

nano THREAD



MASTER
**THE SMALLEST
AND MOST PRECISE**
THREADED CONNECTIONS

nano

EN-ID nano.3



THREADING SOLUTIONS

nano



THREADING SOLUTIONS



THE THREADING
APPLICATIONS SPECIALIST



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DC SWISS SA

Since 1940, DC SWISS SA has been designing and manufacturing medium and top-quality threading tools in the heart of the Bernese Jura, the Swiss cradle of micromechanics and machine tools.

As a major player in the global threading tool market, DC SWISS SA has positioned itself as a specialist in a sector where quality, reliability and performance are essential. Excellence in product quality, technical support and customer training are priorities for this burgeoning industrial company.

The high-performance DC threading tools meet the strictest technological standards and are the result of numerous studies and the expertise gained by the company over many years.

Each tool undergoes multiple tests to guarantee optimum quality. DC SWISS SA offers our multi-generational know-how to our customers to help them find comprehensive solutions that fully meet their needs in their particular area of activity.



DC NANO TOOLS SA

The DC SWISS metrology office is recognised as a Calibration Laboratory for length standards by the Swiss Accreditation Service. It is therefore able to offer a calibration and metrology service in the field of screw connections.

DC NANO TOOLS SA, a member of the DC SWISS Group, is SCS 0143 certified. This certification authorises it to calibrate plug gauges and ring gauges with flank diameters from 0.1 to 3.0 mm and for outside diameters from 0.1 to 3.5 mm, in accordance with the international standard ISO 17025.

This certification is the most comprehensive on the international market.

OUR VALUES

PERFORMANCE

Performance is our primary concern in developing new solutions and improving our products. Value for money over time is the foundation on which we build relationships of trust with our customers.

KNOW-HOW

We use our know-how to create unique ways of resolving problems and apply all the knowledge, experience and skills we have gained since 1940.

RELIABILITY

We know that long-term relationships are built on trust, transparency and the ongoing commitment of each of our employees to provide our customers with tools and services of uncompromising quality.

SWISS QUALITY – 100 % MADE BY DC SWISS

All production stages in our workshops are a guarantee of Swiss Quality, from the development of the tool to manufacturing and final inspection. The quality of our tools is an essential factor in achieving your machining targets and assembling your parts to perfection.

CUSTOMER-FOCUSED CULTURE

Your satisfaction is our priority. Our employees are committed to excellence in providing customer support services and offering customers their skills, flexibility and motivation, together with a clear sense of innovation and quality.



DC SWISS IN FIGURES

9200 tools in our catalogues.

5000 Over 5'000 tools are produced in our workshops each day.

120 qualified employees.

98 % or more of our "catalogue" tools are available from stock for faster turnaround times.

60 We work together with distributors and technology partners around the world.

WE ARE HERE, FOR YOU

SCS QUALITY CERTIFICATION

EXPRESS LEAD TIMES

FULL APPRAISALS (TEST CENTRE)

BESPOKE DEVELOPMENT WORK

RECOMMENDATIONS

TECHNICAL ASSISTANCE

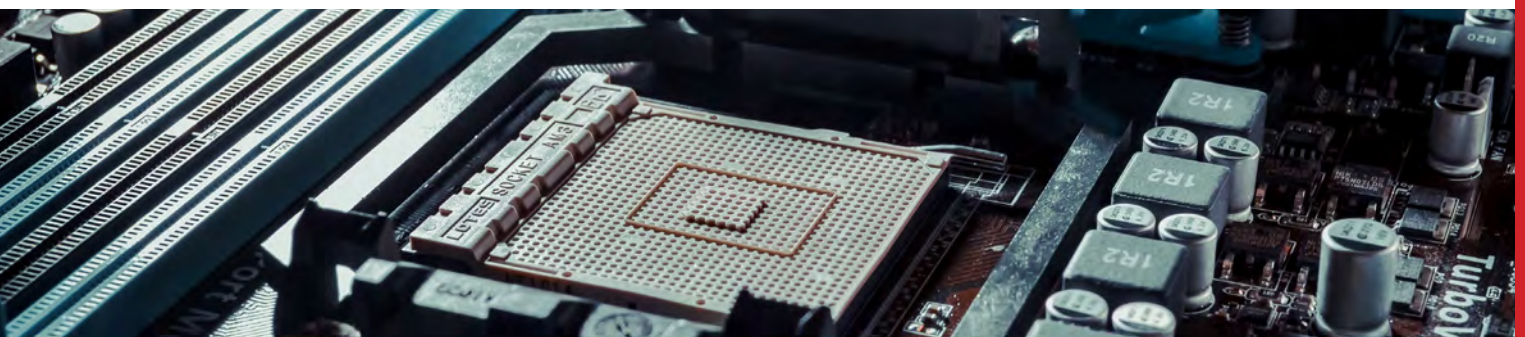
TRAINING

LOGISTICS SUPPORT

CUSTOMER-FOCUSED CULTURE

MEETING YOUR MOST
DEMANDING REQUIREMENTS
IS OUR PRIORITY

MASTER THE SMALLEST AND
MOST PRECISE THREADED CONNECTIONS



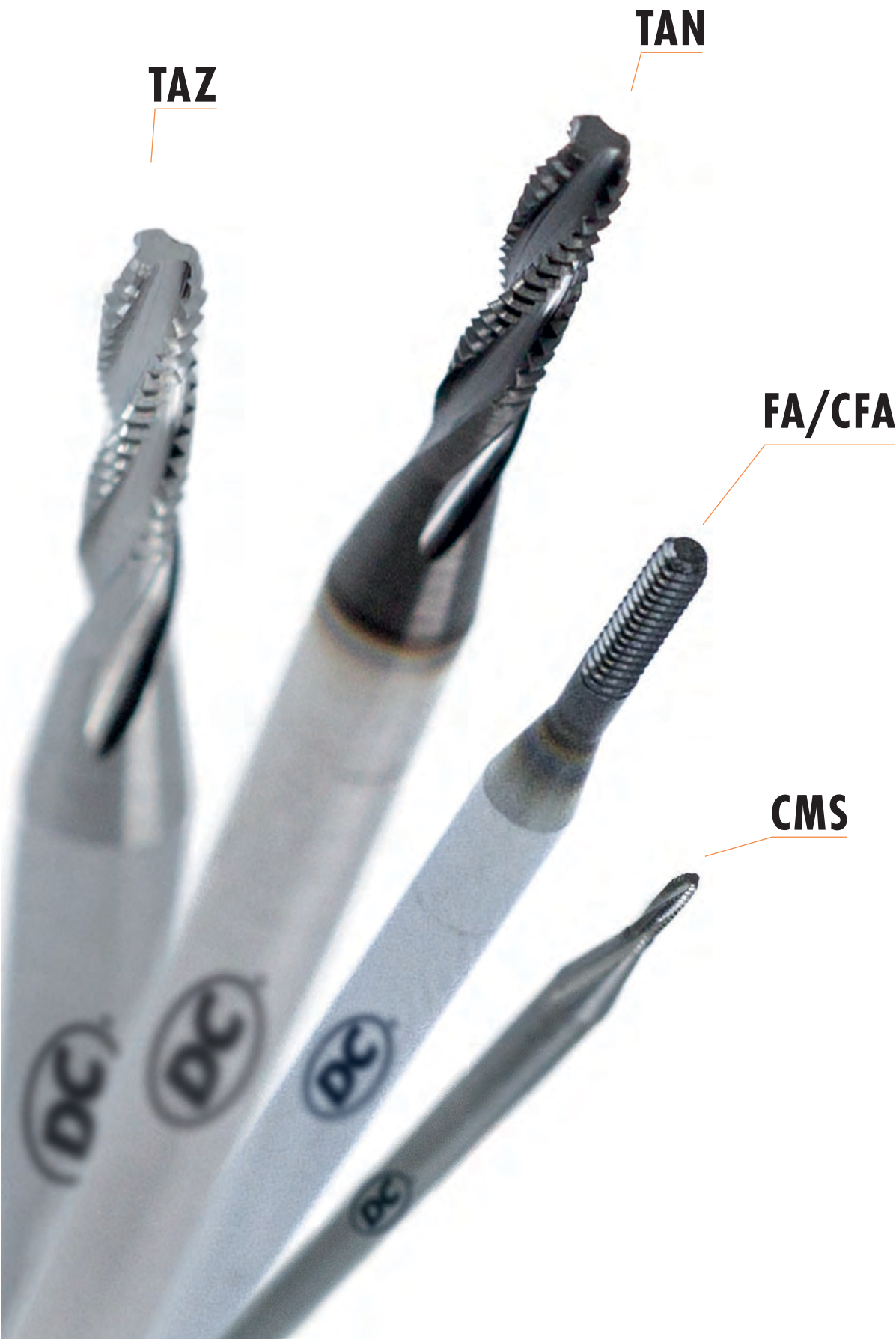
OUR TAPS AND THREAD FORMERS

TAZ

TAN

FA/CFA

CMS



FEATURES

High quality tools

It starts with the use of high-quality raw materials.

VS coating

Improved wear resistance thanks to VS coating. Gives a longer tool life.

TAN



PM

VS

Chip control

- High-performance chip control thanks to perfectly ground flutes
- Ensure a long service life

TAZ



PM

VS

High quality surface

- Perfect surface finishing due to appropriate relief angles
- Easy to screw in

CMS



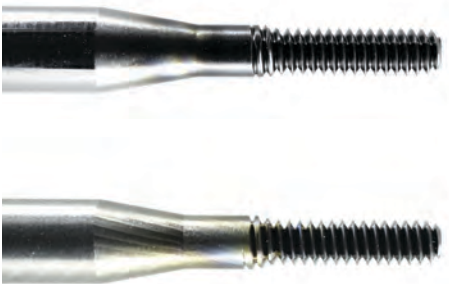
VHM
CAR

VS

Guaranteed gaugeable thread

- Revolutionary geometry guarantees perfect pitch control

FA / CFA



PM

VS

VHM
CAR

VS

Worried about screws pulling out?

- By forming the measurable resistance increases:
 - + 30 % more static resistance
 - + 100 % more dynamic resistance

TBF50



PM

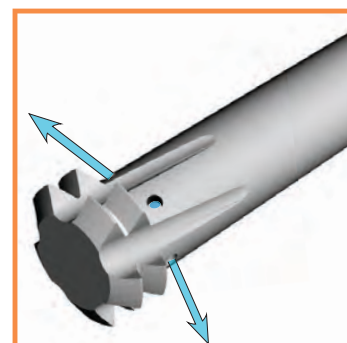
For lead free brass

- For through and blind holes up to 2 x D

GWi SERIES 3000



Ø 0.8 - 6.5 mm



Ø 6.5 - 20 mm

GWi SERIES 3000

OUR THREAD WHIRL CUTTERS

FEATURES

VS and VX coating

Improved wear resistance thanks to VS coating. Gives a longer tool life.

VX coating: improved wear resistance and a longer tool life in stainless steels and nickel alloys thanks to the VX coating.

GW SERIES 1000



VS

- Universal application
- High process security
- Suitable for the smallest dimensions (from 0.3 mm)
- More space for chip evacuation

GW SERIES 2000



VS

- Feed rate multiplied by number of teeth
- Less wear, longer tool life
- The number of teeth varies depending on the size

GW/GWi SERIES 3000



VS

VX

- Improved chip evacuation
- Double the tool life by GWi
- Secure process, reduction in NC-corrections
- No cold welding

VX - The best solution for stainless steels and nickel alloys

GWi SERIES 5000



VS

LH-rot.



For perfect threads without burrs

GWi SERIES 6000



VS

RH-rot.



For perfect threads without burrs
On request

NEW

For greater stability and precision in 2 x D applications.
All our GW / GWi thread whirlers in new versions with shorter clearance (l₃).

THE PERFECT THREAD

GWi5000 & GWi6000



OPTIMUM PERFORMANCE

Never before has the need to offer a perfect threading system been so important. Demand in the threading industry is becoming increasingly sophisticated and requires a flawless profile. That's why we've developed a tool based on the GWi series that **ensures burr-free threads**.

The operation consists of milling the flanks of the thread while working on the internal diameter. Optimum drilling is essential for successful threading. To achieve this, DC SWISS also recommends the appropriate centre drill and twist drill.

CHARACTERISTICS

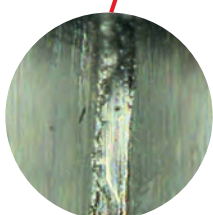
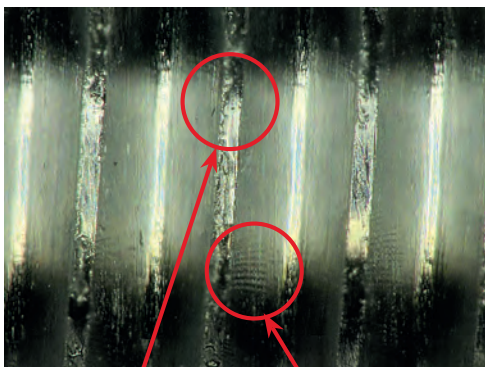
The ultra-fine carbide tool with VS coating offers excellent heat resistance, making it an ideal combination for high-performance machining.

Example:	Material:	Titanium grade 4
	Machine:	Tornos Evo Deco
	Type of hole:	Blind hole
	Thread size:	M1.8 6H
	Depth:	2 x D ₁
	Coolant:	Cutting oil
	Vc & Feed rate:	30 m/min & 0.03 mm/tooth

2500 PERFECT THREADS 1 NC CORRECTION

Number of NC corrections GWi5000:	1X
Number of NC corrections with conventional tool:	5X

Conventional machining



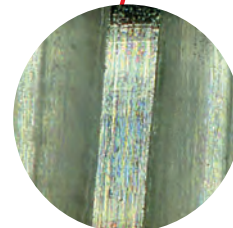
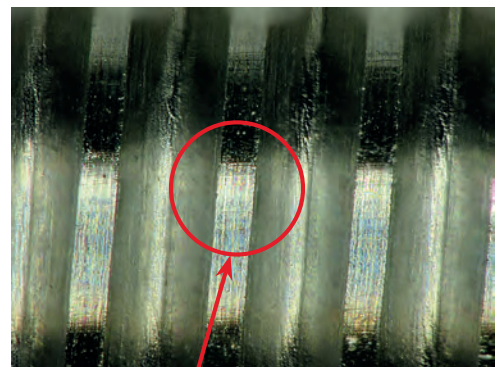
Burrs



Vibrations

Perfect thread

GWi5066VS M1.8x0.35

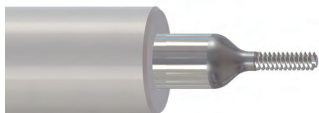
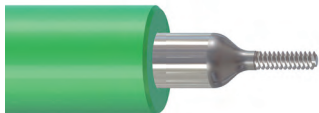
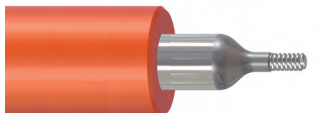


No burrs & no vibrations

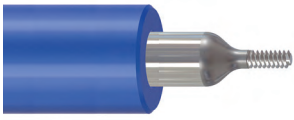
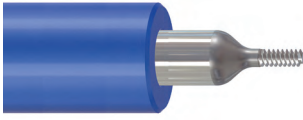
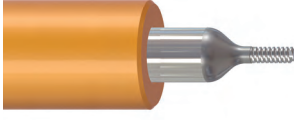
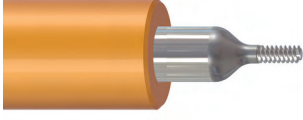
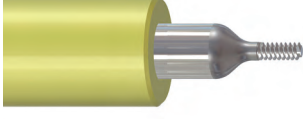
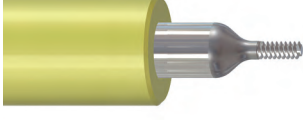
OUR NANO THREAD GAUGES



SPECIFICATIONS OF NANO GAUGES

Thread plug gauges	DN01 Go		Plug gauge for production "Go" made of solid carbide handle $\varnothing d_2 = 6 \text{ mm}$
	DN01 Go		Plug gauge for metrology "Go" made of solid carbide handle $\varnothing d_2 = 6 \text{ mm}$
	DN02 NoGo		Plug gauge for metrology "NoGo" made of solid carbide handle $\varnothing d_2 = 6 \text{ mm}$
	DN5701-1 Go		Plug gauge for production "Go" made of solid carbide handle $\varnothing d_2 = 3 \text{ mm}$
	DN5701-1 Go		Plug gauge for metrology "Go" made of solid carbide handle $\varnothing d_2 = 3 \text{ mm}$
	DN5701-2 NoGo		Plug gauge for metrology "NoGo" made of solid carbide handle $\varnothing d_2 = 3 \text{ mm}$
Thread ring gauges	DH5701-1 Go		Plug gauge for production "Go" made of HSSE-PM handle $\varnothing d_2 = 2.8 \text{ mm}$
	DZ04 Go		Ring gauge for production "Go" in Phynox KL $\varnothing d_2 = 20 \text{ mm}$
	DZ04 Go		Ring gauge for metrology "Go" in Phynox KL $\varnothing d_2 = 20 \text{ mm}$
	DZ14 NoGo		Ring gauge for metrology "NoGo" in Phynox KL $\varnothing d_2 = 20 \text{ mm}$

SPECIFICATIONS OF NANO GAUGES

Thread ring gauges	DN04 Go		Ring gauge for production "Go" in Phynox KL handle Ø d ₂ = 6 mm
	DN04 Go		Ring gauge for metrology "Go" in Phynox KL handle Ø d ₂ = 6 mm
	DN14 NoGo		Ring gauge for metrology "NoGo" in Phynox KL handle Ø d ₂ = 6 mm
Plug check gauges	RN05-1 Go/Go		Plug check gauge to check the quality of the "Go" ring gauge in solid carbide handle Ø d ₂ = 6 mm
	RN15-1 Go/NoGo		Plug check gauge to check the quality of the "NoGo" ring gauge in solid carbide handle Ø d ₂ = 6 mm
	RN05-2 NoGo/Go		Plug check gauge to check the quality of the new "Go" ring gauge in solid carbide handle Ø d ₂ = 6 mm
	RN15-2 NoGo/NoGo		Plug check gauge to check the quality of the new "NoGo" ring gauge in solid carbide handle Ø d ₂ = 6 mm
Master plug gauges	RN05-3 WEAR		Master plug gauge WEAR to check the wear of the ring gauge "Go" in solid carbide handle Ø d ₂ = 6 mm
	RN15-3 WEAR		Master plug gauge WEAR to check the wear of the ring gauge "NoGo" in solid carbide handle Ø d ₂ = 6 mm
Calibration	EN00		Calibration thread plug gauge for the calibration of measuring machines in solid carbide handle Ø d ₂ = 3 mm

RINGS + PLUGS CERTIFICATE

Our DC NANO TOOLS SA metrology laboratory, accredited SCS 0143, in accordance with ISO/IEC/17025, measures and calibrates all thread plug gauges.

The paid certificate is available on request.

DC NANO TOOLS SA
Grand-Rue 19 / CP 363
CH - 2735 Malleray
Tel. + 41 32 491 63 63
info@dcswiss.ch
dcswiss.com



dcswiss.com

In Übereinstimmung mit ISO/IEC/17025
En accord avec ISO/IEC/17025
In accordance with ISO/IEC/17025

Akkreditierungs-Nr.
No d'accréditation
Accreditation No.

SCS 0143

Zertifikat Nr.
No. du certificat
Certificate No.

C14535-113691

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Kunde
Client
Customer

DC SWISS SA
Grand rue 19
2735 Malleray

Auftrags-Nr., Datum
No. de commande, date
Order No., date

SCS

KALIBRIERZERTIFIKAT
CERTIFICAT D'ETALONNAGE
CALIBRATION CERTIFICATE

SCS

Gegenstand
Objet
Object

Gewinde-Ausschusslehndorn
Tampon fileté NENTRE PAS
NO GO screw plug gauge

Hersteller
Fabricant
Manufacturer

DCSWISS SA

Bezeichnung
Designation
Designation

DN02 S0.8 NIHS NT

Referenz Nr.
No. Référence
ID

190796

Beschreibung
Marquage
Engraving

C14535

Datum der Kalibrierung
Date de l'étalonnage
Date of calibration

25-juin-19

Bemerkungen
Remarques
Remarks

Dieses Kalibrierzertifikat dokumentiert die Rückverfolgbarkeit auf nationale Normale zur Darstellung der physikalischen Einheiten (SI).

Ce certificat d'étalonnage confirme le raccordement aux étalons nationaux qui matérialisent les grandeurs physiques (SI).

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).

Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind auf den folgenden Seiten aufgeführt und sind Teil des Zertifikates.

Les résultats, les incertitudes avec le niveau de confiance et les méthodes de mesure sont donnés aux pages suivantes et font partie du certificat.

The measurements, the uncertainties with confidence probability and calibration methods are given on the following pages and are part of the certificate.

Stempel und Datum
Timbre et date
Stamp and date

Verantwortlicher der Messungen
Responsable des mesures
In charge of the measurements

Malleray: _____

André Da Silva

Der Inhalt dieses Zertifikates darf nur in vollständiger Form veröffentlicht oder weitergegeben werden und bedarf der Genehmigung der ausstellenden Kalibrierstelle.
La publication ou la reproduction de ce certificat n'est autorisée que dans sa forme intégrale et demande la permission du laboratoire émetteur.
This certificate shall not be published or reproduced other than in full extent with the prior written consent of the issuing laboratory.

All thread ring gauges are controlled to standards manually with thread plug check gauges. These all have a SCS calibration certificate.

The paid certificate is available on request.

DC NANO TOOLS SA
Grand-Rue 19 / CP 363
CH - 2735 Malleray
Tel. + 41 32 491 63 63
info@dcswiss.ch
dcswiss.com



dcswiss.com

In Anlehnung an ISO/IEC/17025
En référence à ISO/IEC/17025
Referring to ISO/IEC/17025

Zertifikat Nr.
No. du certificat
Certificate no.

B21567

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Kunde
Client
Customer

DC SWISS SA
Grand rue 19
2735 Malleray

Prüfzertifikat
Certificat de contrôle
Certificate of measurement

Gegenstand
Objet
Object

Gewindelehrring GO
Jauge tague fileté GO
GO thread ring gauge

Hersteller
Fabricant
Manufacturer

DCSWISS SA

Bezeichnung
Designation
Designation

DN04 S1 Sh GO

Referenz Nr.
No. de référence
Reference no.

200753

Beschreibung
Marquage
Marking

B21567

Kalibriert durch
Étalonné par
Calibrated by

MRO

Datum der Kalibrierung
Date de l'étalonnage
Date of calibration

24-juin-24

Bemerkungen
Remarques
Remarks

Dieses Prüfzertifikat dokumentiert die Rückverfolgbarkeit auf nationale Normale zur Darstellung der physikalischen Einheiten (SI).

Ce certificat de contrôle confirme le raccordement aux étalons nationaux qui matérialisent les grandeurs physiques (SI).

This certificate of measurement documents the traceability to national standards, which realize the physical units of measurements (SI).

Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren der verwendeten Prüfgeräte sind auf deren Zertifikaten aufgeführt.

Les résultats, les incertitudes avec le niveau de confiance et les méthodes de mesure des rapporteurs sont donnés sur leurs certificats respectives.

The measurements, the uncertainties with confidence probability and calibration methods from the used check gauges are given on their certificates.

Stempel und Datum
Timbre et date
Stamp and date

Verantwortlicher der Prüfung
Responsable du contrôle
Responsible for the control

Malleray

Der Inhalt dieses Zertifikates darf nur in vollständiger Form veröffentlicht oder weitergegeben werden und bedarf der Genehmigung der ausstellenden Prüfstelle.
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The content of this certificate may only be published or passed on in full and requires the authorisation of the issuing inspection laboratory.

NORM NIHS 06-12: COMPARING ST

THREAD PLUG GAUGES

	STB NT/RT	NIHS 06-12
Rounding of pitch and external Ø	to 1 µm	to 0.1 µm
Pitch tolerance	± 1 µm/revolution	± 0.3 µm/l ₂
Tolerance of partial flank angles	from P0.08 = ± 58' to P0.3 = ± 20'	from P0.08 = ± 78' to P0.3 = ± 21' (= 100 % TD2)
External Ø NoGo thread plug gauge	profile with full flanks (pointed)	profile with shortened flanks
Thread run-in	not specified	removal of the incomplete thread, chamfer or point
Handle	not specified	not specified
Permissible measurement uncertainty on the pitch Ø	not specified	not specified
Certification requirements	not specified	not specified

THREAD RING GAUGES

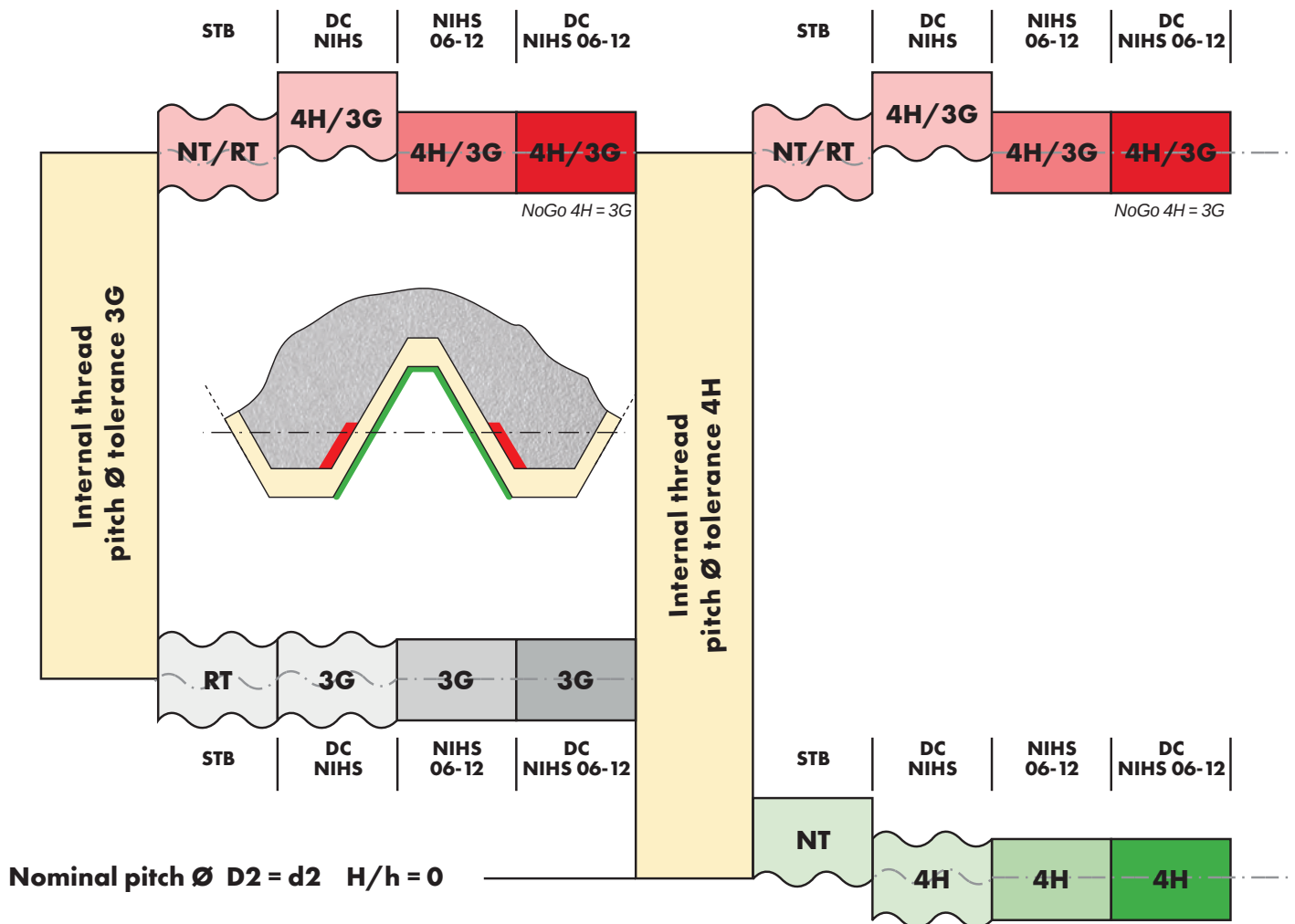
	STB NT/RT	NIHS 06-12
Rounding of pitch and external Ø	to 1 µm	to 0.1 µm
Pitch tolerance	± 1 µm/revolution	± 0.8 µm/l ₂
External Ø NoGo thread ring gauge	profile with full flanks (pointed)	profile with shortened flanks
Thread run-in	not specified	with or without chamfer
Handle	not specified	not specified
Checking the thread ring gauges	not specified	specification of the inspection thread plug gauges
Permissible measurement uncertainty of the pitch Ø of the thread plug gauges	not specified	not specified
Requirements for the certification of inspection thread plug gauges	not specified	not specified

STANDARDS AND INTERPRETATIONS

DC SWISS NIHS 06-12			
to 0.1µm	✓	rounding difference up to 0.5µm	≈ = representation of the rounding differences (see table with the pitch Ø)
± 0.3µm/l ₂	✓	limits the risk of profile shift	see detail 1.1 and 1.3
P ≤ 0.2 = ± 24' P ≥ 0.25 = ± 18'	✓	limits the deviation of the profile	see detail 1.2 and 1.3
profile with shortened flanks	✓	a thread gauge with shortened flanks enables correct control of the pitch Ø, while maintaining the minimum profile	see detail 1.4
removal of the incomplete thread, with chamfer	✓	controls the depth to the last full thread, facilitates positioning	see detail 1.5
Ø6mm	✓	ergonomic	
± 1.9µm	✓		
 SCS	✓		

DC SWISS NIHS 06-12			
to 0.1µm	✓	rounding difference up to 0.5µm	≈ = representation of rounding differences (see table with pitch Ø)
± 0.8µm/l ₂	✓	limits the risk of profile shift	
profile with shortened flanks	✓	the thread ring gauge does not rest on the external Ø	see detail 2.1
with chamfer	✓	prevents deformation or breakage of the 1st incomplete thread, facilitates setting	see detail 2.2
Ø6 or Ø20mm without knurling	✓	ergonomic, avoids excessive force	
specification of the inspection thread plug gauges	✓	the thread ring gauges are certified by means of inspection thread plug gauges	
± 1.9µm	✓		
 SCS certified inspection thread plug gauges	✓		

POSITION OF THE PITCH Ø



Tolerance classes for internal threads	
3G5H	3G6H
4H5H	4H6H

All threading tools and gauges are marked with this first grade only.

Unless explicitly stated otherwise, tolerance 3G5H applies as standard.

- The tolerance classes 3G5H and 3G6H can be used to produce parts before coating (blanks, raw parts or semi-finished parts) or also for finished parts.
- The tolerance classes 4H5H and 4H6H can be used for the manufacture of finished parts (with or without coating).

Tolerance class on the internal Ø.

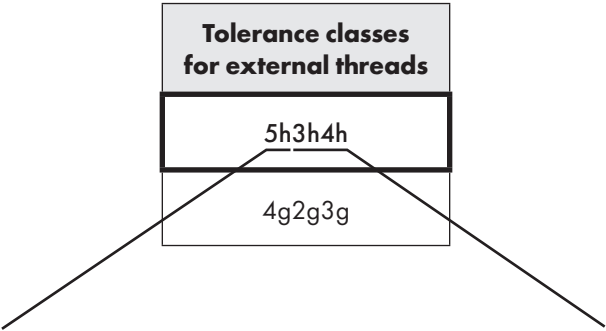
The bore Ø is indicated by the last two characters.

The dimensions of the smooth plug gauges NIHS 06-12:

- 5H (formerly known as "brass")
- 6H (formerly known as "steel")

Go and NoGo are listed on page 27.

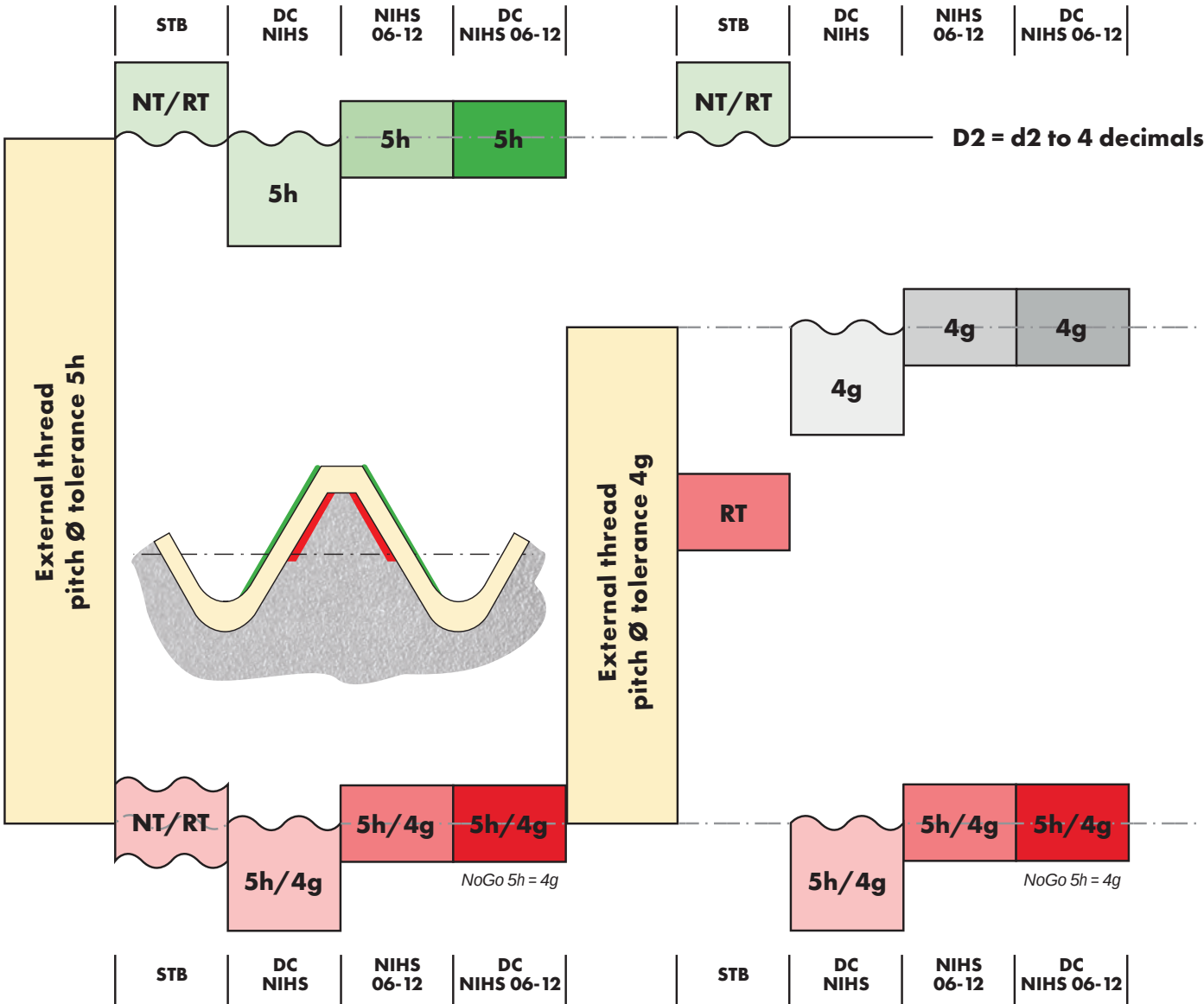
OF THE THREAD GAUGES



Unless explicitly stated otherwise, tolerance 5h applies as standard.

- The tolerance position 4g can be used to produce parts before coating (blanks, raw parts or semi-finished parts). Tolerance class 4g can also be used for finished parts due to its position.
- The tolerance class 5h can be used for the manufacture of finished parts (with or without coating).

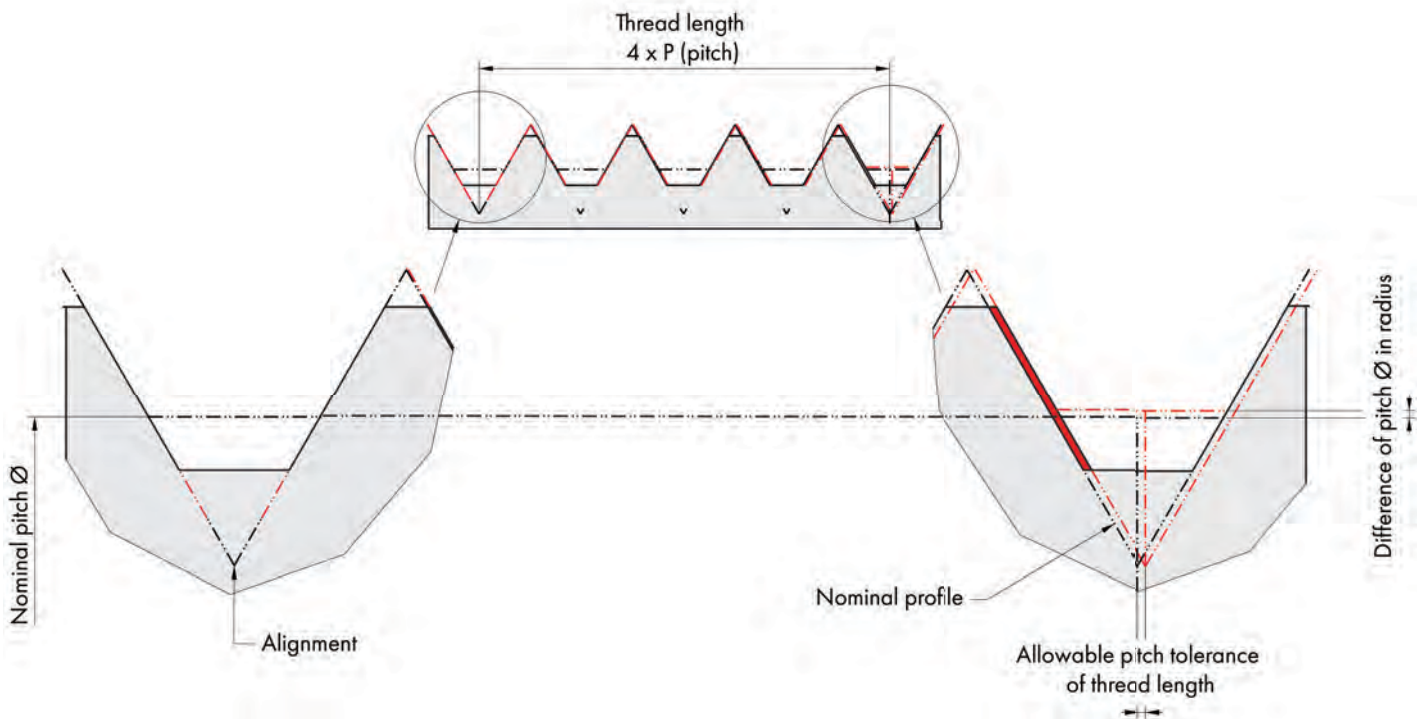
The tolerances of the external (3h) and internal (4h) Ø result from the selected tolerance of the pitch Ø.
They are not indicated on the gauges or on the threading tools.



INTERNAL THREAD, THREAD PLUG GAUGES

1.1 PITCH TOLERANCE OF THREAD PLUG GAUGES

The NIHS 06-12 standard specifies the limits of permissible pitch error for a defined maximum profile offset.

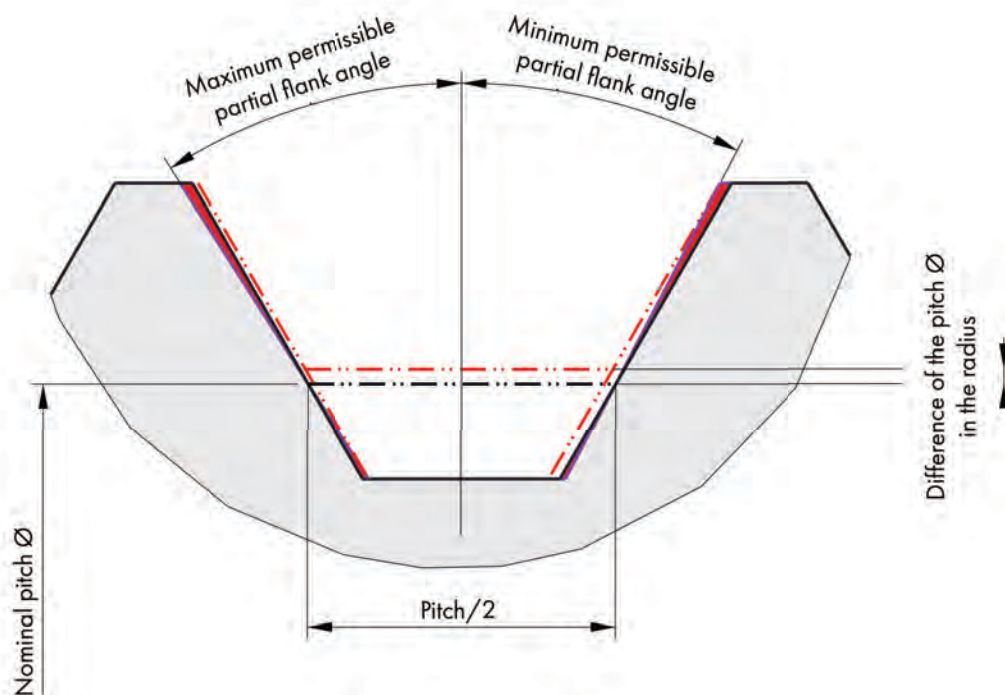


Examples of the influence of the pitch tolerance, expressed in % of the tolerance of the pitch Ø:

Standard	Pitch mm	Permitted pitch tolerance	Example calculated on:	Resulting thread length (l_2) mm	Permitted pitch tolerance on thread length μm	Difference of the resulting pitch Ø μm	Tolerance of the pitch Ø of the good thread plug gauge G_o μm	Influence of the pitch tolerance, expressed in % of the tolerance of the pitch Ø of the gauge
STB NT / RT	0.09	$1\mu\text{m}/\text{revo.}$	4 x pitch	0.36	4	6.9	± 2	173%
NIHS 06-12	0.09	$0.3\mu\text{m}/l_2$	4 x pitch	0.36	0.3	0.5	± 2	13%
STB NT / RT	0.175	$1\mu\text{m}/\text{revo.}$	4 x pitch	0.7	4	6.9	± 2	173%
NIHS 06-12	0.175	$0.3\mu\text{m}/l_2$	4 x pitch	0.7	0.3	0.5	± 2	13%
STB NT / RT	0.25	$1\mu\text{m}/\text{revo.}$	4 x pitch	1	4	6.9	± 2	173%
NIHS 06-12	0.25	$0.3\mu\text{m}/l_2$	4 x pitch	1	0.3	0.5	± 2	13%
STB NT / RT	0.3	$1\mu\text{m}/\text{revo.}$	4 x pitch	1.2	4	6.9	± 2	173%
NIHS 06-12	0.3	$0.3\mu\text{m}/l_2$	4 x pitch	1.2	0.3	0.5	± 2	13%

1.2 TOLERANCE OF PARTIAL FLANK ANGLES OF THE THREAD PLUG GAUGES

It defines the permissible limits of partial flank angle errors to limit any profile errors.



Examples of the influence of the partial flank angle tolerance, expressed in % of the tolerance of the pitch $\varnothing$:

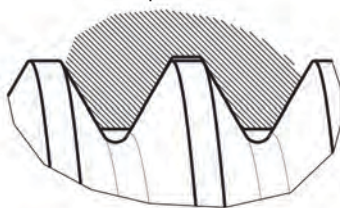
Standard	Pitch mm	Tolerance of the partial flank angle minutes	Difference of the pitch $\varnothing$ μm	Tolerance of the pitch $\varnothing$ of the gauge μm	Influence of the partial flank angle tolerance, expressed in % of the tolerance of the pitch $\varnothing$ of the gauge
STB	0.09	+/- 57.5	3.4	± 2	85%
NIHS 06-12	0.09	+/- 69	4	± 2	100%
DC SWISS NIHS 06-12	0.09	+/- 24	1.4	± 2	35%
STB	0.175	+/- 32.5	3.7	± 2	93%
NIHS 06-12	0.175	+/- 35	4	± 2	100%
DC SWISS NIHS 06-12	0.175	+/- 24	2.7	± 2	68%
STB	0.25	+/- 30	4.8	± 2	120%
NIHS 06-12	0.25	+/- 25	4	± 2	100%
DC SWISS NIHS 06-12	0.25	+/- 18	2.9	± 2	73%
STB	0.3	+/- 20	3.8	± 2	95%
NIHS 06-12	0.3	+/- 21	4	± 2	100%
DC SWISS NIHS 06-12	0.3	+/- 18	3.5	± 2	88%

1.3 THREAD PLUG GAUGES, FAULT ACCUMULATION

Standard	Dimension	Pitch mm	Thread plug gauge	Tolerance	Deviation of the pitch Ø in relation to the standard NIHS 06-12 4H μm	Deviation of the rounding difference of the pitch Ø STB to 1 μm , NIHS to 0.1 μm μm	Difference of pitch Ø due to pitch tolerance over a length of 4 x pitch (P) μm	Difference of the pitch Ø due to the tolerance of the partial flank angle μm	Cumulation of previous deviations and differences μm	Tolerance of the pitch Ø of the gauge μm	Cumulated deviations and differences expressed in % of the tolerance of the pitch Ø of the gauge
STB	S0.35	0.09	Go	NT	2	0.5	6.9	3.4	12.8	± 2	320%
NIHS 06-12	S0.35	0.09	Go	4H	-	-	0.5	4	4.5	± 2	112.5%
DC SWISS NIHS 06-12	S0.35	0.09	Go	4H	-	-	0.5	1.4	1.9	± 2	47.5%
STB	S0.7	0.175	Go	NT	2	-0.3	6.9	3.7	12.3	± 2	307.5%
NIHS 06-12	S0.7	0.175	Go	4H	-	-	0.5	4	4.5	± 2	112.5%
DC SWISS NIHS 06-12	S0.7	0.175	Go	4H	-	-	0.5	2.7	3.2	± 2	80%
STB	S1	0.25	Go	NT	2	0.4	6.9	4.8	14.1	± 2	352.5%
NIHS 06-12	S1	0.25	Go	4H	-	-	0.5	4	4.5	± 2	112.5%
DC SWISS NIHS 06-12	S1	0.25	Go	4H	-	-	0.5	2.9	3.4	± 2	85%
STB	S1.4	0.3	Go	NT	2	-0.1	6.9	3.8	12.6	± 2	315%
NIHS 06-12	S1.4	0.3	Go	4H	-	-	0.5	4	4.5	± 2	112.5%
DC SWISS NIHS 06-12	S1.4	0.3	Go	4H	-	-	0.5	3.5	4	± 2	100%

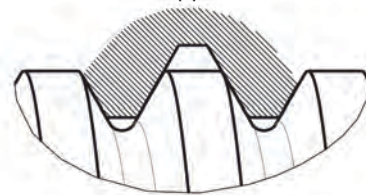
1.4 EXTERNAL Ø OF THE NoGo THREAD PLUG GAUGE

Profile with full flanks
(pointed)

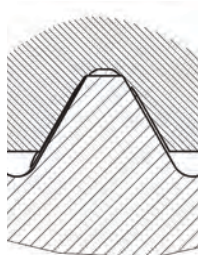


A pointed external Ø of the thread plug gauge can negatively affect the inspection of the nut.

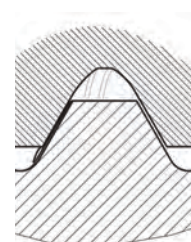
Profile with shortened flanks
(stepped)



The taper of the external Ø of the thread plug gauge allows the correct control of the pitch Ø.



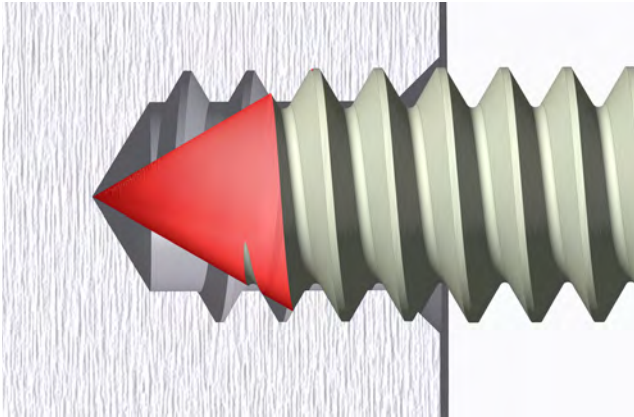
The NoGo thread plug gauge with non-shortened flanks (pointed) can abut on the external Ø of the nut.



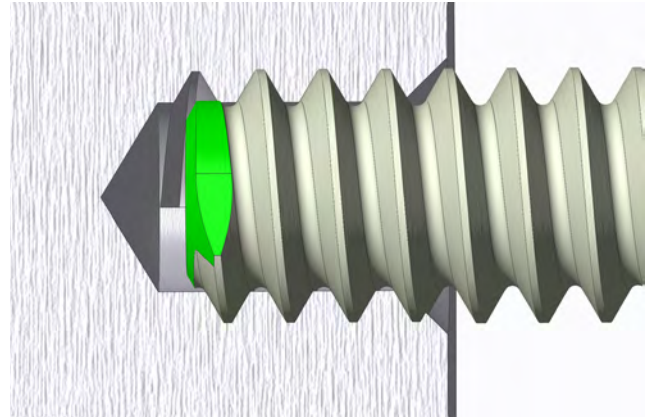
The NoGo plug gauge with shortened flanks allows the pitch Ø to be checked without being influenced by the external Ø of the nut.

1.5 THREAD RUN-IN OF THE THREAD PLUG GAUGE

With point



Removal of the incomplete thread with chamfer

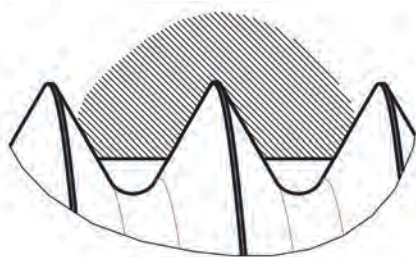


- Controls the depth to the last full thread turn
- Facilitates setting

EXTERNAL THREAD, THREAD RING GAUGES

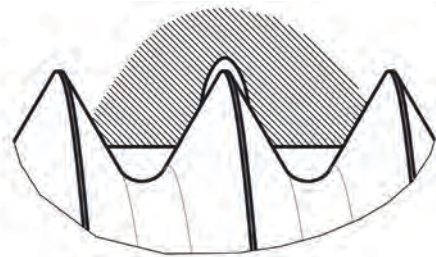
2.1 EXTERNAL Ø OF NoGo THREAD RING GAUGES

Profile with full flanks
(pointed)

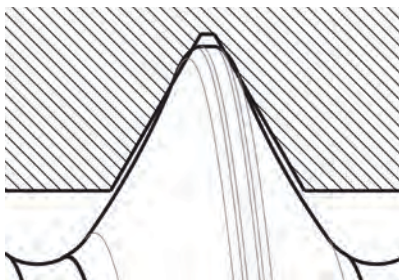


A pointed external Ø of the ring gauge can negatively affect the inspection of the screw.

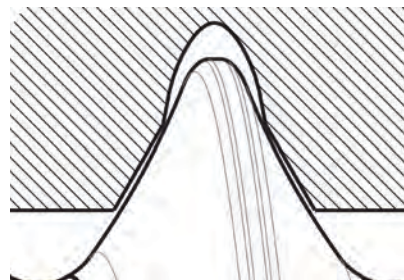
Profile with shortened flanks
(free-punched)



The recess ensures the control of the pitch Ø.



The non-exposed (pointed) NoGo thread ring gauge can protrude on the external Ø of the screw.



The recessed NoGo ring gauge makes it possible to check the pitch Ø without being influenced by the external diameter of the screw.

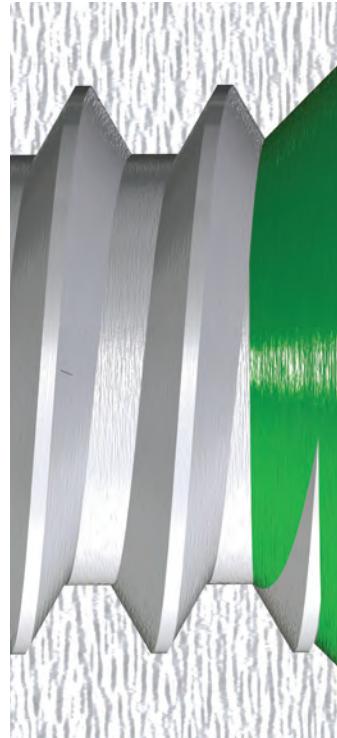
2.2 THREAD RUN-IN OF THE THREAD RING GAUGES

Without chamfer



- Fragile, incomplete thread

With chamfer



- Prevents deformation or breakage of the 1st incomplete thread
- Facilitates setting



3.1 SMOOTH PLUG GAUGES

Limit values of smooth plug gauges

for inside $\varnothing D_1$ of internal threads of tolerance 5H.

Dimensions in millimetres (mm), tolerances in micrometres (μm).

Nominal diameter	Pitch mm	5H Go		5H NoGo	
		$\varnothing$ of the smooth plug gauge	Tolerance	$\varnothing$ of the smooth plug gauge	Tolerance
S0.3	0.08	0.2252	± 1	0.2402	± 1
S0.35	0.09	0.2656	± 1	0.2856	± 1
S0.4	0.1	0.309	± 1	0.33	± 1
S0.45	0.1	0.359	± 1	0.38	± 1
S0.5	0.125	0.385	± 1	0.415	± 1
S0.55	0.125	0.435	± 1	0.465	± 1
S0.6	0.15	0.461	± 1	0.502	± 1
S0.7	0.175	0.537	± 1	0.585	± 1
S0.8	0.2	0.613	± 1	0.665	± 1
S0.9	0.225	0.694	± 2	0.745	± 2
S1	0.25	0.77	± 2	0.825	± 2
S1.1	0.25	0.87	± 2	0.925	± 2
S1.2	0.25	0.97	± 2	1.025	± 2
S1.3	0.3	1.022	± 2	1.085	± 2
S1.4	0.3	1.122	± 2	1.185	± 2

Limit values of the smooth gauges

for inside $\varnothing D_1$ of internal threads of tolerance 6H.

Dimensions in millimetres (mm), tolerances in micrometres (μm)

Nominal diameter	Pitch mm	6H Go		6H NoGo	
		$\varnothing$ of the smooth plug gauge	Tolerance	$\varnothing$ of the smooth plug gauge	Tolerance
S0.4	0.1	0.309	± 1	0.342	± 1
S0.45	0.1	0.359	± 1	0.392	± 1
S0.5	0.125	0.385	± 1	0.435	± 1
S0.55	0.125	0.435	± 1	0.485	± 1
S0.6	0.15	0.466	± 2	0.522	± 2
S0.7	0.175	0.542	± 2	0.605	± 2
S0.8	0.2	0.618	± 2	0.685	± 2
S0.9	0.225	0.694	± 2	0.765	± 2
S1	0.25	0.77	± 2	0.845	± 2
S1.1	0.25	0.87	± 2	0.945	± 2
S1.2	0.25	0.97	± 2	1.045	± 2
S1.3	0.3	1.022	± 2	1.105	± 2
S1.4	0.3	1.122	± 2	1.205	± 2

CALIBRATION THREAD GAUGES

4.1 DEFINITION

A calibration thread plug gauge allows the characterisation of the metrological performance of the various measuring devices and measuring methods.

4.2 FIELD OF APPLICATION

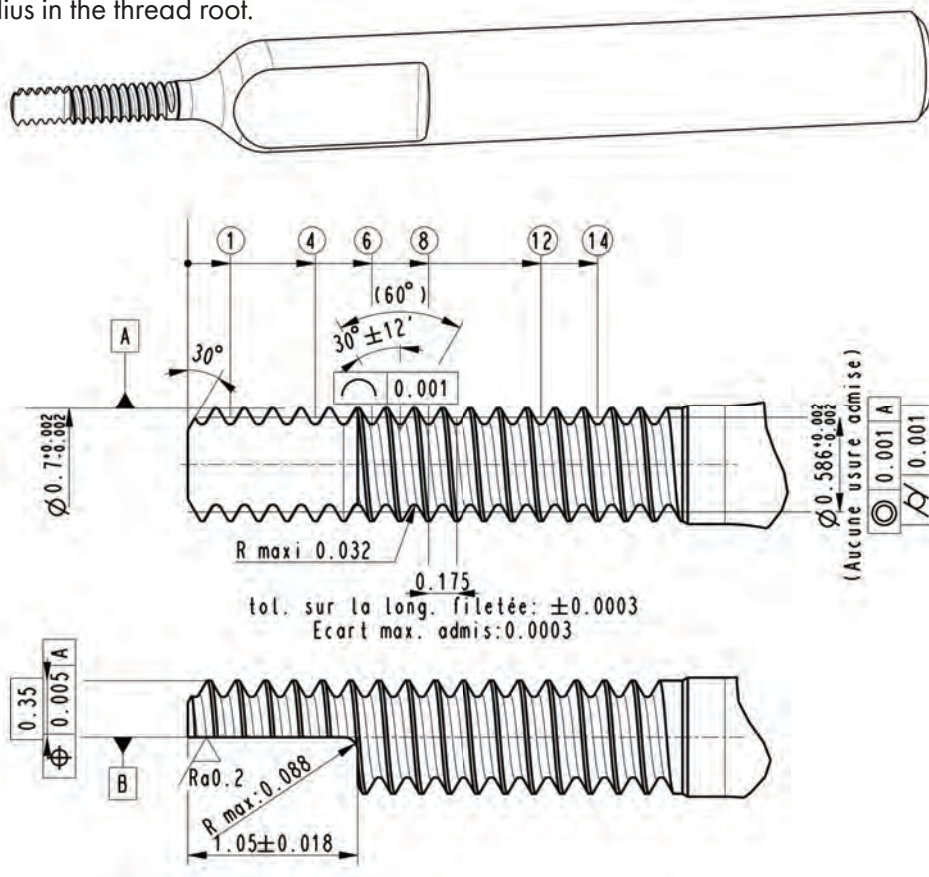
The calibration thread plug gauges S NIHS are designed for the calibration of optical and tactile measuring instruments, for external threads with nominal $\varnothing$ from 0.3 mm to 1.4 mm.

4.3 CONCEPT OF THE CALIBRATION THREAD GAUGES

NIHS 06-11 calibration thread gauges are defined according to a standardised geometric design.

The manufacturer must ensure the following requirements:

- the cylindricity of the pitch $\varnothing$
- the position of the cut out part length and the positioning surface
- the parallelism between the positioning surface and the cut part length
- the tolerance of the form and partial flank angle
- the position of the first measuring thread
- the uniformity of the partial flank angles and the pitch over the entire thread length
- the permissible radius in the thread root.



Our calibration thread gauges are supplied with a SCS measurement certificate for pitch $\varnothing$, partial flank angle and pitch according to NIHS 06-11.

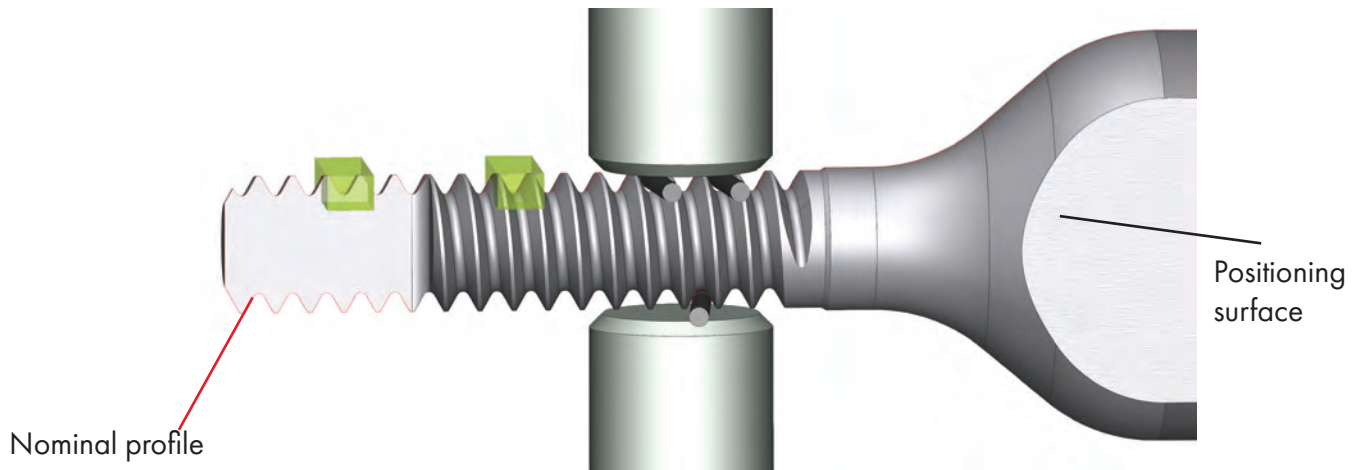
4.4 FUNCTIONS OF THE CALIBRATION THREAD GAUGES

- Calibration of the pitch $\varnothing$
- Calibration of the flank angles
- Calibration of the pitch

4.5 METHODS OF USING THE CALIBRATION THREAD GAUGES

The cut-off part length allows the thread to be measured without profile distortion (without shadowing)

The full part allows the measurement of the thread in real condition (distortion must be considered)



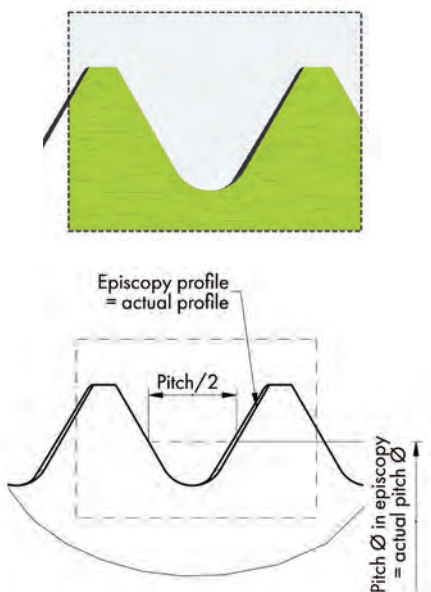
NON-CONTACT (OPTICAL) SOLUTION

Definition of shadow distortion:

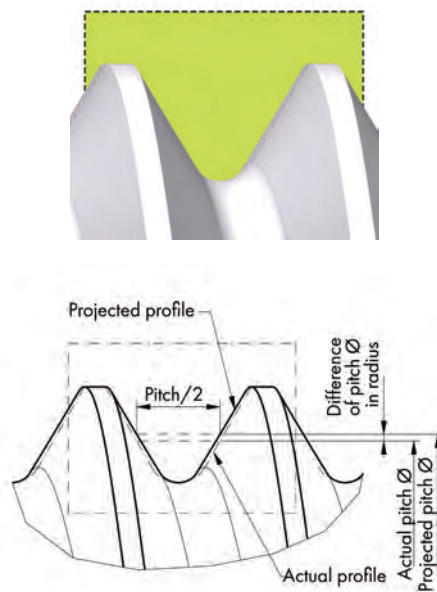
Distortion = deviation of the projected profile from the actual profile in the axial cutting plane of the calibration thread gauge

Optical measurement on the cut-off partial length of the calibration plug gauge in episcopy (reflection) or in diascopy (projection).

Optical measurement on the full partial length of the calibration thread gauge in the diascopy (projection).



- In episcopy, the entire profile can be viewed without distortion.
- In diascopy (projection), the shadow cast is only on the right flank.



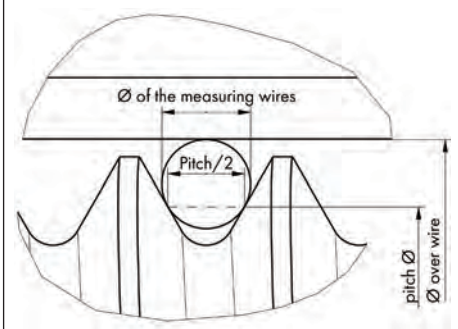
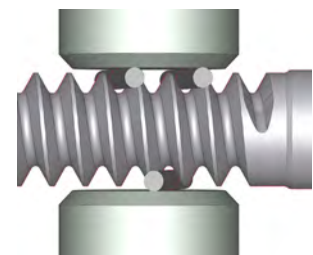
- The shadow cast is on both sides.

References:

- NIHS 06-11 B.2.1 Deviation of the measurement of the pitch Ø.
- NIHS 06-11 B.2.2 Deviation of flank angle measurement.

TACTILE SOLUTION

Tactile measurement via wire on the full partial length of the calibration thread plug gauge



- The measuring force inclines the measuring wires by the pitch angle.

References:

- EURAMET cg-10: defines the determination of the pitch Ø depending on the measuring wires and the applied measuring force.
- Specification of the measuring wires according to standard NIHS 06-13.

5.1 NORMATIVE REFERENCES

NIHS 06-10 Miniature Thread S NIHS

- Basic profile and tolerances
specifies internal and external threads.
-

NIHS 06-11 Miniature Thread S NIHS

- Calibration thread plug gauges
specifies the calibration thread plug gauges for the calibration of measuring equipment.
-

NIHS 06-12 Miniature Thread S NIHS

- Thread gauges
specification of thread plug gauges and plain gauges, thread ring gauges and plug check gauges.
-

NIHS 06-13 Miniature Thread S NIHS

- Gauge wires
specification of gauge wires for pitch Ø control.
-

STB (U758-002D-F)

- Thread gauges for Miniature Thread NIHS S
Swatch Group specification for thread plug gauges and plain gauges, and thread ring gauges.
-

EURAMET cg-10

defines the determination of pitch Ø according to the gauging wires and the applied gauging force.

Ni614, standard DC SWISS SA

- Thread gauges, flank angle
specification of the tolerances of the partial flank angle.

AVAILABLE SETS



THREAD PLUG GAUGES & RING GAUGES DN

SINGLE SET



THREAD RING GAUGES DZ

SINGLE SET



PLUG GAUGES DN / RING GAUGES DN

SET OF 10 OR 20 ITEMS

You can select the exact number of
Go / **NoGo** thread gauges for each set.

Contact us for any other set compositions.

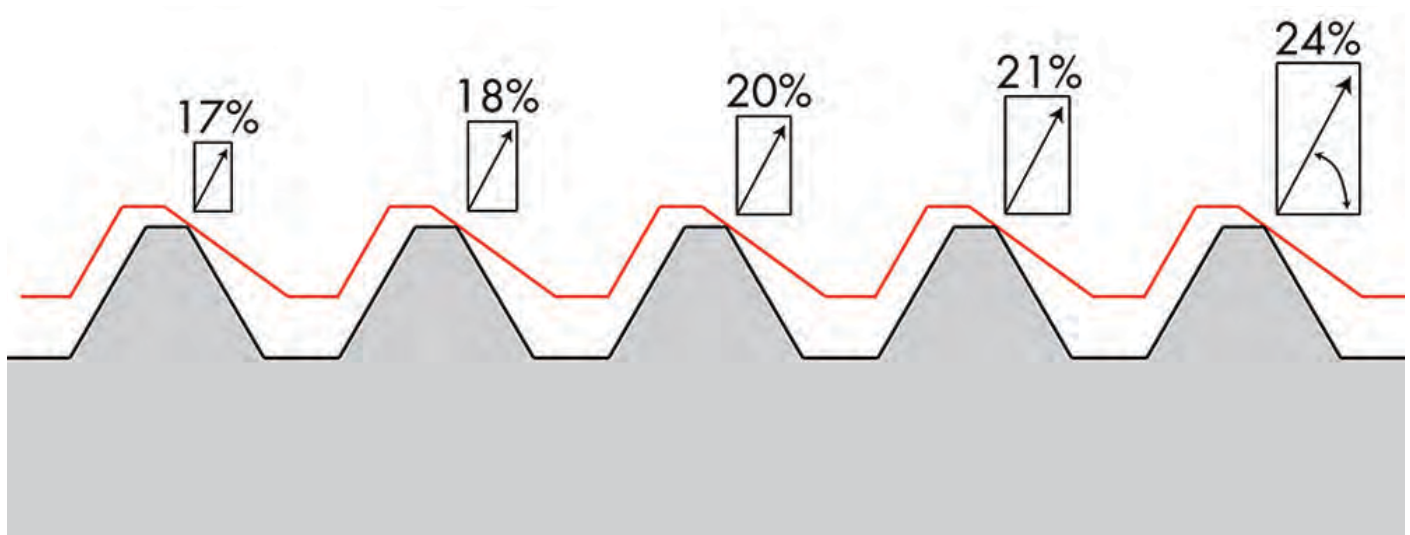
dcswiss.com / info@dcswiss.ch / +41 32 491 63 63



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.

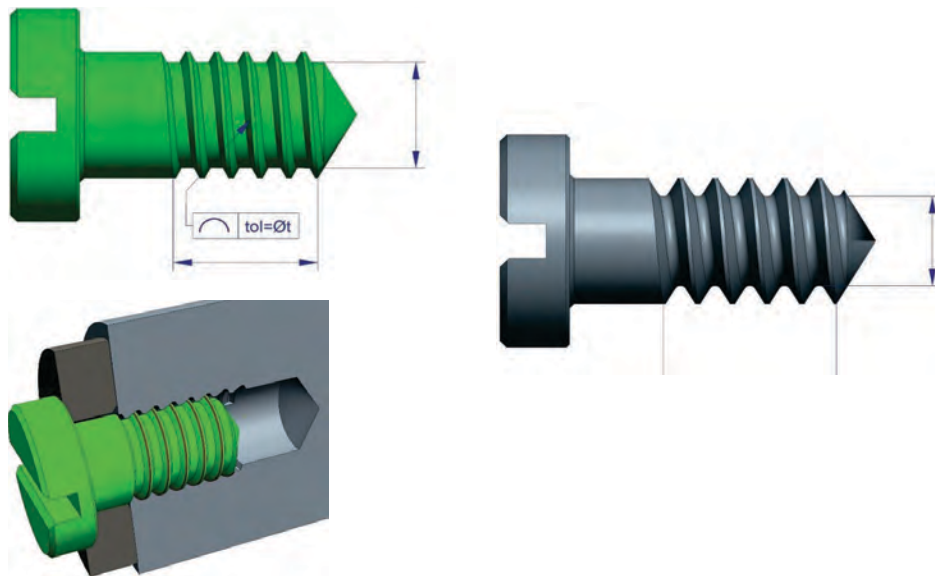
The length of the pitch has been reduced in comparison with the NIHS standard in order to increase the area of contact between the two fixing elements, with the usable length remaining the same. This obviously offers considerable advantages, particularly when working with soft materials and small-headed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

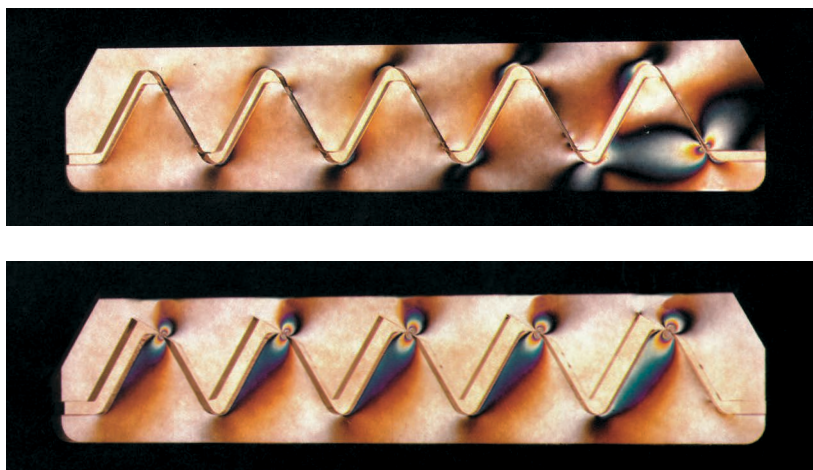
THE ADVANTAGES OF THE SCREW

- 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

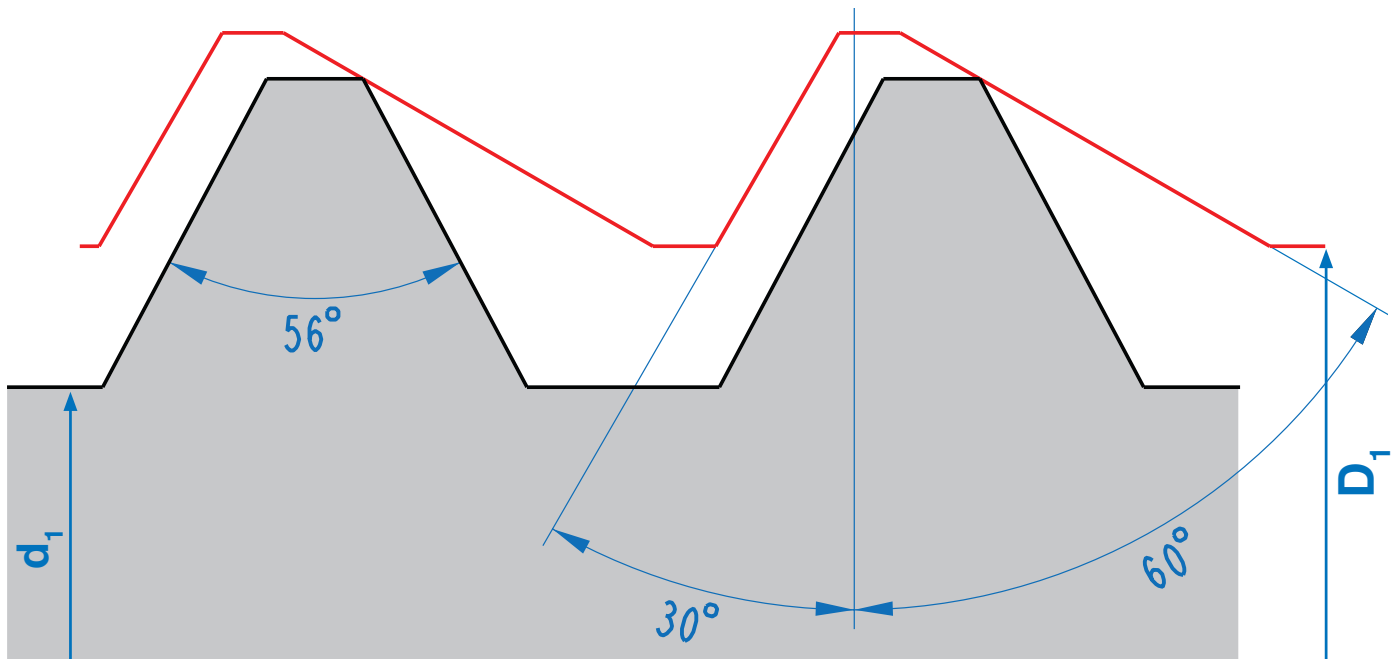


The numerous impact resistance tests that have been carried out, clearly show that the threaded assemblies are totally reliable and now offer a credible response to problems affecting screw resistance.

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

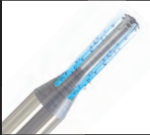


THREADING SOLUTIONS

AVAILABILITY OF THE ARTICLES

- ID Stock item
- ID Available at short notice

REGISTER

 Machine taps nano			 Thread whirl cutters		
M TAN 76 TAZ 77 CMS 78 MF TAN 79 TAZ 80 CMS 81 UNC TAN 82 TAZ 83 CMS 84 UNF TAN 85 TAZ 86 CMS 87 S TAN 88 TAZ 89 CMS 90 SF TAN 91 TAZ 92 CMS 93 SL TAN 94 TAZ 95 CMS 96			M GW1000 112-113 GW2000 118-119 GW3000 124-127 GWi3000 144-146 GWi5000 153-154 MF GW3000 128-131 GWi3000 147-148 UNC GW3000 132-135 GWi3000 149 UNF GW3000 136-139 GWi3000 150 S GW1000 114-115 GW2000 120-121 GW3000 140-143 GWi3000 151-152 GWi5000 155 SL GW1000 116-117 GW2000 122-123 GW3000 140-141		
 Machine thread formers nano			 Thread plug gauges nano		
M FA80 98 FA83 98 CFA80 105 CFA83 105 MF FA80 99 FA83 99 UNC FA80 100 FA83 100 CFA80 106 CFA83 106 UNF FA80 101 FA83 101 CFA80 107 CFA83 107 S FA80 102 FA83 102 CFA80 108 CFA83 108 SF FA80 103 FA83 103 SL FA80 104 FA83 104			M DN01 160 DN02 160 MF DN01 163 DN02 163 UNC, UNF DN01 168 DN02 168 S NIHS 06-12 DN01 171-172 DN02 171-172 DN5701-1 173-174 DN5701-2 173-174 DH5701-1* 175 *Without certificate SCS S NIHS, S NIHS NT DN01 176-177 DN02 176-177 SF NIHS 06-12 DN01 185 DN02 185 SF NIHS DN01 186 DN02 186 SL DN01 191 DN02 191		
			 All nano thread plug gauges are SCS certified, and the paid certificate is available on request.		

	Thread ring gauges nano			Thread plug check gauges nano	
M DZ04 161 DZ14 161 DN04 162 DN14 162			M RN05-1 192 RN15-1 192 RN05-2 193 RN15-2 193		
MF DZ04 164-165 DZ14 164-165 DN04 166-167 DN14 166-167			MF RN05-1 195-196 RN15-1 195-196 RN05-2 197-198 RN15-2 197-198		
UNC, UNF DZ04 169 DZ14 169 DN04 170 DN14 170			UNC, UNF RN05-1 201 RN15-1 201 RN05-2 202 RN15-2 202		
S NIHS 06-12 DZ04 178-179 DZ14 178-179 DN04 181-182 DN14 181-182			S NIHS 06-12 RN05-1 203-204 RN15-1 203-204 RN05-2 206-207 RN15-2 206-207		
S NIHS, S NIHS NT DZ04 180 DZ14 180 DN04 183 DN14 183			S NIHS, S NIHS NT RN05-1 205 RN15-1 205 RN05-2 208 RN15-2 208		
SF NIHS 06-12 DZ04 187 DZ14 187 DN04 189 DN14 189			SF NIHS 06-12 RN05-1 209 RN15-1 209 RN05-2 211 RN15-2 211		
SF NIHS DZ04 188 DZ14 188 DN04 190 DN14 190			SF NIHS, SF NIHS NT RN05-1 210 RN15-1 210 RN05-2 212 RN15-2 212		
 All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.					
	Master plug gauges WEAR nano			Tapping chucks SRT	
M RN05-3 194 RN15-3 194			SRT DIN 1835 B 109		
MF RN05-3 199-200 RN15-3 199-200				Solid carbide spotting drills, Solid carbide twist drills	
 SCS certificate included.			C315VS 156 FZ315VS 157		
	Calibration thread plug gauges nano				
S NIHS 06-12 EN00 184  SCS certificate included.			Technical questionnaire Delivery and payment conditions		Further information are available on www.dcswiss.com

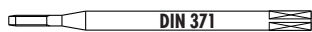
PICTOGRAPHS TAPS AND THREAD FORMERS NANO



For material groups as per **DC** application chart

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

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



Reinforced shank as per DIN 371



Reinforced shank as per DC standards



HSSE-PM



Solid carbide



Number of flutes (Z)



20° left-hand spiral flutes



25° right-hand spiral flutes



Thread former



Through hole < 2 x D, long chipping materials



Blind hole < 2 x D, long chipping materials



Through / blind hole < 2.5 x D, short chipping materials



Through / blind hole < 3 x D, short chipping materials



2 - 3 chamfered threads, form C



3.5 - 5 chamfered threads, form D



1.5 - 2 chamfered threads, form E



Tolerance class 4H



Tolerance class ISO 2 6H



DC "VS" wear-protective coating for general use

PICTOGRAPHS THREAD GAUGES NANO

For micromechanics and watchmaking



Go



Phynox KL



NoGo



LH: Left-hand thread

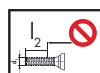
All gauges can be supplied with a left-hand thread upon request



Tolerance class NIHS 4H, Go



Tolerance class NIHS 5h/4g, NoGo



Max. measuring length l_2 must not be exceeded

PICTOGRAPHS SOLID CARBIDE THREAD WHIRL CUTTERS, SPOTTING DRILLS AND TWIST DRILLS



Solid carbide



Thread length $3 \times D_1$



DC "VS" wear-protective coating for general use



Thread length $4 \times D_1$



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



Internal thread (GW - GWi)



Norm of Swiss Watch Industry



Core-hole diameter



Shank tolerance h5



Number of flutes (Z)



Shank tolerance h6



Sense of rotation of tool "left"



Shape accuracy



Sense of rotation of tool "right"



HSC-Machining



Chamfer 90°



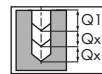
GW1000 profile



Drilling depth $8 \times d_1$



GW2000 profile



Drilling with pecking



GW3000 profile



130° point angle



GWi3000 profile



Internal coolant, with 2 twisted coolant channels



GWi5000 profile



Internal coolant



Number of teeth for programming (GWi5000)



Internal coolant



For burr-free threads (GWi5000)



General dimensions as per DC standards



0° helix angle (GWi5000)



10° right-hand helix angle



Cooling channel GWi $\varnothing 0.8 - \leq 6.35$ mm



Thread length $2 \times D_1$



Thread length $2.5 \times D_1$

DC Machine taps nano

Example



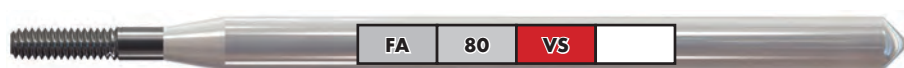
Normal materials	TAN			
Tough materials	TAZ			
Brass	CMS			
< 27° left-hand spiral flutes		40		
< 27° right-hand spiral flutes		50		
VS wear-protective coating, general			VS	
Special execution				SP

General dimensions as per DC standards

For use as per DC application chart for DC taps nano

DC Machine thread formers nano

Example

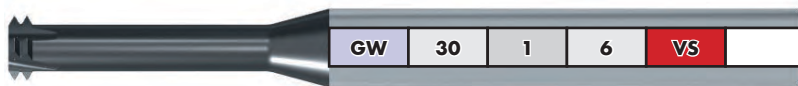


Thread formers nano in PM	FA			
Thread formers nano in solid carbide	CFA			
Lead form E (1.5 - 2 chamfered threads)		80		
Lead form C (2 - 3 chamfered threads)		83		
VS wear-protective coating, general			VS	
Special execution				SP

General dimensions as per DC standards

For use as per DC application chart for DC thread formers nano

Example



Standard execution	GW		
For hardened steels (55 - ≤ 63 HRC)	GWH		
With cooling channel	GW _i		
Single tooth		11	
Single profile, multi toothed		20	
Double pitch with multi flutes		30	
Multi fluted with full profile, left-hand cutting		50	
Multi fluted with full profile, right-hand cutting		60	
External lubrication		1	
Internal lubrication		6	
Thread length 2 x D ₁			5
Thread length 2.5 x D ₁			6
Thread length 3 x D ₁			7
Thread length 4 x D ₁			9
VS wear-protective coating, general			VS
VX coating for stainless steels and nickel alloys			VX
VH coating for hardened steels (≤ 63 HRC)			VH
Special execution			SP

APPLICATION GROUPS

Examples for application groups

Reference: DIN

11 Free-cutting steels 1.0711 9S20 1.0715 9SMn28 1.0718 9SMnPb28 1.0726 35S20 1.0737 9SMnPb36	12 Structural, cementation steels 1.0037 Si37-2 (S235JR) 1.0050 Si50-2 (E295) 1.0060 St60-2 (E335) 1.5919 15CrNi6 1.7131 16MnCr5	13 Carbon steels 1.0503 C45 1.0535 C55 1.0601 C60 1.1545 C105W1 1.2067 102Cr6 (100Cr6)	14 Alloy steels < 850 N/mm ² 1.2363 X100CrMoV5-1 1.3551 80MoCrV42-16 1.7218 25CrMo4 1.7220 34CrMo4 1.7225 42CrMo4	15 Alloy steels hard./temp. > 850 - < 1150 N/mm ² 1.3553 X82WCrMoV6-5-4 1.6580 30CrNiMo8 1.7220 34CrMo4 1.7225 42CrMo4 1.8507 34CrAlMo5
16 High tensile alloy steels ≤ 44 HRC EN-GJS-1200-2 1.6582 34CrNiMo6v 1.7225 42CrMo4v 1.7228 50CrMo4v 1.8515 31CrMo12v	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 X12CrS13 1.4104 X14CrMoS17 1.4305 X10CrNiS18-9	22 Austenitic stainless steels 1.4301 X5CrNi18-10 1.4406 X2CrNiMoN17-12-2 1.4435 X2CrNiMo18-14-3 1.4541 X6CrNiTi18-10 1.4571 X6CrNiMoTi17-12-2
23 Ferritic and martensitic < 850 N/mm ² 1.4112 X90CrMoV18 1.4540 X4CrNiCuNb16-4 1.4582 X4CrNiMoNb25-7 1.4762 X10CrAl24 1.4922 X20CrMoV11-1	24 Ferritic and martensitic > 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 Cast iron 0.6015 GJL-150 0.6020 GJL-200 0.6025 GJL-250 0.6030 GJL-300	32 Spheroidal graphite + malleable cast iron 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 Pure titanium 3.7024 Grad1 3.7034 Grad2 3.7055 Grad3 3.7065 Grad4
42 Titanium alloys 3.7124 TiCu2.5 Ti6Al7Nb 3.7164 TiAl6V4 (Grad5) 3.7174 TiAl6V6Sn2	51 Nickel alloys 1 ≤ 850 N/mm ² 1.3912 Ni36 (Invar) 2.4360 NiCu30Fe (Monel 400) 2.4816 NiCr15Fe (Inconel 600) 1.4876 X10NiCrAlTi32-20	52 Nickel alloys 2 > 850 - ≤ 1150 N/mm ² 2.4375 NiCu30Al (Monel K500) 2.4631 NiCr20TiAl (Nimonic 80) 2.4668 NiCr19NbMo (Inconel 718)	53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm ² 2.4631 NiCr20TiAl (Nimonic80) 2.4668 NiCr19NbMo (Inconel718)	61 Pure copper (electrolytic copper) 2.0060 E-Cu57 (E-Cu)
62 Short chip brass, phosphor bronze, gun metal 2.0401 CuZn39Pb3 (Ms58) 2.0402 CuZn40Pb2 (Ms58) 2.1030 CuSn8 (Bz) 2.1096 G-CuSn5ZnPh	63 Long chip brass 2.0240 CuZn15 (Ms85) 2.0265 CuZn30 (Ms70) 2.0321 CuZn37 (Ms63)	64 Lead free brass CuZn21Si3P (ECOBRASS®) CuZn35 CuZn42	71 Al unalloyed 3.0205 Al99 3.0255 Al99.5	72 Al alloyed Si < 1.5 % 3.1255 AlCuSiMn 3.1355 AlCuMg2 3.2315 AlMgSi1 3.3206 AlMgSi0.5 3.4345 AlZnMgCu0.5
73 Al alloyed Si > 1.5 % - < 10 % 3.2161 G-AlSi8Cu3 3.2162 GD-AlSi8Cu3 3.2341 G-AlSi5Mg 3.2371 G-AlSi7Mg	74 Al alloyed Si > 10 %, Mg-alloys 3.2381 G-AlSi10Mg 3.2382 GD-AlSi10Mg 3.2581 G-AlSi12 3.2583 G-AlSi12 (Cu)	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	

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/mm ²
1.2363	A2
1.3551	M50
1.7218	4130
1.7220	4135
1.7225	4140

15	Alloy steels hard./temp. > 850 - < 1150 N/mm ²
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/mm ²
1.4112	440B
1.4540	XM12
1.4582	-
1.4762	446
1.4821	4922

24	Ferritic and martensitic > 850 - < 1150 N/mm ²
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/mm ²
1.3912	K93600
2.4360	N04400
2.4816	N06600
1.4876	N08800

52	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²
2.4375	N05500 (B865)
2.4631	N07080 (B637)
2.4668	N07718 (B637)

53	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²
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 (ECOBASS®)
	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

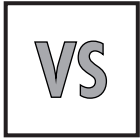
74	Al alloyed Si > 10 %, Mg-alloys
3.2381	A360
3.2382	-
3.2581	A413
3.2583	413.1

81	Thermoplastics
	Delrin (POM)
	Teflon
	Nylon

82	Duroplastics
	Bakelit
	Novopan

83	Glass fibre reinforced plastics
	Glass fibre reinforced, Thermo and Duroplastics

COATINGS AVAILABLE ON NANO TOOLS



- DC "VS" wear-protective coating for general use
- To prevent cold welding



- Improved wear resistance and longer tool life in stainless steels and nickel alloys thanks to the DC "VX"-coating
- To prevent cold welding

SPECIFICATIONS THREADING TAPS AND FORMING TAPS

TAN



TAZ



FA



- 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



- For through holes $< 2 \times D$

Application

TAN40VS



- For easy-to-machine materials, steels, brass, aluminium, yellow gold, silver
- Versatile "VS" wear-protective coating for long tool life in series production
- Can also be used in red and white gold

TAN50



- For blind holes $< 2 \times D$

Application

TAN50VS



- For easy-to-machine materials, steels, brass, aluminium, yellow gold, silver
- Versatile "VS" wear-protective coating for long tool life in series production
- Can also be used in red and white gold

SPECIFICATIONS THREADING TAPS AND FORMING TAPS

TAZ40VS



- For through holes $< 2 \times D$
- With a long chamfer adapted to the pitch, for a better penetration into the material

TAZ50VS



- For blind holes $< 2 \times D$

Application

- For tough materials such as nickel alloys, titanium alloys, alloyed precious materials
- Specific "VS" coating of the latest generation adapted to the geometry of the tool

FA80VS



- 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



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

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
- Versatile "VS" wear-protective coating for long tool life in series production

SPECIFICATIONS THREADING TAPS AND FORMING TAPS

CMS



CFA



- 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



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

CMS50VS



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

CFA80VS



- 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



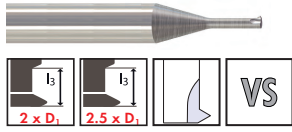
- For through and blind holes $< 2.5 \times D$
- With short chamfer $2.5 \times P$

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
- Versatile "VS" wear-protective coating for long tool life in series production

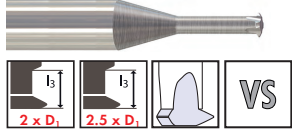
SPECIFICATIONS THREAD WHIRL CUTTERS

GW SERIES 1000



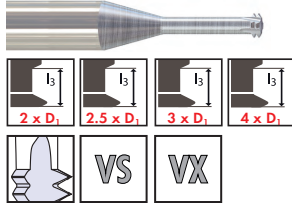
- Universal application
- High process security
- Suitable for the smallest dimensions, from Ø 0.3 mm
- More space for chip evacuation
- For threading depths up to $2.5 \times D_1$

GW SERIES 2000



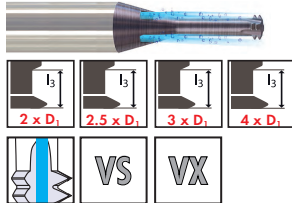
- Feed rate multiplied by number of teeth
- Less wear, longer tool life
- The number of teeth varies, depending on the size
- For threading depths up to $2.5 \times D_1$

GW SERIES 3000



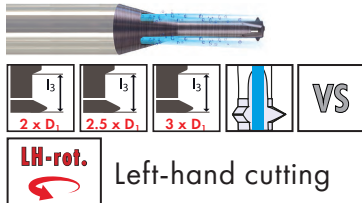
- Secure process, reduction in NC-corrections
- For threading depths up to $4 \times D_1$

GWi SERIES 3000



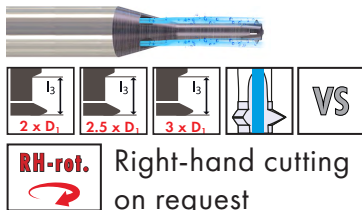
- Thanks to an optimal, specific coolant supply:
 - improved chip evacuation
 - twice the tool life
- For threading depths up to $4 \times D_1$

GWi SERIES 5000



- Its specific geometry allows the final milling of the internal diameter and also the deburring of the realised profile
- Geometrically perfect thread thanks to special cutting division
- For absolutely burr-free threads, even in difficult-to-machine materials, while maintaining dimensional accuracy (tolerance)
- High surface quality thanks to specific cutting-edge conditioning
- Improved chip evacuation and long tool life thanks to optimum coolant supply
- Secure process, reduction in NC-corrections
- LH rotation - left-hand cutting for less pressure on the cutting edges
- For threading depths up to $3 \times D_1$

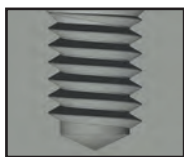
GWi SERIES 6000



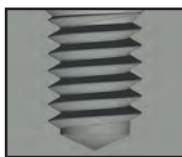
SPECIFIC APPLICATION CASES

GW - GWi

RH



LH

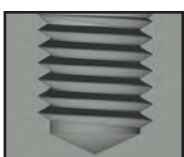


The same thread whirler can be used for right- and left-hand threads

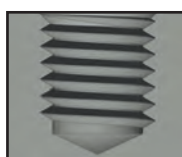


For threads to be cut near to the bottom of blind holes

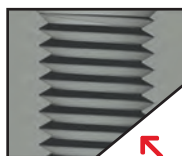
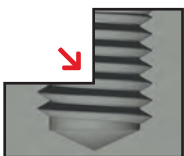
M8 6H



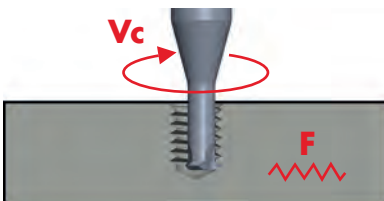
M8 7G



Required tolerance adjustable as per users' choice



For threads with interrupted cut or with oblique entrance or exit

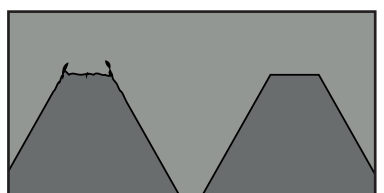


The cutting speed and feed rate can be matched individually to each work-piece material



Ideal for deep blind holes

GWi5000 & GWi6000



BURRS

NO BURRS

For whirling burr-free threads



THREAD TAPS NANO

 Material classification

Material groups		Material designation	Hardness (HB)	Tensile strength R _m (N/mm ²)	Elongation A (%)
10	Steels	11 Free-cutting steels	< 200	< 700	< 10
		12 Structural, cementation steels	< 200	< 700	< 30
		13 Carbon steels	< 300	< 1000	< 20
		14 Alloy steels < 850 N/mm ²	< 250	< 850	< 30
		15 Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850	< 30
		16 High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17 Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18 Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Stainless steels	21 Free machining stainless steels	< 250	< 850	< 25
		22 Austenitic stainless steels	< 250	< 850	> 20
		23 Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
		24 Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850	> 15
30	Cast iron	31 Cast iron	< 250	< 850	< 10
		32 Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanium	41 Pure titanium	< 250	< 850	> 20
		42 Titanium alloys	> 250	> 850	< 20
50	Nickel	51 Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
		52 Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
		53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150	< 20
60	Copper	61 Pure copper (electrolytic copper)	< 120	< 400	> 12
		62 Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63 Long chip brass	< 200	< 700	> 12
		64 Lead free brass	< 220	< 700	> 15
70	Aluminium Magnesium	71 Al unalloyed	< 100	< 350	> 15
		72 Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74 Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Plastic compounds	81 Thermoplastics	-	-	-
		82 Duroplastics	-	-	-
		83 Glass fibre reinforced plastics	-	-	-
90	Precious metals	91 Yellow gold	-	-	-
		92 Red gold	-	-	-
		93 White gold	-	-	-
		94 Silver	-	-	-

THREAD TAPS NANO



V _c (m/min) Guide Line					TAN Normal materials				TAZ Tough materials				CMS Brittle materials		
Ø 0.3 - 1.4 mm		Ø 1.4 - 2.8 mm			TAN40	TAN40VS	TAN50	TAN50VS	TAZ40	TAZ40VS	TAZ50	TAZ50VS	CMS50	CMS50VS	
Standard	Coated	Standard	Coated												
11		4 - 10		12 - 20											11
12		4 - 10		12 - 20											12
13		4 - 10		12 - 20											13
14		4 - 10		12 - 20											14
15															15
16															16
17															17
18															18
21		4 - 10		12 - 20											21
22		4 - 10		12 - 20											22
23		3 - 6		6 - 12											23
24		3 - 6		6 - 12											24
31		4 - 10		12 - 20											31
32		4 - 10		12 - 20											32
41	2 - 4	2 - 4	4 - 8	4 - 8											41
42	2 - 4	2 - 4	4 - 8	4 - 8											42
51															51
52															52
53															53
61		4 - 10		12 - 20											61
62	4 - 10	4 - 10	12 - 20	12 - 20											62
63	4 - 10	4 - 10	12 - 20	12 - 20											63
64		4 - 10		12 - 20											64
71		4 - 10		12 - 20											71
72		4 - 10		12 - 20											72
73		4 - 10		12 - 20											73
74		4 - 10		12 - 20											74
81		4 - 10		12 - 20											81
82															82
83		4 - 10		12 - 20											83
91	4 - 10		12 - 20												91
92		4 - 10		12 - 20											92
93		4 - 10		12 - 20											93
94		4 - 10		12 - 20											94

Optimal with air

Suitable with air

Limited

The indicated values are a guideline.

THREAD FORMERS NANO

DC Material classification

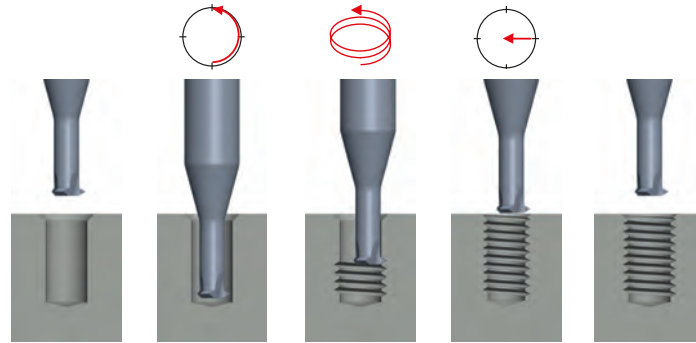
Material groups		Material designation	Hardness (HB)	Tensile strength R _m (N/mm ²)	Elongation A (%)
10	Steels	11 Free-cutting steels	< 200	< 700	< 10
		12 Structural, cementation steels	< 200	< 700	< 30
		13 Carbon steels	< 300	< 1000	< 20
		14 Alloy steels < 850 N/mm ²	< 250	< 850	< 30
		15 Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850	< 30
		16 High tensile alloy steels ≤ 44 HRC	> 250	> 850	< 12
		17 Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400	< 2
		18 Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980	< 2
20	Stainless steels	21 Free machining stainless steels	< 250	< 850	< 25
		22 Austenitic stainless steels	< 250	< 850	> 20
		23 Ferritic and martensitic < 850 N/mm ²	< 250	< 850	> 20
		24 Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850	> 15
30	Cast iron	31 Cast iron	< 250	< 850	< 10
		32 Spheroidal graphite + malleable cast iron	< 250	< 850	> 10
40	Titanium	41 Pure titanium	< 250	< 850	> 20
		42 Titanium alloys	> 250	> 850	< 20
50	Nickel	51 Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850	> 25
		52 Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850	< 25
		53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150	< 20
60	Copper	61 Pure copper (electrolytic copper)	< 120	< 400	> 12
		62 Short chip brass, phosphor bronze, gun metal	< 200	< 700	< 12
		63 Long chip brass	< 200	< 700	> 12
		64 Lead free brass	< 220	< 700	> 15
70	Aluminium Magnesium	71 Al unalloyed	< 100	< 350	> 15
		72 Al alloyed Si < 1.5 %	< 150	< 500	> 15
		73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	< 15
		74 Al alloyed Si > 10 %, Mg-alloys	< 120	< 400	< 10
80	Plastic compounds	81 Thermoplastics	-	-	-
		82 Duroplastics	-	-	-
		83 Glass fibre reinforced plastics	-	-	-
90	Precious metals	91 Yellow gold	-	-	-
		92 Red gold	-	-	-
		93 White gold	-	-	-
		94 Silver	-	-	-

THREAD FORMERS NANO



			FA		CFA	
			Normal materials		Non-ferrous materials	
						
			FA80VS	FA83VS	CFA80VS	CFA83VS
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						

Programming cycle for thread whirling GW1000 and GW2000



DC Application chart for thread whirling

Material groups		Material designation	Hardness (HB)	Tensile strength Rm (N/mm²)	Lubricant	
					Standard	Coated
10	Steels	11 Free-cutting steels	< 200	< 700		OE
		12 Structural, cementation steels	< 200	< 700		OE
		13 Carbon steels	< 300	< 1000		OE
		14 Alloy steels < 850 N/mm²	< 250	< 850		OE
		15 Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850		OE
		16 High tensile alloy steels ≤ 44 HRC	> 250	> 850		OE
		17 Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400		OE
		18 Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980		
20	Stainless steels	21 Free machining stainless steels	< 250	< 850		OE
		22 Austenitic stainless steels	< 250	< 850		OE
		23 Ferritic and martensitic < 850 N/mm²	< 250	< 850		OE
		24 Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850		OE
30	Cast iron	31 Cast iron	< 250	< 850		OE A
		32 Spheroidal graphite + malleable cast iron	< 250	< 850		OE
40	Titanium	41 Pure titanium	< 250	< 850	OE	OE
		42 Titanium alloys	> 250	> 850	OE	OE
50	Nickel	51 Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850		OE
		52 Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850		OE
		53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150		OE
60	Copper	61 Pure copper (electrolytic copper)	< 120	< 400	OE	OE
		62 Short chip brass, phosphor bronze, gun metal	< 200	< 700	OE A	OE A
		63 Long chip brass	< 200	< 700	OE	OE
		64 Lead free brass	< 220	< 700	OE	OE
70	Aluminium Magnesium	71 Al unalloyed	< 100	< 350	OE	OE
		72 Al alloyed Si < 1.5 %	< 150	< 500	OE	OE
		73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400		OE
		74 Al alloyed Si > 10 %, Mg-alloys	< 120	< 400		OE
80	Plastic compounds	81 Thermoplastics	-	-	E	E
		82 Duroplastics	-	-	E	E
		83 Glass fibre reinforced plastics	-	-		E A
90	Precious metals	91 Yellow gold	-	-	OE	OE
		92 Red gold	-	-	OE	OE
		93 White gold	-	-		OE
		94 Silver	-	-		OE

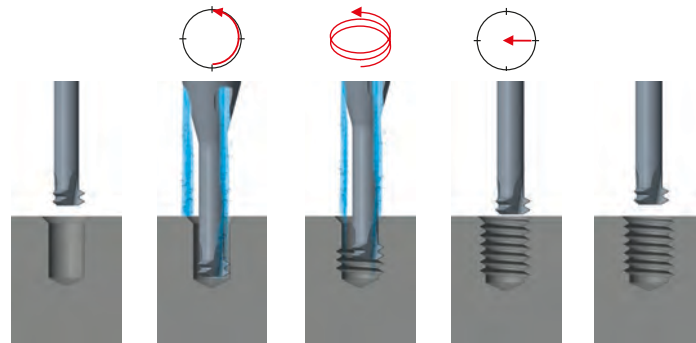
THREAD WHIRLING GW

		GW1000				GW2000			
		GW1115 GW1116				GW2015 GW2016			
									
		VS				VS		VS	
		Milling fz (mm/tooth)				Milling fz (mm/tooth)			
		Ø 0.30 - 1.40				Ø 0.50 - 1.00 Ø 1.01 - 2.74			
		Standard	Coated	Standard	Coated	Standard	Coated	Standard	Coated
11			80 - 100		0.004 - 0.02		80 - 100		0.004 - 0.01 0.01 - 0.05
12			80 - 100		0.004 - 0.02		80 - 100		0.004 - 0.01 0.01 - 0.05
13			70 - 90		0.004 - 0.02		70 - 90		0.004 - 0.01 0.01 - 0.05
14			70 - 90		0.004 - 0.02		70 - 90		0.004 - 0.01 0.01 - 0.05
15			30 - 50		0.004 - 0.02		30 - 50		0.004 - 0.01 0.01 - 0.05
16			15 - 40		0.004 - 0.02		15 - 40		0.003 - 0.01 0.006 - 0.03
17			15 - 30		0.004 - 0.02		15 - 30		0.003 - 0.01 0.006 - 0.025
18									
21			40 - 60		0.004 - 0.02		40 - 60		0.004 - 0.01 0.01 - 0.05
22			30 - 50		0.004 - 0.02		30 - 50		0.004 - 0.01 0.01 - 0.03
23			30 - 50		0.004 - 0.02		30 - 50		0.004 - 0.01 0.01 - 0.03
24			30 - 50		0.004 - 0.02		30 - 50		0.004 - 0.01 0.01 - 0.03
31			90 - 120		0.004 - 0.02		90 - 120		0.004 - 0.01 0.01 - 0.05
32			70 - 90		0.004 - 0.02		70 - 90		0.004 - 0.01 0.01 - 0.05
41	10 - 20	20 - 40		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.03	0.01 - 0.03
42	10 - 20	15 - 35		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.03	0.01 - 0.03
51		20 - 40			0.004 - 0.02		20 - 40		0.004 - 0.01 0.01 - 0.03
52		20 - 40			0.004 - 0.02		20 - 40		0.004 - 0.01 0.01 - 0.03
53		20 - 30			0.004 - 0.02		20 - 30		0.003 - 0.01 0.006 - 0.03
61	150 - 200	200 - 250		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
62	100 - 150	150 - 200		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
63	100 - 150	150 - 200		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
64	100 - 150	150 - 200		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
71	150 - 200	200 - 250		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
72	150 - 200	200 - 250		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
73		200 - 250			0.004 - 0.02		200 - 300		0.004 - 0.01 0.01 - 0.05
74		200 - 250			0.004 - 0.02		200 - 300		0.004 - 0.01 0.01 - 0.05
81	150 - 200	200 - 250		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
82	80 - 120	100 - 200		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
83		80 - 100			0.004 - 0.02		80 - 100		0.004 - 0.01 0.01 - 0.05
91	100 - 150	150 - 200		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
92	70 - 90	90 - 120		0.004 - 0.02	0.004 - 0.02	0.004 - 0.01	0.004 - 0.01	0.01 - 0.05	0.01 - 0.05
93		30 - 50			0.004 - 0.02		30 - 50		0.004 - 0.01 0.01 - 0.05
94		90 - 120			0.004 - 0.02		90 - 120		0.004 - 0.01 0.01 - 0.05

APPLICATION CHART GW - GWi

nano

Programming cycle for thread whirling GW3000 - GWi3000



DC Application chart for thread whirling

Material groups		Material designation	Hardness (HB)	Tensile strength Rm (N/mm²)	Lubricant	
					Standard	Coated
10	Steels	11 Free-cutting steels	< 200	< 700		OE
		12 Structural, cementation steels	< 200	< 700		OE
		13 Carbon steels	< 300	< 1000		OE
		14 Alloy steels < 850 N/mm²	< 250	< 850		OE
		15 Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850		OE
		16 High tensile alloy steels ≤ 44 HRC	> 250	> 850		OE
		17 Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400		OE
		18 Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980		
20	Stainless steels	21 Free machining stainless steels	< 250	< 850		OE
		22 Austenitic stainless steels	< 250	< 850		OE
		23 Ferritic and martensitic < 850 N/mm²	< 250	< 850		OE
		24 Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850		OE
30	Cast iron	31 Cast iron	< 250	< 850		OE A
		32 Spheroidal graphite + malleable cast iron	< 250	< 850		OE
40	Titanium	41 Pure titanium	< 250	< 850	OE	OE
		42 Titanium alloys	> 250	> 850	OE	OE
50	Nickel	51 Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850		OE
		52 Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850		OE
		53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150		OE
60	Copper	61 Pure copper (electrolytic copper)	< 120	< 400	OE	OE
		62 Short chip brass, phosphor bronze, gun metal	< 200	< 700	OE A	OE A
		63 Long chip brass	< 200	< 700	OE	OE
		64 Lead free brass	< 220	< 700	OE	OE
70	Aluminium Magnesium	71 Al unalloyed	< 100	< 350	OE	OE
		72 Al alloyed Si < 1.5 %	< 150	< 500	OE	OE
		73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400		OE
		74 Al alloyed Si > 10 %, Mg-alloys	< 120	< 400		OE
80	Plastic compounds	81 Thermoplastics	-	-	E	E
		82 Duroplastics	-	-	E	E
		83 Glass fibre reinforced plastics	-	-		E A
90	Precious metals	91 Yellow gold	-	-	OE	OE
		92 Red gold	-	-	OE	OE
		93 White gold	-	-		OE
		94 Silver	-	-		OE

Optimal with cutting oil

Suitable with cutting oil

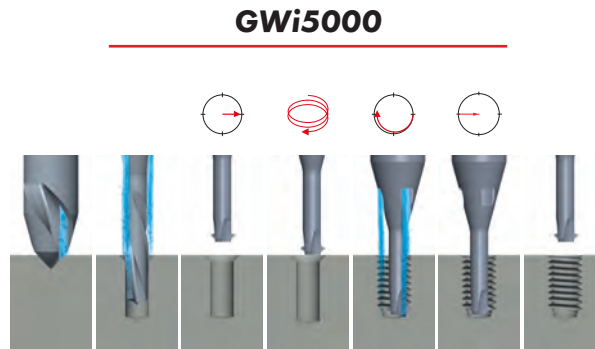
Optimal with emulsion

Suitable with emulsion

THREAD WHIRLING GW - GWi

			GW3000 - GWi3000					
			GW3015 GW3016 GW3017 GW3019	GW3015VS GW3016VS GW3017VS GW3019VS GWi3065VS GWi3066VS GWi3067VS GWi3069VS	GW3015VX GW3016VX GW3017VX GWi3065VX GWi3066VX GWi3067VX			
				 	 			
				VS	VX			
Vc (m/min)			Milling fz (mm/tooth)					
Standard			Coated			Ø 0.80 - 2.74		
11		80 - 100		0.01 - 0.05	0.01 - 0.05	11		
12		80 - 100		0.01 - 0.05	0.01 - 0.05	12		
13		70 - 90		0.01 - 0.05	0.01 - 0.05	13		
14		70 - 90		0.01 - 0.05	0.01 - 0.05	14		
15		30 - 50		0.01 - 0.05	0.01 - 0.05	15		
16		15 - 40		0.006 - 0.03	0.006 - 0.03	16		
17		15 - 30		0.006 - 0.025	0.006 - 0.025	17		
18						18		
21		40 - 60		0.01 - 0.05	0.01 - 0.05	21		
22		30 - 50		0.01 - 0.03	0.01 - 0.03	22		
23		30 - 50		0.01 - 0.03	0.01 - 0.03	23		
24		30 - 50		0.01 - 0.03	0.01 - 0.03	24		
31		90 - 120		0.01 - 0.05	0.01 - 0.05	31		
32		70 - 90		0.01 - 0.05	0.01 - 0.05	32		
41	10 - 20	20 - 40	0.01 - 0.03	0.01 - 0.03	0.01 - 0.03	41		
42	10 - 20	15 - 35	0.01 - 0.03	0.01 - 0.03	0.01 - 0.03	42		
51		20 - 40		0.01 - 0.03	0.01 - 0.03	51		
52		20 - 40		0.01 - 0.03	0.01 - 0.03	52		
53		20 - 30		0.006 - 0.03	0.006 - 0.03	53		
61	150 - 200	200 - 250	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	61		
62	100 - 150	150 - 200	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	62		
63	100 - 150	150 - 200	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	63		
64	100 - 150	150 - 200	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	64		
71	150 - 200	200 - 300	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	71		
72	150 - 200	200 - 300	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	72		
73		200 - 300		0.01 - 0.05	0.01 - 0.05	73		
74		200 - 300		0.01 - 0.05	0.01 - 0.05	74		
81	150 - 200	200 - 300	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	81		
82	80 - 120	100 - 200	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	82		
83		80 - 100		0.01 - 0.05	0.01 - 0.05	83		
91	100 - 150	150 - 200	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	91		
92	70 - 90	90 - 120	0.01 - 0.05	0.01 - 0.05	0.01 - 0.05	92		
93		30 - 50		0.01 - 0.05	0.01 - 0.05	93		
94		90 - 120		0.01 - 0.05	0.01 - 0.05	94		

Programming cycle for thread whirling GWi5000



DC Application chart for thread whirling

Material groups		Material designation	Hardness (HB)	Tensile strength Rm (N/mm ²)	Lubricant	
					Standard	Coated
10 Steels	11	Free-cutting steels	< 200	< 700		OE
	12	Structural, cementation steels	< 200	< 700		OE
	13	Carbon steels	< 300	< 1000		OE
	14	Alloy steels < 850 N/mm ²	< 250	< 850		OE
	15	Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850		OE
	16	High tensile alloy steels ≤ 44 HRC	> 250	> 850		OE
	17	Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400		OE
	18	Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980		
20 Stainless steels	21	Free machining stainless steels	< 250	< 850		OE
	22	Austenitic stainless steels	< 250	< 850		OE
	23	Ferritic and martensitic < 850 N/mm ²	< 250	< 850		OE
	24	Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850		OE
30 Cast iron	31	Cast iron	< 250	< 850		OE
	32	Spheroidal graphite + malleable cast iron	< 250	< 850		OE
40 Titanium	41	Pure titanium	< 250	< 850		OE
	42	Titanium alloys	> 250	> 850		OE
50 Nickel	51	Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850		OE
	52	Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850		OE
	53	Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150		OE
60 Copper	61	Pure copper (electrolytic copper)	< 120	< 400		OE
	62	Short chip brass, phosphor bronze, gun metal	< 200	< 700		OE
	63	Long chip brass	< 200	< 700		OE
	64	Lead free brass	< 220	< 700		OE
70 Aluminium Magnesium	71	Al unalloyed	< 100	< 350		OE
	72	Al alloyed Si < 1.5 %	< 150	< 500		OE
	73	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400		OE
	74	Al alloyed Si > 10 %, Mg-alloys	< 120	< 400		OE
80 Plastic compounds	81	Thermoplastics	-	-		E
	82	Duroplastics	-	-		E
	83	Glass fibre reinforced plastics	-	-		E
90 Precious metals	91	Yellow gold	-	-		OE
	92	Red gold	-	-		OE
	93	White gold	-	-		OE
	94	Silver	-	-		OE

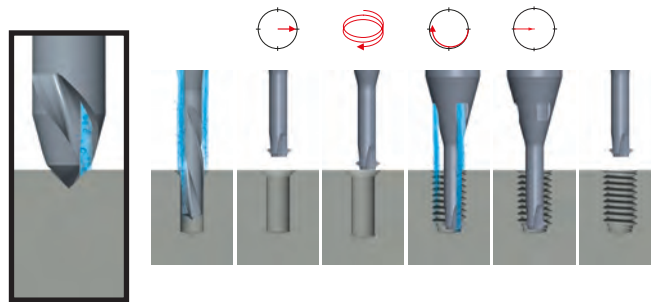
THREAD WHIRLING GWi

GWi5000				
GWi5065VS GWi5066VS GWi5067VS				
				
VS				
Vc (m/min)		Milling fz (mm/tooth)		
Standard	Coated	Ø 0.80 - 2.74		
11	80 - 100	0.007 - 0.05		11
12	80 - 100	0.007 - 0.05		12
13	70 - 90	0.007 - 0.05		13
14	70 - 90	0.007 - 0.05		14
15	30 - 50	0.007 - 0.05		15
16	15 - 40	0.004 - 0.03		16
17	15 - 30	0.004 - 0.025		17
18				18
21	40 - 60	0.007 - 0.05		21
22	30 - 50	0.007 - 0.03		22
23	30 - 50	0.007 - 0.03		23
24	30 - 50	0.007 - 0.03		24
31	90 - 120	0.007 - 0.05		31
32	70 - 90	0.007 - 0.05		32
41	20 - 40	0.007 - 0.03		41
42	15 - 35	0.007 - 0.03		42
51	20 - 40	0.007 - 0.03		51
52	20 - 40	0.007 - 0.03		52
53	20 - 30	0.004 - 0.03		53
61	200 - 250	0.007 - 0.05		61
62	150 - 200	0.007 - 0.05		62
63	150 - 200	0.007 - 0.05		63
64	150 - 200	0.007 - 0.05		64
71	200 - 300	0.007 - 0.05		71
72	200 - 300	0.007 - 0.05		72
73	200 - 300	0.007 - 0.05		73
74	200 - 300	0.007 - 0.05		74
81	200 - 300	0.007 - 0.05		81
82	100 - 200	0.007 - 0.05		82
83	80 - 100	0.007 - 0.05		83
91	150 - 200	0.007 - 0.05		91
92	90 - 120	0.007 - 0.05		92
93	30 - 50	0.007 - 0.05		93
94	90 - 120	0.007 - 0.05		94

APPLICATION CHART C315VS

nano

Programming cycle for spotting drills C315VS



DC Application chart for spotting drills

	Material groups	Material designation	Hardness (HB)	Tensile strength Rm (N/mm²)	Lubricant	
					Standard	Coated
10	Steels	11 Free-cutting steels	< 200	< 700		OE
		12 Structural, cementation steels	< 200	< 700		OE
		13 Carbon steels	< 300	< 1000		OE
		14 Alloy steels < 850 N/mm²	< 250	< 850		OE
		15 Alloy steels hard. / temp. > 850 - < 1150 N/mm²	> 250	> 850		OE
		16 High tensile alloy steels ≤ 44 HRC	> 250	> 850		OE
		17 Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400		OE
		18 Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980		
20	Stainless steels	21 Free machining stainless steels	< 250	< 850		OE
		22 Austenitic stainless steels	< 250	< 850		OE
		23 Ferritic and martensitic < 850 N/mm²	< 250	< 850		OE
		24 Ferritic and martensitic > 850 - < 1150 N/mm²	> 250	> 850		OE
30	Cast iron	31 Cast iron	< 250	< 850		OE
		32 Spheroidal graphite + malleable cast iron	< 250	< 850		OE
40	Titanium	41 Pure titanium	< 250	< 850		OE
		42 Titanium alloys	> 250	> 850		OE
50	Nickel	51 Nickel alloys 1 ≤ 850 N/mm²	< 250	< 850		OE
		52 Nickel alloys 2 > 850 - ≤ 1150 N/mm²	> 250	> 850		OE
		53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm²	> 340	> 1150		OE
60	Copper	61 Pure copper (electrolytic copper)	< 120	< 400		OE
		62 Short chip brass, phosphor bronze, gun metal	< 200	< 700		OE
		63 Long chip brass	< 200	< 700		OE
		64 Lead free brass	< 220	< 700		OE
70	Aluminium Magnesium	71 Al unalloyed	< 100	< 350		OE
		72 Al alloyed Si < 1.5 %	< 150	< 500		OE
		73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400		OE
		74 Al alloyed Si > 10 %, Mg-alloys	< 120	< 400		OE
80	Plastic compounds	81 Thermoplastics	-	-		E
		82 Duroplastics	-	-		E
		83 Glass fibre reinforced plastics	-	-		E
90	Precious metals	91 Yellow gold	-	-		OE
		92 Red gold	-	-		OE
		93 White gold	-	-		OE
		94 Silver	-	-		OE

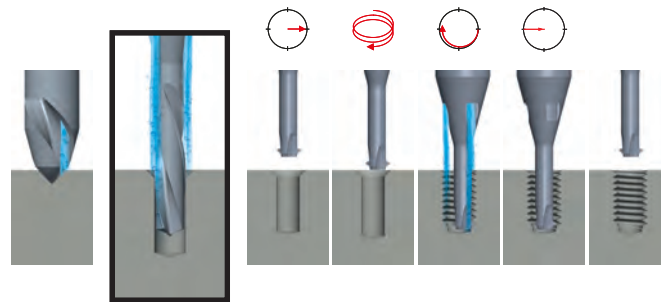
SPOTTING DRILLS

		C315VS			
					
		VS	VS	VS	
		Feed rate f (mm/rev.)			
		Ø 1.40	Ø 2.00	Ø 3.00	
		Coated			
		Vc (m/min)			
		Guide Line			
11	120	0.05	0.08	0.10	11
12	120	0.05	0.08	0.10	12
13	120	0.05	0.08	0.10	13
14	80	0.05	0.08	0.10	14
15	60	0.03	0.04	0.06	15
16	40	0.02	0.03	0.04	16
17	40	0.02	0.03	0.04	17
18					18
21	60	0.03	0.04	0.06	21
22	50	0.03	0.04	0.06	22
23	50	0.03	0.04	0.06	23
24	50	0.03	0.04	0.06	24
31	100	0.04	0.05	0.07	31
32	100	0.04	0.05	0.07	32
41	25	0.03	0.04	0.06	41
42	25	0.04	0.07	0.09	42
51	25	0.025	0.03	0.04	51
52	20	0.025	0.03	0.04	52
53	10	0.025	0.03	0.04	53
61	100	0.06	0.09	0.11	61
62	100	0.06	0.09	0.11	62
63	80	0.06	0.09	0.11	63
64	80	0.06	0.09	0.11	64
71	150	0.06	0.09	0.11	71
72	150	0.06	0.09	0.11	72
73	100	0.06	0.09	0.11	73
74	100	0.06	0.09	0.11	74
81	200	0.08	0.11	0.13	81
82	200	0.08	0.11	0.13	82
83	100	0.08	0.11	0.13	83
91	200	0.08	0.11	0.13	91
92	150	0.08	0.11	0.13	92
93	100	0.08	0.11	0.13	93
94	100	0.08	0.11	0.13	94

APPLICATION CHART FZ315VS

nano

Programming cycle for twist drills made of solid carbide FZ315VS



DC Application chart for twist drills

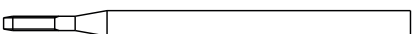
Material groups		Material designation	Hardness (HB)	Tensile strength R _m (N/mm ²)	Lubricant	
					Standard	Coated
10	Steels	11 Free-cutting steels	< 200	< 700		OE
		12 Structural, cementation steels	< 200	< 700		OE
		13 Carbon steels	< 300	< 1000		OE
		14 Alloy steels < 850 N/mm ²	< 250	< 850		OE
		15 Alloy steels hard. / temp. > 850 - < 1150 N/mm ²	> 250	> 850		OE
		16 High tensile alloy steels ≤ 44 HRC	> 250	> 850		OE
		17 Alloy steels tempered > 44 - ≤ 54 HRC	> 410	> 1400		OE
		18 Alloy steels hardened > 54 - ≤ 63 HRC	> 560	> 1980		
20	Stainless steels	21 Free machining stainless steels	< 250	< 850		OE
		22 Austenitic stainless steels	< 250	< 850		OE
		23 Ferritic and martensitic < 850 N/mm ²	< 250	< 850		OE
		24 Ferritic and martensitic > 850 - < 1150 N/mm ²	> 250	> 850		OE
30	Cast iron	31 Cast iron	< 250	< 850		OE
		32 Spheroidal graphite + malleable cast iron	< 250	< 850		OE
40	Titanium	41 Pure titanium	< 250	< 850		OE
		42 Titanium alloys	> 250	> 850		OE
50	Nickel	51 Nickel alloys 1 ≤ 850 N/mm ²	< 250	< 850		OE
		52 Nickel alloys 2 > 850 - ≤ 1150 N/mm ²	> 250	> 850		OE
		53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm ²	> 340	> 1150		OE
60	Copper	61 Pure copper (electrolytic copper)	< 120	< 400		OE
		62 Short chip brass, phosphor bronze, gun metal	< 200	< 700		OE
		63 Long chip brass	< 200	< 700		OE
		64 Lead free brass	< 220	< 700		OE
70	Aluminium Magnesium	71 Al unalloyed	< 100	< 350		OE
		72 Al alloyed Si < 1.5 %	< 150	< 500		OE
		73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400		OE
		74 Al alloyed Si > 10 %, Mg-alloys	< 120	< 400		OE
80	Plastic compounds	81 Thermoplastics	-	-		E
		82 Duroplastics	-	-		E
		83 Glass fibre reinforced plastics	-	-		E
90	Precious metals	91 Yellow gold	-	-		OE
		92 Red gold	-	-		OE
		93 White gold	-	-		OE
		94 Silver	-	-		OE

TWIST DRILLS

		FZ315VS					
							
		VS	VS	VS	VS		
		Feed rate f (mm/rev.)					
		Ø0.58-0.82	Ø0.83-1.07	Ø1.08-1.46	Ø1.47-2.0	Q1	Qx
	V _c (m/min) Guide Line Ø 0.58 - 2.0	Coated					
11	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	1xd,-4xd	1xd,-2xd
12	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	1xd,-4xd	1xd,-2xd
13	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
14	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
15	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
16	35 - 55	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
17	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
18							
21	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
22	30 - 45	0.015-0.025	0.025-0.035	0.035-0.045	0.045-0.055	1xd,-4xd	1xd,-2xd
23	35 - 50	0.02-0.025	0.025-0.035	0.04-0.05	0.05-0.065	1xd,-4xd	1xd,-2xd
24	35 - 50	0.02-0.025	0.025-0.035	0.04-0.05	0.05-0.065	1xd,-4xd	1xd,-2xd
31	50 - 80	0.025-0.045	0.045-0.065	0.065-0.085	0.085-0.10	4xd,-8xd	4xd
32	40 - 70	0.025-0.045	0.045-0.065	0.065-0.085	0.085-0.10	4xd,-8xd	4xd
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
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
51	15 - 25	0.005-0.02	0.02-0.025	0.025-0.035	0.035-0.05	1/2xd,-1xd	1/2xd
52	15 - 25	0.015-0.02	0.02-0.025	0.025-0.035	0.035-0.05	1/2xd,-1xd	1/2xd
53	15 - 25	0.005-0.01	0.01-0.02	0.02-0.03	0.03-0.04	1/2xd,-1xd	1/2xd
61	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd
62	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd
63	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd
64	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd
71	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd
72	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd
73	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd
74	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	2xd,-3xd	3xd
81	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd
82	50 - 80	0.05-0.08	0.06-0.10	0.08-0.12	0.12-0.15	4xd,-8xd	4xd
83	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd
91	50 - 80	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd
92	50 - 80	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd
93	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd
94	40 - 60	0.02-0.035	0.03-0.045	0.04-0.055	0.05-0.065	2xd,-3xd	3xd

	TAN				TAZ	
Characteristics		 VS		 VS		 VS
						
Hole type						
	TAN40	TAN40VS	TAN50	TAN50VS	TAZ40	TAZ40VS
M 4H / 6H ISO DIN 14 ISO DIN 13 DC ~DIN 371	76	76	76	76	77	77
MF 4H / 6H ISO DIN 13 DC ~DIN 371	79	79	79	79	80	80
UNC 2B ASME B1.1 DC ~DIN 371	82	82	82	82	83	83
3B ASME B1.1 DC ~DIN 371	82	82	82	82	83	83
UNF 2B ASME B1.1 DC ~DIN 371	85	85	85	85	86	86
3B ASME B1.1 DC ~DIN 371	85	85	85	85	86	86
S NIHS NIHS 06-10 DC	88	88	88	88	89	89
SF NIHS NIHS 06-10 Fine Thread DC	91	91	91	91	92	92
SL Safelock SL 15-01 DC	94	94	94	94	95	95

TAZ		CMS	
	 VS		 VS
			
			
TAZ50	TAZ50VS	CMS50	CMS50VS
77	77	78	78
80	80	81	81
83	83	84	84
83	83	84	84
86	86	87	87
86	86	87	87
89	89	90	90
92	92	93	93
95	95	96	96

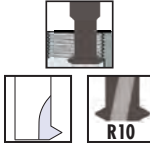
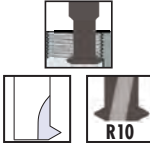
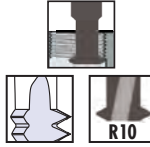
	FA				CFA			
Characteristics		VS		VS		VS		VS
	 1.5 x P		 2.5 x P		 1.5 x P		 2.5 x P	
								
Hole type	 <2.5 x D		 <2.5 x D		 <2.5 x D		 <2.5 x D	
	FA80VS		FA83VS		CFA80VS		CFA83VS	
M 4HX / 6HX ISO DIN 14 ISO DIN 13 DC ~DIN 371	98		98		105		105	
MF 4HX / 6HX ISO DIN 13 DC ~DIN 371	99		99					
UNC 2BX ASME B1.1 DC ~DIN 371	100		100		106		106	
3BX ASME B1.1 DC ~DIN 371	100		100					
UNF 2BX ASME B1.1 DC ~DIN 371	101		101		107		107	
3BX ASME B1.1 DC ~DIN 371	101		101					
S NIHS NIHS 06-10 DC	102		102		108		108	
SF NIHS NIHS 06-10 Fine Thread DC	103		103					
SL Safelock SL 15-01 DC	104		104					



THREADING SOLUTIONS

NANO **FA** | AMAZING
FORMING

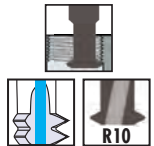
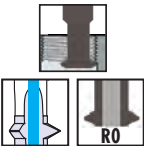
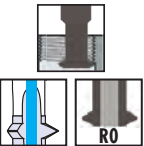
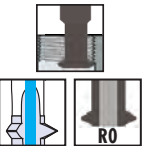
Directory — Solid carbide thread whirl cutters type GW

	GW									
Type	GW1115 GW1115VS		GW1116 GW1116VS		GW2015 GW2015VS		GW2016 GW2016VS		GW3015 GW3015VS GW3015VX	
Coating	VS		VS		VS		VS		VS VX	
										
Thread length										
Characteristics										
M	ISO DIN 14 ISO DIN 13	112	113		118		119		124	
MF	ISO DIN 13								128	
UNC	ASME B1.1								132	
UNF	ASME B1.1								136	
S	NIHS 06-10	114	115		120		121		140	
SL	SL 15-01	116	117		122		123		140	

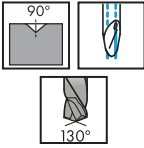
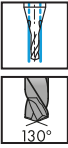
Directory — Solid carbide thread whirl cutters type GW - GWi

		GW - GWi											
Type		GW3016	GW3016VS	GW3016VX	GW3017	GW3017VS	GW3017VX	GW3019	GW3019VS	GW3065VS	GW3065VX	GW3066VS	GW3066VX
Coating			VS	VX		VS	VX		VS	VS	VX	VS	VX
													
Thread length													
Characteristics		   R10			   R10			   R10		   R10		   R10	
M	ISO DIN 14 ISO DIN 13	125			126			127		144		145	
MF	ISO DIN 13	129			130			131		147		147	
UNC	ASME B1.1	133			134			135		149		149	
UNF	ASME B1.1	137			138			139		150		150	
S	NIHS 06-10	141			142			143		151		152	
SL	SL 15-01	141											

Directory — Solid carbide thread whirl cutters type GWi

GWi					
Type	GWi3067VS GWi3067VX		GWi5065VS	GWi5066VS	GWi5067VS
Coating	VS	VX	VS	VS	VS
					
Thread length					
Characteristics					
M ISO DIN 14 ISO DIN 13	146		153	154	154
MF ISO DIN 13	148				
UNC ASME B1.1					
UNF ASME B1.1					
S NIHS 06-10	152		155	155	
SL SL 15-01					

Directory — Solid carbide spotting drills type C, solid carbide twist drills type FZ

	C	FZ
Type	C315VS	FZ315VS
Coating	VS	VS
		
Drilling depth		8xd _i 
Characteristics		
C315VS	156	
FZ315VS		157

		Thread plug gauges						
Characteristics								
								
Type		DN01 Go	DN01 Go	DN02 NoGo	DN5701-1 Go	DN5701-1 Go	DN5701-2 NoGo	DH5701-1 Go
M 4H	ISO DIN 14 ISO DIN 13		160	160				
M 6H	ISO DIN 13		160	160				
M 5H	ISO DIN 13		160	160				
MF 4H	ISO DIN 13		163	163				
MF 6H	ISO DIN 13		163	163				
UNC 2B	ASME B1.1		168	168				
UNC 3B	ASME B1.1		168	168				
UNF 2B	ASME B1.1		168	168				
UNF 3B	ASME B1.1		168	168				
S NIHS 3G	NIHS 06-12	171			173			175
S NIHS 4H	NIHS 06-12		171			173		
S NIHS 4H/3G	NIHS 06-12			171			173	
S NIHS 3G LH	NIHS 06-12	172			174			
S NIHS 4H LH	NIHS 06-12		172			174		
S NIHS 4H/3G LH	NIHS 06-12			172			174	
S NIHS 3G	NIHS	176						
S NIHS 4H	NIHS		176					
S NIHS 4H/3G	NIHS			176				
S NIHS NT	NIHS		177	177				
SF NIHS 3G	NIHS 06-12	185						
SF NIHS 4H	NIHS 06-12		185					
SF NIHS 4H/3G	NIHS 06-12			185				
SF NIHS 3G	NIHS	186						
SF NIHS 4H	NIHS		186					
SF NIHS 4H/3G	NIHS			186				
SL	SL 15-01		191	191				

		Thread ring gauges						Plug check gauges	
Characteristics									
									
Type		DZ04 Go	DZ04 Go	DZ14 NoGo	DN04 Go	DN04 Go	DN14 NoGo	RN05-1 Go/Go	RN15-1 NoGo/Go
M 5h	ISO DIN 14 ISO DIN 13		161	161		162	162	192	192
M 6g	ISO DIN 13		161	161		162	162	192	192
M 6h	ISO DIN 13		161	161		162	162	192	192
MF 4h	ISO DIN 13		164	164		166	166	195	195
MF 6g	ISO DIN 13		165	165		167	167	196	196
MF 6h	ISO DIN 13		164	164		166	166	195	195
UNC 2A	ASME B1.1		169	169		170	170	201	201
UNC 3A	ASME B1.1		169	169		170	170	201	201
UNF 2A	ASME B1.1		169	169		170	170	201	201
UNF 3A	ASME B1.1		169	169		170	170	201	201
S NIHS 4g	NIHS 06-12	178			181			203	
S NIHS 5h	NIHS 06-12		178			181		203	
S NIHS 5h/4g	NIHS 06-12			178			181		203
S NIHS 4g LH	NIHS 06-12	179			182			204	
S NIHS 5h LH	NIHS 06-12		179			182		204	
S NIHS 5h/4g LH	NIHS 06-12			179			182		204
S NIHS	NIHS		180	180		183	183	205	205
S NIHS NT	NIHS		180	180		183	183	205	205
SF NIHS 5h	NIHS 06-12		187			189		209	
SF NIHS 5h/4g	NIHS 06-12			187			189		209
SF NIHS	NIHS		188	188		190	190	210	210
SF NIHS NT	NIHS							210	210

		Plug check gauges		Master plug gauges WEAR		Calibration thread plug gauges
Characteristics						
						
Type		RN05-2 Go/NoGo	RN15-2 NoGo/NoGo	RN05-3 WEAR	RN15-3 WEAR	EN00
M 5h	ISO DIN 14 ISO DIN 13	193	193			
M 6g	ISO DIN 13	193	193	194	194	
M 6h	ISO DIN 13	193	193	194	194	
MF 4h	ISO DIN 13	197	197	199	199	
MF 6g	ISO DIN 13	198	198	200	200	
MF 6h	ISO DIN 13	197	197	199	199	
UNC 2A	ASME B1.1	202	202			
UNC 3A	ASME B1.1	202	202			
UNF 2A	ASME B1.1	202	202			
UNF 3A	ASME B1.1	202	202			
S NIHS 4g	NIHS 06-12	206				
S NIHS 5h	NIHS 06-12	206				
S NIHS 5h/4g	NIHS 06-12		206			
S NIHS 4g LH	NIHS 06-12	207				
S NIHS 5h LH	NIHS 06-12	207				
S NIHS 5h/4g LH	NIHS 06-12		207			
S NIHS	NIHS	208	208			184
S NIHS NT	NIHS	208	208			
SF NIHS 5h	NIHS 06-12	211				
SF NIHS 5h/4g	NIHS 06-12		211			
SF NIHS	NIHS	212	212			
SF NIHS NT	NIHS	212	212			



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



4H

4H

4H

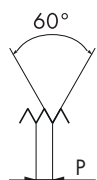
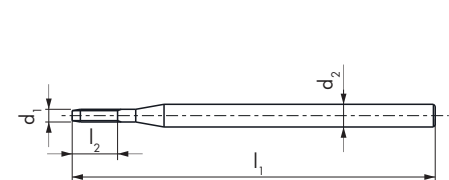
4H

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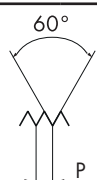
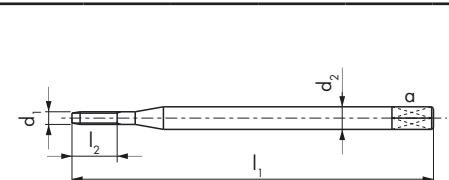


Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm		
0.5	0.125	25	1.5	2	3	Δ0.41
0.6	0.15	25	1.8	2	3	Δ0.5
0.7	0.175	25	2.1	2	3	Δ0.58
0.8	0.2	25	2.4	2	3	Δ0.66
0.9	0.225	25	2.7	2	3	Δ0.74
1	0.25	40	3.0	2.5	3	0.75
1.2	0.25	40	3.6	2.5	3	0.95
1.4	0.3	40	4.2	2.5	3	1.1

Δ 4H5H → 4H6H = +0.02 mm

≥ M1 - ≤ M1.4

ISO 1
4H



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

ISO 2
6H

ISO 2
6H

ISO 2
6H

ISO 2
6H

ID

ID

ID

ID

1.6	0.35	40	4.8	2.5		3	1.25	152538	152537	152569	152568
1.8	0.35	40	5.4	2.5		3	1.45	193841	151461	193915	193952
2	0.4	45	8	2.8	2.1	3	1.6	152542	152541	152573	152572
2.3	0.4	45	9	2.8	2.1	3	1.9	193842	193878	193916	193953
2.5	0.45	50	10	2.8	2.1	3	2.05	193843	193879	193917	193954
2.6	0.45	50	10	2.8	2.1	3	2.15	193844	193880	193918	193955

TAZ

TAZ40



TAZ40VS



TAZ50



TAZ50VS



TAZ40

TAZ40VS

TAZ50

TAZ50VS



4H

4H

4H

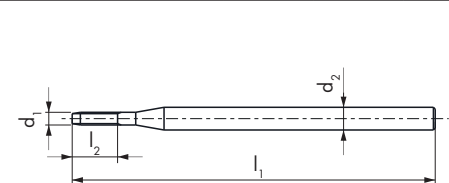
4H

ID

ID

ID

ID

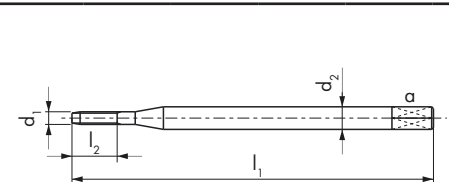


Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm		
0.5	0.125	25	1.5	2	3	Δ0.41
0.6	0.15	25	1.8	2	3	Δ0.5
0.7	0.175	25	2.1	2	3	Δ0.58
0.8	0.2	25	2.4	2	3	Δ0.66
0.9	0.225	25	2.7	2	3	Δ0.74
1	0.25	40	3	2.5	3	0.75
1.2	0.25	40	3.6	2.5	3	0.95
1.4	0.3	40	4.2	2.5	3	1.1

Δ 4H5H → 4H6H = +0.02 mm

≥ M1 - ≤ M1.4

ISO 1
4H



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

ISO 2
6H

ISO 2
6H

ISO 2
6H

ISO 2
6H

ID

ID

ID

ID

1.6	0.35	40	4.8	2.5		3	1.25	194002	194067	194127	194189
1.8	0.35	40	5.4	2.5		3	1.45	194003	194068	194128	194190
2	0.4	45	8	2.8	2.1	3	1.6	194004	194947	194129	179266
2.3	0.4	45	9	2.8	2.1	3	1.9	194005	194069	194130	194191
2.5	0.45	50	10	2.8	2.1	3	2.05	194006	194070	194131	194192
2.6	0.45	50	10	2.8	2.1	3	2.15	194007	194071	194132	194193

CMS

CMS50



62 63 93

CMS50VS



VS

31 62 63 73 74 83
93

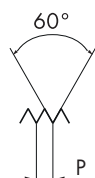
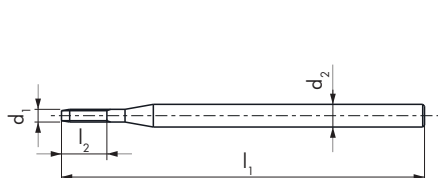
CMS50

CMS50VS



< 3 x D

< 3 x D



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

Δ 4H5H $\rightarrow$ 4H6H = +0.02 mm

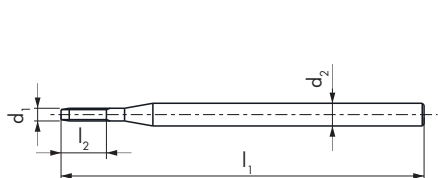
ID

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

TAN

TAN40



62 63 91

TAN40VS



VS

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

TAN50

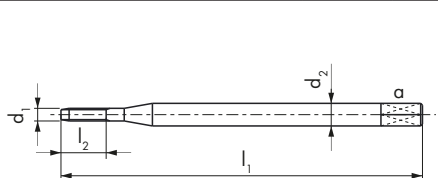


62 63 91

TAN50VS



VS

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


TAN40

TAN40VS

TAN50

TAN50VS


ISO 1
4H

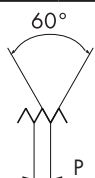
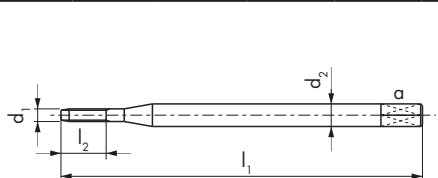
ISO 1
4H

ISO 1
4H

ISO 1
4H

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


ISO 2
6H

ISO 2
6H

ISO 2
6H

ISO 2
6H

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

TAZ

TAZ40



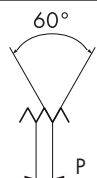
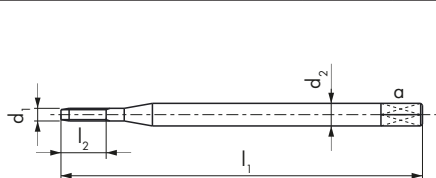
TAZ40VS



TAZ50



TAZ50VS



TAZ40

TAZ40VS

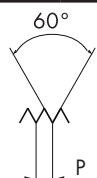
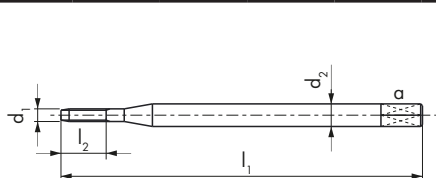
TAZ50

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

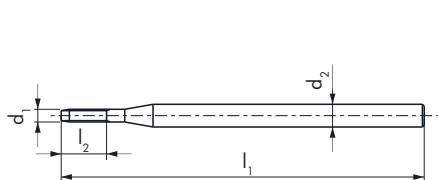


VS

31 62 63 73 74 83
93

CMS50

CMS50VS



ISO 1
4H

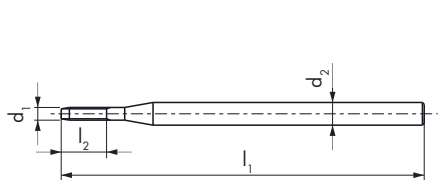
ISO 1
4H

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ h5 mm		
1.4	0.2	32	5.2	2	3	1.2
1.6	0.2	32	6	2	3	1.4
1.8	0.2	32	6.7	2	3	1.6
2	0.2	39	7.5	3	3	1.8
2	0.25	39	7.5	3	3	1.75
2.2	0.2	39	8.2	3	3	2
2.2	0.25	39	8.2	3	3	1.95
2.3	0.2	39	8.6	3	3	2.1
2.3	0.25	39	8.6	3	3	2.05
2.5	0.2	39	9.3	3	3	2.3
2.5	0.25	39	9.3	3	3	2.25

ID

ID

• 193656	• 193719
• 193657	• 193720
• 193658	• 193721
• 193659	• 193722
• 193660	• 193723
• 193661	• 193724
• 193662	• 193725
• 193663	• 193726
• 193664	• 193727
• 193665	• 193728
• 193666	• 193729



ISO 2
6H

ISO 2
6H

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ h5 mm		
2.5	0.35	39	9.3	3	3	2.15
2.6	0.35	39	9.7	3	3	2.25

ID

ID

• 193667	• 193730
• 193668	• 193731

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

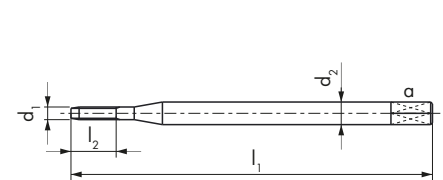


2B

2B

2B

2B



Ø d 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

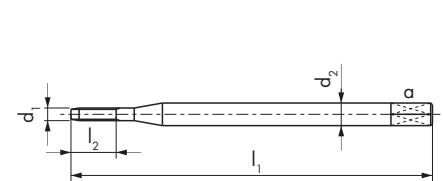
ID

ID

ID

ID

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



Ø d 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



TAZ40

TAZ40VS

TAZ50

TAZ50VS

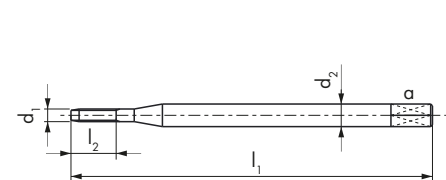


2B

2B

2B

2B



Ø d 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

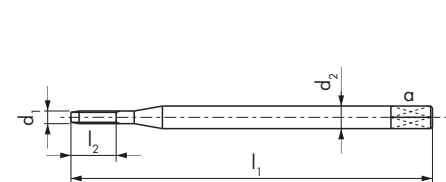
ID

ID

ID

ID

194021	194081	194146	194204
194022	194082	194147	194205
194023	194083	194148	194206



Ø d 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

194024	194084	194149	194207
194025	194085	194150	194208
194026	194086	194151	194209

CMS

CMS50



62 63 93

CMS50VS



VS

31 62 63 73 74 83
93

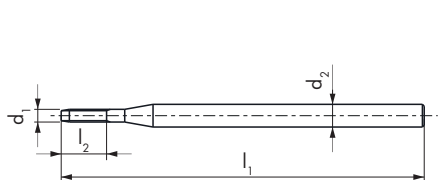
CMS50

CMS50VS



< 3 x D

< 3 x D



2B

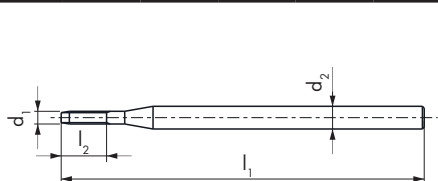
2B

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

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

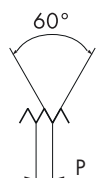
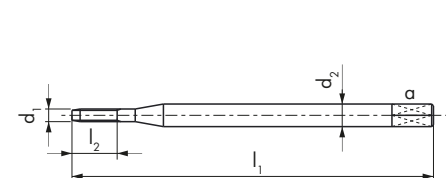


2B

2B

2B

2B



Ø d 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		3	1.2
1	72	1.85	40	5.6	2.5		3	1.5
2	64	2.18	45	9	2.8	2.1	3	1.8
3	56	2.51	50	10	2.8	2.1	3	2.1

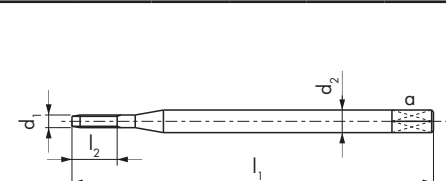
ID

ID

ID

ID

● 193863	● 193900	● 193937	● 193970
● 193864	● 193901	● 193938	● 193971
● 193865	● 193902	● 193939	● 193972
● 193866	● 193903	● 193940	● 193973



Ø d 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		3	1.2
1	72	1.85	40	5.6	2.5		3	1.5
2	64	2.18	45	9	2.8	2.1	3	1.8
3	56	2.51	50	10	2.8	2.1	3	2.1

ID

ID

ID

ID

● 193867	● 193904	● 193941	● 193974
● 193868	● 193905	● 193942	● 193975
● 193869	● 193906	● 193943	● 193976
● 193870	● 193907	● 193944	● 193977

TAZ

TAZ40



TAZ40VS



TAZ50



TAZ50VS



TAZ40

TAZ40VS

TAZ50

TAZ50VS



2B

2B

2B

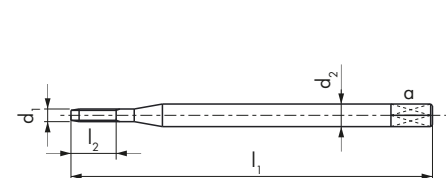
2B

ID

ID

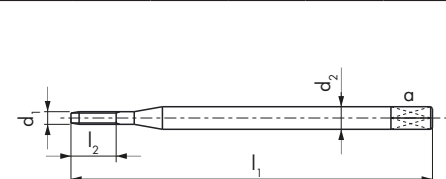
ID

ID



Ø d 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		3	1.2
1	72	1.85	40	5.6	2.5		3	1.5
2	64	2.18	45	9	2.8	2.1	3	1.8
3	56	2.51	50	10	2.8	2.1	3	2.1

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



Ø d 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		3	1.2
1	72	1.85	40	5.6	2.5		3	1.5
2	64	2.18	45	9	2.8	2.1	3	1.8
3	56	2.51	50	10	2.8	2.1	3	2.1

3B

3B

3B

3B

ID

ID

ID

ID

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

CMS

CMS50



62 63 93

CMS50VS



VS

31 62 63 73 74 83
93

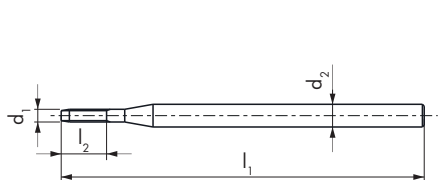
CMS50

CMS50VS



< 3 x D

< 3 x D



2.5 x P

2.5 x P

2B

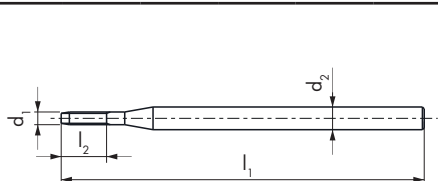
2B

Ø 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

Ø 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



PM



TAN

TAN40



62 63 91

TAN40VS



VS

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

TAN50



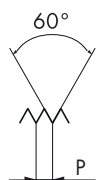
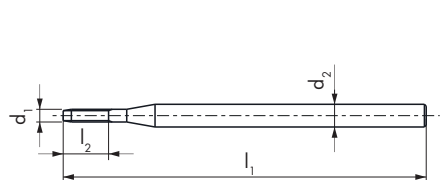
62 63 91

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	$\Delta 1.18$

Δ 4H5H $\rightarrow$ 4H6H = +0.02 mm

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



PM



TAZ

TAZ40



TAZ40VS



VS



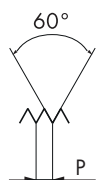
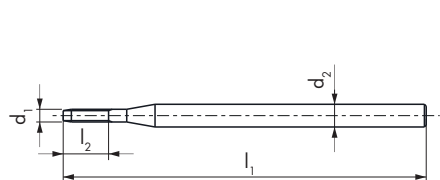
TAZ50



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	$\Delta 1.18$



4H5H $\rightarrow$ 4H6H = +0.02 mm

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



CMS

CMS50



62 63 93

CMS50VS



31 62 63 73 74 83
93

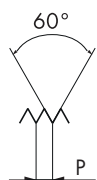
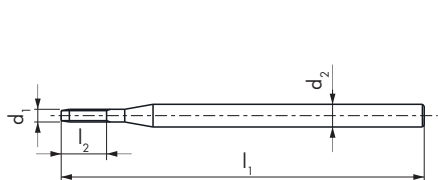
CMS50

CMS50VS



< 3 x D

< 3 x D



$\emptyset d_1$ S	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	$\Delta 0.82$
1.2	0.25	32	4.5	2	3	$\Delta 1.02$
1.4	0.3	32	5.2	2	3	$\Delta 1.18$

ID	ID
● 178257	● 193683
● 178260	● 193684
● 178263	● 193685
● 178266	● 193686
● 178269	● 193687
● 178272	● 193688
● 178275	● 193689
● 178278	● 193690
● 178281	● 193691
● 178284	● 193692
● 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

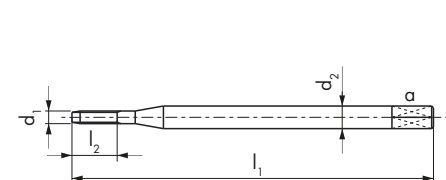


NIHS

NIHS

NIHS

NIHS



Ø 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	Δ 1.26
1.6	0.2	40	4.8	2.5		3	Δ 1.46
1.8	0.2	40	5.4	2.5		3	Δ 1.66
2	0.2	45	6	2.8	2.1	3	Δ 1.86
2.2	0.2	45	6.6	2.8	2.1	3	Δ 2.06
2.2	0.25	45	6.6	2.8	2.1	3	Δ 2.02
2.5	0.2	50	7.5	2.8	2.1	3	Δ 2.36
2.5	0.25	50	7.5	2.8	2.1	3	Δ 2.32



4H5H → 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



VS



TAZ50



TAZ50VS



VS



TAZ40

TAZ40VS

TAZ50

TAZ50VS

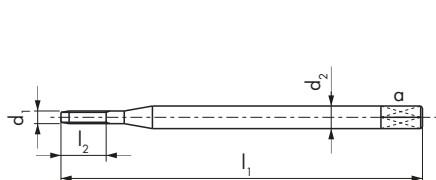


NIHS

NIHS

NIHS

NIHS



Ø 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	Δ 1.26
1.6	0.2	40	4.8	2.5		3	Δ 1.46
1.8	0.2	40	5.4	2.5		3	Δ 1.66
2	0.2	45	6	2.8	2.1	3	Δ 1.86
2.2	0.2	45	6.6	2.8	2.1	3	Δ 2.06
2.2	0.25	45	6.6	2.8	2.1	3	Δ 2.02
2.5	0.2	50	7.5	2.8	2.1	3	Δ 2.36
2.5	0.25	50	7.5	2.8	2.1	3	Δ 2.32



Δ 4H5H → 4H6H = +0.02 mm

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

CMS

CMS50



62 63 93

CMS50VS



VS

31 62 63 73 74 83
93

CMS50

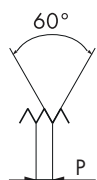
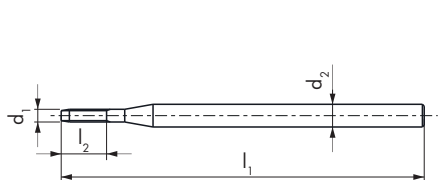
CMS50VS



< 3 x D



< 3 x D



NIHS

NIHS

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

ID

ID

● 180329

● 193694

● 193632

● 193695

● 193633

● 193696

● 193634

● 193697

● 193635

● 193698

● 193636

● 193699

● 193637

● 193700

● 193638

● 193701



Δ 4H5H → 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

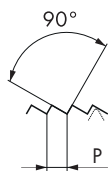
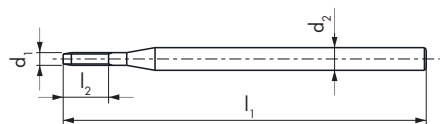


62 63 91

TAN50VS



VS

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

TAN40

TAN40VS

TAN50

TAN50VS



$\emptyset d_1$ 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

• 600065	• 600073	• 600081	• 600089
• 600066	• 600074	• 600082	• 600090
• 600067	• 600075	• 600083	• 600091
• 600068	• 600076	• 600084	• 600092
• 600069	• 600077	• 600085	• 600093
• 600070	• 600078	• 600086	• 600094
• 600071	• 600079	• 600087	• 600095
• 600072	• 600080	• 600088	• 600096

TAZ

TAZ40



TAZ40VS



VS



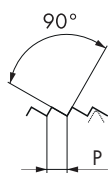
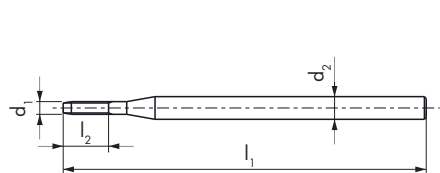
TAZ50



TAZ50VS



VS



TAZ40

TAZ40VS

TAZ50

TAZ50VS



Ø 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



VS

31 62 63 73 74 83
93

CMS50

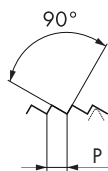
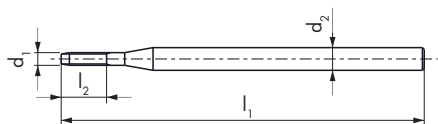
CMS50VS



< 3 x D



< 3 x D



2.5 x P



2.5 x P

Ø d ₁ SL	P mm	l ₁ mm	l ₂ mm	d ₂ h5 mm			ID	ID
0.3	0.06	32	1.1	1.5	3	0.27	600097	600226
0.35	0.06	32	1.3	1.5	3	0.32	600098	600227
0.4	0.08	32	1.5	1.5	3	0.36	600099	600228
0.5	0.1	32	1.8	1.5	3	0.46	600039	600229
0.6	0.125	32	2.2	1.5	3	0.55	600040	600230
0.7	0.15	32	2.6	1.5	3	0.64	600041	600231
0.8	0.15	32	3	1.5	3	0.74	600042	600232
0.9	0.175	32	3.3	1.5	3	0.83	600043	600233
1	0.2	32	3.7	2	3	0.92	600044	600234
1.2	0.2	32	4.5	2	3	1.12	600045	600235
1.4	0.25	32	5.2	2	3	1.3	600046	600236



THREADING SOLUTIONS

FA80VS



FA

FA80VS



VS

FA83VS

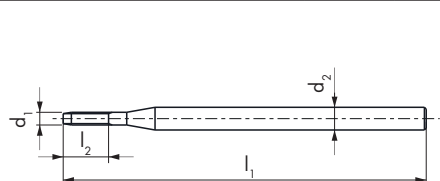


VS



FA80VS

FA83VS



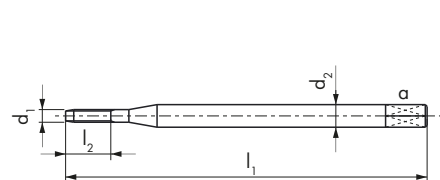
$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	
0.4	0.1	25	1.2	2	$\Delta 0.35$
0.5	0.125	25	1.5	2	$\Delta 0.44$
0.6	0.15	25	1.8	2	$\Delta 0.53$
0.7	0.175	25	2.1	2	$\Delta 0.62$
0.8	0.2	25	2.4	2	$\Delta 0.71$
0.9	0.225	25	2.7	2	$\Delta 0.8$
1	0.25	40	3	2.5	$\Delta 0.88$
1.2	0.25	40	3.6	2.5	$\Delta 1.08$
1.4	0.3	40	4.2	2.5	$\Delta 1.25$

 Tol. = +0/0.02 mm

ID

ID

● 208016	● 208017
● 161750	● 173719
● 152412	● 173720
● 152415	● 173721
● 152418	● 173722
● 152421	● 173723
● 151559	● 173729
● 151565	● 173730
● 152429	● 173731



$\emptyset d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm	
1.6	0.35	40	4.8	2.5		$\Delta 1.45$
1.8	0.35	40	5.4	2.5		$\Delta 1.65$
2	0.4	45	8	2.8	2.1	$\Delta 1.8$
2.3	0.4	45	9	2.8	2.1	$\Delta 2.1$
2.5	0.45	50	10	2.8	2.1	$\Delta 2.3$
2.6	0.45	50	10	2.8	2.1	$\Delta 2.4$

 Tol. = +0/0.02 mm

ID

ID

● 152433	● 193801
● 193764	● 193802
● 151566	● 193803
● 193765	● 193804
● 193766	● 193805
● 193767	● 193806

FA

FA80VS

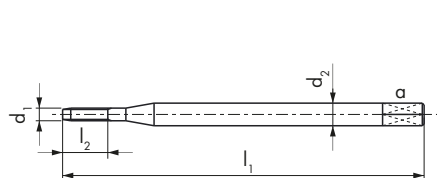


FA83VS



FA80VS

FA83VS



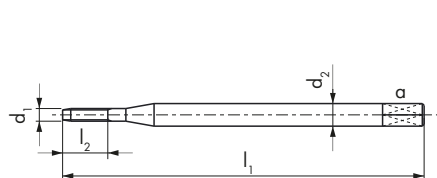
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm	
1.4	0.2	40	4.2	2.5	Δ 1.31	
1.6	0.2	40	4.8	2.5	Δ 1.51	
1.8	0.2	40	5.4	2.5	Δ 1.71	
2	0.2	45	6	2.8	2.1 Δ 1.91	
2	0.25	45	6	2.8	2.1 Δ 1.88	
2.2	0.2	45	6.6	2.8	2.1 Δ 2.11	
2.2	0.25	45	6.6	2.8	2.1 Δ 2.08	
2.3	0.2	45	6.9	2.8	2.1 Δ 2.21	
2.3	0.25	45	6.9	2.8	2.1 Δ 2.18	
2.5	0.2	50	7.5	2.8	2.1 Δ 2.41	
2.5	0.25	50	7.5	2.8	2.1 Δ 2.38	

ID

ID

● 155928	● 180436
● 156480	● 193807
● 193768	● 193808
● 193769	● 193809
● 193770	● 193810
● 193771	● 193811
● 193772	● 193812
● 193773	● 193813
● 193774	● 193814
● 193775	● 193815
● 193776	● 193816

Tol. = +0/0.02 mm



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 Δ 2.35	
2.6	0.35	50	7.8	2.8	2.1 Δ 2.45	

ID

ID

● 193777	● 193817
● 193778	● 193818

Tol. = +0/0.02 mm



PM



FA

FA80VS



VS



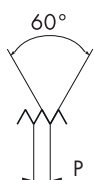
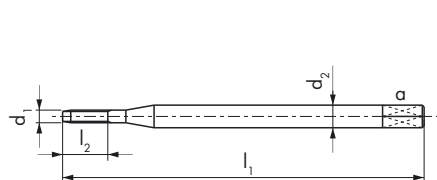
FA83VS



VS

FA80VS

FA83VS



2BX

2BX

Ø d _{UNC}	P TPI	d mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm	
1	64	1.85	40	5.6	2.5	2.1	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

Δ Tol. = +0/0.02 mm

ID

ID

● 193779

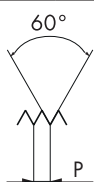
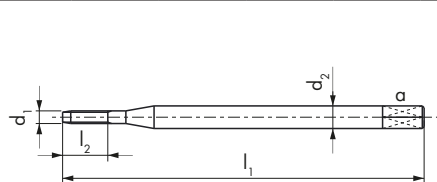
● 193819

● 193780

● 193820

● 193781

● 193821



3BX

3BX

Ø d _{UNC}	P TPI	d mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm	
1	64	1.85	40	5.6	2.5	2.1	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

Δ Tol. = +0/0.02 mm

ID

ID

● 193782

● 193822

● 193783

● 193823

● 193784

● 193824

FA

FA80VS



VS

FA83VS

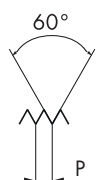
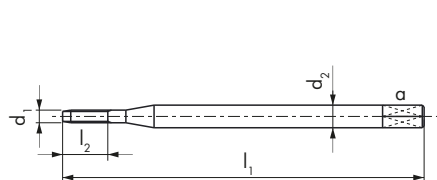


VS



FA80VS

FA83VS



2BX

2BX

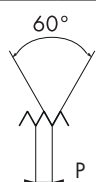
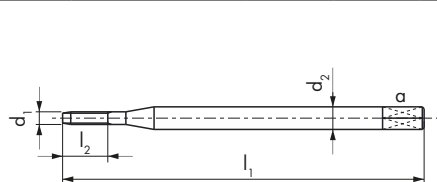
$\emptyset d_1$ UNF	P TPI	d mm	l mm	l ₂ mm	d ₂ mm	a mm	
0	80	1.52	40	4.6	2.5	$\Delta 1.4$	
1	72	1.85	40	5.6	2.5	$\Delta 1.7$	
2	64	2.18	45	9	2.8	2.1	$\Delta 2$
3	56	2.51	50	10	2.8	2.1	$\Delta 2.3$

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 mm	l 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

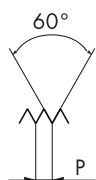
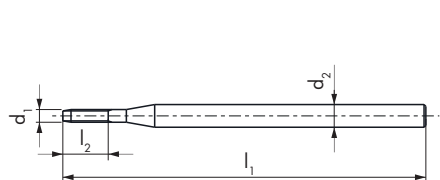


VS



FA80VS

FA83VS



Ø d ₁ S	P mm	l ₁ mm	l ₂ mm	d ₂ mm	
0.4	0.1	25	1.2	2	Δ 0.35
0.5	0.125	25	1.5	2	Δ 0.44
0.6	0.15	25	1.8	2	Δ 0.53
0.7	0.175	25	2.1	2	Δ 0.62
0.8	0.2	25	2.4	2	Δ 0.71
0.9	0.225	25	2.7	2	Δ 0.8
1	0.25	40	3.0	2.5	Δ 0.88
1.2	0.25	40	3.6	2.5	Δ 1.08
1.4	0.3	40	4.2	2.5	Δ 1.25

ID

ID

● 182790	● 185362
● 158977	● 173724
● 151561	● 173725
● 151742	● 173726
● 151564	● 173727
● 151562	● 173728
● 151542	● 173732
● 151543	● 173733
● 152427	● 173734

Δ Tol. = +0/0.02 mm

FA

FA80VS



VS



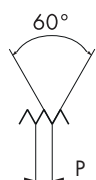
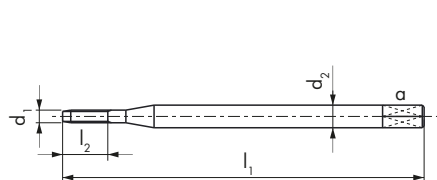
FA83VS



VS

FA80VS

FA83VS



Ø 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		^Δ 1.31
1.6	0.2	40	4.8	2.5		^Δ 1.51
1.8	0.2	40	5.4	2.5		^Δ 1.71
2	0.2	45	6	2.8	2.1	^Δ 1.91
2.2	0.2	45	6.6	2.8	2.1	^Δ 2.11
2.2	0.25	45	6.6	2.8	2.1	^Δ 2.08
2.5	0.2	50	7.5	2.8	2.1	^Δ 2.41
2.5	0.25	50	7.5	2.8	2.1	^Δ 2.38

^Δ  Tol. = +0/0.02 mm

ID

ID

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

FA

FA80VS



VS

FA83VS

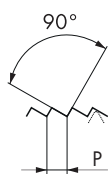
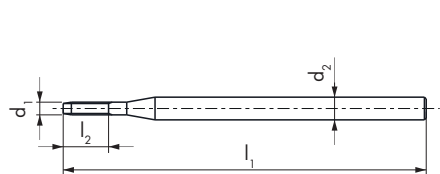


VS



FA80VS

FA83VS



Ø d ₁ SL	P mm	l ₁ mm	l ₂ mm	d ₂ mm
0.5	0.1	25	1.5	2
0.6	0.125	25	1.8	2
0.7	0.15	25	2.1	2
0.8	0.15	25	2.4	2
0.9	0.175	25	2.7	2
1	0.2	40	3	2.5
1.2	0.2	40	3.6	2.5
1.4	0.25	40	4.2	2.5

ID

ID

● 600049	● 600100
● 600050	● 600101
● 600051	● 600102
● 600052	● 600103
● 600053	● 600104
● 600054	● 600105
● 600055	● 600106
● 600056	● 600107

CFA

CFA80VS



VS

62 63 91 92 94

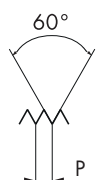
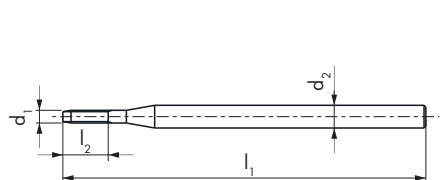
CFA83VS



VS

CFA80VS

CFA83VS



4HX

4HX

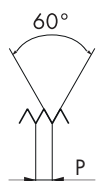
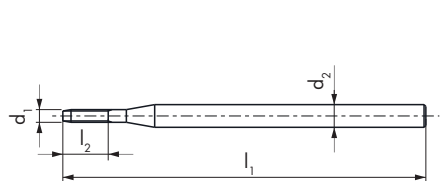
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ h ₅ mm	
0.5	0.125	32	1.5	1.5	Δ 0.44
0.6	0.15	32	1.8	1.5	Δ 0.53
0.7	0.175	32	2.1	1.5	Δ 0.62
0.8	0.2	32	2.4	1.5	Δ 0.71
0.9	0.225	32	2.7	1.5	Δ 0.8
1	0.25	32	3	2	Δ 0.88
1.2	0.25	32	3.6	2	Δ 1.08
1.4	0.3	32	4.2	2	Δ 1.25

Δ Tol. = +0/0.02 mm

ID

ID

● 171771	● 193611
● 171773	● 193612
● 171775	● 193613
● 171777	● 193614
● 171779	● 193615
● 171782	● 193616
● 171783	● 193617
● 171785	● 193618



6HX

6HX

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ h ₅ mm	
1.6	0.35	32	4.8	2	Δ 1.45
1.8	0.35	32	5.4	2	Δ 1.65
2	0.4	39	8	3	Δ 1.8
2.3	0.4	39	9	3	Δ 2.1
2.5	0.45	39	10	3	Δ 2.3
2.6	0.45	39	10	3	Δ 2.4

Δ Tol. = +0/0.02 mm

ID

ID

● 193590	● 193619
● 193591	● 193620
● 193592	● 193621
● 193593	● 193622
● 193594	● 193623
● 193595	● 193624



CFA

CFA80VS



VS

62 63 91 92 94

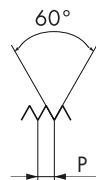
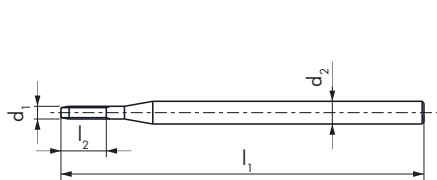
CFA83VS



VS

CFA80VS

CFA83VS



Ø 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	Δ 1.65
2	56	2.18	39	8.6	3	Δ 2
3	48	2.51	39	10	3	Δ 2.25

ID

ID

● 193596

● 193625

● 193597

● 193626

● 193598

● 193627

Δ Tol. = +0/0.02 mm



CFA

CFA80VS



VS

62 63 91 92 94

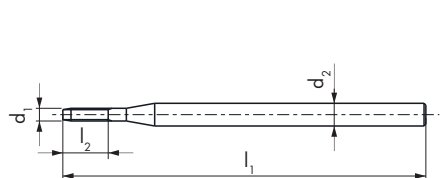
CFA83VS



VS

CFA80VS

CFA83VS



Ø d UNF	P TPI	d mm	l mm	l mm	d ₂ h5 mm	
0	80	1.52	32	4.5	2	Δ 1.4
1	72	1.85	32	5.5	2	Δ 1.7
2	64	2.18	39	8.6	3	Δ 2
3	56	2.51	39	10	3	Δ 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

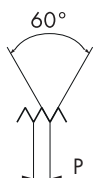
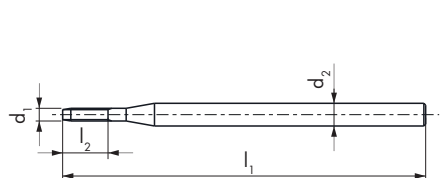
CFA83VS



VS

CFA80VS

CFA83VS



Ø d ₁ S	P mm	l ₁ mm	l ₂ mm	d ₂ h5 mm	
0.5	0.125	32	1.5	1.5	Δ 0.44
0.6	0.15	32	1.8	1.5	Δ 0.53
0.7	0.175	32	2.1	1.5	Δ 0.62
0.8	0.2	32	2.4	1.5	Δ 0.71
0.9	0.225	32	2.7	1.5	Δ 0.8
1	0.25	32	3	2	Δ 0.88
1.2	0.25	32	3.6	2	Δ 1.08
1.4	0.3	32	4.2	2	Δ 1.25

Δ Tol. = +0/0.02 mm

ID

ID

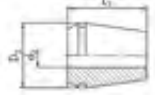
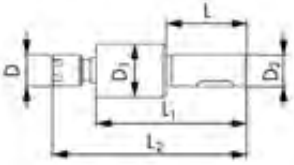
● 171770	● 193603
● 171772	● 193604
● 171774	● 193605
● 171776	● 193606
● 171778	● 193607
● 171780	● 193608
● 171781	● 193609
● 171784	● 193610

SRT

Tapping chucks with axial shock absorber



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

DIN 1835 B							SRT032-D6	SRT054-D12	ER8
SRT nano									
SRT032 / SRT054 D9865-									
									
	D mm	D ₁ mm	D ₂ mm	L mm	L ₁ mm	L ₂ mm	ID	ID	
M0.3 - M2	12	11	6	25	40	56	● 157610		
M0.5 - M4	12	20	12	33	59	75		● 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		

GWi3015VS GWi3065VS



THREADING SOLUTIONS

New Type GWi6000



THREADING SOLUTIONS



GW

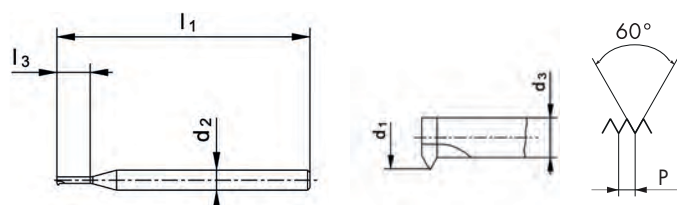
GW1115



GW1115VS



VS



GW1115

GW1115VS



NEW



NEW



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.3	0.08	0.21	39	0.8	3	0.1	1	0.23
0.35	0.09	0.25	39	0.9	3	0.13	1	0.28
0.4	0.1	0.29	39	1	3	0.15	1	0.32 ¹
0.5	0.125	0.36	39	1.2	3	0.19	1	0.41 ¹
0.6	0.15	0.43	39	1.4	3	0.23	1	0.5 ¹
0.7	0.175	0.5	39	1.7	3	0.27	1	0.58 ¹
0.8	0.2	0.57	39	1.9	3	0.31	1	0.66 ¹
0.9	0.225	0.64	39	2.1	3	0.34	1	0.74 ¹
1	0.25	0.71	39	2.4	3	0.38	1	0.75
1.2	0.25	0.91	39	2.8	3	0.58	1	0.95
1.4	0.3	1.06	39	3.2	3	0.66	1	1.1

ID

ID

● 206246	● 206257
● 206247	● 206258
● 206248	● 206259
● 206249	● 206260
● 206250	● 206261
● 206251	● 206262
● 206252	● 206263
● 206253	● 206264
● 206254	● 206265
● 206255	● 206266
● 206256	● 206267

¹ 4H5H → 4H6H = 0.02mm

GW

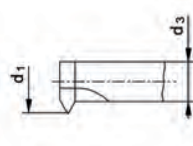
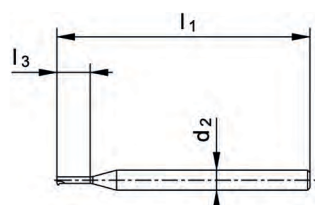
GW1116



GW1116VS



VS



GW1116

GW1116VS



2.5 x D₁

2.5 x D₁

Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.3	0.08	0.21	39	0.9	3	0.1	1	0.23
0.35	0.09	0.25	39	1	3	0.13	1	0.28
0.4	0.1	0.29	39	1.2	3	0.15	1	0.32 ¹
0.5	0.125	0.36	39	1.5	3	0.19	1	0.41 ¹
0.6	0.15	0.43	39	1.7	3	0.23	1	0.5 ¹
0.7	0.175	0.5	39	2	3	0.27	1	0.58 ¹
0.8	0.2	0.57	39	2.3	3	0.31	1	0.66 ¹
0.9	0.225	0.64	39	2.6	3	0.34	1	0.74 ¹
1	0.25	0.71	39	2.9	3	0.38	1	0.75
1.2	0.25	0.91	39	3.4	3	0.58	1	0.95
1.4	0.3	1.06	39	3.9	3	0.66	1	1.1

ID

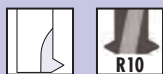
ID

● 194227	● 194245
● 194228	● 194246
● 194229	● 194247
● 194230	● 194248
● 194231	● 194249
● 194232	● 194250
● 194233	● 194251
● 194234	● 194252
● 194235	● 194253
● 194236	● 194254
● 194237	● 194255

¹ 4H5H → 4H6H = +0.02mm

GW

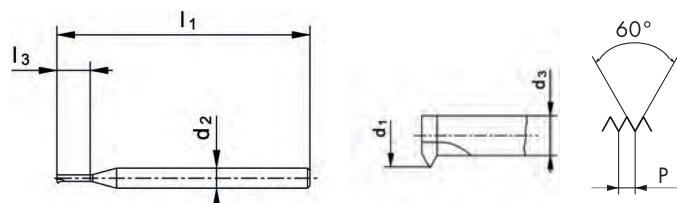
GW1115



GW1115VS



VS



GW1115

GW1115VS



NEW



NEW



$\emptyset D_1$ S	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.3	0.08	0.21	39	0.8	3	0.1	1	0.23
0.35	0.09	0.25	39	0.9	3	0.13	1	0.28
0.4	0.1	0.29	39	1	3	0.15	1	0.32 ¹
0.5	0.125	0.36	39	1.2	3	0.19	1	0.41 ¹
0.6	0.15	0.43	39	1.4	3	0.23	1	0.5 ¹
0.7	0.175	0.5	39	1.7	3	0.27	1	0.58 ¹
0.8	0.2	0.57	39	1.9	3	0.31	1	0.66 ¹
0.9	0.225	0.64	39	2.1	3	0.34	1	0.74 ¹
1	0.25	0.71	39	2.4	3	0.38	1	0.82 ¹
1.2	0.25	0.91	39	2.8	3	0.58	1	1.02 ¹
1.4	0.3	1.06	39	3.2	3	0.66	1	1.18 ¹

ID

ID

• 206268	• 206279
• 206269	• 206280
• 206270	• 206281
• 206271	• 206282
• 206272	• 206283
• 206273	• 206284
• 206274	• 206285
• 206275	• 206286
• 206276	• 206287
• 206277	• 206288
• 206278	• 206289

¹ 4H5H → 4H6H = $\emptyset$.02mm

GW

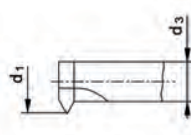
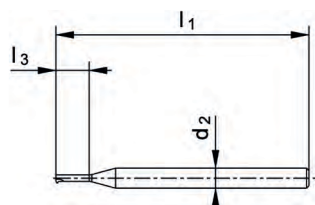
GW1116



GW1116VS



VS



$\emptyset D_1$ S	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm			ID	ID
0.3	0.08	0.21	39	0.9	3	0.1	1	0.23	● 166930	● 166940
0.35	0.09	0.25	39	1	3	0.13	1	0.28	● 194226	● 194244
0.4	0.1	0.29	39	1.2	3	0.15	1	0.32 ¹	● 166931	● 166941
0.5	0.125	0.36	39	1.5	3	0.19	1	0.41 ¹	● 166932	● 166942
0.6	0.15	0.43	39	1.7	3	0.23	1	0.5 ¹	● 166933	● 166943
0.7	0.175	0.5	39	2	3	0.27	1	0.58 ¹	● 166934	● 166944
0.8	0.2	0.57	39	2.3	3	0.31	1	0.66 ¹	● 166935	● 166945
0.9	0.225	0.64	39	2.6	3	0.34	1	0.74 ¹	● 166936	● 166946
1	0.25	0.71	39	2.9	3	0.38	1	0.82 ¹	● 166937	● 166947
1.2	0.25	0.91	39	3.4	3	0.58	1	1.02 ¹	● 166938	● 166948
1.4	0.3	1.06	39	3.9	3	0.66	1	1.18 ¹	● 166939	● 166949

¹  4H5H → 4H6H = 0.02mm

GW

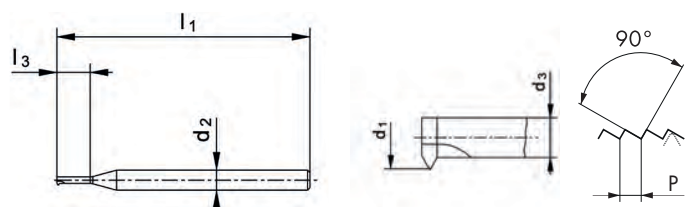
GW1115



GW1115VS



VS



GW1115

GW1115VS



NEW



NEW



Ø D ₁ SL	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.3	0.06	0.23	39	0.7	3	0.15	1	0.27
0.35	0.06	0.28	39	0.8	3	0.2	1	0.32
0.4	0.08	0.31	39	1	3	0.2	1	0.36
0.5	0.1	0.39	39	1.2	3	0.25	1	0.46
0.6	0.125	0.46	39	1.4	3	0.29	1	0.55
0.7	0.15	0.53	39	1.6	3	0.32	1	0.64
0.8	0.15	0.63	39	1.8	3	0.42	1	0.74
0.9	0.175	0.7	39	2.1	3	0.46	1	0.83
1	0.2	0.77	39	2.3	3	0.49	1	0.92
1.2	0.2	0.97	39	2.7	3	0.69	1	1.12
1.4	0.25	1.11	39	3.2	3	0.76	1	1.3

ID

ID

● 600268	● 600279
● 600269	● 600280
● 600270	● 600281
● 600271	● 600282
● 600272	● 600283
● 600273	● 600284
● 600274	● 600285
● 600275	● 600286
● 600276	● 600287
● 600277	● 600288
● 600278	● 600289

GW

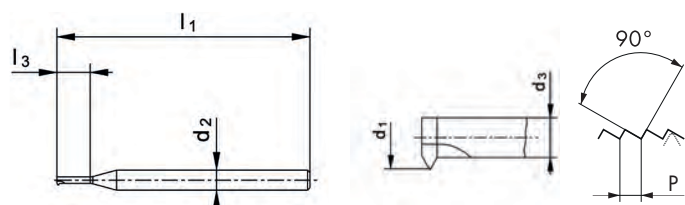
GW1116



GW1116VS



VS



GW1116

GW1116VS



$\emptyset D_1$ SL	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.3	0.06	0.23	39	0.9	3	0.15	1	0.27
0.35	0.06	0.28	39	1	3	0.2	1	0.32
0.4	0.08	0.31	39	1.2	3	0.2	1	0.36
0.5	0.1	0.39	39	1.4	3	0.25	1	0.46
0.6	0.125	0.46	39	1.7	3	0.29	1	0.55
0.7	0.15	0.53	39	2	3	0.32	1	0.64
0.8	0.15	0.63	39	2.2	3	0.42	1	0.74
0.9	0.175	0.7	39	2.5	3	0.46	1	0.83
1	0.2	0.77	39	2.8	3	0.49	1	0.92
1.2	0.2	0.97	39	3.3	3	0.69	1	1.12
1.4	0.25	1.11	39	3.9	3	0.76	1	1.3

ID

ID

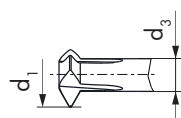
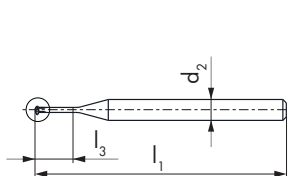
• 600017	• 600023
• 600237	• 600243
• 600018	• 600024
• 600019	• 600025
• 600020	• 600026
• 600021	• 600027
• 600238	• 600244
• 600239	• 600245
• 600240	• 600246
• 600241	• 600247
• 600242	• 600248

GW

GW2015



GW2015VS



GW2015

GW2015VS



NEW



NEW



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.5	0.125	0.36	39	1.2	3	0.19	3	0.41 ¹
0.6	0.15	0.43	39	1.4	3	0.22	3	0.5 ¹
0.7	0.175	0.5	39	1.7	3	0.26	3	0.58 ¹
0.8	0.2	0.57	39	1.9	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.1	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.4	3	0.36	3	0.75
1.2	0.25	0.91	39	2.8	3	0.56	3	0.95
1.4	0.3	1.06	39	3.2	3	0.64	3	1.1
1.6	0.35	1.2	39	3.7	3	0.71	3	1.25
1.8	0.35	1.4	39	4.1	3	0.91	3	1.45
2	0.4	1.54	39	4.6	3	0.98	3	1.6
2.3	0.4	1.84	39	5.2	3	1.28	3	1.9
2.5	0.45	1.98	39	5.6	3	1.35	3	2.05
2.6	0.45	2.08	39	5.8	3	1.45	3	2.15

¹ 4H5H → 4H6H = +0.02mm

ID

ID

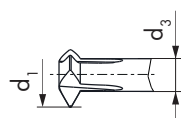
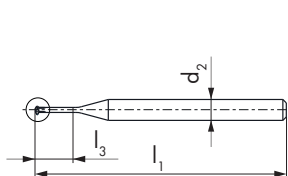
● 206290	● 206308
● 206291	● 206309
● 206292	● 206310
● 206293	● 206311
● 206294	● 206312
● 206295	● 206313
● 206296	● 206314
● 206297	● 206315
● 206298	● 206316
● 206606	● 206317
● 206299	● 206318
● 206300	● 206319
● 206301	● 206320
● 206302	● 206321

GW

GW2016



GW2016VS



GW2016

GW2016VS



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.5	0.125	0.36	39	1.5	3	0.19	3	0.41 ¹
0.6	0.15	0.43	39	1.7	3	0.22	3	0.5 ¹
0.7	0.175	0.5	39	2	3	0.26	3	0.58 ¹
0.8	0.2	0.57	39	2.3	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.6	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.9	3	0.36	3	0.75
1.2	0.25	0.91	39	3.4	3	0.56	3	0.95
1.4	0.3	1.06	39	3.9	3	0.64	3	1.1
1.6	0.35	1.2	39	4.5	3	0.71	3	1.25
1.8	0.35	1.4	39	5	3	0.91	3	1.45
2	0.4	1.54	39	5.6	3	0.98	3	1.6
2.3	0.4	1.84	39	6.3	3	1.28	3	1.9
2.5	0.45	1.98	39	6.9	3	1.35	3	2.05
2.6	0.45	2.08	39	7.1	3	1.45	3	2.15

ID

ID

● 194262	● 194275
● 194263	● 194276
● 194264	● 194277
● 166974	● 166993
● 166975	● 166994
● 166976	● 166995
● 166977	● 166996
● 166978	● 166997
● 166979	● 166998
● 166980	● 166999
● 166981	● 167000
● 194265	● 167399
● 166982	● 167001
● 194266	● 194278

¹ 4H5H → 4H6H = 0.02mm

GW

GW2015



GW2015VS



GW2015

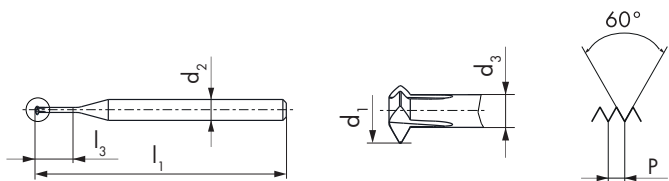
GW2015VS



NEW



NEW



Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.5	0.125	0.36	39	1.2	3	0.19	3	0.41 ¹
0.6	0.15	0.43	39	1.4	3	0.22	3	0.5 ¹
0.7	0.175	0.5	39	1.7	3	0.26	3	0.58 ¹
0.8	0.2	0.57	39	1.9	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.1	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.4	3	0.36	3	0.82 ¹
1.2	0.25	0.91	39	2.8	3	0.56	3	1.02 ¹
1.4	0.3	1.06	39	3.2	3	0.64	3	1.18 ¹

ID

ID

● 206327	● 206335
● 206328	● 206336
● 206329	● 206337
● 206330	● 206338
● 206331	● 206339
● 206332	● 206340
● 206333	● 206341
● 206334	● 206342

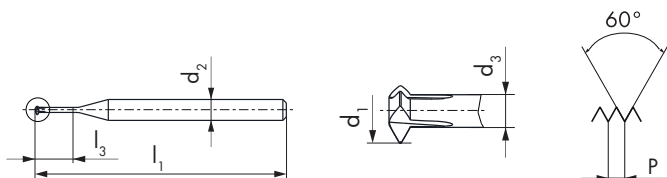
¹ 4H5H → 4H6H = 0.02mm

GW

GW2016



GW2016VS



GW2016

GW2016VS



$\emptyset D_1$ S	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.5	0.125	0.36	39	1.5	3	0.19	3	0.41 ¹
0.6	0.15	0.43	39	1.7	3	0.22	3	0.5 ¹
0.7	0.175	0.5	39	2	3	0.26	3	0.58 ¹
0.8	0.2	0.57	39	2.3	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.6	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.9	3	0.36	3	0.82 ¹
1.2	0.25	0.91	39	3.4	3	0.56	3	1.02 ¹
1.4	0.3	1.06	39	3.9	3	0.64	3	1.18 ¹

ID

ID

● 181410

● 181413

● 181374

● 180947

● 181375

● 181378

● 166969

● 166988

● 166970

● 166989

● 166971

● 166990

● 166972

● 166991

● 166973

● 166992

¹ 4H5H → 4H6H = $\emptyset$.02mm

GW

GW2015



GW2015VS



GW2015

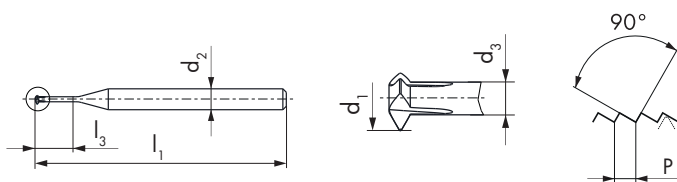
GW2015VS



NEW



NEW



Ø D ₁ SL	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.5	0.1	0.39	39	1.2	3	0.25	3	0.46
0.6	0.125	0.46	39	1.4	3	0.29	3	0.55
0.7	0.15	0.53	39	1.6	3	0.32	3	0.64
0.8	0.15	0.63	39	1.8	3	0.42	3	0.74
0.9	0.175	0.7	39	2.1	3	0.46	3	0.83
1	0.2	0.77	39	2.3	3	0.49	3	0.92
1.2	0.2	0.97	39	2.7	3	0.69	3	1.12
1.4	0.25	1.11	39	3.2	3	0.76	3	1.3

ID

ID

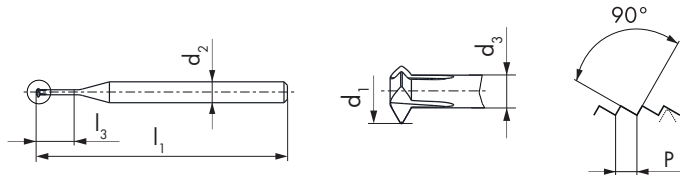
• 600290	• 600298
• 600291	• 600299
• 600292	• 600300
• 600293	• 600301
• 600294	• 600302
• 600295	• 600303
• 600296	• 600304
• 600297	• 600305

GW

GW2016



GW2016VS



GW2016

GW2016VS



Ø D ₁ SL	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.5	0.1	0.39	39	1.4	3	0.25	3	0.46
0.6	0.125	0.46	39	1.7	3	0.29	3	0.55
0.7	0.15	0.53	39	2	3	0.32	3	0.64
0.8	0.15	0.63	39	2.2	3	0.42	3	0.74
0.9	0.175	0.7	39	2.5	3	0.46	3	0.83
1	0.2	0.77	39	2.8	3	0.49	3	0.92
1.2	0.2	0.97	39	3.3	3	0.69	3	1.12
1.4	0.25	1.11	39	3.9	3	0.76	3	1.3

ID

ID

● 600249

● 600257

● 600250

● 600258

● 600251

● 600259

● 600252

● 600260

● 600253

● 600261

● 600254

● 600262

● 600255

● 600263

● 600256

● 600264

GW

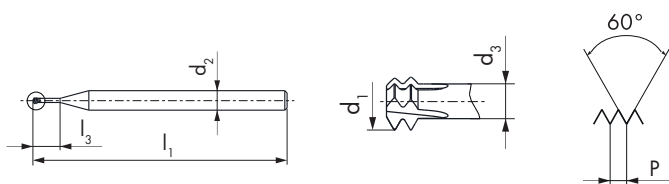
GW3015



GW3015VS



GW3015VX



GW3015

GW3015VS

GW3015VX



NEW



NEW



NEW



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.2	0.57	39	1.9	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.1	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.4	3	0.36	3	0.75
1.2	0.25	0.91	39	2.8	3	0.56	3	0.95
1.4	0.3	1.06	39	3.2	3	0.64	3	1.1
1.6	0.35	1.2	39	3.7	3	0.71	3	1.25
1.8	0.35	1.4	39	4.1	3	0.91	3	1.45
2	0.4	1.54	39	4.6	3	0.98	3	1.6
2.3	0.4	1.84	39	5.2	3	1.28	3	1.9
2.5	0.45	1.98	39	5.6	3	1.35	3	2.05
2.6	0.45	2.08	39	5.8	3	1.45	3	2.15

ID

ID

ID

● 206343

● 206359

● 206375

● 206344

● 206360

● 206376

● 206345

● 206361

● 206377

● 206346

● 206362

● 206378

● 206347

● 206363

● 206379

● 206348

● 206364

● 206380

● 206349

● 206365

● 206381

● 206350

● 206366

● 206382

● 206351

● 206367

● 206383

● 206352

● 206368

● 206384

● 206353

● 206369

● 206385

¹ 4H5H → 4H6H = Ø .02mm

GW

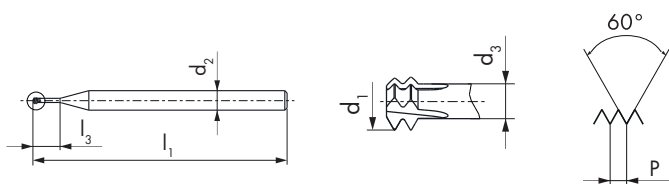
GW3016



GW3016VS



GW3016VX



GW3016

GW3016VS

GW3016VX



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.2	0.57	39	2.3	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.6	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.9	3	0.36	3	0.75
1.2	0.25	0.91	39	3.4	3	0.56	3	0.95
1.4	0.3	1.06	39	3.9	3	0.64	3	1.1
1.6	0.35	1.2	39	4.5	3	0.71	3	1.25
1.8	0.35	1.4	39	5	3	0.91	3	1.45
2	0.4	1.54	39	5.6	3	0.98	3	1.6
2.3	0.4	1.84	39	6.3	3	1.28	3	1.9
2.5	0.45	1.98	39	6.9	3	1.35	3	2.05
2.6	0.45	2.08	39	7.1	3	1.45	3	2.15

ID

ID

ID

● 167021

● 167035

● 187261

● 167022

● 167036

● 187262

● 167023

● 167037

● 187263

● 167024

● 167038

● 187264

● 167025

● 167039

● 187265

● 167026

● 167040

● 187266

● 167027

● 167041

● 187267

● 167028

● 167042

● 187268

● 196140

● 167296

● 194310

● 167029

● 167043

● 187269

● 196141

● 194290

● 194311

¹ 4H5H → 4H6H = 0.02mm

GW

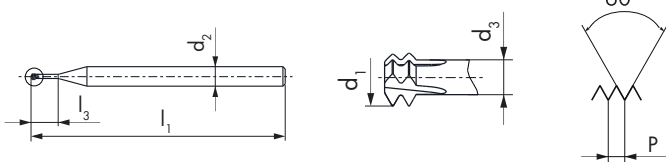
GW3017



GW3017VS



GW3017VX



GW3017

GW3017VS

GW3017VX



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.2	0.57	39	2.7	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	3	3	0.33	3	0.74 ¹
1	0.25	0.71	39	3.4	3	0.36	3	0.75
1.2	0.25	0.91	39	4	3	0.56	3	0.95
1.4	0.3	1.06	39	4.6	3	0.64	3	1.1
1.6	0.35	1.2	39	5.3	3	0.71	3	1.25
1.8	0.35	1.4	39	5.9	3	0.91	3	1.45
2	0.4	1.54	39	6.6	3	0.98	3	1.6
2.3	0.4	1.84	39	7.5	3	1.28	3	1.9
2.5	0.45	1.98	39	8.1	3	1.35	3	2.05
2.6	0.45	2.08	39	8.4	3	1.45	3	2.15

ID

ID

ID

• 196172

• 186266

• 187389

• 196173

• 186267

• 187390

• 196189

• 186268

• 187391

• 196174

• 186269

• 187392

• 196175

• 186270

• 187393

• 196176

• 186271

• 187394

• 196177

• 186272

• 187395

• 183766

• 186273

• 187396

• 196190

• 194296

• 194317

• 196193

• 186274

• 187397

• 196194

• 194297

• 194318

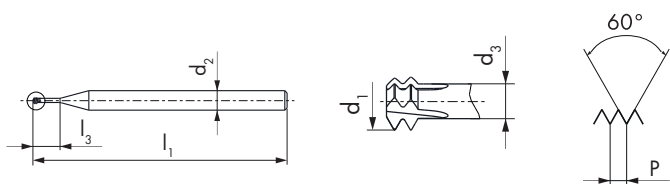
¹ 4H5H → 4H6H = Ø .02mm

GW

GW3019



GW3019VS



GW3019

GW3019VS



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.2	0.57	39	3.5	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	3.9	3	0.33	3	0.74 ¹
1	0.25	0.71	39	4.4	3	0.36	3	0.75
1.2	0.25	0.91	39	5.2	3	0.56	3	0.95
1.4	0.3	1.06	39	6	3	0.64	3	1.1
1.6	0.35	1.2	39	6.9	3	0.71	3	1.25
1.8	0.35	1.4	39	7.7	3	0.91	3	1.45
2	0.4	1.54	39	8.6	3	0.98	3	1.6
2.3	0.4	1.84	39	9.8	3	1.28	3	1.9
2.5	0.45	1.98	39	10.6	3	1.35	3	2.05
2.6	0.45	2.08	39	11	3	1.45	3	2.15

ID

ID

● 167063	● 167077
● 167064	● 167078
● 167065	● 167079
● 167066	● 167080
● 167067	● 167081
● 167068	● 167082
● 167069	● 167083
● 167070	● 167084
● 196268	● 194303
● 167071	● 167085
● 196269	● 194304

¹ 4H5H → 4H6H = √ .02mm

GW

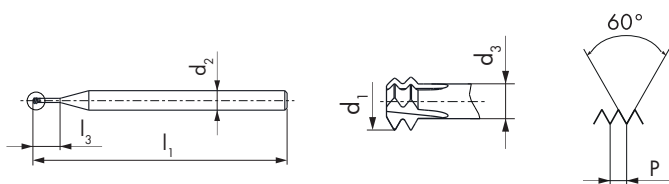
GW3015



GW3015VS



GW3015VX



GW3015

GW3015VS

GW3015VX



NEW



NEW



NEW



$\emptyset D_1$ MF	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
2	0.2	1.77	39	4.3	3	1.49	3	1.8
2	0.25	1.71	39	4.4	3	1.36	3	1.75
2.5	0.2	2.27	39	5.3	3	1.99	3	2.3
2.5	0.25	2.21	39	5.4	3	1.86	3	2.25

ID

ID

ID

206391

206399

206406

206392

207715

206407

206393

206400

206408

206394

206401

206409

GW

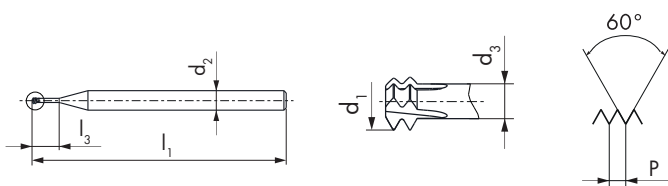
GW3016



GW3016VS



GW3016VX



$\emptyset D_1$ MF	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
2	0.2	1.77	39	5.3	3	1.49	3	1.8
2	0.25	1.71	39	5.4	3	1.36	3	1.75
2.5	0.2	2.27	39	6.6	3	1.99	3	2.3
2.5	0.25	2.21	39	6.6	3	1.86	3	2.25

GW3016

GW3016VS

GW3016VX



ID

ID

ID

● 175225

● 171442

● 187282

● 196146

● 186209

● 187283

● 175226

● 175241

● 187284

● 175227

● 167299

● 187285

GW

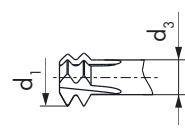
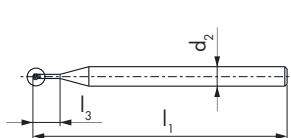
GW3017



GW3017VS



GW3017VX



GW3017

GW3017VS

GW3017VX



$\emptyset D_1$ MF	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
2	0.2	1.77	39	6.3	3	1.49	3	1.8
2	0.25	1.71	39	6.4	3	1.36	3	1.75
2.5	0.2	2.27	39	7.8	3	1.99	3	2.3
2.5	0.25	2.21	39	7.9	3	1.86	3	2.25

ID

ID

ID

• 196197

• 186325

• 187410

• 196198

• 186326

• 187411

• 196191

• 186327

• 187412

• 196192

• 186328

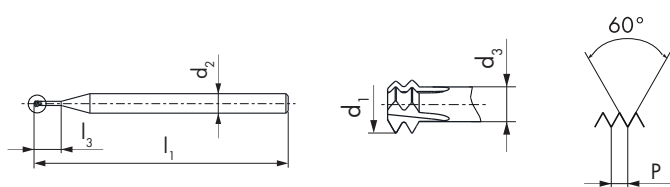
• 187413

GW

GW3019



GW3019VS



GW3019

GW3019VS



$\emptyset D_1$ MF	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
2	0.2	1.77	39	8.3	3	1.49	3	1.8
2	0.25	1.71	39	8.4	3	1.36	3	1.75
2.5	0.2	2.27	39	10.3	3	1.99	3	2.3
2.5	0.25	2.21	39	10.4	3	1.86	3	2.25

ID

ID

● 175254

● 175270

● 196242

● 186592

● 175255

● 175271

● 175256

● 175272

GW

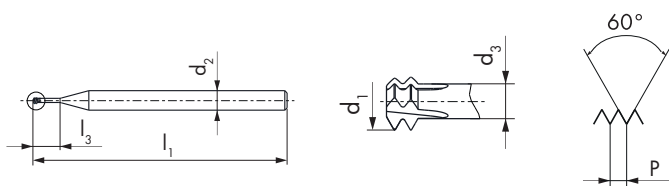
GW3015



GW3015VS



GW3015VX



GW3015

GW3015VS

GW3015VX



NEW



NEW



NEW



Ø D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
2	56	1.66	39	5	3	1.02	3	1.75
3	48	1.91	39	5.8	3	1.17	3	2

ID

ID

ID

• 206414

• 206423

• 206432

• 206415

• 206424

• 206433

GW

GW3016



GW3016VS

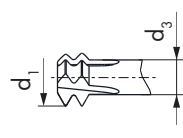
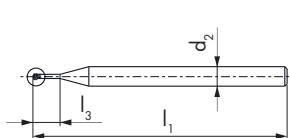


VS

GW3016VX



VX



GW3016

GW3016VS

GW3016VX



Ø D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
2	56	1.66	39	6.1	3	1.02	3	1.75
3	48	1.91	39	7	3	1.17	3	2

ID

ID

ID

● 167472
● 196158

● 167500
● 186236

● 187298
● 187299

GW

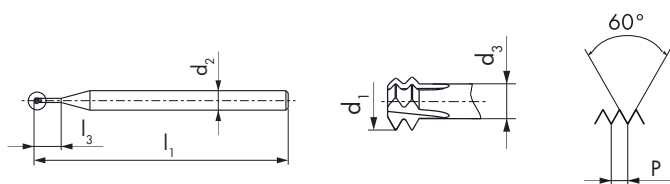
GW3017



GW3017VS



GW3017VX



GW3017

GW3017VS

GW3017VX



$\emptyset D_1$ UNC	P TPI	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
2	56	1.66	39	7.2	3	1.02	3	1.75
3	48	1.91	39	8.3	3	1.17	3	2

ID

ID

ID

• 196219

• 186365

• 187426

• 196221

• 186366

• 187427

GW

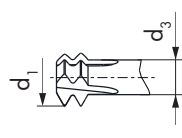
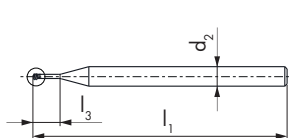
GW3019



GW3019VS



VS



GW3019

GW3019VS



$\emptyset D_1$ UNC	P TPI	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
2	56	1.66	39	9.4	3	1.02	3	1.75
3	48	1.91	39	10.8	3	1.17	3	2

ID

ID

● 167479

● 167507

● 196258

● 186601

GW

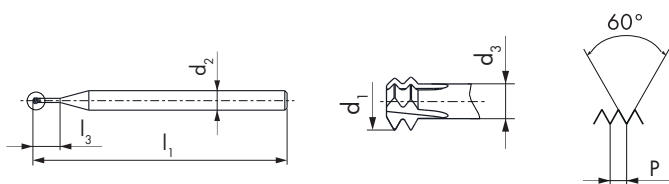
GW3015



GW3015VS



GW3015VX



GW3015

GW3015VS

GW3015VX



NEW



NEW



NEW



2 x D₁



2 x D₁



2 x D₁

$\emptyset D_1$ UNF	P TPI	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0	80	1.15	39	3.5	3	0.71	3	1.2
1	72	1.44	39	4.2	3	0.95	3	1.5
2	64	1.73	39	4.9	3	1.17	3	1.8

ID

ID

ID

206441

206451

206461

206442

206452

206462

206443

206453

206463

GW

GW3016



GW3016VS

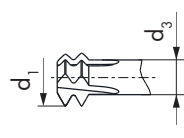
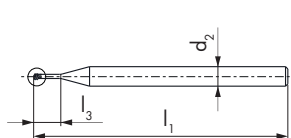


VS

GW3016VX



VX



GW3016

GW3016VS

GW3016VX



$\emptyset D_1$ UNF	P TPI	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0	80	1.15	39	4.3	3	0.71	3	1.2
1	72	1.44	39	5.1	3	0.95	3	1.5
2	64	1.73	39	6	3	1.17	3	1.8

ID

ID

ID

• 175235

• 175248

• 187311

• 175236

• 175249

• 187312

• 196162

• 186248

• 187313

GW

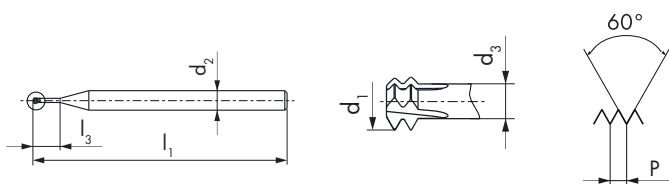
GW3017



GW3017VS



GW3017VX



GW3017

GW3017VS

GW3017VX



$\emptyset D_1$ UNF	P TPI	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0	80	1.15	39	5	3	0.71	3	1.2
1	72	1.44	39	6.1	3	0.95	3	1.5
2	64	1.73	39	7.1	3	1.17	3	1.8

ID

ID

ID

• 196228

• 186404

• 187439

• 196233

• 186405

• 187440

• 196234

• 186406

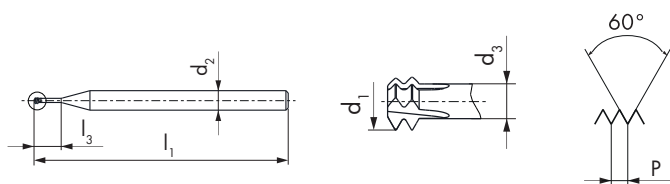
• 187441

GW

GW3019



GW3019VS



GW3019

GW3019VS



Ø D ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0	80	1.15	39	6.6	3	0.71	3	1.2
1	72	1.44	39	7.9	3	0.95	3	1.5
2	64	1.73	39	9.3	3	1.17	3	1.8

ID

ID

175264

175280

175265

175281

196262

186605

GW

GW3015



GW3015VS



GW3015VX



GW3015

GW3015VS

GW3015VX



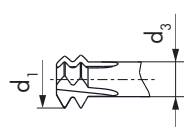
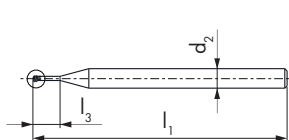
NEW



NEW



NEW



$\emptyset D_1$ S	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.8	0.2	0.57	39	1.9	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.1	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.4	3	0.36	3	0.82 ¹
1.2	0.25	0.91	39	2.8	3	0.56	3	1.02 ¹
1.4	0.3	1.06	39	3.2	3	0.64	3	1.18 ¹

ID

ID

ID

● 206471

● 206476

● 206481

● 206472

● 206477

● 206482

● 206473

● 206478

● 206483

● 206474

● 206479

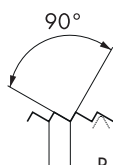
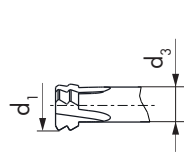
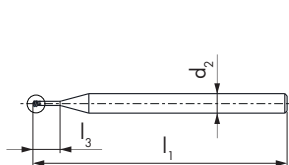
● 206484

● 206475

● 206480

● 206485

¹ 4H5H → 4H6H = $\emptyset$.02mm



$\emptyset D_1$ SL	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.8	0.15	0.63	39	1.8	3	0.42	3	0.74
0.9	0.175	0.7	39	2.1	3	0.46	3	0.83
1	0.2	0.77	39	2.3	3	0.49	3	0.92
1.2	0.2	0.97	39	2.7	3	0.69	3	1.12
1.4	0.25	1.11	39	3.2	3	0.76	3	1.3

ID

ID

● 600306

● 600311

● 600307

● 600312

● 600308

● 600313

● 600309

● 600314

● 600310

● 600315

GW

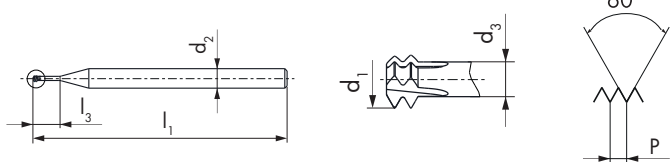
GW3016



GW3016VS



GW3016VX



GW3016

GW3016VS

GW3016VX



Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.2	0.57	39	2.3	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	2.6	3	0.33	3	0.74 ¹
1	0.25	0.71	39	2.9	3	0.36	3	0.82 ¹
1.2	0.25	0.91	39	3.4	3	0.56	3	1.02 ¹
1.4	0.3	1.06	39	3.9	3	0.64	3	1.18 ¹

ID

ID

ID

● 196168

● 194287

● 194305

● 196169

● 182875

● 194306

● 180683

● 168667

● 194307

● 196170

● 194288

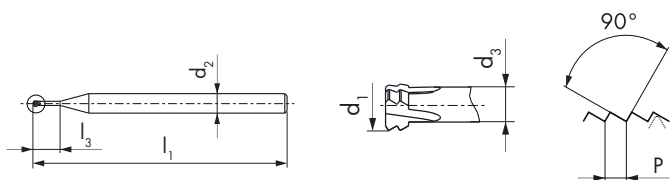
● 194308

● 196171

● 194289

● 194309

¹ 4H5H → 4H6H = Ø .02mm



Ø D ₁ SL	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.15	0.63	39	2.2	3	0.42	3	0.74
0.9	0.175	0.7	39	2.5	3	0.46	3	0.83
1	0.2	0.77	39	2.8	3	0.49	3	0.92
1.2	0.2	0.97	39	3.3	3	0.69	3	1.12
1.4	0.25	1.11	39	3.9	3	0.76	3	1.3

ID

ID

● 600028

● 600034

● 600029

● 600035

● 600030

● 600036

● 600031

● 600037

● 600032

● 600038

GW

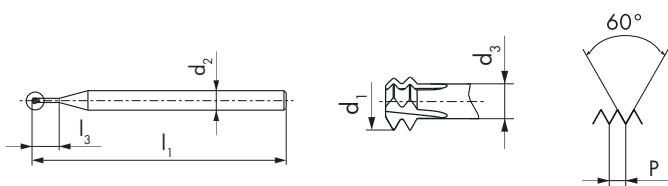
GW3017



GW3017VS



GW3017VX



GW3017

GW3017VS

GW3017VX



Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.2	0.57	39	2.7	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	3	3	0.33	3	0.74 ¹
1	0.25	0.71	39	3.4	3	0.36	3	0.82 ¹
1.2	0.25	0.91	39	4	3	0.56	3	1.02 ¹
1.4	0.3	1.06	39	4.6	3	0.64	3	1.18 ¹

ID

ID

ID

¹ 4H5H → 4H6H = Ø .02mm

GW

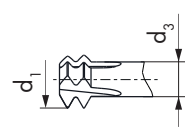
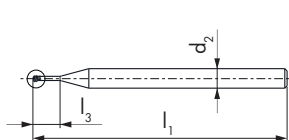
GW3019



GW3019VS



VS



$\emptyset D_1$ S	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.8	0.2	0.57	39	3.5	3	0.29	3	0.66 ¹
0.9	0.225	0.64	39	3.9	3	0.33	3	0.74 ¹
1	0.25	0.71	39	4.4	3	0.36	3	0.82 ¹
1.2	0.25	0.91	39	5.2	3	0.56	3	1.02 ¹
1.4	0.3	1.06	39	6	3	0.64	3	1.18 ¹

ID

ID

● 196270

● 194298

● 196271

● 194299

● 196274

● 194300

● 196272

● 194301

● 196273

● 194302

¹ 4H5H → 4H6H = $\emptyset$.02mm

GWi

GWi3065VS

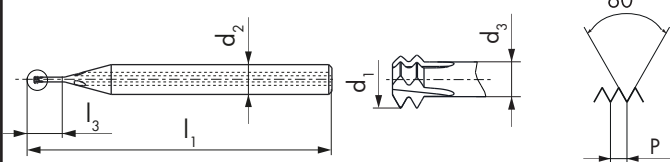


VS

GWi3065VX



VX



GWi3065VS

GWi3065VX



NEW



NEW



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0.8	0.2	0.57	40	1.9	3	0.29	3	0.66 ¹
0.9	0.225	0.64	40	2.1	3	0.33	3	0.74 ¹
1	0.25	0.71	40	2.4	3	0.36	3	0.75
1.2	0.25	0.91	40	2.8	3	0.56	3	0.95
1.4	0.3	1.06	40	3.2	4	0.64	3	1.1
1.6	0.35	1.2	40	3.7	4	0.71	3	1.25
1.8	0.35	1.4	40	4.1	4	0.91	3	1.45
2	0.4	1.54	40	4.6	4	0.98	3	1.6
2.3	0.4	1.84	40	5.2	4	1.28	3	1.9
2.5	0.45	1.98	40	5.6	4	1.35	3	2.05
2.6	0.45	2.08	40	5.8	4	1.45	3	2.15

ID

ID

● 206486	● 206502
● 206487	● 206503
● 206488	● 206504
● 206489	● 206505
● 206490	● 206506
● 206491	● 206507
● 206492	● 206508
● 206493	● 206509
● 206494	● 206510
● 206495	● 206511
● 206496	● 206512

¹ 4H5H → 4H6H = Ø .02mm

GWi

GWi3066VS

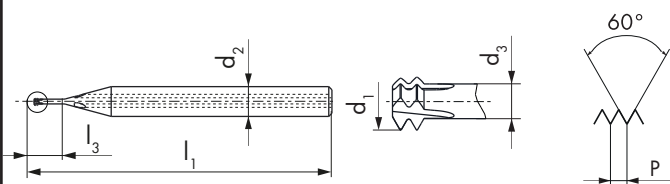


VS

GWi3066VX



VX



GWi3066VS

GWi3066VX



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0.8	0.2	0.57	40	2.3	3	0.29	3	0.66 ¹
0.9	0.225	0.64	40	2.6	3	0.33	3	0.74 ¹
1	0.25	0.71	40	2.9	3	0.36	3	0.75
1.2	0.25	0.91	40	3.4	3	0.56	3	0.95
1.4	0.3	1.06	40	3.9	4	0.64	3	1.1
1.6	0.35	1.2	40	4.5	4	0.71	3	1.25
1.8	0.35	1.4	40	5	4	0.91	3	1.45
2	0.4	1.54	40	5.6	4	0.98	3	1.6
2.3	0.4	1.84	40	6.3	4	1.28	3	1.9
2.5	0.45	1.98	40	6.9	4	1.35	3	2.05
2.6	0.45	2.08	40	7.1	4	1.45	3	2.15

ID

ID

● 186029

● 187325

● 186030

● 187326

● 186031

● 187327

● 186032

● 187328

● 186033

● 187329

● 186034

● 187330

● 186035

● 187331

● 186036

● 187332

● 194324

● 194334

● 186037

● 187333

● 194325

● 194335



4H5H → 4H6H = $\pm$.02mm

GWi

GWi3067VS



VS

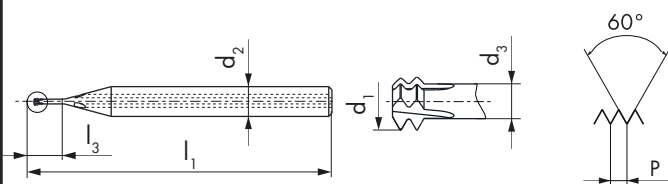
GWi3067VX



VX

GWi3067VS

GWi3067VX



$\emptyset D_1$ M	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h6 mm	d_3 mm		
1.4	0.3	1.06	40	4.6	4	0.64	3	1.1
1.6	0.35	1.2	40	5.3	4	0.71	3	1.25
1.8	0.35	1.4	40	5.9	4	0.91	3	1.45
2	0.4	1.54	40	6.6	4	0.98	3	1.6
2.3	0.4	1.84	40	7.5	4	1.28	3	1.9
2.5	0.45	1.98	40	8.1	4	1.35	3	2.05
2.6	0.45	2.08	40	8.4	4	1.45	3	2.15

ID

ID

● 186443

● 187453

● 186444

● 187454

● 186445

● 187455

● 186446

● 187456

● 194327

● 194337

● 186447

● 187457

● 194328

● 194338

GWi

GWi3065VS



VS

GWi3065VX



VX

GWi3066VS

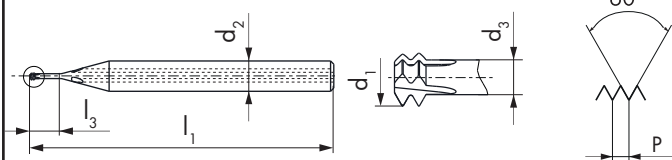


VS

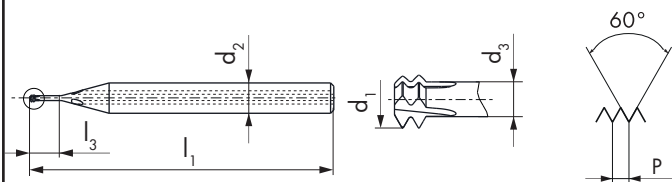
GWi3066VX



VX



Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
2	0.2	1.77	40	4.3	4	1.49	3	1.8
2	0.25	1.71	40	4.4	4	1.36	3	1.75
2.5	0.2	2.27	40	5.3	4	1.99	3	2.3
2.5	0.25	2.21	40	5.4	4	1.86	3	2.25



Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
2	0.2	1.77	40	5.3	4	1.49	3	1.8
2	0.25	1.71	40	5.4	4	1.36	3	1.75
2.5	0.2	2.27	40	6.6	4	1.99	3	2.3
2.5	0.25	2.21	40	6.6	4	1.86	3	2.25

GWi3065VS

GWi3065VX

GWi3066VS

GWi3066VX



NEW



NEW



ID

ID

- 206518
- 206519
- 206520
- 206521

- 206526
- 206527
- 206528
- 206529

ID

ID

- 186086
- 186087
- 186088
- 186089

- 187346
- 187347
- 187348
- 187349

GWi

GWi3067VS



VS

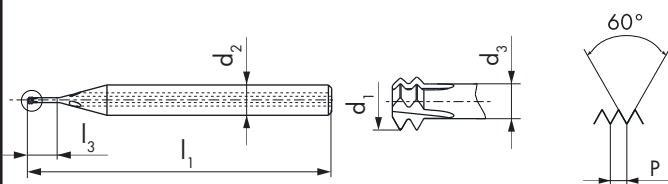
GWi3067VX



VX

GWi3067VS

GWi3067VX



Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
2	0.2	1.77	40	6.3	4	1.49	3	1.8
2	0.25	1.71	40	6.4	4	1.36	3	1.75
2.5	0.2	2.27	40	7.8	4	1.99	3	2.3
2.5	0.25	2.21	40	7.9	4	1.86	3	2.25

ID

ID

• 186488

• 187470

• 186489

• 187471

• 186490

• 187472

• 186491

• 187473

GWi

GWi3065VS



VS

GWi3065VX



VX

GWi3066VS

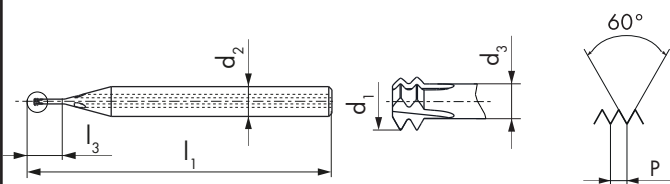


VS

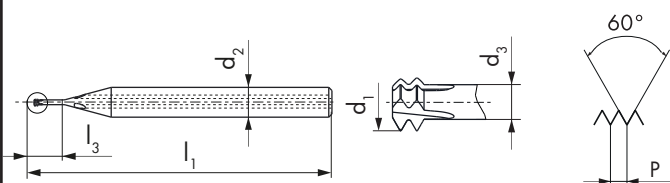
GWi3066VX



VX



Ø D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
2	56	1.66	40	5	4	1.02	3	1.75
3	48	1.91	40	5.8	4	1.17	3	2



Ø D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
2	56	1.66	40	6.1	4	1.02	3	1.75
3	48	1.91	40	7	4	1.17	3	2

GWi3065VS

GWi3065VX

GWi3066VS

GWi3066VX



NEW



NEW



ID

ID

● 206534

● 206543

● 206535

● 206544

ID

ID

● 186128

● 187362

● 186129

● 187363

GWi

GWi3065VS



VS

GWi3065VX



VX

GWi3066VS

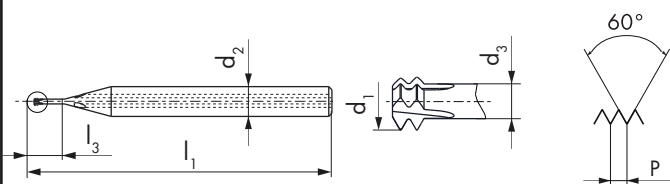


VS

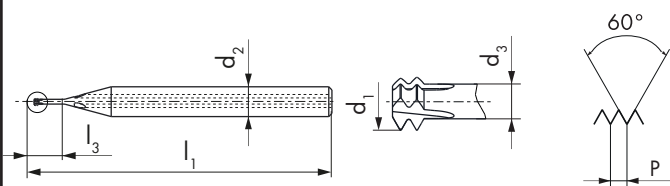
GWi3066VX



VX



Ø D ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0	80	1.15	40	3.5	4	0.71	3	1.2
1	72	1.44	40	4.2	4	0.95	3	1.5
2	64	1.73	40	4.9	4	1.17	3	1.8



Ø D ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0	80	1.15	40	4.3	4	0.71	3	1.2
1	72	1.44	40	5.1	4	0.95	3	1.5
2	64	1.73	40	6	4	1.17	3	1.8

GWi3065VS

GWi3065VX

GWi3066VS

GWi3066VX



ID

ID

● 206552

● 206562

● 206553

● 206563

● 206554

● 206564

ID

ID

● 186167

● 187375

● 186168

● 187376

● 186169

● 187377

GWi

GWi3065VS

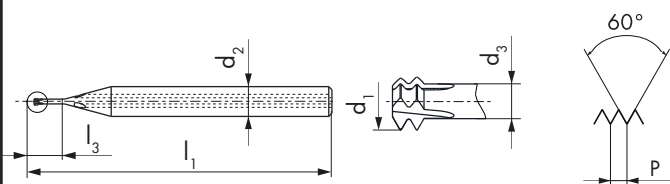


VS

GWi3065VX



VX



GWi3065VS

GWi3065VX



NEW



NEW



2 x D₁



2 x D₁

Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0.8	0.2	0.57	40	1.9	3	0.29	3	0.66 ¹
0.9	0.225	0.64	40	2.1	3	0.33	3	0.74 ¹
1	0.25	0.71	40	2.4	3	0.36	3	0.82 ¹
1.2	0.25	0.91	40	2.8	3	0.56	3	1.02 ¹
1.4	0.3	1.06	40	3.2	4	0.64	3	1.18 ¹

ID

ID

• 206572

• 206577

• 206573

• 206578

• 206574

• 206579

• 206575

• 206580

• 206576

• 206581

¹ 4H5H → 4H6H = Ø .02mm

GWi

GWi3066VS



VS

GWi3066VX



VX

GWi3067VS

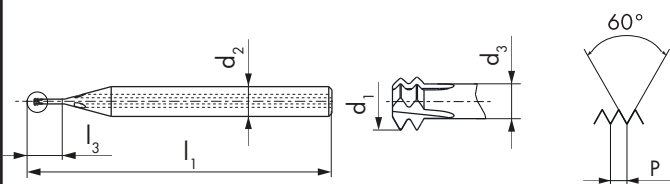


VS

GWi3067VX



VX



Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0.8	0.2	0.57	40	2.3	3	0.29	3	0.66 ¹
0.9	0.225	0.64	40	2.6	3	0.33	3	0.74 ¹
1	0.25	0.71	40	2.9	3	0.36	3	0.82 ¹
1.2	0.25	0.91	40	3.4	3	0.56	3	1.02 ¹
1.4	0.3	1.06	40	3.9	4	0.64	3	1.18 ¹

¹ 4H5H → 4H6H = 0.02mm

GWi3066VS

GWi3066VX

GWi3067VS

GWi3067VX



ID

ID

● 194319

● 194329

● 194320

● 194330

● 194321

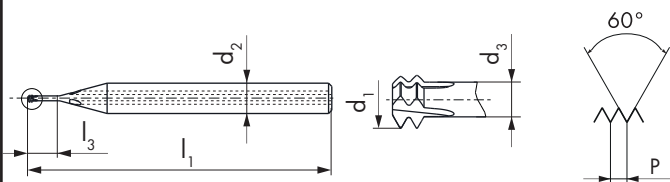
● 194331

● 194322

● 194332

● 194323

● 194333



Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
1.4	0.3	1.06	40	4.6	4	0.64	3	1.18 ¹

¹ 4H5H → 4H6H = 0.02mm

ID

ID

● 194326

● 194336

GWi

GWi5065VS



GWi5065VS

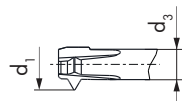
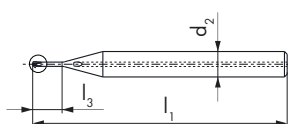


NEW

LH-rot.



2 x D₁



$\emptyset D_1$ M	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h6 mm	d_3 mm		
0.8	0.2	0.55	40	1.9	3	0.27	1	0.58 ¹
0.9	0.225	0.62	40	2.2	3	0.31	1	0.65 ¹
1	0.25	0.66	40	2.4	3	0.31	1	0.7 ¹
1.2	0.25	0.86	40	2.8	3	0.51	1	0.9 ¹
1.4	0.3	1.03	40	3.3	4	0.61	1	1.05 ¹
1.6	0.35	1.16	40	3.8	4	0.67	1	1.19 ¹
1.8	0.35	1.36	40	4.2	4	0.87	1	1.39 ¹
2	0.4	1.5	40	4.6	4	0.94	1	1.54 ¹
2.5	0.45	1.94	40	5.7	4	1.31	1	1.98 ¹

ID

- 206582
- 206583
- 206584
- 206585
- 206586
- 206587
- 206588
- 206589
- 206590

¹  Tol. = $\pm$ /0.02mm

GWi

GWi5066VS



GWi5067VS



GWi5066VS

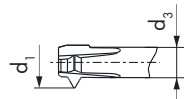
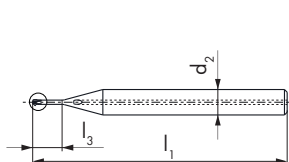
GWi5067VS



LH-rot.



LH-rot.

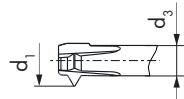
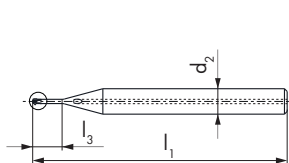


$\emptyset D_1$ M	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h6 mm	d_3 mm		
0.8	0.2	0.55	40	2.3	3	0.27	1	0.58 ¹
0.9	0.225	0.62	40	2.6	3	0.31	1	0.65 ¹
1	0.25	0.66	40	2.9	3	0.31	1	0.7 ¹
1.2	0.25	0.86	40	3.4	3	0.51	1	0.9 ¹
1.4	0.3	1.03	40	4	4	0.61	1	1.05 ¹
1.6	0.35	1.16	40	4.6	4	0.67	1	1.19 ¹
1.8	0.35	1.36	40	5.1	4	0.87	1	1.39 ¹
2	0.4	1.5	40	5.6	4	0.94	1	1.54 ¹
2.5	0.45	1.94	40	7	4	1.31	1	1.98 ¹

¹  Tol. = $\pm$ /0.02mm

ID

- 189165
- 189166
- 189167
- 189168
- 189169
- 189170
- 189171
- 189172
- 189173



$\emptyset D_1$ M	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h6 mm	d_3 mm		
1.4	0.3	1.03	40	4.7	4	0.61	1	1.05 ¹
1.6	0.35	1.16	40	5.4	4	0.67	1	1.19 ¹
1.8	0.35	1.36	40	6	4	0.87	1	1.39 ¹
2	0.4	1.5	40	6.6	4	0.94	1	1.54 ¹
2.5	0.45	1.94	40	8.2	4	1.31	1	1.98 ¹

¹  Tol. = $\pm$ /0.02mm

ID

- 189174
- 189175
- 189176
- 189177
- 189178

GWi

GWi5065VS



VS

GWi5066VS



VS

GWi5065VS

GWi5066VS



NEW



LH-rot.



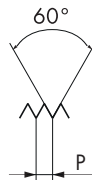
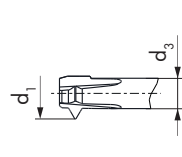
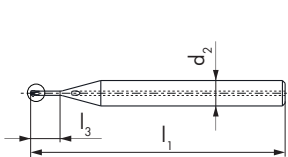
LH-rot.



2 x D₁



2.5 x D₁

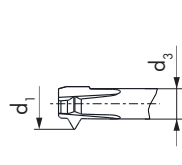
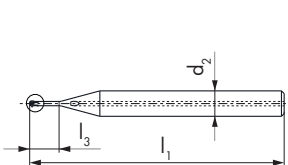


Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0.8	0.2	0.55	40	1.9	3	0.27	1	0.59 ¹
0.9	0.225	0.62	40	2.2	3	0.31	1	0.67 ¹
1	0.25	0.66	40	2.4	3	0.31	1	0.74 ¹
1.2	0.25	0.86	40	2.8	3	0.51	1	0.94 ¹
1.4	0.3	1.03	40	3.3	4	0.61	1	1.09 ¹

¹ Tol. = $\pm$ /0.01mm

ID

- 206601
- 206602
- 206603
- 206604
- 206605



Ø D ₁ S	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h6 mm	d ₃ mm		
0.8	0.2	0.55	40	2.3	3	0.27	1	0.59 ¹
0.9	0.225	0.62	40	2.6	3	0.31	1	0.67 ¹
1	0.25	0.66	40	2.9	3	0.31	1	0.74 ¹
1.2	0.25	0.86	40	3.4	3	0.51	1	0.94 ¹
1.4	0.3	1.03	40	4	4	0.61	1	1.09 ¹

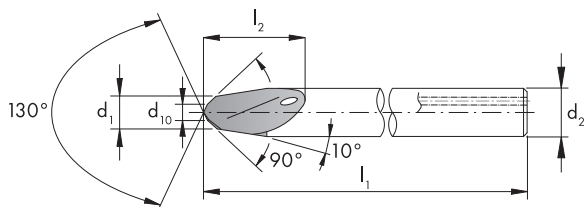
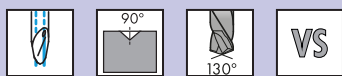
¹ Tol. = $\pm$ /0.01mm

ID

- 189204
- 189205
- 189206
- 189207
- 189208

C

C315VS



C315VS



$\emptyset d_1$	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

ID

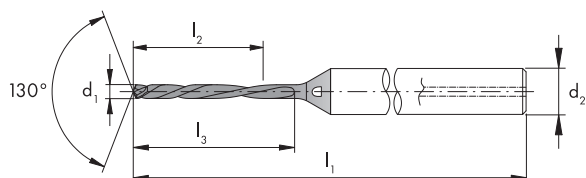
- 182872
- 182873
- 182874

FZ

FZ315VS



VS



FZ315VS



$\emptyset d_1$	D_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm		ID
0.58	M0.8	42	4.6	5.7	3	2	● 182863
0.59	S0.8	42	4.7	5.8	3	2	● 188023
0.65	M0.9	45	5.2	6.4	3	2	● 182864
0.67	S0.9	45	5.4	6.6	3	2	● 188024
0.7	M1	45	5.6	6.9	3	2	● 182865
0.74	S1	45	5.9	7.3	3	2	● 188025
0.9	M1.2	45	7.2	8.8	3	2	● 182866
0.94	S1.2	48	7.5	9.2	3	2	● 188026
1.05	M1.4	48	8.4	10.3	3	2	● 182867
1.09	S1.4	48	8.7	10.7	3	2	● 188027
1.19	M1.6	48	9.5	11.7	3	2	● 182868
1.39	M1.8	52	11.1	13.6	4	2	● 182869
1.54	M2	55	12.3	15.1	4	2	● 182870
1.98	M2.5	55	15.8	19.4	4	2	● 182871



DN5701-1

DN5701-1 S0.7 3G GO

DN5701-1 S0.7 4H GO

DN5701-2 S0.7 4H 3G NO GO

DN5701-1-1

DN5701-2



THREADING SOLUTIONS

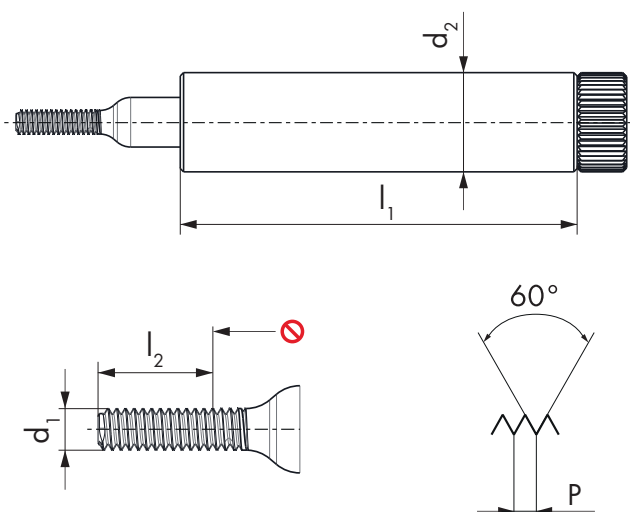
GAUGES IN CERAMIC ON REQUEST



THREADING SOLUTIONS



nano



DN01 Go

DN02 NoGo

DN01 Go

DN02 NoGo



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.

nano

DZ04 Go

DZ14 NoGo

DZ04 Go

DZ14 NoGo

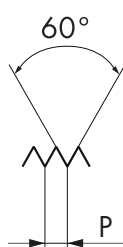
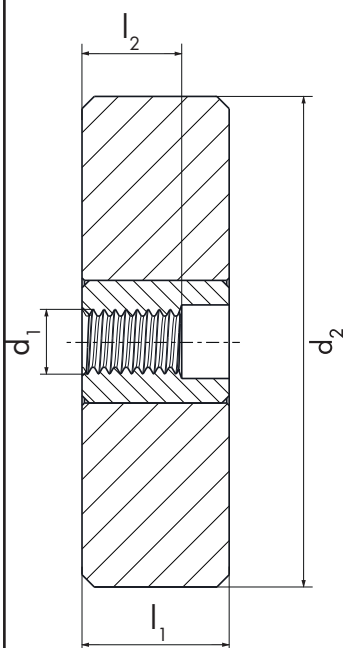


5h

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	6	0.45	20	● 192842	● 192850		
0.35	0.09	6	0.53	20	● 192843	● 192851		
0.4	0.1	6	0.6	20	● 192844	● 192852		
0.5	0.125	6	0.75	20	● 192845	● 192853		
0.6	0.15	6	0.9	20	● 192846	● 192854		
0.7	0.175	6	1.05	20	● 192847	● 192855		
0.8	0.2	6	1.2	20	● 192848	● 192856		
0.9	0.225	6	1.35	20	● 192849	● 192857		
1	0.25	6	1.5	20			● 191473	● 191476
1.2	0.25	6	1.8	20			● 191474	● 191477
1.4	0.3	6	2.1	20			● 191475	● 191478

6g

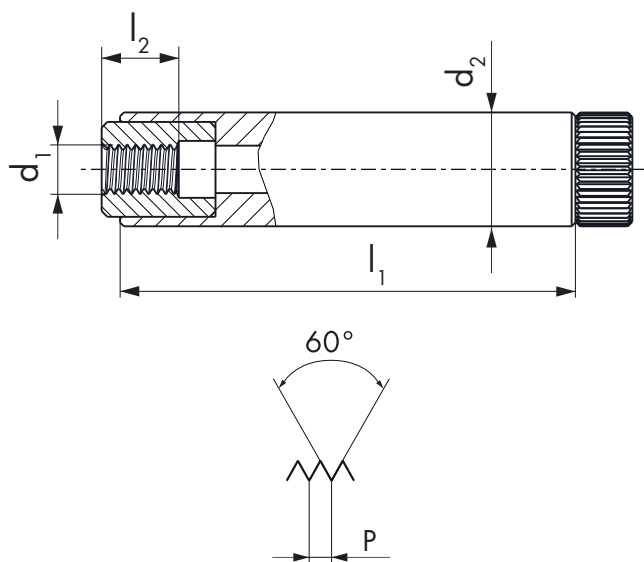
6g

$\emptyset d_1$ M	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.6	0.35	6	2.4	20	● 191479	● 191485
1.8	0.35	6	2.7	20	● 191480	● 191486
2	0.4	6	3	20	● 191481	● 191487
2.3	0.4	6	3.45	20	● 191482	● 191488
2.5	0.45	6	3.75	20	● 191483	● 191489
2.6	0.45	6	3.9	20	● 191484	● 191490



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

nano



DN04 Go

DN14 NoGo

DN04 Go

DN14 NoGo



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	0.45	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

6g

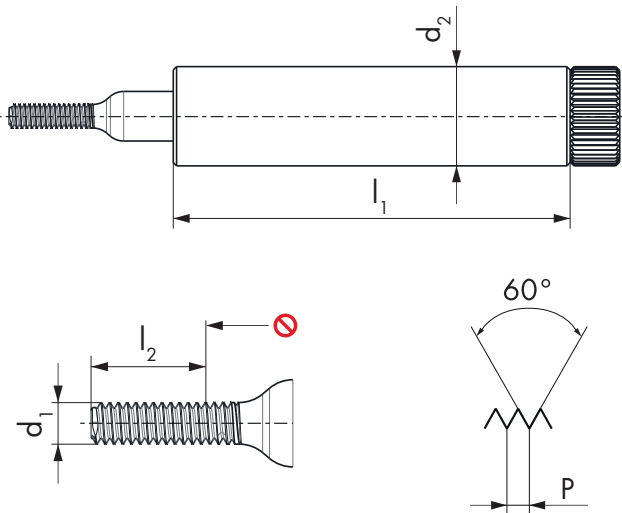
6g

$\emptyset d_1$ M	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.6	0.35	24	2.4	6	● 191453	● 191459
1.8	0.35	24	2.7	6	● 191454	● 191460
2	0.4	24	3	6	● 191455	● 191461
2.3	0.4	24	3.45	6	● 191456	● 191462
2.5	0.45	24	3.75	6	● 191457	● 191463
2.6	0.45	24	3.9	6	● 191458	● 191464



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

nano



DN01 Go

DN02 NoGo

DN01 Go

DN02 NoGo



4H

4H

6H

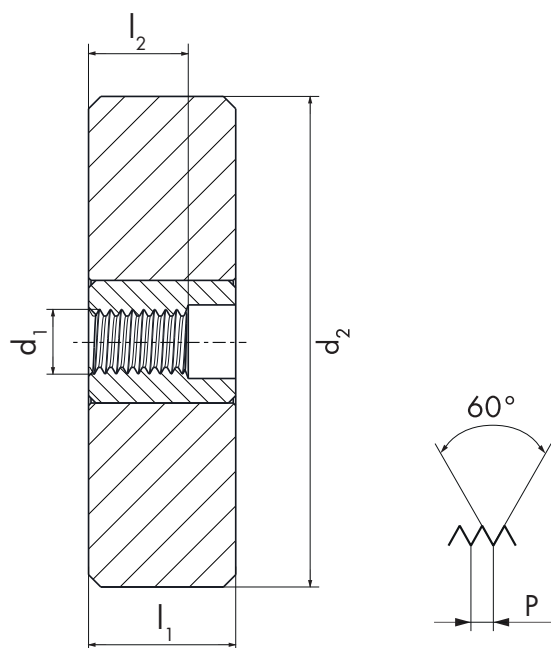
6H

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID	ID	ID
1.4	0.2	24	4.2	6	● 191116	● 191130		
1.6	0.2	24	3	6	● 191117	● 191131		
1.8	0.2	24	3	6	● 191118	● 191132		
2	0.2	24	3	6	● 191119	● 191133		
2	0.25	24	3	6	● 192794	● 192797		
2.2	0.2	24	3	6	● 191120	● 191134		
2.2	0.25	24	3	6	● 191121	● 191135		
2.3	0.2	24	3	6	● 191122	● 191136		
2.3	0.25	24	3	6	● 191123	● 191137		
2.5	0.2	24	3	6	● 191124	● 191138		
2.5	0.25	24	3	6	● 191125	● 191139		
2.5	0.35	24	4.5	6			● 192795	● 192798
2.6	0.35	24	4.5	6			● 192796	● 192799



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

nano



DZ04 Go

DZ14 NoGo

DZ04 Go

DZ14 NoGo



4h

4h

6h

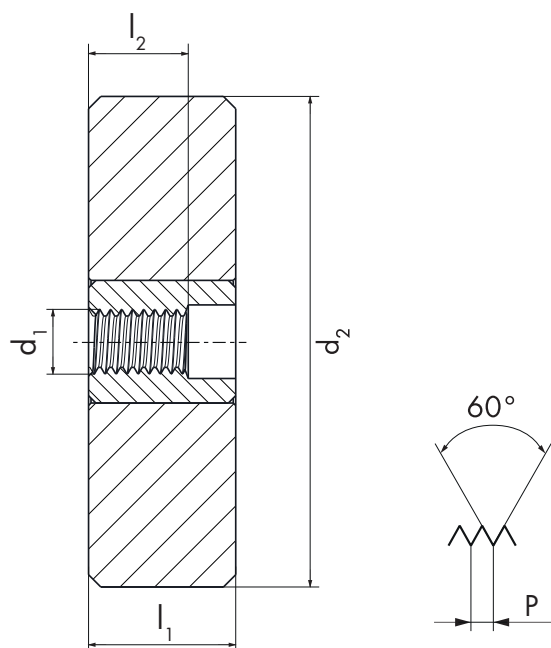
6h

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID	ID	ID
1.4	0.2	6	2.1	20	● 194887	● 194888	● 192858	● 192871
1.6	0.2	6	1.8	20	● 191201	● 191215	● 192859	● 192872
1.8	0.2	6	1.8	20	● 191202	● 191216	● 192860	● 192873
2	0.2	6	1.8	20	● 190711	● 190710	● 192861	● 192874
2	0.25	6	2.25	20	● 194872	● 190690	● 192862	● 192875
2.2	0.2	6	1.8	20	● 191204	● 191218	● 192863	● 192876
2.2	0.25	6	2.25	20	● 191205	● 191219	● 192864	● 192877
2.3	0.2	6	1.8	20	● 191206	● 191220	● 192865	● 192878
2.3	0.25	6	2.25	20	● 191207	● 191221	● 192866	● 192879
2.5	0.2	6	1.8	20	● 191208	● 191222	● 192867	● 192880
2.5	0.25	6	2.25	20	● 194873	● 191223	● 192868	● 192881



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nano



DZ04 Go

DZ14 NoGo



6g

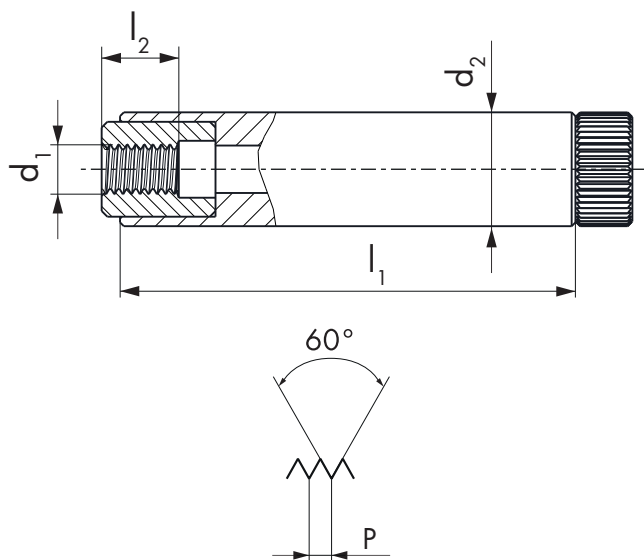
6g

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID
1.6	0.2	6	1.8	20	● 191229	● 191243
1.8	0.2	6	1.8	20	● 191230	● 191244
2	0.2	6	1.8	20	● 191231	● 191245
2	0.25	6	2.25	20	● 194876	● 194877
2.2	0.2	6	1.8	20	● 191232	● 191246
2.2	0.25	6	2.25	20	● 191233	● 191247
2.3	0.2	6	1.8	20	● 191234	● 191248
2.3	0.25	6	2.25	20	● 191235	● 191249
2.5	0.2	6	1.8	20	● 191236	● 191250
2.5	0.25	6	2.25	20	● 191237	● 191251
2.5	0.35	6	3.75	20	● 192869	● 192882
2.6	0.35	6	3.9	20	● 192870	● 192883



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nano



DN04 Go

DN14 NoGo

DN04 Go

DN14 NoGo



4h

4h

6h

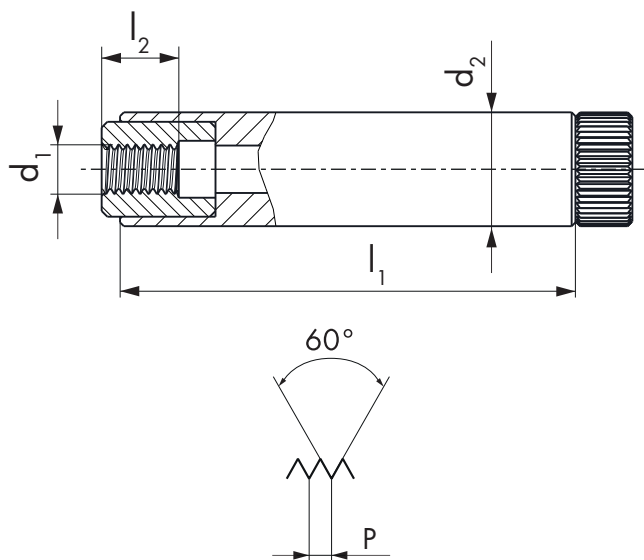
6h

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID	ID	ID
1.4	0.2	24	2.1	6	● 194885	● 194886	● 192816	● 192829
1.6	0.2	24	1.8	6	● 191145	● 191159	● 192817	● 192830
1.8	0.2	24	1.8	6	● 191146	● 191160	● 192818	● 192831
2	0.2	24	1.8	6	● 191147	● 191161	● 192819	● 192832
2	0.25	24	2.25	6	● 194870	● 194871	● 192820	● 192833
2.2	0.2	24	1.8	6	● 191148	● 191162	● 192821	● 192834
2.2	0.25	24	2.25	6	● 191149	● 191163	● 192822	● 192835
2.3	0.2	24	1.8	6	● 191150	● 191164	● 192823	● 192836
2.3	0.25	24	2.25	6	● 191151	● 191165	● 192824	● 192837
2.5	0.2	24	1.8	6	● 191152	● 191166	● 192825	● 192838
2.5	0.25	24	2.25	6	● 191153	● 191167	● 192826	● 192839



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nano



DN04 Go

DN14 NoGo



6g

6g

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID
1.6	0.2	24	1.8	6	● 191173	● 191187
1.8	0.2	24	1.8	6	● 191174	● 191188
2	0.2	24	1.8	6	● 191175	● 191189
2	0.25	24	2.25	6	● 194874	● 194875
2.2	0.2	24	1.8	6	● 191176	● 191190
2.2	0.25	24	2.25	6	● 191177	● 191191
2.3	0.2	24	1.8	6	● 191178	● 191192
2.3	0.25	24	2.25	6	● 191179	● 191193
2.5	0.2	24	1.8	6	● 191180	● 191194
2.5	0.25	24	2.25	6	● 191181	● 191195
2.5	0.35	24	3.75	6	● 192827	● 192840
2.6	0.35	24	3.9	6	● 192828	● 192841



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

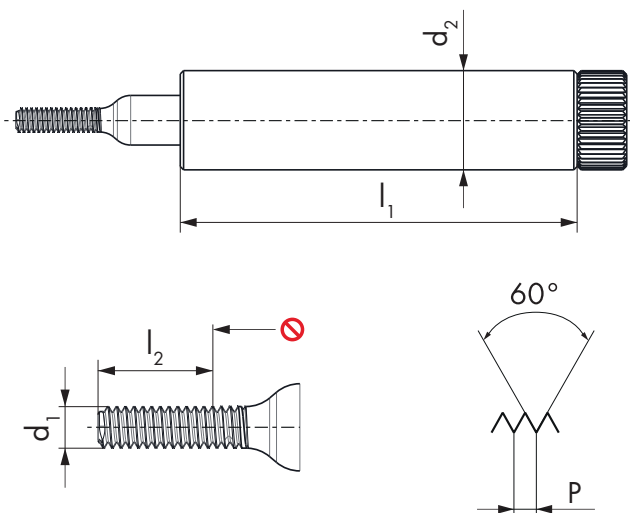
UNC, UNF

ASME B1.1

ASME B1.2

VHM
CAR

nano



DN01 Go

DN02 NoGo

DN01 Go

DN02 NoGo



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	56	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.

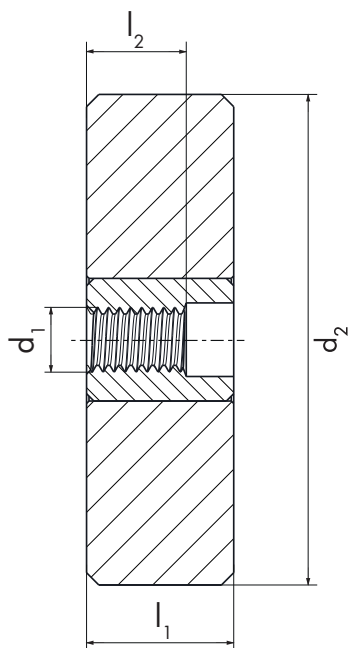
UNC, UNF

ASME B1.1

DZ04: ASME B1.2 / DZ14: ASME B1.2, DC SWISS NI590

PHYN.
KL

nano



DZ04 Go

DZ14 NoGo

DZ04 Go

DZ14 NoGo



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



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

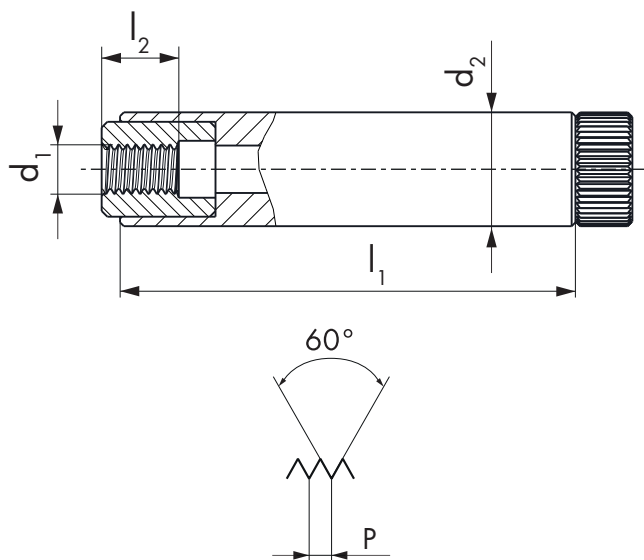
UNC, UNF

ASME B1.1

DN04: ASME B1.2 / DN14: ASME B1.2, DC SWISS NI590

PHYN.
KL

nano



DN04 Go

DN14 NoGo

DN04 Go

DN14 NoGo



2A

2A

3A

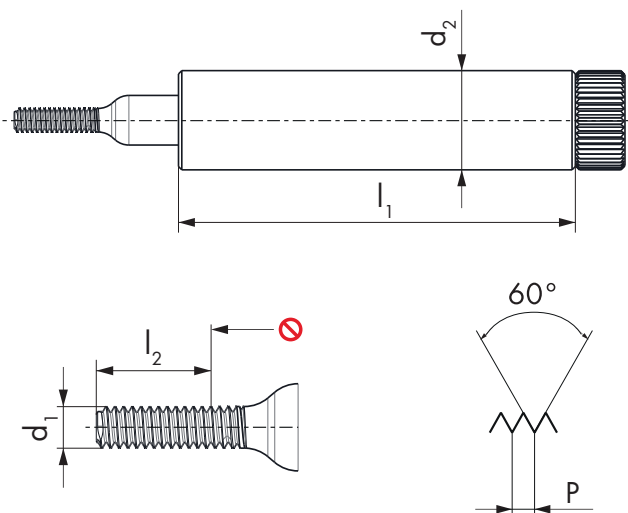
3A

$\emptyset d_1$ 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



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nano



DN01 Go

DN01 Go

DN02 NoGo



NIHS
3G

NIHS
4H

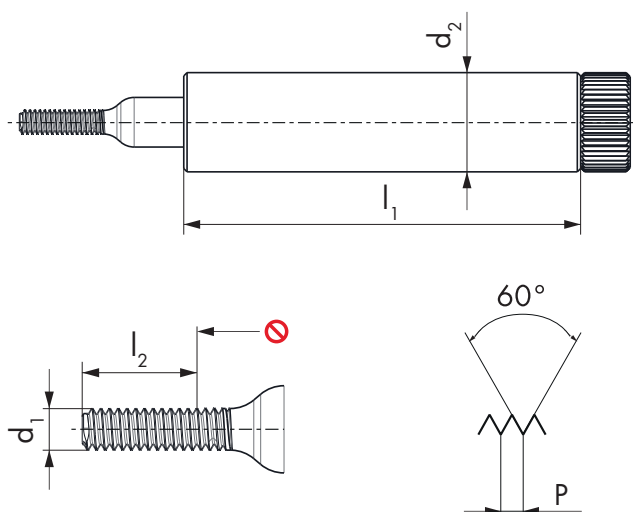
NIHS
4H/3G

$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.3	0.08	24	0.9	6	● 200638	● 200667	● 200698
0.35	0.09	24	1.05	6	● 200639	● 200668	● 200699
0.4	0.1	24	1.2	6	● 200640	● 200669	● 200700
0.45	0.1	24	1.35	6	● 200641	● 200670	● 200701
0.5	0.125	24	1.5	6	● 200642	● 200671	● 200702
0.55	0.125	24	1.65	6	● 200643	● 200672	● 200703
0.6	0.15	24	1.8	6	● 200644	● 200673	● 200704
0.7	0.175	24	2.1	6	● 200645	● 200674	● 200705
0.8	0.2	24	2.4	6	● 200646	● 200675	● 200706
0.9	0.225	24	2.7	6	● 200647	● 200676	● 200707
1	0.25	24	3	6	● 200648	● 200677	● 200708
1.1	0.25	24	3.3	6	● 201027	● 200678	● 201028
1.2	0.25	24	3.6	6	● 200649	● 200679	● 200709
1.3	0.3	24	3.9	6	● 201026	● 200680	● 200710
1.4	0.3	24	4.2	6	● 200650	● 200681	● 200711



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nano



LH

DN01 Go
LH

DN01 Go
LH

DN02 NoGo
LH



NIHS
3G

NIHS
4H

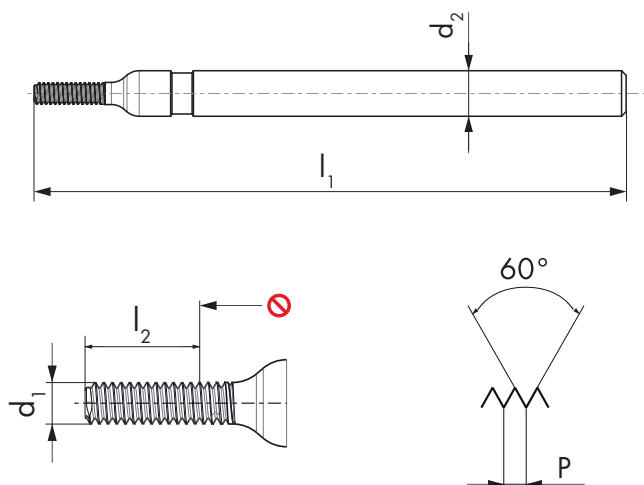
NIHS
4H/3G

$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.4	0.1	24	1.2	6	● 204319	● 204327	● 204329
0.5	0.125	24	1.5	6	● 202073	● 203195	● 203205
0.6	0.15	24	1.8	6	● 203614	● 203197	● 203207
0.7	0.175	24	2.1	6	● 201739	● 203054	● 203056
0.8	0.2	24	2.4	6	● 204321	● 203199	● 203209
0.9	0.225	24	2.7	6	● 204323	● 203201	● 203211
1	0.25	24	3	6	● 204325	● 203203	● 203213
1.2	0.25	24	3.6	6	● 204672	● 204676	● 204680
1.4	0.3	24	4.2	6	● 204674	● 204678	● 204682



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nano



DN5701-1
Go

DN5701-1
Go

DN5701-2
NoGo



NEW



NEW



NEW

NIHS
3G

NIHS
4H

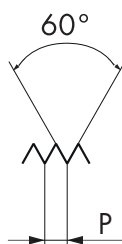
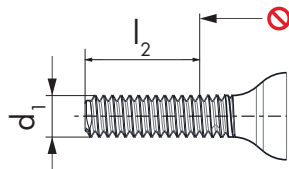
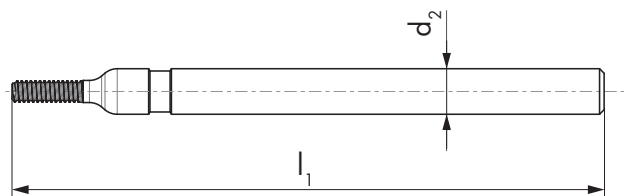
NIHS
4H/3G

$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.3	0.08	39	0.9	3	● 207782	● 207783	● 207795
0.35	0.09	39	1.05	3	● 207784	● 207785	● 207796
0.4	0.1	39	1.2	3	● 205378	● 207786	● 205380
0.5	0.125	39	1.5	3	● 202901	● 207787	● 205553
0.6	0.15	39	1.8	3	● 202249	● 205729	● 203347
0.7	0.175	39	2.1	3	● 202932	● 205581	● 205373
0.8	0.2	39	2.4	3	● 203052	● 207788	● 207797
0.9	0.225	39	2.7	3	● 203520	● 207789	● 203522
1	0.25	39	3	3	● 203541	● 207790	● 203963
1.2	0.25	39	3.6	3	● 207791	● 207792	● 207798
1.4	0.3	39	4.2	3	● 207793	● 207794	● 207799



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nano



LH

DN5701-1
Go LH

DN5701-1
Go LH

DN5701-2
NoGo LH



NEW



NEW



NEW

NIHS
3G

NIHS
4H

NIHS
4H/3G

$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.4	0.1	39	1.2	3	● 207758	● 207764	● 207773
0.5	0.125	39	1.5	3	● 202219	● 207765	● 207774
0.6	0.15	39	1.8	3	● 202955	● 207766	● 205189
0.7	0.175	39	2.1	3	● 203586	● 207767	● 207776
0.8	0.2	39	2.4	3	● 207759	● 207768	● 207777
0.9	0.225	39	2.7	3	● 207760	● 207769	● 207778
1	0.25	39	3	3	● 207761	● 207770	● 207779
1.2	0.25	39	3.6	3	● 207762	● 207771	● 207780
1.4	0.3	39	4.2	3	● 207763	● 207772	● 207781



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

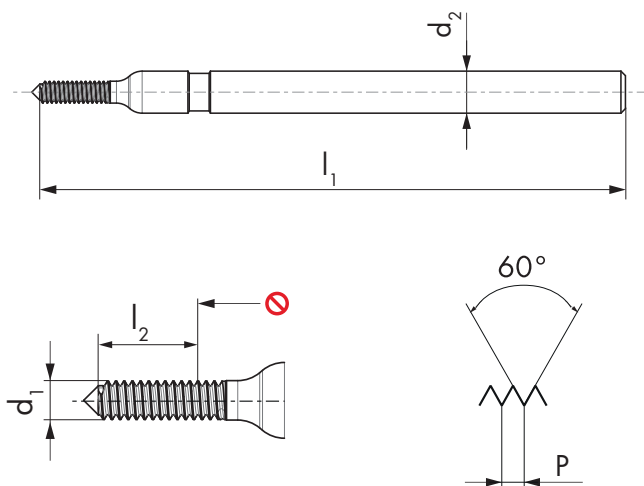
nano

DH5701-1
Go



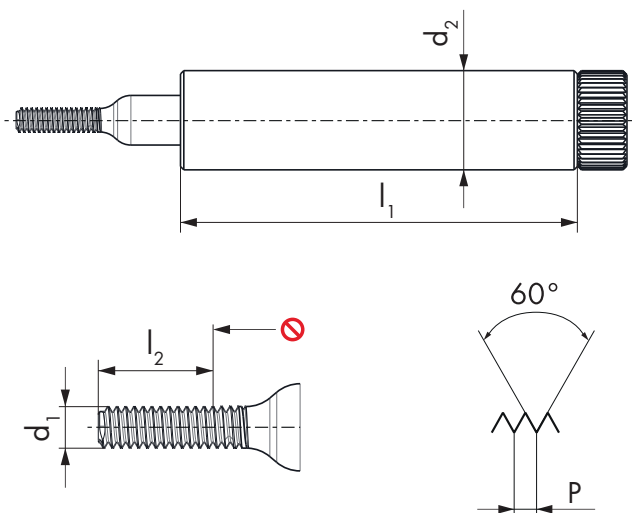
NEW

NIHS
3G



$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID
0.6	0.15	39	1.8	2.8	● 207800
0.7	0.175	39	2.1	2.8	● 207801
0.8	0.2	39	2.4	2.8	● 207802
0.9	0.225	39	2.7	2.8	● 207803
1	0.25	39	3	2.8	● 207804
1.2	0.25	39	3.6	2.8	● 207805
1.4	0.3	39	4.2	2.8	● 207806

nano



DN01 Go

DN01 Go

DN02 NoGo



NIHS
3G

NIHS
4H

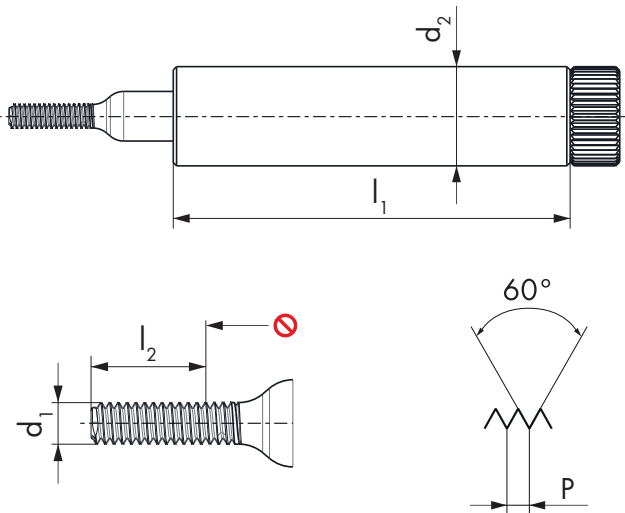
NIHS
4H/3G

$\emptyset d_1$ 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



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nano



DN01 Go

DN02 NoGo

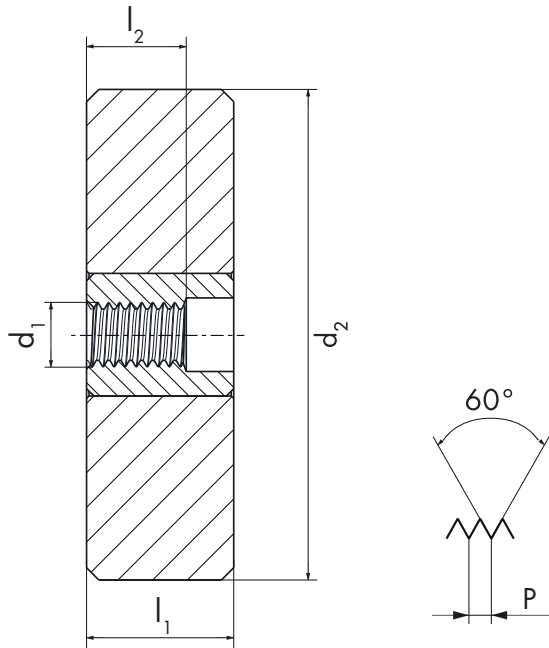


$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
0.3	0.08	24	0.9	6	● 190771	● 190790
0.35	0.09	24	1.05	6	● 190772	● 190791
0.4	0.1	24	1.2	6	● 190773	● 190792
0.5	0.125	24	1.5	6	● 190774	● 190793
0.6	0.15	24	1.8	6	● 190775	● 190794
0.7	0.175	24	2.1	6	● 190776	● 190795
0.8	0.2	24	2.4	6	● 190777	● 190796
0.9	0.225	24	2.7	6	● 190778	● 190797
1	0.25	24	3	6	● 190779	● 190798
1.2	0.25	24	3.6	6	● 190780	● 190799
1.4	0.3	24	4.2	6	● 190781	● 190800



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

nano



DZ04 Go

DZ04 Go

DZ14 NoGo



NIHS
4g

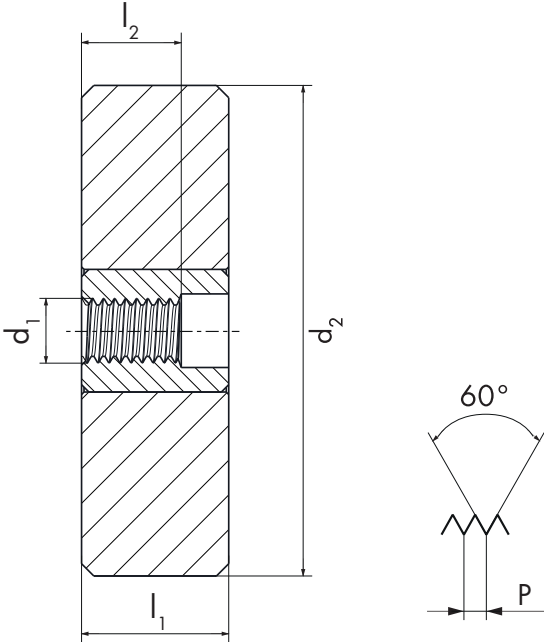
NIHS
5h

NIHS
5h/4g

$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.3	0.08	6	0.45	20	200795	200818	200848
0.35	0.09	6	0.53	20	200796	200819	200849
0.4	0.1	6	0.6	20	200797	200820	200850
0.45	0.1	6	0.68	20	200798	200821	200851
0.5	0.125	6	0.75	20	200799	200822	200852
0.55	0.125	6	0.83	20	200800	200823	200853
0.6	0.15	6	0.9	20	200801	200824	200854
0.7	0.175	6	1.05	20	200802	200825	200855
0.8	0.2	6	1.2	20	200803	200826	200856
0.9	0.225	6	1.35	20	200804	200827	200857
1	0.25	6	1.5	20	200805	200828	200858
1.1	0.25	6	1.65	20	200806	201030	201032
1.2	0.25	6	1.8	20	200807	200829	200859
1.3	0.3	6	1.95	20	200808	200830	200860
1.4	0.3	6	2.1	20	200809	200831	200861

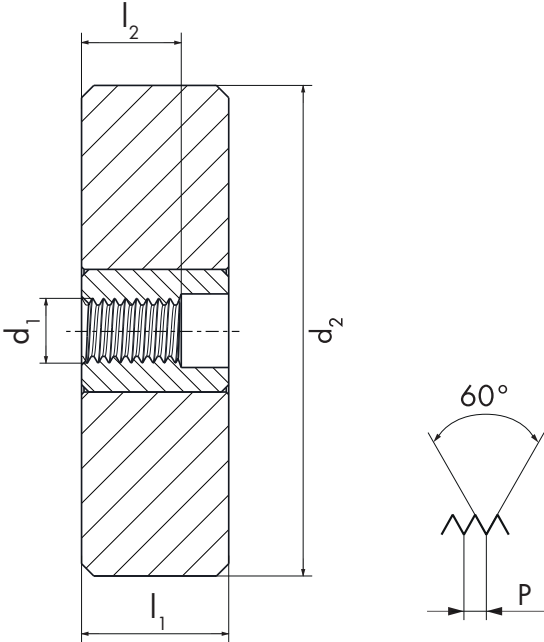


All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.

nano					DZ04 Go LH	DZ04 Go LH	DZ14 NoGo LH	
								
LH					NIHS 4g	NIHS 5h	NIHS 5h/4g	
$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID	
0.4	0.1	6	0.6	20	● 204331	● 202146	● 202148	
0.5	0.125	6	0.75	20	● 203062	● 203620	● 203064	
0.6	0.15	6	0.9	20	● 203616	● 203621	● 203623	
0.7	0.175	6	1.05	20	● 203618	● 203058	● 203060	
0.8	0.2	6	1.2	20	● 204333	● 204339	● 204345	
0.9	0.225	6	1.35	20	● 204335	● 204341	● 204347	
1	0.25	6	1.5	20	● 204337	● 204343	● 204349	
1.2	0.25	6	1.8	20	● 204684	● 204688	● 204692	
1.4	0.3	6	2.1	20	● 204686	● 204690	● 204694	



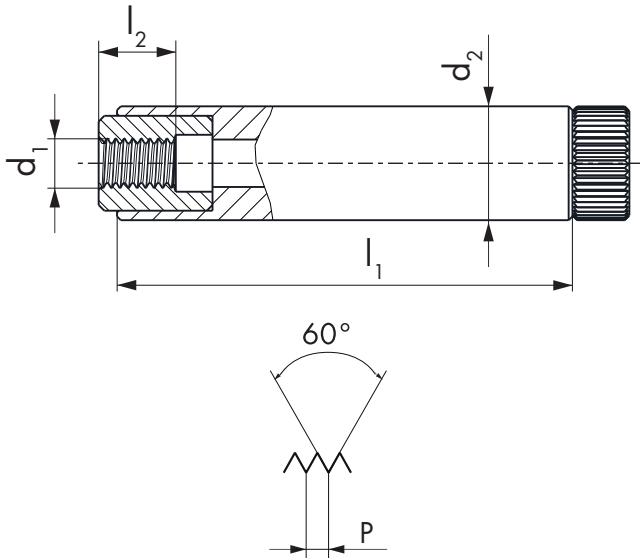
All nano ring gauges have a certificate of measurement, established with SCS certified plug check gauges. The paid certificate is available on request.

nano					DZ04 Go	DZ14 NoGo	DZ04 Go	DZ14 NoGo
								
					NIHS NIHS NIHS NT NIHS NT			
Ø d ₁ s	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID	ID	ID
0.3	0.08	6	0.45	20	● 190809	● 190828	● 190847	● 190866
0.35	0.09	6	0.53	20	● 190810	● 190829	● 190848	● 190867
0.4	0.1	6	0.6	20	● 190811	● 190830	● 190849	● 190868
0.5	0.125	6	0.75	20	● 190812	● 190831	● 190850	● 190869
0.6	0.15	6	0.9	20	● 190813	● 190832	● 190851	● 190870
0.7	0.175	6	1.05	20	● 190814	● 190833	● 190852	● 190871
0.8	0.2	6	1.2	20	● 190815	● 190834	● 190853	● 190872
0.9	0.225	6	1.35	20	● 190816	● 190835	● 190854	● 190873
1	0.25	6	1.5	20	● 190817	● 190836	● 190855	● 190874
1.2	0.25	6	1.8	20	● 190818	● 190837	● 190856	● 190875
1.4	0.3	6	2.1	20	● 190819	● 190838	● 190857	● 190876



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

DN04 Go

DN14 NoGo



NIHS
4g

NIHS
5h

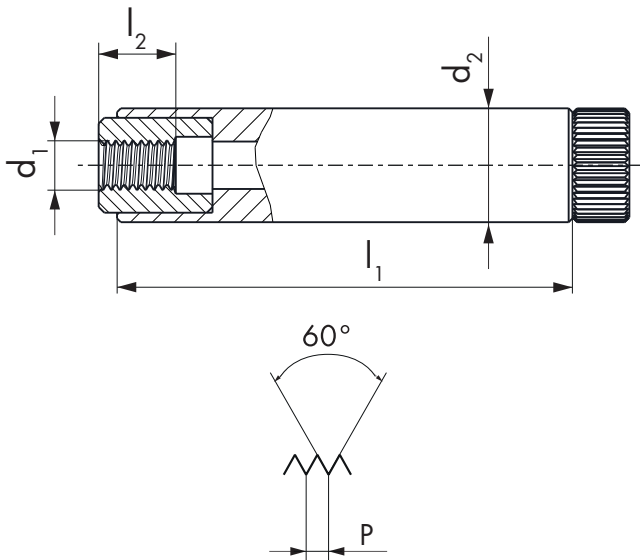
NIHS
5h/4g

$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.3	0.08	24	0.45	6	● 200720	● 200743	● 200773
0.35	0.09	24	0.53	6	● 200721	● 200744	● 200774
0.4	0.1	24	0.6	6	● 200722	● 200745	● 200775
0.45	0.1	24	0.68	6	● 200723	● 200746	● 200776
0.5	0.125	24	0.75	6	● 200724	● 200747	● 200777
0.55	0.125	24	0.83	6	● 200725	● 200748	● 200778
0.6	0.15	24	0.9	6	● 200726	● 200749	● 200779
0.7	0.175	24	1.05	6	● 200727	● 200750	● 200780
0.8	0.2	24	1.2	6	● 200728	● 200751	● 200781
0.9	0.225	24	1.35	6	● 200729	● 200752	● 200782
1	0.25	24	1.5	6	● 200730	● 200753	● 200783
1.1	0.25	24	1.65	6	● 200731	● 201029	● 201031
1.2	0.25	24	1.8	6	● 200732	● 200754	● 200784
1.3	0.3	24	1.95	6	● 200733	● 200755	● 200785
1.4	0.3	24	2.1	6	● 200734	● 200756	● 200786



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nano



LH

DN04 Go
LH

DN04 Go
LH

DN14 NoGo
LH



NIHS
4g

NIHS
5h

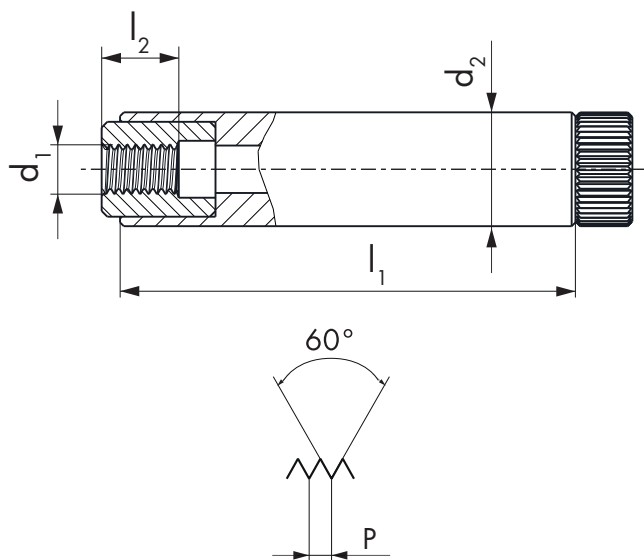
NIHS
5h/4g

$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.4	0.1	24	0.6	6	● 204351	● 202707	● 202706
0.5	0.125	24	0.75	6	● 204353	● 202990	● 203031
0.6	0.15	24	0.9	6	● 204355	● 204365	● 204208
0.7	0.175	24	1.05	6	● 204357	● 204246	● 204212
0.8	0.2	24	1.2	6	● 204359	● 204367	● 204215
0.9	0.225	24	1.35	6	● 204361	● 204369	● 204219
1	0.25	24	1.5	6	● 204363	● 204371	● 204223
1.2	0.25	24	1.8	6	● 204696	● 204700	● 204704
1.4	0.3	24	2.1	6	● 204698	● 204702	● 204706



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 NoGo



DN04 G



DN14 NoGo

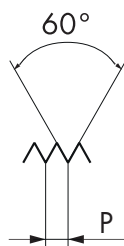
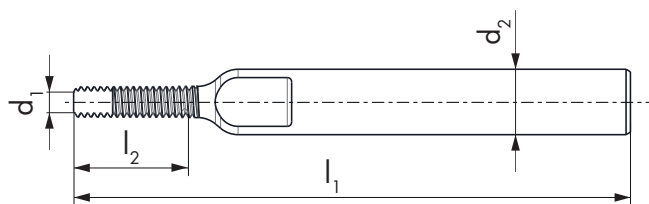


$\varnothing d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID	ID
0.3	0.08	24	0.45	6	● 190885	● 190904	● 190923	● 190942
0.35	0.09	24	0.53	6	● 190886	● 190905	● 190924	● 190943
0.4	0.1	24	0.6	6	● 190887	● 190906	● 190925	● 190944
0.5	0.125	24	0.75	6	● 190888	● 190907	● 190926	● 190945
0.6	0.15	24	0.9	6	● 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



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nano



EN00



NIHS

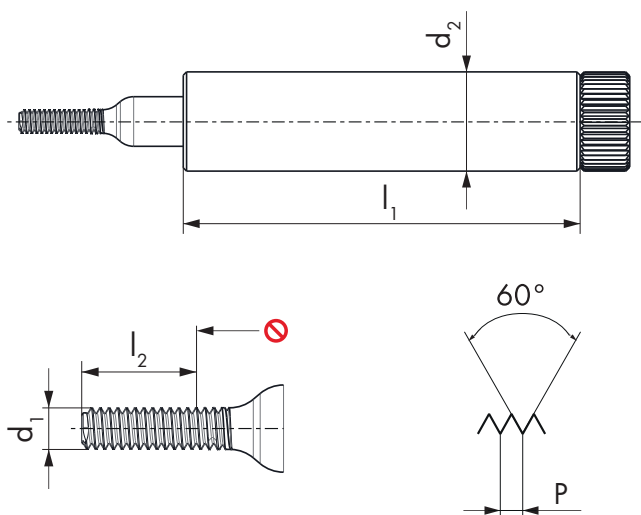
$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID
0.3	0.08	39	1.28	3	● 192747
0.35	0.09	39	1.44	3	● 192748
0.4	0.1	39	1.6	3	● 192749
0.5	0.125	39	2	3	● 192750
0.6	0.15	39	2.4	3	● 192751
0.7	0.175	39	2.8	3	● 192752
0.8	0.2	39	3.2	3	● 192753
0.9	0.225	39	3.6	3	● 192754
1	0.25	39	4	3	● 192755
1.2	0.25	39	4	3	● 192756
1.4	0.3	39	4.8	3	● 192757

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.

nano



DN01 Go

DN01 Go

DN02 NoGo

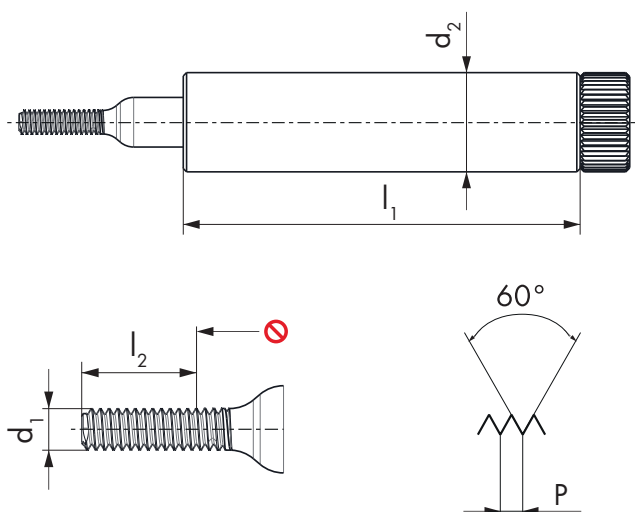
NIHS
3GNIHS
4HNIHS
4H/3G

$\emptyset d_1$ SF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
1.4	0.2	24	4.2	6	● 200651	● 200682	● 200712
1.6	0.2	24	3	6	● 200652	● 200683	● 200713
1.8	0.2	24	3	6	● 200653	● 200684	● 200714
2	0.2	24	3	6	● 200658	● 200689	● 200719
2.2	0.2	24	3	6	● 200654	● 200685	● 200715
2.2	0.25	24	3	6	● 200655	● 200686	● 200716
2.5	0.2	24	3	6	● 200656	● 200687	● 200717
2.5	0.25	24	3	6	● 200657	● 200688	● 200718



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nano



DN01 Go

DN01 Go

DN02 NoGo



NIHS
3G

NIHS
4H

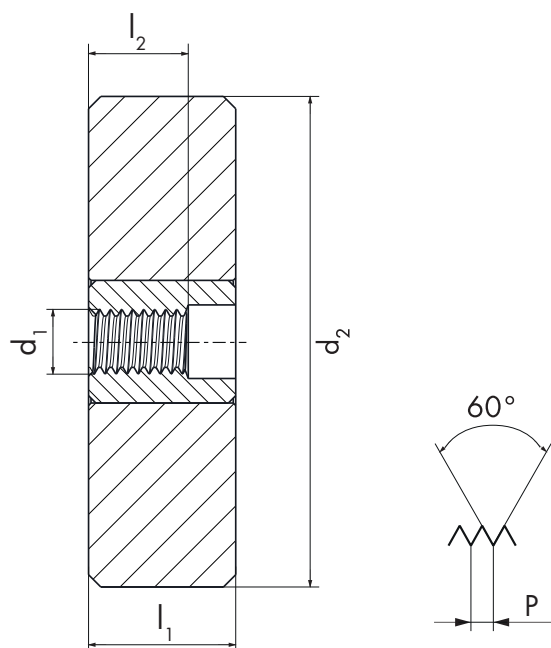
NIHS
4H/3G

$\emptyset d_1$ 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



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nano



DZ04 Go

DZ14 NoGo

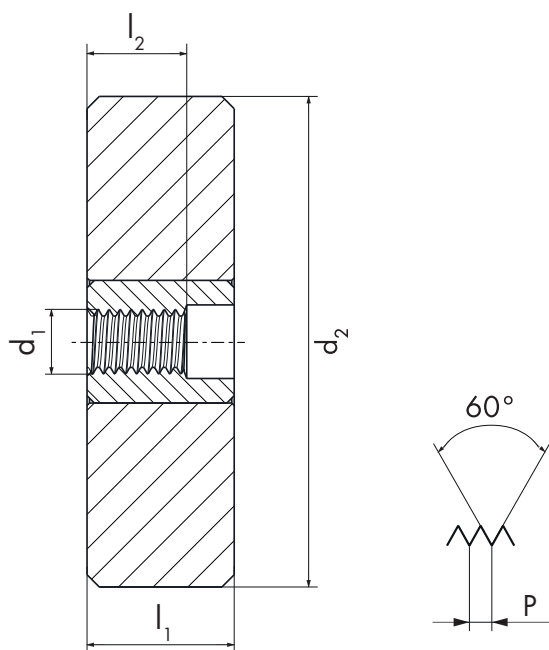
NIHS
5hNIHS
5h/4g

$\emptyset d_1$ SF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.4	0.2	6	2.1	20	● 200832	● 200862
1.6	0.2	6	1.8	20	● 200833	● 200863
1.8	0.2	6	1.8	20	● 200834	● 200864
2	0.2	6	1.8	20	● 200839	● 200869
2.2	0.2	6	1.8	20	● 200835	● 200865
2.2	0.25	6	2.25	20	● 200836	● 200866
2.5	0.2	6	1.8	20	● 200837	● 200867
2.5	0.25	6	2.25	20	● 200838	● 200868



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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DZ04 Go

DZ14 NoGo



NIHS

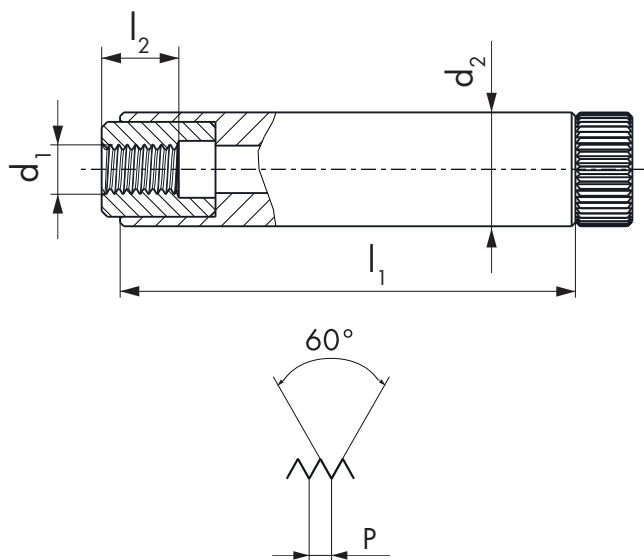
NIHS

$\emptyset d_1$ 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.
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nano



DN04 Go

DN14 NoGo

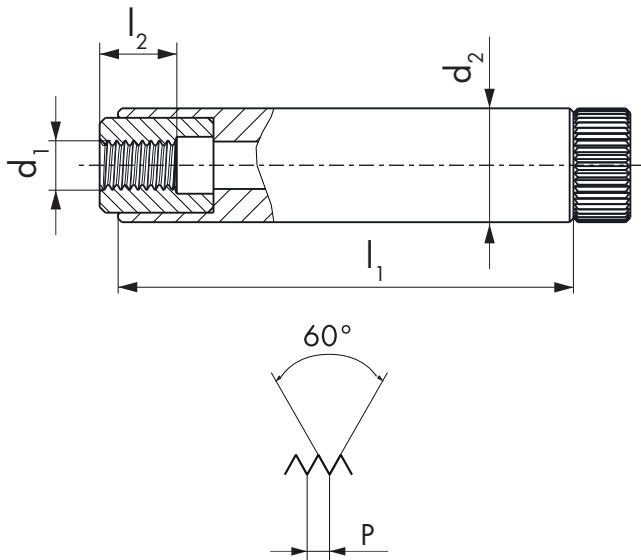


$\emptyset d_1$ SF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.4	0.2	24	2.1	6	● 200757	● 200787
1.6	0.2	24	1.8	6	● 200758	● 200788
1.8	0.2	24	1.8	6	● 200759	● 200789
2	0.2	24	1.8	6	● 200764	● 200794
2.2	0.2	24	1.8	6	● 200760	● 200790
2.2	0.25	24	2.25	6	● 200761	● 200791
2.5	0.2	24	1.8	6	● 200762	● 200792
2.5	0.25	24	2.25	6	● 200763	● 200793



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nano



DN04 Go

DN14 NoGo



NIHS

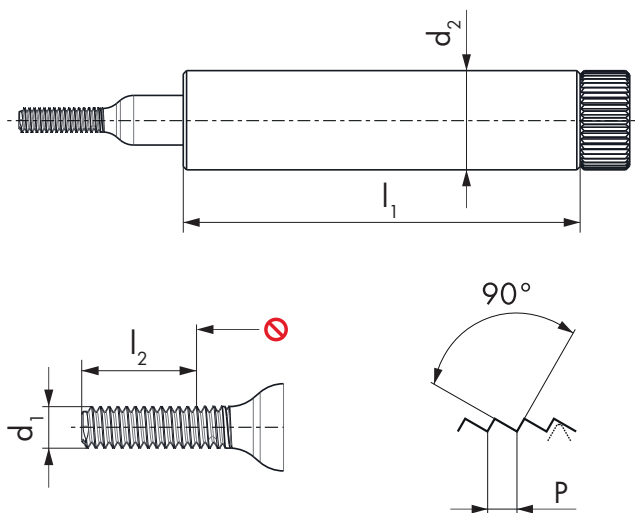
NIHS

$\emptyset d_1$ 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



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The paid certificate is available on request.

nano



DN01 Go

DN02 NoGo

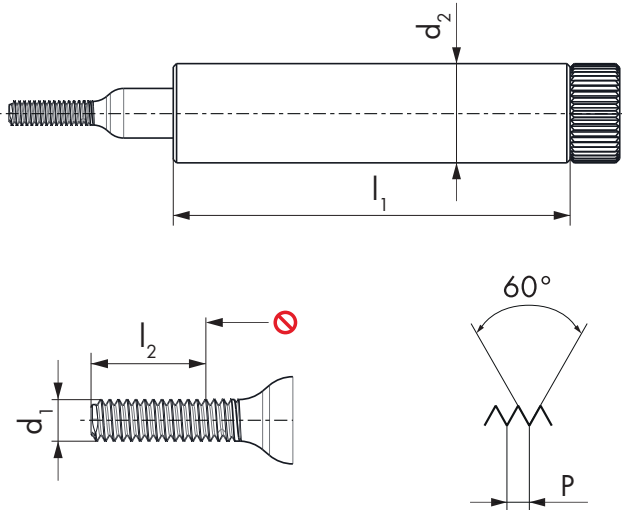


$\emptyset d_1$ SL	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
0.5	0.1	24	1.5	6	● 600178	● 600186
0.6	0.125	24	1.8	6	● 600179	● 600187
0.7	0.15	24	2.1	6	● 600180	● 600188
0.8	0.15	24	2.4	6	● 600181	● 600189
0.9	0.175	24	2.7	6	● 600182	● 600190
1	0.2	24	3	6	● 600183	● 600191
1.2	0.2	24	3.6	6	● 600184	● 600192
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.

nano



RN05-1
Go/Go

RN15-1
NoGo/Go

RN05-1
Go/Go

RN15-1
NoGo/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	● 192884	● 192892		
0.35	0.09	24	0.71	6	● 192885	● 192893		
0.4	0.1	24	0.8	6	● 192886	● 192894		
0.5	0.125	24	1	6	● 192887	● 192895		
0.6	0.15	24	1.2	6	● 192888	● 192896		
0.7	0.175	24	1.4	6	● 192889	● 192897		
0.8	0.2	24	1.6	6	● 192890	● 192898		
0.9	0.225	24	1.8	6	● 192891	● 192899		
1	0.25	24	2	6			● 191499	● 191508
1.2	0.25	24	2.3	6			● 191500	● 191509
1.4	0.3	24	2.7	6			● 191501	● 191510

6g

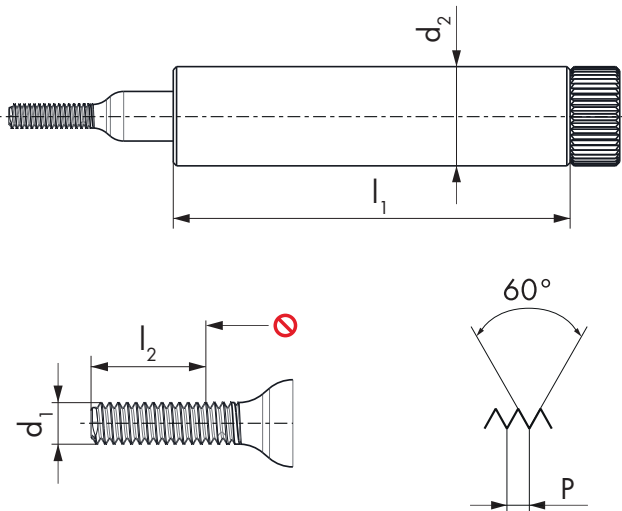
6g

$\emptyset d_1$ 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



RN05-2
Go/NoGo

RN15-2
NoGo/NoGo

RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



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

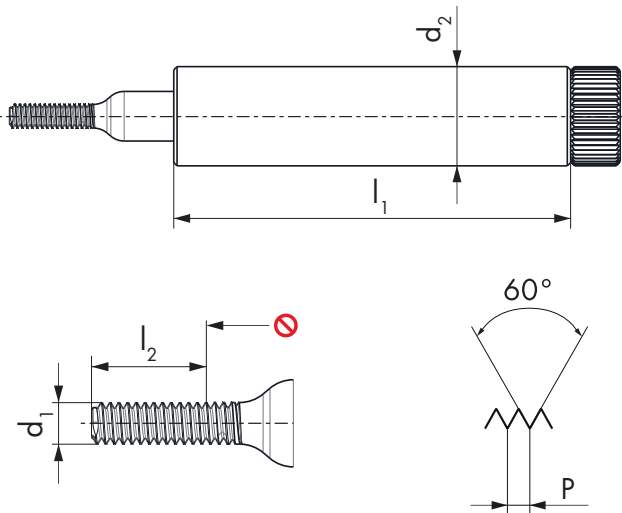
6g

$\emptyset d_1$ 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.

nano



RN05-3
WEAR

RN15-3
WEAR

RN05-3
WEAR

RN15-3
WEAR



6h

6h

6g

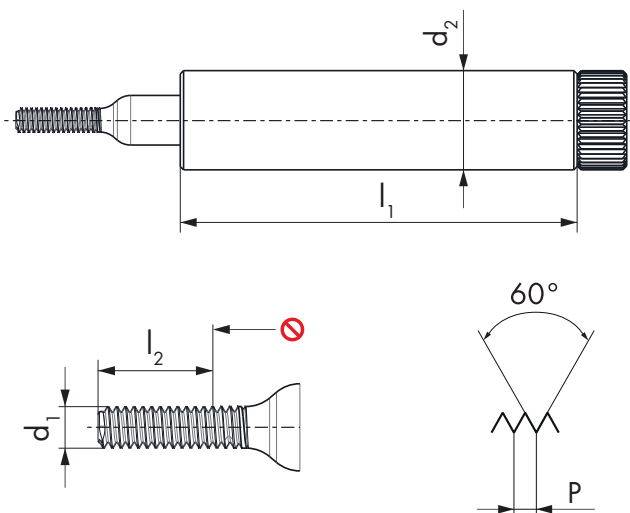
6g

$\emptyset d_1$ 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.

nano



RN05-1
Go/Go

RN15-1
NoGo/Go

RN05-1
Go/Go

RN15-1
NoGo/Go



4h

4h

6h

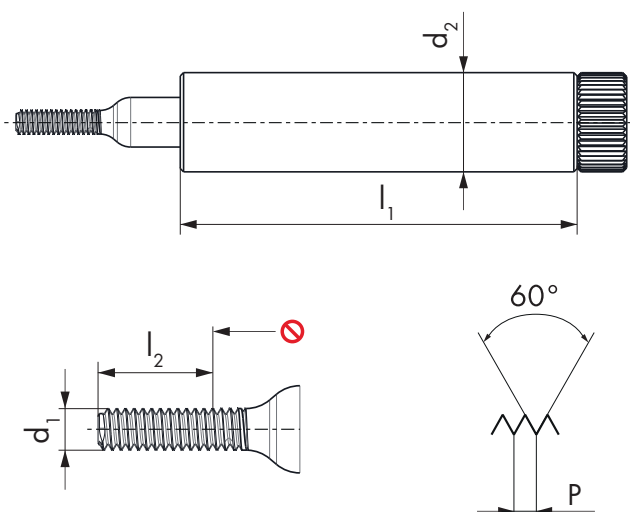
6h

$\emptyset d_1$ 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



SCS certificate included.

nano



RN05-1
Go/Go

RN15-1
NoGo/Go



6g

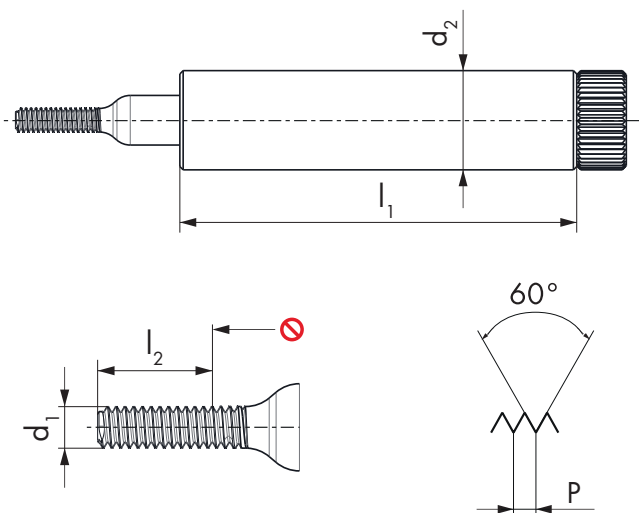
6g

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID
1.6	0.2	24	2.2	6	● 204958	● 204967
1.8	0.2	24	2.2	6	● 204959	● 199684
2	0.2	24	2.2	6	● 204960	● 204968
2	0.25	24	2.75	6	● 204961	● 195625
2.2	0.2	24	2.2	6	● 204962	● 191386
2.2	0.25	24	2.75	6	● 204963	● 199119
2.3	0.2	24	2.2	6	● 204964	● 204969
2.3	0.25	24	2.75	6	● 204965	● 199686
2.5	0.2	24	2.2	6	● 204966	● 202065
2.5	0.25	24	2.75	6	● 191349	● 191391
2.5	0.35	24	4.45	6	● 192943	● 192956
2.6	0.35	24	4.6	6	● 192944	● 192957



SCS certificate included.

nano



RN05-2 Go/NoGo	RN15-2 NoGo/NoGo	RN05-2 Go/NoGo	RN15-2 NoGo/NoGo
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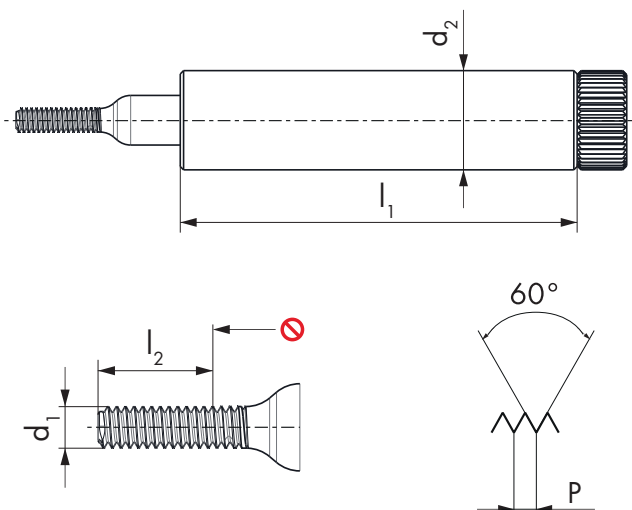
4h	4h	6h	6h
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$\emptyset d_1$ MF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	• 191270	• 197728	• 192958	• 192971
1.6	0.2	24	1.6	6	• 195875	• 195877	• 192959	• 192972
1.8	0.2	24	1.6	6	• 197729	• 197730	• 192960	• 192973
2	0.2	24	1.6	6	• 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



SCS certificate included.

nano



RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



6g

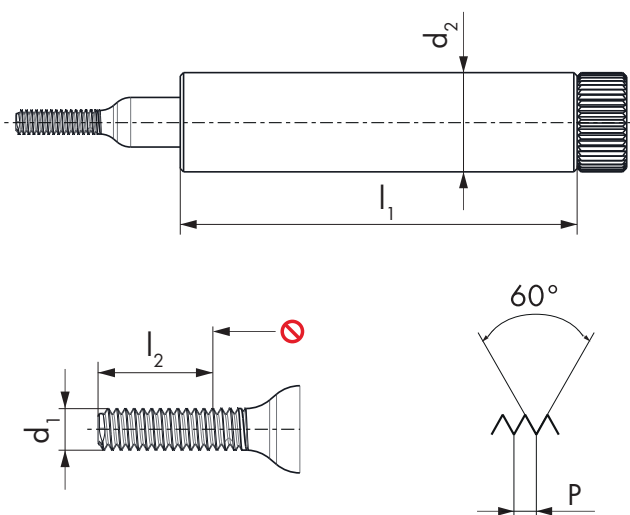
6g

$\emptyset d_1$ MF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.6	0.2	24	1.6	6	● 204970	● 204979
1.8	0.2	24	1.6	6	● 204971	● 199688
2	0.2	24	1.6	6	● 204972	● 204980
2	0.25	24	2	6	● 204973	● 195627
2.2	0.2	24	1.6	6	● 204974	● 191400
2.2	0.25	24	2	6	● 204975	● 199121
2.3	0.2	24	1.6	6	● 204976	● 204981
2.3	0.25	24	2	6	● 204977	● 199690
2.5	0.2	24	1.6	6	● 204978	● 202067
2.5	0.25	24	2	6	● 191363	● 191405
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

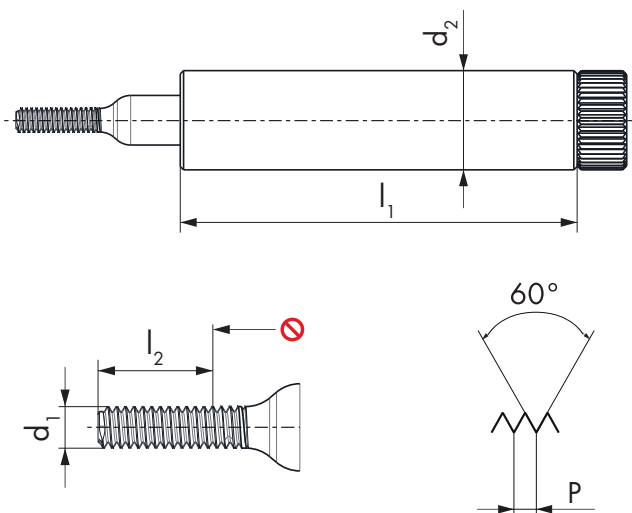
6h

$\varnothing d_1$ MF	P mm	l_1 mm	$l_2 G_0$ 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



SCS certificate included.

nano



RN05-3
WEAR

RN15-3
WEAR



6g

6g

Ø d ₁ MF	P mm	l ₁ mm	l ₂ Go mm	d ₂ mm	ID	ID
1.6	0.2	24	1.6	6	• 204982	• 204992
1.8	0.2	24	1.6	6	• 204983	• 204993
2	0.2	24	1.6	6	• 204984	• 204994
2	0.25	24	2	6	• 204985	• 204995
2.2	0.2	24	1.6	6	• 204986	• 204996
2.2	0.25	24	2	6	• 204987	• 204997
2.3	0.2	24	1.6	6	• 204988	• 204998
2.3	0.25	24	2	6	• 204989	• 204999
2.5	0.2	24	1.6	6	• 204990	• 205000
2.5	0.25	24	2	6	• 204991	• 205001
2.5	0.35	24	4.45	6	• 192995	• 193008
2.6	0.35	24	4.6	6	• 192996	• 193009



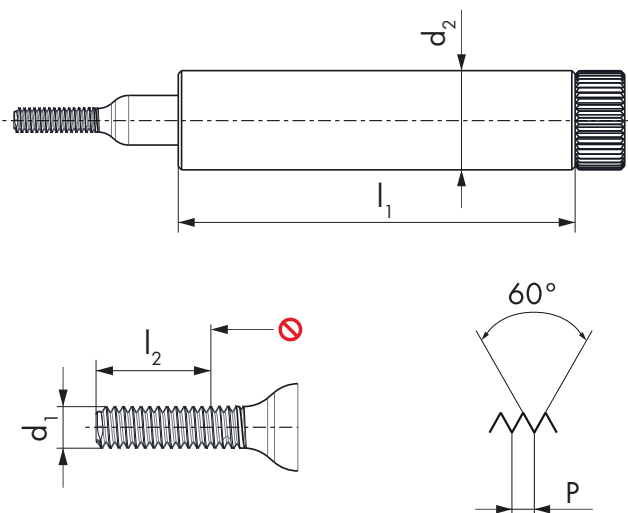
SCS certificate included.

UNC, UNF

ASME B1.1
DC SWISS NI582

VHM
CAR

nano



RN05-1
Go/Go

RN15-1
NoGo/Go

RN05-1
Go/Go

RN15-1
NoGo/Go



2A

2A

3A

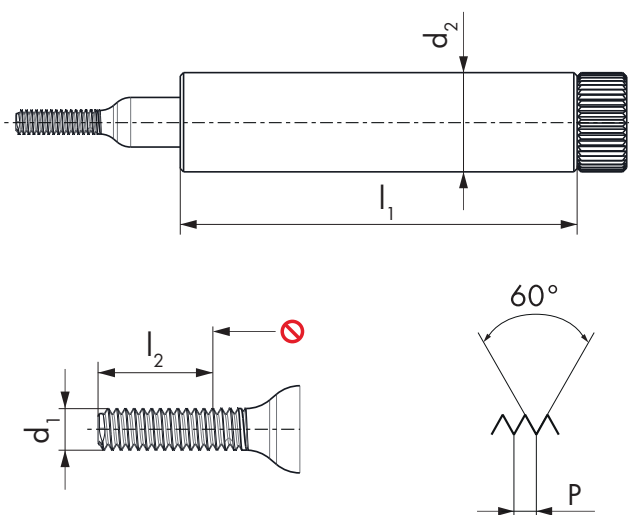
3A

$\emptyset d_1$ 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.

nano



RN05-2
Go/NoGo

RN15-2
NoGo/NoGo

RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



2A

2A

3A

3A

$\emptyset d_1$ UNC	P TPI	$\emptyset d_1$ mm	l_1 mm	l_2 Go mm	d_2 mm
1	64	1.854	24	3.58	6
2	56	2.184	24	4.18	6
3	48	2.515	24	4.83	6

ID

ID

ID

ID

• 191616
• 191617
• 191618

• 191622
• 191623
• 191624

• 191628
• 191629
• 191630

• 191634
• 191635
• 191636

$\emptyset d_1$ UNF	P TPI	$\emptyset d_1$ mm	l_1 mm	l_2 Go mm	d_2 mm
0	80	1.524	24	2.92	6
1	72	1.854	24	3.49	6
2	64	2.184	24	4.07	6
3	56	2.515	24	4.68	6

ID

ID

ID

ID

• 191689
• 191690
• 191691
• 191692

• 191697
• 191698
• 191699
• 191700

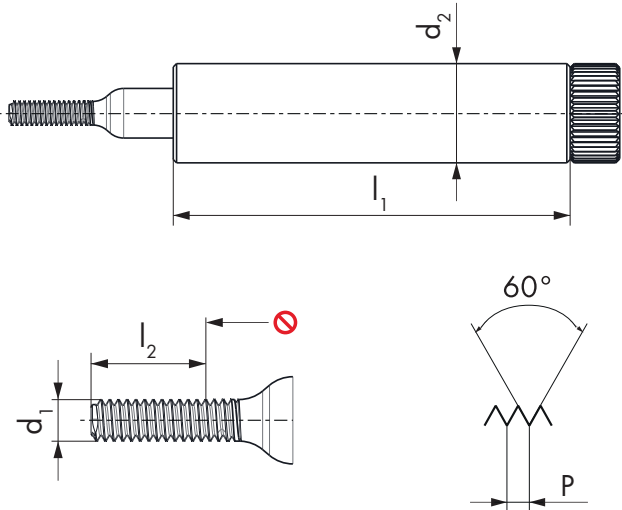
• 191705
• 191706
• 191707
• 191708

• 191713
• 191714
• 191715
• 191716



SCS certificate included.

nano



RN05-1
Go/Go

RN05-1
Go/Go

RN15-1
NoGo/Go



NIHS
4g

NIHS
5h

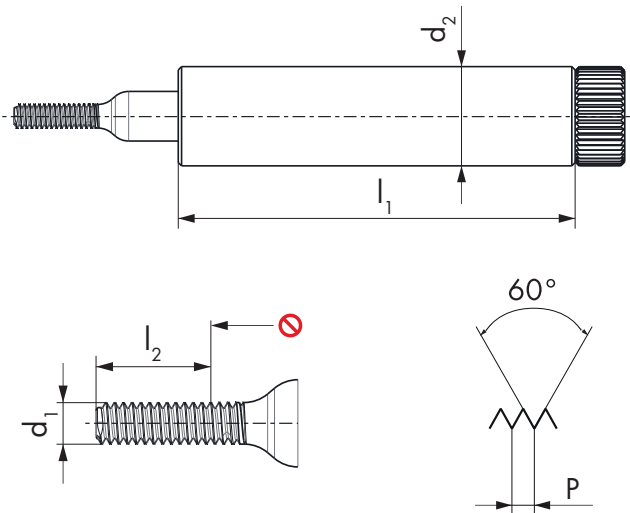
NIHS
5h/4g

$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.3	0.08	24	0.61	6	● 200870	● 200893	● 200978
0.35	0.09	24	0.71	6	● 200871	● 200894	● 200979
0.4	0.1	24	0.8	6	● 200872	● 200895	● 200980
0.45	0.1	24	0.9	6	● 200873	● 200896	● 200981
0.5	0.125	24	1	6	● 200874	● 200897	● 200982
0.55	0.125	24	1.1	6	● 200875	● 200898	● 200983
0.6	0.15	24	1.2	6	● 200876	● 200899	● 200984
0.7	0.175	24	1.4	6	● 200877	● 200900	● 200985
0.8	0.2	24	1.6	6	● 200878	● 200901	● 200986
0.9	0.225	24	1.8	6	● 200879	● 200902	● 200987
1	0.25	24	2	6	● 200880	● 200903	● 200988
1.1	0.25	24	2.15	6	● 200881	● 200904	● 200989
1.2	0.25	24	2.3	6	● 200882	● 200905	● 200990
1.3	0.3	24	2.55	6	● 200883	● 200906	● 200991
1.4	0.3	24	2.7	6	● 200884	● 200907	● 200992



SCS certificate included.

nano



LH

RN05-1
Go/Go LH

RN05-1
Go/Go LH

RN15-1
NoGo/Go LH



NIHS
4g

NIHS
5h

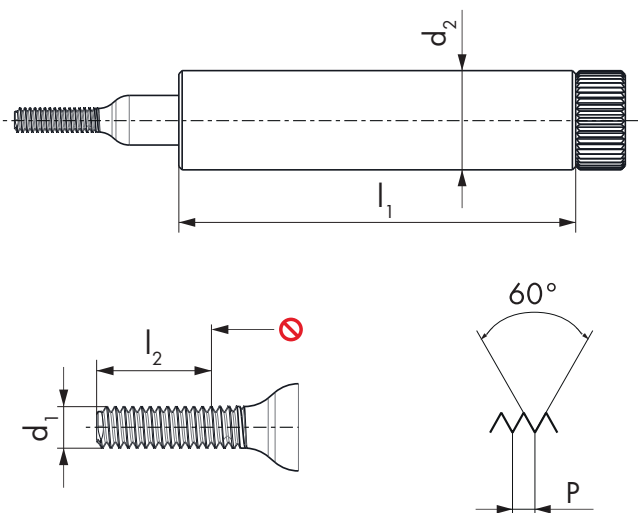
NIHS
5h/4g

$\emptyset d_1$ S	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.4	0.1	24	0.8	6	● 204373	● 202150	● 202152
0.5	0.125	24	1	6	● 203037	● 203044	● 203046
0.6	0.15	24	1.2	6	● 203626	● 203634	● 203638
0.7	0.175	24	1.4	6	● 203630	● 203069	● 203071
0.8	0.2	24	1.6	6	● 204375	● 203350	● 203352
0.9	0.225	24	1.8	6	● 204377	● 204226	● 204234
1	0.25	24	2	6	● 204379	● 204230	● 204238
1.2	0.25	24	2.3	6	● 204708	● 204712	● 204716
1.4	0.3	24	2.7	6	● 204710	● 204714	● 204718



SCS certificate included.

nano



RN05-1
Go/Go

RN15-1
NoGo/Go

RN05-1
Go/Go

RN15-1
NoGo/Go



NIHS

NIHS

NIHS
NT

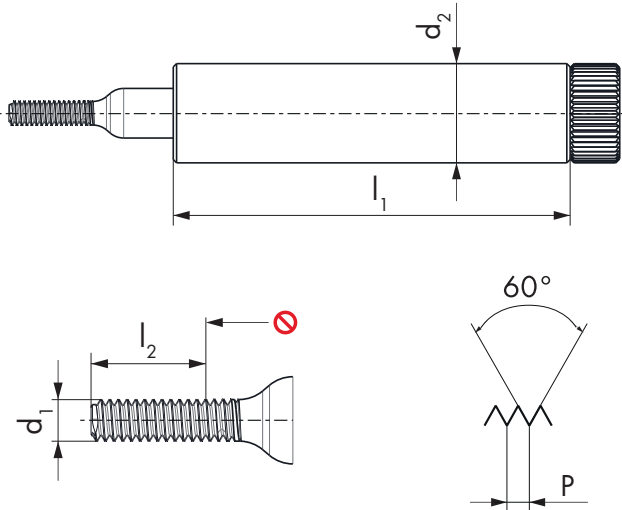
NIHS
NT

$\emptyset d_1$ 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.

nano



RN05-2
Go/NoGo

RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



NIHS
4g

NIHS
5h

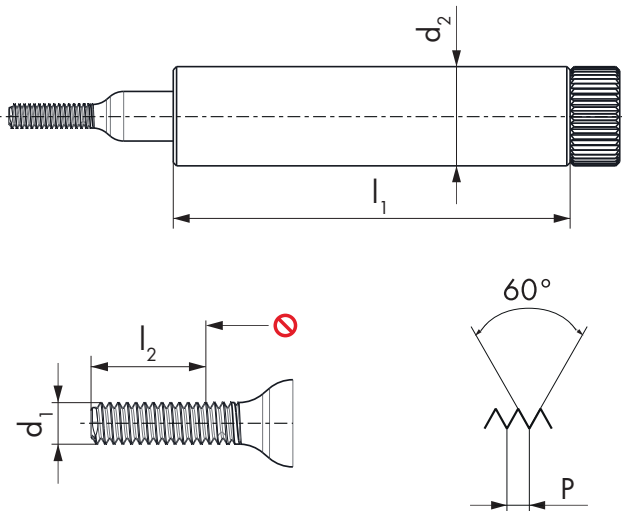
NIHS
5h/4g

$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.3	0.08	24	0.61	6	• 200916	• 200939	• 201009
0.35	0.09	24	0.71	6	• 200917	• 200940	• 201010
0.4	0.1	24	0.8	6	• 200918	• 200941	• 201011
0.45	0.1	24	0.9	6	• 200919	• 200942	• 201012
0.5	0.125	24	1	6	• 200920	• 200943	• 201013
0.55	0.125	24	1.1	6	• 200921	• 200944	• 201014
0.6	0.15	24	1.2	6	• 200922	• 200945	• 201015
0.7	0.175	24	1.4	6	• 200923	• 200946	• 201016
0.8	0.2	24	1.6	6	• 200924	• 200947	• 201017
0.9	0.225	24	1.8	6	• 200925	• 200948	• 201018
1	0.25	24	2	6	• 200926	• 200949	• 201019
1.1	0.25	24	2.15	6	• 200927	• 200950	• 201020
1.2	0.25	24	2.3	6	• 200928	• 200951	• 201021
1.3	0.3	24	2.55	6	• 200929	• 200952	• 201022
1.4	0.3	24	2.7	6	• 200930	• 200953	• 201023



SCS certificate included.

nano



LH

RN05-2 Go/NoGo LH	RN05-2 Go/NoGo LH	RN15-2 NoGo/NoGo LH	
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NIHS
4g

NIHS
5h

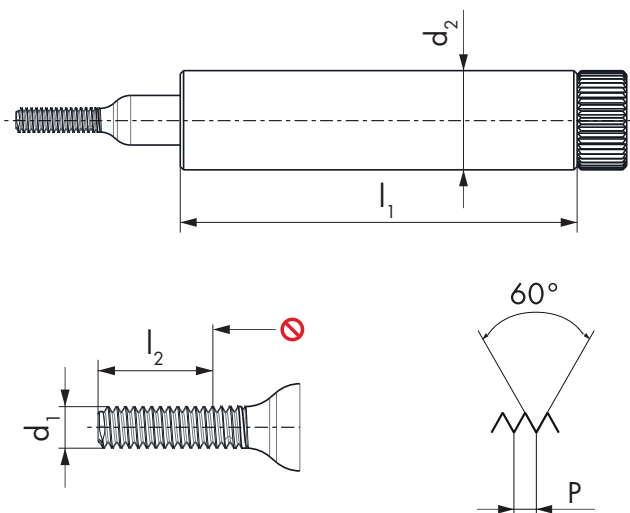
NIHS
5h/4g

$\emptyset d_1$ s	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID
0.4	0.1	24	0.8	6	● 204381	● 202154	● 202156
0.5	0.125	24	1	6	● 203067	● 203048	● 203050
0.6	0.15	24	1.2	6	● 203628	● 203636	● 203640
0.7	0.175	24	1.4	6	● 203632	● 203073	● 203075
0.8	0.2	24	1.6	6	● 204383	● 203354	● 203356
0.9	0.225	24	1.8	6	● 204385	● 204228	● 204236
1	0.25	24	2	6	● 204387	● 204232	● 204240
1.2	0.25	24	2.3	6	● 204720	● 204724	● 204728
1.4	0.3	24	2.7	6	● 204722	● 204726	● 204730



SCS certificate included.

nano



RN05-2
Go/NoGo

RN15-2
NoGo/NoGo

RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



NIHS

NIHS

NIHS
NT

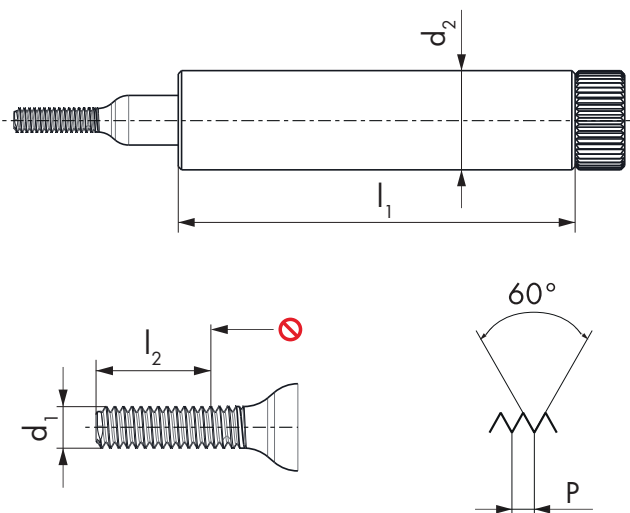
NIHS
NT

$\emptyset d_1$ 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/Go

RN15-1
NoGo/Go



NIHS
5h

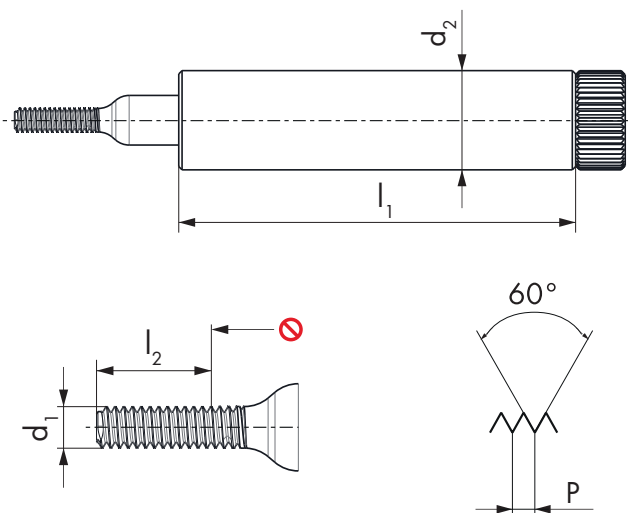
NIHS
5h/4g

$\emptyset d_1$ SF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.4	0.2	24	2.5	6	● 200908	● 200970
1.6	0.2	24	2.2	6	● 200909	● 200971
1.8	0.2	24	2.2	6	● 200910	● 200972
2	0.2	24	2.2	6	● 200915	● 200977
2.2	0.2	24	2.2	6	● 200911	● 200973
2.2	0.25	24	2.75	6	● 200912	● 200974
2.5	0.2	24	2.2	6	● 200913	● 200975
2.5	0.25	24	2.75	6	● 200914	● 200976



SCS certificate included.

nano



RN05-1
Go/Go

RN15-1
NoGo/Go

RN05-1
Go/Go

RN15-1
NoGo/Go

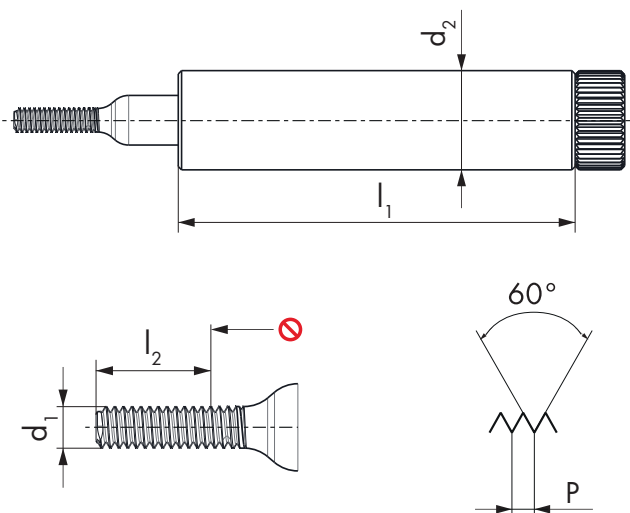


$\emptyset d_1$ SF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID	ID	ID
1.4	0.2	24	2.5	6	● 190972	● 191010	● 191048	● 191086
1.6	0.2	24	2.2	6	● 190973	● 191011	● 191049	● 191087
1.8	0.2	24	2.2	6	● 190974	● 191012	● 191050	● 191088
2	0.2	24	2.2	6	● 190975	● 191013	● 191051	● 191089
2.2	0.2	24	2.2	6	● 190976	● 191014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

nano



RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



NIHS
5h

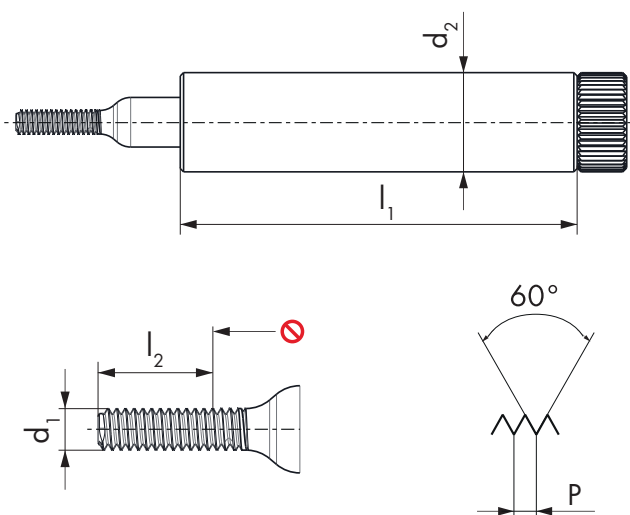
NIHS
5h/4g

$\emptyset d_1$ SF	P mm	l_1 mm	l_2 Go mm	d_2 mm	ID	ID
1.4	0.2	24	2.5	6	● 200954	● 201001
1.6	0.2	24	1.6	6	● 200955	● 201002
1.8	0.2	24	1.6	6	● 200956	● 201003
2	0.2	24	1.6	6	● 200961	● 201008
2.2	0.2	24	1.6	6	● 200957	● 201004
2.2	0.25	24	2	6	● 200958	● 201005
2.5	0.2	24	1.6	6	● 200959	● 201006
2.5	0.25	24	2	6	● 200960	● 201007



SCS certificate included.

nano



RN05-2
Go/NoGo

RN15-2
NoGo/NoGo

RN05-2
Go/NoGo

RN15-2
NoGo/NoGo



NIHS

NIHS

NIHS
NT

NIHS
NT

$\emptyset d_1$ 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.

DELIVERY AND PAYMENT CONDITIONS

Orders	Orders, which cannot be delivered from stock, will be acknowledged. Items, which do not belong any more to our standard programme, although still featured in the catalogue, will be invoiced as «specials». Orders may only be cancelled by mutual written agreement.
Quotations and acknowledgements	For reasons of constant development in this field, all descriptions mentioned in our quotations, annexed documents, weight indications, measurements as well as illustrations and drawings are approximate indications. These technical data have binding value only if expressly specified.
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Special conditions	In the case of partial or total disruption of our production; we reserve the right to partially or totally cancel our delivery commitments.
Tribunal	All disputes are subject to Swiss Law. The seat of court of law will be Moutier (Switzerland).

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: _____

TECHNICAL QUESTIONNAIRE

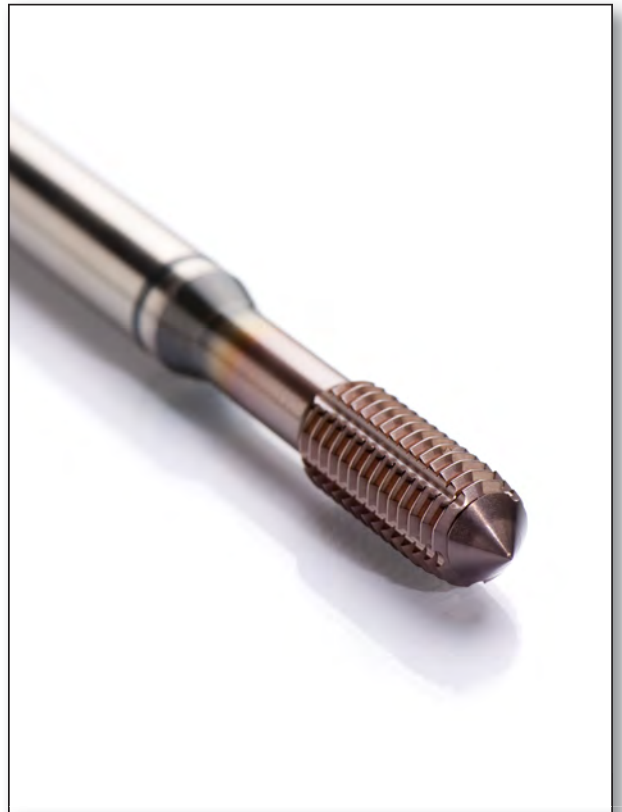
Thread milling and thread whirling

Enquiry ☐	Test result ☐	Complaint ☐
Agency: _____ Customer: _____ Phone or fax: _____		Contact: _____ E-mail: _____ Date: _____
1. Tool type: _____ Tool Ø: _____ Pitch: _____ Serie: _____ Coating: _____		
2. Material group: _____ Material N°: _____ Hardness: _____ N/mm ² / HB / HRC Norm: _____ Elongation: _____ %		
3. Thread: ☐ internal ☐ external ☐ blind hole ☐ through hole Threaded length: _____ mm Core hole Ø: _____ Depth: _____ mm Counter-bore Ø: _____ Depth: _____ mm		
4. Cutting speed (V_c): _____ m/min _____ l/min Feed (f): _____ mm/rev. Feed (f_z): _____ mm/tooth		
5. Machine: _____ ☐ internal coolant Working position: ☐ horizontal Tool attachment: ☐ collet ☐ Weldon / Whistle Notch ☐ vertical ☐ hydraulic chuck ☐ hot / cold shrunk		
6. Lubricant: ☐ emulsion ☐ cutting oil ☐ air ☐ mist Product: _____		
7. Tool change reason: ☐ tool wear ☐ tool breakage ☐ incorrect threading (inspected with gauge) ☐ programme error		
8. Efficiency comparison: Tool under test: _____ Performance and observations: _____ _____ _____		
Remarks: _____ _____ _____ _____		

DC PROGRAMME OVERVIEW



THREAD CUTTING



THREAD FORMING



RIGID TAPPING



TAPPING CHUCKS



THREAD WHIRLING



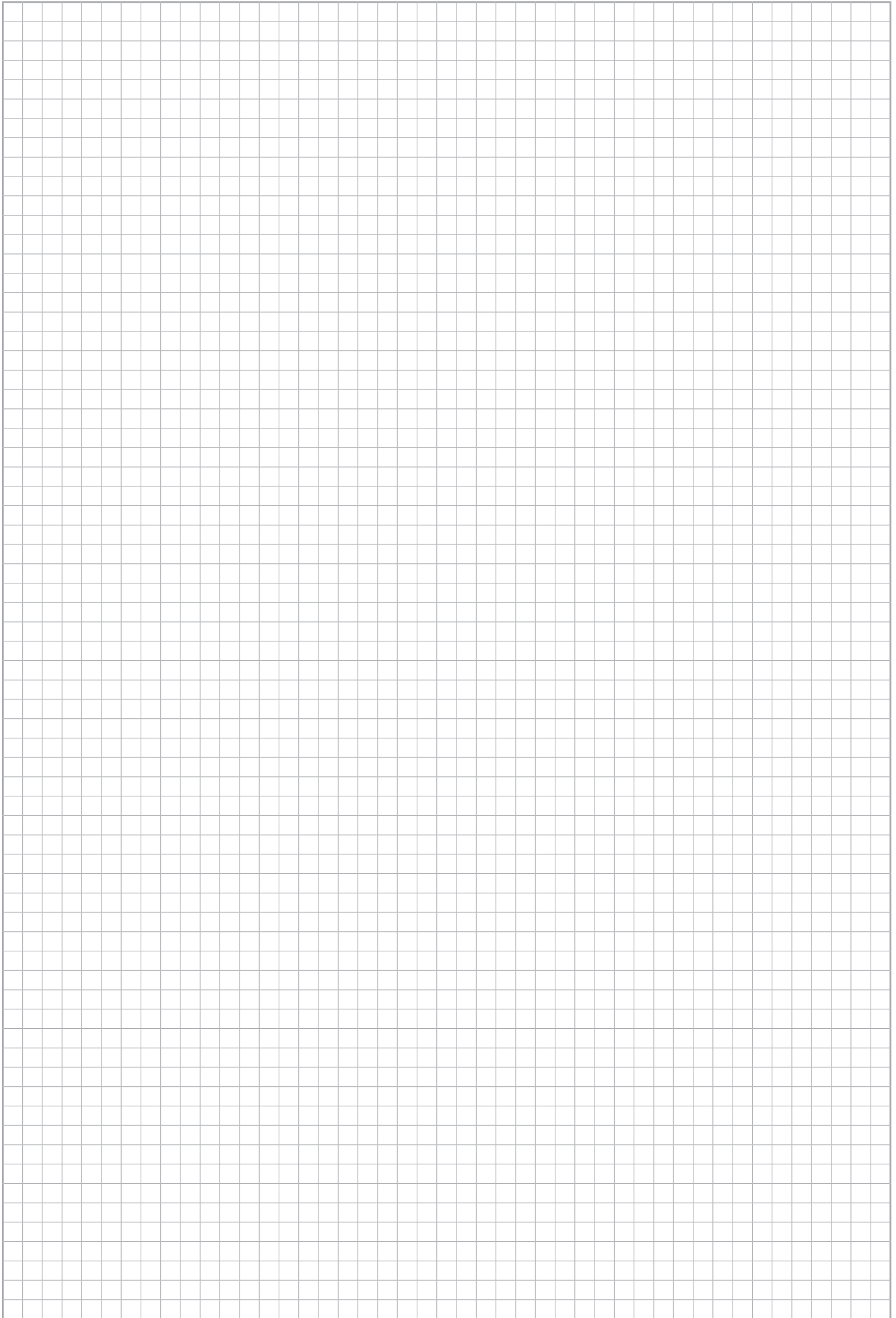
THREAD MILLING



THREAD DIES



THREAD GAUGES

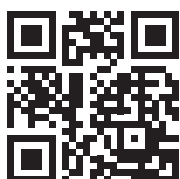




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THREADING SOLUTIONS



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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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