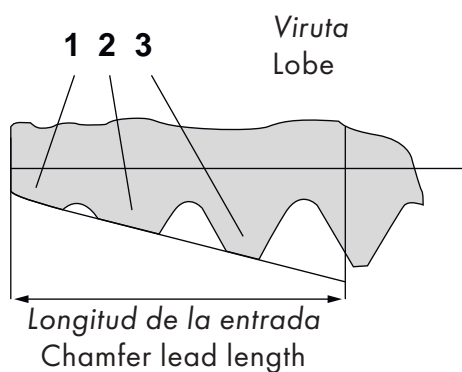


.84

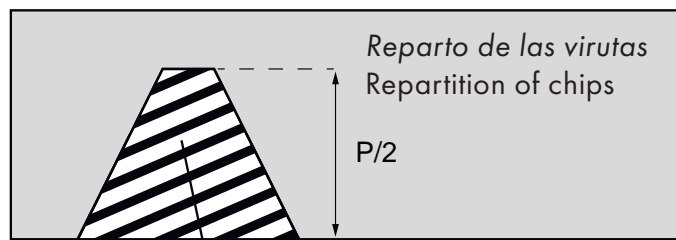
Con ranuras de lubricación y lubricación interna con salidas radiales 45° (la conversión a esta nueva versión está en curso)

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**



$h = \text{espesor de la viruta}$
 $h = \text{Thickness of the chip}$

$\varnothing \text{ del taladro previo}$
 $\text{Core hole diameter}$

Forma y longitud de entrada para machos para ros-car según la norma DIN 2197

Chamfer forms and chamfer lead lengths for taps as per DIN 2197

-8		A 8xP	Longitud de entrada 6 - 8 hilos; para ranuras rectas	Chamfer lead length 6 - 8 threads; for straight flutes
.20 - 4		B 4xP	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 2.5xP	Longitud de entrada 2 - 3 hilos; para ranuras rectas y helicoidales	Chamfer lead length 2 - 3 threads; for straight and spiral flutes
-4		D 4xP	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 1.5xP	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 ros-car por laminación según la norma DIN 2175

Lead taper forms and lead taper lengths for thread forming taps as per DIN 2175

-3		C 2.5xP	Longitud de entrada 2 - 3 hilos	Lead taper length 2 - 3 threads
-5		E 1.5xP	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 inoxidable al azufre; fundición de grafito + esférico 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; ferríticos y martensíticos < 850 N/mm²; titanio puro; aleación de níquel 1 < 850 N/mm²; 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-BRONZE
(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 pequeños 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



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



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 lubricación 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 Nitruado + 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.

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
> 44 - ≤ 54 HRC

*** 18** Aceros templados > 54 - ≤ 63 HRC
Alloy steels hardened > 54 - ≤ 63 HRC
> 54 - ≤ 63 HRC

64 Latón sin plomo (ECOBASS®)
Lead free brass (ECOBASS®)

CuZn21Si3P
(ECOBASS®)
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.

RTS



M

7GX

RTS362VS-3

RTS462VS-3

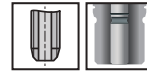


NP



M

NP110-1 NP210-1



NP110-2 -3 NP210-2 -3



H.TC



MF - UNC - UNF

H320TC-4 H420TC-4



H350TC-3 H450TC-3



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°



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



Z370VS-3 Z470VS-3
 Z373VS-3 Z473VS-3



SA320-4 SA420-4
 SA350-3 SA450-3
 SA390-3



TL320VS-4 TL420VS-4
 TL351VS-3 TL451VS-3
 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



DN01



DN02



TAN

TAZ

FA/CFA

CMS



CODIFICACIÓN – CODIFICATION



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
Estándar	Standard	0
Dientes alternos	Interrupted thread	1
Dientes truncados	Truncated thread	2
Lubricación interna	Internal coolant	3
Dientes alternos, lubricación interna	Interrupted thread, internal coolant	4
Dientes truncados, lubricación 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)	TG
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

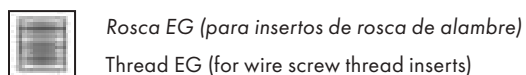
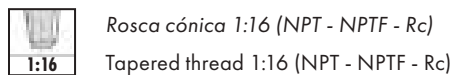
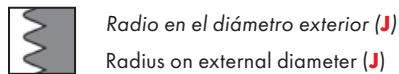
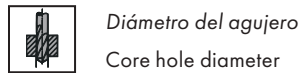
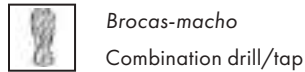
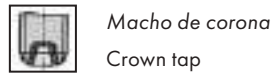
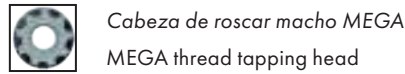
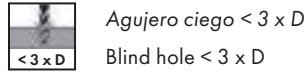
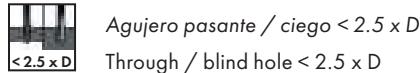
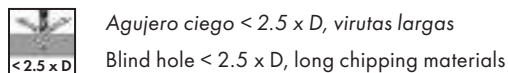
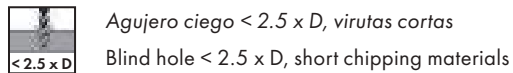
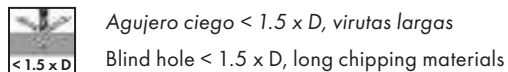
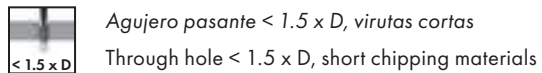
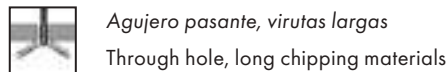
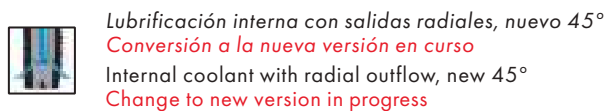
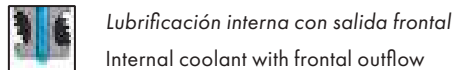
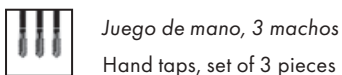
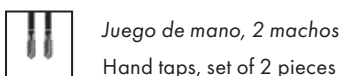
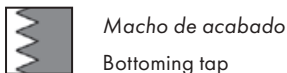
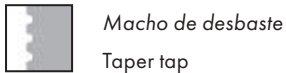
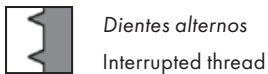
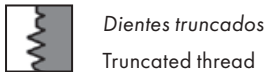
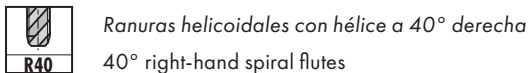
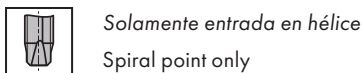
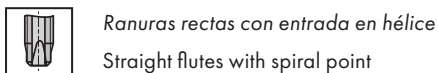
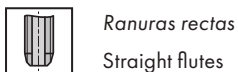
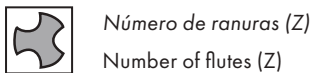
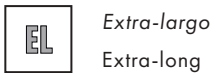
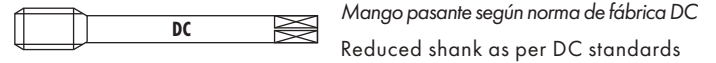
PICTOGRAMAS – PICTOGRAPHS





















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

12	
1.0037	Si37-2 (S235JR)
1.0050	Si50-2 (E295)
1.0060	Si60-2 (E335)
1.5919	15CrNi6
1.7131	16MnCr5

22	
1.4301	X5CrNi18-10
1.4406	X2CrNiMoN17-12-2
1.4435	X2CrNiMo18-14-3
1.4541	X6CrNiTi18-10
1.4571	X6CrNiMoTi17-12-2



PICTOGRAMAS — PICTOGRAPHS

	Rosca izquierda Left-hand thread	●	Artículos disponibles de stock Stock item
	3.5 - 5.5 hilos de entrada, forma B 3.5 - 5.5 chamfered threads, lead form B	●	Disponible a corto plazo Available at short notice
	2 - 3 hilos de entrada, forma C 2 - 3 chamfered threads, lead form C	*	Artículos disponibles de stock hasta agotamiento Available from stock, while stock lasts
	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 inoxidable y aleaciones de níquel 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		

CLASIFICACIÓN DE LOS MATERIALES

Ejemplos prácticos de clasificación de los materiales

Referencia: DIN

11 Aceros de decoletaje 1.0711 9S20 1.0715 9SMn28 1.0718 9SMnPb28 1.0726 35S20 1.0737 9SMnPb36	12 Aceros de construcción o de cementación 1.0037 S137-2 (S235JR) 1.0050 S150-2 (E295) 1.0060 S160-2 (E335) 1.5919 15CrNi6 1.7131 16MnCr5	13 Aceros al carbón 1.0503 C45 1.0535 C55 1.0601 C60 1.1545 C105W1 1.2067 102Cr6 (100Cr6)	14 Aceros aleados < 850 N/mm ² 1.2363 X100CrMoV5-1 1.3551 80MoCrV42-16 1.7218 25CrMo4 1.7220 34CrMo4 1.7225 42CrMo4	15 Aceros aleados/trat. > 850 - < 1150 N/mm ² 1.3553 X82WMoCrV6-5-4 1.6580 30CrNiMo8 1.7220 34CrMo4 1.7225 42CrMo4 1.8507 34CrAlMo5
16 Aceros de alta resistencia ≤ 44 HRC EN-GJS-1200-2 1.6582 34CrNiMo6v 1.7225 42CrMo4v 1.7228 50CrMo4v 1.8515 31CrMo12v	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 X12CrS13 1.4104 X14CrMoS17 1.4305 X10CrNiS18-9	22 Austeníticos 1.4301 X5CrNi18-10 1.4406 X2CrNiMoN17-12-2 1.4435 X2CrNiMo18-14-3 1.4541 X6CrNiTi18-10 1.4571 X6CrNiMoTi17-12-2
23 Ferríticos y martensíticos ≤ 850 N/mm ² 1.4112 X90CrMoV18 1.4540 X4CrNiCuNb16-4 1.4582 X4CrNiMoNb25-7 1.4762 X10CrAl24 1.4922 X20CrMoV11-1	24 Ferríticos y martensíticos > 850 - ≤ 1150 N/mm ² 1.4057 17CrNi16-2 1.4125 X105CrMo17 1.4542 X5CrNiCuNb16-4 1.4548 X5CrNiCuNb17-4-4 1.4748 X85CrMoV18-2	31 Fundición gris 0.6015 GJL-150 0.6020 GJL-200 0.6025 GJL-250 0.6030 GJL-300	32 Fundición de grafito + esferoidal y maleable 0.7040 GJS 400-15 0.7043 GJS 400-18 0.7050 GJS 500-7 0.7060 GJS 600-3 0.7080 GJS 800-2	41 Titanio puro 3.7024 Grad1 3.7034 Grad2 3.7055 Grad3 3.7065 Grad4
42 Aleación al titanio 3.7124 TiCu2.5 TiAl7Nb 3.7164 TiAl6V4 (Grad5) 3.7174 TiAl6V6Sn2	51 Aleación al níquel 1 ≤ 850 N/mm ² 1.3912 Ni36 (Invar) 2.4360 NiCu30Fe (Monel 400) 2.4816 NiCr15Fe (Inconel 600) 1.4876 X10NiCrAlTi32-20	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ² 2.4375 NiCu30Al (MonelK500) 2.4631 NiCr20TiAl (Nimonic 80) 2.4668 NiCr19NbMo (Inconel718)	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ² 2.4631 NiCr20TiAl (Nimonic80) 2.4668 NiCr19NbMo (Inconel718)	61 Cobre puro (electrolítico) 2.0060 E-Cu57 (E-Cu)
62 Latón, bronce (virutas cortas) 2.0401 CuZn39Pb3 (Ms58) 2.0402 CuZn40Pb2 (Ms58) 2.1030 CuSn8 (Bz) 2.1096 G-CuSn5ZnPb	63 Latón (virutas largas) 2.0240 CuZn15 (Ms85) 2.0265 CuZn30 (Ms70) 2.0321 CuZn37 (Ms63)	64 Latón sin plomo CuZn21Si3P (ECOBRESS®) CuZn35 CuZn42	71 Al no aleado 3.0205 Al99 3.0255 Al99.5	72 Al aleado Si < 1.5 % 3.1255 AlCuSiMn 3.1355 AlCuMg2 3.2315 AlMgSi1 3.3206 AlMgSi0.5 3.4345 AlZnMgCu0.5
73 Al aleado Si > 1.5 % - < 10 % 3.2161 G-AlSi8Cu3 3.2162 GD-AlSi8Cu3 3.2341 G-AlSi5Mg 3.2371 G-AlSi7Mg	74 Al aleado Si > 10 %, Aleaciones de magnesio 3.2381 G-AlSi10Mg 3.2382 GD-AlSi10Mg 3.2581 G-AlSi12 3.2583 G-AlSi12 (Cu)	81 Materiales termoplásticos Delrin (POM) Teflon Nylon	82 Materiales duroplásticos Bakelit Novopan	83 Materiales plásticos reforzados por fibras Materiales plásticos reforzados con fibras de vidrio
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 (ECOBRESS®)	
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	

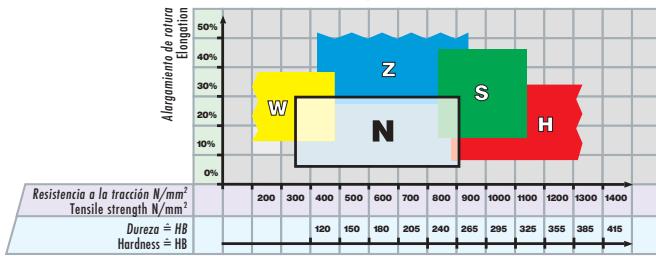
92 Red gold	
4N18	
5N18	
Au585CuAg325	
Au750AgCu	
Au917Cu83	

93 White gold	
Au750PdCu125	
Au750PdCu150	
Au585PdCu150	
Au925Pd75	

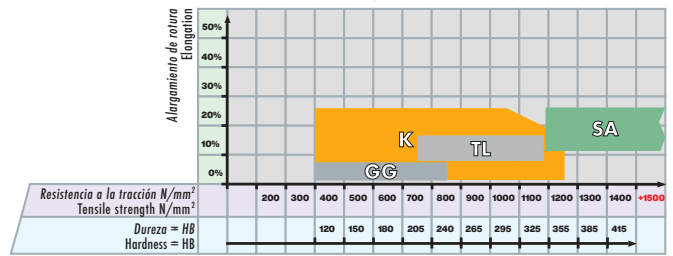
94 Silver	
Ag999	
Ag800Cu	
Ag925Cu	

TABLA DE UTILIZACIÓN — APPLICATION CHART

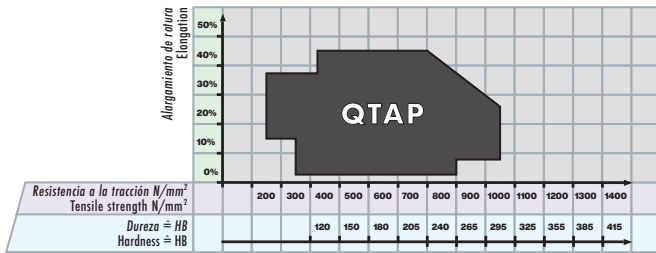
Roscado clásico Thread cutting



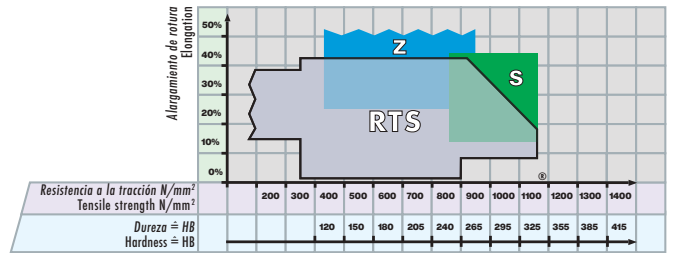
Roscado clásico Thread cutting



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/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard./ temp. > 850 - < 1150 N/mm ²	> 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
20 Aceros inoxidables Stainless steels	18 Aceros templados > 54 - ≤ 63 HRC	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
	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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
30 Fundición Cast iron	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850	> 15
	31 Fundición gris	Cast iron	< 250	< 850	< 10
40 Titanio Titanium	32 Fundición de grafito + esferoidal y maleable	Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
	41 Titanio puro	Pure titanium	< 250	< 850	> 20
50 Níquel Nickel	42 Aleación al titanio	Titanium alloys	> 250	> 850	< 20
	51 Aleación al níquel 1 ≤ 850 N/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
60 Cobre Copper	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150	< 20
	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
70 Aluminio Magnesio Aluminium Magnesium	64 Latón sin plomo	Lead free brass	< 220	< 700	> 15
	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
80 Materiales plásticos Plastic compounds	74 Al aleado Si > 10 %, Aleaciones de magnesio	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
	81 Materiales termoplásticos	Thermoplastics	-	-	-
	82 Materiales duroplásticos	Duroplastics	-	-	-
90 Metales preciosos Precious metals	83 Materiales plásticos reforzados con fibras	Glass fibre reinforced plastics	-	-	-
	91 Oro amarillo	Yellow gold	-	-	-
	92 Oro rojo	Red gold	-	-	-
	93 Oro blanco	White gold	-	-	-
	94 Plata	Silver	-	-	-

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING



Desde página:
From page:

MJ / M
MF
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

V_c
(m/min)
< Ø 20 mm Guide Line
Standard +V / +NV Recub. Coated TN / TC / DL / VS

N Materiales normales Normal materials										
60	62	60	64	64	72	72	74	60	74	74
125	124	125	125		124		131	131	131	
154	154	154	154				156	156	156	
176	176	176	176				178	178	178	
198	198						199	199		
204	205	205	205				206	206	206	
220										
222	222									
	226	226					227	227		

W Materiales blandos Soft materials			
86	86	87	87
		207	207

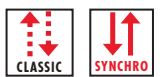
11	10 - 15	25 - 35
12	10 - 15	25 - 35
13	8 - 12	16 - 24
14	8 - 12	16 - 24
15	3 - 5	6 - 12
16	3 - 5	3 - 5
17	2 - 4	
18		
21	10 - 15	20 - 30
22	3 - 6	6 - 12
23	3 - 6	6 - 12
24		4 - 8
31	10 - 15	20 - 30
32	10 - 15	20 - 30
41	4 - 8	4 - 8
42	3 - 5	3 - 5
51		6 - 12
52	4 - 8	4 - 8
53	2 - 4	
61	8 - 12	12 - 16
62	20 - 30	30 - 40
63	16 - 24	
64	16 - 24	
71	10 - 15	20 - 40
72	20 - 30	20 - 40
73	10 - 15	20 - 30
74	10 - 15	20 - 30
81	20 - 30	30 - 50
82	8 - 16	16 - 24
83		8 - 16
91	20 - 30	
92		12 - 16
93		4 - 8
94		16 - 24

E Aceptable con emulsión
Suitable with emulsion

A Óptima con aire
Optimal with air

A Aceptable con aire
Suitable with air

ROSCADO CLÁSICO Y ROSCADO RÍGIDO CLASSIC THREAD CUTTING AND RIGID TAPPING



Desde página:
From page:

MJ / M
MF
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

K Rompedor de virutas Swarf breaker	
104	105
142	



K.13TC K.13VS



QTAP Allrounder Allrounder			
61	106	61	107
143	143	144	144
167	167	168	168
192	192	193	193
210	210	211	211



Q.20VS Q.23VS Q.60VS Q.63VS



Vc (m/min) Guide Line Ø 2.8 - 20 mm					
20 - 40	OE	OE	OE	OE	11
20 - 40	OE	OE	OE	OE	12
16 - 24	OE	OE	OE	OE	13
16 - 24	OE	OE	OE	OE	14
6 - 12	OE	OE	OE	OE	15
					16
					17
					18
20 - 40	OE	OE	OE	OE	21
6 - 12	OE	OE	OE	OE	22
6 - 12	OE	OE	OE	OE	23
4 - 8	OE	OE	OE	OE	24
20 - 40	OE A	OE	OE A	OE	31
20 - 40	OE	OE	OE	OE	32
					41
					42
6 - 12	OE	OE	OE	OE	51
4 - 8	OE	OE	OE	OE	52
					53
12 - 16	OE	OE	OE	OE	61
25 - 35	OE	OE	OE	OE	62
20 - 40	OE	OE	OE	OE	63
20 - 40	OE	OE	OE	OE	64
20 - 40	OE	OE	OE	OE	71
20 - 40	OE	OE	OE	OE	72
20 - 40	OE	OE	OE	OE	73
20 - 40	OE A	OE	OE A	OE	74
20 - 40	OE A	OE	OE A	OE	81
16 - 24	OE	OE	OE	OE	82
8 - 16	OE A	OE	OE A	OE	83
20 - 40	OE	OE	OE	OE	91
12 - 16	OE	OE	OE	OE	92
					93
12 - 16	OE	OE	OE	OE	94







	Vc (m/min) Guide Line			
	Ø 5 - 10.9 mm	Ø 11 - 18.9 mm	Ø 19 - 31.9 mm	Ø 32 - 42 mm
11	30 - 40	20 - 30	20 - 30	20 - 30
12	30 - 40	20 - 30	20 - 30	20 - 30
13	30 - 40	20 - 30	20 - 30	20 - 30
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
17				
18				
21				
22				
23				
24				
31	30 - 40	30 - 40	30 - 40	30 - 40
32	30 - 40	20 - 30	20 - 30	20 - 30
41				
42				
51				
52				
53				
61				
62	30 - 40	30 - 40	30 - 40	30 - 40
63	30 - 40	30 - 40	30 - 40	30 - 40
64	30 - 40	20 - 30	20 - 30	20 - 30
71				
72				
73				
74	30 - 40	30 - 40	30 - 40	30 - 40
81				
82				
83	30 - 40	30 - 40	30 - 40	30 - 40
91				
92				
93				
94				

E Aceptable con emulsión
Suitable with emulsion










A Óptima con aire
Optimal with air

A Aceptable con aire
Suitable with air





REGISTRO — REGISTER

	Roscado clásico Classic thread cutting		Roscado clásico y rígido Classic thread cutting and Rigid Tapping	
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		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	
	Machos de corona Crown taps	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		
M, MF, UN, G (BSP) N 237-239				
	Brocas-machos Combination drill/taps			
M, MF, UNC, G (BSP), PG N 242-243				

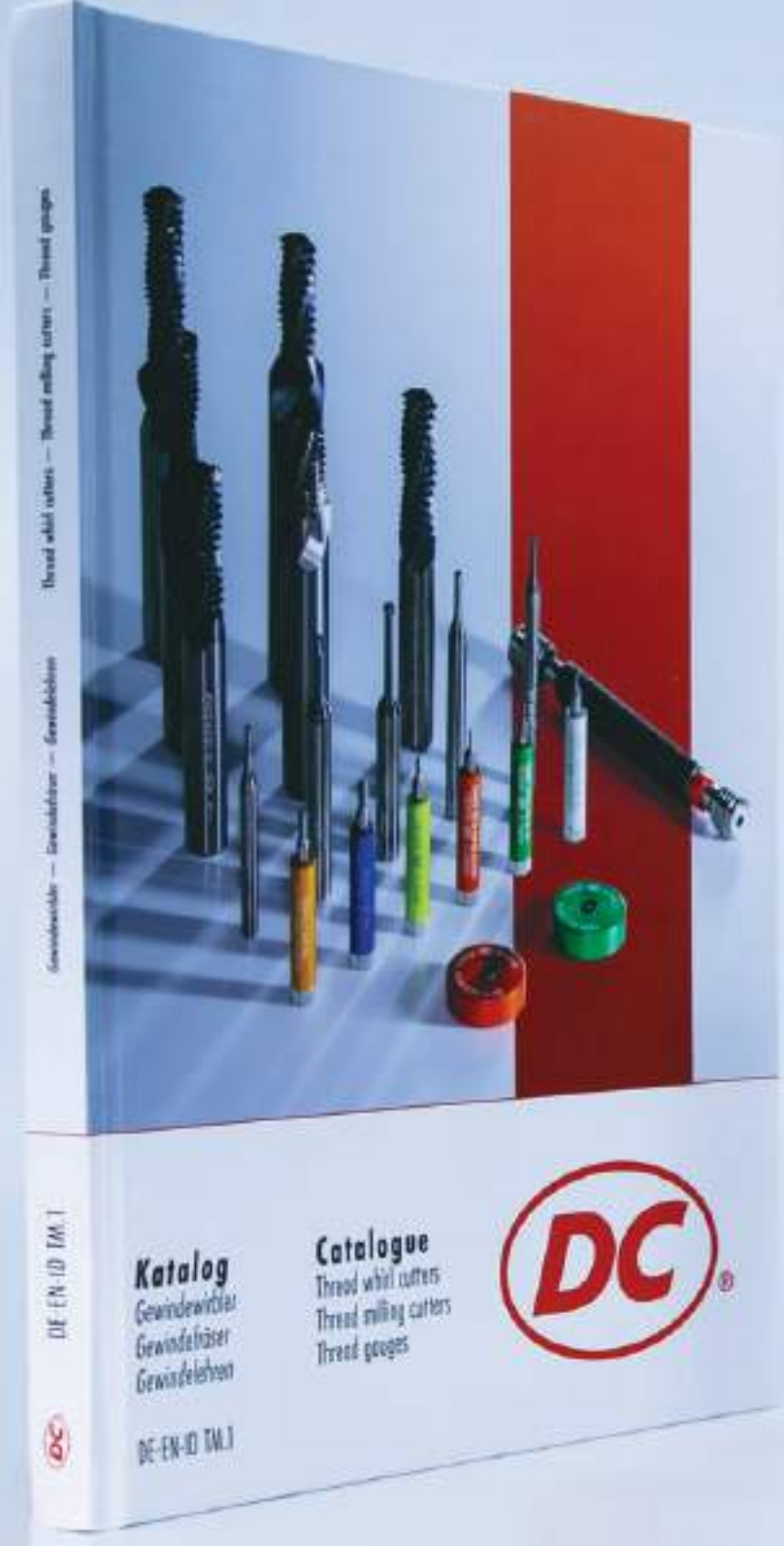
REGISTRO — REGISTER

	<p><i>Cojinetes de roscar</i> Dies</p>		<p><i>Aparatos de roscar SRT</i> Tapping chucks SRT</p>												
<p>M N 272/286/288/289 Z 273/286 Z.LL 273</p> <p>MF N 274-276/287/288 Z 274-275</p> <p>UNC N 277</p> <p>UNF, UNEF, UN, UNS N 278-279</p> <p>G (BSP), R (DIN EN 10226, ISO 7-1) N 280/282/289 Z 281 MS 281</p> <p>NPT, NPTF, PG, TR N 283-284</p> <p>W N 285/289</p>	<table border="0"> <tr> <td>HSK</td><td>306</td><td>BT40</td><td>306</td></tr> <tr> <td>SK40/SK50</td><td>307</td><td>DIN 1835 B</td><td>308-309</td></tr> </table>	HSK	306	BT40	306	SK40/SK50	307	DIN 1835 B	308-309	 <p><i>Pinzas</i> Inserts</p>	<table border="0"> <tr> <td>S</td><td>310</td><td>SC</td><td>311</td></tr> </table>	S	310	SC	311
HSK	306	BT40	306												
SK40/SK50	307	DIN 1835 B	308-309												
S	310	SC	311												
 	<p><i>Calibres de control</i> Thread gauges</p>	  <p><i>Accesorios</i> Accessories</p>	<p><i>Brocas de centrar en metal duro integral</i> Solide carbide spotting drills</p> <p>C315VS 318</p>												
<p>M D 294-295</p> <p>MF D 296-299</p> <p>UNC D 300</p> <p>UNF, UNEF D 301</p> <p>G (BSP), PG D 302</p> <p>NPT, NPTF D 303</p> <p>EG M, EG UNC, EG UNF D 304</p>	<p><i>Brocas de taladrar en metal duro integral</i> Solide carbide twist drills</p> <table border="0"> <tr> <td>FZ315VS</td><td>319</td><td>F313VS</td><td>320</td></tr> <tr> <td>F285VS</td><td>320</td><td>F286VS</td><td>320</td></tr> </table>	FZ315VS	319	F313VS	320	F285VS	320	F286VS	320	<p><i>Porta-cojinetes</i> Die stocks</p> <p>D5810 322</p>	<p><i>Giramachos</i> Tap wrenches</p> <p>D5820 322</p>				
FZ315VS	319	F313VS	320												
F285VS	320	F286VS	320												
		<p><i>Información técnica</i> Condiciones de entrega</p> <p><i>Más información</i> están disponibles en www.dcswiss.com</p>	<p><i>Technical information</i> Delivery and payment conditions</p> <p><i>Further information</i> are available on www.dcswiss.com</p>												

REGISTRO — REGISTER

	Machos para roscar a máquina nano Machine taps nano		Machos para roscado por laminación nano Machine thread formers 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		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		
	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	<p><i>*SL: sólo disponible sin certificado SCS</i> <i>*SL: only available without certificate SCS</i></p> <p><i>Todos los calibres también de roscar nano disponen de certificados SCS de pago, disponible sobre pedido.</i> <i>All nano thread plug gauges are SCS-certified and the paid certificate is available on request.</i></p> <p><i>Todos los calibres anillos nano están acompañados de un certificado de control, hecho con contracalibres tampons certificados SCS. El certificado de control de pago es disponible sobre pedido.</i> <i>All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.</i></p>		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!












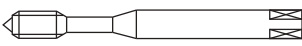
FOR SOLID CARBIDE THREAD MILLING CUTTERS AND THREAD WHIRL CUTTERS PLEASE ASK FOR OUR

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	<i>DIN largo</i> DIN long	DIN 371	46	46	47	47
UNJC 3B	ISO 3161/ASME B1.15	<i>DIN largo</i> DIN long	DIN 371	48	48	49	49
UNJF 3B	ISO 3161/ASME B1.15	<i>DIN largo</i> DIN long	DIN 371	50	50	51	51



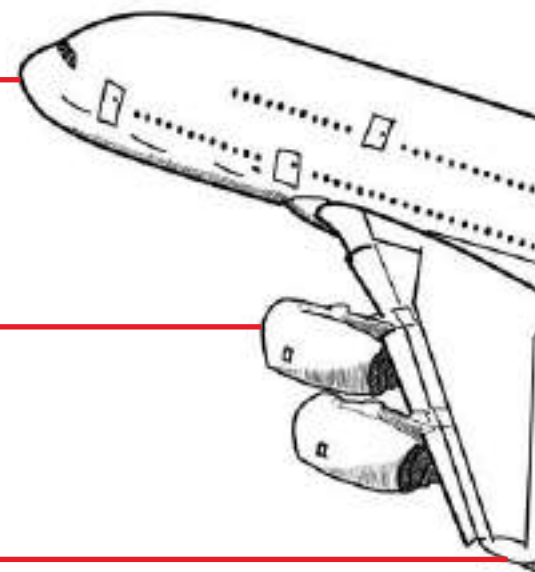
Composites
GWi3067VX



Super alloys
SA390-3



Titanium alloys
TL351VS-3



MJ, UNJC, UNJF

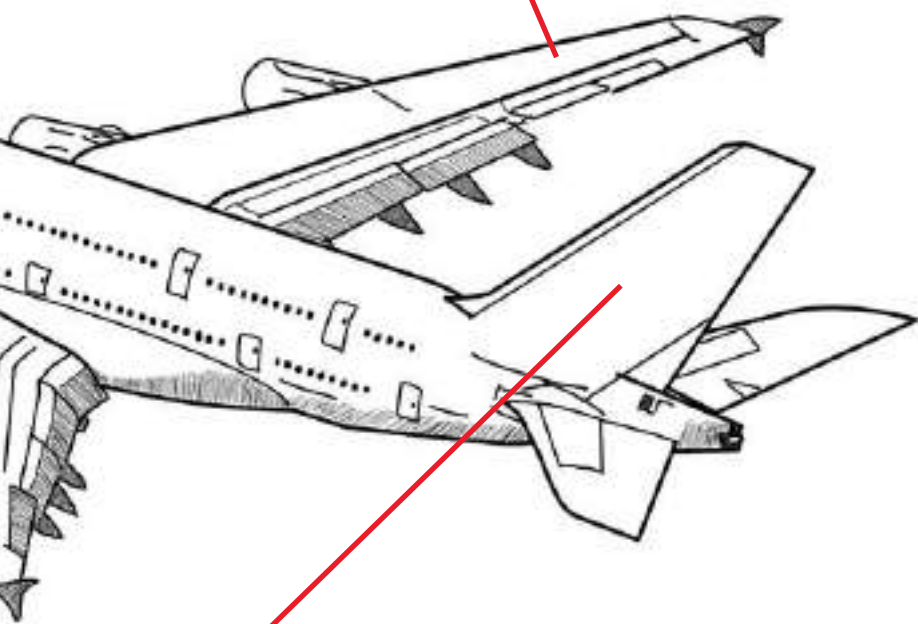
Directorio — Machos para roscar a máquina MJ ISO 5855,
UNJC / UNJF ISO 3161/ASME B1.15

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

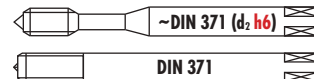
W360DL-3



Glass fibre reinforced plastics

H350TC-3





										S320VS-4	S370VX-3	SA390-3
<p>S320VS-4 </p> <p>S370VX-3 </p>										<p>NEW NEW NEW</p>		
<h1>aero</h1>												
<p>SA390-3 </p>												
$\emptyset d_1$	P	l_1	l_2	l_3	d_2	a			ID			
MJ	mm	mm	mm	mm	mm	mm						
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			
$\emptyset d_1$	P	l_1	l_2	l_3	d_2 h6	a			ID			
MJ	mm	mm	mm	mm	mm	mm						
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			
$\emptyset d_1$	P	l_1	l_2		d_2	a			ID			
MJ	mm	mm	mm		mm	mm						
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**

aero

SA320-4



15 16 52 64

SA350-3

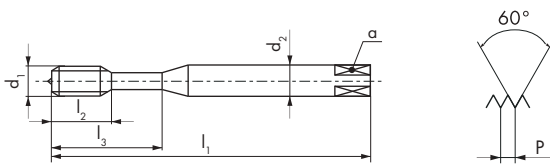


15 16 52 64

TL351VS-3



41 42



SA320-4

SA350-3

TL351VS-3



NEW



NEW



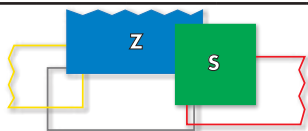
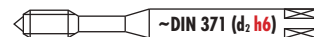
NEW



$\emptyset d_1$ MJ	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
3	0.5	56	12		3.5	2.7	3	2.55
4	0.7	63	14		4.5	3.4	3	3.4
5	0.8	70	15		6	4.9	3	4.3
6	1	80	15	23	6	4.9	3	5.1
8	1	90	18	29	8	6.2	3	7.1
8	1.25	90	18	29	8	6.2	3	6.9
10	1.25	100	20	33	10	8	3	8.9
10	1.5	100	20	33	10	8	3	8.6

ID	ID	ID
● 198990	● 198998	● 198982
● 198991	● 198999	● 198983
● 198992	● 199000	● 198984
● 198993	● 199001	● 198985
● 198994	● 199002	● 198986
● 198995	● 199003	● 198987
● 198996	● 199004	● 198988
● 198997	● 199005	● 198989

≤MJ5x0.8 = **4H6H**



S320VS-4



S370VX-3



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SA390-3



S320VS-4

S370VX-3

SA390-3



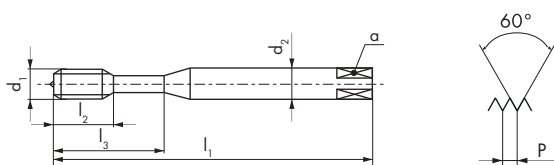
NEW



NEW



NEW



Ø" d ₁ UNJC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			
6	32	3.5	56	13	20	4	3	3	3	2.8
8	32	4.16	63	14	21	4.5	3.4	3	3	3.45
10	24	4.82	70	15	25	6	4.9	3	3	3.9
1/4	20	6.35	80	17	30	7	5.5	3	3	5.2

ID

- 199014
- 199015
- 199016
- 199017

Ø" d ₁ UNJC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h ₆ mm	a mm			
6	32	3.5	56	6.5	20	4 (h9)	3	3	3	2.8
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3	3.45
10	24	4.82	70	9	25	6	4.9	3	3	3.9
1/4	20	6.35	80	11	30	6	4.9	3	3	5.2

ID













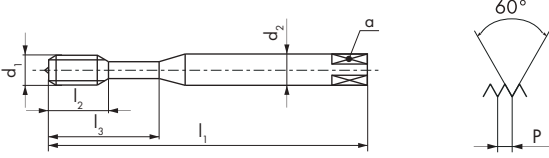








- 199018
- 199019
- 199020
- 199021

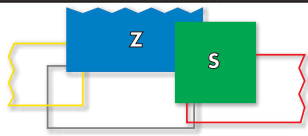
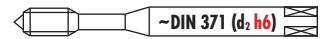
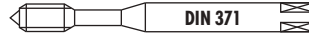
Ø" d ₁ UNJC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			
6	32	3.5	56	13	4	3	3	3	2.8
8	32	4.16	63	14	4.5	3.4	3	3	3.45
10	24	4.82	70	15	6	4.9	3	3	3.9
1/4	20	6.35	80	20	7	5.5	3	3	5.2

ID

- 199034
- 199035
- 199036
- 199037

aero

										SA320-4	SA350-3		TL351VS-3
<p>SA320-4  15 16 52 64</p> <p>SA350-3  R15 15 16 52 64</p>										 <p>NEW</p>	 <p>NEW</p>		 <p>NEW</p>
<p>TL351VS-3  R15  VS  41 42</p>											 < 1.5 x D		 < 2 x D  < 2 x D
										 B 4 x P  3B	 C 2.5 x P  3B		 C 2.5 x P  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	

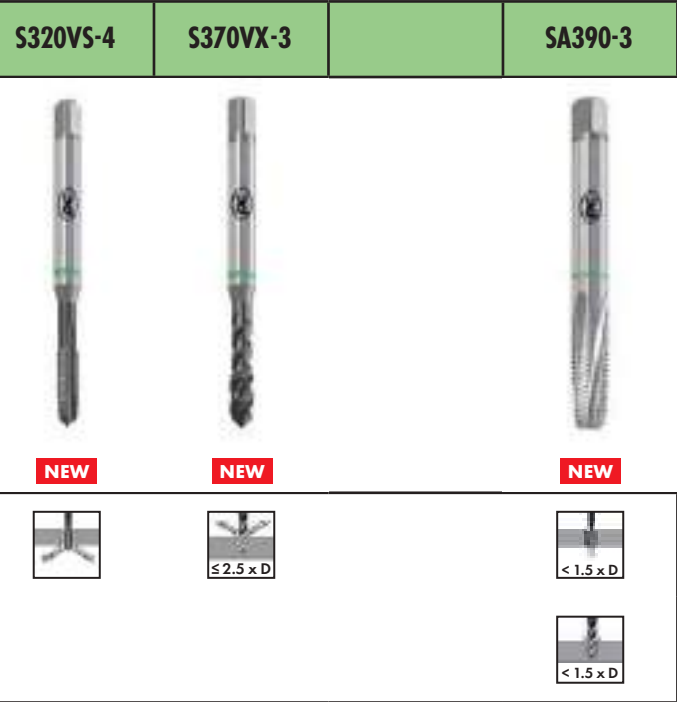
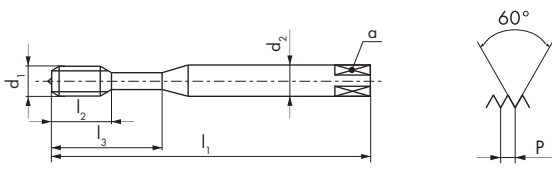


S320VS-4

S370VX-3

aero

SA390-3















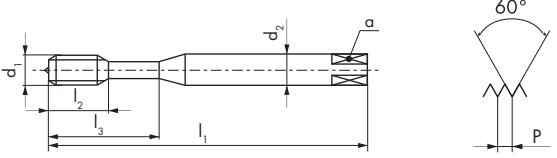








B 4 x P **C** 2.5 x P **C** 2.5 x P

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




































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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























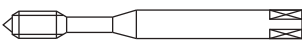
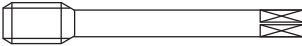
Ø" d ₁ UNJF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID
10	32	4.82	70	15	6	4.9	3	4.1	● 199049
1/4	28	6.35	80	20	7	5.5	3	5.55	● 199050
5/16	24	7.93	90	25	8	6.2	3	7	● 199051
3/8	24	9.52	100	30	10	8	3	8.6	● 199052

aero

										SA320-4	SA350-3		TL351VS-3
<p>SA320-4  15 16 52 64</p> <p>SA350-3  R15 15 16 52 64</p>										 <p>NEW</p>	 <p>NEW</p>		 <p>NEW</p>
<p>TL351VS-3  R15  VS  41 42</p>											 < 1.5 x D		 < 2 x D  < 2 x D
										 B 4 x P  3B	 C 2.5 x P  3B		 C 2.5 x P  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	

		N						
Características Characteristics								
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				


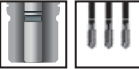


























N								
 R15	 R40	 R40	 R40	 R40	 V	 R40	 R40	 V
 V		 V	 TiN	 TiCN	 E 1.5xP			 V
								
								
N350-3 N350V-3	N360-3	N360V-3	N360TN-3 N360TC-3	N360-5 N360V-5	N361-3	N362V-3	N520-4	N520V-4
72	74	60 / 74	74	80	80	80		
							82	82
72	74	60 / 74	74	80	80	80	82	82
	76	76						
	78	78						
	78	78						
	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						

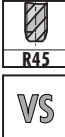
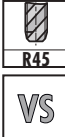

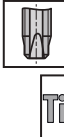
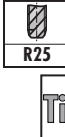
















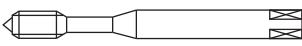
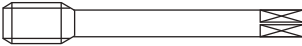
		N							
Características Characteristics		 TiN	 R40	 V	 R40	 TiN		 R40	
									
Tipo de agujero Hole type									
		N520TN-4	N560-3	N560V-3	N560TN-3	N1120-4	N1160-3	N1110 -1 -2 -3 -S	
<i>DIN largo</i> DIN long	DIN 371								
<i>Extra-largo</i> Extra-long	DC	82	84	84	84				
<i>ISO corto</i> ISO short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



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
 NEW								
								
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






















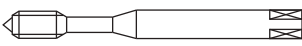
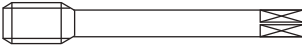
	Z		ZX	H		S	
Características Characteristics							
			 NEW				
Tipo de agujero Hole type							
	Z370VS-3	Z373VS-3	ZX320-4	H320-4 H320TC-4	H350-3 H350TC-3	S320VS-4	S360VS-3
DIN largo DIN long	DIN 371						
Extra-largo Extra-long	DC						
ISO corto ISO short	ISO 529						
DIN corto DIN short	DIN 352						
Tolerancia Tolerance	ISO 2 6H						
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						
	Z470VS-3	Z473VS-3	ZX420-4	H420-4 H420TC-4	H450-3 H450TC-3	S420VS-4	S460VS-3
DIN largo DIN long	DIN 376						
Extra-largo Extra-long	DC						
ISO corto ISO short	ISO 529						
DIN corto DIN short	DIN 352						
Tolerancia Tolerance	ISO 2 6H						
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						



Directorio — Machos para rosca a máquina ISO DIN 13

Directory — Machine taps ISO DIN 13

SA			TL		GG			
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
								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
								103
101	101		101	101	103	103	103	103
101	101		101	101				

		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							






















Directorio — Machos para roscar a máquina ISO DIN 13

Directory — Machine taps ISO DIN 13

RTS							
VS	VS	VS	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
<p>D5855   N1110-S M3, M4, M5, M6, M8, M10, N1210-S M12</p> <p>D5860   N1110-S M3, M4, M5, M6, M8, M10, N1210-S M12   FO DIN 338 D2.5, 3.3, 4.2, 5.0, FO DIN 338 6.8, 8.5, 10.2</p> <p>D5891   N310-3 M3, M4, M5, M6, M8, M10, N410-3 M12</p>			
<p>No D5855 / D5860 / D5891</p>	ID	ID	ID
<p>M3 - M12</p>	● 118728	● 118733	● 170922
BOXSET	D5892		
<p>D5892    N320V-4 M3, M4, M5, M6, M8, M10 </p>			
<p>No D5892</p>	ID		
<p>M3 - M10</p>	● 170921		
BOXSET	D5896		
<p>D5896    N360V-3 M3, M4, M5, M6, M8, M10 </p>			
<p>No D5896</p>	ID		
<p>M3 - M10</p>	● 167599		

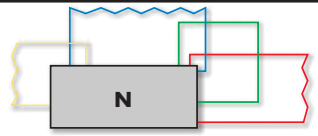




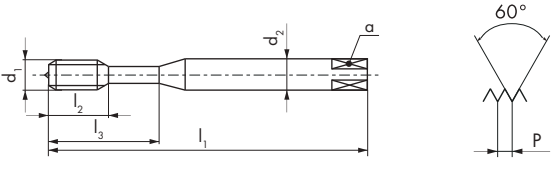
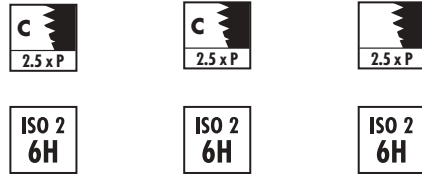




Juegos de machos de roscar — QTAP
Tap assortments — QTAP

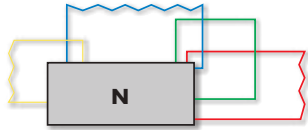


PM



BOXSET	D5893
<p>Q320VS-4</p> <p>VS</p> <p>M3, M4, M5 M6, M8, M10</p>	<p>NEW</p>
<p>No D5893</p>	<p>ID</p>
<p>M3 - M10</p>	<p>• 197104</p>
BOXSET	D5897
<p>Q360VS-3</p> <p>VS</p> <p>M3, M4, M5 M6, M8, M10</p>	<p>NEW</p>
<p>No D5897</p>	<p>ID</p>
<p>M3 - M10</p>	<p>• 197105</p>

										N310-3	N310-3 LH	N320-3	
													
N310-3													
N310-3 LH		LH											
N320-3													
													
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



N410-3



31 62 73 74 91

N410-3 LH

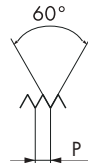
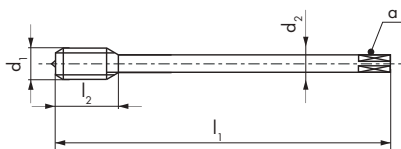




LH

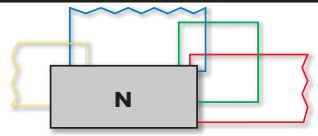











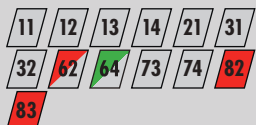
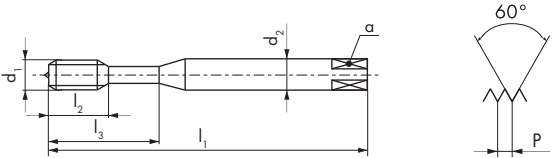












31 62 73 74 91

N410-3

N410-3 LH

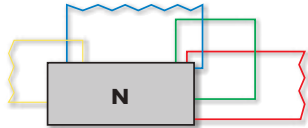





$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
3	0.5	56	12	2.2	1.8	3	2.5	● 101897	
4	0.7	63	14	2.8	2.1	3	3.3	● 101924	
5	0.8	70	15	3.5	2.7	3	4.2	● 101942	
6	1	80	17	4.5	3.4	3	5	● 101953	
7	1	80	17	5.5	4.3	3	6	● 142645	● 111491
8	1.25	90	20	6	4.9	3	6.8	● 101958	● 111492
10	1.5	100	22	7	5.5	3	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	







										N320-4	N320V-4	N320TN-4	N320TC-4
													
N320-4													
N320V-4	 												
N320TN-4	 												
N320TC-4	 												
													
													
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	
<p>* N320-3 / N320V-3 N320TN-3 / N320TC-3 </p>													

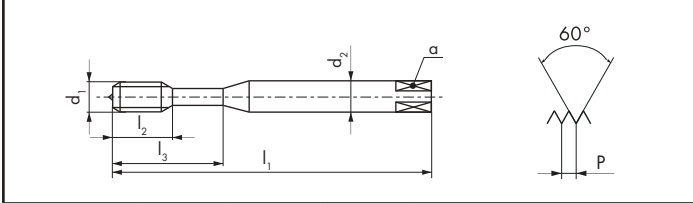
≤ M1.5




									N420-4	N420V-4	N420TN-4	N420TC-4
N420-4												
N420V-4		V										
N420TN-4		TiN										
N420TC-4		TiCN										
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		





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
		
		



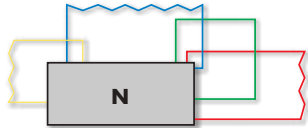
		
ISO 1 4H	ISO 2 6H	ISO 2 6H

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



								N420-4	N420-4 LH	N420V-4 LH
N420-4										
N420-4 LH	LH									
N420V-4 LH	V LH									
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		● 102193	● 102198	● 142621
10	1.5	100	22	7	5.5	3		● 102059	● 102064	● 143287
12	1.75	110	24	9	7	3		● 102070	● 102040	● 146583
14	2	110	28	11	9	3			● 102084	● 146563
16	2	110	30	12	9	3			● 102093	● 143108
20	2.5	140	36	16	12	3			● 102103	● 145579
24	3	160	39	18	14.5	4			● 111493	● 145578
= 6.70										



N320-4



62 63 64 72 73 74
81 91

N320V-4



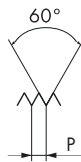
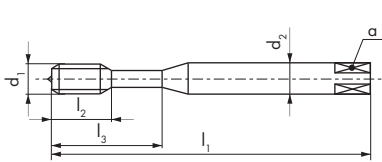
11 12 31 32

N320-4

N320V-4

N320-4

N320-4





ISO 3
6G

ISO 3
6G

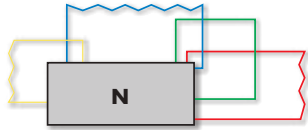
7G





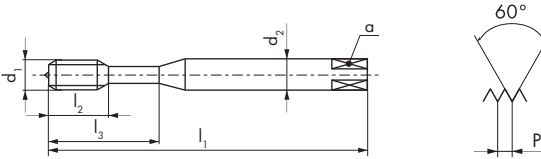
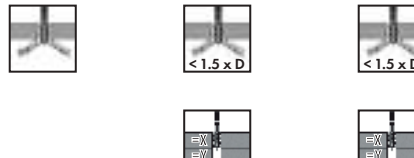




6H
+0.1 mm

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			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 


								N420-4	N420V-4	N420-4	N420-4			
N420-4														
N420V-4														
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			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




										N321-4	N330-4	N330V-4	
<p>N321-4</p>  <p>61 62 63 64 71 72 73 74 81 91</p>													
<p>N330-4</p>  <p>63 72</p>													
<p>N330V-4</p>  <p>11 12</p>													
													
													
													
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	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	

* N321-3 / N330-3 / N330V-3



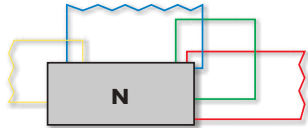
* N330-4 =  2

* N330V-4 =  2

≤ M1.5



								N420-4	N421-4	N430-4	N430V-4
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			11 12								
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			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		



N350-3



62 63 64 72 73 74
81 91

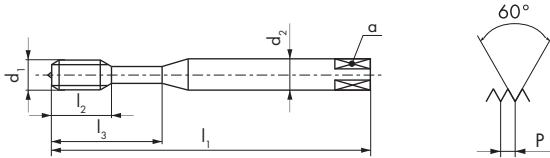
N350V-3





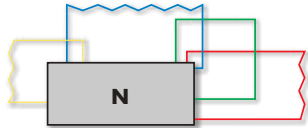
11 12 31 32

N350-3

N350V-3



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



N450-3

R15

62 63 64 72 73 74
81 91

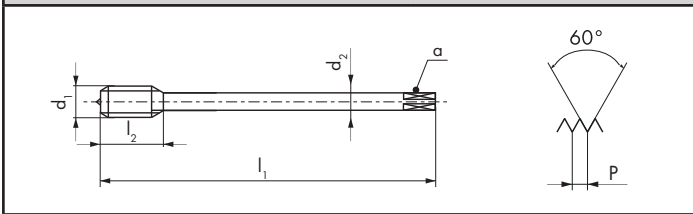
N450V-3

R15

V

11 12 31 32

N450-3	N450V-3		
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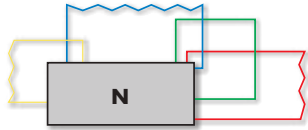
C 2.5 x P

C 2.5 x P

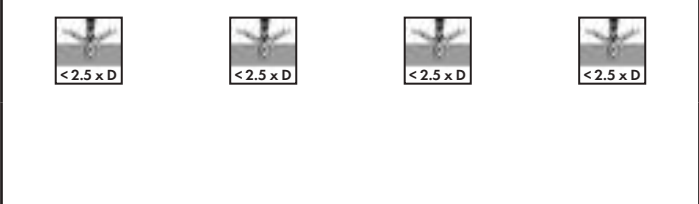
ISO 2 6H

ISO 2 6H

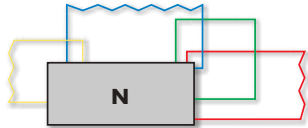
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
8	1.25	90	20	6	4.9	3	6.8	● 102327	● 102334
10	1.5	100	22	7	5.5	3	8.5	● 102314	● 102329
12	1.75	110	24	9	7	3	10.2	● 102317	● 102330
14	2	110	28	11	9	3	12	● 102319	● 145487
16	2	110	30	12	9	3	14	● 102321	● 102331
20	2.5	140	36	16	12	4	17.5	● 102324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










	N360-3	N360V-3	N360TN-3	N360TC-3
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			
N360TC-3	R40	TiCN		
	11 12 13 14 21 31 32 62 64 73 74 82 83			



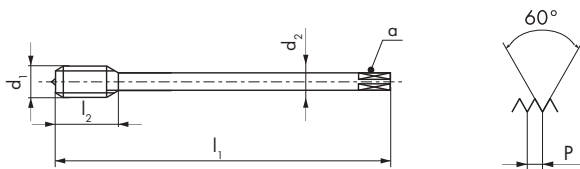
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
2	0.4	45	7		2.8	2.1	2	1.6	● 101618	● 101708	● 101697	● 146842
2.2	0.45	45	8		2.8	2.1	2	1.75	● 101619			
2.3	0.4	45	8		2.8	2.1	2	1.9	● 101620			
2.5	0.45	50	9		2.8	2.1	2	2.05	● 101622	● 101709	● 101698	● 101689
2.6	0.45	50	9		2.8	2.1	2	2.15	● 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













N460-3		63 72 73 74 81 91
N460V-3	 	11 12 32
N460TN-3	 	11 12 13 14 32
N460TC-3	 	11 12 13 14 21 31 32 62 64 73 74 82 83

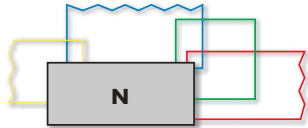









 < 2.5 x D	 < 2.5 x D	 < 2.5 x D	 < 2.5 x D
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 2.5 x P	 2.5 x P	 2.5 x P	 2.5 x P
 ISO 2 6H	 ISO 2 6H	 ISO 2 6H	 ISO 2 6H

$\emptyset d_1$ 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		



N360-3 LH  **LH**      

N360V-3 LH  **V** **LH**   

N360-3       

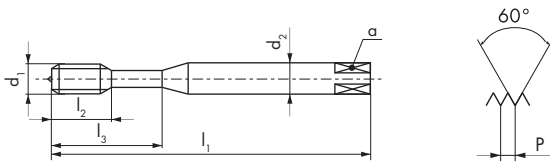
N360V-3  **V**   



N360-3 LH

N360V-3 LH

N360-3

N360V-3



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
2	0.4	45	7		2.8	2.1	2	1.6
2.5	0.45	50	9		2.8	2.1	2	2.05
3	0.5	56	5.5	18	3.5	2.7	3	2.5
3.5	0.6	56	6.5	20	4	3	3	2.95
4	0.7	63	7.5	21	4.5	3.4	3	3.3
5	0.8	70	9	25	6	4.9	3	4.2
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	6.8
10	1.5	100	14	39	10	8	3	8.5

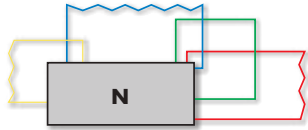
ID

ID

ID ^{6H}+ mm

ID ^{6H}+ mm

● 101617 0.019	● 146000 0.019
● 101621 0.020	● 143294 0.020
● 101627	● 146811
● 101625 0.020	● 104816 0.020
● 101629 0.021	● 125829 0.021
● 101637	● 162540
● 101646	● 144003
● 101634 0.022	● 101643 0.024
● 101654	● 144004
● 101669 0.026	● 104819 0.026
● 101666	● 143925
● 101662 0.028	● 104820 0.028
● 101615	● 143587
● 101611 0.032	● 104821 0.032



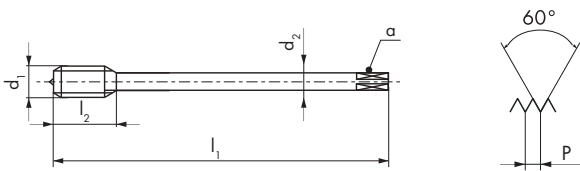
N460-3 LH N460V-3 LH N460-3 N460V-3

N460-3 LH 63 72 73 74 81 91

N460V-3 LH 11 12 32

N460-3 63 72 73 74 81 91

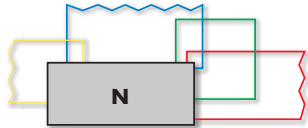
N460V-3 11 12 32



2.5 x P 2.5 x P 2.5 x P 2.5 x P

ISO 2 6H ISO 2 6H ISO 3 6G ISO 3 6G

$\emptyset d_1$ 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



N360-3



63 72 73 74 81 91

N360V-3

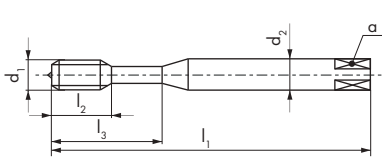




11 12 32

N360-3



N360-3

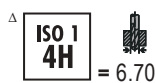
N360V-3

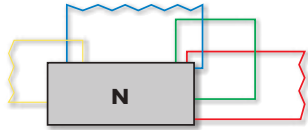





Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		 6H	ID	ID 6H + mm	ID 6H + mm
3	0.5	56	5.5	18	3.5	2.7	3	2.5	● 101624	● 101628 0.036	● 144311 0.036
4	0.7	63	7.5	21	4.5	3.4	3	3.3	● 101633	● 101638 0.041	● 144192 0.041
5	0.8	70	9	25	6	4.9	3	4.2	● 101642	● 101647 0.044	● 143208 0.044
6	1	80	11	30	6	4.9	3	5	● 101651	● 101655 0.050	● 146709 0.050
8	1.25	90	12.5	35	8	6.2	3	^Δ 6.8	● 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



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		 6H	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






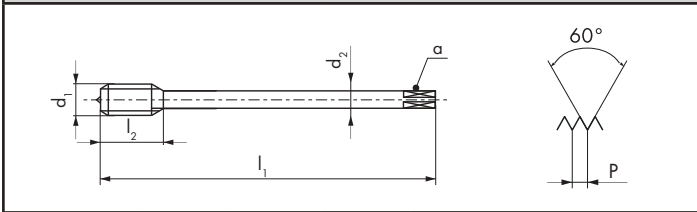








N460-3		63 72 73 74 81 91
N460V-3	 	11 12 32



N460-3	N460-3	N460V-3	
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





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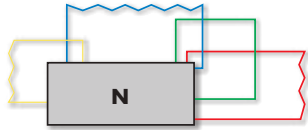
		
		

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
12	1.75	110	14	9	7	3	10.2
16	2	110	18	12	9	3	14

ID	ID 6H + mm	ID 6H + mm
* 124987	● 102363 0.066	● 142532 0.066
	● 102379 0.072	● 144956 0.072
		

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
12	1.75	110	14	9	7	3	10.3
16	2	110	18	12	9	3	14.1

ID	ID
● 102360	● 125044
● 102377	● 145311



N360-5

N360V-5

N361-3

N362V-3



N360-5



63 72 73 74 81 91

N360V-5



11 12 32

N361-3

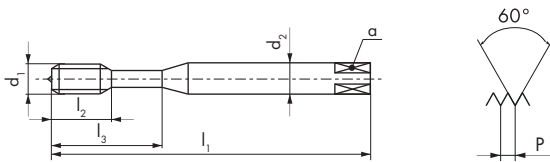


61 63 71 72 73 74
81 91

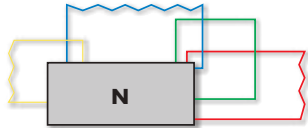
N362V-3













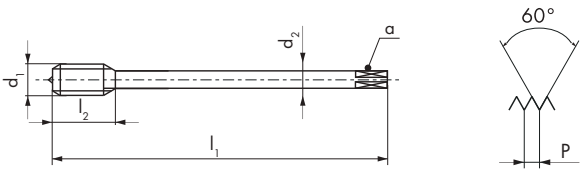












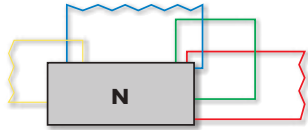
11 12 32



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



								N460-5	N460V-5	N461-3	N462V-3
<p>N460-5</p>  63 72 73 74 81 91								   			
<p>N460V-5</p>   11 12 32											
<p>N461-3</p>   61 63 71 72 73 74 81 91											
<p>N462V-3</p>    11 12 32											
								   			
								   			
$\emptyset d_1$	P	l_1	l_2	d_2	a			ID	ID	ID	ID
M	mm	mm	mm	mm	mm						
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



N520-4



62 63 64 72 73 74
81 91

N520V-4



11 12 31 32

N520TN-4

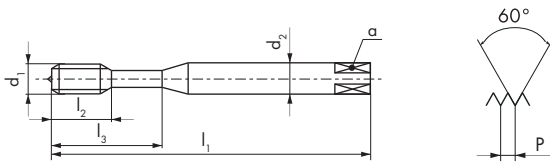


11 12 13 14 32

N520-4

N520V-4

N520TN-4



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
2.5	0.45	100	10		2.8	2.1	3	2.05
3	0.5	112	12	18	3.5	2.7	3	2.5
4	0.7	112	14	21	4.5	3.4	3	3.3
5	0.8	125	15	25	6	4.9	3	4.2
6	1	125	17	30	6	4.9	3	5

ID

ID

ID

● 102594

● 142623

● 102595

● 143399

● 162790

● 102596

● 143400

● 146837

● 102597

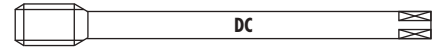
● 142654

● 150113

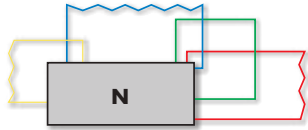
● 102598

● 143137

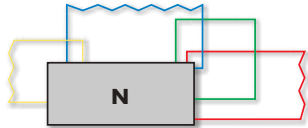
● 148821



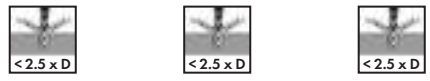
								N620-4	N620V-4	N620TN-4	
N620-4											
N620V-4											
N620TN-4											
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	
4	0.7	112	14	2.8	2.1	3	3.3	● 102619	● 142582	● 146442	
5	0.8	125	15	3.5	2.7	3	4.2	● 102620	● 142657	● 146443	
6	1	125	17	4.5	3.4	3	5	● 102621	● 142658	● 144591	
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	



										N560-3	N560V-3	N560TN-3	
<p>N560-3 </p> <p>N560V-3 </p> <p>N560TN-3 </p>													
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	

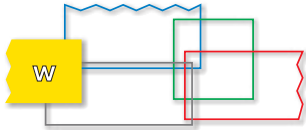
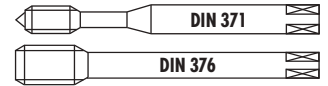


	N660-3	N660V-3	N660TN-3	
N660-3				
N660V-3				
N660TN-3				



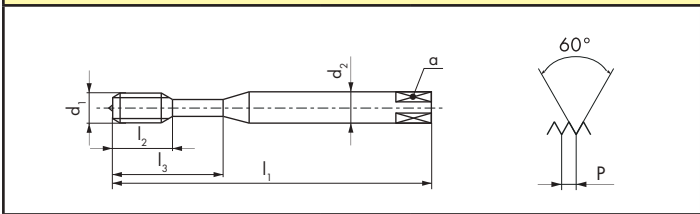
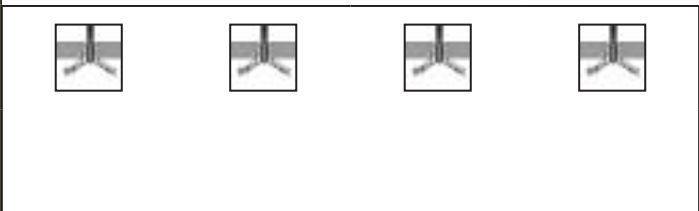
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$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID
6	1	125	11	4.5	3.4	3	5	● 162792	● 115657	
8	1.25	140	12.5	6	4.9	3	6.8	● 162793	● 115544	
10	1.5	160	14	7	5.5	3	8.5	● 162794	● 135539	● 173484
12	1.75	180	14	9	7	3	10.2	● 102623	● 102626	● 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



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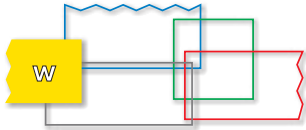
W320-4		71 72 81
W420-4		71 72 81
W320DL-4		71 72 73
W420DL-4		71 72 73



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

$\emptyset d_1$ 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



W360-3

W460-3

W360DL-3

W460DL-3

W360-3



71 72 81

W460-3



71 72 81

W360DL-3

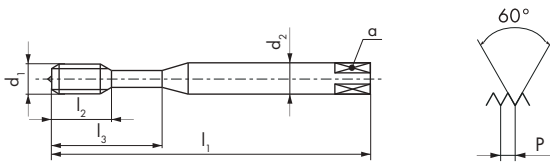


71 72 73

W460DL-3



71 72 73



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
2	0.4	45	7		2.8	2.1	2	1.6
2.5	0.45	50	9		2.8	2.1	2	2.05
3	0.5	56	5.5	18	3.5	2.7	2	2.5
4	0.7	63	7.5	21	4.5	3.4	2	3.3
5	0.8	70	9	25	6	4.9	2	4.2
6	1	80	11	30	6	4.9	2	5
8	1.25	90	12.5	35	8	6.2	2	6.8
10	1.5	100	14	39	10	8	2	8.5
12	1.75	110	14		9	7	3	10.2
16	2	110	18		12	9	3	14

ID

ID

ID

ID

● 104625

● 176719

● 104626

● 176720

● 104627

● 176721

● 104628

● 176722

● 104629

● 176723

● 104630

● 176355

● 104631

● 176724

● 104624

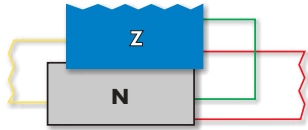
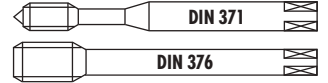
● 176725

● 104640

● 176726

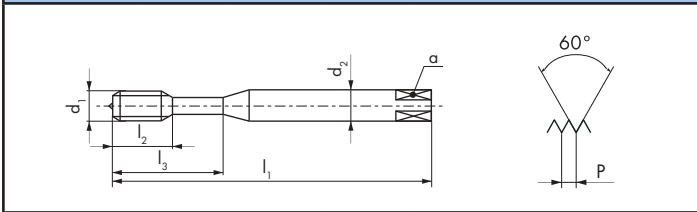
● 104641

● 176727



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

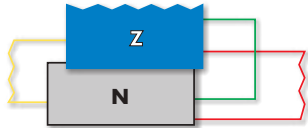
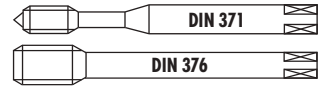


ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H

Ø d1 M	P mm	l1 mm	l2 mm	l3 mm	d2 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

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Z360V-3



12 21 32

Z362V-3



12 21 32

Z462V-3

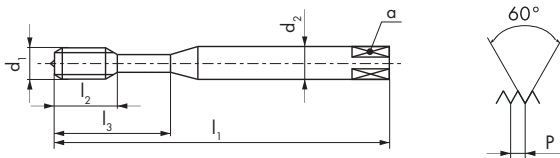


12 21 32

Z360V-3

Z362V-3

Z462V-3



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
2	0.4	45	7		2.8	2.1	2	1.6
2.5	0.45	50	9		2.8	2.1	2	2.05
2.6	0.45	50	9		2.8	2.1	2	2.15
3	0.5	56	5.5	18	3.5	2.7	3	2.5
3.5	0.6	56	6.5	20	4	3	3	2.9
4	0.7	63	7.5	21	4.5	3.4	3	3.3
5	0.8	70	9	25	6	4.9	3	4.2
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	6.8
10	1.5	100	14	39	10	8	3	8.5
12	1.75	110	14		9	7	3	10.2
14	2	110	14		11	9	3	12
16	2	110	18		12	9	3	14
18	2.5	125	21		14	11	3	15.5
20	2.5	140	24		16	12	3	17.5
22	2.5	140	24		18	14.5	3	19.5
24	3	160	27		18	14.5	4	21
27	3	160	27		20	16	4	24
30	3.5	180	30		22	18	4	26.5
36	4	200	36		28	22	4	32
42	4.5	200	40		32	24	4	37.5

ID

ID

ID

● 104684

● 104685

● 104686

● 104687

● 104688

● 104689

● 104690

● 104691

● 104692

● 104683

● 104742

● 104743

● 104744

● 104745

● 104746

● 104752

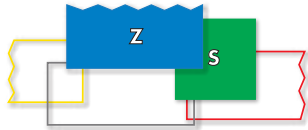
● 104747

● 104748

● 104749

● 104750

● 104751

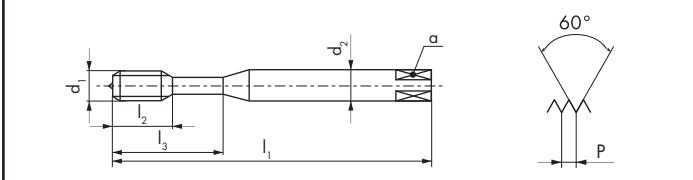


Z362VS-3 Z370VS-3 Z370VS-3 Z373VS-3



Z362VS-3				12 14 21 22 23 32 61 63
Z370VS-3				14 15 21 22 23 24 51 61
Z373VS-3				94
Z370VS-3				13 14 15 21 22 23 24 51
Z373VS-3				52

	PM	PM	PM



6HX	6HX	4HX	6HX

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
* 3	0.5	56	5.5	18	3.5	2.7	3	2.5
4	0.7	63	7.5	21	4.5	3.4	3	3.3
5	0.8	70	9	25	6	4.9	3	4.2
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	6.8
10	1.5	100	14	39	10	8	3	8.5

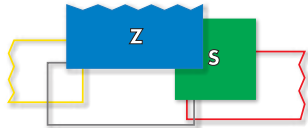
ID	ID	ID
● 111504		
● 111505		
● 111506		
● 111507		
● 111508		
● 111509		

* Z360VS-3

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.3
5	0.8	70	9	25	6	4.9	3	4.2
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	Δ 6.8
10	1.5	100	14	39	10	8	3	8.5

ID	ID	ID
● 162776	● 165324	● 165236
● 162777	● 165325	● 165237
● 162778	● 165326	● 165238
● 162779	● 165327	● 165239
● 162780	● 165328	● 165240
● 162781	● 165438	● 165241

Δ **4HX** = 6.7



Z462VS-3

Z470VS-3

Z473VS-3

Z462VS-3



Z470VS-3



Z473VS-3



Z470VS-3



Z473VS-3



< 2.5 x D



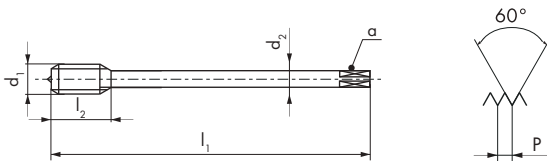
< 3 x D



< 3 x D

PM

PM



2.5 x P

6HX



2.5 x P

6HX



2.5 x P

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		● 111510
14	2	110	14	11	9	4		★ 148169
16	2	110	18	12	9	4		● 111511
20	2.5	140	24	16	12	4		● 111512
24	3	160	27	18	14.5	4		★ 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		● 162782	● 165242
14	2	110	14	* 12	* 9	4		● 162783	
16	2	110	18	12	9	4		● 162784	● 165244
18	2.5	125	21	14	11	4		● 170643	
20	2.5	140	24	16	12	4		● 162785	● 165234
22	2.5	140	24	16	12	4		● 175190	
24	3	160	27	16	12	4		● 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

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

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

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

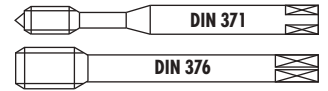
for AMPCO® 25 / 26
Hardness Brinell HB > 380 - < 420
Lubricant: cutting oil / emulsion

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



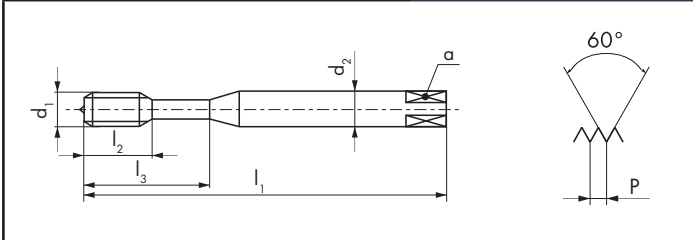
ZX

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		
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 < 1.5 x D	 < 1.5 x D
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6HX	6HX

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.7	63	14	21	4.5	3.4	3	* 3.3
5	0.8	70	15	25	6	4.9	3	* 4.2
6	1	80	17	30	6	4.9	3	* 5
8	1.25	90	20	35	8	6.2	3	* 6.8
10	1.5	100	22	39	10	8	3	* 8.5

ID
● 143599
● 145458
● 110232
● 110233
● 124905

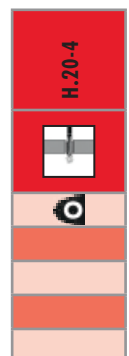
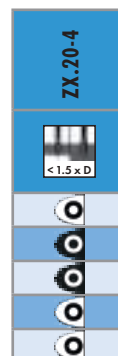
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
12	1.75	110	24	9	7	3	* 10.2
16	2	110	30	12	9	3	* 14

ID
● 110208
● 110207

*Amcco® 25 / Amcco® 26 + 0.2 mm

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

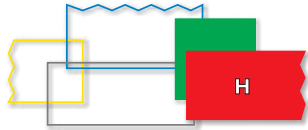
Clasificación de los materiales Material designation	Dureza Hardness Brinell (HB)	Velocidad de corte Cutting speed Vc (m/min) Guide Line
AMPCO® 18	< 290	6 - 10
AMPCO® 21	> 280 - < 330	2 - 3
AMPCO® 22	> 280 - < 330	2 - 3
AMPCO® 25	< 420	2 - 3
AMPCO® 26	< 420	2 - 3







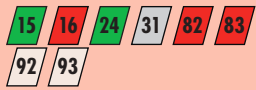





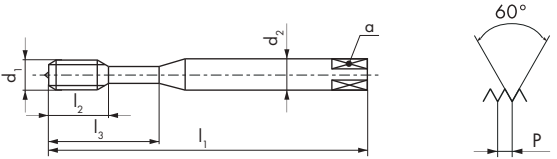
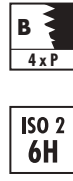
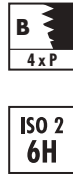
Óptima con aceite de corte
Optimal with cutting oil



Aceptable con aceite de corte
Suitable with cutting oil

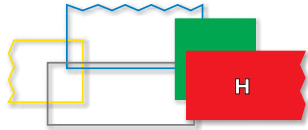







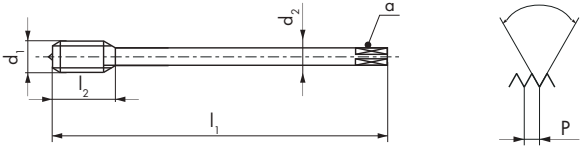








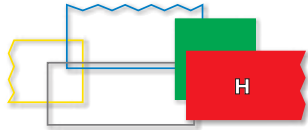
	H320-4	H320TC-4		
H320-4				
H320TC-4				
				
				

		
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$\emptyset d_1$ 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



								H420-4	H420TC-4				
<p>H420-4</p>  <p>15 16 62 64 82</p> <p>H420TC-4</p>   <p>15 16 24 31 82 83 92 93</p>								 					
								 		 			
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					



H350-3



15 16 62 64 82

H350TC-3

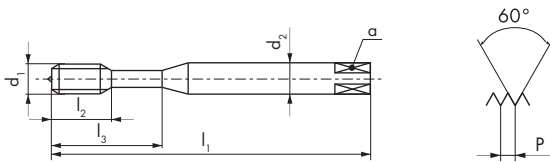




15 16 24 31 82 83
92 93

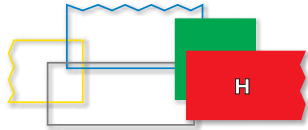
H350-3

H350-3

H350TC-3



$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			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



H450-3



15 16 62 64 82

H450TC-3

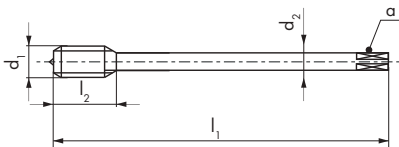




15 16 24 31 82 83
92 93

H450-3

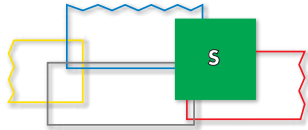
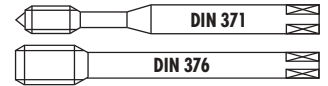
H450-3

H450TC-3



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
12	1.75	110	14	9	7	4	10.2
14	2	110	14	11	9	4	12
16	2	110	18	12	9	4	14
18	2.5	125	21	14	11	4	15.5
20	2.5	140	24	16	12	4	17.5
22	2.5	140	24	18	14.5	4	19.5
24	3	160	27	18	14.5	4	21
27	3	160	27	20	16	4	24
30	3.5	180	30	22	18	4	26.5
36	4	200	36	28	22	4	32
42	4.5	200	40	32	24	4	37.5

ID	ID	6H + mm	ID
● 101305	★ 101304	0.034	● 111501
● 101307			● 146151
● 101309			● 111605
● 101311			
● 101313			● 144986
● 101315			
● 101318			● 144987
● 101320			
● 101323			
● 101324			
● 101325			



S320VS-4



13 15 16 22 23 24
52

S420VS-4

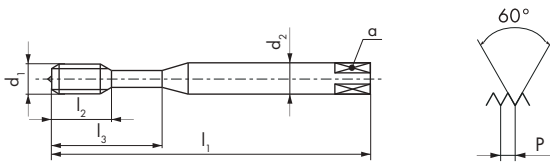


13 15 16 22 23 24
52

S320VS-4

S320VS-4

S420VS-4



6HX

4HX

6HX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
3	0.5	56	12	18	3.5	2.7	3	2.5
4	0.7	63	14	21	4.5	3.4	3	3.3
5	0.8	70	15	25	6	4.9	3	4.2
6	1	80	17	30	6	4.9	3	5
8	1.25	90	20	35	8	6.2	3	Δ 6.8
10	1.5	100	22	39	10	8	3	8.5
12	1.75	110	24		9	7	4	10.2
16	2	110	30		12	9	4	14
20	2.5	140	36		16	12	4	17.5

ID

ID

ID

- 111596 * 165318
- 111597 * 165319
- 111598 * 165320
- 111599 * 165321
- 111600 * 165322
- 111601 * 165323

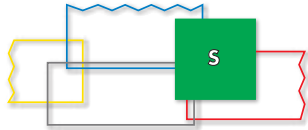
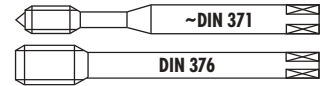
- 111602
- 111603
- 111604

Δ **4HX** = 6.7

M

ISO DIN 13

PM



S360VS-3



13 15 16 22 23 24
52

S460VS-3



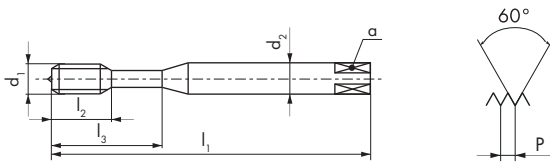
13 15 16 22 23 24
52

aero

SA390-3



16 53



S360VS-3

S460VS-3

SA390-3

SA390-3



6HX

6HX

4HX

6HX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
3	0.5	56	5.5	18	3.5	2.7	3	2.5
4	0.7	63	7.5	21	4.5	3.4	3	3.3
5	0.8	70	9	25	6	4.9	3	4.2
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	6.8
10	1.5	100	14	39	10	8	3	8.5
12	1.75	110	14		9	7	4	10.2
14	2	110	14		11	9	4	12
16	2	110	18		12	9	4	14
20	2.5	140	24		16	12	4	17.5
24	3	160	27		18	14.5	4	21

ID

ID

• 111513

• 111514

• 111515

• 111516

• 111517

• 111518

• 111519

* 148171

• 111520

• 111521

• 111606

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
4	0.7	63	14	4.5	3.4	3	3.3
5	0.8	70	15	6	4.9	3	4.2
6	1	80	20	6	4.9	3	5
8	1.25	90	25	8	6.2	3	Δ 6.8
10	1.5	100	30	10	8	3	8.5
12	1.75	110	35	12	9	4	10.2
14	2	110	40	16	12	4	12

ID

ID

• 149673

• 149674

• 149693

• 149694

• 149707

• 149708

• 149736

• 149737

* 149754

• 149755

• 149775

• 149775

* 149792

Δ 4HX = 6.7

aero

										SA320-4	SA350-3	TL320VS-4	TL351VS-3																																																																																																	
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										<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> 4HX</div> <div style="text-align: center;"> 4HX</div> <div style="text-align: center;"> 4HX</div> <div style="text-align: center;"> 4HX</div> </div>																																																																																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Ø d₁ M</th> <th>P mm</th> <th>l₁ mm</th> <th>l₂ mm</th> <th>l₃ mm</th> <th>d₂ mm</th> <th>a mm</th> <th></th> <th></th> <th>ID</th> <th>ID</th> <th>ID</th> <th>ID</th> </tr> </thead> <tbody> <tr><td>3</td><td>0.5</td><td>56</td><td>12</td><td></td><td>3.5</td><td>2.7</td><td>3</td><td>2.5</td><td>● 147975</td><td>● 147987</td><td>● 152006</td><td>● 152012</td></tr> <tr><td>4</td><td>0.7</td><td>63</td><td>14</td><td></td><td>4.5</td><td>3.4</td><td>3</td><td>3.3</td><td>● 147976</td><td>● 147988</td><td>● 152007</td><td>● 152013</td></tr> <tr><td>5</td><td>0.8</td><td>70</td><td>15</td><td></td><td>6</td><td>4.9</td><td>3</td><td>4.2</td><td>● 147977</td><td>● 147989</td><td>● 152008</td><td>● 152014</td></tr> <tr><td>6</td><td>1</td><td>80</td><td>15</td><td>23</td><td>6</td><td>4.9</td><td>3</td><td>5</td><td>● 147978</td><td>● 147990</td><td>● 152009</td><td>● 152015</td></tr> <tr><td>8</td><td>1.25</td><td>90</td><td>18</td><td>29</td><td>8</td><td>6.2</td><td>3</td><td>6.7</td><td>● 147979</td><td>● 147991</td><td>● 152010</td><td>● 152016</td></tr> <tr><td>10</td><td>1.5</td><td>100</td><td>20</td><td>33</td><td>10</td><td>8</td><td>3</td><td>8.5</td><td>● 147980</td><td>● 147992</td><td>● 152011</td><td>● 152017</td></tr> </tbody> </table>										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		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										
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		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																																																																																																		
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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		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																																																																																																		



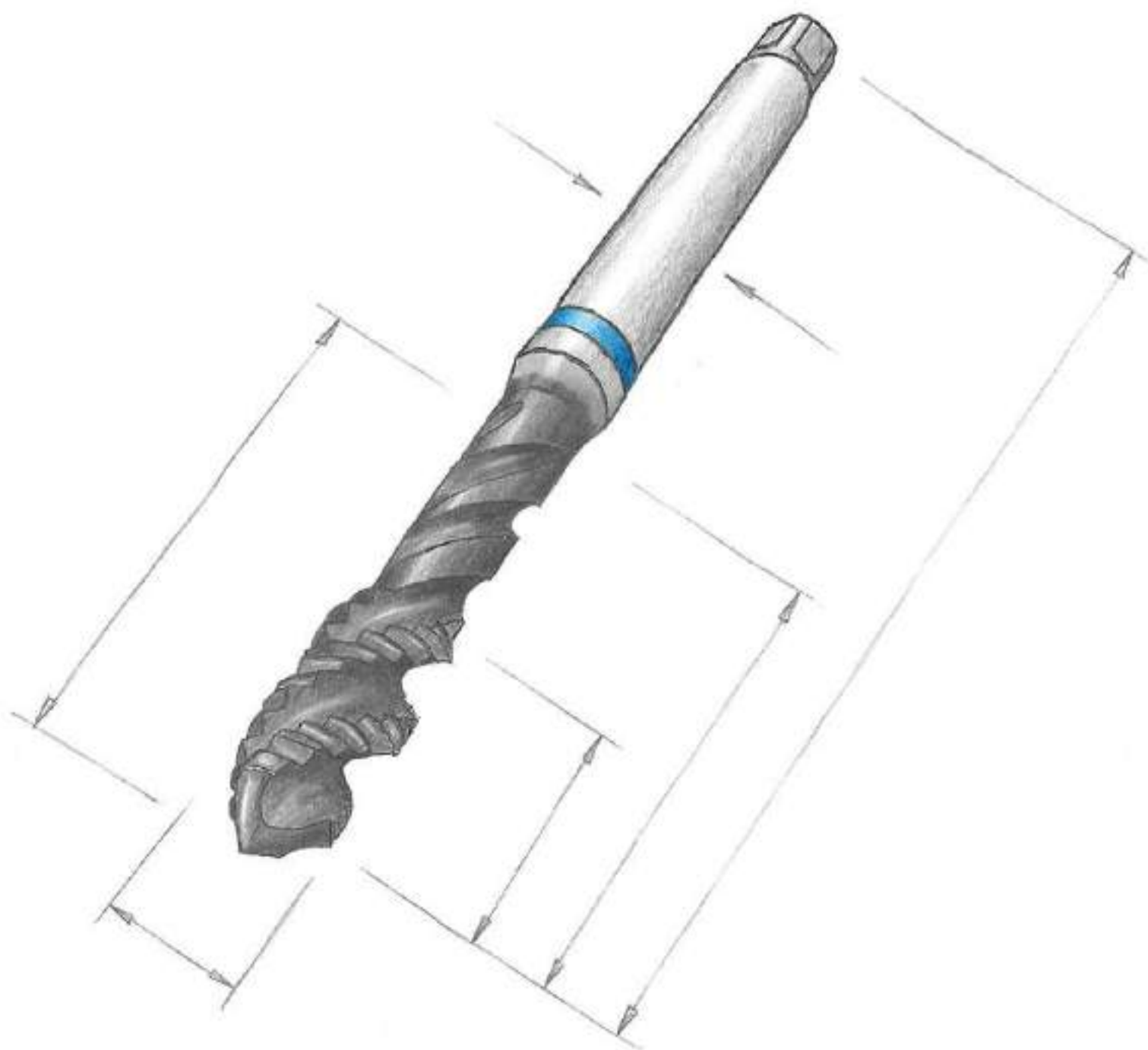
STAP

DC


























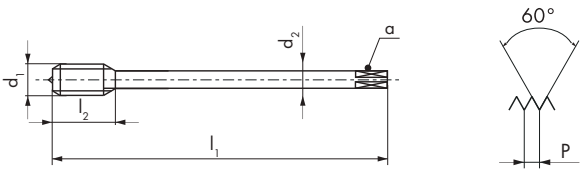








DC

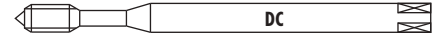
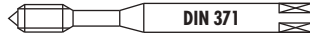
DC

DC





















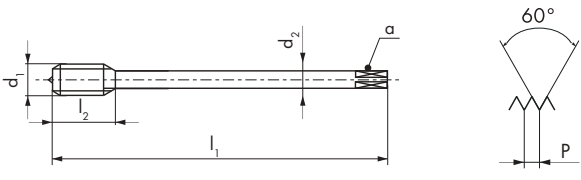

















aero

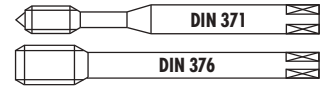
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SA420-4														
SA450-3														
TL420VS-4		VS												
TL451VS-3			VS											
														
									4xP	2.5xP	4xP	2.5xP		
									4HX	4HX	4HX	4HX		
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm				ID	ID	ID	ID		
12	1.75	110	24	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		
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm				ID	ID	ID	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		



										GG350NV-3	GG350TC-3	GG353TC-3	GG550NV-3
										<p>GG350NV-3 </p> <p>GG350TC-3 </p> <p>GG353TC-3 </p> <p>GG550NV-3 </p>			
$\emptyset d_1$ 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	3	2.5	● 101172	● 101178		
4	0.7	63	14	21	4.5	3.4	3	3	3.3	● 101173	● 101179		
5	0.8	70	15	25	6	4.9	3	3	4.2	● 101174	● 101180		
6	1	80	17	30	6	4.9	3	3	5	● 101175	● 101181		
8	1.25	90	20	35	8	6.2	4	4	6.8	● 101076	● 101182		
10	1.5	100	22	39	10	8	4	4	8.5	● 101171	● 101177		
$\emptyset d_1$ 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	3	4.2	● 144947			
6	1	80	17	30	6	4.9	3	3	5	● 147710			
8	1.25	90	20	35	8	6.2	4	4	6.8	● 147711			
10	1.5	100	22	39	10	8	4	4	8.5	● 146708			
$\emptyset d_1$ 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	3.3	● 101196			
5	0.8	125	15	25	6	4.9	3	3	4.2	● 101197			
6	1	125	17	30	6	4.9	3	3	5	● 101198			

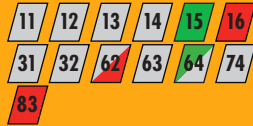
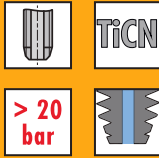


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GG450NV-3   													
GG450TC-3     													
GG453TC-3     													
GG650NV-3   													
									   				
									   				
$\varnothing d_1$	P	l_1	l_2	d_2	a				ID	ID			
M	mm	mm	mm	mm	mm								
8	1.25	90	20	6	4.9	4		6.8	● 101189	● 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				
$\varnothing d_1$	P	l_1	l_2	d_2	a				ID				
M	mm	mm	mm	mm	mm								
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													
$\varnothing d_1$	P	l_1	l_2	d_2	a				ID				
M	mm	mm	mm	mm	mm								
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				

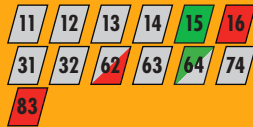
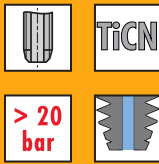


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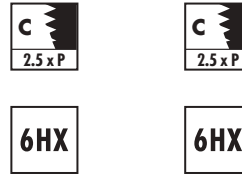
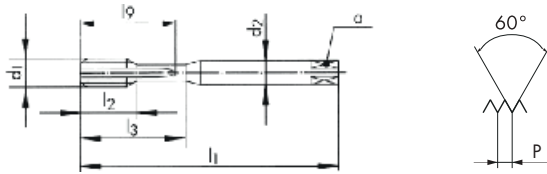


K413TC-3

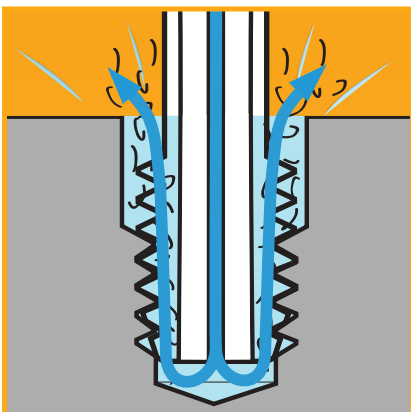


K313TC-3

K413TC-3



$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	l_0 mm	d_2 mm	a mm			ID	ID
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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





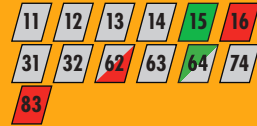
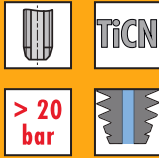
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PM HSSE

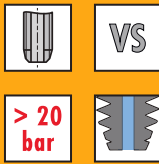


K

K613TC-3

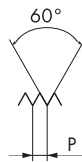
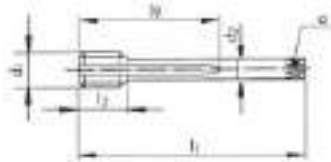
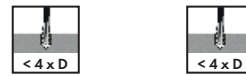


K613VS-3



K613TC-3

K613VS-3



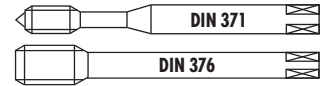
6HX

6HX

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₀ mm	d ₂ mm	a mm			ID	ID
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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
	30 - 40	20 - 30	20 - 30	20 - 30
	30 - 40	30 - 40	30 - 40	30 - 40
	20 - 30	15 - 25	15 - 25	15 - 25
	15 - 20	10 - 15	8 - 12	5 - 8
	8 - 12	5 - 8	5 - 8	5 - 8



QTAP

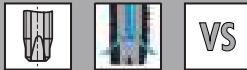
Q320VS-4



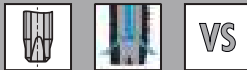
Q420VS-4



Q323VS-4



Q423VS-4



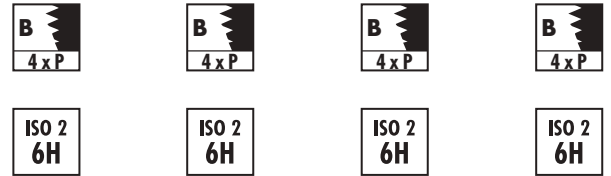
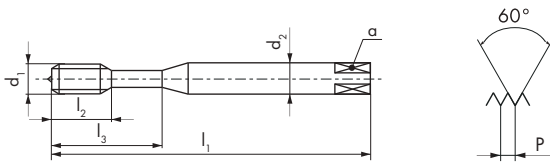
- 11 12 13 14
- 15 21 22 23
- 24 31 32 51
- 52 61 62 63
- 64 71 72 73
- 74 81 82 83
- 91 92 94

Q320VS-4

Q420VS-4

Q323VS-4

Q423VS-4



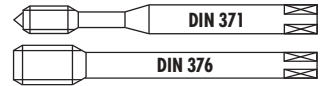
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
3	0.5	56	12	18	3.5	2.7	3		● 195494		● 195505	
4	0.7	63	14	21	4.5	3.4	3		● 195495		● 195506	
5	0.8	70	15	25	6	4.9	3		● 195496		● 195507	
6	1	80	17	30	6	4.9	3		● 195497		● 195508	
8	1.25	90	20	35	8	6.2	3		● 195498		● 195509	
10	1.5	100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



≤ Ø 16 > Ø 16

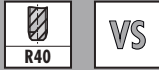
PM

HSSE



QTAP

Q360VS-3



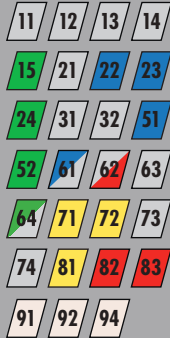
Q460VS-3



Q363VS-3



Q463VS-3

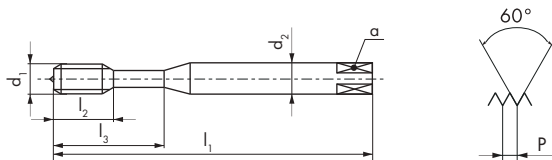


Q360VS-3

Q460VS-3

Q363VS-3

Q463VS-3



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
3	0.5	56	5.5	18	3.5	2.7	3	2.5
4	0.7	63	7.5	21	4.5	3.4	3	3.3
5	0.8	70	9	25	6	4.9	3	4.2
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	6.8
10	1.5	100	14	39	10	8	3	8.5
12	1.75	110	14		9	7	3	10.2
14	2	110	14		11	9	3	12
16	2	110	18		12	9	3	14
20	2.5	140	24		16	12	3	17.5
24	3	160	27		18	14.5	4	21

ID

ID

ID

ID

● 195516

● 195527

● 195517

● 195528

● 195518

● 195529

● 195519

● 195530

● 195520

● 195531

● 195521

● 195532

● 195522 ● 195533

● 195523 ● 195534

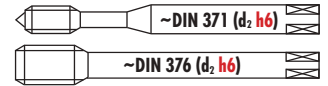
● 195524 ● 195535

● 195525 ● 195536

● 195526 ● 195537



Uniquement pour taraudage synchrone
Nur für Synchrobearbeitung
Only for rigid tapping
Solo per mischilatura sincrona
Solo para roscado sincronizado
Только для rigid tapping

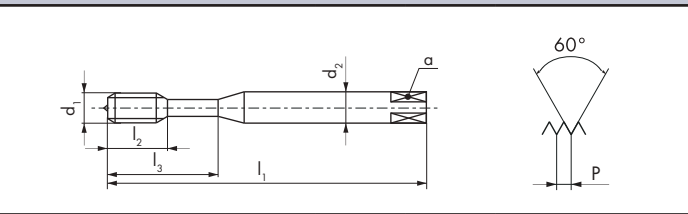
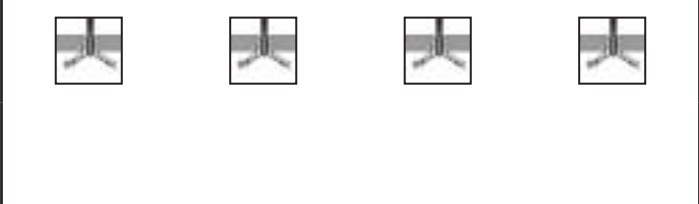


RTS

Rigid Tapping Synchro

RTS320VS-4		VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94
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		VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94
RTS423VS-4		VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94

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



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	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

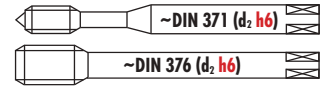
* RTS320VS-3

sur demande
auf Anfrage
on request
su richiesta
sobre pedido
но запычы

≥ Ø 6 mm



Uniquement pour taraudage synchro
 Nur für Synchrobearbeitung
 Only for rigid tapping
 Solo per mescolatura sincrona
 Solo para resacado sincronizado
 Только для rigid tapping



RTS

Rigid Tapping Synchro

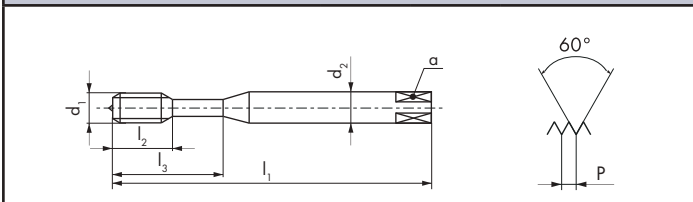
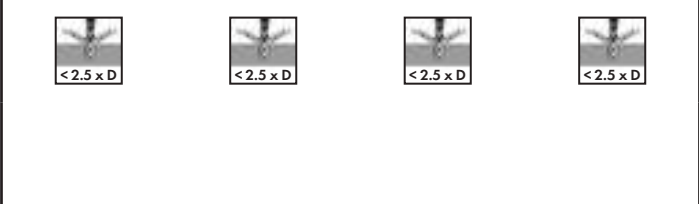
RTS362VS-3

RTS462VS-3

RTS365VS-3

RTS465VS-3

RTS362VS-3	RTS462VS-3	RTS365VS-3	RTS465VS-3
------------	------------	------------	------------



6HX	6HX	6HX	6HX

ϕd_1 M	P mm	l_1 mm	l_2 mm	l_3 mm	$d_2 h_6$ mm	a mm			ID	ID	ID	ID
* 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

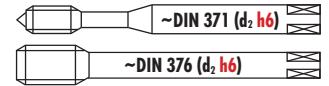
* RTS360VS-3



sur demande
 auf Anfrage
 on request
 su richiesta
 sobre pedido
 no zampocy



Uniquement pour taraudage synchrone
 Nur für Synchronbearbeitung
 Only for rigid tapping
 Solo per miscelatura sincrona
 Solo para roscado sincronizado
 Только для rigid tapping



RTS

Rigid Tapping Synchro

RTS362VS-3



RTS462VS-3

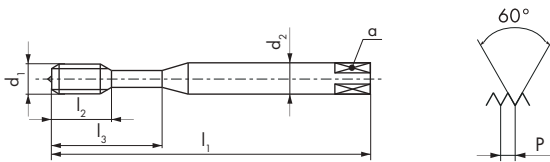


RTS362VS-3

RTS462VS-3

RTS362VS-3

RTS462VS-3



$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	$d_2 h_6$ mm	a mm		
3	0.5	56	5.5	18	3.5(h9)	2.7	3	2.5
4	0.7	63	7.5	21	4.5(h9)	3.4	3	3.35
5	0.8	70	9	25	6	4.9	3	4.25
6	1	80	11	30	6	4.9	3	5
8	1.25	90	12.5	35	8	6.2	3	6.8
10	1.5	100	14	39	10	8	3	8.5
12	1.75	110	14		* 10	* 8	3	10.3
16	2	110	18		12	9	3	14

ID	6H + mm	ID	6H + mm	ID	6H + mm	ID	6H + mm
● 162797	0.020			● 184689	0.036		
● 162798	0.022			● 184691	0.041		
● 162799	0.024			● 184693	0.044		
● 162800	0.026			● 184695	0.050		
● 162801	0.028			● 184697	0.052		
● 162802	0.032			● 184699	0.060		
		● 163253	0.034			● 184701	0.066
		● 172037	0.038			● 184703	0.072

* Norme DC / * DC Norm / * Norma DC



sur demande
 auf Anfrage
 on request
 su richiesta
 sobre pedido
 no zapyty



Uniquement pour taraudage synchrone
 Nur für Synchronbearbeitung
 Only for rigid tapping
 Solo per mescolatura sincrona
 Solo para resacado sincronizado
 Только для rigid tapping



RTS

Rigid Tapping Synchro

RTS362VS-5

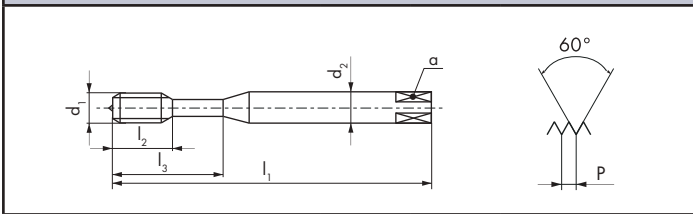
R40 VS

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			

RTS362VS-5 RTS365VS-5



E 1.5 x P **E** 1.5 x P

6HX **6HX**

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	$d_2 h_6$ 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

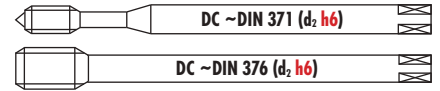
sur demande
 auf Anfrage
 on request
 su richiesta
 sobre pedido
 no зпитры

$\geq \emptyset 6 \text{ mm}$



Uniquement pour taraudage synchro
Nur für Synchrobearbeitung
Only for rigid tapping
Solo per mischilatura sincrona
Solo para roscado sincronizado
Только для rigid tapping

PM

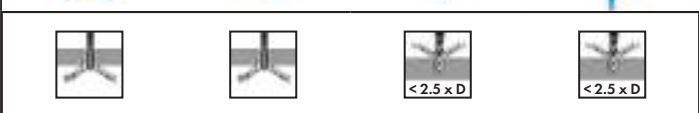


RTS

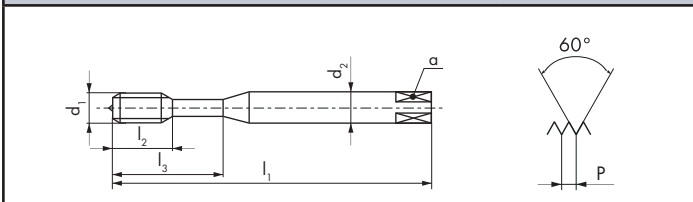
Rigid Tapping Synchro

RTS523VS-4				<table border="1"> <tr><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>21</td><td>31</td><td>32</td></tr> <tr><td>51</td><td>61</td><td>63</td><td>64</td></tr> <tr><td>72</td><td>73</td><td>74</td><td>81</td></tr> <tr><td>82</td><td>83</td><td>91</td><td>92</td></tr> <tr><td>94</td><td></td><td></td><td></td></tr> </table>	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																												
RTS623VS-4				<table border="1"> <tr><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>21</td><td>31</td><td>32</td></tr> <tr><td>51</td><td>61</td><td>63</td><td>64</td></tr> <tr><td>72</td><td>73</td><td>74</td><td>81</td></tr> <tr><td>82</td><td>83</td><td>91</td><td>92</td></tr> <tr><td>94</td><td></td><td></td><td></td></tr> </table>	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																												
RTS565VS-3				<table border="1"> <tr><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>21</td><td>31</td><td>32</td></tr> <tr><td>51</td><td>61</td><td>63</td><td>64</td></tr> <tr><td>72</td><td>73</td><td>74</td><td>81</td></tr> <tr><td>82</td><td>83</td><td>91</td><td>92</td></tr> <tr><td>94</td><td></td><td></td><td></td></tr> </table>	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																												
RTS665VS-3				<table border="1"> <tr><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>21</td><td>31</td><td>32</td></tr> <tr><td>51</td><td>61</td><td>63</td><td>64</td></tr> <tr><td>72</td><td>73</td><td>74</td><td>81</td></tr> <tr><td>82</td><td>83</td><td>91</td><td>92</td></tr> <tr><td>94</td><td></td><td></td><td></td></tr> </table>	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																												

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



$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
5	0.8	125	9	25	6	4.9	3	4.2
6	1	125	11	30	6	4.9	3	5
8	1.25	140	12.5	35	8	6.2	3	6.8
10	1.5	160	14	39	10	8	3	8.5
12	1.75	180	14		* 10	* 8	3	10.2
16	2	200	18		12	9	3	14

ID	ID
● 161038	
● 161041	
● 161044	
● 161047	
	● 161050
	● 161053

* Norme DC / * DC Norm/ * Norma DC

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
6	1	125	11	30	6	4.9	3	5
8	1.25	140	12.5	35	8	6.2	3	6.8
10	1.5	160	14	39	10	8	3	8.5
12	1.75	180	14		* 10	* 8	3	10.2
16	2	200	18		12	9	3	14

ID	ID	
	● 150614	
	● 150624	
	● 150639	
		● 151867
		● 150674

* Norme DC / * DC Norm/ * Norma DC



sur demande
auf Anfrage
on request
su richiesta
sobre pedido
no zapytocy

≥ 0.6 mm



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.**

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

									N1210-1	N1210-2	N1210-3	N1210-S
N1210-1												
N1210-2												
N1210-3						31 62 73 74 91						
N1210-S												
$\varnothing d_1$ 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

										NP110-1	NP110-2	NP110-3	NP110-S
NP110-1													
NP110-2													
NP110-3 													
NP110-S													
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm				ID	ID	ID	ID
3	0.5	40	11	18	3.5	2.7	3			● 174678	● 174687	● 174696	● 173676
4	0.7	45	13	21	4.5	3.4	3			● 174679	● 174688	● 174697	● 173644
5	0.8	50	16	24	6	4.9	3			● 174680	● 174689	● 174698	● 173677
6	1	56	19	27	6	4.9	3			● 174681	● 174690	● 174699	● 173394

									NP210-1	NP210-2	NP210-3	NP210-S					
NP210-1																	
NP210-2																	
NP210-3																	
NP210-S																	
$\varnothing d_1$ 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						




										N1120-4	N1220-4	N1160-3	N1260-3
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										< 2.5 x D	< 2.5 x D
N1260-3		63 72 73 74 81 91										< 2.5 x P	< 2.5 x P
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

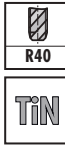


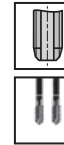




































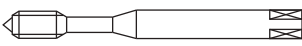

K | DEVELOPING THREADING





























MF Directorio — Machos para roscar a máquina ISO DIN 13

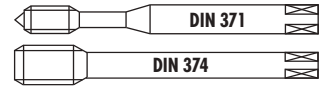
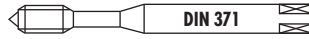
Directory — Machine taps ISO DIN 13

		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				

N					Z			
								
								
								
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

		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							

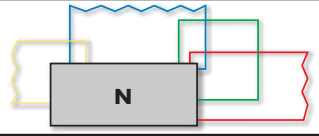




















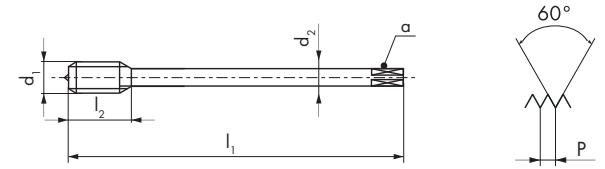










TL		K	QTAP				RTS	
	 R15				 R40	 R40		 R40
VS	 VS	TiCN	VS	VS	VS	VS	VS	VS
			 NEW	 NEW	 NEW	 NEW		
								
TL320VS-4	TL351VS-3	K313TC-3	Q320VS-4	Q323VS-4	Q360VS-3	Q363VS-3	RTS320VS-4	RTS362VS-3
140	140	142	143	143	144	144	145	145
140	140	142	143	143	144	144	145	145
140	140							
TL420VS-4	TL451VS-3	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							




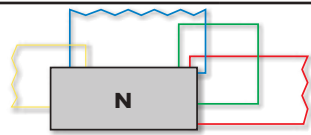
										N320-3		N350-3	N450-3
N320-3		62 63 64 72 73 74 81 91											
N350-3		62 63 64 72 73 74 81 91											
N450-3		62 63 64 72 73 74 81 91											
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID				
2	0.25	45	8		2.8	2.1	2	1.75	● 142689				
2.5	0.35	50	10		2.8	2.1	3	2.15	● 142691				
2.6	0.35	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		

								N410-3	N420-4	N420V-4	N420TN-4
								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											
	 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	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

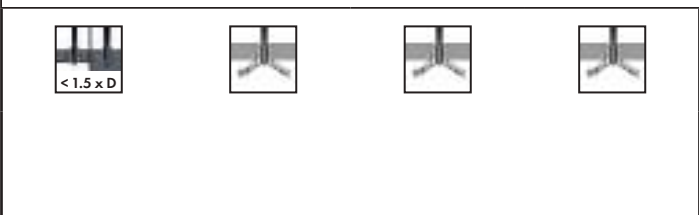
* N420-3







									N410-3	N420-4	N420V-4	N420TN-4
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										
												
												
$\emptyset d_1$ 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			

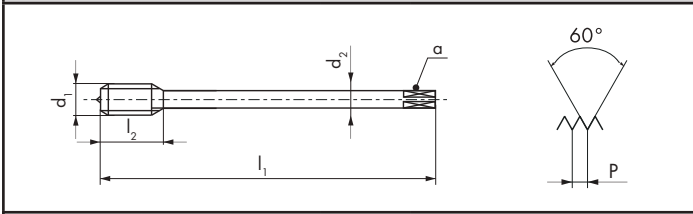
* N410-3 =  4













N410-3	N420-4	N420V-4	N420TN-4
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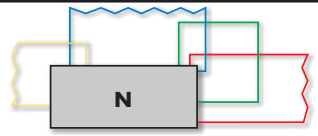




















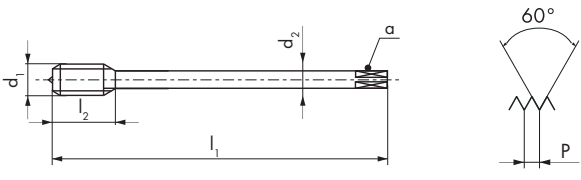












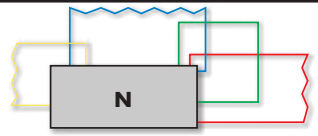






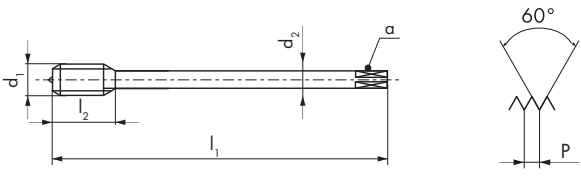





N410-3		31 62 73 74 91
N420-4		62 63 64 72 73 74 81 91
N420V-4	 	11 12 31 32
N420TN-4	 	11 12 13 14 32

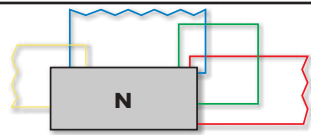


Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID	ID
20	1	125	28	16	12	4	19		● 102098		
20	1.5	125	28	16	12	4	18.5	● 101884	● 102099	● 102272	● 143932
20	2	140	36	16	12	3	18	● 105130	● 102100		
22	1	125	28	18	14.5	4	21		● 102104		
22	1.5	125	28	18	14.5	4	20.5	● 101886	● 102105	● 102274	
22	2	140	36	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			

								N410-3	N420-4	N420V-4	N420-3
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									
											
											
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			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			

								N410-3	N420-4	N420-3
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								
								 2.5 x P ISO 2 6H	 4 x P ISO 2 6H	 2.5 x P ISO 3 7H
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	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



N410-3 LH



31 62 73 74 91

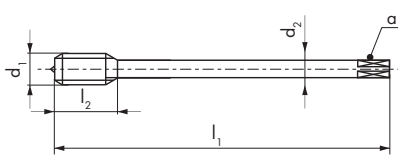
N420-4 LH





62 63 64 72 73 74
81 91

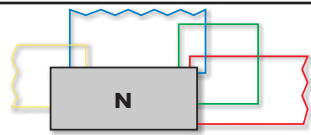
N410-3 LH




















N420-4 LH



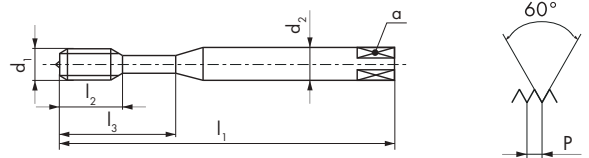
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID
4	0.5	63	14	2.8	2.1	3	3.5	● 104844	
5	0.5	70	15	3.5	2.7	3	4.5	● 104845	
6	0.5	80	17	4.5	3.4	3	5.5	● 104846	● 104870
6	0.75	80	17	4.5	3.4	3	5.25	● 104847	● 105133
7	0.75	80	17	5.5	4.3	3	6.25	● 104848	
8	0.5	90	20	6	4.9	3	7.5	● 104849	
8	0.75	90	20	6	4.9	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





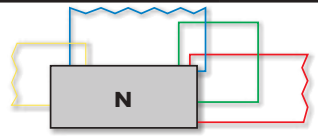







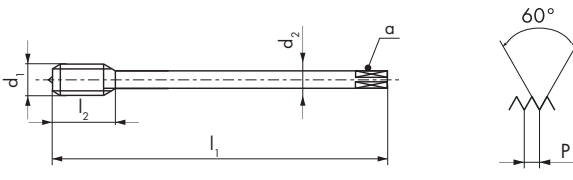










N360-3		     
N360V-3	 	  
N360TN-3	 	    

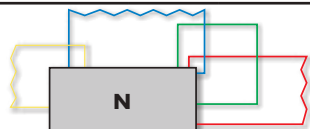
N360-3	N360V-3	N360TN-3	N360-3
			
			



 ISO 2 6H	 ISO 2 6H	 ISO 2 6H	 ISO 3 6G
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$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			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	

								N460-3	N460V-3	N460TN-3	N460-3
											
<p>N460-3  63 72 73 74 81 91</p> <p>N460V-3   11 12 32</p> <p>N460TN-3   11 12 13 14 32</p>											
								 	 	 	 
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			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		



N460-3



63 72 73 74 81 91

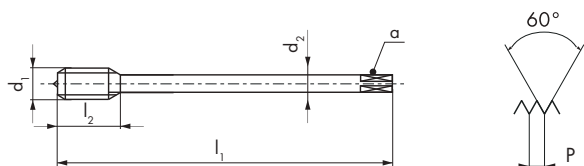
N460V-3





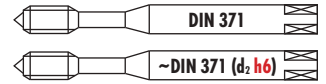
11 12 32

N460-3

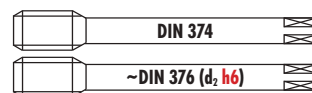
N460V-3



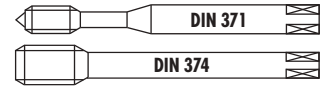
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID
30	1.5	150	24	22	18	4	28.5	● 102404	● 142524
30	2	150	24	22	18	4	28	● 102405	● 142581
32	1.5	150	24	22	18	4	30.5	● 102406	● 143605
33	2	160	26	25	20	4	31	● 102407	● 147604
33	3	180	33	25	20	4	30	● 175437	● 150448
35	1.5	170	24	28	22	5	33.5	● 102408	● 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



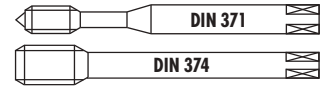
										Z320V-4	Z320VS-4	Z360V-3	Z370VS-3
Z320V-4		V	11 12 13 21	32									
Z320VS-4		VS	11 12 13 14 21	22 23 32 61 63	94								
Z360V-3		V	12 21 32										
Z370VS-3		VS	CLASSIC	14 15 21 22 23	24 51 61 94								
Z370VS-3		VS	SYNCHRO	13 14 15 21 22	23 24 51 52								
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	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		
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm				ID	ID		
4	0.5	63	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		
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm				ID	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													
























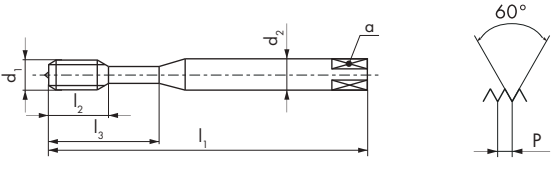









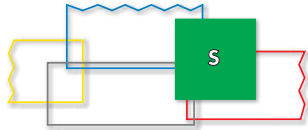
									Z420V-4	Z420VS-4	Z460V-3	Z470VS-3
Z420V-4		V	11 12 13 21 32									
Z420VS-4		VS	11 12 13 14 21 22 23 32 61 63 94									
Z460V-3		V	12 21 32									
Z470VS-3		VS		14 15 21 22 23 24 51 61 94								
Z470VS-3		VS		13 14 15 21 22 23 24 51 52								PM
									ISO 2 6H	ISO 2 6H	ISO 2 6H	6HX
$\emptyset d_1$ 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		
$\emptyset d_1$ 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		
$\emptyset d_1$ 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												



										H320-4	H420-4	H320TC-4	H420TC-4
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											
$\emptyset d_1$ 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			

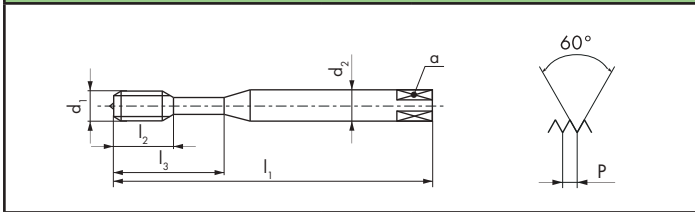


										H350-3	H450-3	H350TC-3	H450TC-3
H350-3  15 16 62 64 82										   			
H450-3  15 16 62 64 82										   			
H350TC-3   15 16 24 31 82 83 92 93										   			
H450TC-3   15 16 24 31 82 83 92 93										   			
										   			
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm				ID	ID	ID	ID
6	0.75	80	11	30	6	4.9	3			● 101249		● 196033	
8	0.75	90	12.5	35	8	6.2	3			● 101252			
8	1	90	12.5	35	8	6.2	3			● 101253		● 150356	
10	1	100	14	39	10	8	3			● 101235		● 148753	
10	1.25	100	14	39	10	8	3			● 145590		● 196034	
12	1	100	14		9	7	4				● 101302		
12	1.5	100	14		9	7	4				● 101303		● 145561
14	1.5	100	14		11	9	4				● 101306		● 184003
16	1.5	100	14		12	9	4				● 101308		● 176013
18	1.5	110	18		14	11	4				● 101310		● 160146
20	1.5	125	20		16	12	4				● 101312		● 160147
22	1.5	125	20		18	14.5	4				● 101314		
24	1.5	140	22		18	14.5	4				● 101316		
24	2	140	22		18	14.5	4				● 101317		
27	2	140	22		20	16	4				● 101319		
30	1.5	150	24		22	18	4				● 101321		
30	2	150	24		22	18	4				● 101322		



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

S320VS-4	S420VS-4	S360VS-3	S460VS-3



6HX	6HX	6HX	6HX

$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
6	0.75	80	17	30	6	4.9	3	5.25
8	1	90	20	35	8	6.2	3	7
10	1	100	22	39	10	8	3	9
12	1.5	100	24		9	7	4	10.5
14	1.5	100	24		11	9	4	12.5
16	1.5	100	26		12	9	4	14.5

ID	ID
* 123690	
• 124288	
• 120059	
	• 120420
	• 120687
	• 120877

$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
8	1	90	12.5	35	8	6.2	3	7
10	1	100	14	39	10	8	3	9
12	1.5	100	14		9	7	4	10.5
14	1.5	100	14		11	9	4	12.5
16	1.5	100	14		12	9	4	14.5

ID	ID
	• 111528
	• 111529
	• 111540
	• 111541
	• 111542

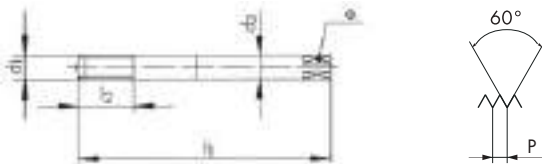
aero



SA390-3



16 53

SA390-3



$\varnothing d_1$ 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

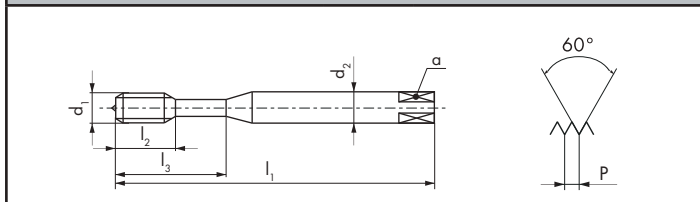
aero

SA320-4 15 16 52 64

SA350-3 15 16 52 64

TL320VS-4 41 42

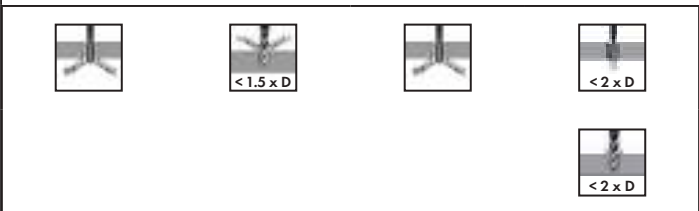
TL351VS-3 41 42



Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.5	63	14		4.5	3.4	3	3.5
5	0.5	70	15		6	4.9	3	4.5
6	0.5	80	15	23	6	4.9	3	5.5
8	1	90	18	29	8	6.2	3	7
10	1	100	20	33	10	8	3	9

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.5	63	14		4.5	3.4	3	3.5
5	0.5	70	15		6	4.9	3	4.5
6	0.5	80	15	23	6	4.9	3	5.5
8	1	90	18	29	8	6.2	3	7
10	1	100	20	33	10	8	3	9

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

ID	ID	ID	ID
	★ 149079		● 152033
	● 149144		● 152049
★ 149193		★ 152058	● 152059
● 149304	● 149306		● 152080
● 149362	● 149364		● 152093

6HX	6HX	6HX	6HX
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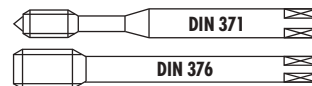
ID	ID	ID	ID
● 149081	● 149083		● 152035
● 149146	● 149148		● 152051
	★ 149199		● 152061
● 149308	● 149310		● 148019
● 149366	● 149368	★ 152094	● 148026

aero

								SA420-4	SA450-3	TL420VS-4	TL451VS-3
SA420-4 15 16 52 64											
SA450-3 15 16 52 64											
TL420VS-4 VS 41 42											
TL451VS-3 R15 VS 41 42											
Ø d₁	P	l₁	l₂	d₂	a			ID	ID	ID	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
Ø d₁	P	l₁	l₂	d₂	a			ID	ID	ID	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		

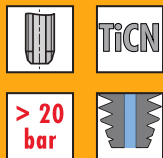


PM

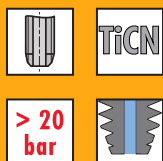


K

K313TC-3

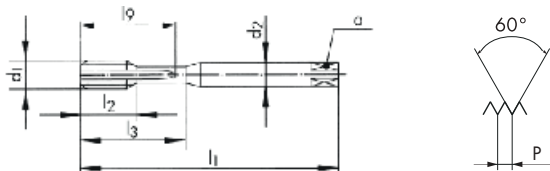


K413TC-3



K313TC-3

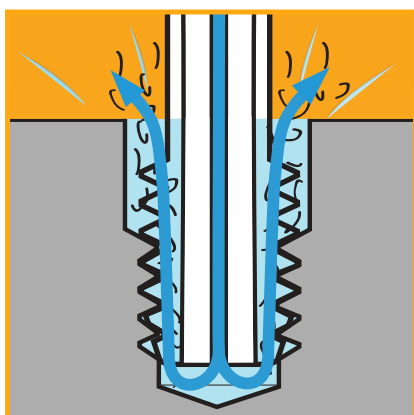
K413TC-3



6HX

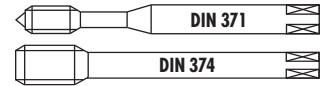
6HX

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	l ₀ 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





PM



QTAP

Q320VS-4



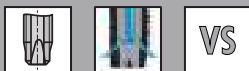
Q420VS-4



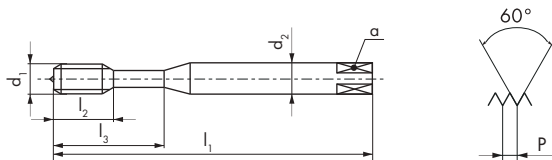
Q323VS-4



Q423VS-4



- 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

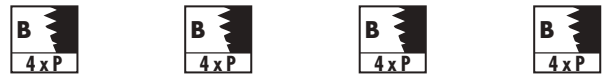


Q320VS-4

Q420VS-4

Q323VS-4

Q423VS-4



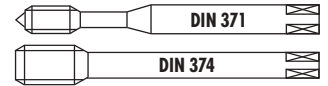
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
6	0.75	80	17	30	6	4.9	3	5.25
8	1	90	20	35	8	6.2	3	7
10	1	100	22	39	10	8	3	9
12	1	100	24		9	7	3	11
12	1.5	100	24		9	7	3	10.5
14	1.5	100	24		11	9	3	12.5
16	1.5	100	26		12	9	3	14.5
18	1.5	110	26		14	11	4	16.5
20	1.5	125	28		16	12	4	18.5

ID	ID	ID	ID
● 197661		● 197684	
● 197662		● 197685	
● 197663		● 197686	
	● 197664		● 197687
	● 197665		● 197688
	● 197666		● 197689
	● 197667		● 197690
	● 197668		● 197691
	● 197669		● 197692



≤ Ø 16 > Ø 16

PM HSSE



QTAP

Q360VS-3



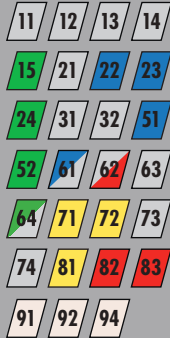
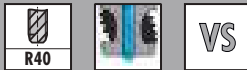
Q460VS-3



Q363VS-3



Q463VS-3

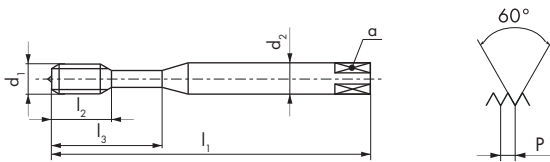


Q360VS-3

Q460VS-3

Q363VS-3

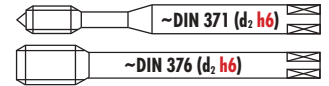
Q463VS-3



Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	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



Uniquement pour taraudage synchro
Nur für Synchrobearbeitung
Only for rigid tapping
Solo per mescolatura sincrona
Solo para resacado sincronizado
Только для rigid tapping

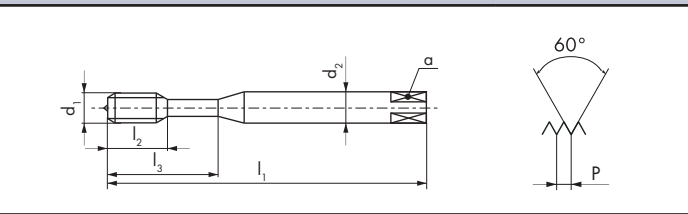
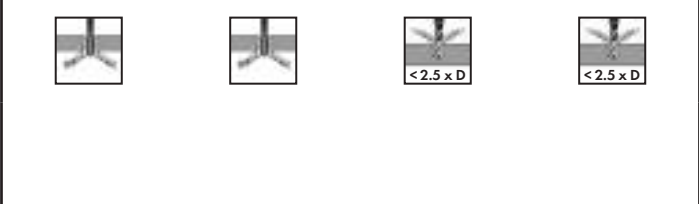


RTS

Rigid Tapping Synchro

RTS320VS-4		VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94	
RTS420VS-4		VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94	
RTS362VS-3			VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94
RTS462VS-3			VS	11 12 13 14 15 21 31 32 51 61 63 64 72 73 74 81 82 83 91 92 94

RTS320VS-4	RTS420VS-4	RTS362VS-3	RTS462VS-3
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6HX	6HX	6HX	6HX

ϕd_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
8	1	90	12.5	35	8	6.2	3	7
10	1	100	14	39	10	8	3	9
12	1.5	110	14		* 10	* 8	3	10.5
14	1.5	110	14		* 12	* 9	3	12.5
16	1.5	110	18		12	9	3	14.5

* Norme DC / * DC Norm/ * Norma DC

ID	ID
● 150615	
● 150630	
	● 150640
	● 150655
	● 150665

ϕd_1 MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
8	1	90	12.5	35	8	6.2	3	7
10	1	100	14	39	10	8	3	9
12	1.5	110	14		* 10	* 8	3	10.5
14	1.5	110	14		* 12	* 9	3	12.5
16	1.5	110	18		12	9	3	14.5

* Norme DC / * DC Norm/ * Norma DC

ID	ID
	● 150617
	● 150632
	● 151862
	● 151869
	● 151871

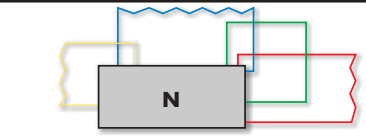









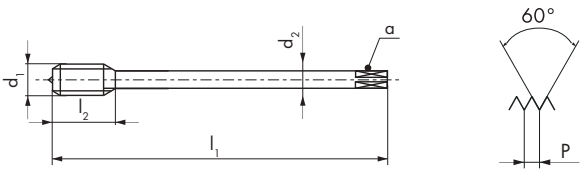




sur demande
auf Anfrage
on request
su richiesta
sobre pedido
no zampocy

$\geq \phi 6$ mm



										N1110-1	N1110-3	N1110-S							
										<p>N1110-1 </p> <p>N1110-3 31 62 73 74 91</p> <p>N1110-S </p>									
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	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								
										<div style="border: 1px solid black; padding: 2px; display: inline-block;">ISO 1 4H</div>									
										P 0.25									

								N1210-1	N1210-3	N1210-S	
N1210-1											
N1210-3											
N1210-S											
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		

									N1210-1	N1210-3	N1210-S
									<div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;">   <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px;">31</div> <div style="border: 1px solid black; padding: 2px; background-color: #f00;">62</div> <div style="border: 1px solid black; padding: 2px;">73</div> <div style="border: 1px solid black; padding: 2px;">74</div> <div style="border: 1px solid black; padding: 2px;">91</div> </div> </div> <div style="display: flex; justify-content: space-around;">   </div>		
										 < 1.5 x D	 < 2.5 x D
									 5 x P	 C 2 x P	<div style="border: 1px solid black; padding: 2px; text-align: center;">ISO 2 6H</div>
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	




































UNC, UNCL()






















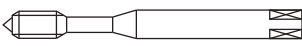
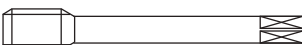




















NUEVO SITIO WEB
EN CONSTRUCCIÓN — SE PUBLICARÁ EN EL VERANO DE 2021.

NEW WEBSITE
UNDER CONSTRUCTION — RELEASED IN SUMMER 2021.

		N						
Características Characteristics								
				V	TiN		V	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							

N	Z				H			
 	 	 	 	 	 	 	 	 
	V	VS	V	VS		TiCN		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
170	158	158	159	160	161	161	162	162
170	158	158	159	160	161	161	162	162
170				160				
N1210 -1 -2 -3 -S	Z420V-4	Z420VS-4	Z462V-3	Z470VS-3	H420-4	H420TC-4	H450-3	H450TC-3
171	158	158	159	160	161	161	162	162
171	158	158	159	160	161	161	162	162

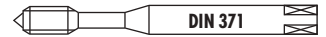
		S		SA			TL	
Características Characteristics		 VS	 R35 VS		 R15	 R10	 VS	 R15 VS
								
Tipo de agujero Hole type								
		S320VS-4	S360VS-3	SA320-4	SA350-3	SA390-3	TL320VS-4	TL351VS-3
DIN largo DIN long	DIN 371	163	164	165	165	166	165	165
ISO corto ISO short	ISO 529							
Tolerancia Tolerance	UNC 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							

Q				RTS	
					
VS	VS	VS	VS	VS	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	N320-4	N320V-4	N320TN-4	
N310-3														
N320-4														
N320V-4														
N320TN-4														
\emptyset " 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		● 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	
\emptyset 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	● 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				

UNC ASME B1.1

HSSE



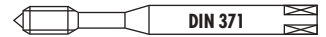
										N410-3	N420-4	N420V-4	N420TN-4
										N410-3		31 62 73 74 91	
N420-4		62 63 64 72 73 74 81 91											
N420V-4		V	11 12 31 32										
N420TN-4		TiN	11 12 13 14 32										
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm				ID	ID	ID	ID
5/16	18	7.93	90	20	6	4.9	3	6.5		● 101997	● 102213	● 142742	● 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		

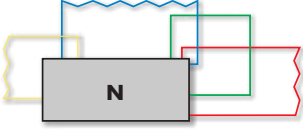























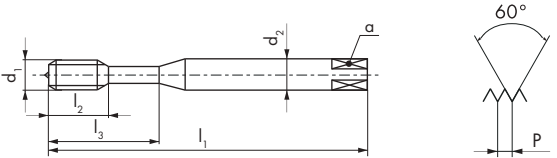






UNC, UNC(I)

UNC ASME B1.1

≤ Ø 2.8 > Ø 2.8

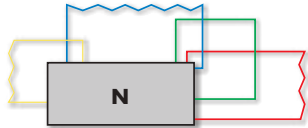
PM HSSE



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

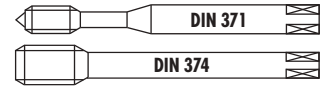


										N460-3	N460V-3	N460TN-3	
<p>N460-3 63 72 73 74 81 91</p> <p>N460V-3 11 12 32</p> <p>N460TN-3 11 12 13 14 32</p>													
										< 2.5 x D	< 2.5 x D	< 2.5 x D	
										2.5 x P	2.5 x P	2.5 x P	
										2B	2B	2B	
$\emptyset'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm				ID	ID	ID	
7/16	14	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, UNC(I)

UNC ASME B1.1

PM



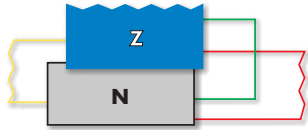
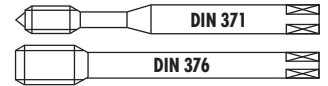
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Z320V-4		V	11	12	13	21	32										
Z320VS-4		VS	11	12	13	14	21	22	23	32	61	63	94				
Z420V-4		V	11	12	13	21	32										
Z420VS-4		VS	11	12	13	14	21	22	23	32	61	63	94				
										2B	2B	2B	2B				
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	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



Z362V-3

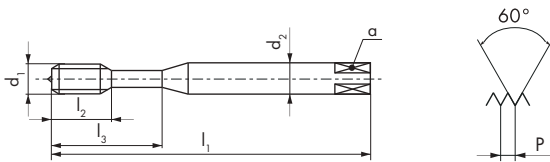


Z462V-3





Z362V-3

Z462V-3



2B

2B

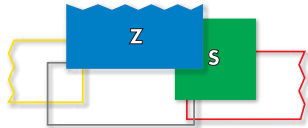
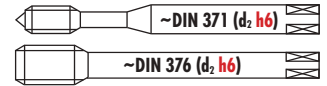
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID
* 2	56	2.18	45	8		2.8	2.1	2	1.75	● 104695	
* 4	40	2.84	56	5.5	18	3.5	2.7	3	2.25	● 104697	
6	32	3.5	56	6.5	20	4	3	3	2.75	● 104699	
8	32	4.16	63	7.5	21	4.5	3.4	3	3.4	● 104700	
10	24	4.82	70	9	25	6	4.9	3	3.8	● 104694	
1/4	20	6.35	80	11	30	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, UNC(I)

UNC ASME B1.1

PM



Z370VS-3

Z470VS-3

Z370VS-3



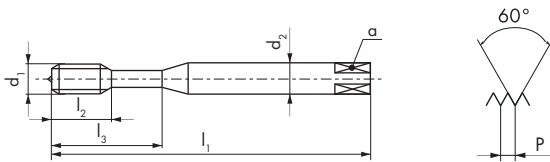
Z470VS-3



Z370VS-3



Z470VS-3



2BX

2BX

Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h ₆ mm	a mm		
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.75
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.4
10	24	4.82	70	9	25	6	4.9	3	3.8
1/4	20	6.35	80	11	30	*6	*4.9	3	5.1
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5
3/8	16	9.52	100	14	39	10	8	3	8
7/16	14	11.11	100	14		8	6.2	3	9.3
1/2	13	12.7	110	14		*10	*8	4	10.8
5/8	11	15.87	110	18		12	9	4	13.6
3/4	10	19.05	125	21		14	11	4	16.6
1	8	25.4	160	27		16	12	4	22.3

ID

ID

- 166123
- 166124
- 166125
- 166126
- 166127
- 166128

- 166129
- 166130
- 166131
- 166132
- 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 h ₆ mm	a mm		
4	40	2.84	56	5.5	18	3.5(h9)	2.7	3	2.3
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.8
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.45
1/4	20	6.35	80	11	30	*6	*4.9	3	5.2
5/16	18	7.93	90	12.5	35	8	6.2	3	6.7

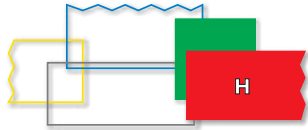
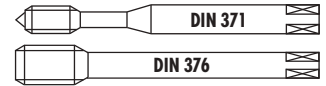
ID

- 165114
- 165115
- 165116
- 165117
- 165118

* Norme DC / * DC Norm/ * Norma DC

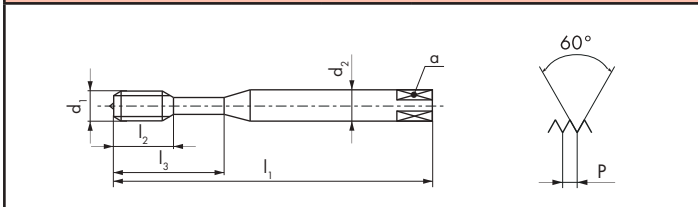
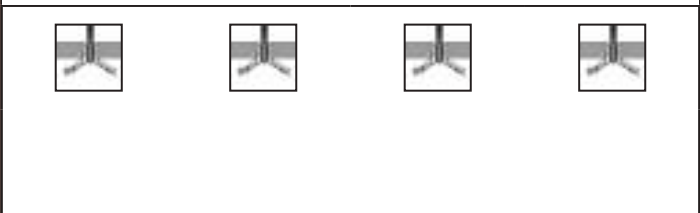
UNC ASME B1.1

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
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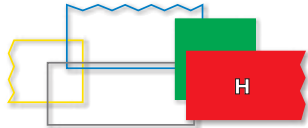
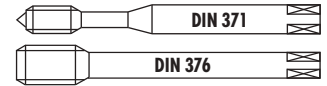
2B	2B	2B	2B

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, UNC(U)

UNC ASME B1.1

PM

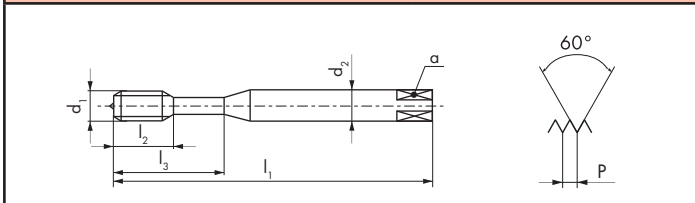


H350-3		15 16 62 64 82
H450-3		15 16 62 64 82
H350TC-3		15 16 24 31 82 83 92 93
H450TC-3		15 16 24 31 82 83 92 93

H350-3	H450-3	H350TC-3	H450TC-3
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< 1.5 x D	< 1.5 x D	< 1.5 x D	< 1.5 x D
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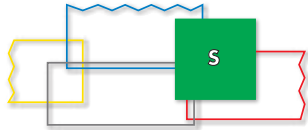
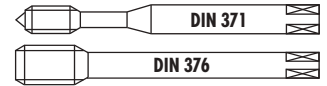


2.5 x P	2.5 x P	2.5 x P	2.5 x P
2B	2B	2B	2B

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		

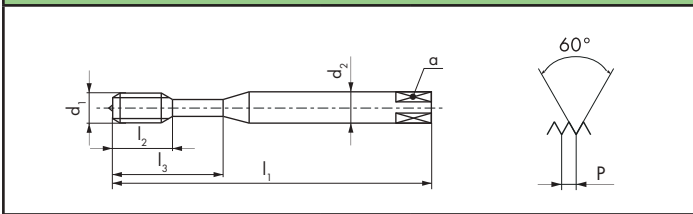
UNC ASME B1.1

PM



S320VS-4 **13 15 16 22 23 24**
52

S420VS-4 **13 15 16 22 23 24**
52



B 4 x P **B** 4 x P

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

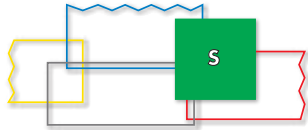
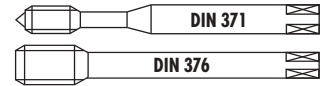
3B
UNC(J)

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, UNC(J)

UNC ASME B1.1

PM



S360VS-3



13 15 16 22 23 24
52

S460VS-3



13 15 16 22 23 24
52

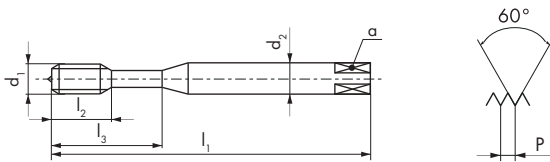
S360VS-3

S460VS-3



< 2 x D

< 2 x D



2B

2B

\emptyset " 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		● 111530	
8	32	4.16	63	7.5	21	4.5	3.4	3		● 111531	
1/4	20	6.35	80	11	30	7	5.5	3		● 111533	
5/16	18	7.93	90	12.5	35	8	6.2	3		● 111534	
3/8	16	9.52	100	14	39	10	8	3		● 111535	
1/2	13	12.7	110	14		9	7	4			● 111537

aero

										SA320-4	SA350-3	TL320VS-4	TL351VS-3
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;">SA320-4</div> <div style="width: 20%; text-align: center;"> </div> <div style="width: 20%; text-align: center;"> 15 16 52 64 </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;">SA350-3</div> <div style="width: 20%; text-align: center;"> </div> <div style="width: 20%; text-align: center;"> 15 16 52 64 </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;">TL320VS-4</div> <div style="width: 20%; text-align: center;"> </div> <div style="width: 20%; text-align: center;"> VS </div> <div style="width: 20%; text-align: center;"> 41 42 </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;">TL351VS-3</div> <div style="width: 20%; text-align: center;"> </div> <div style="width: 20%; text-align: center;"> VS </div> <div style="width: 20%; text-align: center;"> 41 42 </div> </div>													
										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
4	40	2.84	56	12		3.5	2.7	3		● 147271	● 149003		● 152018
5	40	3.17	56	12		3.5	2.7	3				* 152023	* 152024
6	32	3.5	56	13		4	3	3		● 149055	● 149057	* 152027	● 152028
8	32	4.16	63	14		4.5	3.4	3		● 149093	● 149095		● 152037
10	24	4.82	70	15		6	4.9	3		● 149125	* 149127		
1/4	20	6.35	80	15	23	7	5.5	3		● 149222	● 149224		● 127972
5/16	18	7.93	90	18	29	8	6.2	3		● 149269	● 149271		● 152068
3/8	16	9.52	100	20	33	10	8	3		● 149346	● 149348	* 152084	● 152085
										3B UNC(J) 3B UNC(J) 3B UNC(J) 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	ID	ID	ID
4	40	2.84	56	12		3.5	2.7	3		● 149005	● 149007	* 148804	● 150194
6	32	3.5	56	13		4	3	3		● 149059	● 149061	* 152029	● 150210
8	32	4.16	63	14		4.5	3.4	3		● 149097	● 149099		● 152039
10	24	4.82	70	15		6	4.9	3					* 152045
1/4	20	6.35	80	15	23	7	5.5	3		● 149226	● 149228	* 152063	● 152064
5/16	18	7.93	90	18	29	8	6.2	3		● 149273	● 149275	* 152069	● 152070
3/8	16	9.52	100	20	33	10	8	3		● 149350	● 149352		● 152087

UNC, UNC(J)



aero

SA420-4



15 16 52 64

SA450-3



15 16 52 64

SA390-3

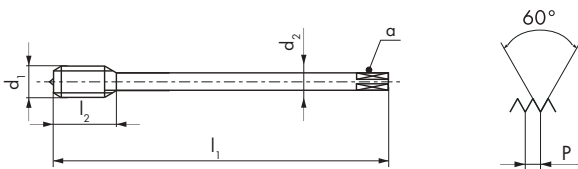


16 53

SA420-4

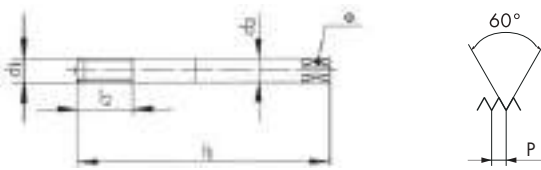
SA450-3

SA390-3



$\emptyset'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1/2	13	12.7	110	24	9	7	4	10.8
5/8	11	15.87	110	30	12	9	4	13.6

ID	ID
● 152247	● 152252
● 152249	● 152254



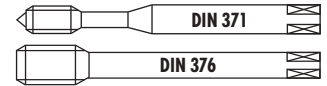
$\emptyset'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
4	40	2.84	56	12	3.5	2.7	3	2.3
6	32	3.5	56	13	4	3	3	2.8
8	32	4.16	63	14	4.5	3.4	3	3.45
10	24	4.82	70	15	6	4.9	3	3.9
1/4	20	6.35	80	20	7	5.5	3	5.2
5/16	18	7.93	90	25	8	6.2	3	6.7
3/8	16	9.52	100	30	10	8	3	8.1



ID
● 149652
● 149666
● 149677
● 149685
● 149713
● 149726
● 149747



PM



QTAP

Q320VS-4



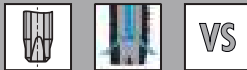
Q420VS-4



Q323VS-4



Q423VS-4



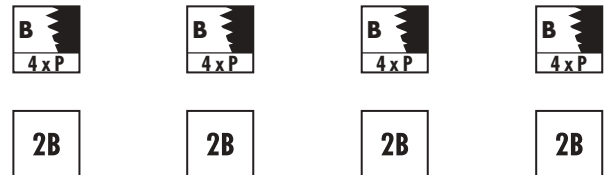
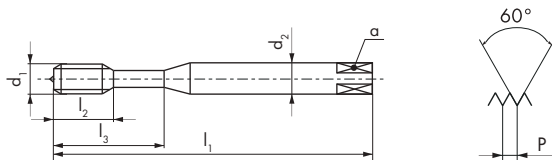
- 11 12 13 14
- 15 21 22 23
- 24 31 32 51
- 52 61 62 63
- 64 71 72 73
- 74 81 82 83
- 91 92 94

Q320VS-4

Q420VS-4

Q323VS-4

Q423VS-4



Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
6	32	3.5	56	13	20	4	3	3	2.75
8	32	4.16	63	14	21	4.5	3.4	3	3.4
10	24	4.82	70	15	25	6	4.9	3	3.8
1/4	20	6.35	80	17	30	7	5.5	3	5.1
5/16	18	7.93	90	20	35	8	6.2	3	6.5
3/8	16	9.52	100	22	39	10	8	3	8
1/2	13	12.7	110	24		9	7	3	10.8
5/8	11	15.87	110	30		12	9	3	13.6
3/4	10	19.05	125	33		14	11	4	16.6
7/8	9	22.22	140	36		18	14.5	4	19.5
1	8	25.4	160	39		18	14.5	4	22.3

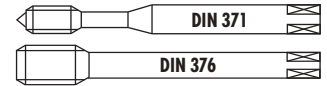
ID	ID	ID	ID
● 196275		● 196320	
● 196276		● 196321	
● 196277		● 196322	
● 196278		● 196323	
● 196279		● 196324	
● 196280		● 196325	
	● 196281		● 196326
	● 196282		● 196327
	● 196283		● 196328
	● 196284		● 196329
	● 196285		● 196330

UNC, UNC(I)



≤ Ø 16 > Ø 16

PM HSSE



QTAP

Q360VS-3



Q460VS-3



Q363VS-3



Q463VS-3

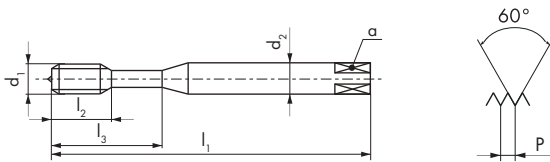




Q360VS-3

Q460VS-3

Q363VS-3

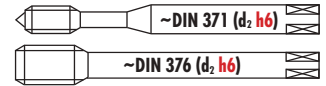
Q463VS-3



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	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



Uniquement pour taraudage synchro
 Nur für Synchrobearbeitung
 Only for rigid tapping
 Solo per mescolatura sincrona
 Solo para resacado sincronizado
 Только для rigid tapping



RTS Rigid Tapping Synchro

RTS320VS-4



RTS420VS-4



RTS362VS-3



RTS462VS-3

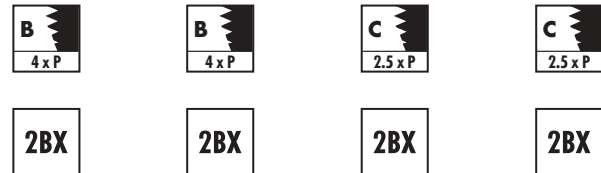
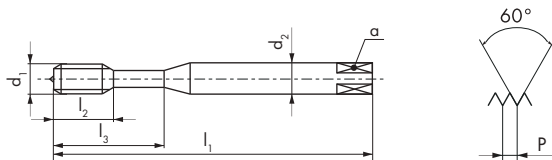




RTS320VS-4

RTS420VS-4

RTS362VS-3


RTS462VS-3



Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		
6	32	3.5	56	6.5	20	4 (h9)	3	3	2.75
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.4
10	24	4.82	70	9	25	6	4.9	3	3.8
1/4	20	6.35	80	11	30	* 6	* 4.9	3	5.1
5/16	18	7.93	90	12.5	35	8	6.2	3	6.5
3/8	16	9.52	100	14	39	10	8	3	8
1/2	13	12.7	110	14		* 10	* 8	3	10.8

ID	ID	ID	ID
● 157395		● 157402	
● 157396		● 157403	
● 157397		● 157404	
● 157398		● 157405	
● 157399		● 157406	
● 157400		● 157407	
	● 157401		● 157408

* Norme DC / * DC Norm/ * Norma DC

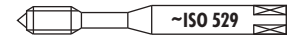
sur demande
 auf Anfrage
 on request
 su richiesta
 sobre pedido
 no zapyty
 ≥ Ø 6 mm

UNC, UNC(U)

UNC ASME B1.1

≤ Ø 2.8 > Ø 2.8

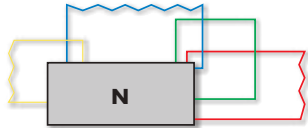
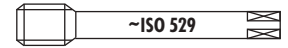
PM HSS




















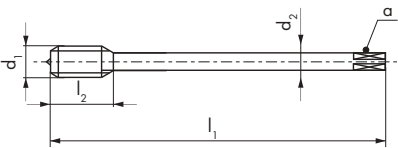








										N1110-1	N1110-2	N1110-3	N1110-S
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
2	56	2.18	45	9.5		2.8	2.1	3	1.75	● 102799	● 102885	● 102998	● 111067
3	48	2.51	45	9.5		2.8	2.1	3	2	* 102800	* 102886	* 102999	* 111068
4	40	2.84	48	11	18	3.15	2.5	3	2.25	● 102802	● 102888	● 103001	● 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






















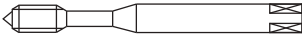
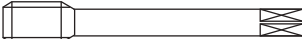


										N1210-1	N1210-2	N1210-3	N1210-S
<p>N1210-1  </p> <p>N1210-2  </p> <p>N1210-3   31 62 73 74 91</p> <p>N1210-S  </p>										   			
   										  			
 										 			
\emptyset " d_1 UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm				ID	ID	ID	ID
7/16	14	11.11	85	22	8	6.3	3	3	3	● 103392	● 103466	● 103606	● 111236
1/2	13	12.7	89	24	9	7.1	3	3	3	● 103387	● 103461	● 103601	● 111229
5/8	11	15.87	102	32	12.5	10	3	3	3	● 103391	● 103465	● 103605	● 111235
3/4	10	19.05	112	33	14	11.2	3	3	3	● 103390	● 103464	● 103604	● 111234
1	8	25.4	130	45	18	14	4	4	4	● 103388	● 103462	● 103602	● 111230

UNC, UNC(I)

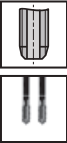

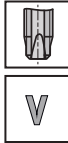

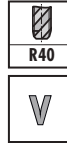
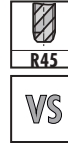





















UNF, UNEF UNS, UN

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

		N						
Características Characteristics								
					 NEW			 NEW
Tipo de agujero Hole type								
		N310-3	N320-3 N320-4	N320V-4	N320TN-4	N360-3	N360V-3	N360TN-3
<i>DIN largo</i> DIN long	DIN 371	176	176	176	176	178	178	178
<i>ISO corto</i> ISO short	ISO 529							
<i>Tolerancia</i> Tolerance	UNF 2B	176	176	176	176	178	178	178
<i>Tolerancia</i> Tolerance	UNF(J) 3B		176			178		
<i>Tolerancia</i> Tolerance	UNEF 2B							
<i>Tolerancia</i> Tolerance	UNS 2B							
<i>Tolerancia</i> Tolerance	UN 2B							
		N410-3	N420-4	N420V-4	N420TN-4	N460-3	N460V-3	N460TN-3
<i>DIN largo</i> DIN long	DIN 374/~DIN 376	177 / 199	177	177	177	179 / 199	179 / 199	179
<i>ISO corto</i> ISO short	ISO 529							
<i>Tolerancia</i> Tolerance	UNF 2B	177	177	177	177	179	179	179
<i>Tolerancia</i> Tolerance	UNF(J) 3B		177			179		
<i>Tolerancia</i> Tolerance	UNEF 2B							
<i>Tolerancia</i> Tolerance	UNS 2B	199				199	199	
<i>Tolerancia</i> 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
196 / 198	198	180	180	181	182	184	184	185
196		180	180	181	182	184	184	185
198	198				182			
N1210 -1 -3 -S	N1220-4	Z420V-4	Z420VS-4	Z460V-3	Z470VS-3	H420-4	H420TC-4	H450-3
197 / 198	198	180	180	181	182	184	184	185
197		180	180	181	182	184	184	185
198	198							

UNF, UNF(), UNEF,
UN, UNS

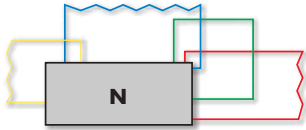
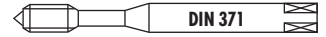
		H	S		SA			TL
Características Characteristics		 R25 TTCN	 VS	 R35 VS		 R15	 R10	 R15 VS
		 NEW						
Tipo de agujero Hole type								
		H350TC-3	S320VS-4	S360VS-3	SA320-4	SA350-3	SA390-3	TL351VS-3
<i>DIN largo</i> DIN long	DIN 371	185	186	186	188	188	190	188
<i>ISO corto</i> ISO short	ISO 529							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

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

UNF ASME B1.1

≤ Ø 2.8 > Ø 2.8

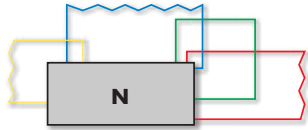
PM HSSE



										N310-3	N320-4	N320V-4	N320TN-4
<p>N310-3 31 62 73 74 91</p> <p>N320-4 62 63 64 72 73 74 81 91</p> <p>N320V-4 V 11 12 31 32</p> <p>N320TN-4 TiN 11 12 13 14 32</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
* 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" d ₁ UNF	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	4.15	● 135506			
1/4	28	6.35	80	17	30	7	5.5	3	5.55	● 155323			
<p>* N320-3 2.5 x P</p>													

UNF ASME B1.1

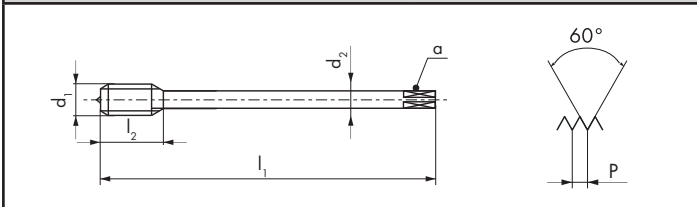
HSSE



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

N410-3	N420-4	N420V-4	N420TN-4

< 1.5 x D			
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2B	2B	2B	2B

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
5/16	24	7.93	90	20	6	4.9	3	6.9
3/8	24	9.52	100	22	7	5.5	3	8.5
7/16	20	11.11	100	19	8	6.2	3	9.8
1/2	20	12.7	100	24	9	7	3	11.4
9/16	18	14.28	100	24	11	9	3	12.9
5/8	18	15.87	100	26	12	9	3	14.5
3/4	16	19.05	125	33	14	11	4	17.5
7/8	14	22.22	140	36	18	14.5	4	20.4
1	12	25.4	160	39	18	14.5	4	23.3
1 1/8	12	28.57	180	39	22	18	4	26.5
1 1/4	12	31.75	180	39	22	18	4	29.7
1 3/8	12	34.92	200	36	28	22	4	32.8
1 1/2	12	38.1	200	41	32	24	4	36

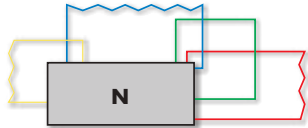
ID	ID	ID	ID
● 102004	● 102223	● 142774	● 196015
● 102003	● 102222	● 142775	● 196016
● 102006	● 102225	● 142776	● 196017
● 102000	● 102219	● 142777	● 196018
	● 102227		
● 102005	● 102224	● 142778	● 196019
● 102002	● 102221	● 142779	● 185919
	● 102226		
	● 102220	● 142780	
	● 142773		
	● 102218		
	● 105137		
	● 105138		






									3B UNF(J)
--	--	--	--	--	--	--	--	--	------------------

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
5/16	24	7.93	90	20	6	4.9	3	7
3/8	24	9.52	100	22	7	5.5	3	8.6
7/16	20	11.11	100	19	8	6.2	3	10
1/2	20	12.7	100	24	9	7	3	11.55

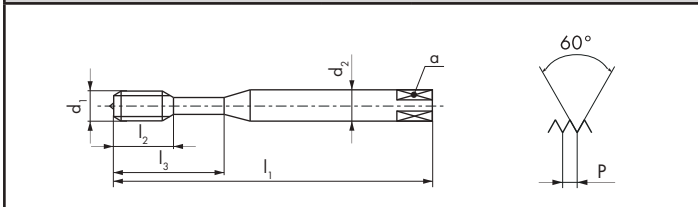
ID
● 155328
● 155326
● 155330
● 155321




UNF, UNF(J)





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

N360-3	N360V-3	N360TN-3
		
 < 2.5 x D	 < 2.5 x D	 < 2.5 x D





		
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		
6	40	3.5	56	6.5	20	4	3	3	2.9
10	32	4.82	70	9	25	6	4.9	3	4.05
12	28	5.48	80	11	30	6	4.9	3	4.6
1/4	28	6.35	80	11	30	7	5.5	3	5.5
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9
3/8	24	9.52	100	14	39	10	8	3	8.5

ID	ID	ID
● 101686		
● 101682	● 101730	● 196009
● 101683		
● 101681	● 101729	● 146137
● 101685	● 101732	● 196010
● 101684	● 101731	● 196011

3B UNF(J)

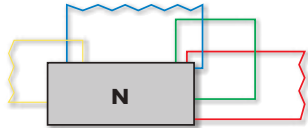
3B UNF(J)

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	4.82	70	9	25	6	4.9	3	4.15
1/4	28	6.35	80	11	30	7	5.5	3	5.55
5/16	24	7.93	90	12.5	35	8	6.2	3	7
3/8	24	9.52	100	14	39	10	8	3	8.6

ID
● 155325
● 155324
● 155329
● 155327

UNF ASME B1.1

HSSE

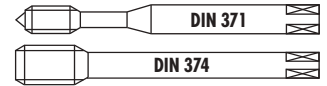


										N460-3	N460V-3	N460TN-3	
<p>N460-3 63 72 73 74 81 91</p> <p>N460V-3 11 12 32</p> <p>N460TN-3 11 12 13 14 32</p>													
										< 2.5 x D	< 2.5 x D	< 2.5 x D	
										2.5 x P	2.5 x P	2.5 x P	
										2B	2B	2B	
$\emptyset'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm				ID	ID	ID	
7/16	20	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)			
$\emptyset'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm				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, UNF(J)

UNF ASME B1.1

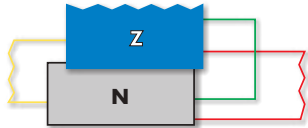
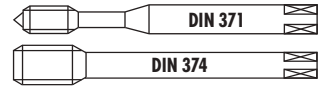
PM



										Z320V-4	Z420V-4	Z320VS-4	Z420VS-4		
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		
										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		● 142783		● 128685			
1/4	28	6.35	80	17	30	7	5.5	3		● 142784		● 128596			
5/16	24	7.93	90	20	35	8	6.2	3		● 142785		● 128869			
3/8	24	9.52	100	22	39	10	8	3		● 142786		● 128814			
7/16	20	11.11	100	19		8	6.2	3			● 142787		● 128960		
1/2	20	12.7	100	24		9	7	3			● 142788		● 128556		
5/8	18	15.87	100	26		12	9	3					● 196031		
3/4	16	19.05	125	33		14	11	4					● 196032		

UNF ASME B1.1

HSSE

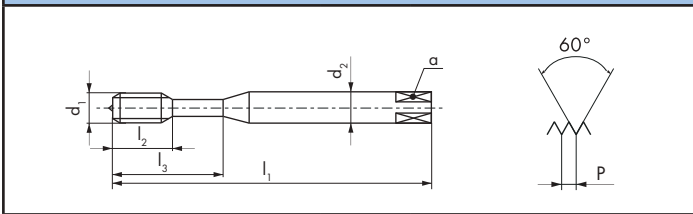


Z360V-3

R40 V 12 21 32

Z460V-3

R40 V 12 21 32



C 2.5 x P 2B

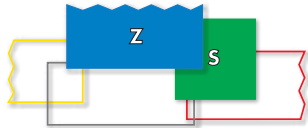
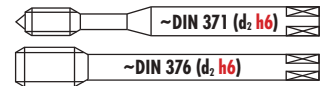
C 2.5 x P 2B

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
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

UNF, UNF(1)

UNF ASME B1.1

PM



Z370VS-3



Z470VS-3



Z370VS-3

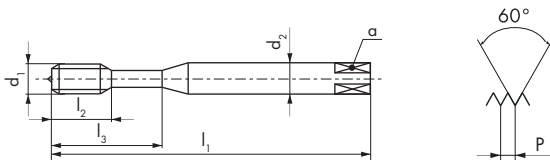


Z470VS-3





Z370VS-3

Z470VS-3



2BX

2BX



Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h ₆ mm	a mm		
10	32	4.82	70	9	25	6	4.9	3	4.05
1/4	28	6.35	80	11	30	* 6	* 4.9	3	5.5
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9
3/8	24	9.52	100	14	39	10	8	3	8.5
7/16	20	11.11	100	14		8	6.2	3	9.8
1/2	20	12.7	110	14		* 10	* 8	4	11.4
5/8	18	15.87	110	18		12	9	4	14.5
3/4	16	19.05	125	21		14	11	4	17.5

* Norme DC / * DC Norm/ * Norma DC

ID

ID

3B
UNF(J)

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h ₆ mm	a mm		
10	32	4.82	70	9	25	6	4.9	3	4.15
1/4	28	6.35	80	11	30	* 6	* 4.9	3	5.55
5/16	24	7.93	90	12.5	35	8	6.2	3	7
3/8	24	9.52	100	14	39	10	8	3	8.6

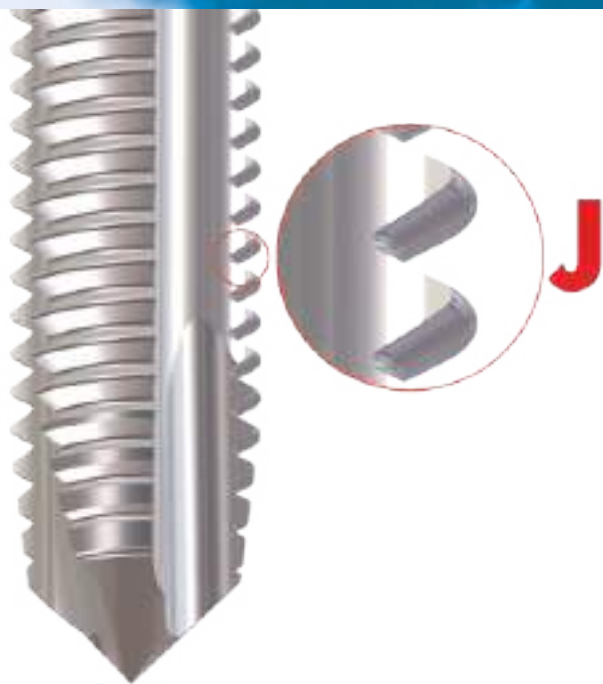
* Norme DC / * DC Norm/ * Norma DC

ID

MJ, UNJC, UNJF

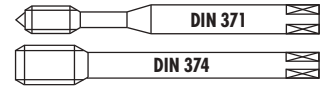
*Nuestros machos para roscar a máquina con radio en el diámetro exterior resumidos en un capítulo aparte que comienza en la **página 44**.*











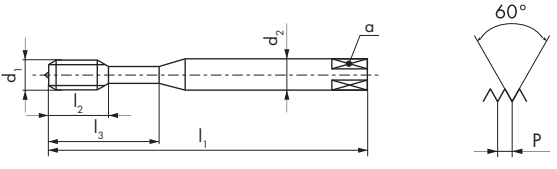














Our machine taps with radius on the outside diameter summarised in a separate chapter from **page 44.**



UNF ASME B1.1

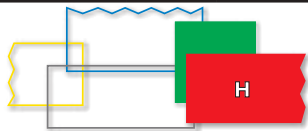
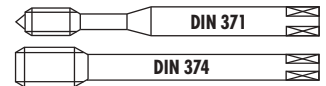
PM



										H320-4	H420-4	H320TC-4	H420TC-4
													
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											
													
										2B	2B	2B	2B
\emptyset " 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		● 101228		● 196060	
1/4	28	6.35	80	17	30	7	5.5	3		● 101227		● 142613	
5/16	24	7.93	90	20	35	8	6.2	3		● 105139		● 196061	
3/8	24	9.52	100	22	39	10	8	3		● 101229		● 196062	
7/16	20	11.11	100	19		8	6.2	3			● 147253		● 196063
1/2	20	12.7	100	24		9	7	4			● 101291		● 196064
5/8	18	15.87	100	26		12	9	4			● 101293		● 196065
3/4	16	19.05	125	33		14	11	4			● 101292		● 196066

UNF ASME B1.1

PM

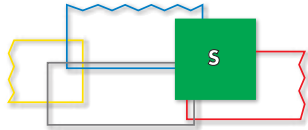
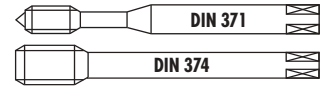


										H350-3	H450-3	H350TC-3	H450TC-3
<p>H350-3 15 16 62 64 82</p> <p>H450-3 15 16 62 64 82</p> <p>H350TC-3 15 16 24 31 82 83 92 93</p> <p>H450TC-3 15 16 24 31 82 83 92 93</p>													
Ø" d₁ UNF	P TPI	d₁ mm	l₁ mm	l₂ mm	l₃ mm	d₂ mm	a mm			ID	ID	ID	ID
10	32	4.82	70	9	25	6	4.9	3	4.05	● 101265		● 196055	
1/4	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, UNF(1)

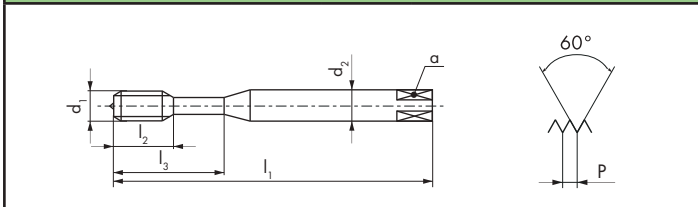
UNF ASME B1.1

PM



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

S320VS-4	S420VS-4	S360VS-3	S460VS-3



3B UNF(J)	3B UNF(J)		

\emptyset " d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			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

\emptyset " d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			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



S | RESPECTING
THREADING

UNE UNF()



aero

SA320-4



15 16 52 64

SA350-3

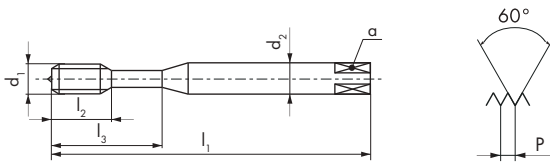


15 16 52 64

TL351VS-3



41 42



SA320-4

SA350-3

TL351VS-3



< 1.5 x D

< 2 x D



< 2 x D



4 x P

2.5 x P

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		
10	32	4.82	70	15		6	4.9	3	4.05
1/4	28	6.35	80	15	23	7	5.5	3	5.5
5/16	24	7.93	90	18	29	8	6.2	3	6.9
3/8	24	9.52	100	20	33	10	8	3	8.5











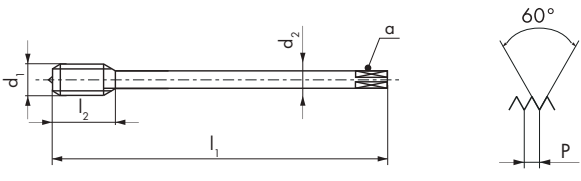





























ID	ID	ID
● 149133	● 149135	● 152047
● 149230	● 149232	● 152066
● 149277	● 149279	● 152072
● 149339	● 149341	● 152083


Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	48	2.84	56	12		3.5	2.7	3	2.35
10	32	4.82	70	15		6	4.9	3	4.15
1/4	28	6.35	80	15	23	7	5.5	3	5.55
5/16	24	7.93	90	18	29	8	6.2	3	7
3/8	24	9.52	100	20	33	10	8	3	8.6

ID	ID	ID
	● 149015	
● 146098	● 149138	● 148004
● 146404	● 149235	● 148012
● 146393	● 149282	● 148016
● 147165	● 149344	● 148023



aero

										SA420-4	SA450-3		TL451VS-3
<p>SA420-4  15 16 52 64</p> <p>SA450-3  15 16 52 64</p>										  			
<p>TL451VS-3   VS 41 42</p>										  			
										  			
										  			
$\emptyset'' d_1$ 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	22	8	6.2	* 4			● 152286	● 152290		● 148031
1/2	20	12.7	100	24	9	7	4			● 152287	● 152291		● 152310
5/8	18	15.87	100	26	12	9	4			★ 152289			
										  			
$\emptyset'' d_1$ 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	22	8	6.2	* 4			● 147187	● 152302		● 148031
1/2	20	12.7	100	24	9	7	4			● 147189	● 152303		● 152310
9/16	18	14.28	100	24	11	9	4			● 146395			
5/8	18	15.87	100	26	12	9	4			● 147169			

* SA420-4 =  3

aero

SA390-3



16 53

SA390-3



$\emptyset'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
10	32	4.82	70	15	6	4.9	3	4.15
1/4	28	6.35	80	20	7	5.5	3	5.55
5/16	24	7.93	90	25	8	6.2	3	7
3/8	24	9.52	100	30	10	8	3	8.6

ID

- 149687
- 149715
- 149728
- 149745



UNE, UNF(1)

NEW

EL PERFECTO "ALLROUNDER"

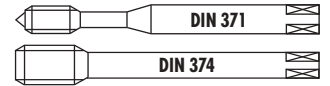
Disponibile para las roscas M, MF, UNC, UNF y G

THE PERFECT "ALLROUNDER"

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



PM



QTAP

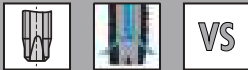
Q320VS-4



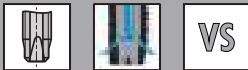
Q420VS-4



Q323VS-4



Q423VS-4



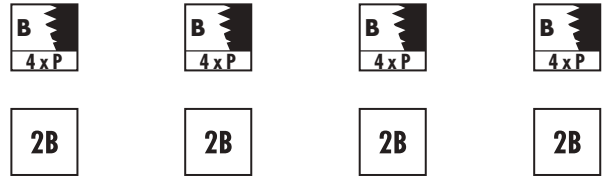
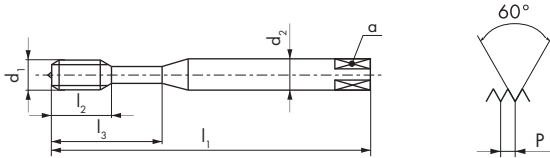
- 11 12 13 14
- 15 21 22 23
- 24 31 32 51
- 52 61 62 63
- 64 71 72 73
- 74 81 82 83
- 91 92 94

Q320VS-4

Q420VS-4

Q323VS-4

Q423VS-4



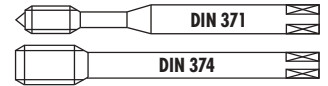
Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	4.82	70	15	25	6	4.9	3	4.05
1/4	28	6.35	80	17	30	7	5.5	3	5.5
5/16	24	7.93	90	20	35	8	6.2	3	6.9
3/8	24	9.52	100	22	39	10	8	3	8.5
7/16	20	11.11	100	19		8	6.2	3	9.8
1/2	20	12.7	100	24		9	7	3	11.4

ID	ID	ID	ID
● 196298		● 197631	
● 196299		● 197632	
● 196300		● 197633	
● 196301		● 197634	
	● 196302		● 197635
	● 196303		● 197636



≤ Ø 16 > Ø 16

PM HSSE



QTAP

Q360VS-3



Q460VS-3



Q363VS-3



Q463VS-3



Q360VS-3

Q460VS-3

Q363VS-3

Q463VS-3

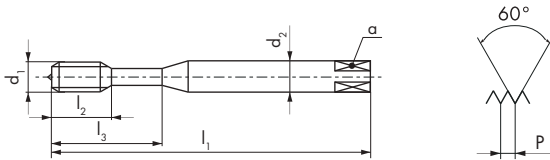


< 2.5 x D

< 2.5 x D

< 2.5 x D

< 2.5 x D





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		
10	32	4.82	70	9	25	6	4.9	3	4.05
1/4	28	6.35	80	11	30	7	5.5	3	5.5
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9
3/8	24	9.52	100	14	39	10	8	3	8.5
7/16	20	11.11	100	14		8	6.2	3	9.8
1/2	20	12.7	100	14		9	7	3	11.4
5/8	18	15.87	100	14		12	9	3	14.5
3/4	16	19.05	125	18		14	11	4	17.5

ID

ID

ID

ID

● 196304

● 197637

● 196305

● 197638

● 196306

● 197639

● 196307

● 197640

● 196308

● 197641

● 196309

● 197642

● 196310

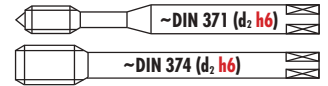
● 197643

● 196311

● 197644



Uniquement pour taraudage synchrone
Nur für Synchrobearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para rosado sincrozado
Тільки для рiгiд tapping



RTS

Rigid Tapping Synchro

RTS320VS-4



RTS420VS-4



RTS362VS-3



RTS462VS-3

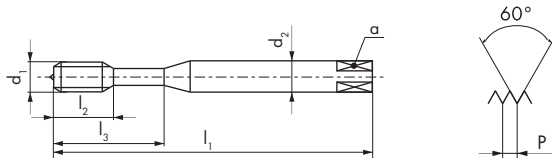
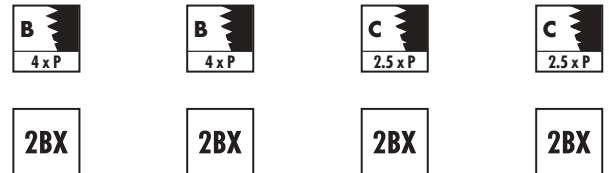


RTS320VS-4

RTS420VS-4

RTS362VS-3

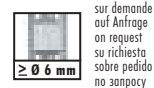
RTS462VS-3

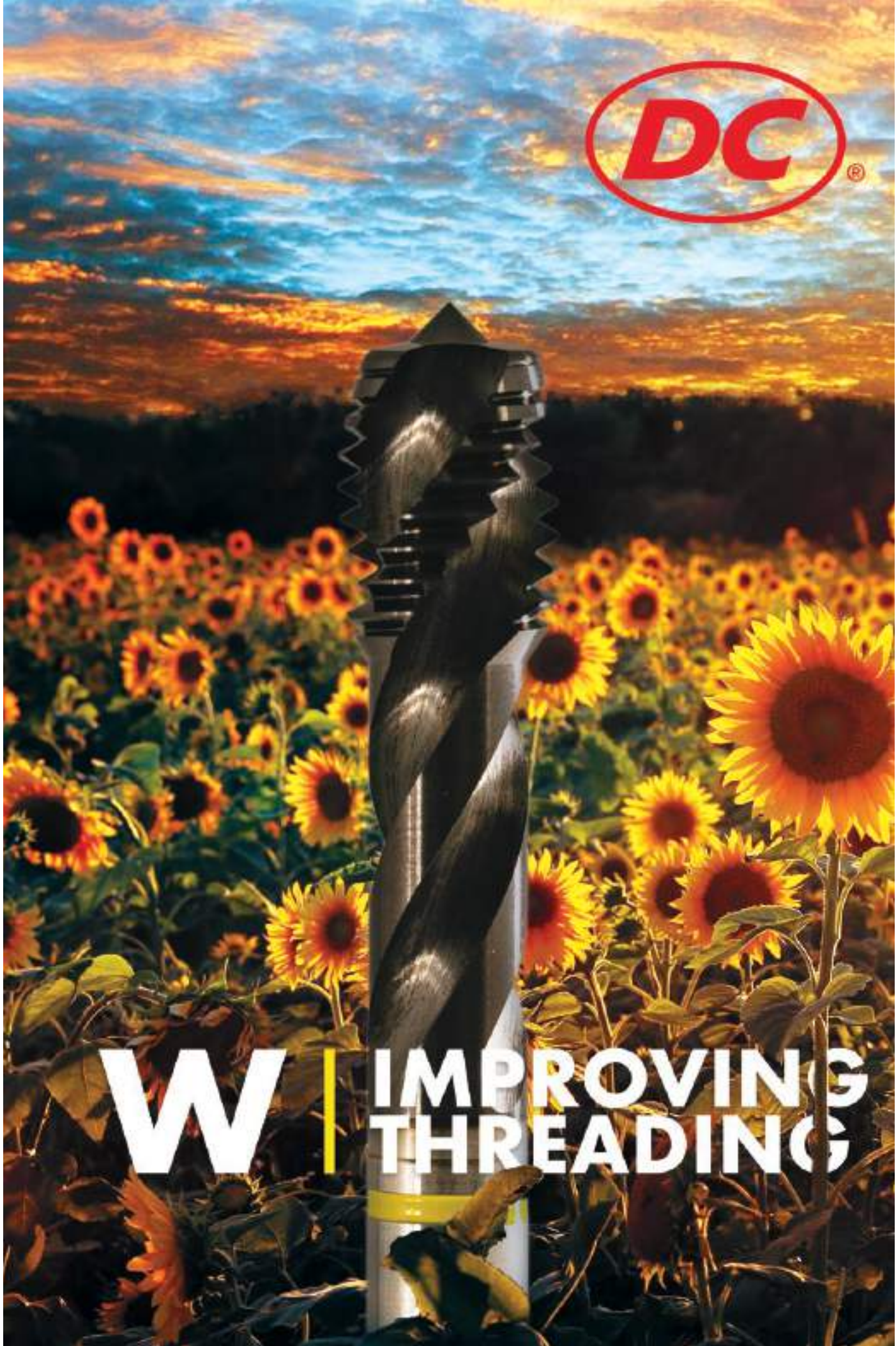


\varnothing " d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h ₆ mm	a mm		
10	32	4.82	70	9	25	6	4.9	3	4.05
1/4	28	6.35	80	11	30	* 6	* 4.9	3	5.5
5/16	24	7.93	90	12.5	35	8	6.2	3	6.9
3/8	24	9.52	100	14	39	10	8	3	8.5
1/2	20	12.7	110	14		* 10	* 8	3	11.4

ID	ID	ID	ID
● 157409		● 157413	
● 157410		● 157414	
● 157411		● 157415	
● 157412		● 157416	
	● 157417		● 157418

* Norme DC / * DC Norm/ * Norma DC





W | IMPROVING THREADING

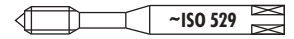
UNE UNF()

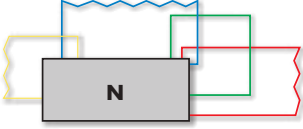















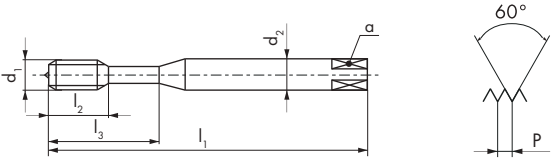




UNF ASME B1.1

≤ Ø 2.8 > Ø 2.8

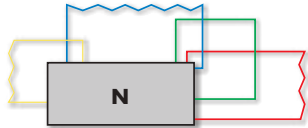
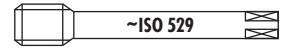
PM HSS



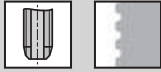
										N1110-1	N1110-3	N1110-S
										N1110-1		
N1110-3					 < 1.5 x D	 < 2.5 x D						
N1110-S				 5 x P	 C 2 x P		 2B	 2B				
												
Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID
0	80	1.52	40	7		2.5	2.1	3	1.2	● 102811	● 103010	● 111079
1	72	1.85	40	8		2.5	2.1	3	1.5	● 102812	● 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

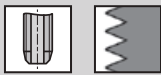
HSS



N1210-1



N1210-3



31 62 73 74 91

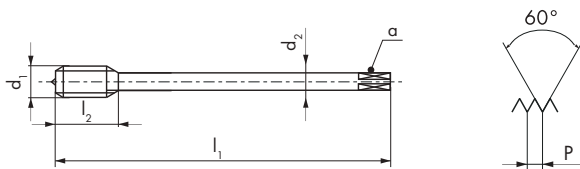
N1210-S



N1210-1



N1210-3

N1210-S



2B

2B

$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
7/16	20	11.11	85	22	8	6.3	3	9.8
1/2	20	12.7	89	24	9	7.1	3	11.4
5/8	18	15.87	102	32	12.5	10	3	14.5
3/4	16	19.05	112	33	14	11.2	4	17.5
7/8	14	22.22	115	32	16	12.5	4	20.4
1	12	25.4	130	45	18	14	4	23.3

ID

ID

ID

● 103411

● 103626

● 111255

● 103407

● 103622

● 111251

● 103410

● 103625

● 111254

● 103409

● 103624

● 111253

● 103412

● 103627

● 111256

● 103408

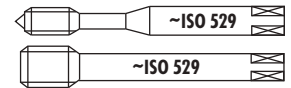
● 103623

● 111252

UNE UNF(1)

UNEF ASME B1.1

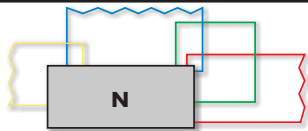
HSS



										N1110-3	N1120-4	N1210-3	N1220-4
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				
\emptyset " 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






















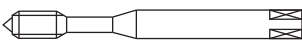
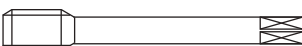


										N410-3	N460-3	N460V-3	
<p>N410-3 </p> <p>N460-3 R40 </p> <p>N460V-3 R40 </p>													
$\emptyset'' d_1$ UNS	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm				ID	ID	ID	
1/4	36	6.35	80	17	4.5	3.4	3	5.65	● 104899				
1/2	24	12.7	100	24	9	7	3	11.6	● 104900				
1	14	25.4	140	34	18	14.5	4	23.6	● 104898				
1	14	25.4	140	22	18	14.5	4	23.6		● 102437	● 142789		
$\emptyset'' d_1$ 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		

UNEF, UNS, UN

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
<i>DIN largo</i> DIN long	DIN 5156	204	205	205	206	206	206	206
<i>DIN largo</i> DIN long	~ DIN 376							
<i>DIN corto</i> DIN short	DIN 5157							
<i>LH Rosca izquierda</i> LH Left-hand thread	DIN 5156	204						

G Directorio — Machos para roscar a máquina y a mano G (gas) DIN EN ISO 228


























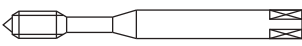
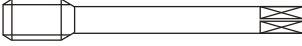
Directory — Machine and hand taps G (BSP) DIN EN ISO 228





















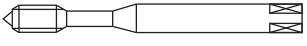
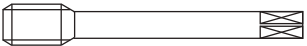
N			W		Z			
			 R40 E 1.5xP	 R40 E 1.5xP DLC	 V	 VS	 R40 V	 R45 VS
N210-1	N210-3	N210-S	W460-5	W460DL-5	Z420V-4	Z420VS-4	Z460V-3	Z470VS-3
			207	207	208	208	208	
								209
213	213	213						

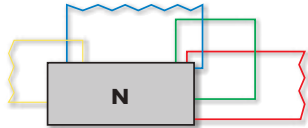
G (ISO), Rp, Rc, W, SV Schaublin

G Directorio — Machos para roscar a máquina G (gas) DIN EN ISO 228

Directory — Machine taps G (BSP) DIN EN ISO 228

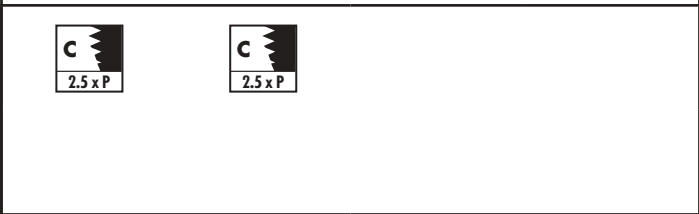
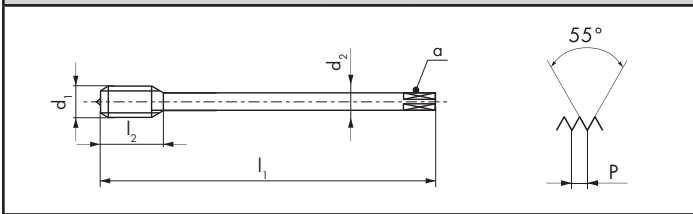
	H	GG	QTAP				RTS	
Características Characteristics	 R25	 R15  NV	 VS	 R40  VS	 R40  VS	 R40  E 1.5xP  VS		
			 	 				
Tipo de agujero Hole type								
								
	H450-3	GG450NV-3	Q420VS-4 Q423VS-4	Q460VS-3 Q463VS-3	RTS462VS-3	RTS462VS-5		
DIN largo DIN long	DIN 5156	207	210	211				
DIN largo DIN long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

	N					
Características Characteristics		 		 		 
						
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



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

N410-3	N410-3 LH		
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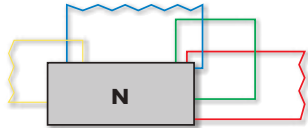
$\frac{\text{Ø}''}{G}$	d_1	P	d_1	l_1	l_2	d_2	a			ID	ID
		TPI	mm	mm	mm	mm	mm				
1/8	28	9.72	90	22	7	5.5	3	8.75	●	101855	
1/4	19	13.15	100	20	11	9	3	11.6	●	101853	● 101854
3/8	19	16.66	100	20	12	9	4	15.2	●	101861	● 101862
1/2	14	20.95	125	22	16	12	4	18.9	●	101851	● 101852
3/4	14	26.44	140	28	20	16	4	24.4	●	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














										N420-4	N420V-4	N420TN-4	
N420-4													
N420V-4													
N420TN-4													
$\frac{\text{Ø}''}{G}$	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				

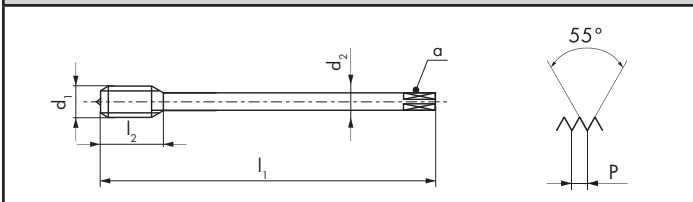






N460-3	N460V-3	N460TN-3	N462V-3
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N460-3			63 72 73 74 81 91
N460V-3			11 12 32
N460TN-3			11 12 13 14 32
N462V-3			11 12 32

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



			
2.5 x P	2.5 x P	2.5 x P	2.5 x P

$\frac{\text{Ø}''}{G}$	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		

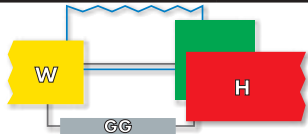
G DIN EN ISO 228 (BSP)

≤ Ø 25.4 > Ø 25.4

HSSE
W

PM
H/GG

HSSE
H/GG



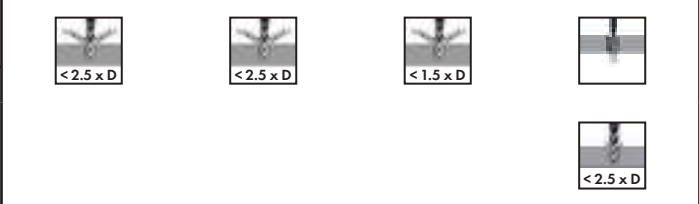
W460-5 **W460DL-5** **H450-3** **GG450NV-3**

W460-5 **71 72 81**

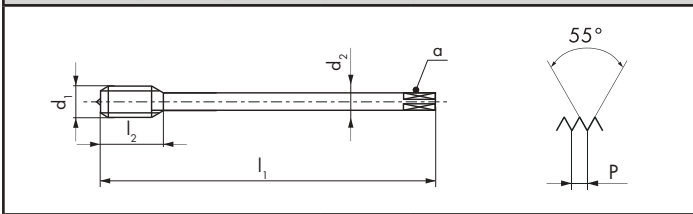
W460DL-5 **71 72 73**



H450-3 **15 16 62 64 82**



GG450NV-3 **31**



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	14	7	5.5	3	8.75
1/4	19	13.15	100	14	11	9	* 4	11.6
3/8	19	16.66	100	14	12	9	4	15.2
1/2	14	20.95	125	20	16	12	4	18.9
3/4	14	26.44	140	22	20	16	4	24.4
1	11	33.24	160	26	25	20	4	30.7

ID	ID	ID
● 119350	● 176728	● 101298
● 119300	● 176729	● 101297
● 119682	● 176730	● 101301
● 119199	● 176731	● 101296
		● 101300
		● 101299

* W460-5 = 3
* W460DL-5 = 3

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	4	8.75
1/4	19	13.15	100	20	11	9	4	11.6
3/8	19	16.66	100	20	12	9	4	15.2
1/2	14	20.95	125	22	16	12	4	18.9
3/4	14	26.44	140	28	20	16	4	24.4
1	11	33.24	160	32	25	20	4	30.7

ID
● 102309
● 102308
● 102312
● 102307
● 102311
● 102310

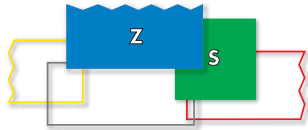
G DIN EN ISO 228 (BSP)

< Ø 25.4 > Ø 25.4

PM Z420	HSSE Z420	HSSE Z460
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										Z420V-4	Z420VS-4	Z460V-3	
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	



Z470VS-3

Z470VS-3



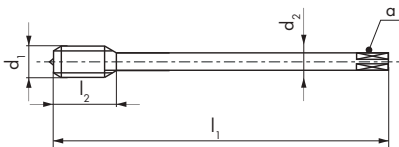
VS



Z470VS-3



VS



$\frac{\text{Ø}''}{G} d_1$	P TPI	d_1 mm	l_1 mm	l_2 mm	$d_2 h_6$ 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



QTAP

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

Q420VS-4

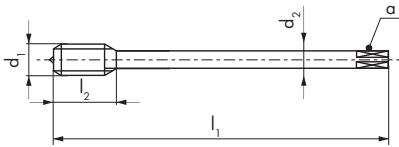
Q423VS-4



NEW



NEW



$\frac{\text{Ø}''}{G}$	d_1	P	d_1	l_1	l_2	d_2	a		
		TPI	mm	mm	mm	mm	mm		
1/8	28	9.72	90	22	7	5.5	3	8.75	● 196312 ● 197645
1/4	19	13.15	100	20	11	9	3	11.6	● 196313 ● 197646
3/8	19	16.66	100	20	12	9	3	15.2	● 196314 ● 197647
1/2	14	20.95	125	22	16	12	4	18.9	● 196315 ● 197648

ID

ID

● 196312

● 197645

● 196313

● 197646

● 196314

● 197647

● 196315

● 197648

G

DIN EN ISO 228 (BSP)



≤ Ø 16 > Ø 16

PM

HSSE



QTAP

Q460VS-3



Q463VS-3



- 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

Q460VS-3

Q463VS-3



NEW



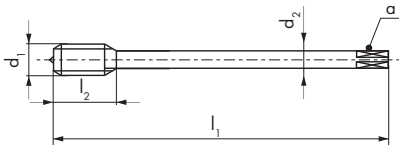
NEW



< 2.5 x D



< 2.5 x D



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	14	7	5.5	3	8.75
1/4	19	13.15	100	14	11	9	3	11.6
3/8	19	16.66	100	14	12	9	4	15.2
1/2	14	20.95	125	20	16	12	4	18.9

ID

ID

● 196316

● 197649

● 196317

● 197650

● 196318

● 197651

● 196319

● 197652

G (BSP)

G

DIN EN ISO 228 (BSP)



Uniquement pour taraudage synchrone
 Nur für Synchronbearbeitung
 Only for rigid tapping
 Solo per maschiatura sincrona
 Solo para roscado sincrozado
 Тільки для рідкого tapping

PM



RTS

Rigid Tapping Synchro

RTS462VS-3

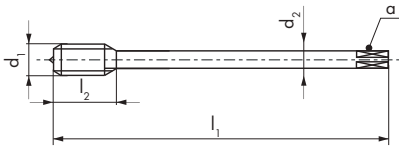


RTS462VS-5



RTS462VS-3

RTS462VS-5



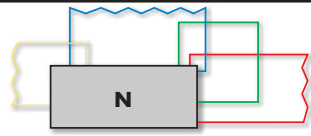
\emptyset " G	d_1 TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h6 mm	a mm		
1/8	28	9.72	100	14	* 8	* 6.2	3	8.75
1/4	19	13.15	110	14	* 12	* 9	3	11.6
3/8	19	16.66	110	18	12	9	4	15.2
1/2	14	20.95	125	20	16	12	4	18.9







ID	ID
● 151861	● 170629
● 151868	● 170631
● 151872	● 170633
● 150685	● 170635

* Norme DC / * DC Norm/ * Norma DC






sur demande
 auf Anfrage
 on request
 su richiesta
 sobre pedido
 на запит

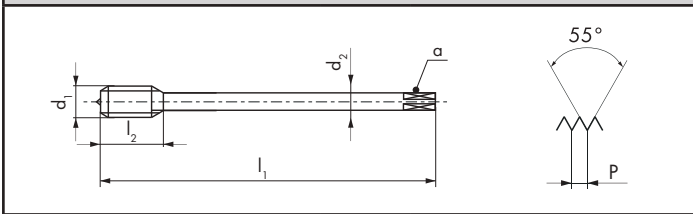




N210-1			
N210-3			31 62 73 74 91
N210-S			



N210-1	N210-3	N210-S	
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	 < 1.5 x D	 < 2.5 x D
---	---	---

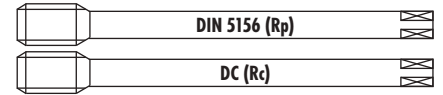


 5 x P	 C 2 x P
--	--

$\frac{\text{Ø}''}{\text{G}}$	d_1 TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	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



										N420-3			N410-3
N420-3 62 63 64 72 73 74 81 91 													
N410-3 31 62 74 													
$\emptyset'' d_1$ 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			
$\emptyset'' d_1$ 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) $\emptyset d_1$ - 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

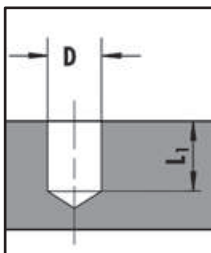
					D5800
D5800					
\emptyset'' Rc	l_1 mm	l_2 mm	d_2 mm	a mm	
1/16	70	17	6	4.9	● 118701
1/8	70	17	8	6.2	● 110531
1/4	80	27	10	8	● 110530
3/8	85	27	12	9	● 110535
1/2	95	35	16	12	● 110529
3/4	105	35	20	16	● 110534
1	130	43	25	20	● 110532

Taladros previos para roscas gas cónicas, según DIN EN 10226

Core hole diameters for tapered pipe thread to DIN EN 10226

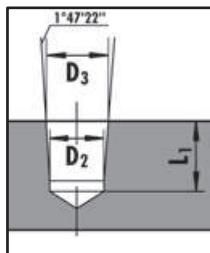
Taladros previos cilíndricos
Desgaste más rápido del macho.
A evitar

Parallel hole
Increased tap wear,
not recommended



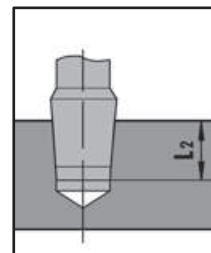
Taladros previos cónicos 1:16
Taladrar cilíndrico según $\emptyset D_2$
y escariar cónico según $\emptyset D_3$

Tapered hole 1:16
Pre-drill at $\emptyset D_2$
and taper-ream to $\emptyset D_3$



Roscar
Roscar hasta la profundidad
 $L_2 = \emptyset$ nominal

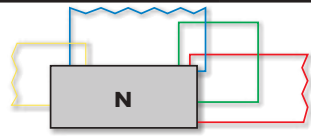
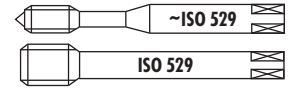
Tapped hole
Engage tap to hole depth
 $L_2 =$ nominal \emptyset



\emptyset'' 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)

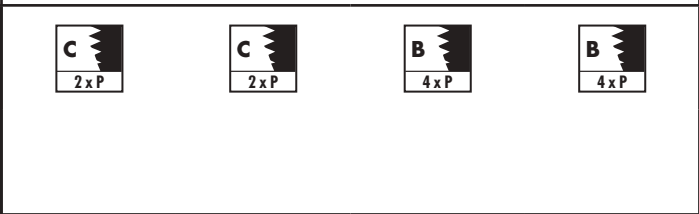
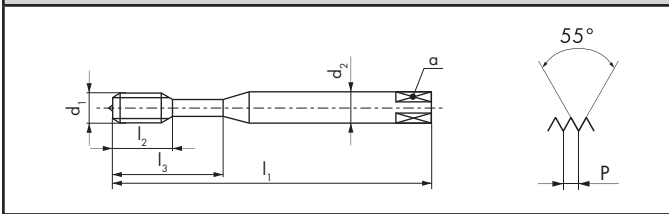
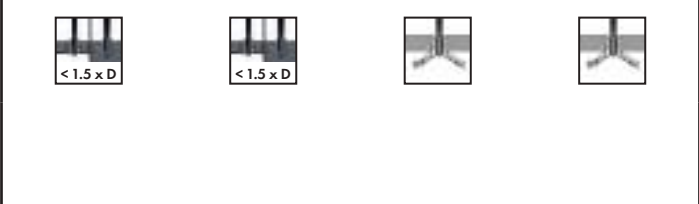
HSS



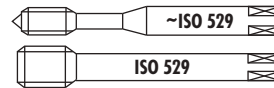
N1110-3 **N1210-3** **N1120-4** **N1220-4**



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
















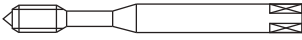

\emptyset " d_1 W	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
1/8	40	3.17	48	11	18	3.15	2.5	3	2.5	● 103025		● 103126	
5/32	32	3.96	53	13	21	4	3.15	3	3.1	● 103031		● 103130	
3/16	24	4.76	58	16	25	5	4	3	3.6	● 103026		● 103127	
1/4	20	6.35	66	19	30	6.3	5	3	4.9	● 103024		● 103125	
5/16	18	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



										N1110-3	N1210-3	N5120			
N1110-3			31 / 62 / 73 / 74 / 91												
N1210-3			31 / 62 / 73 / 74 / 91												
N5120		$\geq \emptyset 3$	11 / 12												
$\emptyset d_1$	P	l_1	l_2	l_3	d_2	a			ID						
W	TPI/mm	mm	mm	mm	mm	mm									
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					
$\emptyset d_1$	P	l_1	l_2	l_3	d_2	a			ID	ID					
SV	mm	mm	mm	mm	mm	mm									
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. $\begin{matrix} +0.1 \text{ mm} \\ 0 \end{matrix}$															
$\emptyset d_1$	P	d_2	l_1			ID									
W	mm	mm	mm												
6.82	0.625	B8	25	9	4	6.75	● 130215								





















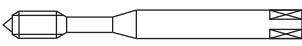

NPT, NPTF

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			 	 	 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	N410-5	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
N410-3										
N410V-3										
N411V-3										
N410-3										
$\emptyset'' d_1$ 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		● 101961	● 102021	● 102031	● 101971
1/8	27	71	13	8	6.2		● 101964	● 102024	● 102034	● 101974
1/4	18	80	20	11	9		● 101963	● 102023	● 102033	● 101973
3/8	18	90	20	12	9		● 101968	● 102028	● 102038	● 101978
1/2	14	100	26	16	12		● 101962	● 102022	● 102032	● 101972
3/4	14	110	26	20	16		● 101967	● 102027	● 102037	● 101977
1	11.5	125	32	25	20		● 101965	● 102025	● 102035	● 101975
1 1/4	11.5	125	32	32	24		● 101960	● 102020		
1 1/2	11.5	140	32	36	29		● 101959	● 102019		
2	11.5	160	32	36	29		● 101966	● 102026		

Vc (m/min) $\emptyset d_1$ - Guide Line				
NPT, NPTF	1/16" - 1/4"	3/8" - 1/2"	3/4" - 1"	1.1/4" - 2"
	6	5	4	3
	5	4	3	2
	10	8	7	5
	18	15	13	10

NPT, NPTF

ASME B1.20.1, ANSI B1.20.3

HSSE



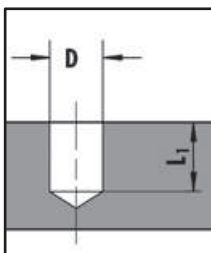
					D5800			
D5800 								
					ID			
Ø" NPT, NPTF	l₁ mm	l₂ mm	d₂ mm	a mm				
1/16	70	17	6	4.9	● 118701			
1/8	70	17	8	6.2	● 110531			
1/4	80	27	10	8	● 110530			
3/8	85	27	12	9	● 110535			
1/2	95	35	16	12	● 110529			
3/4	105	35	20	16	● 110534			
1	130	43	25	20	● 110532			

Taladros previos para roscas NPT y NPTF

Core hole diameters for NPT and NPTF threads

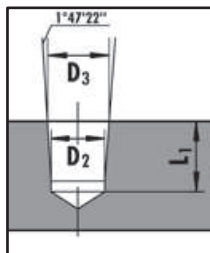
Taladros previos cilíndricos
Desgaste más rápido del macho.
A evitar

Parallel hole
Increased tap wear,
not recommended



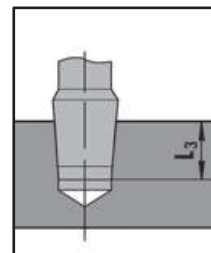
Taladros previos cónicos 1:16
Taladrar cilíndrico según Ø D₂
y escariar cónico según Ø D₃

Tapered hole 1:16
Pre-drill at Ø D₂
and taper-ream to Ø D₃



Roscar
Roscar hasta la profundidad
L₃ = Ø nominal

Tapped hole
Engage tap to hole depth
L₃ = nominal Ø



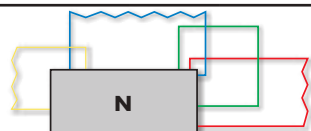
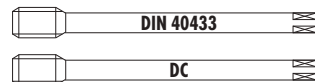
*Es recomendado de escariar D₃ al máximo

*Taper-ream at upper limit D₃ is recommended

Ø" NPT, NPTF	D mm	L ₁ mm	D ₂ mm	NPT		L ₃ mm
				D ₃ (+0.05) mm	D ₃ (+0.05) 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



N420-3

N410-8

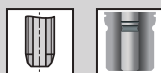
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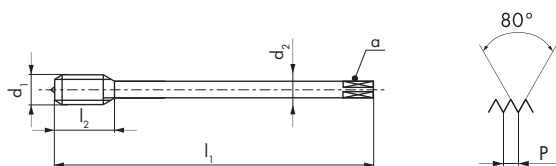
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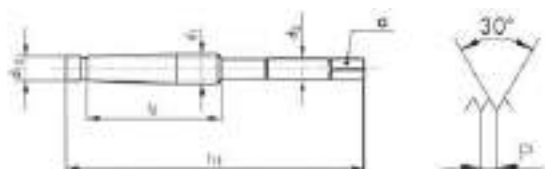
N410-8



31 62 74

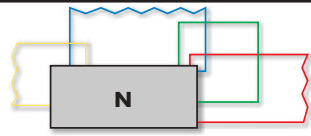





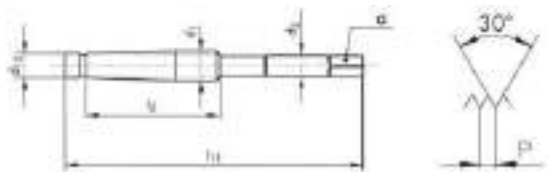



























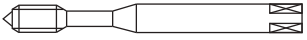

$\emptyset d_1$ PG	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
7	20	12.5	100	24	9	7	3	11.3	● 104901
9	18	15.2	100	26	12	9	3	13.9	● 104902
11	18	18.6	110	26	14	11	4	17.3	● 104903
13.5	18	20.4	125	28	16	12	4	19.1	● 104904
16	18	22.5	125	28	18	14.5	4	21.2	● 104905
21	16	28.3	150	36	22	18	4	26.8	● 104906
29	16	37	170	38	28	22	4	35.5	● 104907
36	16	47	190	38	36	29	5	45.5	● 104908



$\emptyset d_1$ 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
















7H

										N410-1	N410-2	N410-3	N410-S
<p>N410-1</p>  <p>N410-2</p>  <p>N410-3</p>  <p>N410-S</p> 													
													
										7H		7H	
$\emptyset d_1$ TR	P mm	l_1 mm	l_2 mm	d_{10} mm	d_2 mm	a mm				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
										<p>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.</p> <p>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.</p>			

	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, EG UNC,
EG UNF

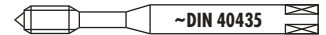
EG M ISO DIN 8140



≤ Ø 2.8 > Ø 2.8

PM

HSSE



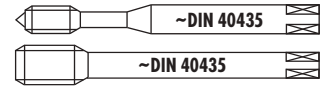
										N320-4	N320V-4	N420-4	N420V-4
N320-4													
N320V-4													
N420-4													
N420V-4													
Ø d₁ EG M	P mm	d₁ mm	l₁ mm	l₂ mm	l₃ mm	d₂ mm	a mm			ID	ID	ID	ID
2	0.4	2.52	50	10		2.8	2.1	3	2.1	● 101537	● 118788		
2.5	0.45	3.08	56	12	18	3.5	2.7	3	2.65	● 101538			
3	0.5	3.65	56	13	20	4	3	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



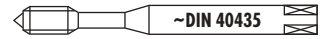
≤ Ø 2.8 > Ø 2.8

PM HSSE



										N360-3	N360V-3	N460-3	N460V-3
N360-3 63 72 73 74 81 91													
N360V-3 11 12 32													
N460-3 63 72 73 74 81 91													
N460V-3 11 12 32													
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



aero

SA320-4



15 16 52 64

SA350-3

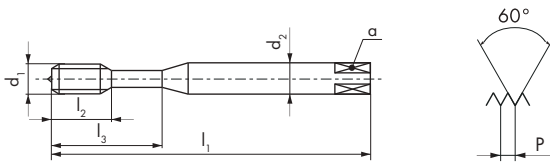


15 16 52 64

TL351VS-3



41 42



SA320-4

SA350-3

TL351VS-3



< 1.5 x D

< 2 x D



< 2 x D



4 x P

2.5 x P

2.5 x P



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		
3	0.5	3.65	56	13		4	3	3	3.15
4	0.7	4.91	70	15		6	4.9	3	4.2
5	0.8	6.04	80	15	23	6	4.9	3	5.25
6	1	7.3	80	15	23	7	5.5	3	6.3
8	1.25	9.62	100	20	33	10	8	3	8.4

ID	ID	ID
● 147676	● 147682	● 150478
● 147678	● 147684	● 152003
● 147680	● 147686	● 150184
● 147688	● 147692	● 152005
● 149354	● 149356	● 152089



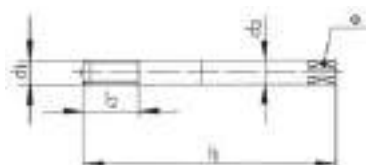
aero

SA390-3



16 53

SA390-3

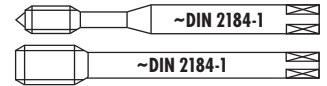


$\emptyset d_1$ EG M	P mm	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
3	0.5	3.65	56	13	4	3			● 149669
4	0.7	4.91	70	15	6	4.9			● 149688
5	0.8	6.04	80	20	6	4.9			● 149710
6	1	7.3	80	20	7	5.5			● 149723
8	1.25	9.62	100	30	10	8			● 149748
10	1.5	11.94	110	35	12	9			● 149767

EG UNC ASME B18.29.1



HSSE

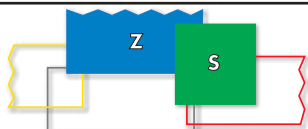
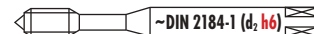


										N320-4	N420-4	N360-3	N460-3
N320-4		62 63 64 72 73 74 81 91											
N420-4		62 63 64 72 73 74 81 91											
N360-3		63 72 73 74 81 91											
N460-3		63 72 73 74 81 91											
Ø" d ₁ EG UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
4	40	3.67	56	13	20	4	3	3	3.05	● 110946			
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	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

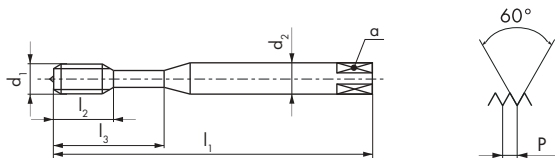


Z370VS-3

Z370VS-3



Z370VS-3



Ø d EG UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm			
4	40	3.67	56	6.5	20	4(h9)	3	3	3	3.05
6	32	4.53	70	9	25	6	4.9	3	3	3.75
8	32	5.19	70	9	25	6	4.9	3	3	4.45

ID


























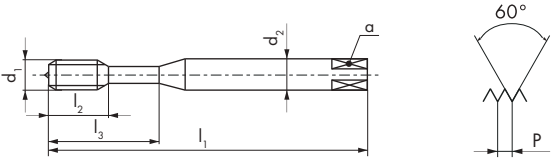






- 165126
- 165127
- 165128



PM



aero

										SA320-4	SA350-3	TL320VS-4	TL351VS-3																																																																																										
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>SA320-4  15 16 52 64</p> <p>SA350-3  R15 15 16 52 64</p> </div> <div style="width: 50%; text-align: center;">     </div> </div>										<div style="display: flex; justify-content: space-around;">     </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"></div> <div style="text-align: center;"> < 1.5 x D</div> <div style="text-align: center;"></div> <div style="text-align: center;"> < 2 x D</div> </div>																																																																																													
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>TL320VS-4  VS 41 42</p> <p>TL351VS-3  R15  VS 41 42</p> </div> <div style="width: 50%; text-align: center;">     </div> </div>										<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> B 4 x P</div> <div style="text-align: center;"> C 2.5 x P</div> <div style="text-align: center;"> B 4 x P</div> <div style="text-align: center;"> C 2.5 x P</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">3B</div> <div style="text-align: center;">3B</div> <div style="text-align: center;">3B</div> <div style="text-align: center;">3B</div> </div>																																																																																													
										<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Ø" d₁ EG UNC</th> <th>P TPI</th> <th>d₁ mm</th> <th>l₁ mm</th> <th>l₂ mm</th> <th>l₃ mm</th> <th>d₂ mm</th> <th>a mm</th> <th></th> <th></th> <th>ID</th> <th>ID</th> <th>ID</th> <th>ID</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>40</td> <td>3.67</td> <td>56</td> <td>13</td> <td></td> <td>4</td> <td>3</td> <td>3</td> <td>3.05</td> <td>● 149073</td> <td>● 149075</td> <td></td> <td>● 152031</td> </tr> <tr> <td>6</td> <td>32</td> <td>4.53</td> <td>70</td> <td>15</td> <td></td> <td>6</td> <td>4.9</td> <td>3</td> <td>3.75</td> <td>● 149121</td> <td>● 149123</td> <td>* 152040</td> <td>● 152041</td> </tr> <tr> <td>8</td> <td>32</td> <td>5.19</td> <td>70</td> <td>15</td> <td></td> <td>6</td> <td>4.9</td> <td>3</td> <td>4.45</td> <td>● 149170</td> <td>● 149172</td> <td></td> <td>● 152053</td> </tr> <tr> <td>1/4</td> <td>20</td> <td>8</td> <td>90</td> <td>18</td> <td>29</td> <td>8</td> <td>6.2</td> <td>3</td> <td>6.7</td> <td>● 149284</td> <td>● 149286</td> <td>* 152073</td> <td>● 152074</td> </tr> <tr> <td>5/16</td> <td>18</td> <td>9.77</td> <td>100</td> <td>20</td> <td>33</td> <td>10</td> <td>8</td> <td>3</td> <td>8.4</td> <td></td> <td>* 149360</td> <td></td> <td></td> </tr> </tbody> </table>										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	ID	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		
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	ID	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



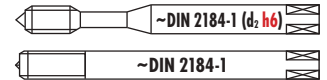
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											3B	3B	3B	3B
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6	40	4.33	63	14	21	4.5	3.4	3	3.7	● 118879				
8	36	5.08	70	15	25	6	4.9	3	4.4	● 118882				
10	32	5.85	80	17	30	6	4.9	3	5.1	● 104941				
1/4	28	7.52	90	20	35	8	6.2	3	6.65	● 110234				
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" 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			
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

EG UNF ASME B18.29.1



PM



										Z370VS-3	S320VS-4	S360VS-3	SA390-3
Z370VS-3	R45	VS	CLASSIC	14	15	21	22	23	24				
Z370VS-3	R45	VS	SYNCHRO	13	14	15	21	22	23				
S320VS-4		VS		13	15	16	22	23	24				
S360VS-3	R35	VS		13	15	16	22	23	24				
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	l ₃ 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			



PM



aero

SA320-4



15 16 52 64

SA350-3

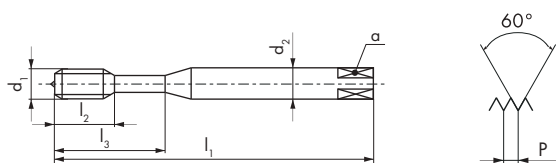


15 16 52 64

TL351VS-3



41 42



SA320-4

SA350-3

TL351VS-3



< 1.5 x D

< 2 x D



< 2 x D



4 x P



2.5 x P



2.5 x P

3B

3B

3B

Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	5.85	80	15	23	6	4.9	3	5.1
1/4	28	7.52	90	18	29	8	6.2	3	6.65
5/16	24	9.31	90	20	31	9	7	3	8.2

ID	ID	ID
● 149190	● 149192	● 148008
● 146099	● 149268	● 148014
● 149336	● 149338	● 148021

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 sitúa 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
- lubricante 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

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.

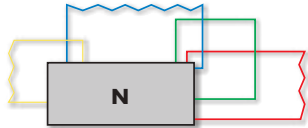
Chip accumulation

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)	MF	P	V _c (m/min)	n (U/min)	MF	P	V _c (m/min)	n (U/min)	UN-8	P	V _c (m/min)	n (U/min)
30	3.5	7.9	84	22	1.5	8.0	116	45	1.5	6.9	49	1 1/4"	8	7.8	77
33	3.5	7.7	74	24	1.5	8.0	106	45	2.0	6.9	49	1 3/8"	8	7.6	69
36	4.0	7.5	66	26	1.5	7.9	97	48	1.5	6.6	44	1 1/2"	8	7.3	62
39	4.0	7.3	60	28	1.5	7.9	90	48	2.0	6.6	44	1 5/8"	8	7.1	55
42	4.5	7.1	54	30	1.5	7.9	84	48	3.0	6.6	44	1 3/4"	8	6.9	49
45	4.5	6.9	49	30	2.0	7.9	84	48	4.0	6.6	44	1 7/8"	8	6.7	45
48	5.0	6.6	44	32	1.5	7.8	77	50	1.5	6.5	41	2"	8	6.4	40
52	5.0	6.4	39	32	2.0	7.8	77	52	1.5	6.4	39	2 1/8"	8	6.4	38
56	5.5	6.1	35	33	1.5	7.7	74	52	3.0	6.4	39	2 1/4"	8	6.1	34
60	5.5	5.8	31	33	2.0	7.7	74	55	1.5	6.2	36	2 1/2"	8	5.6	28
64	6.0	5.5	28	34	1.5	7.6	71	56	4.0	6.1	35				
68	6.0	5.2	25	35	1.5	7.6	69	60	2.0	5.8	31				
				36	1.5	7.5	66	64	4.0	5.5	28				
				36	2.0	7.5	66	68	4.0	5.2	25				
				36	3.0	7.5	66	72	6.0	5.0	22				
				38	1.5	7.3	62	76	6.0	4.7	20				
				40	1.5	7.2	57	80	2.0	4.4	18				
				40	2.0	7.2	57	80	4.0	4.4	18				
				42	1.5	7.1	54	80	6.0	4.4	18				
				42	2.0	7.1	54	90	6.0	3.7	13				
				42	3.0	7.1	54	100	6.0	3.0	10				
				42	4.0	7.1	54	110	6.0	2.5	7				
												G	P	V_c	n
													TPI	(m/min)	(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

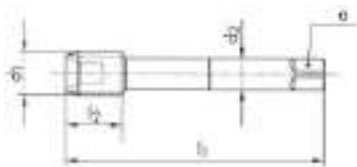




N470V-4

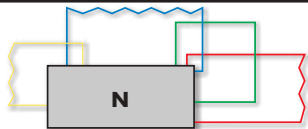


11 12 13 14 21 32

N470V-4



ϕd_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

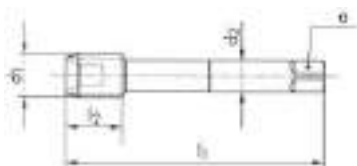




N470V-3



11 12 13 14 21 32

N470V-3

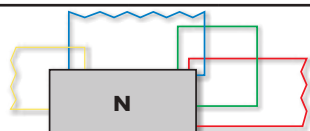


Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID
△ 22	1.5	125	28	18	14.5	4	20.5	* 102526
△ 26	1.5	140	30	18	14.5	4	24.5	* 102529
△ 28	1.5	140	30	20	16	4	26.5	* 102530
30	1.5	160	32	22	18	5	28.5	* 102531
34	1.5	160	26	22	18	5	32.5	* 102537
35	1.5	175	28	25	20	5	33.5	* 102538
36	2	175	35	25	20	5	34	● 102540
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!



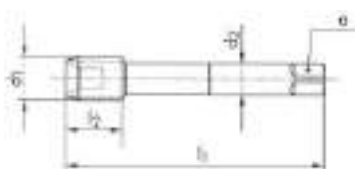


N470V-3



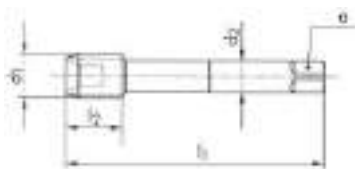
11 12 13 14 21 32

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



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 trabajar.
- Para los materiales de virutas cortas, la profundidad de la rosca a realizar no debe superar $1.8 \times D$ ($2 \times D$ para N5952).
- Para los materiales de virutas cortas, la profundidad de la rosca a realizar no debe superar $1.2 \times D$.
- La lubricación es la misma.

Velocidad de corte

Si las máquinas lo permiten, es preferible trabajar 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)

Grupos de materiales	Vc (m/min)	Ø y números de revoluciones/min										
		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Aceros hasta 500 N/mm ²	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Aceros desde 500 N/mm ²	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)

Material groups	Vc (m/min)	Speeds for different diameters										
		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Steels up to 500 N/mm ²	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Steels over 500 N/mm ²	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	
$\emptyset d_1$ 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			
$\emptyset d_1$ 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			
$\emptyset d_1$ 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			
$\emptyset d_1$ 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



N5951



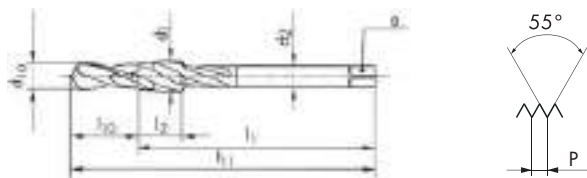
2B



$\emptyset'' d_1$ UNC	P TPI	d_1 mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm
6	32	3.5	66	16	4	3	2.8	10
10	24	4.82	75.5	18	4.5	3.4	3.86	12.5
1/4	20	6.35	81	20	7	5.5	5.15	14
1/2	13	12.7	106	16	9	7	10.85	25

ID

- ★ 104601
- 104598
- 104597
- ★ 104596



$\emptyset'' d_1$ G	P TPI	d_1 mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm
1/8	28	9.72	93	12	7	5.5	8.75	20
1/4	19	13.15	106	14	11	9	11.75	25
3/8	19	16.66	123	16	12	9	15.25	32
1/2	14	20.95	132	18	16	12	19	36

ID

- 104567
- 104566
- 104569
- 104565



$\emptyset d_1$ PG	P TPI	d_1 mm	l_{11} mm	l_2 mm	d_2 mm	a mm	d_{10} mm	l_{10} mm
16	18	22.5	142	20	18	14.5	21.25	40
29	16	37	203	28	28	22	35.65	63

ID

- 104591
- 104593

ROSCADO POR LAMINACIÓN THREAD FORMING

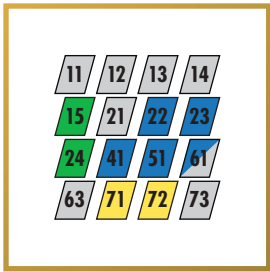


A PETICIÓN

Ejecuciones especiales con lóbulos poligonales adaptados para aplicaciones específicas.

ON REQUEST

Special executions with adapted polygon lobes for specific applications.

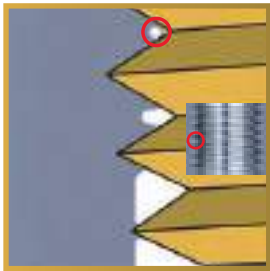


Campo de aplicación

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.

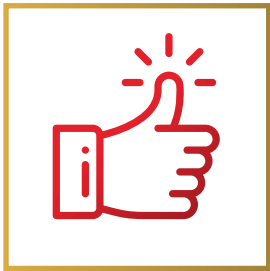


Proceso del laminado

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.
- Óptimo 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.

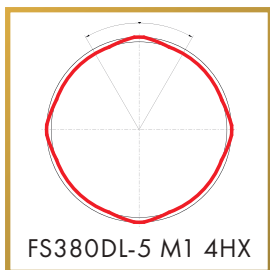


Lubrificación

La laminación del material ocasiona importantes fuerzas de fricción, 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.

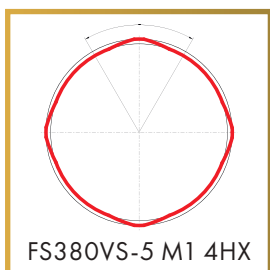


Macho de laminación FS-DL

Macho de laminación universal a 4 puntas para pequeños roscados de $\varnothing \geq 1 - < 3$ 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 $\varnothing \geq 1 - < 3$ mm, in all cold forming materials. With "DLC" wear-protective coating with excellent lubrication and sliding properties. For stainless steels, pure copper, etc.



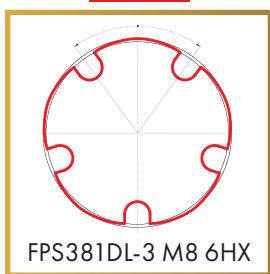
Macho de laminación FS-VS

Macho de laminación universal a 4 puntas para pequeños roscados de $\varnothing \geq 1 - < 3$ 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 $\varnothing \geq 1 - < 3$ mm, in all cold forming materials. With DC "VS" tool wear protective coating with high sliding properties.

NEW

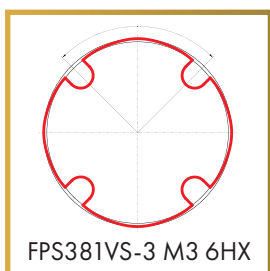


Macho de laminación FPS-DL

Para $\geq \varnothing 3$ 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 $\varnothing \geq 3$ 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.

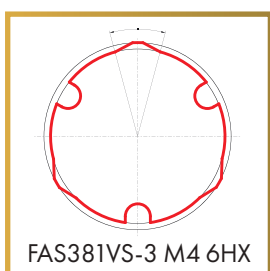


Macho de laminación FPS-VS

Para $\geq \varnothing 3$ 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 $\varnothing \geq 3$ 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.



Macho de laminación FAS-VS

Para $\varnothing \geq 3$ 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 $\varnothing \geq 3$ 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 lubricación desde Ø 3 mm

El lubricante está 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 lubricación

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).

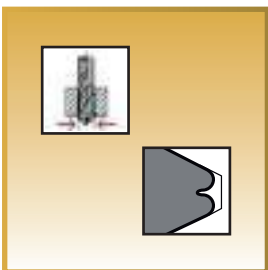


Con lubricación interna

Recomendado particularmente para agujeros profundos y trabajos en horizontal.

With internal coolant supply

Highly recommended for deeper threads and for horizontal working.

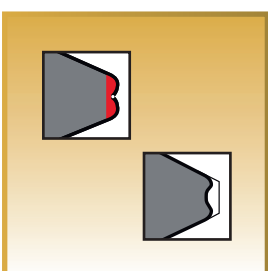


Perfil del roscado correcto

Un taladro previo preciso es fundamental para realizar un roscado conforme a las normas. Para materiales con fuerte coeficiente de alargamiento o roscado profundo $> 2 \times D$, 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 $> 2 \times D$, we recommend increasing the core hole \varnothing 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

DC Machos de laminación

DC Thread formers

Ejemplo - Example



Polígono estándar $\lt; \varnothing 3 \text{ mm}$	Standard polygon form $\lt; \varnothing 3 \text{ mm}$	FS						
Polígono pasivo $\geq \varnothing 3 \text{ mm}$	Passive polygon form $\geq \varnothing 3 \text{ mm}$	FPS						
Polígono activo $\geq \varnothing 3 \text{ mm}$	Active polygon form $\geq \varnothing 3 \text{ mm}$	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 lubricación	Without lubrication grooves					0		
Con ranuras de lubricación	With lubrication grooves					1		
Lubricación 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

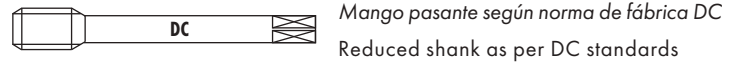
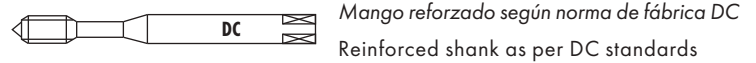
PICTOGRAMAS – PICTOGRAPHS



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

12	
1.0037	Si37-2 (S235JR)
1.0050	Si50-2 (E295)
1.0060	Si60-2 (E335)
1.5919	15CrNi6
1.7131	16MnCr5

22	
1.4301	X5CrNi18-10
1.4406	X2CrNiMoN17-12-2
1.4435	X2CrNiMo18-14-3
1.4541	X6CrNiTi18-10
1.4571	X6CrNiMoTi17-12-2



Extra-largo
Extra-long



HSSE-PM
HSSE-PM



Macho de roscar por laminación
Thread former



Macho de roscar por laminación con ranuras de lubricación
Thread former with lubrication grooves



Lubricación interna con salida frontal, sobre pedido
Internal coolant with frontal outflow, on request



Lubricación 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

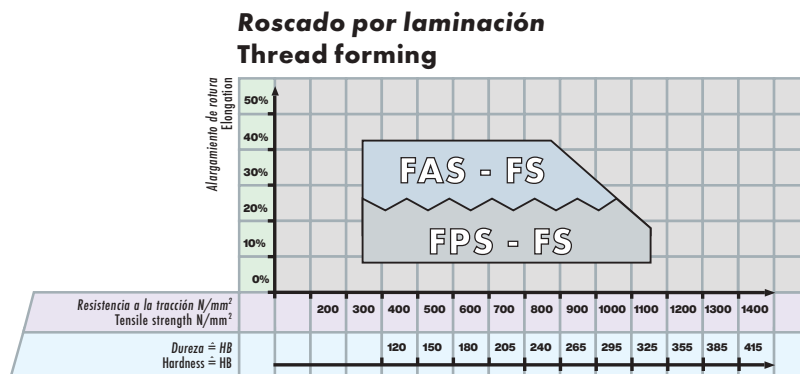


Disponible a corto plazo
Available at short notice



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

TABLA DE UTILIZACIÓN — APPLICATION CHART



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/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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 página:
From page:

M
MF
UNC
UNF
G

		FS		FPS					FAS			
		254	255	256	256	256	256	258	259	259	260	
								262		262		
								263		263		
								264		264		
								265		265		
		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										11
12	12 - 20	20 - 40										12
13	12 - 20	20 - 30										13
14	12 - 20	20 - 30										14
15	6 - 12	10 - 15										15
16												16
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18												18
21	12 - 20	10 - 20										21
22	6 - 12	10 - 15										22
23	6 - 12	6 - 12										23
24	6 - 12	6 - 12										24
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32												32
41	12 - 20	10 - 20										41
42												42
51	6 - 12	10 - 15										51
52												52
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61	12 - 20	10 - 20										61
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63	12 - 20	20 - 30										63
64	12 - 20	20 - 30										64
71	12 - 20	20 - 40										71
72	12 - 20	20 - 40										72
73	12 - 20	20 - 40										73
74												74
81												81
82												82
83												83
91	12 - 20	20 - 40										91
92	12 - 20	20 - 40										92
93	12 - 20	20 - 40										93
94	12 - 20	20 - 40										94

Vc
(m/min)
Guide Line
Ø 1 - 2.8 mm Ø 2.8 - 20 mm

11	12 - 20	20 - 40
12	12 - 20	20 - 40
13	12 - 20	20 - 30
14	12 - 20	20 - 30
15	6 - 12	10 - 15
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22	6 - 12	10 - 15
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93	12 - 20	20 - 40
94	12 - 20	20 - 40

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A Óptima con aire
Optimal with air

A Aceptable con aire
Suitable with air

D Limitada
Limited
























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



					FS		FPS	
Características Characteristics					VS E 1.5 x P C 2.5 x P	DLC E 1.5 x P C 2.5 x P	DLC DLC	VS VS
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	<i>DIN largo</i> DIN long	~DIN 2174	254	255	256	256
M	6GX	ISO DIN 13	<i>DIN largo</i> DIN long	~DIN 2174	254	255		256
M	6HX	ISO DIN 13	<i>Extra-largo</i> Extra-long	DC				
MF	6HX	ISO DIN 13	<i>DIN largo</i> DIN long	~DIN 2174				262
UNC	2BX	ASME B1.1	<i>DIN largo</i> DIN long	~DIN 2184-1	263			263
UNF	2BX	ASME B1.1	<i>DIN largo</i> DIN long	~DIN 2184-1	264			264
								FPS481VS-3
M	6HX	ISO DIN 13	<i>DIN largo</i> DIN long	~DIN 2174				257
M	6GX	ISO DIN 13	<i>DIN largo</i> DIN long	~DIN 2174				
M	6HX	ISO DIN 13	<i>Extra-largo</i> Extra-long	DC				
MF	6HX	ISO DIN 13	<i>DIN largo</i> DIN long	~DIN 2174				262
UNC	2BX	ASME B1.1	<i>DIN largo</i> DIN long	~DIN 2184-1				
UNF	2BX	ASME B1.1	<i>DIN largo</i> DIN long	~DIN 2184-1				
G <small>(BSP)</small>		DIN EN ISO 228	<i>DIN largo</i> DIN long	~DIN 2189				265

Directorio — Machos para roscado por laminación
Directory — Machine thread formers



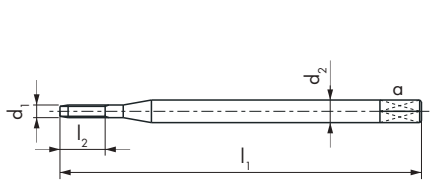
FPS			FAS			
	 VS	 VS	 		 VS	 VS
VS			VS	VS		
			 			
						
FPS384VS-3	FPS581VS-3	FPS584VS-3	FAS380VS-3 FAS381VS-3	FAS384VS-3	FAS581VS-3	FAS584VS-3
258			259	260		
			259			
	257	258			261	261
			262			
			263			
			264			
FPS484VS-3	FPS681VS-3	FPS684VS-3	FAS481VS-3	FAS484VS-3	FAS681VS-3	FAS684VS-3
258			259	260		
			259			
	257	258			261	261
			262			
			265			

FS FORMING

FS380VS-5

11 12 13 14
21
FS380VS-3

11 12 13 14
21
FS380VS-5
FS380VS-3
FS380VS-3
FS380VS-3

6HX
6HX
6HX
6GX


Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm	4HX Tol. 6HX	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

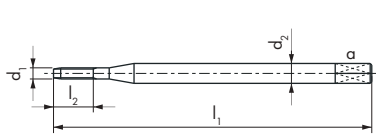
FS FORMING

FS380DL-5

DLC

FS380DL-3

DLC

FS380DL-5
FS380DL-3
FS380DL-3
FS380DL-3

6HX
6HX
6HX
6GX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	$\frac{d_1}{P}$ 4HX Tol. 6HX	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		

 $\leq M1.5$
4HX

FPS FORMING

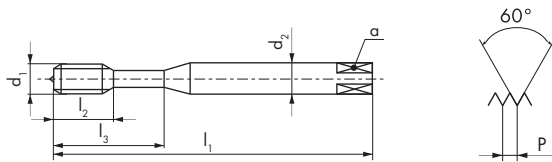
FPS380DL-3		DLC	63 64 71 72 73 91 92 94
FPS381DL-3		DLC	63 64 71 72 73 91 92 94
FPS380VS-3		VS	11 12 13 14
FPS381VS-3		VS	11 12 13 14 15

FPS380DL-3	FPS381DL-3	FPS380VS-3	FPS381VS-3
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NEW

NEW



6HX

6HX

6HX

6HX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX Tol.
3	0.5	56	12	18	3.5	2.7	2.8 +0.03
3.5	0.6	56	13	20	4	3	3.25 +0.03
4	0.7	63	14	21	4.5	3.4	3.7 +0.03
5	0.8	70	15	25	6	4.9	4.65 +0.03
6	1	80	17	30	6	4.9	5.55 +0.05
8	1.25	90	20	35	8	6.2	7.4 +0.05
10	1.5	100	22	39	10	8	9.3 +0.05

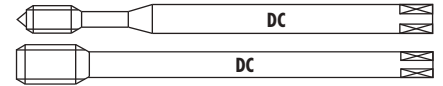
ID	ID	ID	ID
● 170553	● 182038	● 166614	● 166616
● 175347	● 182623	● 166620	● 166622
● 170554	● 182039	● 166627	● 166629
● 182619	● 178343	● 166635	● 166637
● 182620	● 171112	● 166644	● 166646
● 182621	● 179144	● 166654	● 166656
● 182622	● 171113	● 166664	● 166666

6GX

6GX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX Tol.
3	0.5	56	12	18	3.5	2.7	2.8 +0.03
3.5	0.6	56	13	20	4	3	3.25 +0.03
4	0.7	63	14	21	4.5	3.4	3.7 +0.03
5	0.8	70	15	25	6	4.9	4.65 +0.03
6	1	80	17	30	6	4.9	5.55 +0.05
8	1.25	90	20	35	8	6.2	7.4 +0.05
10	1.5	100	22	39	10	8	9.3 +0.05

ID	6H + mm	ID	6H + mm
● 166697	0.020	● 166617	0.020
● 166687	0.021	● 166623	0.021
● 166688	0.022	● 166630	0.022
● 166689	0.024	● 166638	0.024
● 166686	0.026	● 166647	0.026
● 166740	0.028	● 166657	0.028
● 166739	0.032	● 166667	0.032



FPS FORMING

FPS481VS-3



VS

11 12 13 14
15

FPS581VS-3



EL VS

11 12 13 14
15

FPS681VS-3



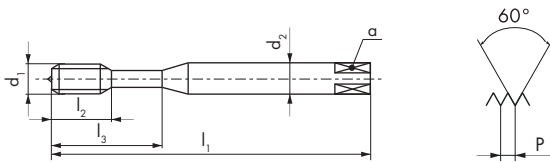
EL VS

11 12 13 14
15

FPS481VS-3

FPS581VS-3

FPS681VS-3



6HX

6HX

6HX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	6HX Tol.
12	1.75	110	24	9	7	11.2 +0.05
14	2	110	28	11	9	13.1 +0.05
16	2	110	30	12	9	15.1 +0.05
20	2.5	140	36	16	12	18.85 +0.05

ID

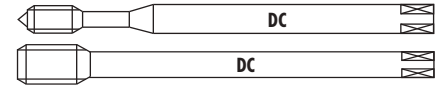
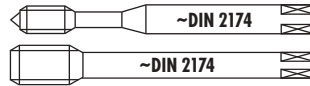
- 166673
- 166678
- 166683
- 168713

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX Tol.
3	0.5	100	12	18	3.5	2.7	2.8 +0.03
4	0.7	125	14	21	4.5	3.4	3.7 +0.03
5	0.8	140	15	25	6	4.9	4.65 +0.03
6	1	160	17	30	6	4.9	5.55 +0.05
8	1.25	180	20	35	8	6.2	7.4 +0.05
10	1.5	200	22	39	10	8	9.3 +0.05
12	1.75	224	24		9	7	11.2 +0.05

ID

ID

- 172824
- 172826
- 172828
- 172830
- 172832
- 172834
- 172836



FPS FORMING

FPS384VS-3



11/12/13/14
15

FPS484VS-3



11/12/13/14
15

FPS584VS-3



11/12/13/14
15

FPS684VS-3



11/12/13/14
15

FPS384VS-3

FPS484VS-3

FPS584VS-3

FPS684VS-3

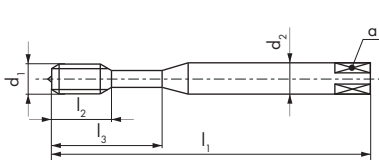


6HX

6HX

6HX

6HX



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm	6HX Tol.
3	0.5	56	12	18	3.5	2.7	2.8 +0.03
4	0.7	63	14	21	4.5	3.4	3.7 +0.03
5	0.8	70	15	25	6	4.9	4.65 +0.03
6	1	80	17	30	6	4.9	5.55 +0.05
8	1.25	90	20	35	8	6.2	7.4 +0.05
10	1.5	100	22	39	10	8	9.3 +0.05
12	1.75	110	24		9	7	11.2 +0.05
14	2	110	28		11	9	13.1 +0.05
16	2	110	30		12	9	15.1 +0.05

ID

ID

- 166737
- 166738
- 166640
- 166650
- 166660
- 166670

- 166675
- 166680
- 166685

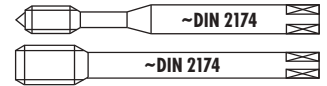
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm	6HX Tol.
3	0.5	100	12	18	3.5	2.7	2.8 +0.03
4	0.7	125	14	21	4.5	3.4	3.7 +0.03
5	0.8	140	15	25	6	4.9	4.65 +0.03
6	1	160	17	30	6	4.9	5.55 +0.05
8	1.25	180	20	35	8	6.2	7.4 +0.05
10	1.5	200	22	39	10	8	9.3 +0.05
12	1.75	224	24		9	7	11.2 +0.05

ID

ID

- 172763
- 172766
- 172769
- 172772
- 172775
- 172778

- 172781



FAS FORMING

FAS380VS-3



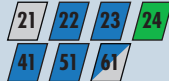
VS



FAS381VS-3



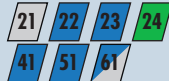
VS



FAS481VS-3



VS



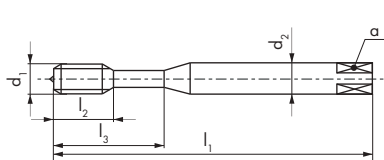
FAS380VS-3



FAS381VS-3



FAS481VS-3



6HX

6HX

6HX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.	
3	0.5	56	12	18	3.5	2.7	2.8	+ 0.03
3.5	0.6	56	13	20	4	3	3.25	+ 0.03
4	0.7	63	14	21	4.5	3.4	3.7	+ 0.03
5	0.8	70	15	25	6	4.9	4.65	+ 0.03
6	1	80	17	30	6	4.9	5.55	+ 0.05
8	1.25	90	20	35	8	6.2	7.4	+ 0.05
10	1.5	100	22	39	10	8	9.3	+ 0.05
12	1.75	110	24		9	7	11.2	+ 0.05
14	2	110	28		11	9	13.1	+ 0.05
16	2	110	30		12	9	15.1	+ 0.05
20	2.5	140	36		16	12	18.85	+ 0.05

ID

ID

ID

● 170603	● 166612	
● 170605	● 166618	
● 170607	● 166624	
● 170609	● 166632	
● 170611	● 166641	
● 170616	● 166651	
● 170618	● 166661	
		● 166671
		● 166676
		● 166681
		● 168711

6GX

6GX

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.	
3	0.5	56	12	18	3.5	2.7	2.8	+ 0.03
3.5	0.6	56	13	20	4	3	3.25	+ 0.03
4	0.7	63	14	21	4.5	3.4	3.7	+ 0.03
5	0.8	70	15	25	6	4.9	4.65	+ 0.03
6	1	80	17	30	6	4.9	5.55	+ 0.05
8	1.25	90	20	35	8	6.2	7.4	+ 0.05
10	1.5	100	22	39	10	8	9.3	+ 0.05
12	1.75	110	24		9	7	11.2	+ 0.05
14	2	110	28		11	9	13.1	+ 0.05
16	2	110	30		12	9	15.1	+ 0.05

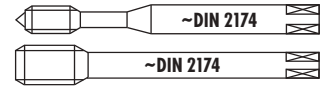
ID

6H

ID

6H

● 166703	0.020		
● 166704	0.021		
● 166705	0.022		
● 166706	0.024		
● 166707	0.026		
● 166708	0.028		
● 166709	0.032		
		● 166710	0.034
		★ 166711	0.038
		● 166712	0.038



FAS FORMING

FAS384VS-3

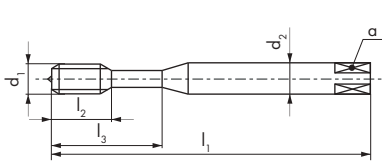


FAS484VS-3



FAS384VS-3

FAS484VS-3



$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX Tol.	
3	0.5	56	12	18	3.5	2.7	2.8	+ 0.03
4	0.7	63	14	21	4.5	3.4	3.7	+ 0.03
5	0.8	70	15	25	6	4.9	4.65	+ 0.03
6	1	80	17	30	6	4.9	5.55	+ 0.05
8	1.25	90	20	35	8	6.2	7.4	+ 0.05
10	1.5	100	22	39	10	8	9.3	+ 0.05
12	1.75	110	24		9	7	11.2	+ 0.05
14	2	110	28		11	9	13.1	+ 0.05
16	2	110	30		12	9	15.1	+ 0.05

ID

ID

● 166741

● 166742

● 166690

● 166691

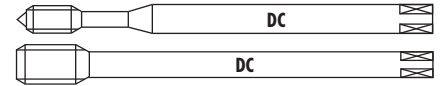
● 166692

● 166693

● 166694

● 166695

● 166696



FAS FORMING

FAS581VS-3



FAS681VS-3



FAS584VS-3



FAS684VS-3



FAS581VS-3

FAS681VS-3

FAS584VS-3

FAS684VS-3

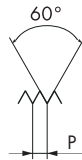
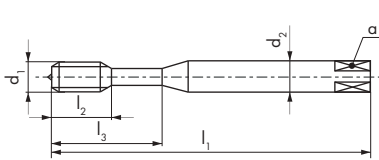


6HX

6HX

6HX

6HX



$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX Tol.
3	0.5	100	12	18	3.5	2.7	2.8 + 0.03
4	0.7	125	14	21	4.5	3.4	3.7 + 0.03
5	0.8	140	15	25	6	4.9	4.65 + 0.03
6	1	160	17	30	6	4.9	5.55 + 0.05
8	1.25	180	20	35	8	6.2	7.4 + 0.05
10	1.5	200	22	39	10	8	9.3 + 0.05
12	1.75	224	24		9	7	11.2 + 0.05

ID

ID

ID

ID

● 172784

● 172805

● 172787

● 172808

● 172790

● 172811

● 172793

● 172814

● 172796

● 172817

● 172799

● 172820

● 172802

● 172822

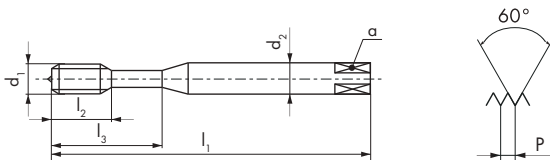
FPS FAS		FORMING						FPS381VS-3	FPS481VS-3	FAS381VS-3	FAS481VS-3
FPS381VS-3		VS	11	12	13	14	15				
FPS481VS-3		VS	11	12	13	14	15				
FAS381VS-3		VS	21	22	23	24	41	51	61		
FAS481VS-3		VS	21	22	23	24	41	51	61		
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	ϕ 6HX Tol.	ID	ID	ID	ID
4	0.5	63	14	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

FS FPS FORMING FAS

FS380VS-3 VS

FPS381VS-3 VS

FAS381VS-3 VS



\emptyset " d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm	\emptyset 2BX Tol.
2	56	2.18	45	9		2.8	2.1	1.95 + 0.02
4	40	2.84	56	12	18	3.5	2.7	2.55 + 0.03
6	32	3.5	56	13	20	4	3	3.15 + 0.03
8	32	4.16	63	14	21	4.5	3.4	3.8 + 0.03
10	24	4.82	70	15	25	6	4.9	4.35 + 0.05
1/4	20	6.35	80	17	30	7	5.5	5.75 + 0.05

FS380VS-3



2BX

ID

● 157285

FPS381VS-3



2BX

ID

● 170063

● 166713

● 166714

● 166715

● 166716

FAS381VS-3



2BX

ID

● 170065

● 166725

● 166726

● 166727

● 166728

FS FPS FORMING FAS										FS380VS-5	FPS381VS-3	FAS381VS-3
FS380VS-5 VS												
FPS381VS-3 VS												
FAS381VS-3 VS												
										 2BX	 2BX	 2BX
$\emptyset'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	$\frac{d_1}{P}$	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



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						
$\frac{\text{Ø}'' d_1}{G}$	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 \varnothing 3 mm
with spiral entry from \varnothing 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 \varnothing 2 mm
with spiral entry from \varnothing 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 \varnothing 2 mm
with spiral entry from \varnothing 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 \varnothing 3 mm
with spiral entry from \varnothing 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 de 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.

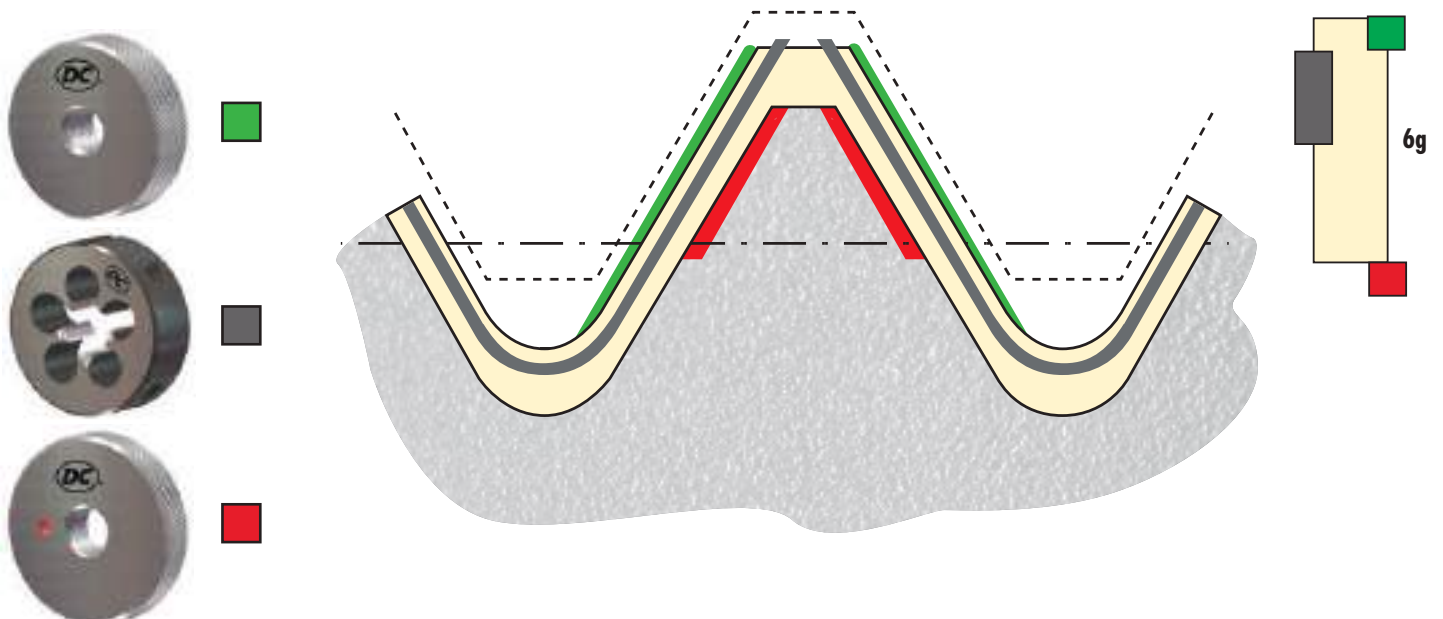
Material designation	Material Number	Cutting speed m/min (guide line)	Cutting fluid	Rake angle	Type of die
General engineering steels	St37-2, St50-2	8 - 12	Cutting oil	17 - 22°	N5...
Free-cutting steels	9SMn28, 9SMnPb28	10 - 14	Cutting oil	17 - 22°	N5...
Case hardening steels	C15, Ck15, 16MnCr5	6 - 10	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

DC Cojinetes de roscar



Ejemplo

Z	51	20	LL	SP
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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).

DC Dies



Example

Z	51	20	LL	SP
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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 American 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

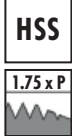

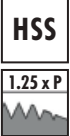
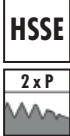


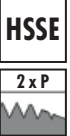




















MS: HSS, lapped, chamfer length 1.25 x P

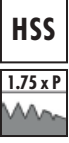
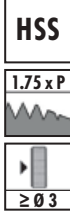


Z: HSSE, nitrided from Ø 3 mm (P = 0.5 mm),
chamfer length 2 x P, with spiral entry from Ø 2 mm

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								
								
		$\geq \emptyset 3$	$\geq \emptyset 3$	$\geq \emptyset 3$	$\geq \emptyset 2$	$\geq \emptyset 2$	$\geq \emptyset 3$	$\geq \emptyset 2$
								
								
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	
	
	
N5310	N5420
288	289
288	
289	
289	

Pictogramas - Pictographs










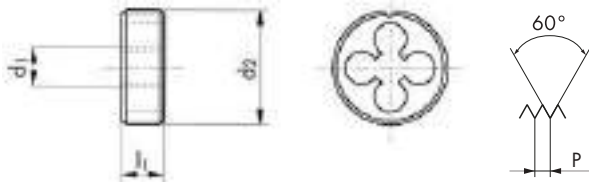









	HSS HSS
	HSSE HSSE
	1.25 hilos de entrada 1.25 chamfered threads
	1.75 hilos de entrada 1.75 chamfered threads
	2 hilos de entrada 2 chamfered threads
	Entrada en hélice desde Ø 3 mm Spiral entry from Ø 3 mm
	Entrada en hélice de los 2 lados desde Ø 3 mm Spiral entry on both sides from Ø 3 mm
	Números de ranuras Number of flutes
	Diámetro del torneado Turned diameters
	Nitruración ($d1 \geq 3 \text{ mm}$, $P \geq 0.5 \text{ mm}$) Nitrided ($d1 \geq 3 \text{ mm}$, $P \geq 0.5 \text{ mm}$)
	Cojinete con 2 agujeros de fijación Die with 2 securing holes
	Tolerancia 6g Tolerance 6g
	Tolerancia 6e Tolerance 6e
	Tolerancia "Medium Class" Tolerance "Medium Class"
	Tolerancia A Tolerance A
	Rosca cónica 1:16 (NPT - NPTF - R) Tapered thread 1:16 (NPT - NPTF - R)
	Rosca izquierda Left-hand thread









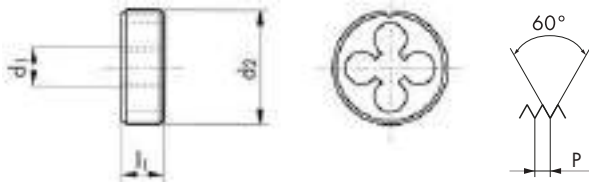





N5110								N5110		N5120		N5120 LH		N5120	
								6g		6g		6g		6e	
$\emptyset d_1$ M	P mm	d_2 mm	l_1 mm					ID	ID	ID	ID	6g - mm			
1	0.25	16	5	3			0.97	● 103851							
1.1	0.25	16	5	3			1.07	● 124659							
1.2	0.25	16	5	3			1.17	● 103852							
1.4	0.3	16	5	3			1.36	● 103853							
1.6	0.35	16	5	3			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					



Z5120		Z5120 LL					Z5120	Z5120 LL			
				13	14	21					
				13	14	15	21				
							2 x P	2.25 x P	6g	6g	
$\emptyset d_1$ M	P mm	d_2 mm	l_1 mm	Z5120	Z5120LL	$\rightarrow 6g^c$	ID	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				





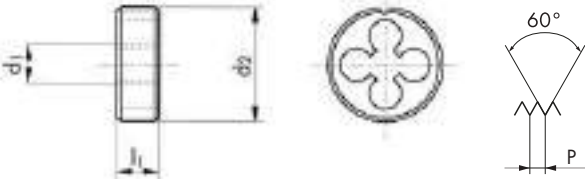






N5120								N5120	N5120 LH	N5120	Z5120	
Z5120												
								1.75 x P	1.75 x P	1.75 x P	2 x P	
								6g	6g	6e	6g	
$\emptyset d_1$ MF	P mm	d_2 mm	l_1 mm	N	Z	$\rightarrow 6g \leftarrow$	$\rightarrow 6e \leftarrow$	ID	ID	ID	6g - mm	ID
*2	0.25	16	5	4		1.93		● 103863				
*2.5	0.35	16	5	4		2.44		● 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				
* N5110								P 0.25 6h				

							N5120	N5120 LH	Z5120
N5120  									
N5120 LH   									
Z5120   									
							 	 	 
$\emptyset d_1$ MF	P mm	d_2 mm	l_1 mm	 N	 Z		ID	ID	ID
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		

						N5120	N5120 LH		
<p>N5120   </p> <p>N5120 LH    </p>									
									
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			



N5110							N5110	N5120		
N5120										
$\emptyset'' d_1$ UNC	P TPI	d_1 mm	d_2 mm	l_1 mm			ID	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		







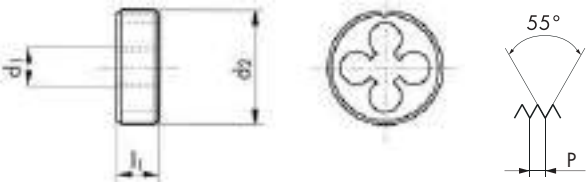






							N5110	N5120		
<p>N5110 </p> <p>N5120  </p>										
							 		 	
Ø" d ₁ UNF	P TPI	d ₁ mm	d ₂ mm	l ₁ mm			ID	ID		
0	80	1.52	16	5	3	1.47	● 103897			
1	72	1.85	16	5	3	1.79	● 103898			
2	64	2.18	16	5	4	2.12	● 103899			
3	56	2.51	16	5	4	2.44	● 103900			
4	48	2.84	16	5	4	2.77	● 103901			
5	44	3.17	20	5	4	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

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





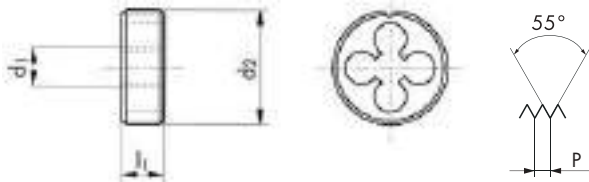
N5120							N5120			
Ø" d ₁ UNEF	P TPI	d ₁ mm	d ₂ mm	l ₁ mm	⊕	⚡ →2A←	ID			
12	32	5.48	20	7	4	5.39	● 104278			
1/4	32	6.35	20	7	4	6.25	● 104275			
5/16	32	7.93	25	9	4	7.84	● 104283			
3/8	32	9.52	30	11	4	9.42	● 104282			
7/16	28	11.11	30	11	5	11	● 104285			
1/2	28	12.7	38	10	5	12.59	● 104274			
9/16	24	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			

							N5120	N5120 LH		
<p>N5120  </p> <p>N5120 LH   </p>										
							 		 	
\varnothing'' G	P TPI	d ₁ mm	d ₂ mm	l ₁ mm			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)

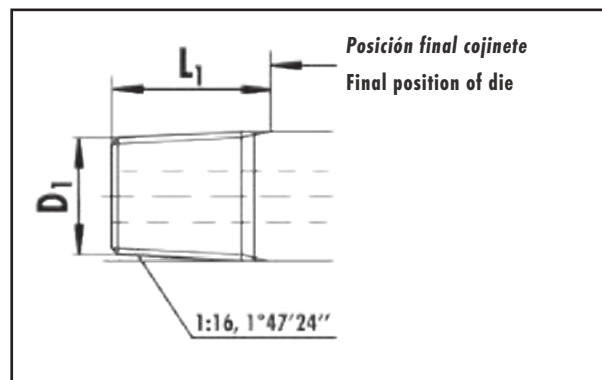
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






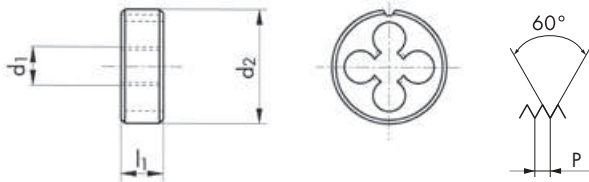
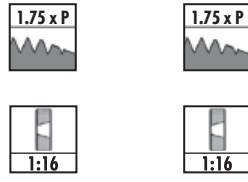

Z5120		NI	13 14 21	Z5120	MS5120	MS5120				
MS5120			62							
MS5120			62	 	 	 				
										
$\emptyset'' d_1$ G	P TPI	d ₁ mm	d ₂ mm	l ₁ mm	Z	MS	$\rightarrow A \leftarrow$	ID	ID	ID
1/8	28	9.72	30	11	5	5	9.62	● 104761		★ 142831
1/4	19	13.15	38	10	5	5	13.03	● 104760	● 101338	★ 142832
3/8	19	16.66	45	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

N5120					N5120
$\emptyset'' d_1$ 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

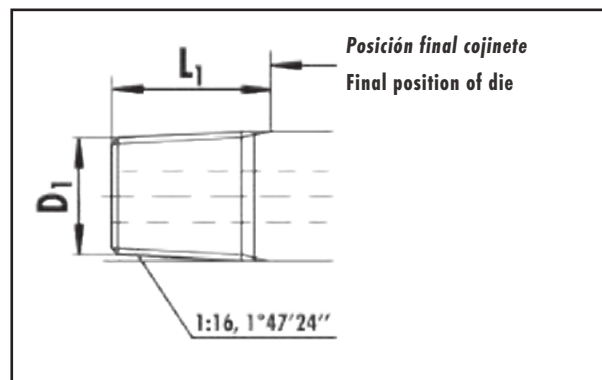
Valores orientativos de los diámetros de giro para las roscas R (en mm)
Guide values for turning diameters for R-threads (in mm)



\emptyset'' 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

<p>N5120    </p>					N5120	N5120		
<p>N5120    </p>					<p>NPT NPTF</p> 			
								
$\varnothing'' d_1$ 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)



\varnothing'' NPT	D_1 mini mm	D_1 maxi mm	D_1 (guide line) mm	L_1 (guide line) mm	\varnothing'' 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







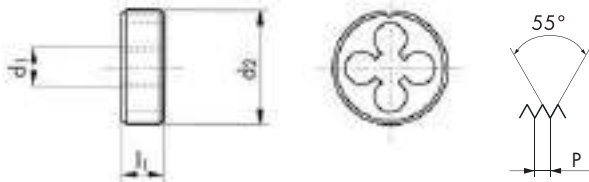



















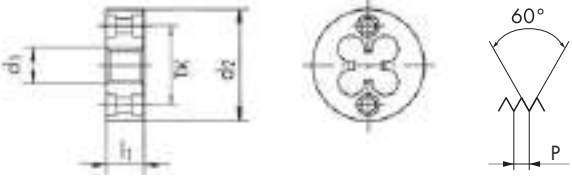









N5120							N5120	N5120			
							<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">PG</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">TR</div> </div>				
$\emptyset d_1$ PG	P TPI	d_1 mm	d_2 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!											
							<div style="border: 1px solid black; padding: 5px; text-align: center;">7e</div>				
$\emptyset d_1$ TR	P mm	d_2 mm	l_1 mm			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)

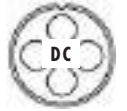
HSS




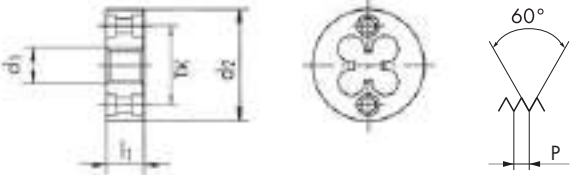







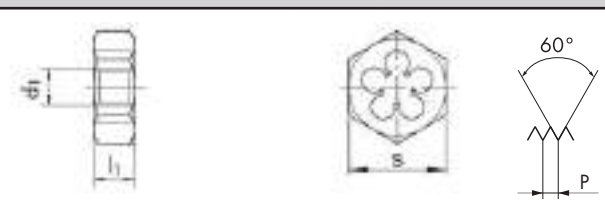







							N5120	N5120 LH		
<p>N5120  </p> <p>N5120 LH   </p>										
										
\emptyset'' W	d_1 TPI	d_1 mm	d_2 mm	l_1 mm			ID	ID		
1/8	40	3.17	20	5	4	3.09	● 104320			
5/32	32	3.96	20	7	4	3.88	● 104333			
3/16	24	4.76	20	7	4	4.66	● 104325			
1/4	20	6.35	20	7	4	6.24	● 104318			
5/16	18	7.93	25	9	4	7.82	● 104331			
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			

								N5220	N5220	Z5220	
<p>N5220   </p> <p>N5220   </p> <p>Z5220    </p>											
											
											
Ø d ₁ M	P mm	d ₂ mm	l ₁ mm		TK mm			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 



N5220   							N5220	
								
								
$\varnothing d_1$ MF	P mm	d_2 mm	l_1 mm		TK mm		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	

N5310						N5310						
										11	12	
												
$\emptyset d_1$ M	P mm	s mm	l_1 mm			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						
$\emptyset d_1$ MF	P mm	s mm	l_1 mm			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



							N5310	N5310		N5420		
N5310												
N5310												
N5420												
\emptyset " d ₁ G	P TPI	d ₁ mm	s mm	l ₁ mm			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					
\emptyset " d ₁ W	P TPI	d ₁ mm	s mm	l ₁ mm			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					
\emptyset d ₁ M	P mm	d ₂ mm	l ₁ mm				ID					
2.5	0.45	16	8	4	4	2.43	★ 104527					
3.5	0.6	16	9.5	4	4	3.41	★ 104530					
8	1.25	25	14	5	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.

Directorio - Tampones de roscas y calibres anillos de roscas
Directory - Screw thread plug and ring gauges

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			

Pictogramas - Pictographs

	"Pasa" "Go"
	"No pasa" "No-Go"
	"Pasa" / "No pasa" "Go" / "No-Go"
	Tolerancia 6H, "Pasa" Tolerance 6H, "Go"
	Tolerancia 6G, "Pasa" / "No pasa" Tolerance 6G, "Go" / "No-Go"
	Tolerancia 6g, "No pasa" Tolerance 6g, "No-Go"
	Rosca izquierda Left-hand thread

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			

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 nº 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.

		D5701-1	D5701-2	D5703	D5703 LH	D5703	
D5701-1	M1 - M1.4 = 						
D5703	M1 - M1.4 = 				 		
$\emptyset d_1$ M	P mm	ID	ID	ID	ID	ID	
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	D5704 LH	D5704	D5714	D5714	
D5704	M1 - M1.4 = 6h						
D5714	M1 - M1.4 = 6h		6g	6g LH	6e	6g	6e
Ø d ₁ M	P mm	ID	ID	ID	ID	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		
							
				 			
$\emptyset d_1$ 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			
							
							
$\emptyset d_1$ 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				









		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					

		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					

		D5701-1	D5703	D5704	D5714		
							
							
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		
							
							
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

		D5701-1	D5701-2	D5703	D5704	D5714	D5725
$\emptyset'' d_1$ G	P TPI	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	
$\emptyset d_1$ 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				
								
								
Ø d, 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, 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, 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						




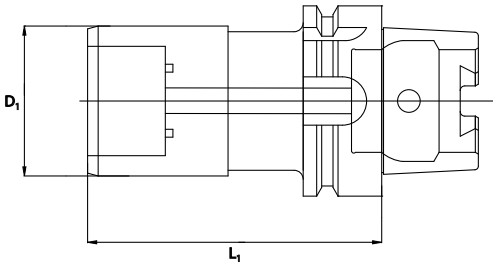











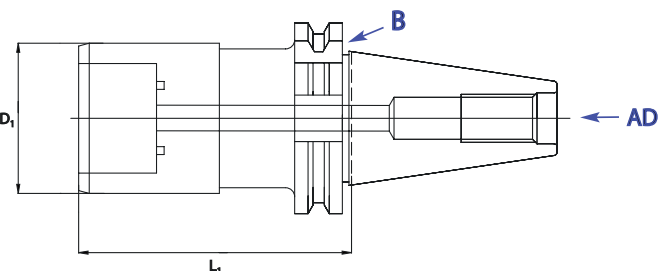








SRT 312 **DC** SYNCHRO



SRT Mandril de roscar con amortiguador axial

Tapping chucks with axial shock absorber

 Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per mescolature sincrone
Solo para roscado sincronizado
Только для rigid tapping

DIN 69 893 A	SRT-HSK63-312	SRT-HSK63-820	SRT-HSK63-1433			
<h1>HSK</h1>						
						
						
D₁ mm	L₁ mm					
		310				
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				SRT-BT40-312	SRT-BT40-820	SRT-BT40-1433
<h1>BT</h1>						
						
						
D₁ mm	L₁ mm					
		310				
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

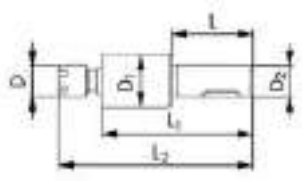
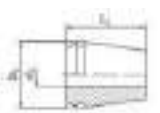



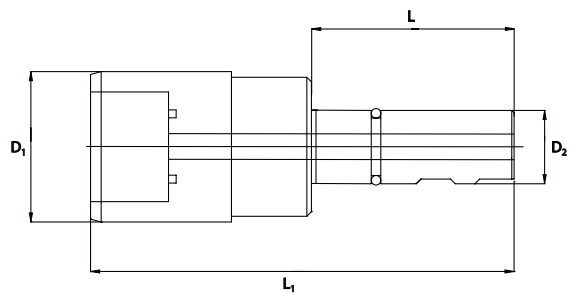






SYNCHRO Uniquement pour taraudage synchrone
 Nur für Synchronbearbeitung
 Only for rigid tapping
 Solo per mescolatura sincrona
 Solo para roscado sincronizado
 Только для rigid tapping

DIN 69 871 Form AD + B	SRT-SK40-312	SRT-SK40-820	SRT-SK40-1433																				
<h1>SK</h1>																							
	< 50 bar	< 50 bar	< 50 bar																				
<table border="1"> <thead> <tr> <th>D_1 mm</th> <th>L_1 mm</th> <th></th> <th></th> <th>310</th> </tr> </thead> <tbody> <tr> <td>M3 - M12</td> <td>36</td> <td>65</td> <td>SK40</td> <td>S1</td> </tr> <tr> <td>M8 - M20</td> <td>53</td> <td>79</td> <td>SK40</td> <td>S2</td> </tr> <tr> <td>M14 - M33</td> <td>78</td> <td>115</td> <td>SK40</td> <td>S3</td> </tr> </tbody> </table>	D_1 mm	L_1 mm			310	M3 - M12	36	65	SK40	S1	M8 - M20	53	79	SK40	S2	M14 - M33	78	115	SK40	S3	ID	ID	ID
D_1 mm	L_1 mm			310																			
M3 - M12	36	65	SK40	S1																			
M8 - M20	53	79	SK40	S2																			
M14 - M33	78	115	SK40	S3																			
	● 170124	● 170125	● 170126																				
DIN 69 871 Form AD + B	SRT-SK50-820	SRT-SK50-1433	SRT-SK50-2248																				
<h1>SK</h1>																							
	< 50 bar	< 50 bar	< 50 bar																				
<table border="1"> <thead> <tr> <th>D_1 mm</th> <th>L_1 mm</th> <th></th> <th></th> <th>310</th> </tr> </thead> <tbody> <tr> <td>M8 - M20</td> <td>53</td> <td>79</td> <td>SK50</td> <td>S2</td> </tr> <tr> <td>M14 - M33</td> <td>78</td> <td>115</td> <td>SK50</td> <td>S3</td> </tr> <tr> <td>M22 - M48</td> <td>96</td> <td>170</td> <td>SK50</td> <td>S4</td> </tr> </tbody> </table>	D_1 mm	L_1 mm			310	M8 - M20	53	79	SK50	S2	M14 - M33	78	115	SK50	S3	M22 - M48	96	170	SK50	S4	ID	ID	ID
D_1 mm	L_1 mm			310																			
M8 - M20	53	79	SK50	S2																			
M14 - M33	78	115	SK50	S3																			
M22 - M48	96	170	SK50	S4																			
	● 170128	● 170129	● 170130																				

SRT Mandril de roscar con amortiguador axial

Tapping chucks with axial shock absorber

 Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschietture sincrone
Solo para roscado sincronizado
Только для rigid tapping

DIN 1835 B	SRT032-D6		SRT054-D12		ER8	
<h1>SRT nano</h1>						
SRT032 / SRT054			D9865-			
						
	D mm	D ₁ mm	D ₂ mm	L mm	L ₁ mm	L ₂ mm
M0.3 - M2	12	11	6	25	40	56
M0.5 - M4	12	20	12	33	59	75
						
						
			ID		ID	
			● 157610		● 127413	
No	D ₂ mm	L ₃ mm	d ₂ 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	
<h1>SRT short</h1>						
						
	D ₁ mm	D ₂ mm	L mm	L ₁ mm		
						
					< 30 bar	< 30 bar
					< 30 bar	< 30 bar
			ID		ID	
			● 162832		● 162831	
			● 162833			
	D ₁ mm	D ₂ mm	L mm	L ₁ mm		 310
M3 - M12	39	20	47	86	S1	
M3 - M12	39	25	53	90	S1	
M5 - M20	56	25	53	110	S2	

SRT Mandril de roscar con amortiguador axial

Tapping chucks with axial shock absorber



Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per mescolatura sincrona
Solo para roscado sincronizado
Только для rigid tapping

DIN 1835 B	SRT-1D20-312	SRT-1D25-312	SRT-2D25-820																																
SRT																																			
<table border="1"> <thead> <tr> <th></th> <th>D₁ mm</th> <th>D₂ mm</th> <th>L mm</th> <th>L₁ mm</th> <th></th> <th></th> <th>310</th> </tr> </thead> <tbody> <tr> <td>M3 - M12</td> <td>36</td> <td>20</td> <td>51</td> <td>97</td> <td>S1</td> <td></td> <td></td> </tr> <tr> <td>M3 - M12</td> <td>36</td> <td>25</td> <td>57</td> <td>103</td> <td>S1</td> <td></td> <td></td> </tr> <tr> <td>M8 - M20</td> <td>53</td> <td>25</td> <td>57</td> <td>131</td> <td>S2</td> <td></td> <td></td> </tr> </tbody> </table>		D ₁ mm	D ₂ mm	L mm	L ₁ mm			310	M3 - M12	36	20	51	97	S1			M3 - M12	36	25	57	103	S1			M8 - M20	53	25	57	131	S2			ID	ID	ID
	D ₁ mm	D ₂ mm	L mm	L ₁ mm			310																												
M3 - M12	36	20	51	97	S1																														
M3 - M12	36	25	57	103	S1																														
M8 - M20	53	25	57	131	S2																														
	● 170140	● 170020	● 170141																																
DIN 1835 B	SRT-2D32-820	SRT-3D25-1433	SRT-3D32-1433																																
SRT																																			
<table border="1"> <thead> <tr> <th></th> <th>D₁ mm</th> <th>D₂ mm</th> <th>L mm</th> <th>L₁ mm</th> <th></th> <th></th> <th>310</th> </tr> </thead> <tbody> <tr> <td>M8 - M20</td> <td>53</td> <td>32</td> <td>61.5</td> <td>135.5</td> <td>S2</td> <td></td> <td></td> </tr> <tr> <td>M14 - M33</td> <td>78</td> <td>25</td> <td>57</td> <td>164.5</td> <td>S3</td> <td></td> <td></td> </tr> <tr> <td>M14 - M33</td> <td>78</td> <td>32</td> <td>61.5</td> <td>169</td> <td>S3</td> <td></td> <td></td> </tr> </tbody> </table>		D ₁ mm	D ₂ mm	L mm	L ₁ mm			310	M8 - M20	53	32	61.5	135.5	S2			M14 - M33	78	25	57	164.5	S3			M14 - M33	78	32	61.5	169	S3			ID	ID	ID
	D ₁ mm	D ₂ mm	L mm	L ₁ mm			310																												
M8 - M20	53	32	61.5	135.5	S2																														
M14 - M33	78	25	57	164.5	S3																														
M14 - M33	78	32	61.5	169	S3																														
	● 170142	● 170143	● 170144																																

SRT *Pinza sin embrague de seguridad* Inserts without slipping clutch



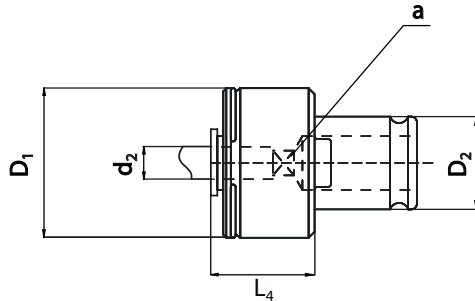
Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per mescolature sincrone
Solo para roscado sincronizado
Только для rigid tapping

SRT					S1-	S2-	S3-	S4-
No	D ₁ mm	D ₂ mm	d ₂ mm	α mm	ID	ID	ID	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



SC1- SC2- SC3- SC4-

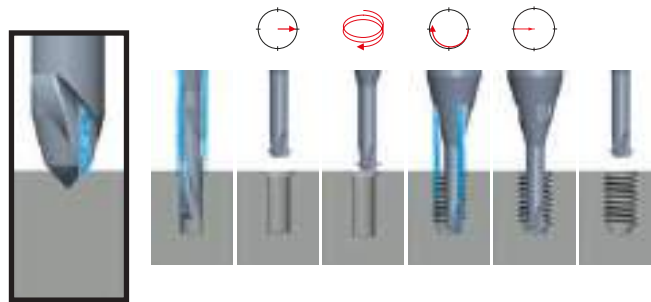


No	D_1 mm	D_2 mm	d_2 mm	a mm	L_4 mm	ID	ID	ID	ID
SC1-0028	32	19	2.8	2.1	25	● 170160			
SC1-0035	32	19	3.5	2.7	25	● 170161			
SC1-0045	32	19	4.5	3.4	25	● 170162			
SC1-0060	32	19	6	4.9	25	● 170163			
SC1-0070	32	19	7	5.5	25	● 170164			
SC1-0080	32	19	8	6.2	25	● 170165			
SC1-0090	32	19	9	7	25	● 170166			
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

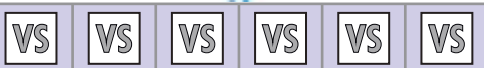


DC Clasificación de los materiales

DC Material classification

Grupos de materiales Material groups	Clasificación de los materiales	Material designation	Dureza Hardness (HB)	Resistencia Tensile strength Rm (N/mm ²)	Lubricante Lubricant Recubrimiento Coated
10 Aceros Steels	11 Aceros de decoletaaje	Free-cutting steels	< 200	< 700	
	12 Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	
	13 Aceros al carbón	Carbon steels	< 300	< 1000	
	14 Aceros aleados < 850 N/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850	
	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	
	22 Austeníticos	Austenitic stainless steels	< 250	< 850	
	23 Ferríticos y martensíticos < 850 N/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850	
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	
	42 Aleación al titanio	Titanium alloys	> 250	> 850	
50 Níquel Nickel	51 Aleación al níquel 1 ≤ 850 N/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150	
60 Cobre Copper	61 Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	
	62 Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	
	63 Latón (virutas largas)	Long chip brass	< 200	< 700	
	64 Latón sin plomo	Lead free brass	< 220	< 700	
70 Aluminio Magnesio Aluminium Magnesium	71 Al no aleado	Al unalloyed	< 100	< 350	
	72 Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	
	73 Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	
	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	-	-	
	94 Plata	Silver	-	-	

BROCA DE CENTRAR C315VS — SPOTTING DRILLS C315VS



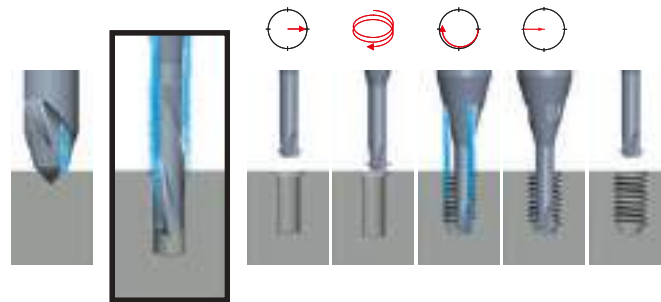
	Vc (m/min) Guide Line Recubrimiento Coated	C315VS						
		Avance f (mm/rev.)			Feed rate f (mm/rev.)			
		Ø 1.40	Ø 2.00	Ø 3.00	Ø 4.00	Ø 6.00	Ø 8.00	
11	120	0.05	0.08	0.10	0.12	0.15	0.20	11
12	120	0.05	0.08	0.10	0.12	0.15	0.20	12
13	120	0.05	0.08	0.10	0.12	0.15	0.20	13
14	80	0.05	0.08	0.10	0.12	0.15	0.20	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/mm ²)	Lubricante Lubricant Recubrimiento Coated
10 Aceros Steels	11 Aceros de decoletaje	Free-cutting steels	< 200	< 700	
	12 Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	
	13 Aceros al carbón	Carbon steels	< 300	< 1000	
	14 Aceros aleados < 850 N/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850	
	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	
	22 Austeníticos	Austenitic stainless steels	< 250	< 850	
	23 Ferríticos y martensíticos < 850 N/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850	
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	
	42 Aleación al titanio	Titanium alloys	> 250	> 850	
50 Níquel Nickel	51 Aleación al níquel 1 ≤ 850 N/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150	
60 Cobre Copper	61 Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	
	62 Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	
	63 Latón (virutas largas)	Long chip brass	< 200	< 700	
	64 Latón sin plomo	Lead free brass	< 220	< 700	
70 Aluminio Magnesio Aluminium Magnesium	71 Al no aleado	Al unalloyed	< 100	< 350	
	72 Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	
	73 Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	
	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	-	-	
	94 Plata	Silver	-	-	

BROCAS DE TALADRAR FZ315VS — TWIST DRILLS FZ315VS







































		FZ315VS						FZ315VS							
		VS		VS		VS		VS		VS		VS		VS	
		Avance f (mm/rev.)				Feed rate f (mm/rev.)		Avance f (mm/rev.)				Feed rate f (mm/rev.)			
		Ø0.58-0.82	Ø0.83-1.07	Ø1.08-1.46	Ø1.47-2.0	Q1	Qx	Ø2.01-3.05	Ø3.06-4.5	Ø4.51-5.4	Qx				
		Vc (m/min) Guide Line Ø 0.58 - 2.0		Vc (m/min) Guide Line Ø 2.01 - 5.4		Recubrimiento Coated		Vc (m/min) Guide Line Ø 0.58 - 2.0		Vc (m/min) Guide Line Ø 2.01 - 5.4		Recubrimiento Coated			
11	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	1xd,-4xd	1xd,-2xd	80 - 110	0.07-0.12	0.12-0.18	0.18-0.23				11
12	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	1xd,-4xd	1xd,-2xd	80 - 110	0.07-0.12	0.12-0.17	0.17-0.22				12
13	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	70 - 100	0.07-0.12	0.12-0.17	0.17-0.22				13
14	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	70 - 100	0.07-0.12	0.12-0.17	0.17-0.22				14
15	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	70 - 100	0.07-0.12	0.12-0.17	0.17-0.22				15
16	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	70 - 100	0.07-0.10	0.10-0.14	0.14-0.17				16
17	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	60 - 80	0.07-0.10	0.10-0.15	0.14-0.18				17
18															18
21	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	60 - 80	0.045-0.055	0.055-0.07	0.07-0.10				21
22	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd	60 - 80	0.045-0.055	0.055-0.07	0.07-0.10				22
23	35 - 50	0.02-0.025	0.025-0.035	0.04-0.05	0.05-0.065	1xd,-4xd	1xd,-2xd	60 - 80	0.05-0.065	0.05-0.065	0.06-0.09				23
24	35 - 50	0.02-0.025	0.025-0.035	0.04-0.05	0.05-0.065	1xd,-4xd	1xd,-2xd	60 - 80	0.05-0.065	0.05-0.065	0.06-0.09				24
31	50 - 80	0.025-0.045	0.045-0.065	0.065-0.085	0.085-0.10	4xd,-8xd	4xd	90 - 130	0.10-0.15	0.15-0.20	0.20-0.25				31
32	40 - 70	0.025-0.045	0.045-0.065	0.065-0.085	0.085-0.10	4xd,-8xd	4xd	80 - 120	0.10-0.14	0.14-0.18	0.18-0.23				32
41	15 - 25	0.005-0.02	0.015-0.045	0.04-0.06	0.055-0.07	1/2xd,-1xd	1/4xd,-1/2xd	30 - 40	0.055-0.07	0.055-0.07	0.055-0.07	1/3xd,-1/2xd			41
42	15 - 25	0.005-0.02	0.015-0.045	0.04-0.06	0.055-0.07	1/2xd,-1xd	1/4xd,-1/2xd	30 - 40	0.055-0.07	0.055-0.07	0.055-0.07	1/3xd,-1/2xd			42
51	15 - 25	0.005-0.02	0.02-0.025	0.025-0.035	0.035-0.05	1/2xd,-1xd	1/2xd	30 - 40	0.035-0.05	0.035-0.05	0.05-0.08				51
52	15 - 25	0.015-0.02	0.02-0.025	0.025-0.035	0.035-0.05	1/2xd,-1xd	1/2xd	30 - 40	0.035-0.05	0.035-0.05	0.05-0.08				52
53	15 - 25	0.005-0.01	0.01-0.02	0.02-0.03	0.03-0.04	1/2xd,-1xd	1/2xd	30 - 40	0.03-0.04	0.03-0.04	0.04-0.06				53
61	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25				61
62	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25				62
63	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd	80 - 110	0.12-0.15	0.14-0.18	0.18-0.23				63
64	50 - 80	0.05-0.08	0.06-0.1	0.08-0.12	0.12-0.15	4xd,-8xd	4xd	80 - 110	0.12-0.15	0.14-0.18	0.18-0.23				64
71	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25				71
72	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25				72
73	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd	100 - 130	0.12-0.15	0.14-0.18	0.18-0.23				73
74	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd	100 - 130	0.12-0.15	0.14-0.18	0.18-0.23				74
81	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25				81
82	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd	130 - 180	0.12-0.15	0.15-0.20	0.20-0.25				82
83	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd	80 - 120	0.07-0.12	0.12-0.18	0.18-0.23				83
91	50 - 80	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd	130 - 180	0.07-0.12	0.12-0.17	0.17-0.22				91
92	50 - 80	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd	130 - 180	0.07-0.12	0.12-0.17	0.17-0.22				92
93	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd	80 - 110	0.07-0.12	0.12-0.17	0.17-0.22				93
94	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd	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

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/mm ²)	Lubricante Lubricant Recubrimiento Coated
10 Aceros Steels	11 Aceros de decoletaje	Free-cutting steels	< 200	< 700	 
	12 Aceros de construcción / cementación	Structural, cementation steels	< 200	< 700	 
	13 Aceros al carbón	Carbon steels	< 300	< 1000	 
	14 Aceros aleados < 850 N/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	 
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850	 
	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	 
	22 Austeníticos	Austenitic stainless steels	< 250	< 850	 
	23 Ferríticos y martensíticos < 850 N/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	 
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850	 
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	 
	42 Aleación al titanio	Titanium alloys	> 250	> 850	
50 Níquel Nickel	51 Aleación al níquel 1 ≤ 850 N/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	 
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150	
60 Cobre Copper	61 Cobre puro (electrolítico)	Pure copper (electrolytic copper)	< 120	< 400	 
	62 Latón, bronce (virutas cortas)	Short chip brass, phosphor bronze, gun metal	< 200	< 700	
	63 Latón (virutas largas)	Long chip brass	< 200	< 700	 
	64 Latón sin plomo	Lead free brass	< 220	< 700	 
70 Aluminio Magnesio Aluminium Magnesium	71 Al no aleado	Al unalloyed	< 100	< 350	 
	72 Al aleado Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500	 
	73 Al aleado Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	 
	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	-	-	 
	94 Plata	Silver	-	-	 

F286VS — F286VS



		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		
Vc (m/min) Guide Line	Recubrimiento Coated								
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.

Brocas de centrar en metal duro integral
Solid carbide spotting drills

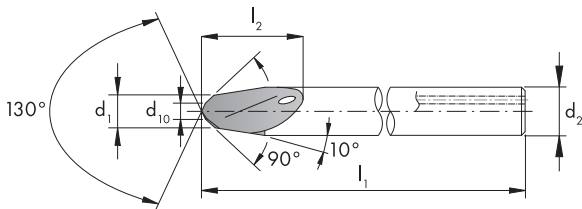
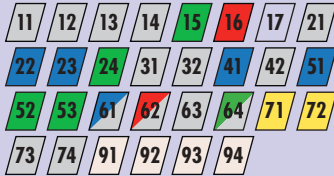
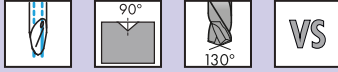
VHM
CAR



h6

C

C315VS



C315VS



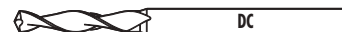
Ø d ₁	l ₁ mm	l ₂ mm	d ₂ h6 mm	d ₁₀ mm	
1.4	40	6	3	0.5	2
2	40	6.2	3	1	2
3	40	6.3	3	1.5	2
4	50	8	4	2	2
6	60	12	6	3	2
8	70	16	8	4	2

ID

- 182872
- 182873
- 182874
- 190331
- 190332
- 190333

Brocas de taladrar en metal duro integral
Solid carbide twist drills

VHM
CAR



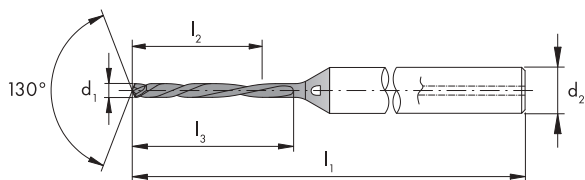
h6

FZ

FZ315VS



FZ315VS



FZ315VS

FZ315VS



Ø d ₁	D ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	
0.58	M0.8	42	4.6	5.7	3	2
0.59	S0.8	42	4.7	5.8	3	2
0.65	M0.9	45	5.2	6.4	3	2
0.67	S0.9	45	5.4	6.6	3	2
0.7	M1	45	5.6	6.9	3	2
0.74	S1	45	5.9	7.3	3	2
0.9	M1.2	45	7.2	8.8	3	2
0.94	S1.2	48	7.5	9.2	3	2
1.05	M1.4	48	8.4	10.3	3	2
1.09	S1.4	48	8.7	10.7	3	2
1.19	M1.6	48	9.5	11.7	3	2
1.39	M1.8	52	11.1	13.6	4	2
1.54	M2	55	12.3	15.1	4	2
1.98	M2.5	55	15.8	19.4	4	2

ID

- 182863
- 188023
- 182864
- 188024
- 182865
- 188025
- 182866
- 188026
- 182867
- 188027
- 182868
- 182869
- 182870
- 182871

Ø d ₁	D ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	
2.15	UNC4	63	12.9	19.4	4	2
2.45	M3	65	14.7	22.1	4	2
2.65	UNC6	68	15.9	23.9	4	2
2.85	M3.5	68	17.1	25.7	4	2
3.25	M4	74	19.5	29.3	6	2
3.95	UNF10	78	23.7	35.6	6	2
4.1	M5	80	24.6	36.9	6	2
4.9	M6	84	29.4	44.1	6	2
5	UNC1/4	84	30	45	6	2
5.4	UNF1/4	88	32.4	48.6	6	2

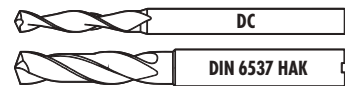
ID

- 190326
- 190321
- 190327
- 190322
- 190323
- 190329
- 190324
- 190325
- 190328
- 190330

Brocas de taladrar en metal duro integral

Solid carbide twist drills

VHM
CAR



HBK
HEK



sur demande
auf Anfrage
on request
su richiesta
sobre pedido
no zakazy

							F313VS	F285VS	F286VS	
<p>F313VS</p> <p>11 12 13 14 15 21 22 23 24 41 61 63 71 72 73 74</p>										
<p>F285VS F286VS</p> <p>11 12 13 14 15 21 22 23 24 41 51 61 71 72 73 74 93 94</p>										
$\emptyset d_1$ (h ₇)	d_2 (h ₈) 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										
$\emptyset d_1$ (m ₇)	d_2 (h ₈) 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			
$\emptyset d_1$ (m ₇)	d_2 (h ₈) 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			



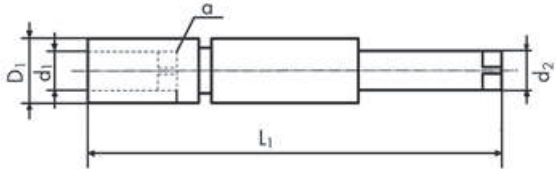


Z | CHALLENGING THREADING

Porta-cojinetes y giramachos Die stocks and tap wrenches

<p>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</p> <p>D5820- Giramacho regulable DIN 1814 Tap wrenches, adjustable DIN 1814</p>										D5810-	D5820-
											
DIN EN	M	MF	UNC	UNF	UNEF UNS UN	W	G (BSP)	NPT NPTF R (BSPT)	ID		
No D5810- Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø			
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		
<p>*Excepto el paso de 3 mm (utilizar el N° 13). For 3 mm pitches use No. 13.</p>											
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



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 experiencia, 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.

**TECNOLOGÍA MEDICAL
MEDICAL**

**AVIACIÓN Y AEROESPACIAL
AEROSPACE**

**SOLUCIONES PERSONALIZADAS
CUSTOMISED SOLUTIONS**



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.

**AUTOMOCIÓN
AUTOMOTIVE**

**INDUSTRIA RELOJERA
WATCHMAKING**





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 $< 2 \times D$
- For through holes $< 2 \times D$

TAN50



- Para los agujeros ciegos $< 2 \times D$
- For blind holes $< 2 \times D$

Aplicación

Para materiales fáciles de mecanizar, aceros, latón, oro amarillo, plata

Application

For easy-to-machine materials, steels, brass, yellow gold, silver

TAN40VS



- 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

TAN50VS



TAZ40VS



- Para los agujeros pasantes $< 2 \times D$
- Con una larga entrada adaptada al paso, para una mejor penetración en el material
- For through holes $< 2 \times D$
- With a long chamfer adapted to the pitch, for a better penetration into the material

TAZ50VS



- Para los agujeros ciegos $< 2 \times D$
- For blind holes $< 2 \times D$

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 $< 2.5 \times D$
- Con una entrada extra corta de $1.5 \times P$ (para los hilos cercanos al fondo del agujero)

- For through and blind holes $< 2.5 \times D$
- With extra-short chamfer $1.5 \times P$ (for threads close to the bottom of the core hole)

FA83VS



- Para los agujeros pasantes y ciegos $< 2.5 \times D$
- Con una entrada corta $2.5 \times P$

- For through and blind holes $< 2.5 \times D$
- With short chamfer $2.5 \times P$

Aplicación

- Para cualquier tipo de material con una elongación $> 5\%$.
- Polígono hecho de 4 puntas de contacto de $\varnothing 0.5\text{ mm}$
- 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 $\varnothing 0.5\text{ mm}$
- Improved thread tensile strength



- 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



- 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



- Para los agujeros pasantes y ciegos $< 3 \times D$
- Con una revolucionaria geometría de entrada para una óptima penetración del material

- For through and blind holes $< 3 \times D$
- With a revolutionary chamfer geometry for optimal material penetration

CMS50VS



Aplicación

- Para materiales frágiles, latón (virutas cortas), hierro fundido gris, Cube2, aleación de aluminio con Si $> 5 \%$.
- Recubrimiento específico "VS" de última generación adaptado a la geometría de la herramienta

Application

- For brittle materials like short chip brass, grey cast iron, Cube2, aluminium alloy with Si $> 5 \%$
- Specific "VS" coating of the latest generation adapted to the geometry of the tool



CFA80VS



- Para los agujeros pasantes y ciegos $< 2.5 \times D$
- Con una entrada extra corta de $1.5 \times P$ (para los hilos cercanos al fondo del agujero)

- For through and blind holes $< 2.5 \times D$
- With extra-short chamfer $1.5 \times P$ (for threads close to the bottom of the core hole)

CFA83VS



- Para los agujeros pasantes y ciegos $< 2.5 \times D$
- Con una entrada corta $2.5 \times P$

- For through and blind holes $< 2.5 \times D$
- With short chamfer $2.5 \times P$

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



- 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

DC Machos para roscar a máquina nano

DC Machine taps nano

Ejemplo - Example



Materiales normales	Normal materials	TAN	
Materiales tenaces	Tough materials	TAZ	
Látón	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 fabricación DC

General dimensions as per DC standards

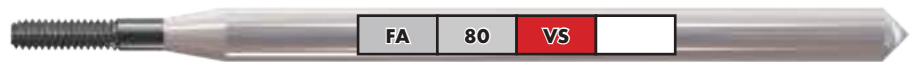
Para la aplicación de acuerdo con la tabla de utilización DC para los machos DC tipo nano

For use as per DC application chart for DC taps nano

DC Machos para roscado por laminación nano

DC 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 fabricación DC

General dimensions as per DC standards

Para la aplicación de acuerdo con la tabla de utilización DC para los machos para roscado por laminación DC tipo nano

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

12	
1.0037	Si37-2 (S235JR)
1.0050	Si50-2 (E295)
1.0060	Si60-2 (E335)
1.5919	15CrNi6
1.7131	16MnCr5

22	
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 reforzado según norma de fábrica DC
Reinforced shank as per DC standards



HSSE-PM
HSSE-PM



Artículos disponibles de stock
Stock item



Metal duro integral
Solid Carbide



Disponible a corto plazo
Available at short notice



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



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



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



Clase de tolerancia 4H
Tolerance class 4H



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



Recubrimiento de protección contra el desgaste "VS" para uso general
DC "VS" wear-protective coating for general use



Recubrimiento de protección "VX" para aceros inoxidables y aleaciones de níquel
DC "VX" wear-protective coating for stainless steels and nickel alloys

**MACHOS PARA ROSCAR NANO
THREAD TAPS NANO**

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/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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	-	-	-

MACHOS PARA ROSCAR NANO – THREAD TAPS NANO



Desde página:
From page:

M
MF
UNC
UNF
S
SF
SL

TAN			
Materiales normales Normal materials			
338	338	338	338
341	341	341	341
344	344	344	344
347	347	347	347
350	350	350	350
353	353	353	353
356	356	356	356
TAN40	TAN40VS	TAN50	TAN50VS

TAZ			
Materiales tenaces Tough materials			
339	339	339	339
342	342	342	342
345	345	345	345
348	348	348	348
351	351	351	351
354	354	354	354
357	357	357	357
TAZ40	TAZ40VS	TAZ50	TAZ50VS

CMS	
Materiales frágiles Brittle materials	
340	340
343	343
346	346
349	349
352	352
355	355
358	358
CMS50	CMS50VS

Vc (m/min) Guide Line Ø 0.3 - 1.4 mm Ø 1.4 - 2.8 mm			
Estándar Standard	Recubrimiento Coated	Estándar Standard	Recubrimiento Coated

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nano



	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



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

nano

TAN

TAN40



62 63 91

TAN40VS



11 12 13 14 32 62
63 71 72 73 74 81
93

TAN50



62 63 91

TAN50VS



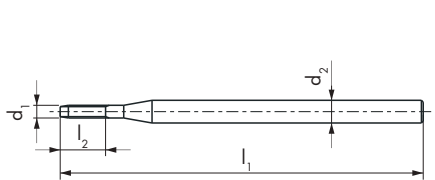
11 12 13 14 32 62
63 71 72 73 74 81
93

TAN40

TAN40VS

TAN50

TAN50VS



4H

4H

4H

4H

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm		
0.5	0.125	25	1.5	2	3	Δ0.41
0.6	0.15	25	1.8	2	3	Δ0.5
0.7	0.175	25	2.1	2	3	Δ0.58
0.8	0.2	25	2.4	2	3	Δ0.66
0.9	0.225	25	2.7	2	3	Δ0.74
1	0.25	40	3.0	2.5	3	0.75
1.2	0.25	40	3.6	2.5	3	0.95
1.4	0.3	40	4.2	2.5	3	1.1

ID

ID

ID

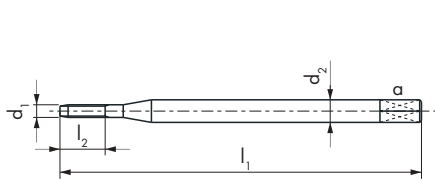
ID

● 161817	● 161748	● 161818	● 161749
● 152512	● 152511	● 152545	● 151766
● 152516	● 152515	● 152548	● 152547
● 152520	● 152519	● 152552	● 152551
● 152524	● 152523	● 152555	● 152554
● 152528	● 152527	● 152558	● 151557
● 152531	● 151463	● 152562	● 152561
● 152534	● 151756	● 152565	● 151757

Δ 4H5H → 4H6H = +0.02 mm

≥ M1 - ≤ M1.4

ISO 1
4H



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		
1.6	0.35	40	4.8	2.5		3	1.25
1.8	0.35	40	5.4	2.5		3	1.45
2	0.4	45	8	2.8	2.1	3	1.6
2.3	0.4	45	9	2.8	2.1	3	1.9
2.5	0.45	50	10	2.8	2.1	3	2.05
2.6	0.45	50	10	2.8	2.1	3	2.15

ID

ID

ID

ID

● 152538	● 152537	● 152569	● 152568
● 193841	● 151461	● 193915	● 193952
● 152542	● 152541	● 152573	● 152572
● 193842	● 193878	● 193916	● 193953
● 193843	● 193879	● 193917	● 193954
● 193844	● 193880	● 193918	● 193955

TAZ

TAZ40



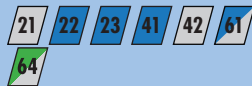
TAZ40VS



TAZ50



TAZ50VS

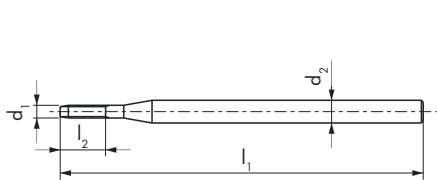


TAZ40

TAZ40VS

TAZ50

TAZ50VS



4H

4H

4H

4H

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm		
0.5	0.125	25	1.5	2	3	Δ0.41
0.6	0.15	25	1.8	2	3	Δ0.5
0.7	0.175	25	2.1	2	3	Δ0.58
0.8	0.2	25	2.4	2	3	Δ0.66
0.9	0.225	25	2.7	2	3	Δ0.74
1	0.25	40	3	2.5	3	0.75
1.2	0.25	40	3.6	2.5	3	0.95
1.4	0.3	40	4.2	2.5	3	1.1

ID

ID

ID

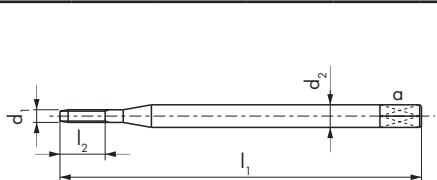
ID

● 193994	● 194059	● 194119	● 194182
● 193995	● 194060	● 194120	● 194183
● 193996	● 194061	● 194121	● 194184
● 193997	● 194062	● 194122	● 194185
● 193998	● 194063	● 194123	● 194186
● 193999	● 194064	● 194124	● 183753
● 194000	● 194065	● 194125	● 194187
● 194001	● 194066	● 194126	● 194188

Δ 4H5H → 4H6H = +0.02 mm

≥ M1 - ≤ M1.4

ISO 1
4H



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		
1.6	0.35	40	4.8	2.5		3	1.25
1.8	0.35	40	5.4	2.5		3	1.45
2	0.4	45	8	2.8	2.1	3	1.6
2.3	0.4	45	9	2.8	2.1	3	1.9
2.5	0.45	50	10	2.8	2.1	3	2.05
2.6	0.45	50	10	2.8	2.1	3	2.15

ID

ID

ID

ID

● 194002	● 194067	● 194127	● 194189
● 194003	● 194068	● 194128	● 194190
● 194004	● 194947	● 194129	● 179266
● 194005	● 194069	● 194130	● 194191
● 194006	● 194070	● 194131	● 194192
● 194007	● 194071	● 194132	● 194193

CMS

CMS50



62 63 93

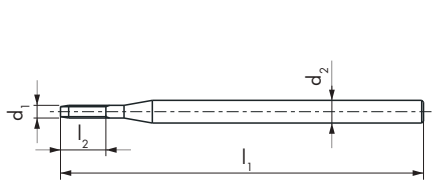
CMS50VS



31 62 63 73 74 83
93

CMS50

CMS50VS



4H

4H

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 h5 mm		
0.3	0.08	32	1.1	1.5	3	0.23
0.35	0.09	32	1.3	1.5	3	0.28
0.4	0.1	32	1.5	1.5	3	$\Delta 0.32$
0.5	0.125	32	1.8	1.5	3	$\Delta 0.41$
0.6	0.15	32	2.2	1.5	3	$\Delta 0.5$
0.7	0.175	32	2.6	1.5	3	$\Delta 0.58$
0.8	0.2	32	3	1.5	3	$\Delta 0.66$
0.9	0.225	32	3.3	1.5	3	$\Delta 0.74$
1	0.25	32	3.7	2	3	0.75
1.2	0.25	32	4.5	2	3	0.95
1.4	0.3	32	5.2	2	3	1.1

4H5H \rightarrow 4H6H = +0.02 mm

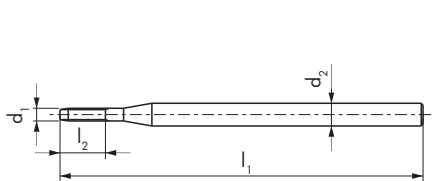
ID

ID

● 193639	● 193702
● 193640	● 193703
● 193641	● 193704
● 193642	● 193705
● 193643	● 193706
● 193644	● 193707
● 193645	● 193708
● 193646	● 193709
● 193647	● 193710
● 193648	● 193711
● 193649	● 193712

$\geq M1 - \leq M1.4$

ISO 1
4H



ISO 2
6H

ISO 2
6H

$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 h5 mm		
1.6	0.35	32	6	2	3	1.25
1.8	0.35	32	6.7	2	3	1.45
2	0.4	39	7.5	3	3	1.6
2.3	0.4	39	8.6	3	3	1.9
2.5	0.45	39	9.3	3	3	2.05
2.6	0.45	39	9.7	3	3	2.15

ID

ID

● 193650	● 193713
● 193651	● 193714
● 193652	● 193715
● 193653	● 193716
● 193654	● 193717
● 193655	● 193718



PM

DC - DIN 371

TAN

TAN40



62 63 91

TAN40VS



VS

11 12 13 14 32 62
63 71 72 73 74 81
93

TAN50



62 63 91

TAN50VS



VS

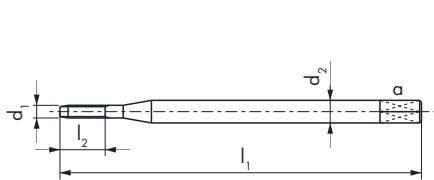
11 12 13 14 32 62
63 71 72 73 74 81
93

TAN40

TAN40VS

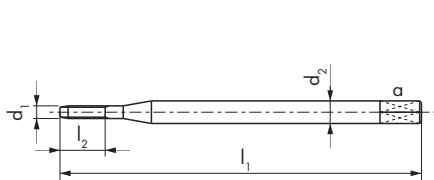
TAN50

TAN50VS



$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1.4	0.2	40	4.2	2.5		3	1.2
1.6	0.2	40	4.8	2.5		3	1.4
1.8	0.2	40	5.4	2.5		3	1.6
2	0.2	45	6	2.8	2.1	3	1.8
2	0.25	45	6	2.8	2.1	3	1.75
2.2	0.2	45	6.6	2.8	2.1	3	2
2.2	0.25	45	6.6	2.8	2.1	3	1.95
2.3	0.2	45	6.9	2.8	2.1	3	2.1
2.3	0.25	45	6.9	2.8	2.1	3	2.05
2.5	0.2	50	7.5	2.8	2.1	3	2.3
2.5	0.25	50	7.5	2.8	2.1	3	2.25

ID	ID	ID	ID
• 170390	• 193881	• 170393	• 156730
• 193845	• 193882	• 193919	• 193956
• 193846	• 193883	• 193920	• 180810
• 193847	• 193884	• 193921	• 184999
• 193848	• 193885	• 193922	• 182944
• 193849	• 193886	• 193923	• 179593
• 193850	• 193887	• 193924	• 193957
• 193851	• 193888	• 193925	• 193958
• 193852	• 193889	• 193926	• 193959
• 193853	• 193890	• 193927	• 193960
• 193854	• 193891	• 193928	• 193961



$\emptyset d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
2.5	0.35	50	7.5	2.8	2.1	3	2.15
2.6	0.35	50	7.8	2.8	2.1	3	2.25

ID	ID	ID	ID
• 193855	• 193892	• 193929	• 193962
• 193856	• 193893	• 193930	• 193963



PM

DC - DIN 371

TAZ

TAZ40



TAZ40VS



VS



TAZ50



TAZ50VS



VS

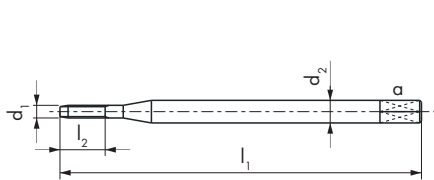


TAZ40

TAZ40VS

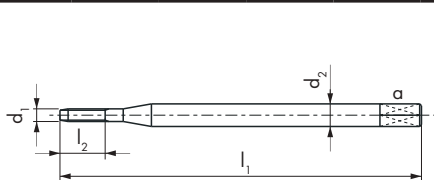
TAZ50

TAZ50VS



Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
1.4	0.2	40	4.2	2.5		3	1.2
1.6	0.2	40	4.8	2.5		3	1.4
1.8	0.2	40	5.4	2.5		3	1.6
2	0.2	45	6	2.8	2.1	3	1.8
2	0.25	45	6	2.8	2.1	3	1.75
2.2	0.2	45	6.6	2.8	2.1	3	2
2.2	0.25	45	6.6	2.8	2.1	3	1.95
2.3	0.2	45	6.9	2.8	2.1	3	2.1
2.3	0.25	45	6.9	2.8	2.1	3	2.05
2.5	0.2	50	7.5	2.8	2.1	3	2.3
2.5	0.25	50	7.5	2.8	2.1	3	2.25

ID	ID	ID	ID
● 194008	● 194950	● 194133	● 194194
● 194009	● 194072	● 194134	● 181665
● 194010	● 194073	● 194135	● 190047
● 194011	● 194949	● 194136	● 194195
● 194012	● 194948	● 194137	● 185307
● 194013	● 194074	● 194138	● 194196
● 194014	● 194075	● 194139	● 194197
● 194015	● 194076	● 194140	● 194198
● 194016	● 194077	● 194141	● 194199
● 194017	● 194078	● 194142	● 194200
● 194018	● 194951	● 194143	● 194201



Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
2.5	0.35	50	7.5	2.8	2.1	3	2.15
2.6	0.35	50	7.8	2.8	2.1	3	2.25

ID	ID	ID	ID
● 194019	● 194079	● 194144	● 194202
● 194020	● 194080	● 194145	● 194203



CMS

CMS50



62 63 93

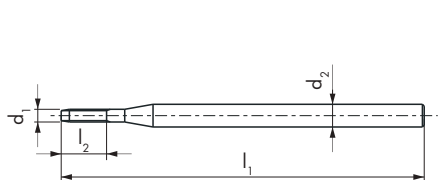
CMS50VS



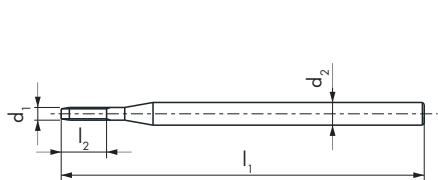
31 62 63 73 74 83
93

CMS50

CMS50VS



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



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

11010



PM

DC - DIN 371

TAN

TAN40



62 63 91

TAN40VS



VS

11 12 13 14 32 62
63 71 72 73 74 81
93

TAN50



62 63 91

TAN50VS



VS

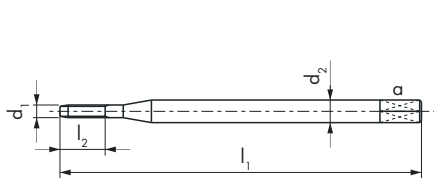
11 12 13 14 32 62
63 71 72 73 74 81
93

TAN40

TAN40VS

TAN50

TAN50VS



2B

2B

2B

2B

$\emptyset d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1	64	1.85	40	5.6	2.5		3	1.45
2	56	2.18	45	9	2.8	2.1	3	1.75
3	48	2.51	50	10	2.8	2.1	3	2

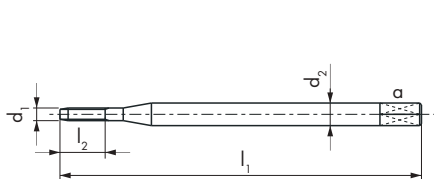
ID

ID

ID

ID

● 193857	● 193894	● 193931	● 193964
● 193858	● 193895	● 193932	● 193965
● 193859	● 193896	● 193933	● 193966



3B

3B

3B

3B

$\emptyset d_1$ UNC(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1	64	1.85	40	5.6	2.5		3	1.45
2	56	2.18	45	9	2.8	2.1	3	1.75
3	48	2.51	50	10	2.8	2.1	3	2

ID

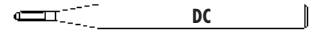
ID

ID

ID

● 193860	● 193897	● 193934	● 193967
● 193861	● 193898	● 193935	● 193968
● 193862	● 193899	● 193936	● 193969

TAZ										TAZ40	TAZ40VS	TAZ50	TAZ50VS
<p>TAZ40 </p> <p>TAZ40VS VS </p> <p>TAZ50 </p> <p>TAZ50VS VS </p>													
										2B	2B	2B	2B
Ø d₁ UNC	P TPI	d₁ mm	l₁ mm	l₂ mm	d₂ 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 d₁ UNC(J)	P TPI	d₁ mm	l₁ mm	l₂ mm	d₂ 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	



CMS

CMS50



62 63 93

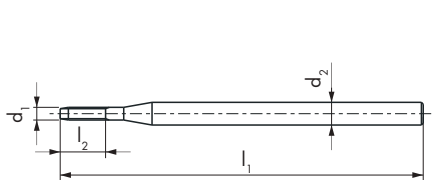
CMS50VS



31 62 63 73 74 83 93

CMS50

CMS50VS



2B

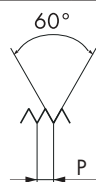
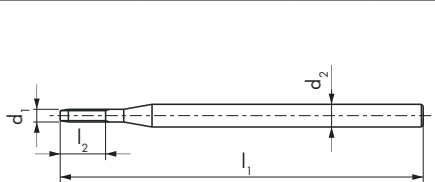
2B

Ø d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ h5 mm		
1	64	1.85	32	6.9	2	3	1.45
2	56	2.18	39	8.1	3	3	1.75
3	48	2.51	39	9.4	3	3	2

ID

ID

- | | |
|----------|----------|
| ● 193669 | ● 193732 |
| ● 193670 | ● 193733 |
| ● 193671 | ● 193734 |



3B

3B

Ø d ₁ UNC(J)	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ h5 mm		
1	64	1.85	32	6.9	2	3	1.45
2	56	2.18	39	8.1	3	3	1.75
3	48	2.51	39	9.4	3	3	2

ID

ID






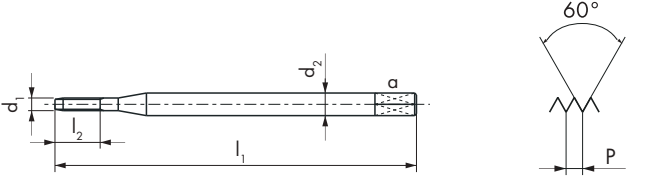

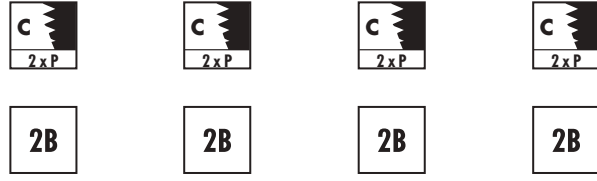
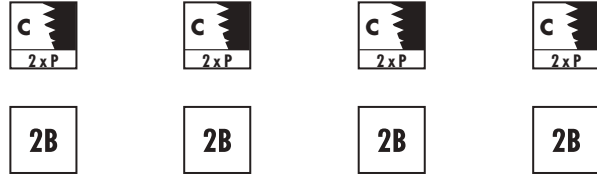


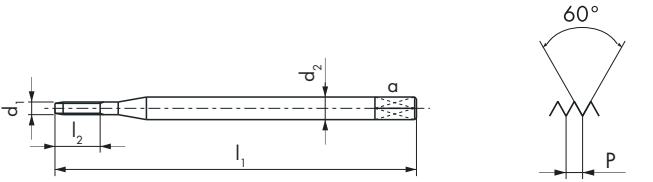



- | | |
|----------|----------|
| ● 193672 | ● 193735 |
| ● 193673 | ● 193736 |
| ● 193674 | ● 193737 |



PM

DC - DIN 371

TAN

										TAN40	TAN40VS	TAN50	TAN50VS
<p>TAN40  62 63 91</p> <p>TAN40VS  VS 11 12 13 14 32 62 63 71 72 73 74 81 93</p> <p>TAN50  62 63 91</p> <p>TAN50VS  VS 11 12 13 14 32 62 63 71 72 73 74 81 93</p>													
													
													
$\emptyset d$	P	d_1	l_1	l_2	d_2	a				ID	ID	ID	ID
UNF	TPI	mm	mm	mm	mm	mm							
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	
													
$\emptyset d$	P	d_1	l_1	l_2	d_2	a				ID	ID	ID	ID
UNF(J)	TPI	mm	mm	mm	mm	mm							
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	

nanos



PM

DC - DIN 371

TAZ

TAZ40



TAZ40VS



TAZ50



TAZ50VS

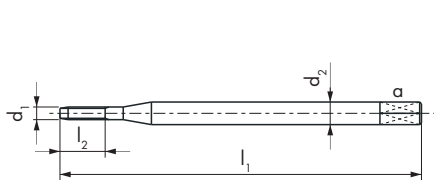


TAZ40

TAZ40VS

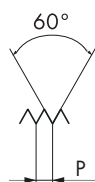
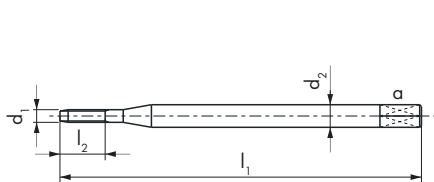
TAZ50

TAZ50VS



$\emptyset d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
0	80	1.52	40	4.6	2.5			
1	72	1.85	40	5.6	2.5			
2	64	2.18	45	9	2.8	2.1		
3	56	2.51	50	10	2.8	2.1		

ID	ID	ID	ID
194027	194087	194152	194210
194028	194088	194153	194211
194029	194089	194154	194212
194030	194090	194155	194213



$\emptyset d_1$ UNF(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm		
0	80	1.52	40	4.6	2.5			
1	72	1.85	40	5.6	2.5			
2	64	2.18	45	9	2.8	2.1		
3	56	2.51	50	10	2.8	2.1		

ID	ID	ID	ID
194031	194091	194156	194214
194032	194092	194157	194215
194033	194093	194158	194216
194034	194094	194159	194217

UNF ASME B1.1



VHM
CAR



CMS

CMS50



62 63 93

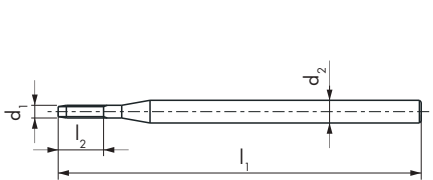
CMS50VS



31 62 63 73 74 83
93

CMS50

CMS50VS



2B

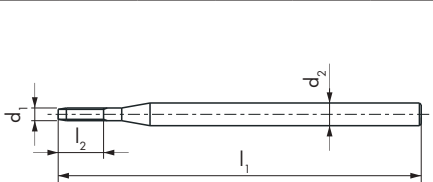
2B

$\emptyset d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm		
0	80	1.52	32	5.7	2	3	1.2
1	72	1.85	32	6.9	2	3	1.5
2	64	2.18	39	8.1	3	3	1.8
3	56	2.51	39	9.4	3	3	2.1

ID

ID

- | | |
|----------|----------|
| ● 193675 | ● 193738 |
| ● 193676 | ● 193739 |
| ● 193677 | ● 193740 |
| ● 193678 | ● 193741 |



3B

3B

$\emptyset d_1$ UNF(J)	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm		
0	80	1.52	32	5.7	2	3	1.2
1	72	1.85	32	6.9	2	3	1.5
2	64	2.18	39	8.1	3	3	1.8
3	56	2.51	39	9.4	3	3	2.1

ID

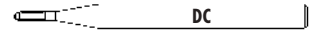
ID

- | | |
|----------|----------|
| ● 193679 | ● 193742 |
| ● 193680 | ● 193743 |
| ● 193681 | ● 193744 |
| ● 193682 | ● 193745 |

UNF



PM



TAN

TAN40



62 63 91

TAN40VS



VS

11 12 13 14 32 62
63 71 72 73 74 81
93

TAN50



62 63 91

TAN50VS



VS

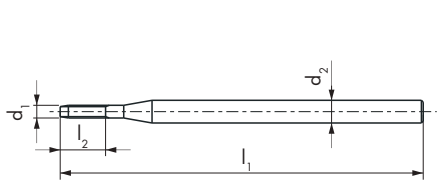
11 12 13 14 32 62
63 71 72 73 74 81
93

TAN40

TAN40VS

TAN50

TAN50VS



NIHS

NIHS

NIHS

NIHS

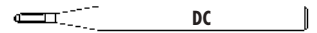
$\emptyset d_1$ S	P mm	l_1 mm	l_2 mm	d_2 mm		
0.5	0.125	25	1.5	2	3	$\Delta 0.41$
0.6	0.15	25	1.8	2	3	$\Delta 0.5$
0.7	0.175	25	2.1	2	3	$\Delta 0.58$
0.8	0.2	25	2.4	2	3	$\Delta 0.66$
0.9	0.225	25	2.7	2	3	$\Delta 0.74$
1	0.25	40	3	2.5	3	$\Delta 0.82$
1.2	0.25	40	3.6	2.5	3	$\Delta 1.02$
1.4	0.3	40	4.2	2.5	3	$\Delta 1.18$

ID	ID	ID	ID
● 161816	● 157021	● 159301	● 158384
● 152510	● 152509	● 151567	● 152544
● 152514	● 152513	● 151768	● 152546
● 152518	● 152517	● 152550	● 152549
● 152522	● 152521	● 152553	● 151563
● 152526	● 152525	● 152557	● 152556
● 152530	● 152529	● 152560	● 152559
● 152533	● 152532	● 152564	● 152563

Δ 4H5H \rightarrow 4H6H = +0.02 mm



PM



TAZ

TAZ40



TAZ40VS



VS



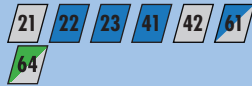
TAZ50



TAZ50VS



VS

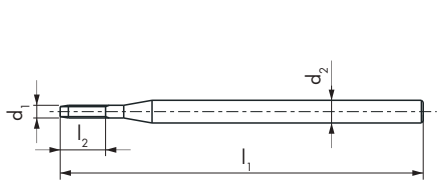


TAZ40

TAZ40VS

TAZ50

TAZ50VS



NIHS

NIHS

NIHS

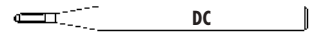
NIHS

$\emptyset d_1$ S	P mm	l_1 mm	l_2 mm	d_2 mm		
0.5	0.125	25	1.5	2	3	$\Delta 0.41$
0.6	0.15	25	1.8	2	3	$\Delta 0.5$
0.7	0.175	25	2.1	2	3	$\Delta 0.58$
0.8	0.2	25	2.4	2	3	$\Delta 0.66$
0.9	0.225	25	2.7	2	3	$\Delta 0.74$
1	0.25	40	3	2.5	3	$\Delta 0.82$
1.2	0.25	40	3.6	2.5	3	$\Delta 1.02$
1.4	0.3	40	4.2	2.5	3	$\Delta 1.18$

ID	ID	ID	ID
● 193978	● 194043	● 194103	● 194168
● 193979	● 194044	● 194104	● 194169
● 193980	● 194045	● 194105	● 194170
● 193981	● 194046	● 194106	● 188515
● 193982	● 194047	● 194107	● 188521
● 193983	● 194048	● 194108	● 194171
● 193984	● 194049	● 194109	● 194172
● 193985	● 194050	● 194110	● 194173

Δ 4H5H \rightarrow 4H6H = +0.02 mm

nano



CMS

CMS50



62 63 93

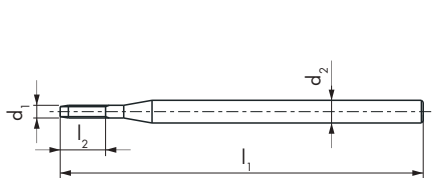
CMS50VS



31 62 63 73 74 83
93

CMS50

CMS50VS



$\emptyset d_1$ 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	$\Delta 0.32$	● 178263	● 193685
0.5	0.125	32	1.8	1.5	3	$\Delta 0.41$	● 178266	● 193686
0.6	0.15	32	2.2	1.5	3	$\Delta 0.5$	● 178269	● 193687
0.7	0.175	32	2.6	1.5	3	$\Delta 0.58$	● 178272	● 193688
0.8	0.2	32	3	1.5	3	$\Delta 0.66$	● 178275	● 193689
0.9	0.225	32	3.3	1.5	3	$\Delta 0.74$	● 178278	● 193690
1	0.25	32	3.7	2	3	$\Delta 0.82$	● 178281	● 193691
1.2	0.25	32	4.5	2	3	$\Delta 1.02$	● 178284	● 193692
1.4	0.3	32	5.2	2	3	$\Delta 1.18$	● 178287	● 193693

Δ 4H5H \rightarrow 4H6H = +0.02 mm



TAN

TAN40



62 63 91

TAN40VS



VS

11 12 13 14 32 62
63 71 72 73 74 81
93

TAN50



62 63 91

TAN50VS



VS

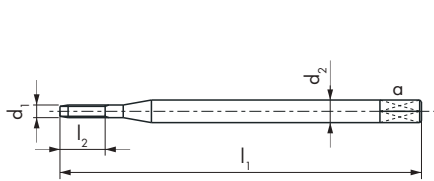
11 12 13 14 32 62
63 71 72 73 74 81
93

TAN40

TAN40VS

TAN50

TAN50VS



$\emptyset d_1$ SF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1.4	0.2	40	4.2	2.5		3	$\Delta 1.26$
1.6	0.2	40	4.8	2.5		3	$\Delta 1.46$
1.8	0.2	40	5.4	2.5		3	$\Delta 1.66$
2	0.2	45	6	2.8	2.1	3	$\Delta 1.86$
2.2	0.2	45	6.6	2.8	2.1	3	$\Delta 2.06$
2.2	0.25	45	6.6	2.8	2.1	3	$\Delta 2.02$
2.5	0.2	50	7.5	2.8	2.1	3	$\Delta 2.36$
2.5	0.25	50	7.5	2.8	2.1	3	$\Delta 2.32$

Δ 4H5H \rightarrow 4H6H = +0.02 mm

ID

ID

ID

ID

● 193833	● 170491	● 169767	● 170492
● 193834	● 193871	● 193908	● 193945
● 193835	● 193872	● 193909	● 193946
● 193836	● 193873	● 193910	● 193947
● 193837	● 193874	● 193911	● 193948
● 193838	● 193875	● 193912	● 193949
● 193839	● 193876	● 193913	● 193950
● 193840	● 193877	● 193914	● 193951



TAZ

TAZ40



TAZ40VS



TAZ50



TAZ50VS

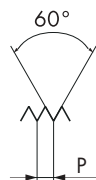
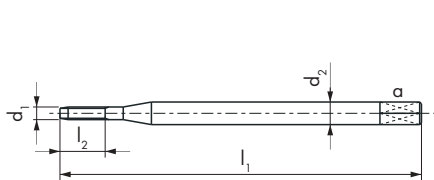


TAZ40

TAZ40VS

TAZ50

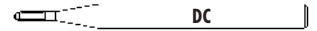
TAZ50VS



$\emptyset d_1$ SF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
1.4	0.2	40	4.2	2.5		3	$\Delta 1.26$
1.6	0.2	40	4.8	2.5		3	$\Delta 1.46$
1.8	0.2	40	5.4	2.5		3	$\Delta 1.66$
2	0.2	45	6	2.8	2.1	3	$\Delta 1.86$
2.2	0.2	45	6.6	2.8	2.1	3	$\Delta 2.06$
2.2	0.25	45	6.6	2.8	2.1	3	$\Delta 2.02$
2.5	0.2	50	7.5	2.8	2.1	3	$\Delta 2.36$
2.5	0.25	50	7.5	2.8	2.1	3	$\Delta 2.32$

ID	ID	ID	ID
● 193986	● 194051	● 194111	● 194174
● 193987	● 194052	● 194112	● 194175
● 193988	● 194053	● 194113	● 194176
● 193989	● 194054	● 194114	● 194177
● 193990	● 194055	● 194115	● 194178
● 193991	● 194056	● 194116	● 194179
● 193992	● 194057	● 194117	● 194180
● 193993	● 194058	● 194118	● 194181

Δ 4H5H → 4H6H = +0.02 mm



CMS

CMS50



62 63 93

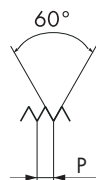
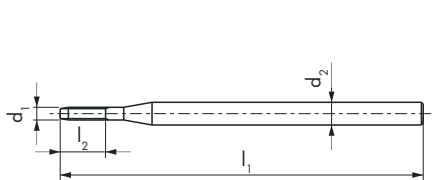
CMS50VS



31 62 63 73 74 83
93

CMS50

CMS50VS



Ø d ₁ SF	P mm	l ₁ mm	l ₂ mm	d ₂ h5 mm		
1.4	0.2	32	5.2	2	3	Δ 1.26
1.6	0.2	32	6	2	3	Δ 1.46
1.8	0.2	32	6.7	2	3	Δ 1.66
2	0.2	39	7.5	3	3	Δ 1.86
2.2	0.2	39	8.2	3	3	Δ 2.06
2.2	0.25	39	8.2	3	3	Δ 2.02
2.5	0.2	39	9.3	3	3	Δ 2.36
2.5	0.25	39	9.3	3	3	Δ 2.32

4H5H → 4H6H = +0.02 mm

ID

ID

● 180329	● 193694
● 193632	● 193695
● 193633	● 193696
● 193634	● 193697
● 193635	● 193698
● 193636	● 193699
● 193637	● 193700
● 193638	● 193701

TAN

TAN40



62 63 91

TAN40VS



VS

11 12 13 14 32 62
63 71 72 73 74 81
93

TAN50



62 63 91

TAN50VS



VS

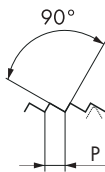
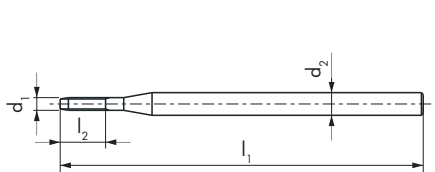
11 12 13 14 32 62
63 71 72 73 74 81
93

TAN40

TAN40VS

TAN50

TAN50VS



$\emptyset d_1$ 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	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

TAZ

TAZ40



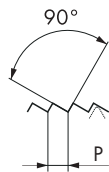
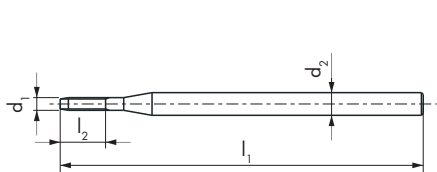
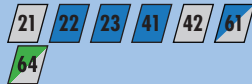
TAZ40VS



TAZ50



TAZ50VS



TAZ40

TAZ40VS

TAZ50

TAZ50VS



$\emptyset d_1$ SL	P mm	l_1 mm	l_2 mm	d_2 mm		
0.5	0.1	25	1.5	2	3	0.46
0.6	0.125	25	1.8	2	3	0.55
0.7	0.15	25	2.1	2	3	0.64
0.8	0.15	25	2.4	2	3	0.74
0.9	0.175	25	2.7	2	3	0.83
1	0.2	40	3	2.5	3	0.92
1.2	0.2	40	3.6	2.5	3	1.12
1.4	0.25	40	4.2	2.5	3	1.3

ID	ID	ID	ID
● 600210	● 600218	● 600194	● 600202
● 600211	● 600219	● 600195	● 600203
● 600212	● 600220	● 600196	● 600204
● 600213	● 600221	● 600197	● 600205
● 600214	● 600222	● 600198	● 600206
● 600215	● 600223	● 600199	● 600207
● 600216	● 600224	● 600200	● 600208
● 600217	● 600225	● 600201	● 600209

CMS

CMS50



62 63 93

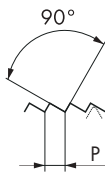
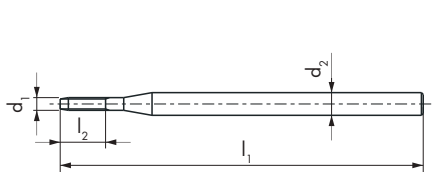
CMS50VS



31 62 63 73 74 83
93

CMS50

CMS50VS



$\emptyset d_1$ 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



H | PERSEVERING THREADING

00000



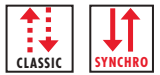
MACHOS PARA ROSCADO POR LAMINACIÓN NANO THREAD FORMERS NANO

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/mm ²)	Alargamiento Elongation A (%)
10 Aceros Steels	11 Aceros de decoletaaje	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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	-	-	-

MACHOS PARA ROSCADO POR LAMINACIÓN NANO THREAD FORMERS NANO



Desde página:
From page:

M
MF
UNC
UNF
S
SF
SL

FA		CFA	
Materiales normales Normal materials		Materiales no ferrosos Non-ferrous materials	
363	363	370	370
364	364		
365	365	371	371
366	366	372	372
367	367	373	373
368	368		
369	369		
FA80VS	FA83VS	CFA80VS	CFA83VS

	Vc (m/min) Guide Line		FA80VS	FA83VS	CFA80VS	CFA83VS
	Ø 0.3 - 1.4 mm	Ø 1.4 - 2.8 mm				
	Recubrimiento Coated	Recubrimiento Coated				
11	4 - 10	12 - 20				
12	4 - 10	12 - 20				
13	4 - 10	12 - 20				
14	4 - 10	12 - 20				
15	3 - 6	6 - 12				
16						
17						
18						
21	4 - 10	12 - 20				
22	3 - 6	6 - 12				
23	3 - 6	6 - 12				
24	3 - 6	6 - 12				
31						
32						
41						
42						
51	3 - 6	6 - 12				
52						
53						
61	4 - 10	12 - 20				
62	4 - 10	12 - 20				
63	4 - 10	12 - 20				
64	4 - 10	12 - 20				
71	4 - 10	12 - 20				
72	4 - 10	12 - 20				
73	4 - 10	12 - 20				
74						
81						
82						
83						
91	4 - 10	12 - 20				
92	4 - 10	12 - 20				
93	4 - 10	12 - 20				
94	4 - 10	12 - 20				

nano



				FA		CFA					
Características Characteristics					VS		VS		VS		VS
Tipo de agujero Hole type											
				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						

FA

FA80VS



VS

FA83VS

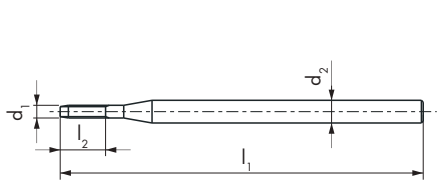


VS



FA80VS

FA83VS

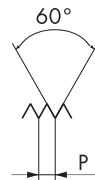
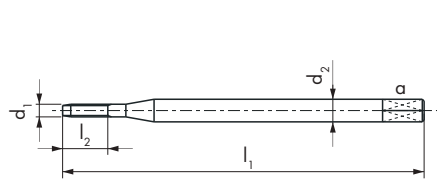


4HX

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	Δ0.44	● 161750	● 173719
0.6	0.15	25	1.8	2	Δ0.53	● 152412	● 173720
0.7	0.175	25	2.1	2	Δ0.62	● 152415	● 173721
0.8	0.2	25	2.4	2	Δ0.71	● 152418	● 173722
0.9	0.225	25	2.7	2	Δ0.8	● 152421	● 173723
1	0.25	40	3	2.5	Δ0.88	● 151559	● 173729
1.2	0.25	40	3.6	2.5	Δ1.08	● 151565	● 173730
1.4	0.3	40	4.2	2.5	Δ1.25	● 152429	● 173731

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		Δ1.45	● 152433	● 193801
1.8	0.35	40	5.4	2.5		Δ1.65	● 193764	● 193802
2	0.4	45	8	2.8	2.1	Δ1.8	● 151566	● 193803
2.3	0.4	45	9	2.8	2.1	Δ2.1	● 193765	● 193804
2.5	0.45	50	10	2.8	2.1	Δ2.3	● 193766	● 193805
2.6	0.45	50	10	2.8	2.1	Δ2.4	● 193767	● 193806

Tol. = +0/0.02 mm

FA

FA80VS

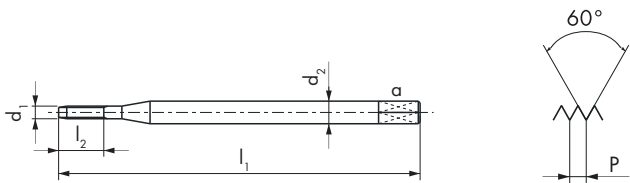


FA83VS



FA80VS

FA83VS

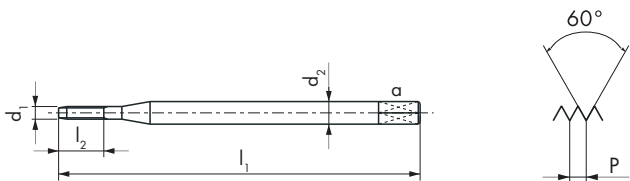


4HX

4HX

$\varnothing d_1$ 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		$\Delta 1.31$	● 155928	● 180436
1.6	0.2	40	4.8	2.5		$\Delta 1.51$	● 156480	● 193807
1.8	0.2	40	5.4	2.5		$\Delta 1.71$	● 193768	● 193808
2	0.2	45	6	2.8	2.1	$\Delta 1.91$	● 193769	● 193809
2	0.25	45	6	2.8	2.1	$\Delta 1.88$	● 193770	● 193810
2.2	0.2	45	6.6	2.8	2.1	$\Delta 2.11$	● 193771	● 193811
2.2	0.25	45	6.6	2.8	2.1	$\Delta 2.08$	● 193772	● 193812
2.3	0.2	45	6.9	2.8	2.1	$\Delta 2.21$	● 193773	● 193813
2.3	0.25	45	6.9	2.8	2.1	$\Delta 2.18$	● 193774	● 193814
2.5	0.2	50	7.5	2.8	2.1	$\Delta 2.41$	● 193775	● 193815
2.5	0.25	50	7.5	2.8	2.1	$\Delta 2.38$	● 193776	● 193816

Tol. = +0/0.02 mm



6HX

6HX

$\varnothing d_1$ 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	$\Delta 2.35$	● 193777	● 193817
2.6	0.35	50	7.8	2.8	2.1	$\Delta 2.45$	● 193778	● 193818


Tol. = +0/0.02 mm




PM

DC - DIN 371

FA

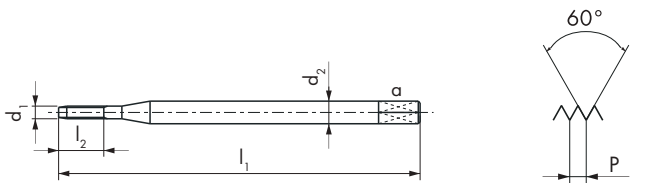
FA80VS  VS

FA83VS  VS

11	12	13	14	15
21	22	23	24	51
61	63	64	71	72
73	91	92	94	

FA80VS

FA83VS



2BX

2BX

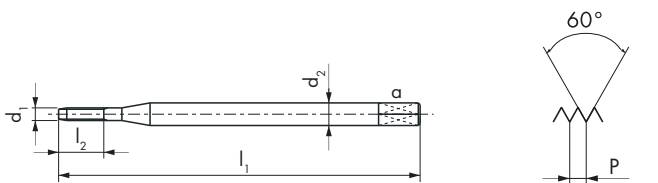
$\emptyset d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm	
1	64	1.85	40	5.6	2.5	1.65	Δ 1.65
2	56	2.18	45	9	2.8	2.1	Δ 2
3	48	2.51	50	10	2.8	2.1	Δ 2.25

ID

ID

- | | |
|--|--|
| ● 193779 | ● 193819 |
| ● 193780 | ● 193820 |
| ● 193781 | ● 193821 |

Δ Tol. = +0/0.02 mm



3BX

3BX

$\emptyset d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm	
1	64	1.85	40	5.6	2.5	1.65	Δ 1.65
2	56	2.18	45	9	2.8	2.1	Δ 2
3	48	2.51	50	10	2.8	2.1	Δ 2.25

ID

ID

- | | |
|--|--|
| ● 193782 | ● 193822 |
| ● 193783 | ● 193823 |
| ● 193784 | ● 193824 |

Δ Tol. = +0/0.02 mm


nomo




PM

DC - DIN 371

FA

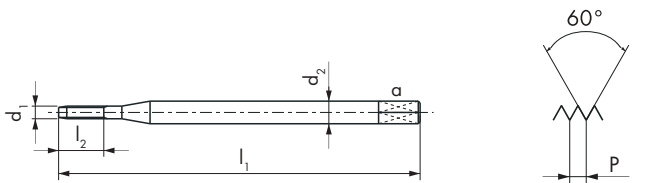
FA80VS  VS

FA83VS  VS

11	12	13	14	15
21	22	23	24	51
61	63	64	71	72
73	91	92	94	

FA80VS

FA83VS



2BX

2BX

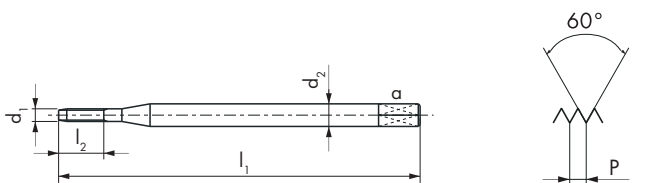
$\emptyset d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm	
0	80	1.52	40	4.6	2.5		$\Delta 1.4$
1	72	1.85	40	5.6	2.5		$\Delta 1.7$
2	64	2.18	45	9	2.8	2.1	$\Delta 2$
3	56	2.51	50	10	2.8	2.1	$\Delta 2.3$

Δ Tol. = +0/0.02 mm

ID

ID

- | | |
|--|--|
| ● 193785 | ● 193825 |
| ● 193786 | ● 193826 |
| ● 193787 | ● 193827 |
| ● 193788 | ● 193828 |



3BX

3BX

$\emptyset d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm	
0	80	1.52	40	4.6	2.5		$\Delta 1.4$
1	72	1.85	40	5.6	2.5		$\Delta 1.7$
2	64	2.18	45	9	2.8	2.1	$\Delta 2$
3	56	2.51	50	10	2.8	2.1	$\Delta 2.3$

Δ Tol. = +0/0.02 mm

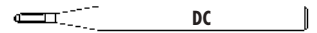
ID

ID

- | | |
|--|--|
| ● 193789 | ● 193829 |
| ● 193790 | ● 193830 |
| ● 193791 | ● 193831 |
| ● 193792 | ● 193832 |



PM



FA

FA80VS



VS

FA83VS

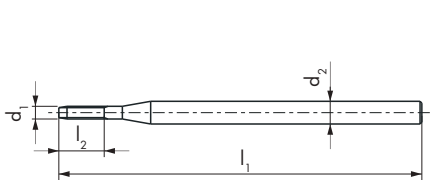


VS



FA80VS

FA83VS



$\emptyset d_1$ S	P mm	l_1 mm	l_2 mm	d_2 mm	
0.5	0.125	25	1.5	2	$\Delta 0.44$
0.6	0.15	25	1.8	2	$\Delta 0.53$
0.7	0.175	25	2.1	2	$\Delta 0.62$
0.8	0.2	25	2.4	2	$\Delta 0.71$
0.9	0.225	25	2.7	2	$\Delta 0.8$
1	0.25	40	3.0	2.5	$\Delta 0.88$
1.2	0.25	40	3.6	2.5	$\Delta 1.08$
1.4	0.3	40	4.2	2.5	$\Delta 1.25$

Δ Tol. = +0/0.02 mm

ID

ID

● 158977	● 173724
● 151561	● 173725
● 151742	● 173726
● 151564	● 173727
● 151562	● 173728
● 151542	● 173732
● 151543	● 173733
● 152427	● 173734



FA

FA80VS

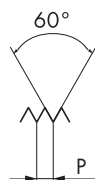
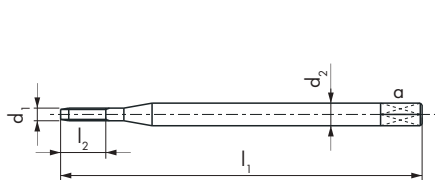


FA83VS



FA80VS

FA83VS



$\emptyset d_1$ SF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	
1.4	0.2	40	4.2	2.5		$\Delta 1.31$
1.6	0.2	40	4.8	2.5		$\Delta 1.51$
1.8	0.2	40	5.4	2.5		$\Delta 1.71$
2	0.2	45	6	2.8	2.1	$\Delta 1.91$
2.2	0.2	45	6.6	2.8	2.1	$\Delta 2.11$
2.2	0.25	45	6.6	2.8	2.1	$\Delta 2.08$
2.5	0.2	50	7.5	2.8	2.1	$\Delta 2.41$
2.5	0.25	50	7.5	2.8	2.1	$\Delta 2.38$

ID	ID
● 176180	● 193793
● 193757	● 193794
● 193758	● 193795
● 193759	● 193796
● 193760	● 193797
● 193761	● 193798
● 193762	● 193799
● 193763	● 193800

Δ Tol. = +0/0.02 mm

FA

FA80VS

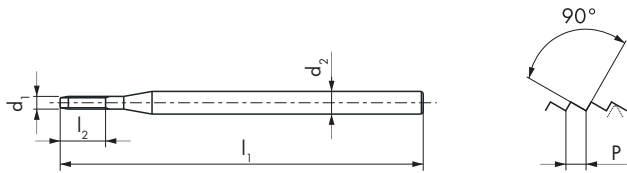


FA83VS



FA80VS

FA83VS



$\varnothing d_1$ 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



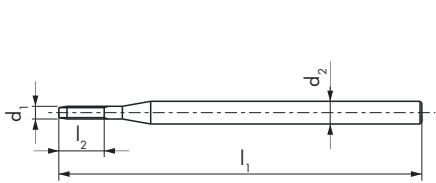
62 63 91 92 94

CFA83VS



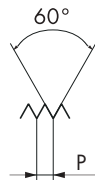
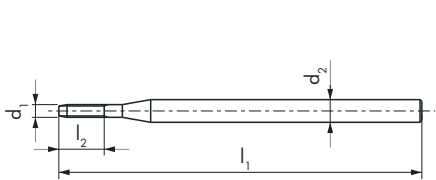
CFA80VS

CFA83VS



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ h ₅ mm		ID	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

Tol. = +0/0.02 mm



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ h ₅ mm		ID	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

Tol. = +0/0.02 mm





CFA

CFA80VS



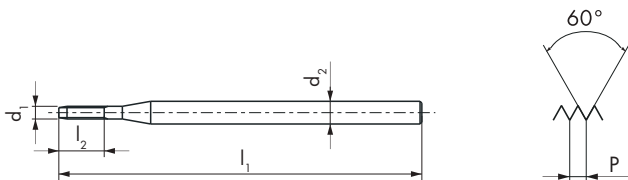
62 63 91 92 94

CFA83VS



CFA80VS

CFA83VS



$\emptyset d$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 h5 mm	
1	64	1.85	32	5.5	2	$\Delta 1.65$
2	56	2.18	39	8.6	3	$\Delta 2$
3	48	2.51	39	10	3	$\Delta 2.25$

ID

ID

● 193596	● 193625
● 193597	● 193626
● 193598	● 193627

Δ Tol. = +0/0.02 mm



CFA

CFA80VS



62 63 91 92 94

CFA83VS



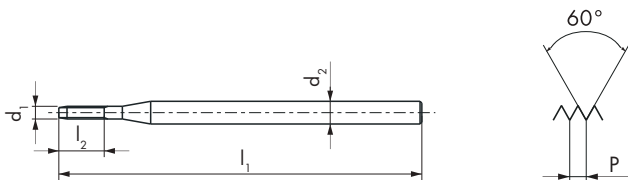
CFA80VS

CFA83VS



2BX

2BX



$\emptyset d$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 ^{h5} mm	
0	80	1.52	32	4.5	2	$\Delta 1.4$
1	72	1.85	32	5.5	2	$\Delta 1.7$
2	64	2.18	39	8.6	3	$\Delta 2$
3	56	2.51	39	10	3	$\Delta 2.3$

ID	ID
● 193599	● 193628
● 193600	● 193629
● 193601	● 193630
● 193602	● 193631

Δ Tol. = +0/0.02 mm



CFA

CFA80VS



VS

62 63 91 92 94

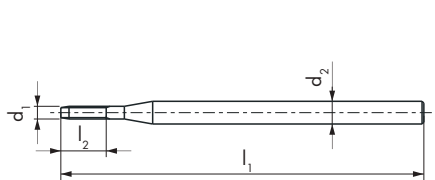
CFA83VS



VS

CFA80VS

CFA83VS



$\emptyset d_1$ S	P mm	l_1 mm	l_2 mm	d_2 h5 mm	
0.5	0.125	32	1.5	1.5	$\Delta 0.44$
0.6	0.15	32	1.8	1.5	$\Delta 0.53$
0.7	0.175	32	2.1	1.5	$\Delta 0.62$
0.8	0.2	32	2.4	1.5	$\Delta 0.71$
0.9	0.225	32	2.7	1.5	$\Delta 0.8$
1	0.25	32	3	2	$\Delta 0.88$
1.2	0.25	32	3.6	2	$\Delta 1.08$
1.4	0.3	32	4.2	2	$\Delta 1.25$

Δ Tol. = +0/0.02 mm

ID

ID

● 171770	● 193603
● 171772	● 193604
● 171774	● 193605
● 171776	● 193606
● 171778	● 193607
● 171780	● 193608
● 171781	● 193609
● 171784	● 193610

CALIBRES TAMPÓN — THREAD PLUG GAUGES



METROLOGÍA — METROLOGY



PRODUCCIÓN — PRODUCTION



< 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.

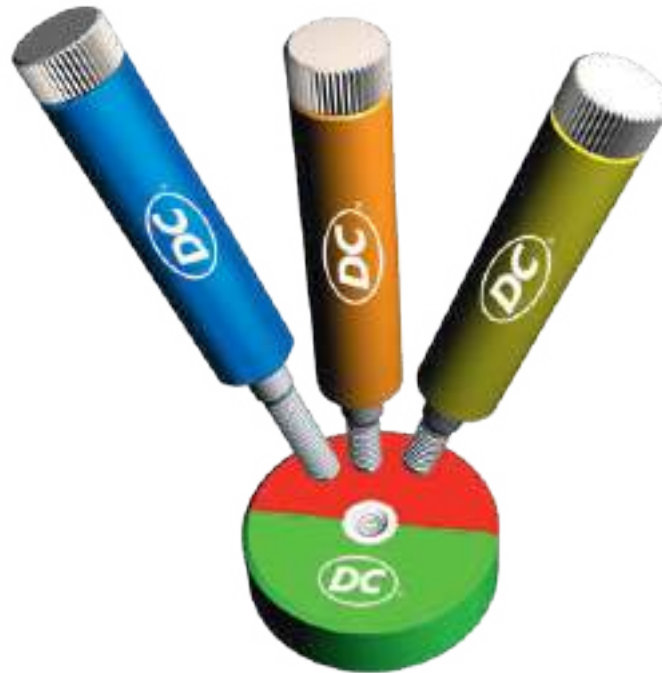
CONTRA CALIBRES — PLUG CHECK GAUGES

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.

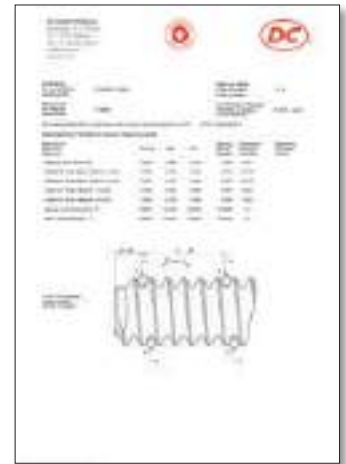
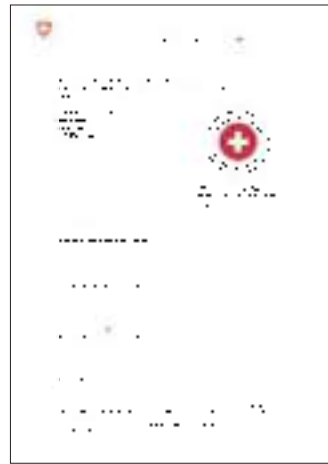
SCS CERTIFICADO DE MEDICIÓN



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.

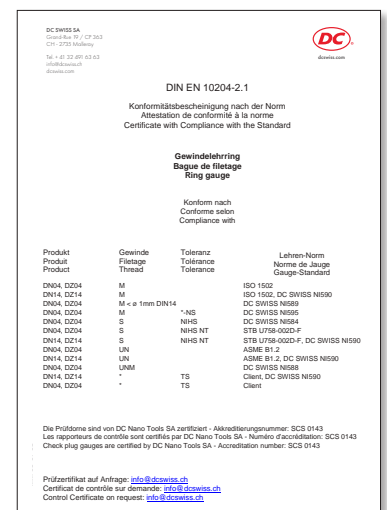
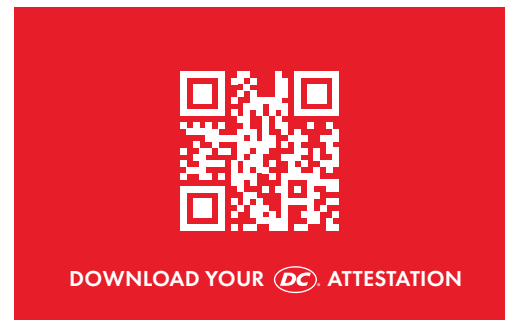
DC SWISS SA quality control

DOWNLOAD YOUR 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





pen
pencil

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

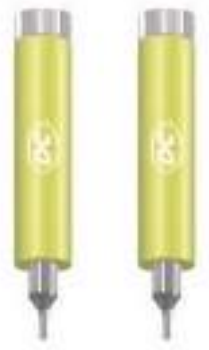

OBSERVACIONES — REMARKS

INFORMACIÓN DE ENVÍO — DELIVERY INFORMATION

Por favor, dirija su pedido.
Thank you for initialing your order.



	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	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								

	Testigo de desgaste WEAR Master plug gauges WEAR	Patrones Calibration thread plug gauges
Características Characteristics		
		
Tipo Type	RN05-3 WEAR	RN15-3 WEAR
M 4H / 5h	ISO DIN 14 ISO DIN 13	
M 6H / 6g	ISO DIN 14 ISO DIN 13	401
M 5H / 6h	ISO DIN 13	401
MF 4H / 4h	ISO DIN 13	404
MF 6H / 6g	ISO DIN 13	404
MF 6h	ISO DIN 13	404
S NIHS	NIHS	411

Pictogramas - Pictographs



"Pasa"
"Go"



"No pasa"
"No-Go"



Tolerancia 6H, "Pasa"
Tolerance 6H, "Go"



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



Phynox KL
Phynox KL

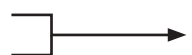


Sobre pedido, todos los calibres de roscas son igualmente a la entrega para roscado a izquierda
All gauges can be supplied with a left-hand thread upon request

Utilización — Use



RN05-1
RN05-2



DN04/DZ04



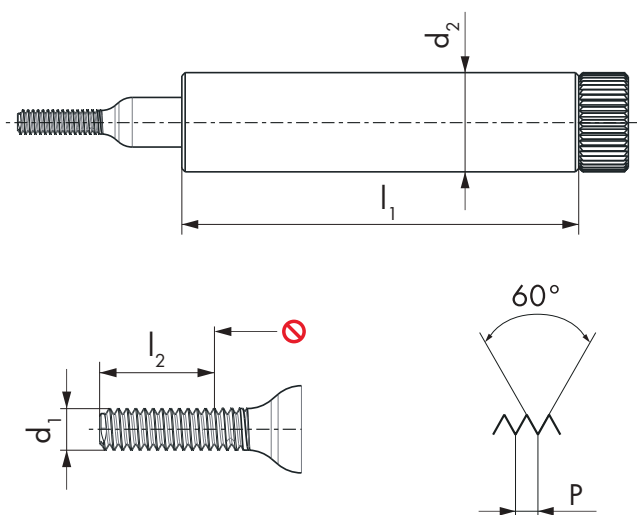
RN15-1
RN15-2



DN14/DZ14



nano



DN01 GO DN02 NO-GO DN01 GO DN02 NO-GO



4H **4H** **5H** **5H**

$\emptyset d_1$ M	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.9	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

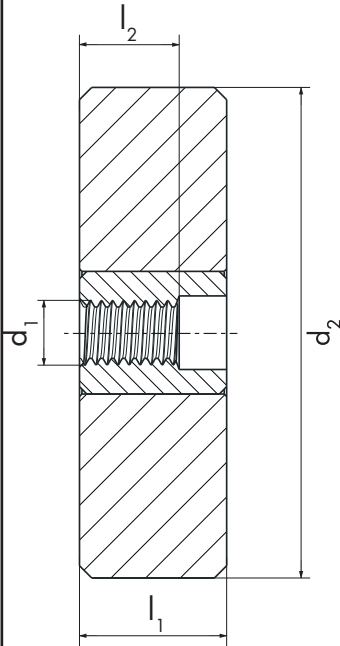
6H **6H**

$\emptyset d_1$ M	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	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.

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DZ04 GO

DZ14 NO-GO

DZ04 GO

DZ14 NO-GO



5h

5h

6h

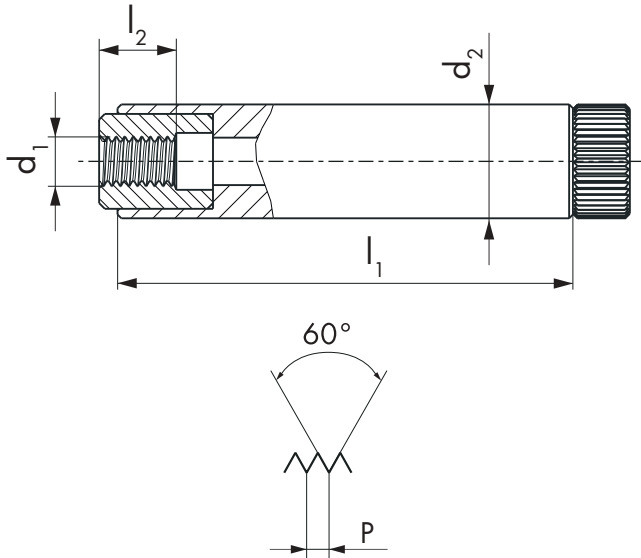
6h



All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.



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DN04 GO DN14 NO-GO DN04 GO DN14 NO-GO



$\emptyset d_1$ 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								



$\emptyset d_1$ 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



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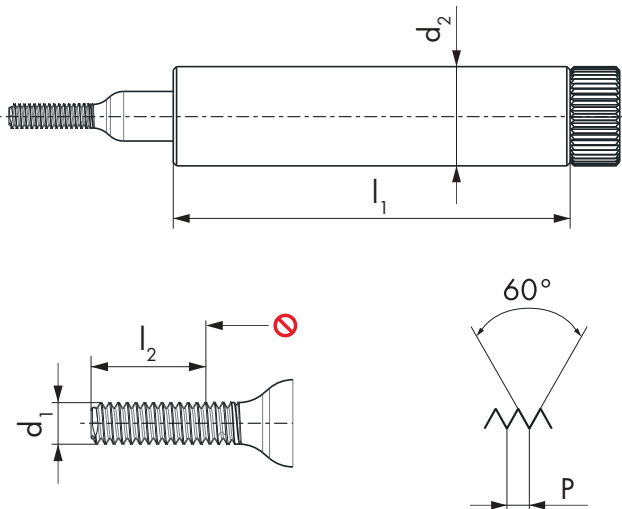
nano

DN01 GO

DN02 NO-GO

DN01 GO

DN02 NO-GO



4H

4H

6H

6H

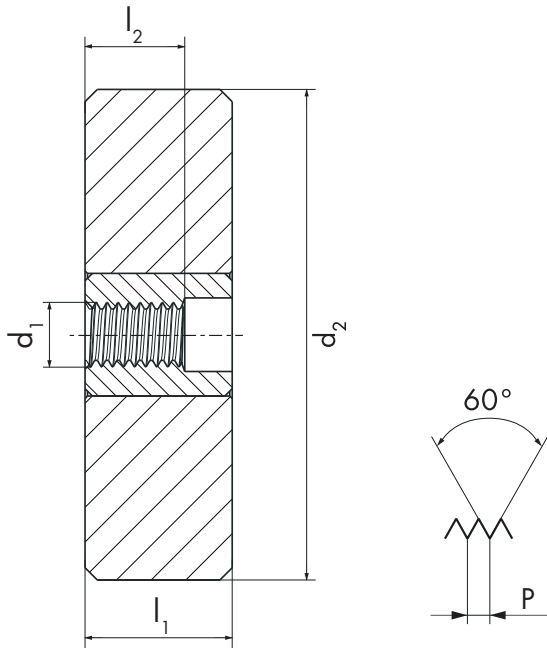
$\varnothing d_1$ MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	4.2	6	● 191116	● 191130		
1.6	0.2	24	3	6	● 191117	● 191131		
1.8	0.2	24	3	6	● 191118	● 191132		
2	0.2	24	3	6	● 191119	● 191133		
2	0.25	24	3	6	● 192794	● 192797		
2.2	0.2	24	3	6	● 191120	● 191134		
2.2	0.25	24	3	6	● 191121	● 191135		
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

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DZ04 GO

DZ14 NO-GO

DZ04 GO

DZ14 NO-GO



4h

4h

6g

6g

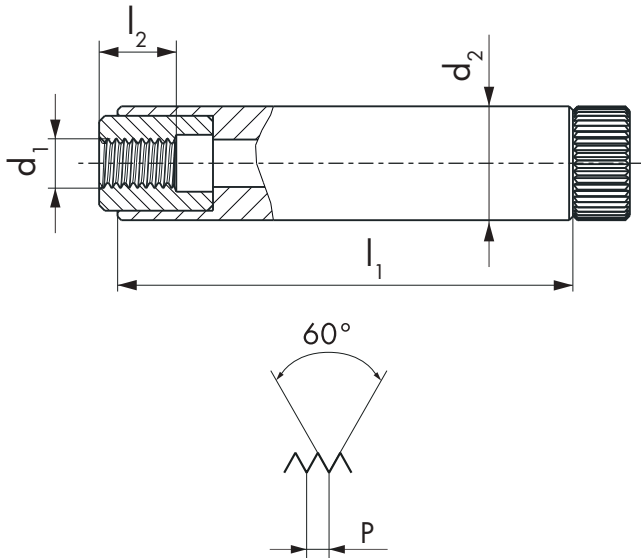
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	6	2.1	20	● 194887	● 194888	● 192858 ¹	● 192871 ¹
1.6	0.2	6	1.8	20	● 191201	● 191215	● 191229	● 191243
1.8	0.2	6	1.8	20	● 191202	● 191216	● 191230	● 191244
2	0.2	6	1.8	20	● 190711	● 190710	● 191231	● 191245
2	0.25	6	2.25	20	● 194872	● 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



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DN04 GO

DN14 NO-GO

DN04 GO

DN14 NO-GO



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

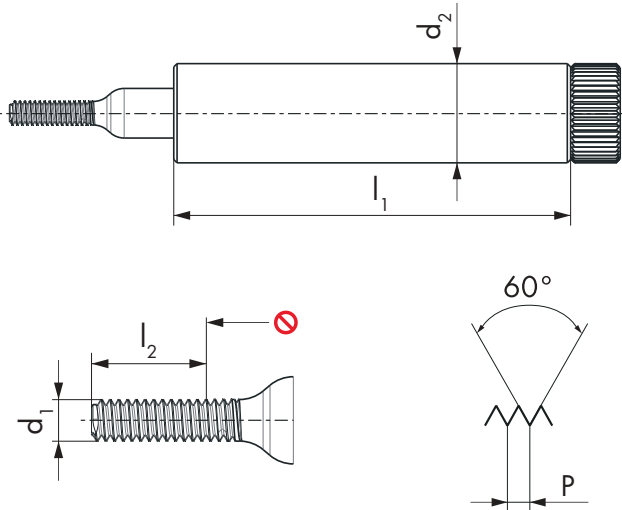


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UNC, UNF ASME B1.1 ASME B1.2

VHM
CAR

nano



DN01 GO DN02 NO-GO DN01 GO DN02 NO-GO



2B **2B** **3B** **3B**

$\emptyset d_1$ UNC	P TPI	$\emptyset d_1$ 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
$\emptyset d_1$ UNF	P TPI	$\emptyset d_1$ 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.

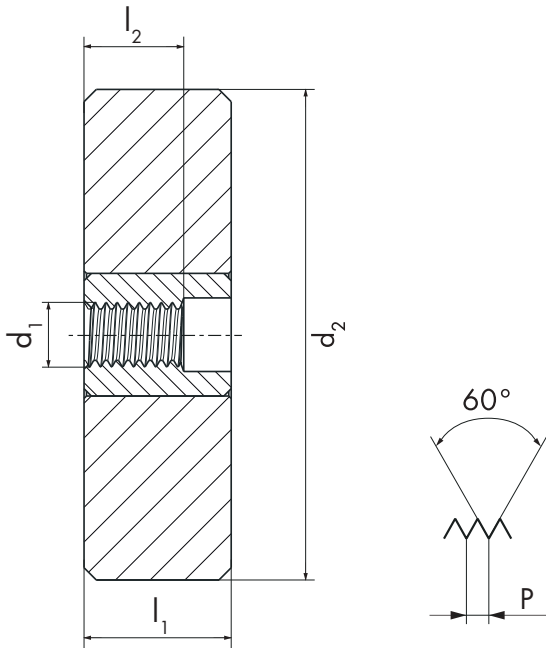
UNC, UNF

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

$\emptyset d_1$ UNC	P TPI	$\emptyset d_1$ 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
$\emptyset d_1$ UNF	P TPI	$\emptyset d_1$ 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



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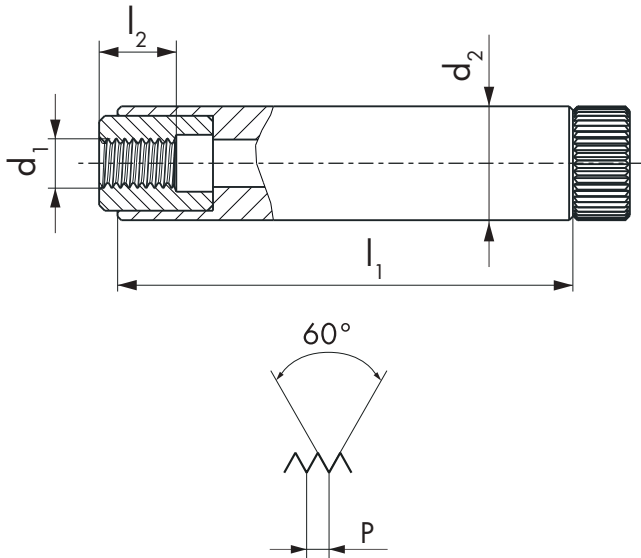
UNC, UNF

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

$\emptyset d_1$ UNC	P TPI	$\emptyset d_1$ 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
$\emptyset d_1$ UNF	P TPI	$\emptyset d_1$ 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



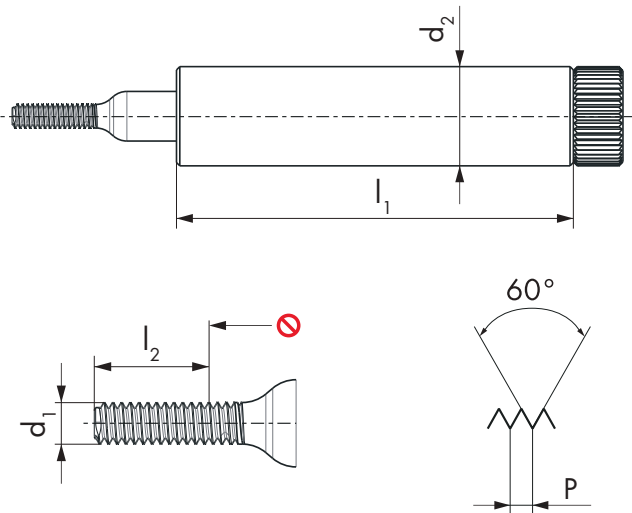
All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.

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DN01 GO

DN01 GO

DN02 NO-GO

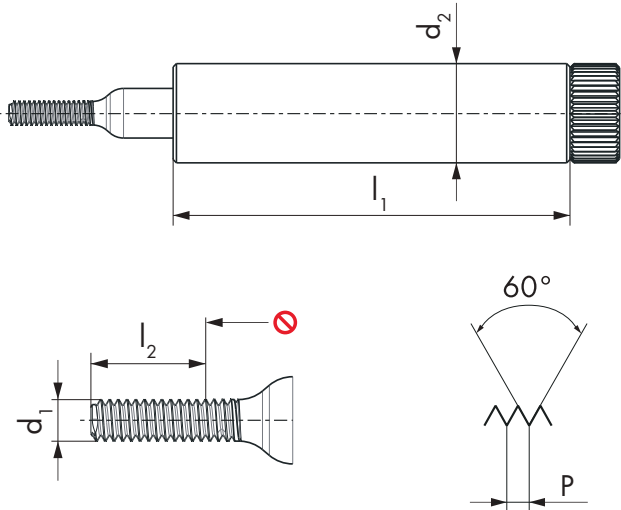


$\emptyset d_1$ S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID
0.3	0.08	24	0.9	6	● 190733	● 193242	● 190752
0.35	0.09	24	1.05	6	● 190734	● 193243	● 190753
0.4	0.1	24	1.2	6	● 190735	● 193244	● 190754
0.5	0.125	24	1.5	6	● 190736	● 193245	● 190755
0.6	0.15	24	1.8	6	● 190737	● 193246	● 190756
0.7	0.175	24	2.1	6	● 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.

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DN01 GO

DN02 NO-GO



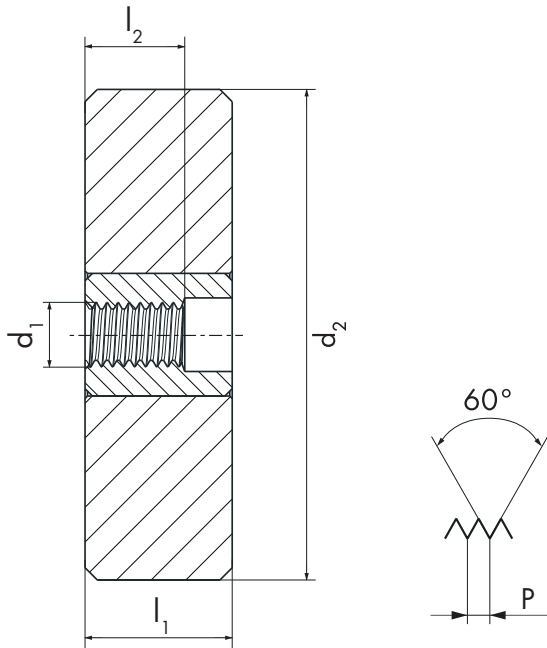
$\varnothing d_1$ S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID
0.3	0.08	24	0.9	6	● 190771	● 190790
0.35	0.09	24	1.05	6	● 190772	● 190791
0.4	0.1	24	1.2	6	● 190773	● 190792
0.5	0.125	24	1.5	6	● 190774	● 190793
0.6	0.15	24	1.8	6	● 190775	● 190794
0.7	0.175	24	2.1	6	● 190776	● 190795
0.8	0.2	24	2.4	6	● 190777	● 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



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DZ04 GO

DZ14 NO-GO

DZ04 GO

DZ14 NO-GO



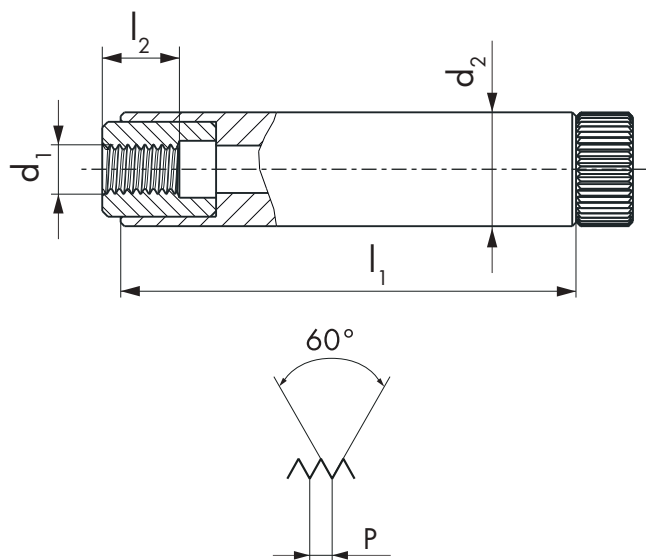
$\emptyset d_1$ S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
* 0.3	0.08	6	0.45	20	● 190809	● 190828	● 190847	● 190866
* 0.35	0.09	6	0.53	20	● 190810	● 190829	● 190848	● 190867
0.4	0.1	6	0.6	20	● 190811	● 190830	● 190849	● 190868
0.5	0.125	6	0.75	20	● 190812	● 190831	● 190850	● 190869
0.6	0.15	6	0.9	20	● 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



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DN04 GO DN14 NO-GO DN04 GO DN14 NO-GO



$\emptyset d_1$ 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



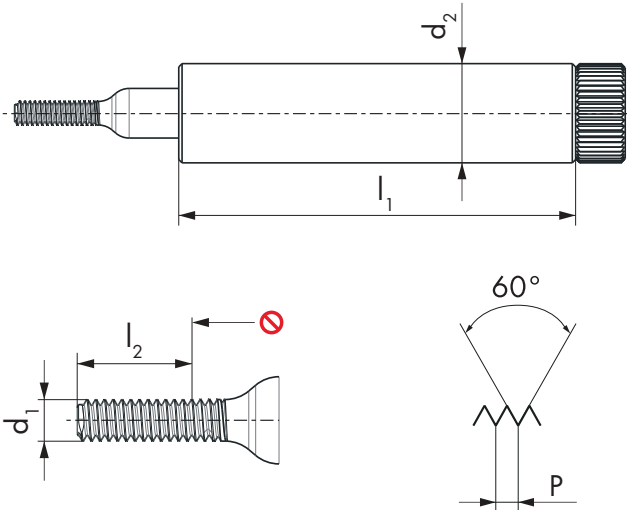
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DN01 GO

DN01 GO

DN02 NO-GO



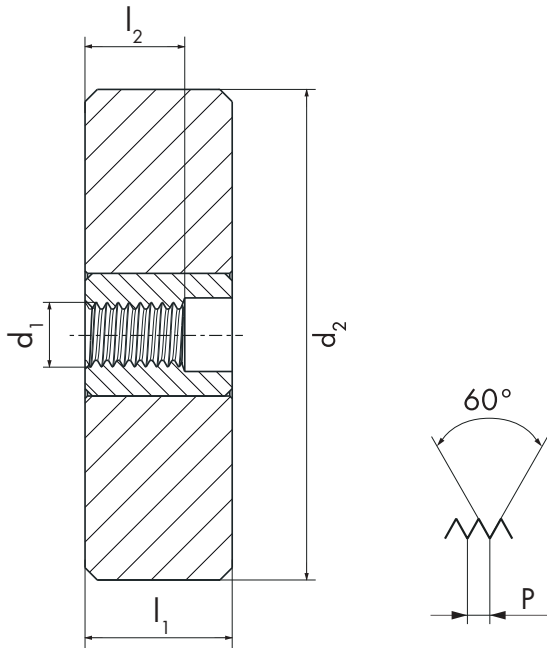
$\emptyset d_1$ SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID
1.4	0.2	24	4.2	6	● 190744	● 193256	● 190763
1.6	0.2	24	3	6	● 190745	● 193257	● 190764
1.8	0.2	24	3	6	● 190746	● 193258	● 190765
2	0.2	24	3	6	● 190747	● 193259	● 190766
2.2	0.2	24	3	6	● 190748	● 193260	● 190767
2.2	0.25	24	3	6	● 190749	● 193261	● 190768
2.5	0.2	24	3	6	● 190750	● 193262	● 190769
2.5	0.25	24	3	6	● 190751	● 193263	● 190770

nano



All nano thread plug gauges are SCS-certified and the paid certificate is available on request.

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DZ04 GO

DZ14 NO-GO



$\emptyset d_1$ 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

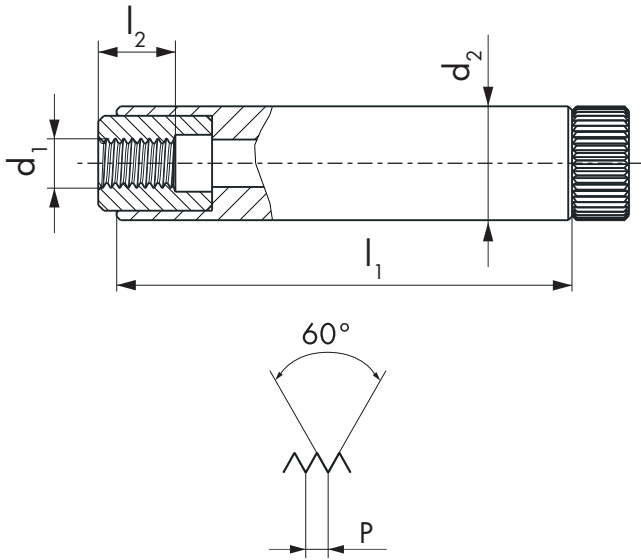


All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.

nano

DN04 GO

DN14 NO-GO



$\emptyset d_1$ 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

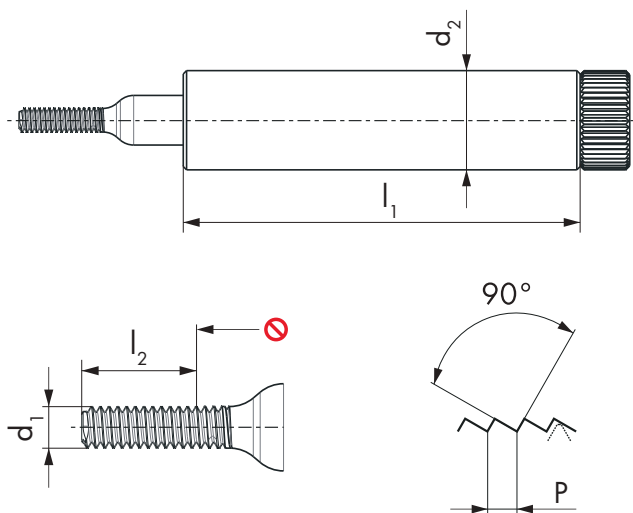


All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.

nano

DN01 GO

DN02 NO-GO



$\emptyset d_1$ 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.



ISO DIN 14 / ISO DIN 13
DC SWISS NI589 / ISO 1502

VHM
CAR

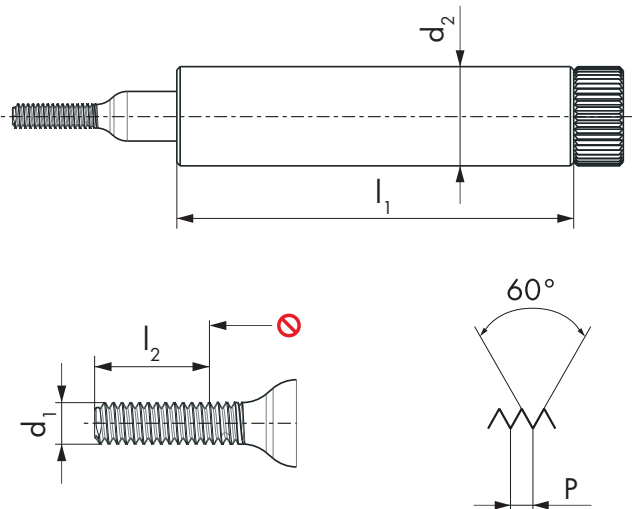
nano

RN05-1 GO

RN15-1 GO

RN05-1 GO

RN15-1 GO



$\emptyset d_1$ 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



$\emptyset d_1$ 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.



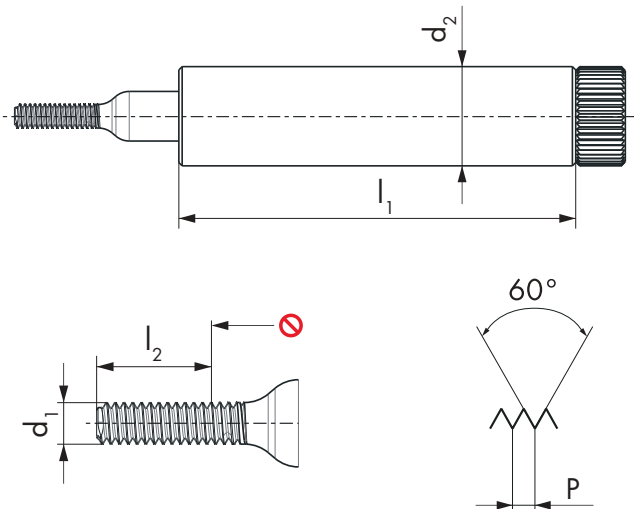
nano



ISO DIN 14 / ISO DIN 13
DC SWISS NI589 / ISO 1502



nano



RN05-2
NO-GO

RN15-2
NO-GO

RN05-2
NO-GO

RN15-2
NO-GO



5h

5h

6h

6h

$\emptyset d_1$ 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

$\emptyset d_1$ 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.



ISO DIN 13
ISO 1502

VHM
CAR

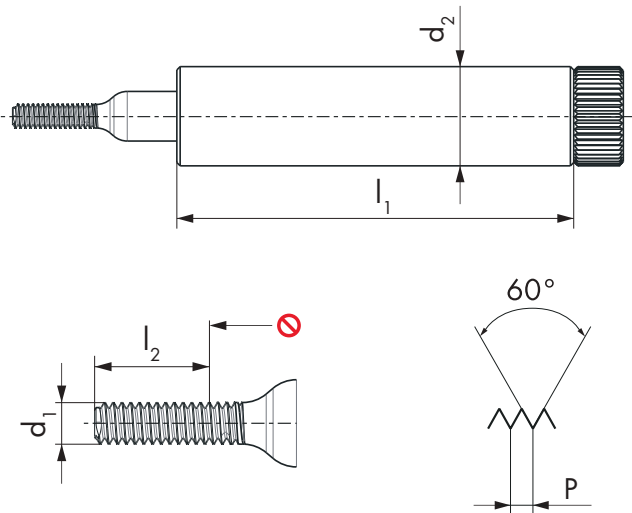
nano

RN05-3
WEAR

RN15-3
WEAR

RN05-3
WEAR

RN15-3
WEAR



6h

6h

6g

6g

$\emptyset d_1$ 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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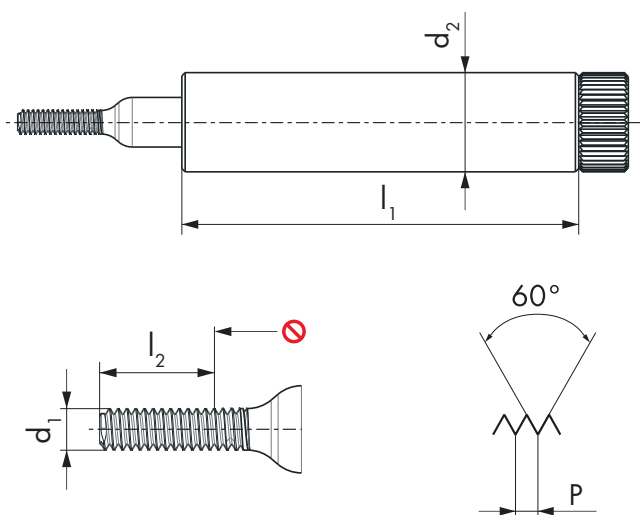
nano

RN05-1 GO

RN15-1 GO

RN05-1 GO

RN15-1 GO



4h

4h

6h

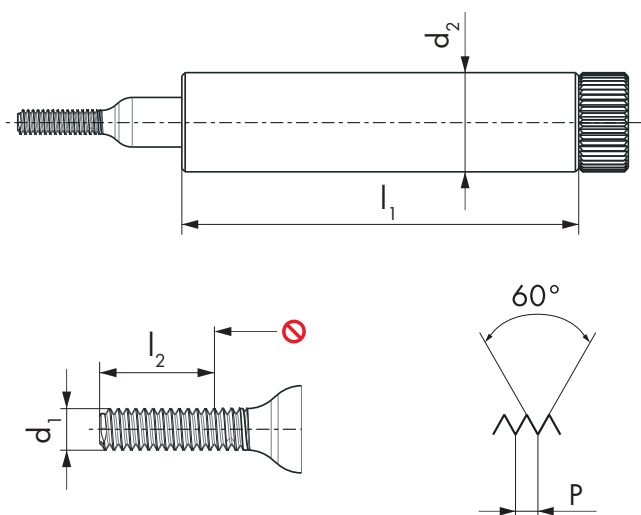
6h

$\emptyset d_1$ 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	● 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
							6g	6g
$\emptyset d_1$ MF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID		
2.5	0.35	24	4.45	6	● 192943	● 192956		
2.6	0.35	24	4.6	6	● 192944	● 192957		



SCS certificate included.

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**RN05-2
NO-GO**

**RN15-2
NO-GO**

**RN05-2
NO-GO**

**RN15-2
NO-GO**



4h

4h

6h

6h

$\emptyset d_1$ 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

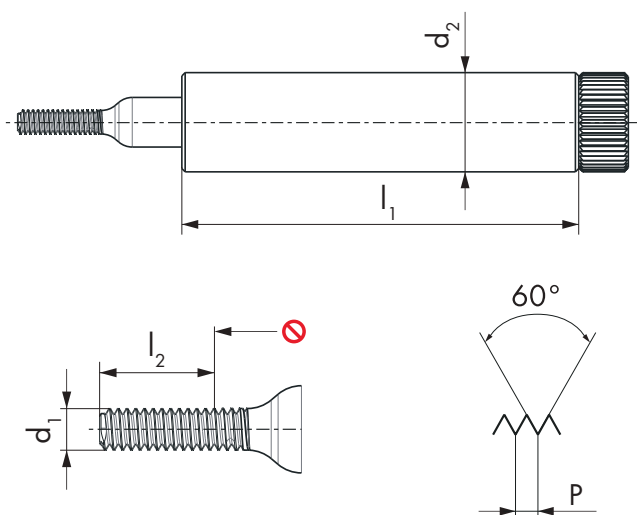
6g

$\emptyset d_1$ 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.

nano



RN05-3 WEAR **RN15-3 WEAR** **RN05-3 WEAR** **RN15-3 WEAR**



4h **4h** **6h** **6h**

$\emptyset d_1$ MF	P mm	l_1 mm	l_2 G0 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**

$\emptyset d_1$ MF	P mm	l_1 mm	l_2 G0 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.

UNC, UNF ASME B1.1 DC SWISS NI582

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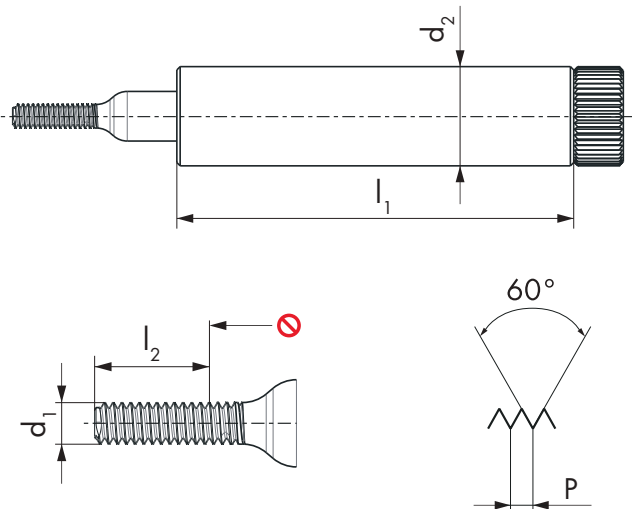
nano

RN05-1 GO

RN15-1 GO

RN05-1 GO

RN15-1 GO



2A

2A

3A

3A

$\emptyset d_1$ UNC	P TPI	$\emptyset d_1$ 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
$\emptyset d_1$ UNF	P TPI	$\emptyset d_1$ 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.

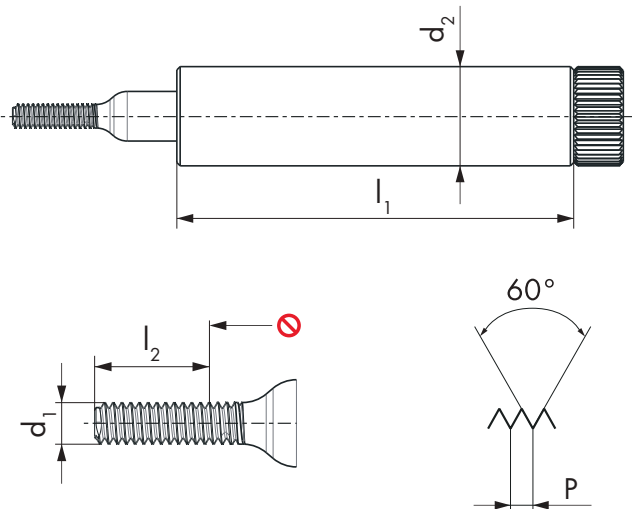


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UNC, UNF ASME B1.1 DC SWISS NI582

VHM
CAR

nano



RN05-2
NO-GO

RN15-2
NO-GO

RN05-2
NO-GO

RN15-2
NO-GO



2A

2A

3A

3A

$\emptyset d_1$ UNC	P TPI	$\emptyset d_1$ 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
$\emptyset d_1$ UNF	P TPI	$\emptyset d_1$ 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.

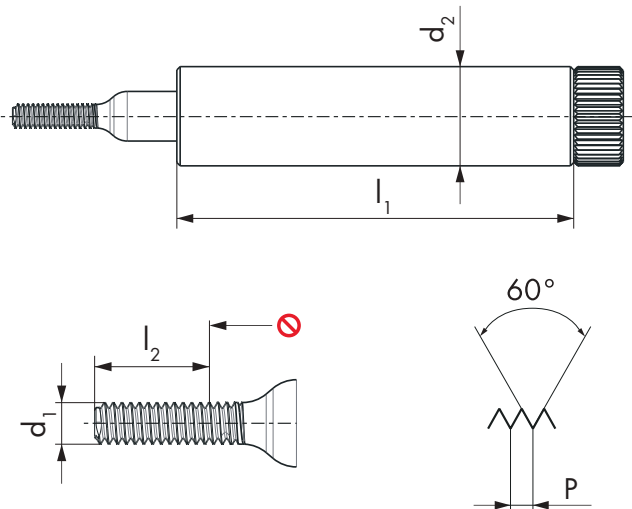
nano

RN05-1 GO

RN15-1 GO

RN05-1 GO

RN15-1 GO

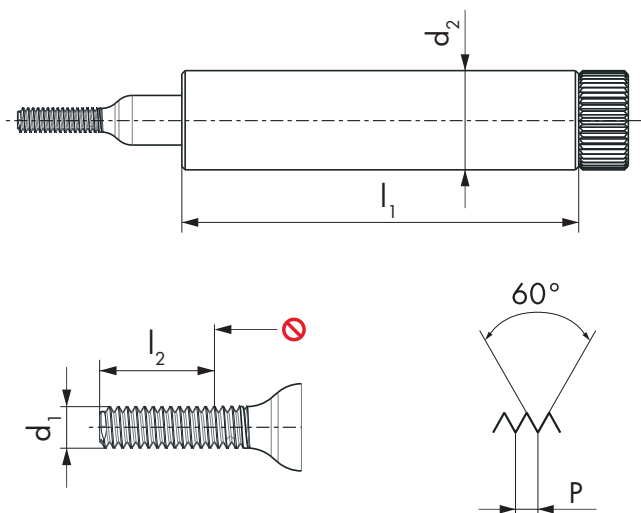


$\emptyset d_1$ S	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.61	6	● 190961	● 190999	● 191037	● 191075
0.35	0.09	24	0.71	6	● 190962	● 191000	● 191038	● 191076
0.4	0.1	24	0.8	6	● 190963	● 191001	● 191039	● 191077
0.5	0.125	24	1	6	● 190964	● 191002	● 191040	● 191078
0.6	0.15	24	1.2	6	● 190965	● 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.

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**RN05-2
NO-GO**

**RN15-2
NO-GO**

**RN05-2
NO-GO**

**RN15-2
NO-GO**



$\emptyset d_1$ 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.

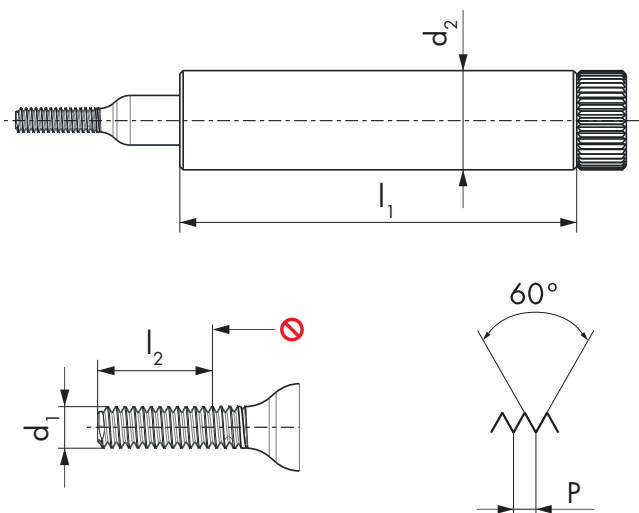
nano

RN05-1 GO

RN15-1 GO

RN05-1 GO

RN15-1 GO

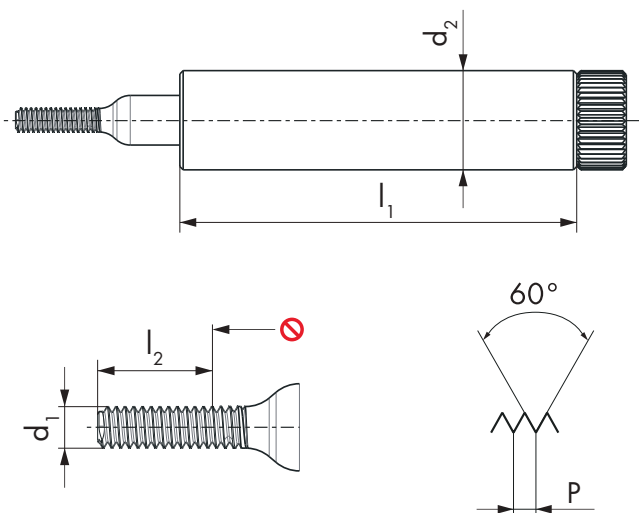


$\emptyset d_1$ SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	● 190972	● 191010	● 191048	● 191086
1.6	0.2	24	2.2	6	● 190973	● 191011	● 191049	● 191087
1.8	0.2	24	2.2	6	● 190974	● 191012	● 191050	● 191088
2	0.2	24	2.2	6	● 190975	● 191013	● 191051	● 191089
2.2	0.2	24	2.2	6	● 190976	● 191014	● 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.

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RN05-2
NO-GO

RN15-2
NO-GO

RN05-2
NO-GO

RN15-2
NO-GO

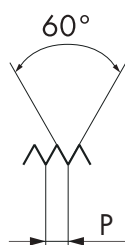
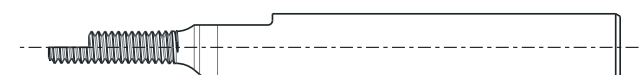
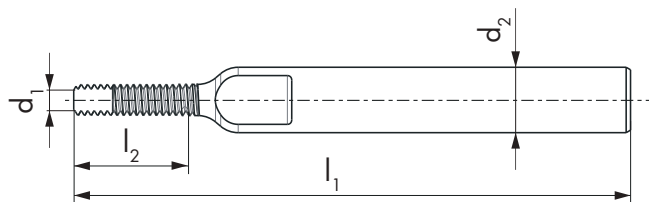


$\emptyset d_1$ SF	P mm	l_1 mm	l_2 GO mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	● 190991	● 191029	● 191067	● 191105
1.6	0.2	24	1.6	6	● 190992	● 191030	● 191068	● 191106
1.8	0.2	24	1.6	6	● 190993	● 191031	● 191069	● 191107
2	0.2	24	1.6	6	● 190994	● 191032	● 191070	● 191108
2.2	0.2	24	1.6	6	● 190995	● 191033	● 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.

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EN00



NIHS

$\varnothing d_1$ 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 específico. 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 metroológico 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.

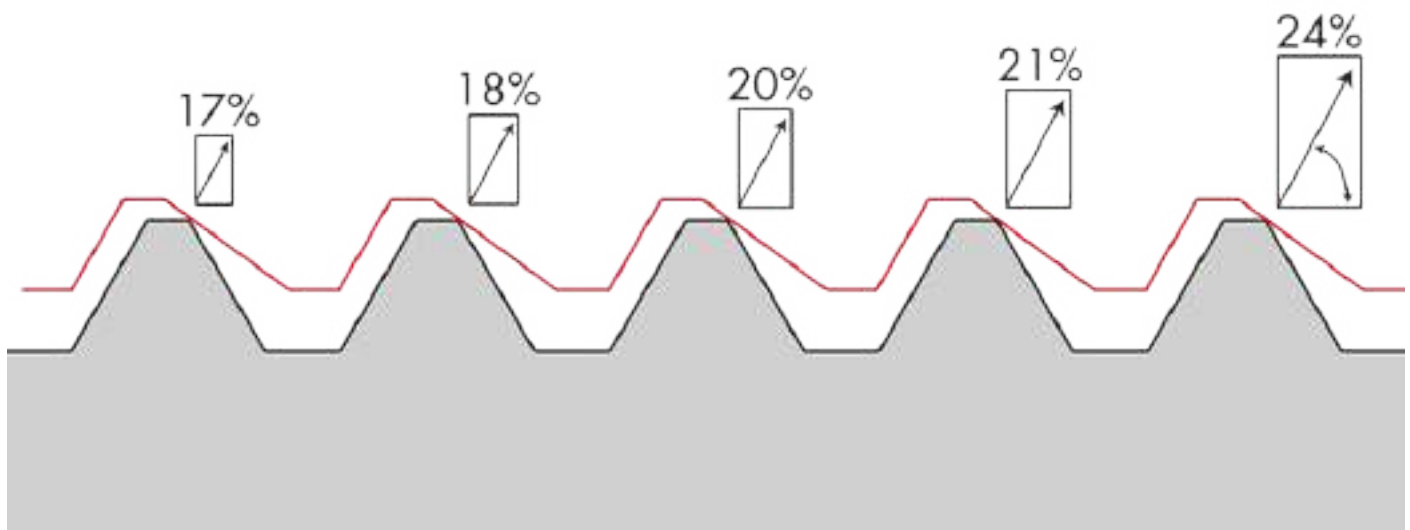


SCS certificate included.

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.

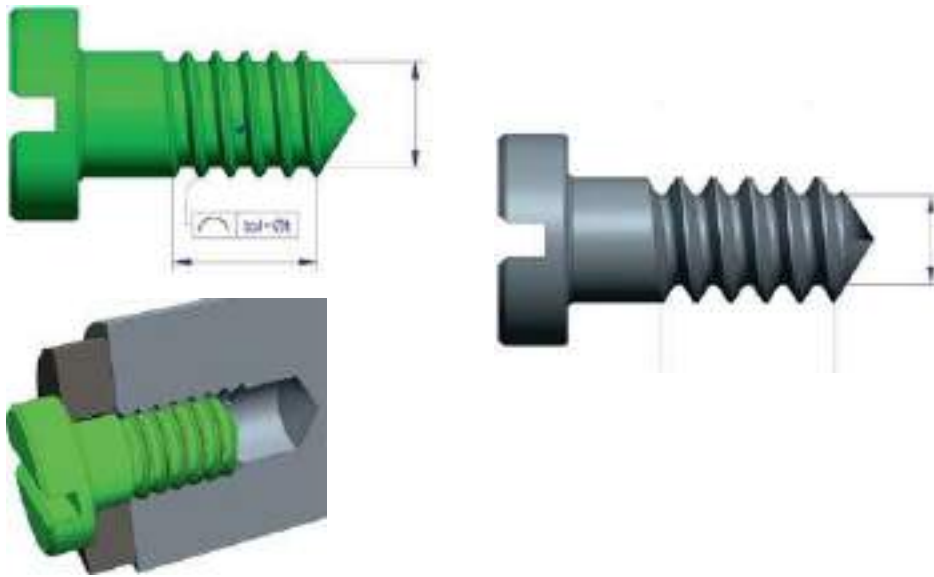
La longitud del paso se ha reducido en comparación con la norma NIHS con el fin de aumentar el área de contacto entre los dos elementos de fijación, manteniéndose igual la longitud útil. Evidentemente, esto ofrece ventajas considerables, especialmente cuando se trabaja con materiales blandos y tornillos 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

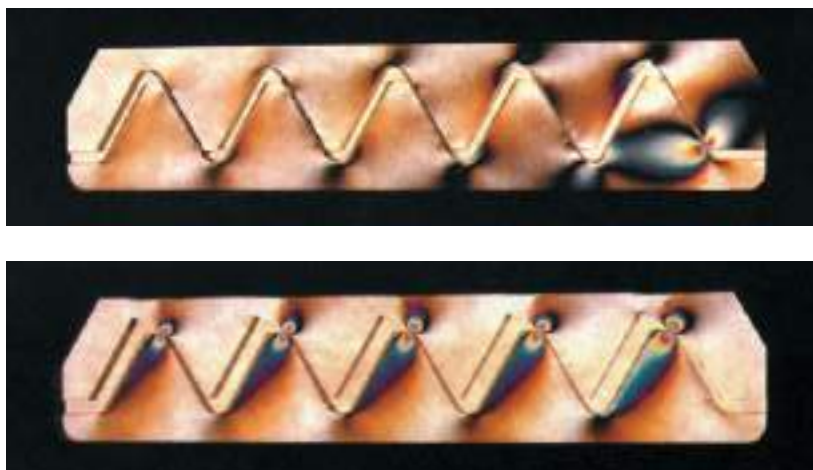
LAS VENTAJAS DEL TORNILLO

- 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

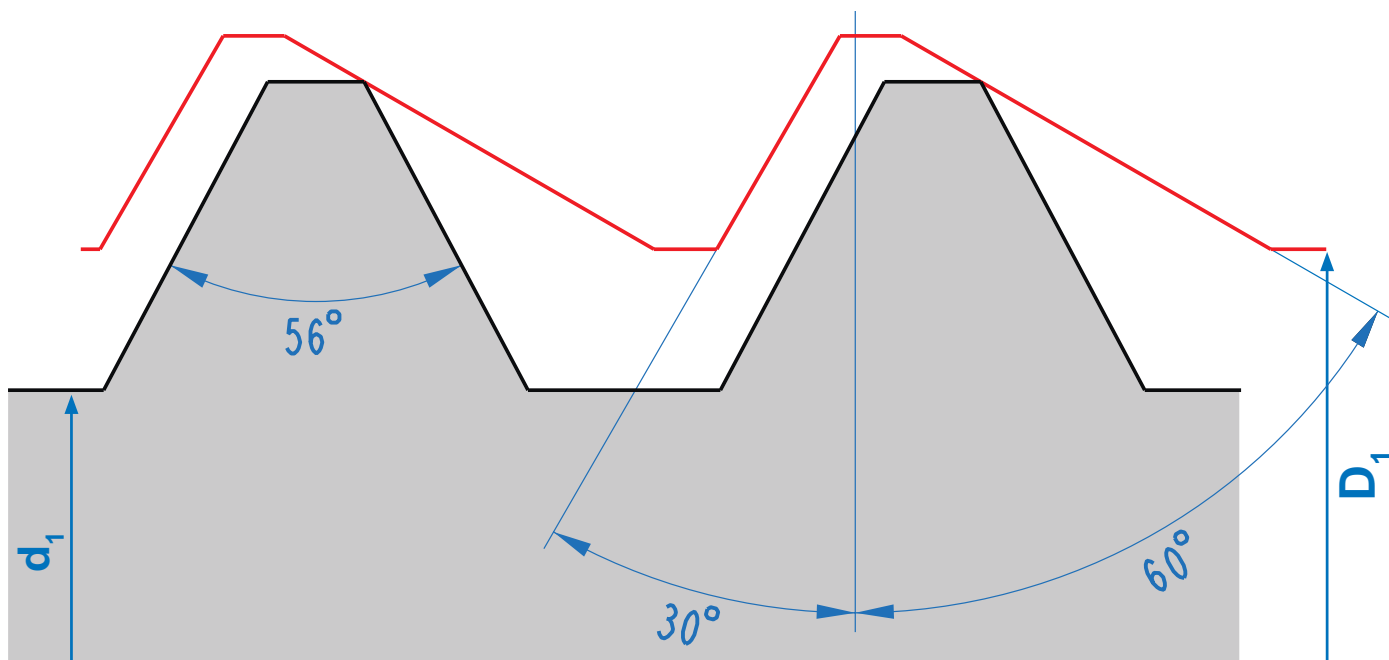


Las numerosas pruebas de resistencia al impacto que se han llevado a cabo muestran claramente que los conjuntos roscados son totalmente fiables y ahora ofrecen una respuesta creíble a los problemas que afectan a la resistencia de los tornillos.

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

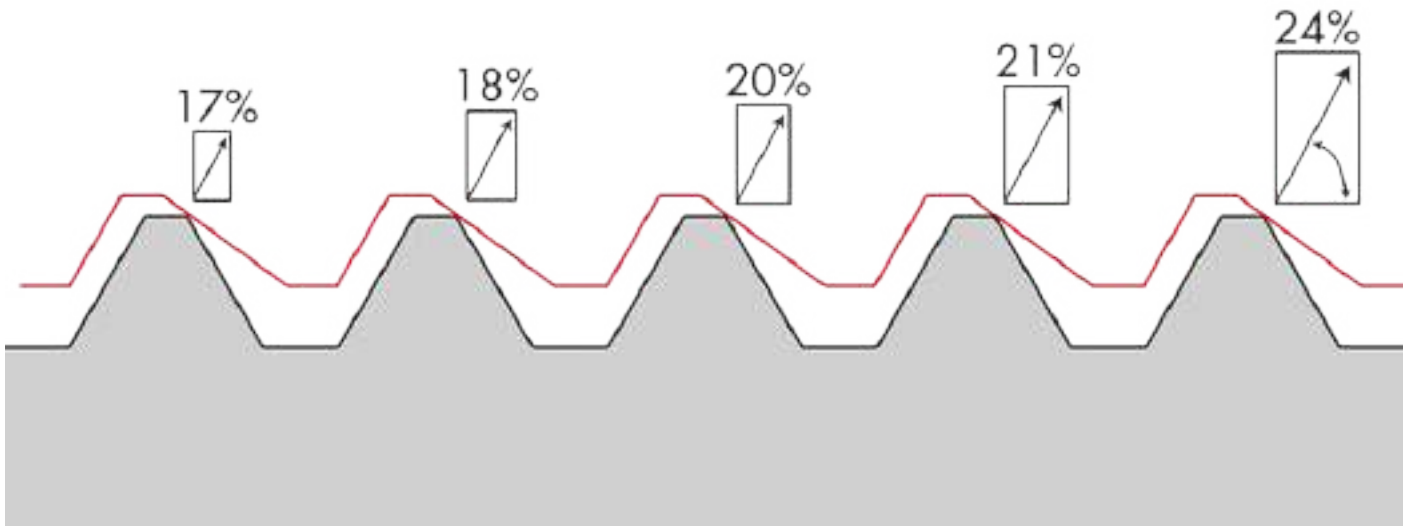
MICRO SAFELOCK



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.

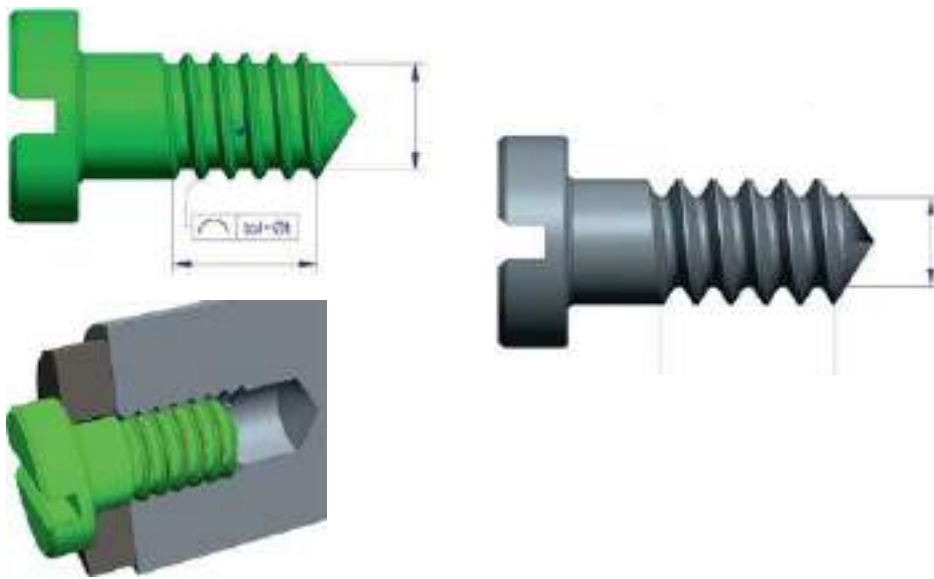
The length of the pitch has been reduced in comparison with the NIHS standard in order to increase the area of contact between the two fixing elements, with the usable length remaining the same. This obviously offers considerable advantages, particularly when working with soft materials and small-headed 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

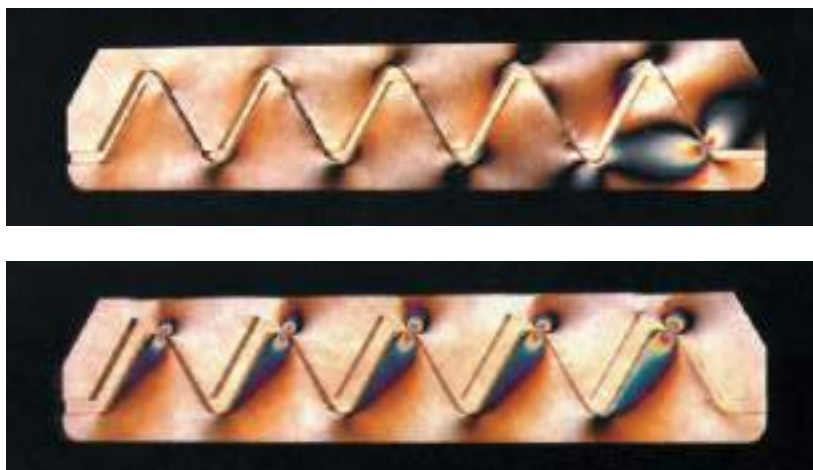
THE ADVANTAGES OF THE SCREW

- 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

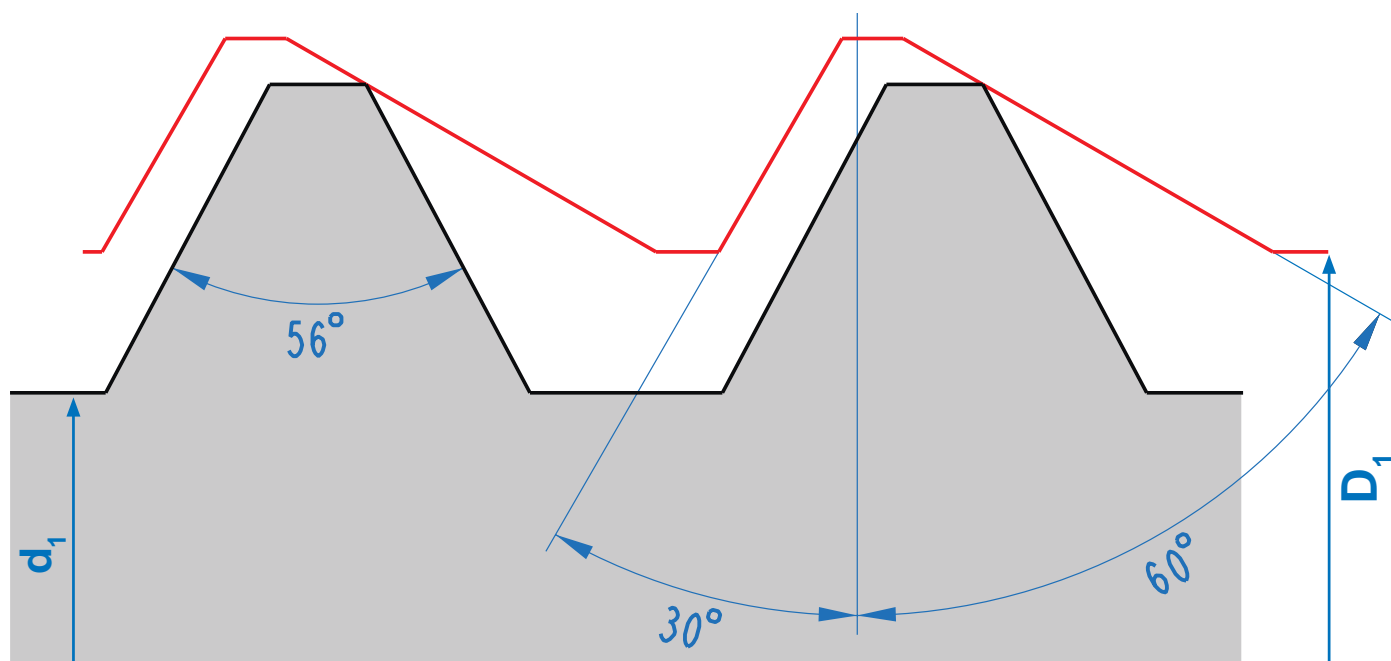


The numerous impact resistance tests that have been carried out, clearly show that the threaded assemblies are totally reliable and now offer a credible response to problems affecting screw resistance.

The tightening torques applied to specimen screws are 25 % less than the values recommended by manufacturers of chemical "threadlocking" coatings.



SAFELOCK DIMENSIONS AND STANDARDS



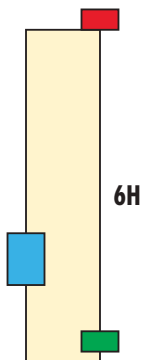
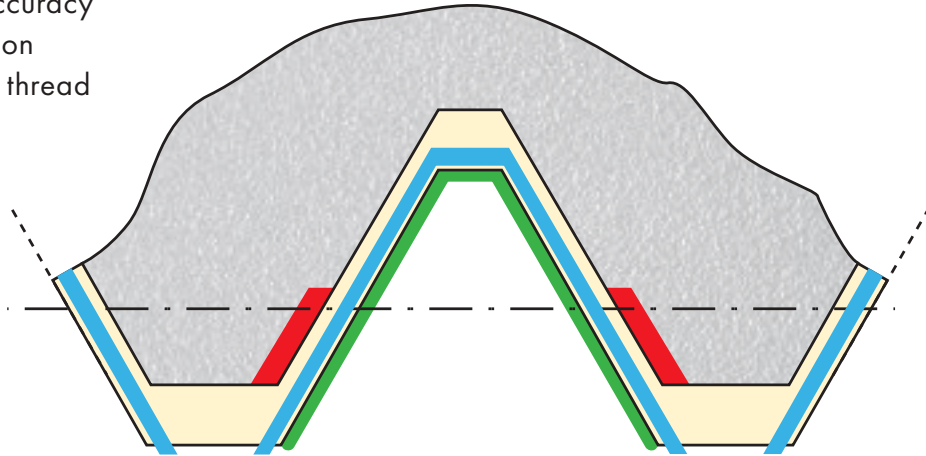
Dimension	Pitch mm	d_1 mini mm	d_1 maxi mm	Angles of sides of nut	Angles of sides of screw	d_1
SL 0.3	0.06	0.264	0.278	$30^\circ/60^\circ$	56°	0.247
SL 0.35	0.06	0.314	0.328	$30^\circ/60^\circ$	56°	0.297
SL 0.4	0.08	0.356	0.372	$30^\circ/60^\circ$	56°	0.331
SL 0.5	0.1	0.448	0.466	$30^\circ/60^\circ$	56°	0.416
SL 0.6	0.125	0.538	0.559	$30^\circ/60^\circ$	56°	0.496
SL 0.7	0.15	0.628	0.651	$30^\circ/60^\circ$	56°	0.576
SL 0.8	0.15	0.728	0.751	$30^\circ/60^\circ$	56°	0.676
SL 0.9	0.175	0.818	0.844	$30^\circ/60^\circ$	56°	0.756
SL 1.0	0.2	0.908	0.936	$30^\circ/60^\circ$	56°	0.836
SL 1.2	0.2	1.108	1.136	$30^\circ/60^\circ$	56°	1.036
SL 1.4	0.25	1.288	1.321	$30^\circ/60^\circ$	56°	1.197

TOLERANCIAS PARA LOS HILOS M Y MF TOLERANCES FOR M AND MF THREADS

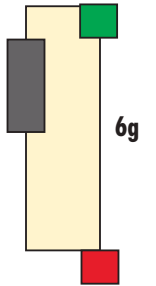
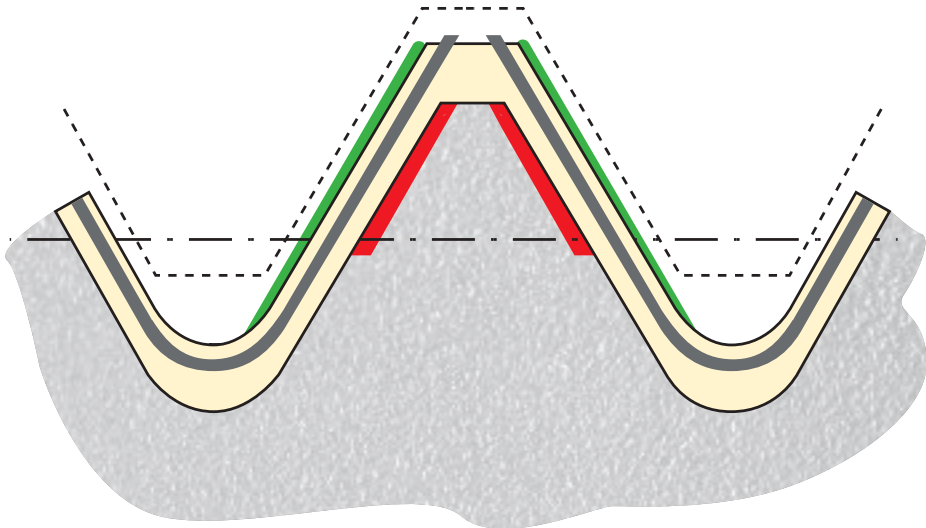
Hilo de la tuerca
Nut thread

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

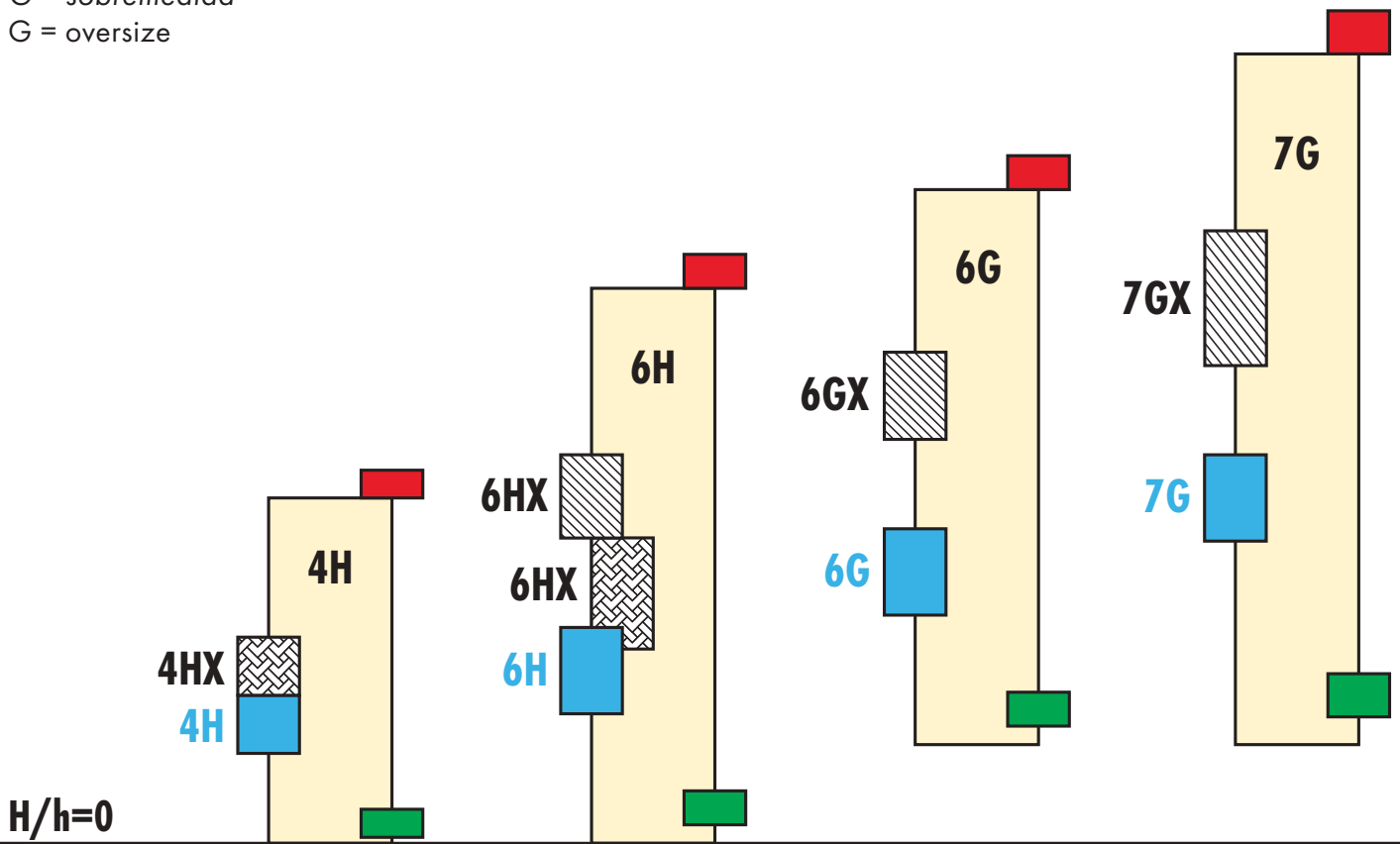
Tolerancia 6g
- Número = grado de precisión
- Letra minúscula = rosca externa

Tolerance 6g
- Number = degree of accuracy
- Lowercase letter = external thread

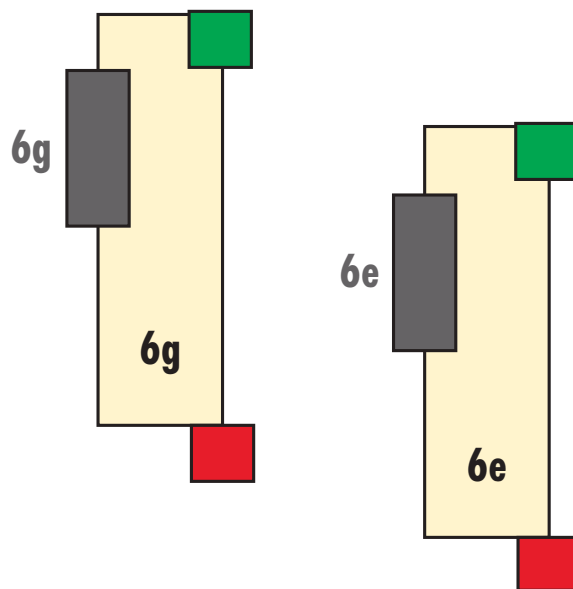


TOLERANCIAS PARA LOS HILOS M Y MF TOLERANCES FOR M AND MF THREADS

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 sitúa en la zona de tolerancia que se adapta a las nuevas categorías de utilización.

Categorías de utilización de los machos según DIN EN 22857		Antigua norma DIN 802, parte 1. Categorías 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

Dímetros nominales - Diámetros de flancos

Diámetros nominales	Paso	Tolerancia	Rosca de tuerca diámetros de flancos		Tolerancia	Rosca de tornillo diámetros 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 medidas 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
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		Paso	Clase de tolerancia	Diferencia inferior	Diferencia superior	Diámetros nominales por encima de		Paso	Clase de tolerancia	Diferencia inferior	Diferencia superior		
de	hasta	P				de	hasta	P					
0.99	1.4	0.2	ISO 1 / 4H	+ 5	+ 15	11.2	22.4	2.5	ISO 1 / 4H	+ 18	+ 54		
		0.25	ISO 1 / 4H	+ 6	+ 17				ISO 2 / 6H	+ 54	+ 90		
		0.3	ISO 1 / 4H	+ 6	+ 18				ISO 3 / 6G	+ 90	+ 126		
1.4	2.8	0.2	ISO 1 / 4H	+ 5	+ 15			22.4	45	1	7G	+ 126	+ 162
		0.25	ISO 1 / 4H	+ 6	+ 18						ISO 1 / 4H	+ 13	+ 40
		0.35	ISO 1 / 4H	+ 7	+ 20						ISO 2 / 6H	+ 40	+ 66
		0.4	ISO 2 / 6H	+ 20	+ 34					ISO 3 / 6G	+ 66	+ 92	
			ISO 1 / 4H	+ 7	+ 21					7G	+ 92	+ 118	
		0.45	ISO 1 / 4H	+ 8	+ 23					1.5	ISO 2 / 6H	+ 48	+ 80
ISO 2 / 6H	+ 23	+ 38	ISO 3 / 6G	+ 80	+ 112								
	7G	+ 112	+ 144										
2.8	5.6	0.35	ISO 1 / 4H	+ 7	+ 21			2	ISO 1 / 4H	+ 18	+ 54		
			ISO 2 / 6H	+ 21	+ 36	ISO 2 / 6H	+ 54		+ 90				
		0.5	ISO 1 / 4H	+ 8	+ 24	ISO 3 / 6G	+ 90	+ 126					
			ISO 2 / 6H	+ 24	+ 40		7G	+ 126	+ 162				
			ISO 3 / 6G	+ 40	+ 55		3	ISO 1 / 4H	+ 21	+ 64			
		7G	+ 55	+ 70	ISO 2 / 6H	+ 64		+ 106					
		0.6	ISO 1 / 4H	+ 9	+ 27	ISO 3 / 6G		+ 106	+ 148				
			ISO 2 / 6H	+ 27	+ 45	7G	+ 148	+ 190					
		ISO 3 / 6G	+ 45	+ 63	3.5	ISO 1 / 4H	+ 22	+ 67					
			7G	+ 63		+ 81	ISO 2 / 6H	+ 67	+ 112				
			ISO 1 / 4H	+ 10		+ 29	ISO 3 / 6G	+ 112	+ 157				
		0.75	ISO 2 / 6H	+ 29	+ 48	7G	+ 157	+ 202					
ISO 3 / 6G	+ 48		+ 67	4	ISO 1 / 4H		+ 24	+ 71					
0.8	7G	+ 67	+ 86		ISO 2 / 6H	+ 71	+ 118						
	ISO 1 / 4H	+ 10	+ 30		ISO 3 / 6G	+ 118	+ 165						
	ISO 2 / 6H	+ 30	+ 50	7G	+ 165	+ 212							
ISO 3 / 6G	+ 50	+ 70	4.5	ISO 1 / 4H	+ 25	+ 75							
	7G	+ 70		+ 90	ISO 2 / 6H	+ 75	+ 125						
	ISO 1 / 4H	+ 12		+ 35	ISO 3 / 6G	+ 125	+ 175						
5.6	11.2	1	ISO 2 / 6H	+ 35	+ 59	7G	+ 175	+ 225					
			ISO 3 / 6G	+ 59	+ 83		45	90	1.5	ISO 1 / 4H	+ 17	+ 51	
			7G	+ 83	+ 107					ISO 2 / 6H	+ 51	+ 85	
			ISO 1 / 4H	+ 13	+ 38					ISO 3 / 6G	+ 85	+ 119	
		1.25	ISO 2 / 6H	+ 38	+ 63	7G			+ 119	+ 153			
			ISO 3 / 6G	+ 63	+ 88				2	ISO 1 / 4H	+ 19	+ 57	
			7G	+ 88	+ 113					ISO 2 / 6H	+ 57	+ 95	
		1.5	ISO 1 / 4H	+ 14	+ 42	ISO 3 / 6G				+ 95	+ 133		
			ISO 2 / 6H	+ 42	+ 70	7G			+ 133	+ 171			
			ISO 3 / 6G	+ 70	+ 98	3			ISO 1 / 4H	+ 22	+ 67		
		7G	+ 98	+ 126	ISO 2 / 6H				+ 67	+ 112			
		11.2	22.4	1	ISO 3 / 6G				+ 63	+ 88	7G	+ 157	+ 202
7G	+ 88				+ 113	4			ISO 1 / 4H	+ 25		+ 75	
ISO 1 / 4H	+ 14				+ 42		ISO 2 / 6H	+ 75	+ 125				
1.25	ISO 2 / 6H	+ 42	+ 70	ISO 3 / 6G	+ 125		+ 175						
	ISO 3 / 6G	+ 70	+ 98	7G	+ 175	+ 225							
	7G	+ 98	+ 126	5	ISO 1 / 4H	+ 27	+ 80						
1.5	ISO 1 / 4H	+ 15	+ 45		ISO 2 / 6H	+ 80	+ 133						
	ISO 2 / 6H	+ 45	+ 75		ISO 3 / 6G	+ 133	+ 186						
	ISO 3 / 6G	+ 75	+ 105	7G	+ 186	+ 239							
7G	+ 105	+ 135	5.5	ISO 1 / 4H	+ 28	+ 84							
1.75	ISO 1 / 4H	+ 16		+ 48	ISO 2 / 6H	+ 84	+ 140						
	ISO 2 / 6H	+ 48		+ 80	ISO 3 / 6G	+ 140	+ 196						
	ISO 3 / 6G	+ 80	+ 112	7G	+ 196	+ 252							
7G	+ 112	+ 144	6	ISO 1 / 4H	+ 30	+ 90							
2	ISO 1 / 4H	+ 17		+ 51	ISO 2 / 6H	+ 90	+ 150						
	ISO 2 / 6H	+ 51		+ 85	ISO 3 / 6G	+ 150	+ 210						
	ISO 3 / 6G	+ 85	+ 119	7G	+ 210	+ 270							
7G	+ 119	+ 153											

METRIC ISO THREADS

Pitch diameter tolerances for taps

Nominal thread Ø		Pitch	Tolerance classes	Lower limit	Upper limit	Nominal thread Ø		Pitch	Tolerance classes	Lower limit	Upper limit			
over	to	P				over	to	P						
0.99	1.4	0.2	ISO 1 / 4H	+ 5	+ 15	11.2	22.4	2.5	ISO 1 / 4H	+ 18	+ 54			
		0.25	ISO 1 / 4H	+ 6	+ 17				ISO 2 / 6H	+ 54	+ 90			
		0.3	ISO 1 / 4H	+ 6	+ 18				ISO 3 / 6G	+ 90	+ 126			
1.4	2.8	0.2	ISO 1 / 4H	+ 5	+ 15			22.4	45	1	7G	+ 126	+ 162	
		0.25	ISO 1 / 4H	+ 6	+ 18						ISO 1 / 4H	+ 13	+ 40	
		0.35	ISO 1 / 4H	+ 7	+ 20						ISO 2 / 6H	+ 40	+ 66	
		0.4	ISO 2 / 6H	+ 20	+ 34					ISO 3 / 6G	+ 66	+ 92		
			7G	+ 92	+ 118					1.5	ISO 1 / 4H	+ 16	+ 48	
		0.45	ISO 1 / 4H	+ 8	+ 23						ISO 2 / 6H	+ 48	+ 80	
ISO 2 / 6H	+ 23	+ 38	ISO 3 / 6G	+ 80	+ 112									
2.8	5.6	0.35	ISO 2 / 6H	+ 23	+ 38			2.8	5.6	0.35	7G	+ 112	+ 144	
			ISO 1 / 4H	+ 7	+ 21						2	ISO 1 / 4H	+ 18	+ 54
		0.5	ISO 2 / 6H	+ 21	+ 36	ISO 2 / 6H	+ 54			+ 90				
			ISO 1 / 4H	+ 8	+ 24	ISO 3 / 6G	+ 90			+ 126				
		ISO 2 / 6H	+ 24	+ 40	7G	+ 126	+ 162			3	ISO 1 / 4H	+ 21	+ 64	
			ISO 3 / 6G	+ 40		+ 55	ISO 2 / 6H				+ 64	+ 106		
		7G	+ 55	+ 70	7G	+ 148	+ 190				3.5	ISO 1 / 4H	+ 22	+ 67
		0.6	ISO 1 / 4H	+ 9	+ 27	ISO 2 / 6H	+ 67			+ 112		ISO 2 / 6H	+ 67	+ 112
			ISO 2 / 6H	+ 27	+ 45		ISO 3 / 6G			+ 112		+ 157	7G	+ 157
		ISO 3 / 6G	+ 45	+ 63	7G					+ 157	+ 202	4	ISO 1 / 4H	+ 24
		7G	+ 63	+ 81	ISO 1 / 4H	+ 24	+ 71			ISO 2 / 6H	+ 71		+ 118	
		0.7	ISO 1 / 4H	+ 10		+ 29	ISO 2 / 6H			+ 71	+ 118		ISO 3 / 6G	+ 118
0.75	ISO 2 / 6H		+ 29	+ 48		7G		+ 165	+ 212	4.5	ISO 1 / 4H	+ 25	+ 75	
	ISO 3 / 6G	+ 48	+ 67	7G	+ 175			+ 225	ISO 2 / 6H		+ 75	+ 125		
7G	+ 67	+ 86	ISO 3 / 6G	+ 125	+ 175	7G	+ 175	+ 225	ISO 3 / 6G		+ 125	+ 175		
0.8	ISO 1 / 4H	+ 10		+ 30	45		90	1.5	ISO 1 / 4H	+ 17	+ 51			
	ISO 2 / 6H	+ 30		+ 50					ISO 2 / 6H	+ 51	+ 85			
ISO 3 / 6G	+ 50	+ 70	ISO 3 / 6G	+ 85		+ 119								
5.6	11.2	1	7G	+ 70	+ 90	5.6	11.2	1	7G	+ 119	+ 153			
			ISO 1 / 4H	+ 12	+ 35				2	ISO 1 / 4H	+ 19	+ 57		
			ISO 2 / 6H	+ 35	+ 59					ISO 2 / 6H	+ 57	+ 95		
			ISO 3 / 6G	+ 59	+ 83					ISO 3 / 6G	+ 95	+ 133		
		7G	+ 83	+ 107	7G			+ 133		+ 171				
		1.25	ISO 1 / 4H	+ 13	+ 38			3	ISO 1 / 4H	+ 22	+ 67			
				ISO 2 / 6H	+ 38				+ 63	ISO 2 / 6H	+ 67	+ 112		
					ISO 3 / 6G				+ 63	+ 88	ISO 3 / 6G	+ 112	+ 157	
				7G	+ 88				+ 113	7G	+ 157	+ 202		
		1.5	ISO 1 / 4H	+ 14	+ 42			4	ISO 1 / 4H	+ 25	+ 75			
				ISO 2 / 6H	+ 42				+ 70	ISO 2 / 6H	+ 75	+ 125		
					ISO 3 / 6G				+ 70	+ 98	ISO 3 / 6G	+ 125	+ 175	
7G	+ 98			+ 126	7G	+ 175	+ 225							
11.2	22.4	1	ISO 1 / 4H	+ 13	+ 38	11.2	22.4	1	ISO 1 / 4H	+ 13	+ 38			
			ISO 2 / 6H	+ 38	+ 63				1.25	ISO 1 / 4H	+ 14	+ 42		
			ISO 3 / 6G	+ 63	+ 88					ISO 2 / 6H	+ 42	+ 70		
		7G	+ 88	+ 113	ISO 3 / 6G			+ 70		+ 98				
		1.25	ISO 1 / 4H	+ 14	+ 42			1.25	ISO 1 / 4H	+ 14	+ 42			
				ISO 2 / 6H	+ 42					+ 70	ISO 2 / 6H	+ 42	+ 70	
					ISO 3 / 6G					+ 70		+ 98	ISO 3 / 6G	+ 70
				7G	+ 98					+ 126	7G	+ 98	+ 126	
		1.5	ISO 1 / 4H	+ 15	+ 45			1.5	ISO 1 / 4H	+ 15	+ 45			
				ISO 2 / 6H	+ 45					+ 75	ISO 2 / 6H	+ 45	+ 75	
					ISO 3 / 6G					+ 75		+ 105	ISO 3 / 6G	+ 75
				7G	+ 105					+ 135	7G	+ 105	+ 135	
1.75	ISO 1 / 4H	+ 16	+ 48	1.75	ISO 1 / 4H	+ 16	+ 48							
		ISO 2 / 6H	+ 48			+ 80	ISO 2 / 6H	+ 48	+ 80					
			ISO 3 / 6G			+ 80		+ 112	ISO 3 / 6G	+ 80	+ 112			
		7G	+ 112			+ 144	7G	+ 112	+ 144					
2	ISO 1 / 4H	+ 17	+ 51	2	ISO 1 / 4H	+ 17	+ 51							
		ISO 2 / 6H	+ 51			+ 85	ISO 2 / 6H	+ 51	+ 85					
			ISO 3 / 6G			+ 85		+ 119	ISO 3 / 6G	+ 85	+ 119			
		7G	+ 119			+ 153	7G	+ 119	+ 153					
22.4	45	1	ISO 1 / 4H	+ 13	+ 38	22.4	45	1	ISO 1 / 4H	+ 13	+ 40			
			ISO 2 / 6H	+ 38	+ 63				1.5	ISO 2 / 6H	+ 40	+ 66		
			ISO 3 / 6G	+ 63	+ 88					ISO 3 / 6G	+ 66	+ 92		
		7G	+ 88	+ 113	7G			+ 92		+ 118				
		1.25	ISO 1 / 4H	+ 14	+ 42			1.25	ISO 1 / 4H	+ 14	+ 42			
				ISO 2 / 6H	+ 42					+ 70	ISO 2 / 6H	+ 42	+ 70	
					ISO 3 / 6G					+ 70		+ 98	ISO 3 / 6G	+ 70
				7G	+ 98					+ 126	7G	+ 98	+ 126	
		1.5	ISO 1 / 4H	+ 15	+ 45			1.5	ISO 1 / 4H	+ 15	+ 45			
				ISO 2 / 6H	+ 45					+ 75	ISO 2 / 6H	+ 45	+ 75	
					ISO 3 / 6G					+ 75		+ 105	ISO 3 / 6G	+ 75
				7G	+ 105					+ 135	7G	+ 105	+ 135	
1.75	ISO 1 / 4H	+ 16	+ 48	1.75	ISO 1 / 4H	+ 16	+ 48							
		ISO 2 / 6H	+ 48			+ 80	ISO 2 / 6H	+ 48	+ 80					
			ISO 3 / 6G			+ 80		+ 112	ISO 3 / 6G	+ 80	+ 112			
		7G	+ 112			+ 144	7G	+ 112	+ 144					
2	ISO 1 / 4H	+ 17	+ 51	2	ISO 1 / 4H	+ 17	+ 51							
		ISO 2 / 6H	+ 51			+ 85	ISO 2 / 6H	+ 51	+ 85					
			ISO 3 / 6G			+ 85		+ 119	ISO 3 / 6G	+ 85	+ 119			
		7G	+ 119			+ 153	7G	+ 119	+ 153					

OBSERVACIONES INTERESANTES PARA ROSCAR

Las condiciones óptimas de utilización permiten reducir el tiempo de fabricación, así como optimizar 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 alargamiento a la rotura de mínimo 10 % pueden ser deformados en frío.

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, alternarse a la parte superior del campo de tolerancia.

Lubrificación Centro de mecanizado

El lubricante 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:

Lubricar solamente con el aditivo de emulsión

A. Un aparato de lubricación, 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 desde un recipiente separado en el taladro previo.

Roscar de segunda operación

Esa solución permite la utilización de un lubricante 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 características 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

OBSERVACIONES 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 geometría 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 está 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 está 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 máximo hasta $0.5 \times P$.

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 lubricante. Usar un macho con otra geometría de corte u otro recubrimiento.
	Afilado incorrecto	Reafilarse 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.
	Lubricante inadaptado o en cantidad insuficiente	Asegurarse de la calidad del lubricante 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 lubricante 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 sincronizada	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.
	Lubricante inadecuado o en cantidad insuficiente	Asegurarse de la calidad del lubricante y averiguar que el líquido llega hasta 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 material 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.

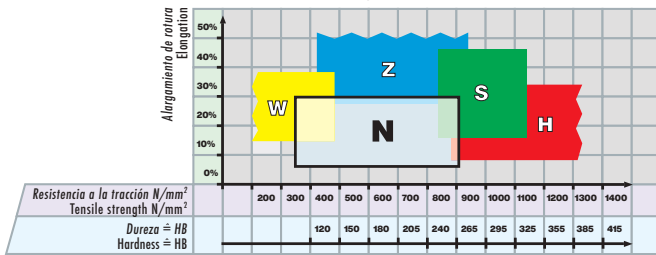
Problem	Causes	Solutions
Stripped threads	Incorrect tap in use (cutting geometry incorrect for application)	Use a tap from the relevant material group.
	Spindle speed and feed rate not synchronized	Check feed rate programming and / or pitch of leading spindle. Use a tapping spindle with axial float or 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.

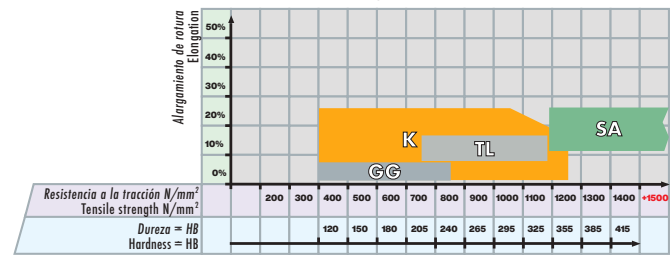
Problem	Causes	Solutions
Unsatisfactory thread surface finish	Incorrect tap in use (cutting geometry unsuitable for application)	Select tap from the relevant material group.
	The tap is blunt	Replace or re-grind tap.
	Tap badly re-ground	Re-grind tap again. Check that cutting geometry is suitable for 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/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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



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PG / TR
EG M / EG UNC / EG UNF

N												
Materiales normales Normal materials												
	60	62	60	64	64	72	72	74	60	74	74	
	125	124	125	125		124		131	131	131		
	154	154	154	154				156	156	156		
	176	176	176	176				178	178	178		
	198	198						199	199			
	204	205	205	205				206	206	206		
	220											
	222	222										
		226	226					227	227			
11												11
12												12
13												13
14												14
15												15
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17												17
18												18
21												21
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32												32
41												41
42												42
51												51
52												52
53												53
61												61
62												62
63												63
64												64
71												71
72												72
73												73
74												74
81												81
82												82
83												83
91												91
92												92
93												93
94												94

Vc (m/min) Guide Line					
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
10 - 15	10 - 20	10 - 15	25 - 35	5 - 10	
10 - 15	10 - 20	10 - 15	25 - 35	5 - 10	
8 - 12	10 - 20	8 - 12	16 - 24	10 - 15	
8 - 12	10 - 20	8 - 12	16 - 24	4 - 8	
2 - 4	4 - 10	3 - 5	6 - 12	2 - 4	3 - 5
	2 - 4	3 - 5	3 - 5	2 - 4	3 - 5
		2 - 4			
4 - 10	10 - 15	10 - 15	20 - 30	5 - 10	
3 - 6	4 - 8	3 - 6	6 - 12		
3 - 6	4 - 8	3 - 6	6 - 12		
	3 - 5		4 - 8		3 - 5
10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	15 - 25
10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	
2 - 4	4 - 8	4 - 8	4 - 8		
2 - 4	3 - 5	3 - 5	3 - 5		
	3 - 5		6 - 12		
		4 - 8	4 - 8		
		2 - 4			
8 - 12		8 - 12	12 - 16	4 - 8	
6 - 12	6 - 12	20 - 30	30 - 40	15 - 25	25 - 35
10 - 20		16 - 24		8 - 12	
10 - 20		16 - 24		8 - 12	
10 - 15	10 - 15	10 - 15	20 - 40	5 - 10	
10 - 20	20 - 30	20 - 30	20 - 40	10 - 15	
10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	
10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	
10 - 20		20 - 30	30 - 50	10 - 15	
8 - 16	16 - 24	8 - 16	16 - 24	5 - 12	10 - 15
	6 - 12		8 - 16		5 - 12
12 - 20		20 - 30			
	12 - 16		12 - 16		
	4 - 8		4 - 8		
	12 - 20		16 - 24		

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING



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H Materiales de alta resistencia High tensile materials				S Aleaciones especiales Special alloys			
94	94	96	96	46	99	46	On request
136	136	137	137	138	138		
161	161	162	162	48	164	48	
184	184	185	185	50	186	50	
		207					

Vc (m/min) Guide Line						
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	
12	10 - 15	10 - 20	10 - 15	25 - 35	5 - 10	
13	8 - 12	10 - 20	8 - 12	16 - 24	10 - 15	
14	8 - 12	10 - 20	8 - 12	16 - 24	4 - 8	
15	2 - 4	4 - 10	3 - 5	6 - 12	2 - 4	3 - 5
16		2 - 4	3 - 5	3 - 5	2 - 4	3 - 5
17			2 - 4			
18						
21	4 - 10	10 - 15	10 - 15	20 - 30	5 - 10	
22	3 - 6	4 - 8	3 - 6	6 - 12		
23	3 - 6	4 - 8	3 - 6	6 - 12		
24		3 - 5		4 - 8		3 - 5
31	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	15 - 25
32	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	
41	2 - 4	4 - 8	4 - 8	4 - 8		
42	2 - 4	3 - 5	3 - 5	3 - 5		
51		3 - 5		6 - 12		
52			4 - 8	4 - 8		
53			2 - 4			
61	8 - 12		8 - 12	12 - 16	4 - 8	
62	6 - 12	6 - 12	20 - 30	30 - 40	15 - 25	25 - 35
63	10 - 20		16 - 24		8 - 12	
64	10 - 20		16 - 24		8 - 12	
71	10 - 15	10 - 15	10 - 15	20 - 40	5 - 10	
72	10 - 20	20 - 30	20 - 30	20 - 40	10 - 15	
73	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	
74	10 - 15	10 - 20	10 - 15	20 - 30	5 - 10	
81	10 - 20		20 - 30	30 - 50	10 - 15	
82	8 - 16	16 - 24	8 - 16	16 - 24	5 - 12	10 - 15
83		6 - 12		8 - 16		5 - 12
91	12 - 20		20 - 30			
92		12 - 16		12 - 16		
93		4 - 8		4 - 8		
94		12 - 20		16 - 24		

ROSCADO CLÁSICO — CLASSIC THREAD CUTTING



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EG M / EG UNC / EG UNF

AERO								
SA Aleaciones especiales Special alloys			TL Aleaciones titanio Titan. alloys		GG Fundición gris y fundición al Cast iron / Al casting			
47	47	46	100	47	102	102	102	
140	140	139	140	140				
49	49	48	165	49				
51	51	50		51				
					207			
228	228	229	232	228				



Vc (m/min) Guide Line					
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

	Ø 1 - 2.8 mm		Ø 2.8 - 26 mm		Ø 26 - 60 mm		SA			TL		GG			
	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated	Estándar Standard	Recub. Coated	SA.20	SA.50	SA.90	TL.20VS	TL.51VS	GG.50NV	GG.50TC	GG.53TC	
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	⊙	⊙							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										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					⊙	⊙					41
42	2 - 4	3 - 5	3 - 5	3 - 5					⊙	⊙					42
51		3 - 5		6 - 12											51
52			4 - 8	4 - 8			⊙ E	⊙ E							52
53			2 - 4					⊙ 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		⊙ E	⊙ 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

D Limitada
Limited

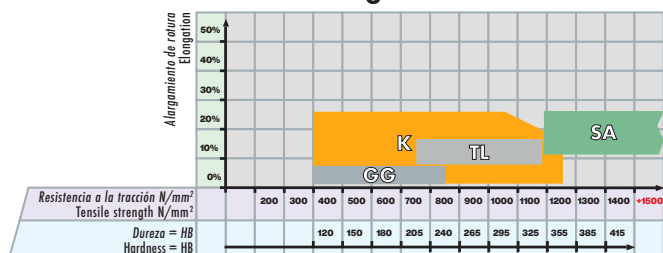
Los valores indicados son orientativos.
The indicated values are a guideline.



ROSCADO CLÁSICO Y ROSCADO RÍGIDO CLASSIC THREAD CUTTING AND RIGID TAPPING



Roscado clásico Thread cutting



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K Rompeador de virutas Swarf breaker	
104	105
142	

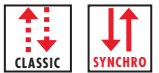


K.137C	K.13VS

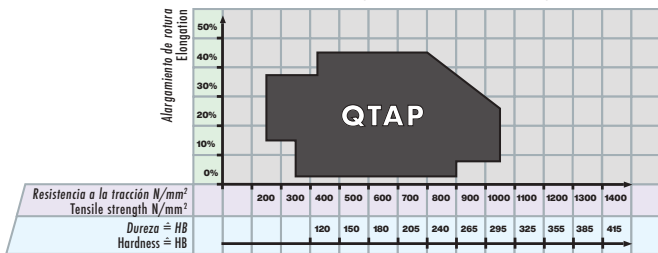
	Vc (m/min) Guide Line			
	Ø 5 - 10.9 mm	Ø 11 - 18.9 mm	Ø 19 - 31.9 mm	Ø 32 - 42 mm
	Recub. Coated	Recub. Coated	Recub. Coated	Recub. Coated
11	30 - 40	20 - 30	20 - 30	20 - 30
12	30 - 40	20 - 30	20 - 30	20 - 30
13	30 - 40	20 - 30	20 - 30	20 - 30
14	20 - 30	15 - 25	15 - 25	15 - 25
15	15 - 20	10 - 15	8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

E	E	11
E	E	12
E	E	13
E	E	14
E	E	15
E	E	16
		17
		18
		21
		22
		23
		24
E	E	31
E	E	32
		41
		42
		51
		52
		53
		61
E	E	62
E	E	63
E	E	64
		71
		72
		73
E	E	74
		81
		82
E	E	83
		91
		92
		93
		94

ROSCADO CLÁSICO Y ROSCADO RÍGIDO CLASSIC THREAD CUTTING AND RIGID TAPPING



Roscado clásico y roscado rígido Thread cutting classic and rigid



Desde página:
From page:

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QTAP Allrounder Allrounder

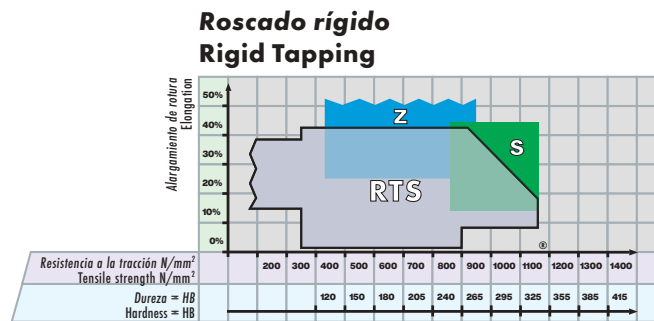
61	106	61	107
143	143	144	144
167	167	168	168
192	192	193	193
210	210	211	211



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



TABLA DE UTILIZACIÓN — APPLICATION CHART



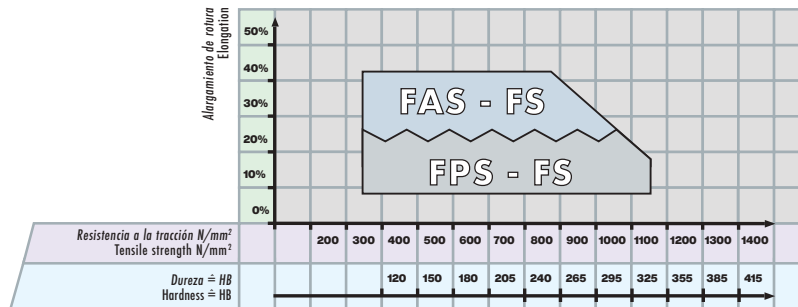
DC Clasificación de los materiales

DC Material classification

Grupos de materiales Material groups	Clasificación de los materiales	Material designation	Dureza Hardness (HB)	Resistencia Tensile strength Rm (N/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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	-	-	-

TABLA DE UTILIZACIÓN — APPLICATION CHART

Roscado por laminación Thread forming



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 POR LAMINACIÓN – THREAD FORMING



Desde página: From page:	FS		FPS					FAS		
M	254	255	256	256	256	256	258	259	259	260
MF									262	
UNC	263								263	
UNF	264								264	
G									265	



NEW **NEW**

	FS.80VS	FS.80DL	FPS.80DL	FPS.81DL	FPS.80VS	FPS.81VS	FPS.84VS	FAS.80VS	FAS.81VS	FAS.84VS
V_c (m/min) Guide Line										
Ø 1 - 2.8 mm										
Ø 2.8 - 20 mm										

	Ø 1 - 2.8 mm	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										
12	12 - 20	20 - 40										
13	12 - 20	20 - 30										
14	12 - 20	20 - 30										
15	6 - 12	10 - 15										
16												
17												
18												
21	12 - 20	10 - 20										
22	6 - 12	10 - 15										
23	6 - 12	6 - 12										
24	6 - 12	6 - 12										
31												
32												
41	12 - 20	10 - 20										
42												
51	6 - 12	10 - 15										
52												
53												
61	12 - 20	10 - 20										
62												
63	12 - 20	20 - 30										
64	12 - 20	20 - 30										
71	12 - 20	20 - 40										
72	12 - 20	20 - 40										
73	12 - 20	20 - 40										
74												
81												
82												
83												
91	12 - 20	20 - 40										
92	12 - 20	20 - 40										
93	12 - 20	20 - 40										
94	12 - 20	20 - 40										

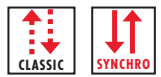
MACHOS PARA ROSCAR NANO
THREAD TAPS NANO

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/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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	-	-	-

MACHOS PARA ROSCAR NANO — THREAD TAPS NANO



Desde página: From page:
M
MF
UNC
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SL

TAN			
Materiales normales			
Normal materials			
338	338	338	338
341	341	341	341
344	344	344	344
347	347	347	347
350	350	350	350
353	353	353	353
356	356	356	356

TAZ			
Materiales tenaces			
Tough materials			
339	339	339	339
342	342	342	342
345	345	345	345
348	348	348	348
351	351	351	351
354	354	354	354
357	357	357	357

CMS	
Materiales frágiles	
Brittle materials	
340	340
343	343
346	346
349	349
352	352
355	355
358	358



TAN40	TAN40VS	TAN50	TAN50VS

TAZ40	TAZ40VS	TAZ50	TAZ50VS

CMS50	CMS50VS

Vc (m/min) Guide Line			
Ø 0.3 - 1.4 mm		Ø 1.4 - 2.8 mm	
Estándar Standard	Recubrimiento Coated	Estándar Standard	Recubrimiento Coated
11	4 - 10		12 - 20
12	4 - 10		12 - 20
13	4 - 10		12 - 20
14	4 - 10		12 - 20
15			
16			
17			
18			
21	4 - 10		12 - 20
22	4 - 10		12 - 20
23	3 - 6		6 - 12
24	3 - 6		6 - 12
31	4 - 10		12 - 20
32	4 - 10		12 - 20
41	2 - 4	2 - 4	4 - 8
42	2 - 4	2 - 4	4 - 8
51			
52			
53			
61	4 - 10		12 - 20
62	4 - 10	4 - 10	12 - 20
63	4 - 10	4 - 10	12 - 20
64	4 - 10		12 - 20
71	4 - 10		12 - 20
72	4 - 10		12 - 20
73	4 - 10		12 - 20
74	4 - 10		12 - 20
81	4 - 10		12 - 20
82			
83	4 - 10		12 - 20
91	4 - 10	12 - 20	
92	4 - 10		12 - 20
93	4 - 10		12 - 20
94	4 - 10		12 - 20

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MACHOS PARA ROSCADO POR LAMINACIÓN NANO THREAD FORMERS NANO

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/mm ²)	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/mm ²	Alloy steels < 850 N/mm ²	< 250	< 850	< 30
	15 Aceros aleados / tratados > 850 - < 1150 N/mm ²	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 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/mm ²	Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
	24 Ferríticos y martensíticos > 850 - < 1150 N/mm ²	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 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/mm ²	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
	52 Aleación al níquel 2 > 850 - ≤ 1150 N/mm ²	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
	53 Aleación al níquel 3 > 1150 - ≤ 1600 N/mm ²	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 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	-	-	-

MACHOS PARA ROSCADO POR LAMINACIÓN NANO THREAD FORMERS NANO



**Desde página:
From page:**

M
MF
UNC
UNF
S
SF
SL

FA Materiales normales Normal materials		CFA Materiales no ferrosos Non-ferrous materials	
363	363	370	370
364	364		
365	365	371	371
366	366	372	372
367	367	373	373
368	368		
369	369		

FA80VS	FA83VS	CFA80VS	CFA83VS

	Vc (m/min) Guide Line		FA80VS	FA83VS	CFA80VS	CFA83VS	
	Ø 0.3 - 1.4 mm	Ø 1.4 - 2.8 mm					
	Recubrimiento Coated	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	3 - 6	6 - 12					15
16							16
17							17
18							18
21	4 - 10	12 - 20					21
22	3 - 6	6 - 12					22
23	3 - 6	6 - 12					23
24	3 - 6	6 - 12					24
31							31
32							32
41							41
42							42
51	3 - 6	6 - 12					51
52							52
53							53
61	4 - 10	12 - 20					61
62	4 - 10	12 - 20					62
63	4 - 10	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							74
81							81
82							82
83							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

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)	<i>Machos para roscar a mano con diámetros escalonados en los flancos</i>	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)	<i>Machos para roscar a máquina cortos</i>	Short machine taps
DIN 352	NP110-S NP210-S	<i>Machos para roscar a mano con diámetros escalonados en los flancos, desbete -1 con espiga guía</i>	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.;	<i>Machos para roscar a máquina con mango DIN reforzado</i>	Machine taps with reinforced DIN shank
DIN 376 / DIN 374 / DIN 5156 (G)	N4.; W4.; Z4.; H4.; S4.; SA4.; TL4.; GG4.; K4.; Q4.; RTS4.;	<i>Machos para roscar a máquina con mango DIN pasante</i>	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	<i>Machos para roscar a máquina extra largos con ranuras largas y con mango DIN pasante</i>	Extra-long machine taps with long flutes and reduced DIN shank
DC / DIN 371	N5.; GG5.; RTS5.;	<i>Machos para roscar a máquina extra largos con mango DIN reforzado</i> <i>Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 371</i>	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.;	<i>Machos para roscar a máquina extra largos con mango DIN pasante</i> <i>Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 376</i>	Extra-long machine taps with reduced DIN shank Overall length as per norm DC, shank dimensions as per DIN 376
DC	N470V-	<i>Macho de corona</i>	Crown taps
DC	N5951 / N5952	<i>Brocas-Machos</i>	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)	FAS3.; FAS3.; FPS3.;	<i>Machos para roscado por laminación con mango DIN reforzado</i>	Machine thread formers with reinforced DIN shank
~ DIN 2174 (M - MF) ~ DIN 2184-1 (UNC - UNF) ~ DIN 2189 (G)	FAS4.; FPS4.;	<i>Machos para roscado por laminación con mango DIN pasante</i>	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.;	<i>Machos para roscado por laminación extra largos con mango DIN reforzado</i> <i>Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 2174</i>	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.;	<i>Machos para roscado por laminación extra largos con mango DIN pasante</i> <i>Longitud total según el estándar de fábrica DC, dimensiones del mango según DIN 2174</i>	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 <i>Dureza Rockwell</i> Hardness Rockwell	HB <i>Dureza Brinell</i> Hardness Brinell	HV <i>Dureza Vickers</i> Hardness Vickers	N/mm² Mpa <i>Resistencia a la tracción</i> 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										W(BSW)	BSF	G (BSP) Rp	Ø mm		
		UNC	UNF	UNEF	4	6	8	12	16	20	28					32	
0 1/16" 1 2 3/32"	1.52 1.59 1.85 2.18 2.38		80 64 56											48		28	7.72
3 4 5 1/8" 6	2.51 2.84 3.17 3.17 3.50	48 40 40 40 32	56 48 44 44 40											40		28	9.72
5/32" 8 3/16" 10 12	3.96 4.16 4.76 4.82 5.48	32 32 24 24	36 32 32 28											32 24	32		
7/32" 1/4" 9/32" 5/16" 3/8"	5.55 6.35 7.14 7.93 9.52	20 20 18 16	28 28 24 24	32 32										24 20	28 26 26	19	13.15
7/16" 1/2" 9/16" 5/8" 11/16"	11.11 12.70 14.28 15.87 17.46	14 13 12 11	20 20 18 18	28 28 24 24													
3/4" 13/16" 7/8" 15/16" 1"	19.05 20.64 22.22 23.81 25.40	10 9 8	16 14 12	20 20 20 20				12 12 12	16 16 16		28 28 28	32 32 32 32	10 9 8	12 12 10	14 11 11	14 14 11	26.44 30.20 33.24
1 1/16" 1 1/8" 1 3/16" 1 1/4" 1 5/16"	26.99 28.57 30.16 31.75 33.34	7 7	12 12	18 18 18 18			8 8 8 8	12 12 12	16 16 16	20 20 20 20	28 28 28		7 7	9 9	11 11	37.89 41.91	
1 3/8" 1 7/16" 1 1/2" 1 9/16" 1 5/8"	34.92 36.51 38.10 39.69 41.28	6 6	12 12	18 18 18 18			6 6 6 6	8 8 8 8	12 12 12	16 16 16	20 20 20 20	28 28	6 6 5	8 8 8	11 11	44.32 47.80	
1 11/16" 1 3/4" 1 13/16" 1 7/8" 1 15/16"	42.86 44.45 46.04 47.63 49.21	5		18			6 6 6 6	8 8 8 8	12 12 12	16 16 16	20 20 20		5 4 1/2	7	11	53.74	
2" 2 1/8" 2 1/4" 2 3/8" 2 1/2"	50.80 53.97 57.15 60.32 63.50	4 1/2 4 1/2 4					6 6 6 6	8 8 8 8	12 12 12	16 16 16	20 20 20		4 1/2 4 4	7 6 6	11 11 11	59.61 65.71 75.18	
2 5/8" 2 3/4" 2 7/8" 3" 3 1/8"	66.67 69.85 73.02 76.20 79.37	4 4				4 4	6 6 6	8 8 8	12 12	16 16 16	20 20		3 1/2 3 1/2	6 5	11 11	81.53 87.88	
3 1/4" 3 3/8" 3 1/2" 3 5/8" 3 3/4"	82.55 85.72 88.90 92.07 95.25	4 4 4				4 4	6 6 6	8 8 8	12 12	16 16			3 1/4 3 1/4 3	5 4 1/2 4 1/2	11 11 11	93.98 100.33 106.68	
3 7/8" 4"	98.42 101.60	4				4	6 6	8 8	12 12	16 16			3 4 1/2		11	113.03	

TABLA DE CONVERSIÓN – CONVERSION TABLE

	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		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
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



MF DIN 13, ISO 261, *4H / 6H

Ø	P	Ø Núcleo - Core Ø nut		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
*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



M DIN 13, ISO 261, *5H / 6H

Ø	P	Ø Núcleo - Core Ø nut		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
*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



DIÁMETRO DEL AGUJERO — CORE HOLES

MF DIN 13, ISO 261, 6H

Ø	P	Ø Núcleo - Core Ø nut		Ø guide line
		Ø mini	Ø maxi	
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		Ø guide line
		Ø mini	Ø maxi	
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		Ø guide line
			Ø mini	Ø maxi	
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		Ø guide line
			Ø mini	Ø maxi	
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


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

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

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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
(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		Ø guide line
		Ø mini	Ø maxi	
d _i	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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		Ø guide line
		Ø mini	Ø maxi	
d _i	mm			
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		Ø guide line
		Ø mini	Ø maxi	
d _i	mm			
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		Ø guide line
		Ø mini	Ø maxi	
d _i	mm			
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		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
*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		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
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

MF DIN 13, ISO 261, 6g

Ø	P	Ø Exterior Thread outside Ø		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
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

DIÁMETRO DE TORNEADO — TURNED DIAMETERS

MF DIN 13, ISO 261, 6g

Ø	P	Ø Exterior Thread outside Ø		Ø guide line
		Ø mini	Ø maxi	
d ₁	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d ₁	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d ₁	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d ₁	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d ₁	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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		Ø guide line
		Ø mini	Ø maxi	
d _i	mm			
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		Ø guide line
			Ø mini	Ø maxi	
d _i	TPI	mm			
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

Offertar

Resultado de prueba

Reclamación

Agente: _____
Cliente: _____
Tel. o fax: _____

Responsable: _____
E-mail: _____
Fecha: _____

1. Tipo de herramienta: _____
Particularidad: _____

Dimensiones: _____
Tolerancia: _____

2. Referencia del material: _____

No del material: _____
Norma: _____

Dureza: _____ N/mm² / HB / HRC
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 _____ l/min

Avance (f): _____ %

5. Máquina: _____ lubricación interior

Posición de trabajo: horizontal vertical

Roscado sincronizado: "Soft Rigid Tapping" **Mandril:** con compensación axial

pinza

con desbloqueo

Weldon

reversible

sujeción térmica / en frío

con embrague de fricción

6. Lubrificante: taladrina aceite aire microlubricación

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: _____

Enquiry

Test result

Complaint

Agency: _____
Customer: _____
Phone or fax: _____

Contact: _____
E-mail: _____
Date: _____

1. Tool type: _____
Particularity: _____

Thread size: _____
Class of tolerance: _____

2. Material group: _____
Material N°: _____
Norm: _____

Hardness: _____ N/mm² / HB / HRC
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 \varnothing 5 mm)
Acondicionamiento de vanguardia ($\varnothing \leq 52$ mm)
Alargar la entrada (desde \varnothing 2.5 mm)
Acortar la entrada (desde \varnothing 2.5 mm)
Afilar la entrada en helice (desde \varnothing 5 mm)
Modificación de l_3 , d_2 , a o d_4
Alargando las ranuras ($\varnothing \geq 5$ mm - ≤ 48 mm)
Quitar la punta de centrado ($\varnothing \geq 1$ mm - ≤ 12 mm)
Alternar los dientes (a partir de un paso de 0.5 mm)
Truncar las roscas (desde \varnothing 3 mm)
La superficie de Grind Weldon ($\varnothing \geq 6$ mm - ≤ 16 mm)
Lubricación interna con salida frontal ($\varnothing \geq 3$ mm - ≤ 25.4 mm)
Lubricación interna con salidas radiales ($\varnothing \geq 3$ 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 \varnothing 5 mm)
Conditioning of cutting edges ($\varnothing \leq 52$ mm)
Lengthening of chamfer (from \varnothing 2.5 mm)
Shortening of chamfer (from \varnothing 2.5 mm)
Grinding of peeling cut (from \varnothing 5 mm)
Modification of l_3 , d_2 , a or d_4
Lengthening of flutes ($\varnothing \geq 5$ mm - ≤ 48 mm)
Removal of center point ($\varnothing \geq 1$ mm - ≤ 12 mm)
Interrupted thread (from pitch 0.5 mm)
Truncated thread (from \varnothing 3 mm)
Grinding the Weldon Surface ($\varnothing \geq 6$ mm - ≤ 16 mm)
Internal coolant, with frontal outflow ($\varnothing \geq 3$ mm - ≤ 25.4 mm)
Internal coolant, with radial outflow ($\varnothing \geq 3$ 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.**

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Pedidos	<p>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.</p>
Ofertas y confirmaciones de pedidos	<p>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.</p>
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DC PROGRAMME OVERVIEW



THREAD CUTTING



THREAD FORMING



RIGID TAPPING



TAPPING CHUCKS



THREAD WHIRLING



THREAD MILLING



THREAD DIES



THREAD GAUGES



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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

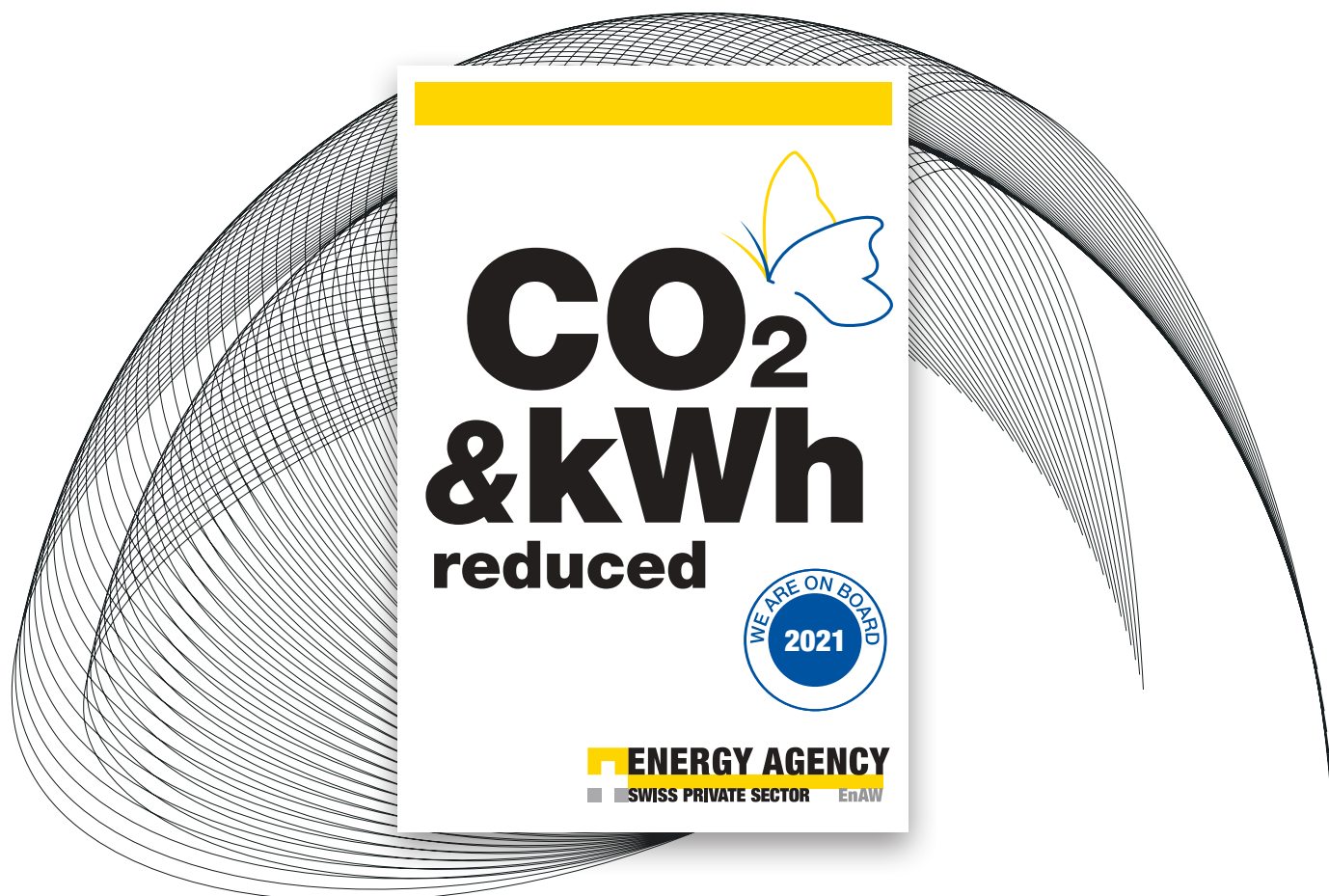
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Swiss Accreditation Service SAS

Head of SAS
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Certificate of the Swiss Private Sector Energy Agency

Voluntary Climate Protection and Energy Efficiency



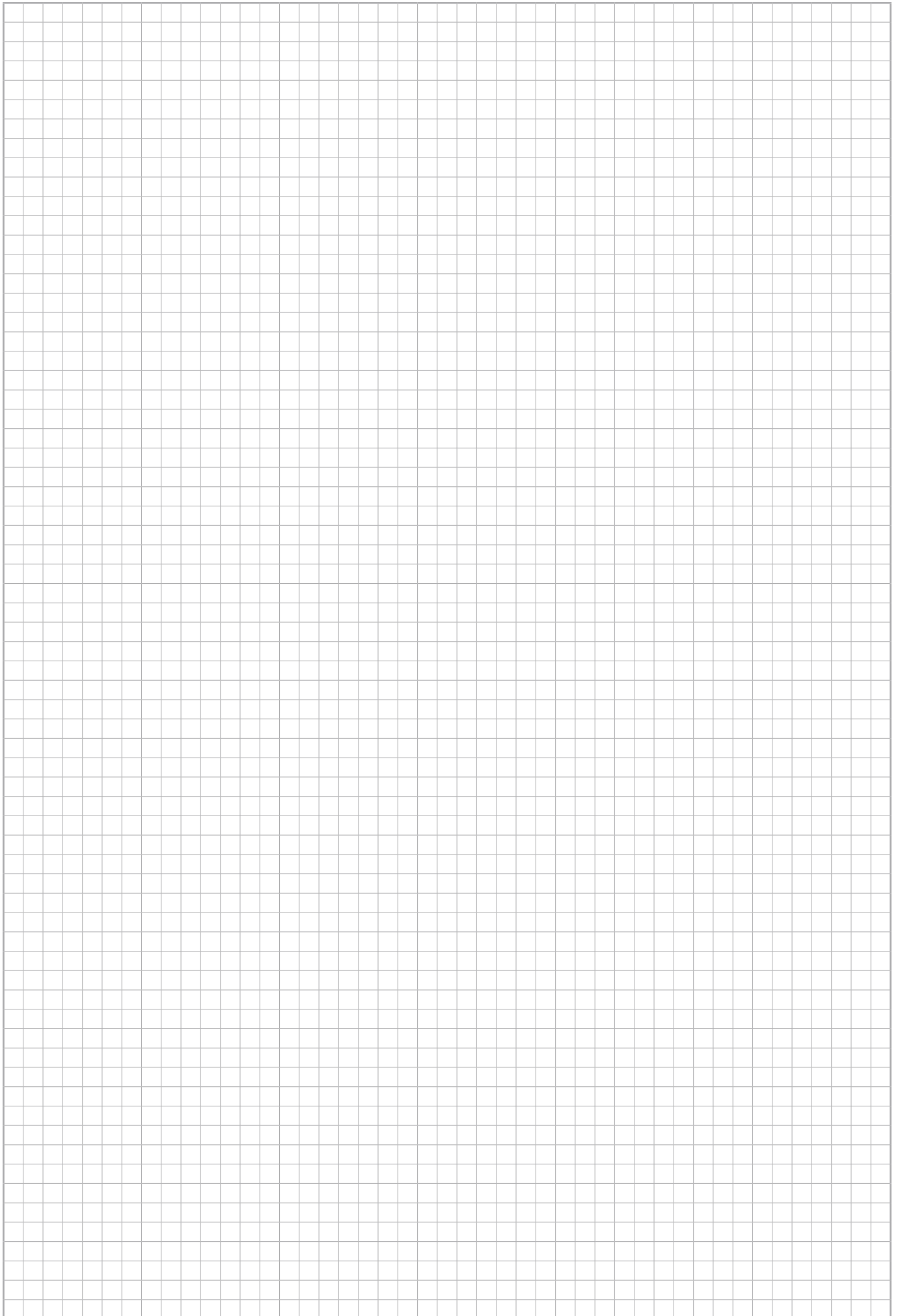
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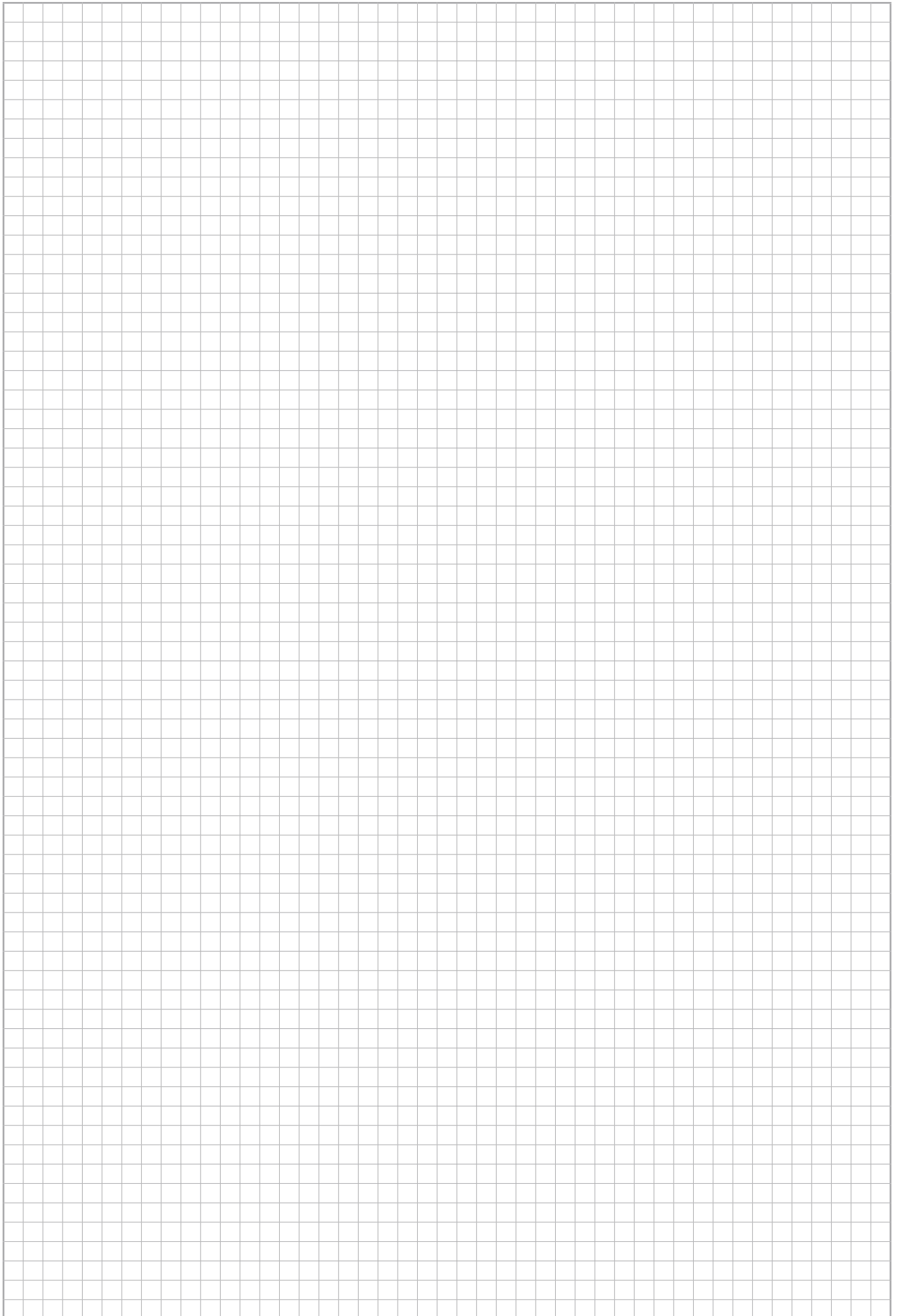
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Dr. Jacqueline Jakob
Swiss Private Sector Energy Agency

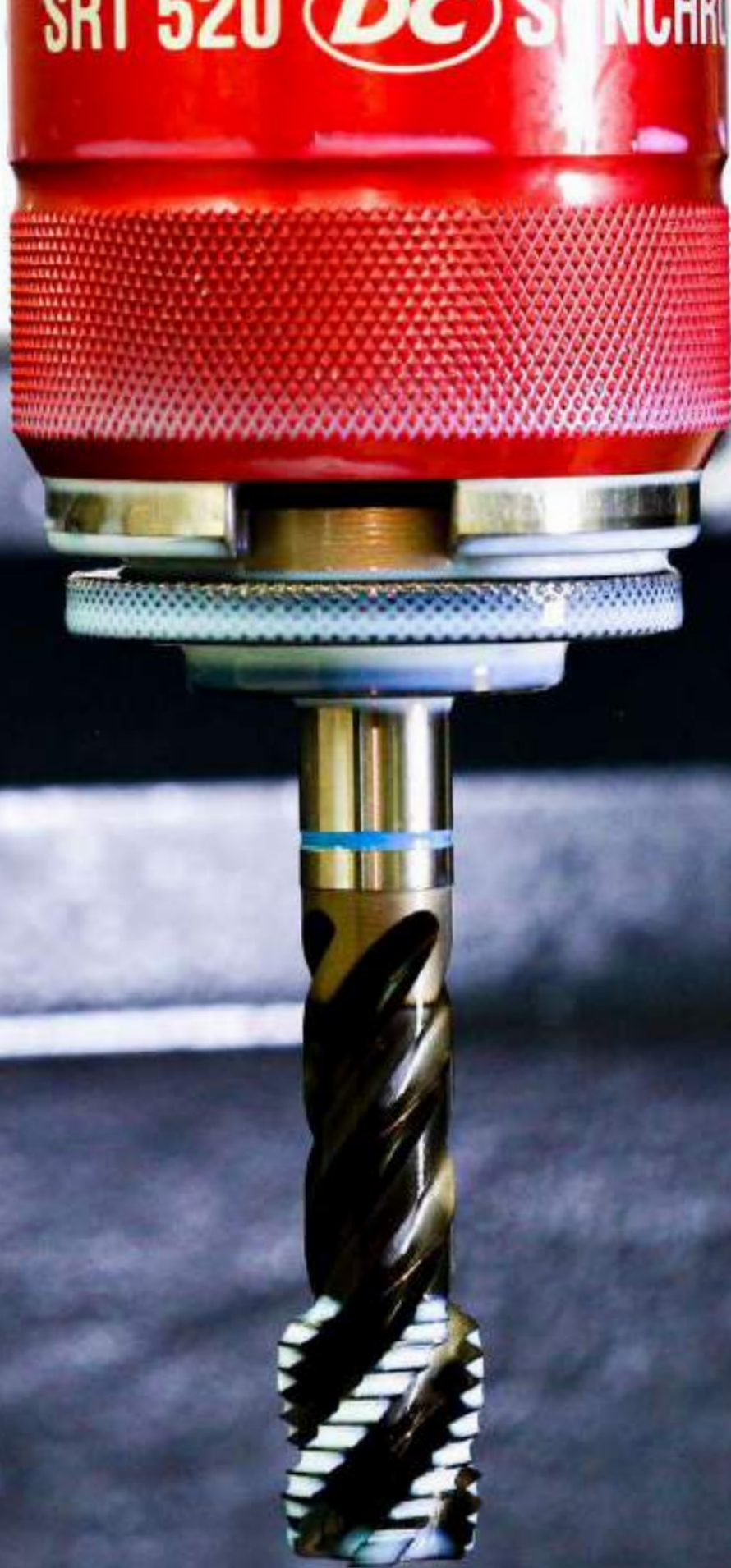
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Martin Kernen
Swiss Private Sector Energy Agency





SRT 520 DC SYNCRIL





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ATENCIÓN

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El reafilado de útiles 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.



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