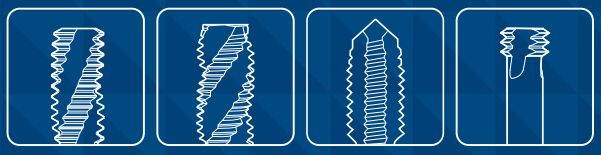
YE-TT20
EUROPE
2020/2021

Registered
ISO 9001:2015 / ISO 14001:2015

GLOBAL BRAND 2012

CUTTING TOOLS



THREADING

YG-1 CO., LTD.

GUIDE LINE TO ICONS

Working Material

- GS — Steels with good machinability Rm<850N/mm²
- VG — Heat treated and heat-resistant steels Rm<850N/mm² ≤Rm≤1,200N/mm²
- HR — High alloyed steels Rm>1,200N/mm²
- VA — Stainless steels
- NW — Carbon steels with low contents of alloys Rm<700N/mm²
- Ti — Titanium alloys
- Ni — Nickel alloys
- GV — Any material with at least 8~10% elongation
- Al — Aluminum & Aluminum alloys
- GG — Grey Cast Iron
- Ms — Brass
- MU — Multi-Purpose

Helix Angle

- L20
- R20

Standard of Tools

- DIN 371
- LONG
- DIN 352
- DIN 2182/2183

Class of Thread

- 6HX
- 6H Mod.
- 2B
- 6GX
- 6H
- 2BX

Tool Material

- CARBIDE — Carbide
- HSS-PM — YG-1 Premium Powder Metallurgy HSS
- HSS-E — 5% Cobalt HSS
- HSS — High Speed Steel

Chamfer Lead Acc. to DIN2197

- I/III, I/II/III — Set of Hand Taps
- LONG — Long Chamfer Lead for Nut Tap
- B — Form B (with Gun-nose and Chamfer Lead 4~5 Thread)
- C — Form C (Chamfer Lead 2~3 Thread)
- D — Form D (Chamfer Lead 4~5 Thread)
- E — Form E (Chamfer Lead 1.5~2 Thread)

Thread Angle

- 60°
- 55°

Surface Treatment

- TiCN — Titanium Carbon Nitride Coating
- TiAlN — Titanium Aluminum Nitride Coating
- Hardslick — TiAlN+WC/C Coating
- TiN — Titanium Nitride Coating
- Vap — Steam Tempered
- NI — Nitrided
- Bright — Bright Finish

CUTTING TOOLS

Certificate of Registration

This is to certify that :

YG-1 Co., Ltd.

211, Sowolchoon-ro, Bupyeong-gu, Incheon, Korea

Has been assessed by International Certification Registrar Ltd., in respect of their Quality Management Systems and found to comply with

ISO 9001:2015

Approval is hereby granted for registration providing the rules and conditions relating to certification are observed at all times.

Certification Scope

Design, Development and Manufacture of Endmill, Drill, Rotary Burrs, Insert, Holder

Certificate Issue Date :05th February 2018 Initial Issued Date : 20th February 2009

Expiration Date : 04th February 2021 Certificate No. : QI9427/09

The Seal of ICR Limited was here to affixed in the presence of :

President

International Certification Registrar Ltd

Certificate of Registration

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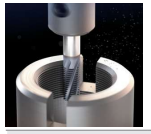
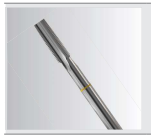
PRODUCTS	DESCRIPTION	PAGE
	1 **SOLID CARBIDE THREAD MILLS (with & without Coolant Holes)** 2 VHM - GEWINDEFRÄSER (mit und ohne Kühlkanäle) 3 FRAISE A FILETER CARBURE (avec et sans arrosage central) 4 FRESE A FILETTARE IN METALLO DURO (con e senza fori di refrigerazione) 5 Fresas de roscar de metal duro (con y sin agujeros de refrigeración) 6 Твердосплавные резьбофрезы (с/без отверстий для СОЖ) 7 WĘGLIKOWE FREZY GWINTUJĄCE (Z I BEZ CHŁODZENIA WEWNĘTRZNEGO) 8 SOLID KARBÜR VİDA AÇMA FREZELERİ (Su delikli ve su deliksiz)	Threading Large Diameter in High Quality Available with Chamfer	39
	1 **HSS-PM SYNCHRO TAPS (Spiral Flute, Spiral Point, Straight Flute & Cold Forming)** 2 HSS Synchro Gewindebohrer 3 Tarauds SYNCHRO HSS 4 MASCHI SYNCHRO 5 MACHOS HSS-PM SYNCHRO 6 Метчики SYNCHRO с покрытием TiN/TiCN из порошковой быстрорежущей стали для высокоскоростного нарезания резьбы 7 GWINTOWNIKI SYNCHRO HSS 8 HSS SYNCHRO TİP KILAVUZLAR	For High Speed Tapping on Rigid CNC Machine	63
	1 **HSS-E & HSS-PM COMBO TAPS (Spiral Point & Spiral Flute Tap)** 2 HSS COMBO GEWİNDEBOHRER (gerade- und drallgenutet) 3 COMBO TAPS - TARAUDS HSS (Entree GUN, HELICOIDAUX) 4 MASCHI COMBO IN HSS (Fori passanti e fori ciechi) 5 Machos Combo HSS (tipo helicoidal con entrada corregida) 6 Метчики COMBO из быстрорежущей стали (с винтовой подточкой, с винтовыми канавками) 7 GWINTOWNIKI COMBO HSS 8 HSS COMBO KILAVUZLAR (Düz kanal eğik ağız bilemeli ve helis kanallı)	For Multi Purpose Tapping YG-1's Patent	71
	1 **HSS & HSS-E YG TAP GENERAL** 2 YG Gewindebohrer Universal 3 Taraud YG pour usage général 4 MASCHI FORI CIECHI/FORI PASSANTI 5 MACHOS YG PARA USO GENERAL 6 Метчики YG из быстрорежущей стали для общего применения 7 GWINTOWNIKI UNIWERSALNE 8 HSS YG GENEL KILAVUZLAR	Suitable for Tapping Blind / Through Holes due to Flute Geometry and Excellent Chip Evacuation	119
	1 **HSS-E & HSS-PM YG TAP STEEL** 2 HSS YG Gewindebohrer Stähle 3 Taraud YG HSS pour ACIERS 4 MASCHI IN HSS 5 MACHOS HSS YG PARA ACERO 6 Метчики YG из быстрорежущей стали для обработки стали 7 GWINTOWNIKI HSS DO STALI 8 HSS YG ÇELİK KILAVUZLARI	For Steel Materials but also other Long Chip Forming Materials	163
	1 **SOLID CARBIDE & HSS-E YG TAP HARDENED** 2 HSS YG Geweindebohrer für gehärtete Stähle 3 Taraud YG HSS pour Aciers Trempés 4 MASCHI IN HSS PER ACCIAI TEMPRATI 5 MACHOS HSS YG PARA MATERIALES DE ALTA DUREZA 6 Метчики YG из быстрорежущей стали для закаленной стали 7 GWINTOWNIKI HSS DO STALI ULEPSZONYCH CIEPLNIE 8 HSS YG SERTLEŞTİRİLMİŞ ÇELİK KILAVUZLARI	For Hardened Steels Applications to Control the Continuous and Red-glowing Chips	191
	1 **HSS-E & HSS-PM YG TAP INOX** 2 HSS YG Gewindebohrer INOX 3 Taraud YG HSS pour INOX 4 MASCHI IN HSS PER INOX 5 MACHOS HSS YG PARA ACEROS INOXIDABLES 6 Метчики YG из быстрорежущей стали для обработки нержавеющей стали 7 GWINTOWNIKI HSS DO STALI NIERDZEWNEJ 8 HSS YG PASLANMAZ ÇELİK KILAVUZLARI	For Stainless Steels with Lamellar, Irregular Chip Formation where the Cutting Forces are Higher	203
	1 **SOLID CARBIDE & HSS-E YG TAP CAST IRON** 2 HSS Gewindebohrer Guss 3 Taraud YG HSS pour la FONTE 4 MASCHI IN HSS PER GHISA 5 MACHOS HSS YG PARA FUNDICIÓN 6 Метчики YG из быстрорежущей стали для обработки чугуна 7 GWINTOWNIKI HSS DO ŻELIWA 8 HSS YG DÖKME DEMİR KILAVUZLARI	For Cast Iron or Similar Work Materials	227
	1 **HSS-E YG TAP ALU** 2 HSS YG TAP Aluminium 3 Taraud YG HSS pour ALU 4 MASCHI IN HSS PER ALU 5 MACHOS HSS YG PARA ALUMINIO 6 Метчики YG из быстрорежущей стали для обработки алюминия 7 GWINTOWNIKI HSS DO ALUMINIUM 8 HSS YG ALUMINYUM KILAVUZLARI	For long-chipping Aluminum Wrought Alloys with Large Chip Gullets to Avoid Clogging in the Threading Operations	239
	1 **HSS-PM YG TAP Ti Ni** 2 HSS YG Gewindebohrer Titan / Superlegierungen 3 Taraud YG HSS pour Titane 4 MASCHI IN HSS PER SUPERLEGHE E LEGHE DI TITANIO 5 MACHOS HSS YG PARA TITANIO Y ALEACIONES CON NIQUEL 6 Метчики YG из быстрорежущей стали для обработки никелевых и титановых сплавов 7 GWINTOWNIKI HSS DO STOPÓW TYTANU I NIKLU 8 HSS YG TİTANYUM-NİKEL KILAVUZLARI	For Heat Resistent Super Alloys and Titanium Alloys Applied with Cutting Edge Rake Angles and Thread Relief	253

THREADING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH 6. RUSSIAN 7. POLISH 8. TURKISH

PRODUCTS	DESCRIPTION	PAGE
	1 **HSS-E & HSS-PM YG TAP FORMING** 2 HSS INNENGEWINDEFORMER 3 TARAUDS HSS A REFOULER 4 MASCHI A RULLARE 5 Machos HSS de laminación 6 Раскатники из быстрорежущей стали 7 WYGNIATAKI Z HSS 8 HSS OVALAMA KILAVUZLARI	Tapping by Forming Soft Materials	269
	1 **HSS-E NUT TAPS** 2 HSS MUTTERGEWINDEBOHRER 3 TARAUDS HSS ENFILADE 4 MASCHI PER DADI 5 Machos HSS para roscado de tuercas 6 Гаечные метчики из быстрорежущей стали 7 GWINTOWNIKI NAKRĘTKOWE HSS 8 HSS SOMUN KILAVUZLARI	Nut Tapping Machines	287
	1 **HSS-E SCREW THREAD INSERT TAPS** 2 HSS GEWINDEBOHRER FÜR GEWINDEDRAHTEINSÄTZE 3 TARAUDS HSS POUR FILETS RAPPORTES 4 MASCHI PER HELICOIL 5 Machos HSS para insertos de roscas de tornillo (helicoil) 6 Метчики из быстрорежущей стали под резьбовые вставки 7 GWINTOWNIKI EG HSS 8 HSS HELİCOİL KILAVUZLARI	Tapping STI Threads of Soft Materials	291
	1 **HSS & HSS-E PIPE TAPS** 2 HSS GASGEWINDEBOHRER 3 TARAYDS HSS POUR TUBE 4 MASCHI PER TUBI 5 Machos HSS rosca GAS 6 Метчики из быстрорежущей стали для трубной резьбы 7 GWINTOWNIKI RUROWE 8 HSS BORU KILAVUZLARI	Tapping Whitworth Pipe threads	299

SYNCHRO TAPS

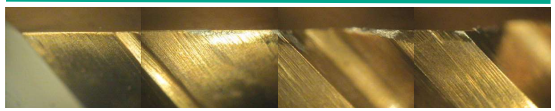
Reference page : p.63 - p.69

TEST Ⅰ - SPIRAL FLUTE

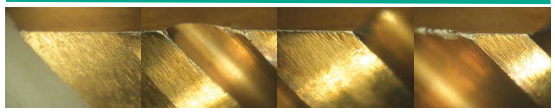
Cutting Condition

Tool	HSS-PM Synchro Spiral Flute Tap
Size	M10×1.5
Work Material	JIS : S45C(HRc35) DIN : C45 WR : 1.0503
Cutting Speed	30 m/min.
RPM (rev./min)	955 rev./min.
Feed(mm/min)	1.5 mm/rev.
Tapping Depth	25 mm
Tapping Method	Blind Hole Tapping
Coolant	Wet Cut
Machine	Machining Center

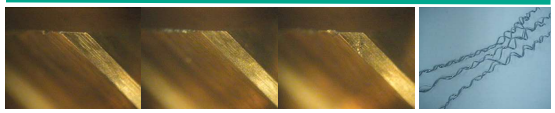
YG-1(Total Tapping 330 Holes)-Chamfer



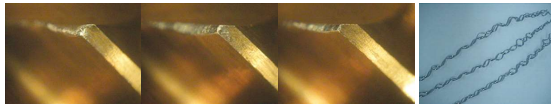
Competitor A(Total Tapping 330 Holes)-Chamfer



YG-1(Total Tapping 330 Holes)-Thread



Competitor A(Total Tapping 330 Holes)-Thread

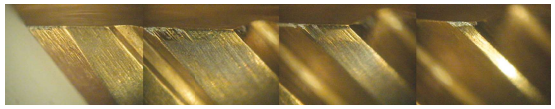


TEST Ⅱ - SPIRAL FLUTE

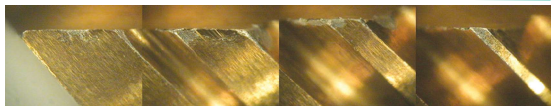
Cutting Condition

Tool	HSS-PM Synchro Spiral Flute Tap
Size	M6×1.0
Work Material	JIS : S45C(HRc35) DIN : C45 WR :1.0503
Cutting Speed	30 m/min.
RPM (rev./min)	1,592 rev./min.
Feed(mm/min)	1.0 mm/rev.
Tapping Depth	25 mm
Tapping Method	Blind Hole Tapping
Coolant	Wet Cut
Machine	Machining Center

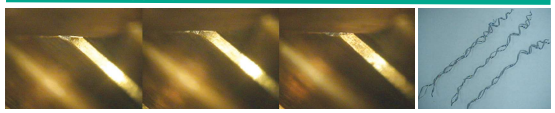
YG-1(Total Tapping 490 Holes)-Chamfer



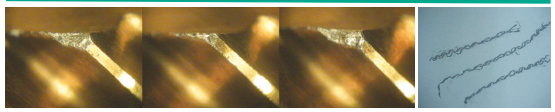
Competitor A(Total Tapping 490 Holes)-Chamfer



YG-1(Total Tapping 490 Holes)-Thread



Competitor A(Total Tapping 490 Holes)-Thread



COMBO TAPS - MULTI PURPOSE

Reference page : p.71 - p.117

TEST Ⅰ - SPIRAL FLUTE

Cutting Condition

Tool	Combo Spiral Flute Tap
Size	M8×1.25
Work Material	JIS : S45C(HRc35) DIN : C45 WR : 1.0503
Tapping Depth	20mm
Coolant	Water Soluble Oil
Vc (Tapping Speed)	10.0m/min

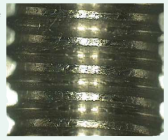
YG-1(Total Tapping 204 Holes)

Surface Roughness of Work Piece
Oberflächengüte des Werkstücks

204 Holes ▶

Competitor A (Total Tapping 159 Holes)

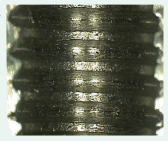
Surface Roughness of Work Piece
Oberflächengüte des Werkstücks



159 Holes ▶

Competitor B (Total Tapping 204 Holes)

Surface Roughness of Work Piece
Oberflächengüte des Werkstücks



204 Holes ▶

TEST Ⅱ - SPIRAL POINT

Cutting Condition

Tool	Combo Spiral Point Tap
Size	M2×0.4
Work Material	JIS : S45C(HRc35) DIN : C45 WR : 1.0503
Tapping Depth	6mm
Coolant	Tapping Oil
Machine	Machining Center

YG-1(Total Tapping 450 Holes)

Competitor A (Total Tapping 318 Holes)

Tool broke after tapping 318 holes

Competitor B (Total Tapping 103 Holes)

Tool broke after tapping 103 holes

COMBO TAPS - INOX

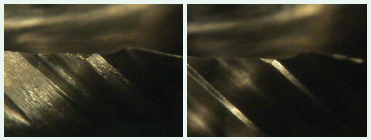
Reference page : p.71 - p.117

TEST Ⅰ - SPIRAL FLUTE

Cutting Condition

Tool	Combo tap for Stainless Steels (TQ744246)
Size	M4×0.7
Work Material	JIS : SUS304 DIN : X5CrNi18 10(X 4 CrNi18-10) WR : 1.4303
Tapping Depth	10mm
Coolant	Wet Cut
Vc (Tapping Speed)	8m/min.

YG-1 (Total Tapping 170 Holes)



Competitor A (Total Tapping 170 Holes)

Competitor B

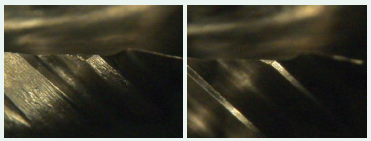
Tool broke after tapping 83 holes

TEST Ⅱ - SPIRAL FLUTE

Cutting Condition

Tool	Combo tap for Stainless Steels (TQ744316)
Size	M6×1.0
Work Material	JIS : SUS304 DIN : X5CrNi18 10 (X 4 CrNi18-10) WR : 1.4303
Tapping Depth	15mm
Coolant	Wet Cut
Vc (Tapping Speed)	8m/min.

YG-1(Total Tapping 230 Holes)



Competitor A

Tool broke after tapping 92 holes

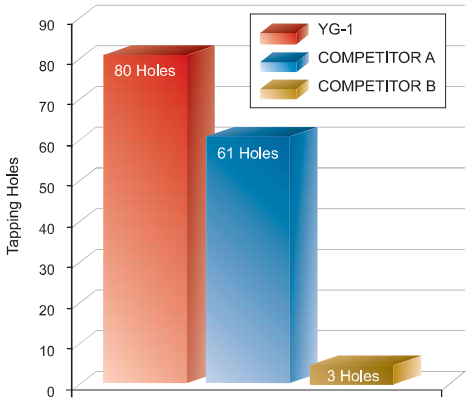
Competitor B

Tool broke after tapping 98 holes

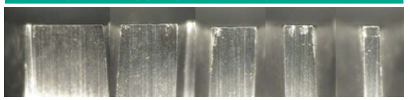
CARBIDE TAP for HARDENED STEELS

Reference page : p.191 - p.201

TEST Ⅰ - STRAIGHT FLUTE TAPS



YG-1(Total Tapping 80 Holes)



Competitor A(Total Tapping 61 Holes)

Tool broke after tapping 61 holes

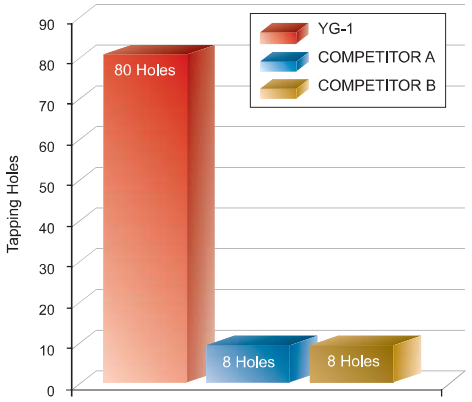
Competitor B(Total Tapping 3 Holes)

Tool broke after tapping 3 holes

Cutting Condition

Tool	Straight flute tap
Size	M6×1.0
Work Material	JIS : SKD61 (HRc50) DIN : X40GrMoV51(1.2344) AISI : H13
R.P.M.	120 rev./min.
Feed	1.0 mm/rev.
Tapping Depth	9mm (1.5×D)
Coolant	Wet Cut

TEST Ⅱ - STRAIGHT FLUTE TAPS



YG-1(Total Tapping 80 Holes)

Competitor A(Total Tapping 8 Holes)

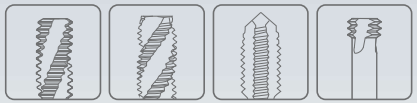
Competitor B(Total Tapping 8 Holes)

Tool broke after tapping 8 holes

Cutting Condition

Tool	Straight flute tap
Size	M6×1.0
Work Material	JIS : SKD61 (HRc50) DIN : X40GrMoV51(1.2344) AISI : H13
R.P.M.	120 rev./min.
Feed	1.0 mm/rev.
Tapping Depth	9mm (1.5×D)
Coolant	Wet Cut

Global Cutting Tool Leader **YG-1**



THREADING

THREADING TOOLS

SOLID CARBIDE THREAD MILLS (with & without Coolant Holes)

HSS-PM SYNCHRO TAPS (Spiral Flute, Spiral Point, Straight Flute & Cold Forming)

HSS-E & HSS-PM COMBO TAPS (Spiral Poin & Spiral Flute Tap)

HSS & HSS-E YG TAP GENERAL

HSS-E & HSS-PM YG TAP STEEL

SOLID CARBIDE & HSS-E YG TAP HARDENED

HSS-E & HSS-PM YG TAP INOX

SOLID CARBIDE & HSS-E YG TAP CAST IRON

HSS-E YG TAP ALU

HSS-PM YG TAP Ti Ni

HSS-E & HSS-PM YG TAP FORMING

HSS-E NUT TAPS

HSS-E SCREW THREAD INSERT TAPS

HSS & HSS-E PIPE TAPS

YG-1 CO., LTD.

CONTENTS

SOLID CARBIDE THREAD MILLS	SOLID CARBIDE **THREAD MILLS** (with & without Coolant Holes) Threading Large Diameter in High Quality / Available with Chamfer	THREAD MILLS
	HSS-PM **SYNCHRO** TAPS (Spiral Flute, Spiral Point, Straight Flute & Cold Forming) For High Speed Tapping on Rigid CNC Machine	SYNCHRO TAPS
HSS MACHINE TAPS	HSS-E & HSS-PM **COMBO** TAPS (Spiral Point & Spiral Flute Tap) For Multi Purpose Tapping / YG-1's Patent	COMBO TAPS
HSS MACHINE & HAND TAPS	HSS & HSS-E YG TAP **GENERAL** Suitable for Tapping Blind / Through Holes due to Flute Geometry and Excellent Chip Evacuation	YG TAP GENERAL
HSS MACHINE TAPS	HSS-E & HSS-PM YG TAP **STEEL** For Steel Materials but also other Long Chip Forming Materials	YG TAP STEEL
SOLID CARBIDE & HSS MACHINE TAPS	SOLID CARBIDE & HSS-E YG TAP **HARDENED** For Hardened Steels Applications to Control the Continuous and Red-glowing Chips	YG TAP HARDENED
HSS MACHINE TAPS	HSS-E & HSS-PM YG TAP **INOX** For Stainless Steels with Lamellar, Irregular Chip Formation where the Cutting Forces are Higher	YG TAP INOX
SOLID CARBIDE & HSS MACHINE TAPS	SOLID CARBIDE & HSS-E YG TAP **CAST IRON** For Cast Iron or Similar Work Materials	YG TAP CAST IRON
HSS MACHINE TAPS	HSS-E YG TAP **ALU** For long-chipping Aluminum Wrought Alloys with Large Chip Gullets to Avoid Clogging in the Threading Operations	YG TAP ALU
	HSS-PM YG TAP **Ti Ni** For Heat Resistent Super Alloys and Titanium Alloys Applied with Cutting Edge Rake Angles and Thread Relief	YG TAP Ti Ni
	HSS-E & HSS-PM YG TAP **FORMING** Tapping by Forming Soft Materials	YG TAP FORMING
	HSS-E **NUT** TAPS Nut Tapping Machines	NUT TAPS
	HSS-E **SCREW THREAD INSERT** TAPS Tapping STI Threads of Soft Materials	STI TAPS
HSS PIPE TAPS	HSS & HSS-E **PIPE** TAPS Tapping Whitworth Pipe threads	PIPE TAPS
TECHNICAL DATA	TECHNICAL DATA	TECHNICAL DATA

SELECTION GUIDE

YG THREADING TOOLS

THREAD MILLS

TYPE	Thread Mill without Coolant Hole				Thread Mill with Coolant Hole		
THREAD FORM	M	MF	UNC	UNF	M	MF	BSP(G)
HOLE TYPE	Max. 2.0xD Blind /Through Hole	Max. 1.5xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 1.5xD Blind /Through Hole	-
TOOL MATERIAL	CARBIDE						
FLUTE TYPE	Helix						
HELIX ANGLE	R15						
SERIES NO.	L1211 (P.42)	L1212 (P.43)	L1213 (P.44)	L1214 (P.45)	L4211 (P.46)	L4212 (P.47)	L6215 (P.48)
SURFACE TREATMENT	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
MODEL							

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ISO	VDI 3323	Material Description	HB	HRc							
P	1	Non-alloy steel	125		◎	◎	◎	◎	◎	◎	◎
	2		190	13	◎	◎	◎	◎	◎	◎	◎
	3		250	25	◎	◎	◎	◎	◎	◎	◎
	4		270	28	◎	◎	◎	◎	◎	◎	◎
	5		300	32	◎	◎	◎	◎	◎	◎	◎
	6	Low alloy steel	180	10	◎	◎	◎	◎	◎	◎	◎
	7		275	29	◎	◎	◎	◎	◎	◎	◎
	8		300	32	◎	◎	◎	◎	◎	◎	◎
	9		350	38	◎	◎	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel	200	15	◎	◎	◎	◎	◎	◎	◎
	11		325	35	◎	◎	◎	◎	◎	◎	◎
M	12	Stainless steel	200	15	○	○	○	○	○	○	○
	13		240	23	○	○	○	○	○	○	○
	14		180	10	○	○	○	○	○	○	○
K	15	Grey cast iron	180	10	◎	◎	◎	◎	◎	◎	◎
	16		260	26	◎	◎	◎	◎	◎	◎	◎
	17	Nodular Cast Iron	160	3	◎	◎	◎	◎	◎	◎	◎
	18		250	25	◎	◎	◎	◎	◎	◎	◎
	19	Malleable cast iron	130		◎	◎	◎	◎	◎	◎	◎
	20		230	21	◎	◎	◎	◎	◎	◎	◎
N	21	Aluminum-wrought alloy	60		◎	◎	◎	◎	◎	◎	◎
	22		100		◎	◎	◎	◎	◎	◎	◎
	23	Aluminum-cast, alloyed	75		◎	◎	◎	◎	◎	◎	◎
	24		90		◎	◎	◎	◎	◎	◎	◎
	25		130		◎	◎	◎	◎	◎	◎	◎
	26	Copper and Copper Alloys (Bronze / Brass)	110		◎	◎	◎	◎	◎	◎	◎
	27		90		◎	◎	◎	◎	◎	◎	◎
	28		100		◎	◎	◎	◎	◎	◎	◎
	29	Non Metallic Materials			◎	◎	◎	◎	◎	◎	◎
	30				◎	◎	◎	◎	◎	◎	◎
S	31	Heat Resistant Super Alloys	200	15	○	○	○	○	○	○	○
	32		280	30	○	○	○	○	○	○	○
	33		250	25	○	○	○	○	○	○	○
	34		350	38	○	○	○	○	○	○	○
	35		320	34	○	○	○	○	○	○	○
	36	Titanium Alloys	400 Rm		○	○	○	○	○	○	○
	37		1050 Rm		○	○	○	○	○	○	○
H	38	Hardened steel	550	55							
	39		630	60							
	40	Chilled Cast Iron	400	42							
	41	Hardened Cast Iron	550	55							

THREAD MILLS

TYPE	Thread Mill with Coolant Hole & Chamfer					Miniature Thread Mill		Miniature Thread Mill for Hard Materials		Drill & Thread Mill with Chamfer
	M	MF	UNC	UNF	NPT	M	UNC	M	UNC	M
HOLE TYPE	Max. 2.0xD Blind /Through Hole	Max. 1.5xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	-	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole	Max. 2.0xD Blind /Through Hole
TOOL MATERIAL	CARBIDE									
FLUTE TYPE	Helix					Helix		Straight		Helix
HELIX ANGLE	R15					R15		–		R25
SERIES NO.	L4271 (P.49)	L4272 (P.50)	L4273 (P.51)	L4274 (P.52)	L4276 (P.53)	L12D1 (P.54)	L12D3 (P.55)	L19E1 (P.56)	L19E3 (P.57)	L41A1 / L42A1 (P.58)
SURFACE TREATMENT	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	AlTiN	AlTiN	Bright / TiAlN
MODEL										

◎	◎	◎	◎	◎	◎	◎				1		
◎	◎	◎	◎	◎	◎	◎				2		
◎	◎	◎	◎	◎	◎	◎				3		
◎	◎	◎	◎	◎	◎	◎				4		
◎	◎	◎	◎	◎	◎	◎				5		
◎	◎	◎	◎	◎	◎	◎	○	○		6	P	
◎	◎	◎	◎	◎	◎	◎	○	○		7		
◎	◎	◎	◎	◎	◎	◎	○	○		8		
◎	◎	◎	◎	◎	◎	◎	○	○		9		
◎	◎	◎	◎	◎	◎	◎	○	○		10		
◎	◎	◎	◎	◎	◎	◎	○	○		11		
○	○	○	○	○	○	○	○	○		12		
○	○	○	○	○	○	○	○	○		13	M	
○	○	○	○	○	○	○	○	○		14		
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	15		
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	16		
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	17	K	
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	18		
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	19		
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	20		
◎	◎	◎	◎	◎	◎	◎			◎	21		
◎	◎	◎	◎	◎	◎	◎			◎	22		
◎	◎	◎	◎	◎	◎	◎			◎	23		
◎	◎	◎	◎	◎	◎	◎			◎	24		
◎	◎	◎	◎	◎	◎	◎			◎	25	N	
◎	◎	◎	◎	◎	◎	◎			◎	26		
◎	◎	◎	◎	◎	◎	◎			◎	27		
◎	◎	◎	◎	◎	◎	◎			◎	28		
◎	◎	◎	◎	◎	◎	◎			◎	29		
◎	◎	◎	◎	◎	◎	◎			◎	30		
○	○	○	○	○	○	○	◎	◎		31		
○	○	○	○	○	○	○	◎	◎		32		
○	○	○	○	○	○	○	◎	◎		33		
○	○	○	○	○	○	○	◎	◎		34	S	
○	○	○	○	○	○	○	◎	◎		35		
○	○	○	○	○	○	○	◎	○		36		
○	○	○	○	○	○	○	○	○		37		
							◎	◎		38		
							◎	◎		39	H	
							◎	◎		40		
							◎	◎		41		

SELECTION GUIDE

YG THREADING TOOLS

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			SYNCHRO TAPS				COMBO TAPS			
HOLE TYPE			Max. 2.5xD Blind Hole	Max. 3.0xD Through Hole	Max. 2.0xD Blind Through Hole	Max. 3.0xD Blind Through Hole	Max. 2.5xD Blind Hole			
TOOL MATERIAL			HSS-PM				HSS-E			
CHAMFER LEAD ACC. TO DIN2197			C	B	C	C	C	C	C	C
FLUTE TYPE			Spiral Flute	Spiral Point	Straight Flute	Cold Forming	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute
SPIRAL FLUTE ANGLE			R45	-	-	-	R40	R40	R40	R40
SERIES	M	DIN371/376	TTS31 (P.65)	TTS33 (P.66)	TKS35 (P.67)	TTS37 (P.68)	TC804 (P.76)	TD804 (P.76)	TB804 (P.76)	TCE05 (P.77)
		DIN352								
		DIN357/LONG								
	MF	DIN374					TC844 (P.81)	TD844 (P.81)	TB844 (P.81)	TCE09 (P.83)
		DIN2181								
	UNC	DIN371/376					TC824 (P.91)	TD824 (P.91)	TB824 (P.91)	TCE01 (P.92)
		DIN351								
	UNF	DIN371/374					TC864 (P.93)	TD864 (P.93)	TB864 (P.93)	TCE02 (P.94)
		DIN2181								
	BSW	DIN2182/2183								
		DIN351								
	G(BSP)	DIN5156/5157								
	EG-M	DIN371/376								
	EG-UNC	DIN371/376								
	EG-UNF	DIN371/374								
SURFACE TREATMENT			TiN	TiN	TiCN	TiN	Bright	TiN	VAP	Bright
MODEL										

ISO	VDI 3323	Material Description	HB	HRc							
P	1	Non-alloy steel	125		◎	◎	○	◎	○	○	○	○
	2		190	13	◎	◎	○	◎	◎	◎	◎	◎
	3		250	25	◎	◎	○	◎	◎	◎	◎	◎
	4		270	28	◎	◎	○	◎	◎	◎	◎	◎
	5		300	32					◎	◎	◎	◎
	6	Low alloy steel	180	10	◎	◎	○	◎	◎	◎	◎	◎
	7		275	29	◎	◎	○	◎	◎	◎	◎	◎
	8		300	32					◎	◎	◎	◎
	9		350	38					◎	◎	◎	◎
	10	High alloyed steel, and tool steel	200	15					○	○	○	○
	11		325	35								
M	12	Stainless steel	200	15	◎	◎		◎	◎	◎	◎	◎
	13		240	23	◎	◎		◎	◎	◎	◎	◎
	14		180	10	○	○		◎	◎	◎	◎	◎
K	15	Grey cast iron	180	10	○	○	◎		◎	◎	◎	◎
	16		260	26			◎		◎	◎	◎	◎
	17	Nodular cast iron	160	3	◎	◎	◎		◎	◎	◎	◎
	18		250	25			◎		◎	◎	◎	◎
	19	Malleable cast iron	130				○					
	20		230	21			○					
N	21	Aluminum-wrought alloy	60					◎				
	22		100					◎				
	23	Aluminum-cast, alloyed	75		◎	◎	○	◎	◎	◎	◎	◎
	24		90		◎	◎	○	◎				
	25		130		◎	◎	○	○				
	26	Copper and Copper Alloys (Bronze / Brass)	110		◎	◎			◎	◎	◎	◎
	27		90						◎	◎	◎	◎
	28		100		○	○		◎	◎	◎	◎	◎
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys	200	15								
	32		280	30								
	33		250	25								
	34		350	38								
	35		320	34								
	36	Titanium Alloys	400 Rm									
	37		1050 Rm									
H	38	Hardened steel	550	55								
	39		630	60								
	40	Chilled Cast Iron	400	42								
	41	Hardened Cast Iron	550	55								

	COMBO TAPS															
	Max. 2.5xD Blind Hole															
	HSS-E															HSS-PM
	C	C	C	C	C	C	C	C	C	C	C	C	C	E	C	C
	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute
	R40	R40	R40	R40	R40	R40	R40	R40	R40	R40	R40	R40	R40	R40	R45	R45
	TDE05 (P.77)	TBE05 (P.77)	TCE06 (P.78)	TDE06 (P.78)	TBE06 (P.78)	TCE07 (P.79)	TDE07 (P.79)	TBE07 (P.79)	TCE08 (P.80)	TDE08 (P.80)	TBE08 (P.80)	TC804-IC (P.85)		TC807 (P.86)	TB744 (P.88)	TQ744 (P.88)
													TC633 (P.87)			
	TDE09 (P.83)														TB754 (P.90)	TQ754 (P.89)
	TDE01 (P.92)															
	TDE02 (P.94)															
	TiN	VAP	Bright	TiN	VAP	Bright	TiN	VAP	Bright	TiN	VAP	Bright	Bright	Bright	VAP	VAP

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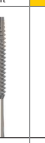
YG THREADING TOOLS

COMBO TAPS

Max. 3.0xD Through Hole

HOLE TYPE			Max. 3.0xD Through Hole							
TOOL MATERIAL			HSS-E							
CHAMFER LEAD ACC. TO DIN2197			B	B	B	B	B	B	B	B
FLUTE TYPE			Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point
SPIRAL FLUTE ANGLE			–	–	–	–	–	–	–	–
SERIES	M	DIN371/376	TC814 (P.95)	TD814 (P.95)	TB814 (P.95)	TCJ05 (P.96)	TDJ05 (P.96)	TBJ05 (P.96)	TCJ06 (P.97)	TDJ06 (P.97)
		DIN352								
		DIN357/LONG								
	MF	DIN374	TC854 (P.100)	TD854 (P.100)	TB854 (P.100)	TCJ09 (P.102)	TDJ09 (P.102)			
		DIN2181								
	UNC	DIN371/376	TC834 (P.109)	TD834 (P.109)	TB834 (P.109)	TCJ01 (P.110)	TDJ01 (P.110)			
		DIN351								
	UNF	DIN371/374	TC874 (P.111)	TD874 (P.111)	TB874 (P.111)	TCJ02 (P.112)	TDJ02 (P.112)			
		DIN2181								
	BSW	DIN2182/2183								
		DIN351								
	G(BSP)	DIN5156/5157								
	EG-M	DIN371/376								
	EG-UNC	DIN371/376								
	EG-UNF	DIN371/374								
SURFACE TREATMENT			Bright	TiN	VAP	Bright	TiN	VAP	Bright	TiN
MODEL										

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◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	HB	HRc								
P	1	Non-alloy steel	125		○	○	○	○	○	○	○	○
	2		190	13	◎	◎	◎	◎	◎	◎	◎	◎
	3		250	25	◎	◎	◎	◎	◎	◎	◎	◎
	4		270	28	◎	◎	◎	◎	◎	◎	◎	◎
	5		300	32	◎	◎	◎	◎	◎	◎	◎	◎
	6	Low alloy steel	180	10	◎	◎	◎	◎	◎	◎	◎	◎
	7		275	29	◎	◎	◎	◎	◎	◎	◎	◎
	8		300	32	◎	◎	◎	◎	◎	◎	◎	◎
	9		350	38	◎	◎	◎	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel	200	15	○	○	○	○	○	○	○	○
	11		325	35								
M	12	Stainless steel	200	15	◎	◎	◎	◎	◎	◎	◎	◎
	13		240	23	◎	◎	◎	◎	◎	◎	◎	◎
	14		180	10	◎	◎	◎	◎	◎	◎	◎	◎
K	15	Grey cast iron	180	10	◎	◎	◎	◎	◎	◎	◎	◎
	16		260	26	◎	◎	◎	◎	◎	◎	◎	◎
	17	Nodular cast iron	160	3	◎	◎	◎	◎	◎	◎	◎	◎
	18		250	25	◎	◎	◎	◎	◎	◎	◎	◎
	19	Malleable cast iron	130									
	20		230	21								
N	21	Aluminum-wrought alloy	60									
	22		100									
	23	Aluminum-cast, alloyed	75		◎	◎	◎	◎	◎	◎	◎	◎
	24		90									
	25		130									
	26	Copper and Copper Alloys (Bronze / Brass)	110		◎	◎	◎	◎	◎	◎	◎	◎
	27		90		◎	◎	◎	◎	◎	◎	◎	◎
	28		100		◎	◎	◎	◎	◎	◎	◎	◎
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys	200	15								
	32		280	30								
	33		250	25								
	34		350	38								
	35		320	34								
	36	Titanium Alloys	400 Rm									
	37		1050 Rm									
H	38	Hardened steel	550	55								
	39		630	60								
	40	Chilled Cast Iron	400	42								
	41	Hardened Cast Iron	550	55								

COMBO TAPS

Max. 3.0xD Through Hole

HOLE TYPE		Max. 3.0xD Through Hole									
TOOL MATERIAL		HSS-E									HSS-PM
CHAMFER LEAD ACC. TO DIN2197		B	B	B	B	B	B	B	B	B	B
FLUTE TYPE		Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point
SPIRAL FLUTE ANGLE		–	–	–	–	–	–	–	–	–	–
SERIES	M	TBJ06 (P.97)	TCJ07 (P.98)	TDJ07 (P.98)	TBJ07 (P.98)	TCJ08 (P.99)	TDJ08 (P.99)	TBJ08 (P.99)	TC814-IC (P.104)		TQ428 (P.106)
										TC445 (P.105)	
	MF										TB438 (P.108)
	UNC										TQ438 (P.107)
	UNF										
	BSW										
	G(BSP)										
	EG-M										
	EG-UNC										
	EG-UNF										
SURFACE TREATMENT		VAP	Bright	TiN	VAP	Bright	TiN	VAP	Bright	Bright	VAP	VAP
MODEL												

P	1	○	○	○	○	○	○	○	○	○		
	2	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○
	3	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	4	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○
	5	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	6	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○
	7	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○
	8	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	9	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	10	○	○	○	○	○	○	○	○	○		
	11											
M	12	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	13	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	14	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
K	15	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	16	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	17	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	18	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	19											
	20											
N	21											
	22											
	23	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	24											
	25											
	26	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	27	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	28	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○
	29											
	30											
S	31											
	32											
	33											
	34											
	35											
	36											
	37											
H	38											
	39											
	40											
	41											

COMBO TAP SETS

Combo Spiral Flute Taps

TB804SET5	TC804SET7
VAP	Bright
5pcs	7pcs

Combo Spiral Flute Taps + Gold-P Drill

TD804SET7-GLP195

TiN

14pcs

P.493

CARBIDE
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YG TAP STEEL
YG TAP HARDENED
YG TAP INOX
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THREADING TOOLS

YG TAP GENERAL

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HOLE TYPE			Max. 2.5xD Blind Hole			Max. 3.0xD Through Hole				Max. 3xD Blind Through Hole
TOOL MATERIAL			HSS-E							
CHAMFER LEAD ACC. TO DIN2197			C	C	C	B	B	B	B	C	C
FLUTE TYPE			Spiral Flute	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Flute	Straight Flute
SPIRAL FLUTE ANGLE			R40	R40	R20	–	–	–	–	L20	–
SERIES	M	DIN371/376	TC711 (P.124)	TD711 (P.125)	TC517 (P.133)	TC127 (P.135)	TD127 (P.136)	TC227 (P.145)	TD227 (P.146)	TC211 (P.147)	TC463 (P.148)
		DIN352			TC612 (P.134)	TC122 (P.137)					
		DIN357/LONG									
	MF	DIN374	TC411 (P.126)	TD411 (P.128)		TC222 (P.138)	TD222 (P.140)				TC473 (P.149)
		DIN2181									
	UNC	DIN371/376	TC144 (P.130)			TC214 (P.142)					TC424 (P.150)
		DIN351									
	UNF	DIN371/374	TC124 (P.131)			TC234 (P.143)					
		DIN2181									
	BSW	DIN2182/2183	TC134 (P.132)			TC224 (P.144)					
		DIN351									
	G(BSP)	DIN5156/5157									
	EG-M	DIN371/376									
	EG-UNC	DIN371/376									
	EG-UNF	DIN371/374									
SURFACE TREATMENT			Bright	TiN	Bright	Bright	TiN	Bright	TiN	Bright	Bright
MODEL											

ISO	VDI 3323	Material Description	HB	HRc									
P	1	Non-alloy steel	125		○	○	○	○	○	○	○	○	○
	2		190	13	◎	◎	◎	◎	◎	◎	◎	◎	○
	3		250	25	◎	◎	◎	◎	◎	◎	◎	◎	○
	4		270	28	◎	◎	◎	◎	◎	◎	◎	◎	○
	5		300	32	○	○	○	○	○	○	○	○	○
	6	Low alloy steel	180	10	◎	◎	◎	◎	◎	◎	◎	◎	○
	7		275	29	◎	◎	◎	◎	◎	◎	◎	◎	○
	8		300	32	○	○	○	○	○	○	○	○	○
	9		350	38									
	10	High alloyed steel, and tool steel	200	15									
	11		325	35									
M	12	Stainless steel	200	15	○	○	○	○	○	○	○	○	○
	13		240	23	○	○	○	○	○	○	○	○	○
	14		180	10									
K	15	Grey cast iron	180	10									○
	16		260	26									○
	17	Nodular cast iron	160	3	◎	◎	◎	◎	◎	◎	◎	◎	○
	18		250	25	◎	◎	◎	◎	◎	◎	◎	◎	○
	19	Malleable cast iron	130										
	20		230	21									
N	21	Aluminum-wrought alloy	60		○	○	○	○	○	○	○	○	
	22		100										
	23	Aluminum-cast, alloyed	75		○	○	○	○	○	○	○	○	
	24		90		○	○	○	○	○	○	○	○	
	25		130		◎	◎	◎	◎	◎	◎	◎	◎	○
	26	Copper and Copper Alloys (Bronze / Brass)	110		○	○	○	○	○	○	○	○	○
	27		90										○
	28		100		◎	◎	◎	◎	◎	◎	◎	◎	
	29	Non Metallic Materials											
	30												
S	31	Heat Resistant Super Alloys	200	15									
	32		280	30									
	33		250	25									
	34		350	38									
	35		320	34									
	36	Titanium Alloys	400 Rm										
	37		1050 Rm										
H	38	Hardened steel	550	55									
	39		630	60									
	40	Chilled Cast Iron	400	42									
	41	Hardened Cast Iron	550	55									

YG TAP GENERAL

Max. 2.0xD Blind/Through Hole

HSS

I / II / III	I / III	I / II / III	I / III	I / II / III	I / II / III	
Straight Flute	Straight Flute	Straight Flute	Straight Flute	Straight Flute	Straight Flute	
–	–	–	–	–	Left Hand Cut	
T7109 (P.151)					T7343 (P.158)	M
	T7309 (P.153)					MF
		T7363 (P.155)				UNC
			T7509 (P.156)			UNF
				T7609 (P.157)		BSW
						G(BSP)
						EG-M
						EG-UNC
						EG-UNF
Bright	Bright	Bright	Bright	Bright	Bright	

○	○	○	○	○	○	1	P
○	○	○	○	○	○	2	
○	○	○	○	○	○	3	
○	○	○	○	○	○	4	
						5	
○	○	○	○	○	○	6	
○	○	○	○	○	○	7	
						8	
						9	
						10	
						11	
						12	M
						13	
						14	
						15	K
						16	
○	○	○	○	○	○	17	
○	○	○	○	○	○	18	
						19	
						20	
						21	N
						22	
						23	
						24	
○	○	○	○	○	○	25	
○	○	○	○	○	○	26	
○	○	○	○	○	○	27	
						28	
						29	
						30	
						31	S
						32	
						33	
						34	
						35	
						36	
						37	
						38	H
						39	
						40	
						41	

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			YG TAP GENERAL		YG TAP STEEL		
HOLE TYPE			Max. 2.0xD Blind/Through Hole		Max. 2.5xD Blind Hole		
TOOL MATERIAL			HSS	HSS-E	HSS-PM		HSS-E
CHAMFER LEAD ACC. TO DIN2197			I / II / III	I / II / III	C	C	C
FLUTE TYPE			Straight Flute	Straight Flute	Spiral Flute	Spiral Flute	Spiral Flute
SPIRAL FLUTE ANGLE			–	–	R40	R40	R40
SERIES	M	DIN371/376			TQ823 (P.166)	TR823 (P.167)	TC312 (P.168)
		DIN352	TB373 (P.159)	TC353 (P.160)			
		DIN357/LONG					
	MF	DIN374					TC413 (P.172)
		DIN2181					
	UNC	DIN371/376					TC174 (P.174)
		DIN351					
	UNF	DIN371/374					TC184 (P.176)
		DIN2181					
	BSW	DIN2182/2183					
		DIN351					
	G(BSP)	DIN5156/5157					
	EG-M	DIN371/376					
	EG-UNC	DIN371/376					
	EG-UNF	DIN371/374					
SURFACE TREATMENT			VAP	Bright	VAP	Bright	Bright
MODEL							

ISO	VDI 3323	Material Description	HB	HRc				
P	1	Non-alloy steel	125		○	○			
	2		190	13	○	○	○	○	○
	3		250	25	○	○	○	○	○
	4		270	28	○	○	○	○	○
	5	Low alloy steel	300	32			◎	◎	◎
	6		180	10	○	○	○	○	○
	7		275	29	○	○	○	○	○
	8		300	32			◎	◎	◎
	9		350	38			◎	◎	◎
	10	High alloyed steel, and tool steel	200	15			○	○	○
	11		325	35					
M	12	Stainless steel	200	15	○				
	13		240	23	○				
	14		180	10	○		○	○	○
K	15	Grey cast iron	180	10					
	16		260	26					
	17	Nodular cast iron	160	3					
	18		250	25					
	19	Malleable cast iron	130						
	20		230	21					
N	21	Aluminum-wrought alloy	60						
	22		100						
	23	Aluminum-cast, alloyed	75						
	24		90						
	25		130						
	26	Copper and Copper Alloys (Bronze / Brass)	110						
	27		90						
	28		100						
	29	Non Metallic Materials							
	30								
S	31	Heat Resistant Super Alloys	200	15			○	○	○
	32		280	30					
	33		250	25					
	34		350	38					
	35		320	34					
	36	Titanium Alloys	400 Rm				○	○	○
	37		1050 Rm						
H	38	Hardened steel	550	55					
	39		630	60					
	40	Chilled Cast Iron	400	42					
	41	Hardened Cast Iron	550	55					

	YG TAP STEEL									
	Max. 2.5xD Blind Hole				Max. 3.0xD Through Hole					
	HSS-E				HSS-PM		HSS-E			
	C	C	C	C	B	B	B	B	B	B
	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point	Spiral Point
	R40	R40	R40	R40	-	-	-	-	-	-
M	TD312 (P.169)	TB312 (P.170)	TY312 (P.171)	TB913 (P.177)	TQ863 (P.178)	TR863 (P.179)	TC422 (P.180)	TD422 (P.181)	TE422 (P.182)	TY422 (P.183)
MF	TD413 (P.173)						TC263 (P.184)	TD263 (P.185)		
UNC	TD174 (P.175)						TC244 (P.186)	TD244 (P.187)		
UNF							TC254 (P.188)			
BSW										
G(BSP)										
EG-M										
EG-UNC										
EG-UNF										
	TiN	VAP	TiAlN	VAP	VAP	Bright	Bright	TiN	Ni	TiAlN
P	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	○	○	○	○	○	○	○	○	○	○
M					○	○	○	○	○	○
					○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
K										
N										
S	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
H										

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YG TAP HARDENED

HOLE TYPE			Max. 2.0xD Blind / Through Hole		Max. 2.5xD Blind Hole			Max. 3.0xD Through Hole	
TOOL MATERIAL			CARBIDE		HSS-E				
CHAMFER LEAD ACC. TO DIN2197			C	D	C	C	C	B	B
FLUTE TYPE			Straight Flute	Straight Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point
SPIRAL FLUTE ANGLE			-	-	R40	R40	R40	-	-
SERIES	M	DIN371/376	T0997-TIC (P.194)	T0999-TIC (P.195)	TC313 (P.196)	TB313 (P.197)	TY313 (P.198)	TC283 (P.199)	TY283 (P.200)
		DIN352							
		DIN357/LONG							
	MF	DIN374							
		DIN2181							
	UNC	DIN371/376							
		DIN351							
	UNF	DIN371/374							
		DIN2181							
	BSW	DIN2182/2183							
		DIN351							
	G(BSP)	DIN5156/5157							
	EG-M	DIN371/376							
	EG-UNC	DIN371/376							
	EG-UNF	DIN371/374							
SURFACE TREATMENT			TiCN	TiCN	Bright	VAP	TiAlN	Bright	TiAlN
MODEL									

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ISO	VDI 3323	Material Description	HB	HRc					
P	1	Non-alloy steel	125						
	2		190	13					
	3		250	25					
	4		270	28					
	5		300	32					
	6	Low alloy steel	180	10					
	7		275	29		○	○	○	○	○
	8		300	32		○	○	○	○	○
	9		350	38	○	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel	200	15						
	11		325	35						
M	12	Stainless steel	200	15						
	13		240	23						
	14		180	10		○	○	○	○	○
K	15	Grey cast iron	180	10						
	16		260	26						
	17	Nodular cast iron	160	3						
	18		250	25						
	19	Malleable cast iron	130							
	20		230	21						
N	21	Aluminum-wrought alloy	60							
	22		100							
	23	Aluminum-cast, alloyed	75							
	24		90							
	25		130							
	26	Copper and Copper Alloys (Bronze / Brass)	110				○	○	○	○	○
	27		90							
	28		100							
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys	200	15						
	32		280	30						
	33		250	25						
	34		350	38						
	35		320	34						
	36	Titanium Alloys	400 Rm							
	37		1050 Rm							
H	38	Hardened steel	550	55	◎	◎				
	39		630	60	◎	◎				
	40	Chilled Cast Iron	400	42	◎	◎				
	41	Hardened Cast Iron	550	55	◎	◎				

YG TAP INOX

Max. 2.0xD Blind Hole	Max. 2.5xD Blind Hole											
HSS-E	HSS-PM		HSS-E							HSS-PM		
C	C	C	C	C	C	C	C	C	C	B	B	
Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point	
R40	R40	R40	R40	R40	R40	R40	R40	R40	R40	–	–	
TB711 (P.206)	TQ813 (P.207)	TR813 (P.208)	TB914 (P.209)	TI914 (P.209)	TBE15 (P.210)	TBE16 (P.211)	TBE17 (P.212)	TBE18 (P.213)	TCH14 (P.214)	TQ853 (P.215)	TR853 (P.216)	M
			TB183 (P.219)									MF
			TB904 (P.220)									UNC
			TB924 (P.221)									UNF
												BSW
												G(BSP)
												EG-M
												EG-UNC
												EG-UNF
VAP	VAP	Bright	VAP	TiCN	VAP	VAP	VAP	VAP	HardSlick	VAP	Bright	
◎	○	○	◎	◎	◎	◎	◎	◎	◎	○	○	1
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	2
	○	○	○	○	○	○	○	○	○	○	○	3
	○	○	○	○	○	○	○	○	○	○	○	4
												5
	○	○	○	○	○	○	○	○	○	○	○	6 P
												7
												8
												9
												10
												11
○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	12
○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	13 M
○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	14
												15
												16
												17
												18 K
												19
												20
○												21
												22
												23
												24
												25
												26 N
												27
○												28
												29
												30
	○	○	○	○	○	○	○	○	○	○	○	31
												32
												33
												34 S
												35
	○	○	○	○	○	○	○	○	○	○	○	36
												37
												38
												39
												40 H
												41

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YG TAP INOX / YG TAP CAST IRON

HOLE TYPE			Max. 2.5xD Blind Hole		Max. 2.0xD Blind / Through Hole				
TOOL MATERIAL			HSS-E		CARBIDE	HSS-E			
CHAMFER LEAD ACC. TO DIN2197			B	B	C	C	C	C	C
FLUTE TYPE			Spiral Point	Spiral Point	Straight Flute	Straight Flute	Straight Flute	Straight Flute	Straight Flute
SPIRAL FLUTE ANGLE			–	–	-	-	-	-	-
SERIES	M	DIN371/376	TB623 (P.217)	TCH23 (P.218)	T0993 (P.229)	TE821 (P.230)	TD821 (P.231)	TI821 (P.232)	TY821 (P.233)
		DIN352							
		DIN357/LONG							
	MF	DIN374	TB123 (P.222)			TE403 (P.234)			
		DIN2181							
	UNC	DIN371/376	TB264 (P.223)			TE434 (P.235)			
		DIN351							
	UNF	DIN371/374	TB274 (P.224)			TE454 (P.236)			
		DIN2181							
	BSW	DIN2182/2183							
		DIN351							
	G(BSP)	DIN5156/5157							
	EG-M	DIN371/376							
	EG-UNC	DIN371/376							
	EG-UNF	DIN371/374							
SURFACE TREATMENT			VAP	HardSlick	Bright	NI	TiN	TiCN	TiAlN
MODEL									

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◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	HB	HRc						
P	1	Non-alloy steel	125		◎	◎				
	2		190	13	◎	◎				
	3		250	25	○	○				
	4		270	28	○	○				
	5		300	32						
	6	Low alloy steel	180	10	○	○				
	7		275	29						
	8		300	32						
	9		350	38						
	10	High alloyed steel, and tool steel	200	15						
	11		325	35						
M	12	Stainless steel	200	15	◎	◎				
	13		240	23	◎	◎				
	14		180	10	◎	◎				
K	15	Grey cast iron	180	10			◎	◎	◎	◎	◎
	16		260	26			◎	◎	◎	◎	◎
	17	Nodular cast iron	160	3			◎	◎	◎	◎	◎
	18		250	25			◎	◎	◎	◎	◎
	19	Malleable cast iron	130				○	○	○	○	○
	20		230	21			○	○	○	○	○
N	21	Aluminum-wrought alloy	60							
	22		100				◎				
	23	Aluminum-cast, alloyed	75							
	24		90				◎				
	25		130							
	26	Copper and Copper Alloys (Bronze / Brass)	110							
	27		90					○	◎	◎	◎
	28		100							
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys	200	15	○	○				
	32		280	30						
	33		250	25						
	34		350	38						
	35		320	34						
	36	Titanium Alloys	400 Rm		○	○				
	37		1050 Rm							
H	38	Hardened steel	550	55						
	39		630	60						
	40	Chilled Cast Iron	400	42			◎			
	41	Hardened Cast Iron	550	55						

YG TAP ALU / YG TAP Ti Ni

	Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole		Max. 2.0xD Blind/Through Hole			Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole	
	HSS-E							HSS-PM			
	C	C	B	B	C	C	C	C	C	B	B
	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point	Straight Flute	Straight Flute	Straight Flute	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point
	R45	R40	-	-	-	-	-	R25	R25	-	-
M	TC163 (P.242)	TE953 (P.243)	TC622 (P.247)	TE943 (P.248)	TC433 (P.249)	TE433 (P.250)	TY433 (P.251)	TM903 (P.256)	TZ903 (P.257)	TM293 (P.258)	TZ293 (P.259)
MF	TC963 (P.244)										
UNC	TC169 (P.245)										
UNF	TC170 (P.246)										
BSW											
G(BSP)											
EG-M											
EG-UNC											
EG-UNF											
	Bright	NI	Bright	NI	Bright	NI	TiAlN	Bright	TiAlN	Bright	TiAlN
P	○		○								
	○		○								
	○	○	○	○							
								○	○	○	○
								○	○	○	○
								○	○	○	○
M											
K											
N	◎	○	◎	○							
	◎	○	◎	○							
	◎	○	◎	○							
	◎	○	◎	○							
		◎		◎							
					◎	◎	◎				
	○		○		○	○	○				
					○		○				
S								○	○	○	○
										○	○
										○	○
										○	○
										○	○
								○	○	○	○
								◎	◎	◎	◎
H											
										○	○

CARBIDE
HSS
THREAD MILLS
SYNCHRO TAPS
COMBO TAPS
YG TAP GENERAL
YG TAP STEEL
YG TAP HARDENED
YG TAP INOX
YG TAP CAST IRON
YG TAP ALU
YG TAP Ti Ni
YG TAP FORMING
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THREADING TOOLS

YG TAP Ti Ni

HOLE TYPE			Max. 2.5xD Blind Hole	Max. 3.0xD Through Hole	Max. 2.5xD Blind Hole	Max. 3.0xD Through Hole			
TOOL MATERIAL			HSS-PM						
CHAMFER LEAD ACC. TO DIN2197			C	C	B	B	C	C	B	B
FLUTE TYPE			Spiral Flute	Spiral Flute	Spiral Point	Spiral Point	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point
SPIRAL FLUTE ANGLE			R40	R40	-	-	R40	R40	-	-
SERIES	M	DIN371/376	TM933 (P.260)	TZ933 (P.261)	TM923 (P.262)	TZ923 (P.263)	TQ833 (P.264)	TR833 (P.265)	TQ873 (P.266)	TR873 (P.267)
		DIN352								
		DIN357/LONG								
	MF	DIN374								
		DIN2181								
	UNC	DIN371/376								
		DIN351								
	UNF	DIN371/374								
		DIN2181								
	BSW	DIN2182/2183								
		DIN351								
	G(BSP)	DIN5156/5157								
	EG-M	DIN371/376								
	EG-UNC	DIN371/376								
	EG-UNF	DIN371/374								
SURFACE TREATMENT			Bright	TiAlN	Bright	TiAlN	VAP	Bright	VAP	Bright
MODEL										

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◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	HB	HRc							
P	1	Non-alloy steel	125								
	2		190	13							
	3		250	25							
	4		270	28							
	5		300	32							
	6	Low alloy steel	180	10	◎	◎	◎	◎	◎	◎	◎	◎
	7		275	29	◎	◎	◎	◎	◎	◎	◎	◎
	8		300	32	◎	◎	◎	◎	◎	◎	◎	◎
	9		350	38	◎	◎	◎	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel	200	15								
	11		325	35								
M	12	Stainless steel	200	15								
	13		240	23								
	14		180	10								
K	15	Grey cast iron	180	10								
	16		260	26								
	17	Nodular cast iron	160	3								
	18		250	25								
	19	Malleable cast iron	130									
	20		230	21								
N	21	Aluminum-wrought alloy	60									
	22		100									
	23	Aluminum-cast, alloyed	75									
	24		90									
	25		130									
	26	Copper and Copper Alloys (Bronze / Brass)	110									
	27		90									
	28		100									
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys	200	15	◎	◎	◎	◎	◎	◎	◎	◎
	32		280	30	◎	◎	◎	◎	◎	◎	◎	◎
	33		250	25	◎	◎	◎	◎	◎	◎	◎	◎
	34		350	38	◎	◎	◎	◎	◎	◎	◎	◎
	35		320	34	◎	◎	◎	◎	◎	◎	◎	◎
	36	Titanium Alloys	400 Rm					○	○	○	○	○
	37		1050 Rm		○	○	○	○	◎	◎	◎	◎
H	38	Hardened steel	550	55				○				
	39		630	60								
	40	Chilled Cast Iron	400	42			○	○			○	○
	41	Hardened Cast Iron	550	55								

YG TAP FORMING

Max. 3.0xD Blind / Through Hole

		HSS-E			HSS-PM	HSS-E		HSS-PM	HSS-E	
		C	C	C	C	C	C	C	C	C
		-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-
M		TD703 (P.272)	TE703 (P.273)	TY703 (P.274)	TQ703 (P.275)	TD713 (P.276)	TE713 (P.277)	TQ723 (P.278)	TE723 (P.279)	TD723 (P.280)
MF		TD733 (P.281)	TE733 (P.282)							
UNC		TD704 (P.283)	TE704 (P.284)							
UNF										
BSW										
G(BSP)										
EG-M										
EG-UNC										
EG-UNF										
		TiN	NI	TiAlN	VAP	TiN	NI	VAP	NI	TiN
P	1		◎	◎	◎	◎	◎	◎	◎	◎	◎
	2		◎	◎	◎	◎	◎	◎	◎	◎	◎
	3		◎	◎	◎	◎	◎	◎	◎	◎	◎
	4										
	5										
	6		◎	◎	◎	◎	◎	◎	◎	◎	◎
	7										
	8										
	9										
	10										
	11										
M	12		○	○	○	○	○	○	○	○	○
	13		○	○	○	○	○	○	○	○	○
	14		○	○	○	○	○	○	○	○	○
K	15										
	16										
	17										
	18										
	19										
	20										
N	21		◎	◎	◎	◎	◎	◎	◎	◎	◎
	22		◎	◎	◎	◎	◎	◎	◎	◎	◎
	23		○	○	○	○	○	○	○	○	○
	24		○	○	○	○	○	○	○	○	○
	25										
	26		○	○	○	○	○	○	○	○	○
	27										
	28		○	○	◎	○	◎	○	○	○	◎
	29										
	30										
S	31										
	32										
	33										
	34										
	35										
	36										
	37										
H	38										
	39										
	40										
	41										

CARBIDE
HSS
THREAD MILLS
SYNCHRO TAPS
COMBO TAPS
YG TAP GENERAL
YG TAP STEEL
YG TAP HARDENED
YG TAP INOX
YG TAP CAST IRON
YG TAP ALU
YG TAP Ti Ni
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YG THREADING TOOLS

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◎ : Excellent ○ : Good

			NUT TAPS	SCREW THREAD INSERT TAPS		PIPE TAPS	
HOLE TYPE			Max. 2.0xD Through Hole	Max. 2.5xD Blind Hole	Max. 3.0xD Through Hole	Max. 2.0xD Blind/Through Hole	Max. 2.5xD Blind Hole
TOOL MATERIAL			HSS-E	HSS-E		HSS	HSS-E
CHAMFER LEAD ACC. TO DIN2197			Long	C	B	I/III	C
FLUTE TYPE			Straight Flute	Spiral Flute	Spiral Point	Straight Flute	Spiral Flute
SPIRAL FLUTE ANGLE			–	R40	–	–	R40
SERIES	M	DIN371/376					
		DIN352					
		DIN357/LONG	TC803 (P.289)				
	MF	DIN374					
		DIN2181					
	UNC	DIN371/376					
		DIN351					
	UNF	DIN371/374					
		DIN2181					
	BSW	DIN2182/2183					
		DIN351					
	G(BSP)	DIN5156/5157				T7709 (P.301)	TC728 (P.302)
	EG-M	DIN371/376		TC909 (P.293)	TC973 (P.294)		
	EG-UNC	DIN371/376		TC944 (P.295)	TC934 (P.296)		
	EG-UNF	DIN371/374			TC954 (P.297)		
SURFACE TREATMENT			Bright	Bright	Bright	Bright	Bright
MODEL							

ISO	VDI 3323	Material Description	HB	HRc					
P	1	Non-alloy steel	125		○	○	○	○	
	2		190	13	○	○	○	○	◎
	3		250	25	○	○	○	○	◎
	4		270	28	○				◎
	5	Low alloy steel	300	32					
	6		180	10	○			○	◎
	7		275	29	○				◎
	8		300	32					
	9		350	38					
	10	High alloyed steel, and tool steel	200	15					
	11		325	35					
M	12	Stainless steel	200	15					
	13		240	23					
	14		180	10					
K	15	Grey cast iron	180	10				○	
	16		260	26				○	
	17	Nodular cast iron	160	3	○				◎
	18		250	25	○				◎
	19	Malleable cast iron	130						
	20		230	21					
N	21	Aluminum-wrought alloy	60			◎	◎	○	○
	22		100			◎	◎	○	○
	23	Aluminum-cast, alloyed	75			◎	◎	○	○
	24		90			◎	◎		○
	25		130		○				◎
	26	Copper and Copper Alloys (Bronze / Brass)	110		○				◎
	27		90		○	◎	◎		○
	28		100						
	29	Non Metallic Materials							
	30								
S	31	Heat Resistant Super Alloys	200	15					
	32		280	30					
	33		250	25					
	34		350	38					
	35		320	34					
	36	Titanium Alloys	400 Rm						
	37		1050 Rm						
H	38	Hardened steel	550	55					
	39		630	60					
	40	Chilled Cast Iron	400	42					
	41	Hardened Cast Iron	550	55					

	PIPE TAPS			
	Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole	
	HSS-E			
	C	C	B	
	Spiral Flute	Spiral Flute	Spiral Point	
	R40	R40	–	
M				
MF				
UNC				
UNF				
BSW				
G(BSP)	TC729 (P.303)	TB514 (P.304)	TC727 (P.305)	
EG-M				
EG-UNC				
EG-UNF				
	Bright	VAP	Bright	
P	○	◎	◎	1
	○	◎	◎	2
	◎		◎	3
	◎		◎	4
				5
	○		◎	6
	○		◎	7
	◎			8
	◎			9
				10
				11
M		◎		12
		◎		13
	○	◎		14
K				15
				16
			◎	17
			◎	18
				19
				20
N			○	21
			○	22
			○	23
			○	24
			◎	25
			◎	26
			○	27
				28
				29
				30
S				31
				32
				33
				34
				35
				36
				37
H				38
				39
				40
				41

CARBIDE
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YG TAP GENERAL
YG TAP STEEL
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CUTTING SPEED TABLE SCHNITTGESCHWINDIGKEITSTABELLE

Cutting Speeds m/min. into revolutions per minute

TOOL R.P.M. (rev/min)																
Tool Dia.	Cutting Speed (m/min)															
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
1	318	637	955	1274	1592	1910	2548	3185	3822	4777	6396	7962	9554	12739	15924	19108
2	159	318	478	637	796	955	1274	1592	1911	2388	3185	3981	4777	6369	7962	9554
3	106	212	318	425	531	637	849	1062	1274	1592	2123	2654	3185	4246	5308	6369
4	80	159	239	318	398	478	637	796	955	1194	1592	1990	2389	3185	3981	4777
5	64	127	191	255	318	382	510	637	764	955	1274	1592	1911	2548	3185	3822
6	53	106	159	212	265	318	425	531	637	796	1062	1327	1592	2123	2653	3185
8	40	80	119	159	199	239	318	398	478	597	796	955	1194	1592	1990	2388
10	31	64	96	127	159	191	255	318	382	478	637	796	955	1274	1592	1911
12	26	53	80	106	133	159	212	265	318	398	531	663	796	1062	1327	1592
14	23	45	68	91	114	136	182	227	273	341	455	569	682	910	1137	1365
16	20	40	60	80	100	119	159	199	239	299	398	498	597	796	995	1194
18	18	35	53	71	88	106	142	177	212	265	354	442	531	708	885	1062
20	16	32	48	64	80	96	127	159	191	239	318	398	478	637	796	955
25	13	25	38	51	64	76	102	127	153	191	255	318	382	510	637	764
30	11	21	32	42	53	64	85	106	127	159	212	265	318	425	531	637
35	9	18	27	36	45	55	73	91	109	136	182	227	273	364	455	546
40	8	16	24	32	40	48	64	80	96	119	159	199	239	118	398	478

RPM = rev/min
V = m/min
D = Dia.(mm)

$$V = \frac{RPM \cdot \pi \cdot D}{1000}$$

$$RPM = \frac{1000 \cdot V}{\pi \cdot D}$$

The applied High Speed Steels holds a grant of good wear resistance and toughness. Therefore YG-1 normally delivers taps with bright and unfinished surface. For certain materials, various surface treatments provide higher advantage in machining.

STEAM TEMPERED - Vap

Steam Tempered is a Fe3O4-oxyd-coating which reduces friction between the tool and workpiece, also preventing cold welding.

NITRIDING - NI

Recommend surface treatment for machining materials that affect wear abrasion, such as grey cast iron, alu-alloys with high Si-percentages (more than 10%).

Below are the various surface treatments for excellent finish surfaces suitable for many applications. The surface treatments are produced and developed within the company.

TiN-COATING

TiN-coating yields a hardness of approx. 2,300 HV and also a heat resistant up to approx. 600°C. The current coating is an excellent all-round coating for normal applications.
Colour : Golden Coefficient of friction against steel : 0.4

TiCN-COATING

TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness.
The TiCN brings advantages for machining very difficult steels or cutting interrupted bores.
The TiCN-coating has a hardness of approx. 3,000 HV, but is heat resistance only holds up to approx. 400°C, meaning that the TiCN needs an excellent cooling system for a long service life.
Colour : Blue-Grey Coefficient of friction against steel : 0.4

TiAlN-COATING

A special coating for machining abrasive materials such as grey cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining at high temperatures with insufficient cooling, or at high speeds ≥ 600m/min. TiAlN has a hardness of approx. 3,000 HV and is heat resistant up to approx. 800°C.
Colour : Violet-Grey Coefficient of friction against steel : 0.4

Hardslick-COATING

Hardslick combines the advantages of an extremely hard, thermally stable TiAlN-coating with the sliding and lubricating properties of an outer WC/C(Tungsten carbide/carbon)-coating in a novel way. The Hardslick coating has a hardness of approx. 3,000 HV and is temperature-resistant up to approx. 800°C.
Colour : Violet-Grey Coefficient of friction against steel : 0.2

EXAMPLES FOR APPLICATION MATERIAL GROUPS

11 Magnetic Soft Steels < 400 N/mm²

1.1013	RFe 100
1.1014	RFe 80
1.1015	RFe 60
1.0718	9 S MnPb 28

12 Structure/Case Carburizing Steels < 700 N/mm²

1.0037	St 37-2
1.0050	St 50-2
1.0060	St 60-2
1.0070	St 70-2
1.0401	C 15
1.1141	Ck 15

13 Plain Carbon Steels < 850 N/mm²

1.0501	C 35
1.0503	C 45
1.0535	C 55
1.0601	C 60
1.1181	Ck 35
1.1191	Ck 45

14 Alloy Steels < 850 N/mm²

1.2080	X210Cr12
1.2363	X100CrMoV5-1
1.3243	S 6-5-2-5
1.3343	S 6-5-2
1.7218	25CrMo4
1.7220	34CrMo4

15 Alloy, Hardened & Tempered Steels < 1,200 N/mm²

1.2581	X30WCrV9 3
1.2622	X60WCrMoV9
1.2550	60WCrV7
1.6580	30CrNiMo8
1.7361	32CrMo12
1.8515	31CrMo12

16 Alloy, Hardened & Tempered Steels > 1,200 N/mm²

To this group belong most of the materials of group 15, but present a higher tensile strength.

21 Free machining stainless Steels < 850 N/mm²

1.4005	X12CrS13
1.4006	X10Cr13
1.4016	X6Cr17
1.4104	X12CrMoS17
1.4305	X10CrNiS18 9

22 Austenitic stainless Steels < 850 N/mm²

1.4301	X5CrNi18 10
1.4406	X2CrNiMoN17 12 2
1.4435	X2CrNiMo18 14 3
1.4541	X6CrNiTi18 10
1.4571	X6CrNiMoTi17 12 2
1.4828	X15CrNiSi20 12

23 Matensitic/Ferritic/Fer.-Aus. Stainless Steels < 1,000 N/mm²

1.4112	X90CrMoV18
1.4125	X105CrMo17
1.4002	X6CrAl13
1.4512	X6CrTi12
1.4582	X4CrNiMoNb25 7
1.4821	X20CrNiSi25 4

31 Grey graphite cast irons < 500 N/mm²

0.6015	GG-15
0.6020	GG-20
0.6025	GG-25
0.6030	GG-30
0.6035	GG-35
0.6040	GG-40

32 Grey graphite cast irons < 1,000 N/mm²

0.6020	GG-20
0.6025	GG-25
0.6030	GG-30
0.6035	GG-35
0.6040	GG-40

33 Nodular graphite, Malleable cast irons < 700 N/mm²

0.7040	GGG-40
0.7043	GGG-40.3
0.7050	GGG-50
0.7060	GGG-60
0.8040	GTW-40
0.8065	GTW-65

34 Nodular graphite, Malleable cast irons < 1,000 N/mm²

0.7040	GGG-40
0.7043	GGG-40.3
0.7050	GGG-50
0.7060	GGG-60
0.7070	GGG-70
0.7080	GGG-80

41 Titanium unalloys < 700 N/mm²

3.7024	Ti99.5
3.7034	Ti99.7
3.7035	Ti2
3.7055	Ti99.4
3.7064	Ti99.2
3.7065	Ti4

42 Titanium alloys < 900 N/mm²

	TiA14Mn4
3.7114	TiA15Sn2
3.7124	TiCu2
3.7164	TiA16V4
3.7174	TiA16V6Sn2

43 Titanium alloys < 1,300 N/mm²

3.7124	TiCu2
3.7144	TiA16Sn2Zr4Mo2
3.7154	TiAl6Zr5
3.7164	TiA16V4
3.7174	TiA16V6Sn2
3.7184	TiAl4Mo4Sn2

51 Nickel unalloys < 500 N/mm²

2.1504	NiAlBz
2.4042	Ni99CSi
2.4060	Ni99.6
2.4062	Ni99.4Fe

52 Heat resisting Nickel alloys < 900 N/mm²

2.4360	Monel 400
2.4374	Monel 500
2.4665	Hastelloy X
2.4812	Hastelloy C
2.4816	Inconel 600
1.4876	Incoloy 800

53 Heat resisting Nickel alloys < 1,400 N/mm²

2.4631	Nimonic80A
2.4632	Nimonic90
2.4634	Nimonic105
2.4662	Nimonic901
2.4668	Inconel 718
2.4669	Inconel X-750

61 Copper unalloys < 350 N/mm²

2.0060	E-Cu57
2.0070	SE-Cu
2.0090	SF-Cu
2.1356	CuMn3
2.1522	CuSi2Mn

62 Short chip Brass, Bronze copper alloys < 700N/mm²

2.0360	CuZn40 (Ms60)
2.0380	CuZn39Pb2 (Ms58)
2.0410	CuZn44Pb2
2.0580	CuZn40Mn1Pb
2.1086	G-CuSn10Zn
2.1096	G-CuSn5ZnPb

63 Long chip Brass, Bronze copper alloys < 700 N/mm²

2.0250	CuZn20
2.0321	CuZn37
2.1020	CuSn6
2.1080	CuSn6Zn6
2.1245	CuBel.7
2.1293	CuCrZr

64 Cu-Al-Fe alloys < 1,500 N/mm²

71 Aluminum-Magnesium unalloys < 350 N/mm²

3.0250	Al99.5H
3.0280	Al99.8H
3.0305	Al99.9
3.3308	Al99.9Mg0.5

72 Aluminum alloys, Si < 1.5% < 600 N/mm²

3.0515	AlMn1
3.0525	AlMn1Mg0.5
3.1325	AlCuMg1
3.3315	AlMg1
3.3241	G-AlMg3Si
3.3292	GD-AlMg9

73 Aluminum alloys, 0.5-10% Si < 600 N/mm²

3.2134	G-AlSi5Cu1Mg
3.2152	GD-AlSi6Cu4
3.2162	GD-AlSi8Cu3
3.2373	G-AlSi9Mg

74 Aluminum alloys, Si > 10% < 600 N/mm²

3.2381	G-AlSi10Mg
3.2383	G-AlSi10Mg(Cu)
3.2581	G-AlSi12
3.2583	G-AlSi12(Cu)
3.5662	G-MgA16
3.5812	G-MgA18Zn1

81 Thermoplastics

Delrin(POM)
Teflon
Nylon

82 Thermosseting plastics

Bakelit
Novopan

83 Reinforced plastics materials

Glass fiber reinforced
Thermo and Duroplastics

Referance:DIN

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
10 - STEEL					
11 - Magnetic soft steels - Hardness < 120 HB 30 - Tensile strength < 400 N/mm²					
1.1013	RFe 100		OSOA12	EN2	
1.1014	RFe 80				
1.1015	RFe 60		230Mo7	EN1	
1.0718	9 S MnPb 28				
12 - Structural steels - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
12.1 - Structural steels					
1.0034	RSt 34-2	A34-2 EN	1449 34/20 HR		
1.0035	St 33	A33	Fe 310-0		
1.0036	St 37-2		060A35	EN3A,4,5,6,7,8	
1.0037	RSt 37-2				
1.0044	St 44-2				
1.0050	St 50-2		4360-50B	EN 207	
1.0060	St 60-2				
1.0070	St 70-2				
1.0116	St 37-3				
1.0144	St 44-3				
12.2 - Case carburizing steels					
1.0301	C 10	AF 34 C 10	040 A 10		M 1010
1.0401	C 15	AF 37 C 12	080 A 15		M 1015
1.1121	Ck 10	XC 10	040 A 10		1010
1.1141	Ck 15	XC 12	040 A 15		1015
1.5732	14 Ni Cr 10	14 NC 11			3415
1.7015	15 Cr 3	12 C 3	523 M 15		5015
1.7131	16 Mn Cr 5	16 MC 4	527 M 17	EN 32	5115
1.7147	20 Mn Cr 5	20 MC 5			5120
12.3 - Free machining steels					
1.0710	15 S 10				
1.0715	9 S Mn 28	S 250	230 M 07		1213
1.0718	9 S Mn Pb 28	S 250 Pb			12 L 13
1.0721	10 S 20	10 F1	210 M 15		1108 1109
1.0722	10 S Pb 20	10 Pb F 2			11 L 08
1.0723	15 S 20	.....	210 A 15		
1.0726	35 S 20	35 MF 6	212 M 36		1140
1.0727	45 S 20	45 MF 4			1146
1.0736	9 S Mn 36	S 300			1215
1.0737	9 S Mn Pb 36	S 300 Pb			12 L 14
12.4 - Cast structural steels					
1.0416	GS - 38				
1.0446	GS - 45				
1.0552	GS - 52				
1.0553	GS - 60	E 36 - 3			
1.0554	GS - 70				
13 - Plain carbon steels - tempered					
13.1 - Steels, tempered - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.0402	C 22	1 C 22	070 M 20		M 1023
1.0501	C 35	1 C 35	080 A 32		1035
1.0503	C 45	1 C 45	060 A 47		1045
1.0535	C 55	1 C 55	070 M 55		1055
1.0601	C 60	1 C 60	060 A 62	EN 43	1060
1.1157	40 Mn 4	35 M 5	150 M 36		1035 1041
1.1151	Ck 22	2 C 22	055 M 15		1020 1023
1.1181	Ck 35	2 C 35	080 A 35		1035 1038
1.1191	Ck 45	2 C 45	080 M 46	EN 9, 10	1045
1.1203	Ck 55	2 C 55	060 A 57		1055
1.1221	Ck 60	2 C 60	060 A 62		1060 1064

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
14 - Alloy steels - Hardness < 250 HB 30, < 25 HRC - Tensile strength < 850 N/mm²					
14.1 - Cold work tool steels					
1.2056	90 Cr 3				
1.2067	100 Cr 6	Y 100 C 6	BL 3		L 1 L 3
1.2080	X 210 Cr 12	Z 200 C 12	BD 3		D3
1.2083	X 42 Cr 13	Z 40 C 14			420
1.2363	X 100 CrMoV5 1	Z 100 CDV 5	BA 2		A 2
1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	BD 2		D 2
1.2510	100 MnCrW 4	90 MWCV 5	BO 1		O1
1.2550	60 WCrV 7	55WC 20	BS 1		S1
1.2823	70 Si 7				
1.2826	60 Mn Si Cr 4				
1.2842	90 MnCrV 8	90 MV 8	BO 2		O 2
14.2 - High speed steels					
1.3202	S 12-4-4-5	Z 130 WKCV 12-05-04-04	BT 15		T 15
1.3207	S 10-4-3-10	Z130 WKCDV10-10-04-04-03	BT 42		T 42
1.3243	S 6-5-2-5	Z85 WDKCV 06-05-05-04-02	BM 35		M 35
1.3247	S 2-10-1-8	Z110 DKCWV 09-08-04-02-01	BM 42		M 42
1.3343	S 6-5-2	Z 85 WDCV 06-05-04-02	BM 2		M 2
1.3344	S 6-5-3	Z 120 WDCV 06-05-04-03			M 3 / 2
1.3348	S 2-9-2	Z 100 DCWV 09-04-02-02			M 7
ASP 23	(S 6-5-3)				
ASP 30					
ASP 60					
14.3 - Alloy steels					
1.5919	GS-15Cr Ni 6	16 NC 6			3115
1.7218	GS-25Cr Mo 4	25 C D 4	70 8A 25		4130
1.7220	GS-34Cr Mo 4	35 C D 4	70 8A 37		4135 4137
1.7379	GS-18 Cr Mo 9 10				
14.4 - Tempered steels					
1.0503	C 45	1 C 45	060 A 47		1045
1.7220	34 Cr Mo 4	34 Cr Mo 4	708 A 37		4135, 4137
1.7225	42 Cr Mo 4	42 CD 4	708 A 42	EN 16, 17, 19	4140, 4142
1.7228	50 Cr Mo 4	50 Cr Mo 4	708 A 47		4150
14.5 - Nitriding steels					
1.7779	20 Cr Mo V 13.5				
1.8504	34 Cr Al 6				
1.8506	34 Cr Al S 5				
1.8507	34 Cr Al Mo 5	30 CAD 6.12			A 355 Cl.D
1.8509	41 Cr Al Mo 7	40 CAD 6.12	905 M 39		A 355 Cl.A
1.8515	31 Cr Mo 12	30 CD 12	722 M 24		
15 - Alloy steels / Tempered steels - Hardness 250-350 HB 30, 25-38 HRC - Tensile strength 850-1,200 N/mm²					
15.1 - Alloy steels for tools					
1.2311	40 Cr Mn Mo 7				
1.2312	40 Cr Mn Mo S 86				
1.2436	X 210 Cr W 12	Z 200 CW 12			
1.2711	54 Ni Cr Mo V 6				
1.2713	55 Ni Cr Mo V 6	55 NCDV 7	826 M 40	S 95, S 97, S 98	L 6
1.2714	56 Ni Cr Mo V 7				
1.2743	60 Ni Cr Mo V 12 4				
1.2766	35 Ni Cr Mo 16				
15.2 - Alloy steels for hot work					
1.2343	X 38 Cr Mo V 5 1	Z 38 CDV 5	BH 11		H 11
1.2344	X 40 Cr Mo V 5 1	Z 40 CDV 5	BH 13		H 13
1.2365	X 32 Cr Mo V 3 3	32 DCV 28	BH 10		H 10
1.2367	X 40 Cr Mo V 5 3	Z 38 CDV 5.3			
1.2581	X 30 W Cr V 9 3	Z 30 WCV 9.3	BH 21		H 21
1.2622	X 60 W Cr Mo V 9				
1.2678	X 45 CoCrWV 5 5 5				
1.2550	60 WCr V 7	55 WC 20	BS 1		S 1
1.2567	X 30 W Cr V 5 3	Z 32 WCV 5			

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
15.3 - Hardened tempered steels - Hardness may be different according to presentation and dimensions of material					
1.5864	35 Ni Cr 18				
1.6580	30 Cr Ni Mo 8	30 Cr Ni Mo 8			
1.7361	32 Cr Mo 12	30 CD 12	722 M 24		
1.7707	30 Cr Mo V 9				
1.8161	58 Cr V 4				
15.4 - Nitriding steels					
1.8515	31 Cr Mo 12	30 CD 12	722 M 24		
1.8519	31 Cr Mo V 9		830 M 31		
1.8523	39 Cr Mo V 13 9		897 M 39		
1.8550	34 Cr Al Ni 7		826 M 40		
16 - Alloy steels / Hardened tempered steels - Hardness > 38 HRC - Tensile strength > 1,200 N/mm²					
To this group belong most of the materials of group 15, but present a higher tensile strength					
20 - STAINLESS STEELS					
21 - Free machining stainless steels - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.4104	X 12 Cr Mo S 17	Z 13 CF 17	416 S 37	EN 56	430 F
1.4305	X 10 Cr Ni S 18 09	Z 8 CNF 18-09	303 S 21	EN 60	303
22 - Austenitic stainless steels - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.4300	X 12 Cr Ni 18 8		320 S 12		
1.4301	X 5 Cr Ni 18 10	Z 6 CN 18-09	304 S 15	EN 80, EN 58 + C	304
1.4311	X 2 CrNiN 18 10	Z 3 CN 18-07 Az	304 S 61		304 LN
1.4406	X 2 CrNiMoN 17 12 2	Z 3 CND 17 11 02	316 S 61		316 LN
1.4433	X 2 CrNiMo 18 15		316 S		
1.4435	X 2 CrNiMo 18 14 3	Z3 CND 17-12-03	316 S 11		316 L
1.4539	X 1 CrNiMoCu 25 20 5	Z 1 NCDU 25-20	321 S 17		UNS N08904
1.4541	X 6 CrNiTi 18 10	Z 6 CNT 18 10	321 S 18	EN 58 J, 316	321
1.4571	X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17 12	320 S 18		316 Ti
1.4573	X 10 CrNiMoTi 18 12		320 S 33		
1.4828	X 15 CrNiSi 20 12	Z 15 CNS 20-12	309 S 24		309
22.1 - Cast austenitic stainless steels					
1.4308	G-X 6 CrNi 18 9	Z 6 CN 18.10 M	304 C 15(LT196)		CF-8
1.4313	G-X 5 CrNi 13 4	Z 8 CD 17-01	425 C 12		CA 6 -NM
1.4408	G-X 6 CrNiMo 18 10		316 C 16(LT196)		CF-8M
1.4581	G-X 5 CrNiMoNb 18 10	Z 4 CNDNb 18.12M	318 C 17		
23 - Martensitic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,000 N/mm²					
1.4021	X 20 Cr 13	Z 20 C 13	420 S 37		420
1.4034	X 46 Cr 13	Z 44 C 14	(420 S 45)		
1.4057	X 20 CrNi 17 2	Z 15 CN 16-02	431 S 29		431
1.4112	X 90 CrMoV 18				
1.4116	X 45 CrMoV 15			EN 58, b.e.j.t	
1.4125	X 105 CrMo 17	Z 100 CD 17		Duplex alloys	440 C
1.4718	X 45 CrSi 9 3	Z 45 CS 9	401 S 45		HNV 3
1.4747	X 80 CrNiSi 20	Z 80 CSN 20-02	443 S 65		HNV 6
1.4086	G-X 120 Cr 29				
1.4106	G-X 10 CrMo 13				
1.4138	G-X 120 CrMo 29 2				
24 - Ferritic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4002	X 6 Cr Al 13	Z 8 CA 12	405 S 17		405
1.4006	X 10 Cr 13	Z 10 C 13	410 C 21		410
1.4016	X 6 Cr 17	Z 8 C 17	430 S 17		430
1.4510	X 6 Cr Ti 17	Z 8 CT 17			430 Ti
1.4512	X 6 Cr Ti 12	Z 6 CT 12	409 S 19		409
25 - Ferritic-Austenitic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4460	X 8 CrNiMo 27 5	Z 5 CND 27-05 Az			329
1.4582	X 4 CrNiMoNb 25 7				
1.4821	X 20 CrNiSi 25 4				

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
30 - CAST IRONS					
31 - Grey graphite cast irons - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
0.6010	GG-10	Ft 10 D			A 48-20 B
0.6015	GG-15	Ft 20 D	Grade 150	Grey cast iron soft	A 48-25 B
0.6020	GG-20	Ft 25 D	Grade 220		A 48-30 B
0.6025	GG-25	Ft 30 D	Grade 260		A 48-40 B
0.6030	GG-30	Ft 30 D	Grade 300		A 48-45 B
0.6035	GG-35	Ft 35 D	Grade 350		A 48-50 B
0.6040	GG-40	Ft 40 D	Grade 400		A 48-60 B
31.1 - Meehanite - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
.....	GF - 150				
.....	GD - 260				
32 - Grey graphite cast irons - Hardness 150 - 300 HB 30 - Tensile strength 500 - 1,000 N/mm²					
0.6020	GG - 20	Ft 25 D	Grade 220	Grey cast iron hard	A 48-30 B
0.6025	GG - 25	Ft 30 D	Grade 260		A 48-40 B
0.6030	GG - 30	Ft 30 D	Grade 300		A 48-45 B
0.6035	GG - 35	Ft 35 D	Grade 350		A 48-50 B
0.6040	GG - 40	Ft 40 D	Grade 400		A 48-60 B
32.1 - Meehanite - Hardness 150-300 HB 30 - Tensile strength 500-1,000 N/mm²					
.....	GF - 150				
.....	GD - 260				
15 - Alloy steels / Tempered steels - Hardness 250-350 HB 30, 25-38 HRC - Tensile strength 850-1,200 N/mm²					
0.7033	GGG-35.3				
0.7040	GGG-40	FGS 400-12	420 / 12		60-40-18
0.7043	GGG-40.3	FGS 370-17	370 / 17		
0.7050	GGG-50	FGS 500-7	500 / 7		65-45-12
0.7060	GGG-60	FGS 600-3	600 / 3	S.G.iron, Meehanite	80-55-06
0.8035	GTW-35		700/2,30g/72	Black & White Heart	
0.8040	GTW-40				
0.8045	GTW-45				
0.8065	GTW-65				
0.8135	GTS-35				
0.8145	GTS-45				
0.8155	GTS-55				
0.8165	GTS-65				
33.1 - Meehanite - Hardness < 200 HB 30 -Tensile strength < 700 N/mm²					
SF 400					
SPF 600					
34 - Nodular graphite, tempered malleable cast irons - Hardness 200-300 HB 30 - Tensile strength 700-1,000 N/mm²					
0.7070	GGG-70	FGS 700-2	700 / 2	S.G.iron,Meehanite	100-70-03
0.7080	GGG-80	FGS 800-2	800 / 2	Black & White Heart	120-90-02
And materials from group 33 tempered					
34.1 - Meehanite - Hardness 200-300 HB 30 - Tensile strength 700-1,000 N/mm²					
	SH 800		420/12, P 440/7		
	SH 1000				
40 - TITANIUM					
41 - Titanium, unalloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
3.7024.1LN	Ti 99.5				
3.7034.1LN	Ti 99.7				
3.7035	Ti 2				
3.7055	Ti 99.4		TA 1-9	Ti 99.0	
3.7064.1LN	Ti 99.2				
3.7065	Ti 4				
3.7255	Ti 3 Pd				

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
42 - Titanium, alloys - Hardness < 270 HB 30 - Tensile strength < 900 N/mm²					
	Ti Al 4 Mn 4				
3.7144 LN	Ti Al 5 Sn 2				
3.7124 LN	Ti Cu 2		TA 10-14, TA 17	Ti - 2AL	
3.7164 LN	Ti Al 6 V 4		TA 18		
3.7174 LN	Ti Al 6 V 6 Sn 2				
43 - Titanium, alloys - Hardness 270-300 HB 30 - Tensile strength 900-1,300 N/mm²					
3.7124 LN	Ti Cu 2				
3.7144 LN	Ti Al 6 Sn 2 Zr4 Mo2			Ti AL	
3.7154 LN	Ti Al 6 Zr 5		TA 10-13, TA 28	3.7174LN, 3.7148LN	
3.7164 LN	Ti Al 6 V 4				
3.7174 LN	Ti Al 6 V Sn 2				
3.7184 LN	Ti Al 4 Mo 4 Sn 2				
50 - NICKEL					
51 - Nickel, unalloys - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
2.1504 LN	Ni Al Bz				
2.4042	Ni 99 CSi		NA 11, NA 12	Nickel 200	
2.4060	Ni 99.6			Nickel 270	
2.4062	Ni 99.4 Fe				
52 - Heat resisting nickel alloys - Hardness < 270 HB 30 - Tensile strength < 900 N/mm²					
2.4360 LN	Monel 400				
2.4374 LN	Monel 500				
2.4617	Hastelloy B 2			Nimonic 75	
2.4665	Hastelloy X		HR 203		
2.4812	Hastelloy C		3027-76	Hastelloy C	
2.4816	Inconel 600			Haynes Alloys 263	
1.4876	Incoloy 800				
2.4983	Udimet 500				
53 - Heat resisting nickel alloys - Hardness 270-410 HB 30 - Tensile strength 900-1,400 N/mm²					
2.4631	Nimonic 80 A			Nimonic 80	
2.4632	Nimonic 90				
2.4634	Nimonic 105				
2.4662	Nimonic 901		HR 8		
2.4668	Inconel 718		HR 401, 601	Rene 41	
2.4669	Inconel X-750				
2.4670 LN	Nimocast 713				
2.4674 LN	Nimocast PK 24				
2.4856	Inconel 625				
2.6554 LN	Waspaloy				
60 - COPPER					
61 - Copper, unalloys - Hardness < 100 HB 30 - Tensile strength < 350 N/mm²					
2.0060	E - Cu 57				
2.0070	SE - Cu			Commercially Pure	
2.0090	SF - Cu		C 101		
2.1356	Cu Mn 3				
2.1522	Cu Si 2 Mn				
62 - Short chip copper alloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
62.1 - Brass					
2.0360	Cu Zn 40(MS 60)				
2.0380	Cu Zn 39 Pb 2 (MS 58)		CZ120, CZ109		
2.0410	Cu Zn 44 Pb 2		PB104		
2.0561	Cu Zn 40 Al 1			2.1030, 2.1080	
2.0580	Cu Zn 40 Mn 1 Pb				
2.0771	Cu Ni 7 Zn 39 Mn 5 Pb3				
62.2 - Bronzes					
2.1086	G-Cu Sn 10 Zn				
2.1093	G-Cu Sn 6 Zn Ni				
2.1096	G-Cu Sn 5 Zn Pb				

MATERIAL GROUP

STANDARDS

GERMANY		FRANCE	GREAT BRITAIN	EN & OTHER	U.S.A.
W.Nr	DIN	AFNOR	B.S.	CLASSIFICATIONS	AISI
63 - Long chip copper alloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
63.1 - Brass					
2.0250	Cu Zn 20				
2.0265	Cu Zn 30				
2.0321	Cu Zn 37		CZ108, CZ106		
2.0335	Cu Zn 36 (Ms 63)				
63.2 - Bronzes					
2.1020	Cu Sn 6				
2.1030	Cu Sn 8				
2.1080	Cu Sn 6 Zn 6				
63.3 - Copper alloys tempered by forging					
2.1245	Cu Be 1.7				
2.1247	Cu Be 2				
2.1293	Cu Cr Zr				
64 - Cu - Al - Fe alloys Hardness < 440 HB 30 - Tensile strength < 1,500 N/mm²					
70 - ALUMINIUM - MAGNESIUM					
71 - Aluminum - Magnesium, unalloys - Hardness < 100 HB 30 - Tensile strength < 350 N/mm²					
3.0250	Al 99.5 H				
3.0280	Al 99.8 H				
3.0305	Al 99.9				
3.3308	Al 99.9 Mg 0.5				
72 - Aluminum alloys, Si < 1.5% - Hardness < 180 HB 30 - Tensile strength < 600 N/mm²					
72.1 - Forging aluminum alloys					
3.0515	Al Mn 1				
3.0516	S-Al Mn				
3.0525	Al Mn 1 Mg 0.5				
3.0615	Al Mg Si Pb				
3.1325	Al Cu Mg 1				
3.1355	Al Cu Mg 2				
3.3315	Al Mg 1				
3.3535	Al Mg 3				
3.4365	Al Zn Mg Cu 1.5				
72.2 - Cast aluminum alloys					
3.1841	G - Al Cu 4 Ti				
3.3241	G - Al Mg 3 Si				
3.3292	GD - Al Mg 9				
73 - Aluminum alloys, 0.5-10% Si - Hardness < 180 HB 30 - Tensile strength < 600 N/mm²					
73.1 - Cast aluminum alloys					
3.2134	G - Al Si 5 Cu 1 Mg				
3.2152	GD - Al Si 6 Cu 4				
3.2162	GD - Al Si 8 Cu 3				
3.2373	G - Al Si 9 Mg				
74 - Aluminum alloys, Si > 10% - Hardnes < 180 HB 30 - Tensile strength < 600 N/mm²					
74.1 - Cast aluminum alloys					
3.2381	G - Al Si 10 Mg				
3.2383	G - Al Si 10 Mg (Cu)				
3.2581	G - Al Si 12				
3.2583	G - Al Si 12 (Cu)				
3.2982	GD - Al Si 12 (Cu)				
74.2 - Cast aluminum - magnesium alloys					
3.5106	G - Mg Ag 3 SE 2 Zr 1				
3.5662	G - Mg Al 6				
3.5812	G - Mg Al 8 Zn 1				
3.5912	G - Mg Al 9 Zn 1				