Threading Tools

ANSI and DIN Range

prototyp

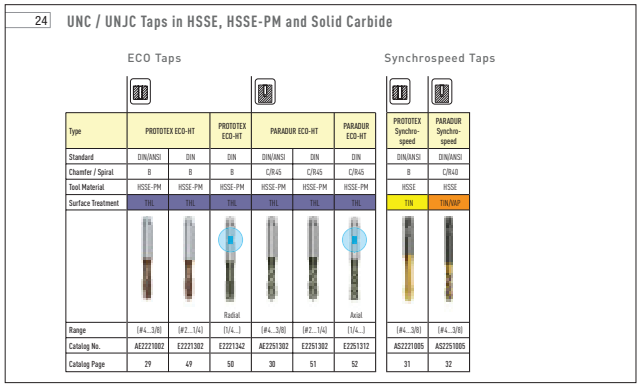
Quick reference

Here is the fastest way to reach your tools

The PROTOTYP catalog has been reorganized.
This page will give you the information needed for selecting and locating products.

Search methods:

There are many ways of getting information. The right one depends on exactly what you´re looking for.



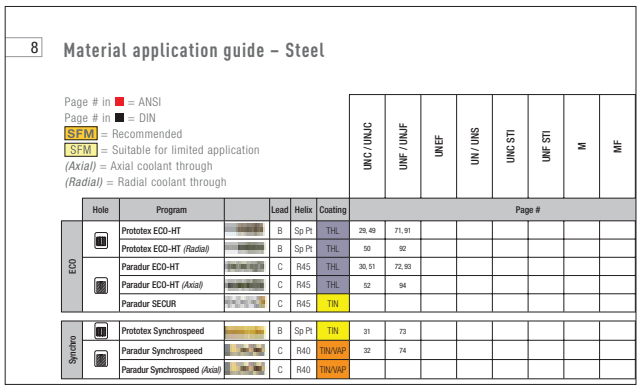
Thread profile and geometry:

The tool overview located at the beginning of each tabbed section can help you quickly identify a tool and it‘s basic features.

Code No	page	Code No	page	Code No
2		A2051705	138	A2350302
20213	159	A2061705	193	A235033
2021306	159	A222002	44	A23516
202161	165	A22203	36	A2351604
2031406	163	A222030	119	A23517
2031416	164	A2220302	36	A2351705
20360	156	A22206	41	A2351760
2036005	156	A222060	121	A2361705
204102	168	A2220606	41	A254602
20416	166	A2220806	44	A25563
20513	161	A222089	123	A264602
2051306	161	A22210	33	A26563
20516	169	A2221005	33	AC2231416
20517	157	A22314	39	AC225532
205175	157	A2231406	39	AC2255322

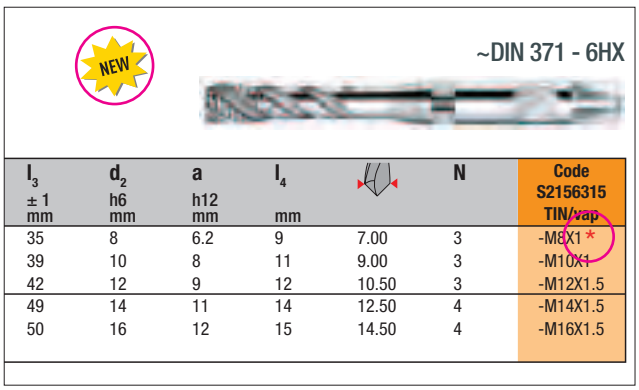
Catalog Number:

If you already know the catalog number you‘re looking for, then use the index beginning on page 271.



Application:

Is there an application that you need a recommendation for? Then use the material application guide on pages 8-21. They are conveniently organized by ISO material groups.



l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2156315 TIN/vap
35	8	6.2	9	7.00	3	-M8X1 *
39	10	8	11	9.00	3	-M10X1
42	12	9	12	10.50	3	-M12X1.5
49	14	11	14	12.50	4	-M14X1.5
50	16	12	15	14.50	4	-M16X1.5

New Products:

Are you curious about the latest products in our offering? Look for the ”NEW“ item icon on the tool overviews and on the product pages.

The icons:

The square icons below can be found above the the size range for each series in this catalog. These icons make it faster to recognize the individual features of every tool and their application capability.

A complete listing of the icons and their descriptions can be found on pages 268 - 269.

TEC/CCS:

Information is everything and often forms the basis for success. We want to give you more information with our new Computer Cutting-data Service (CCS). The latest version TEC/CCS, allows for swift and precise selection of tools for every machining problem. TEC/CCS can answer the following questions and more.

- Which tool is best suited for my application?
- What are the cutting parameters?
- What is the expected tool life?
- What is the cost per hole?
- Are there alternative solutions?
- What is the price of the selected tooling?
- Which is the best corresponding TITEX tap drill?

The ordering code:

The correct order code – an important point, that´s quite simple! In every product table you'll find one or more columns labeled with "Code", the first part of the order number and the coating. This is valid for all versions of the selected product. You simply add the first part of the order number to the second part in the column below, which corresponds to the size you require. And that's it!

Example:

Code E 20 23305 TIN
-M12
-M14
-M16
-M18
-M20
-M22
-M24
-M26

= **E2023305-M12**

Material groups

ISO Material Group	PROTOTYP Material Group	PROTOTYP Material Group Description	Tensile Strength (N/mm²)	Brinell Hardness (HB)	Rockwell Hardness (HRc)	Examples
P		**Steel**				
	1.1	Magnetic soft steel	200 - 400	60 - 120		1005-1010, 1108-1115, 1210-1215, A36
	1.2	Structural steel, case carburizing steel	350 - 700	100 - 200		1030-1095, 1146-1151, 12L14
	1.3	Plain carbon steel	350 - 850	100 - 250		1020-1035, 1045, 1055, 1060
	1.4	Alloy steel	500 - 850	150 - 250		4140, A2, 4340, M42, M2, T1, P20
	1.5	Alloy steel, Tempered steel	850 - 1200	250 - 350	25 - 38	01, L6, M42, D3, A2, M2, 4140, 8620, P20
	1.6.1	Alloy steel, Tempered steel	1200 - 1400	350 - 410	38 - 44	01, L6, M42, D3, A2, 4140, 8130, P20
	1.6.2	Alloy steel, Tempered steel	1400 - 1600	410 - 470	44 - 49	02, D3
M		**Stainless Steel**				
	2.1	Free machining stainless steel	400 - 850	120 - 250		303, 416, 430F
	2.2	Austenitic	450 - 850	130 - 250		304, 321, 316, 17-4PH, 15-5PH
	2.3	Ferritic, austenitic, martensitic	450 - 1100	130 - 320		409, 410, 420, 430, 436
	2.4	High tensile chrome-nickel alloys	1100 - 1400	320 - 410	33 - 44	660, A286, AMS
K		**Cast Iron**				
	3.1	Cast Iron	150 - 500	50 - 150		GG10, GG40, ASTM A48 class 20
	3.2	Cast Iron	500 - 1000	150 - 300		GG25, GG40, ASTM A48 class 40
	3.3	Ductile Iron	500 - 700	150 - 200		GGG40-GGG70, ASTM A220 grade 40010
	3.4	Ductile Iron	700 - 1000	200 - 300	14 - 32	GGG40-GGG70, ASTM A602 grade 90001
	3.5	Compacted graphite iron	700 - 1000	200 - 300	14 - 32	CGI
N		**Non-ferrous Materials**				
	6.1	Copper, unalloyed	250 - 350	80 - 100		Commercially pure
	6.2	Short chip brass	350 - 700	100 - 200		ASTM B30
	6.3	Long chip brass	400 - 700	120 - 200		ASTM B36
	6.4	Cu-Al-Fe alloys	700 - 1500	200 - 440	14 - 47	Ampco
	6.5	Cu-Al-Ni alloys (short chipping)	400 - 850	120 - 250		
	6.6	Cu-Al-Ni alloys (long chipping)	400 - 850	120 - 250		
	7.1	Al, Mg unalloyed	200 - 350	60 - 100		Commercially pure, EC, 1060, 1100
	7.2	Al, alloyed Si<0.5%	300 - 600	90 - 180		6061, 7025, 2024
	7.3.1	Al, alloyed Si>=0.5%<4%	300 - 600	90 - 180		4013, 8009, 296.2
	7.3.2	Al, alloyed Si>=4%<12%	300 - 600	90 - 180		356, 380, 319, 355.1, 4043, A356.2
	7.4	Al, alloyed Si>=12%	300 - 600	90 - 180		390, 393
	7.5.1	Magnesium Standard alloy	120 - 300			AZ 81, SAE 50
	7.5.2	Magnesium – high tensile strength	240 - 400	70 - 120		SAE 520, SAE523
	7.5.3	Heat resistant magnesium alloys	120 - 300			

ISO Material Group	PROTOTYP Material Group	PROTOTYP Material Group Description	Tensile Strength (N/mm²)	Brinell Hardness (HB)	Rockwell Hardness (HRc)	Examples
S		**High Temp Alloys and Titanium Alloys**				
	4.1	Titanium, unalloyed	400 - 700	120 - 200		Commercially pure, ASTM B265 grade 1
	4.2	Titanium, alloyed	700 - 900	200 - 270	14 - 28	TiAl6V4, ASTM 4928
	4.3	Titanium, alloyed	900 - 1400	270 - 410	28 - 44	TiAl6V4, ASTM 4929
	5.1	Nickel, unalloyed	400 - 500	120 - 150		Commercially pure, Nickel 200/300
	5.2	Nickel, alloyed	500 - 900	150 - 270		Monel 400, Hasteloy, Inconel, Waspaloy
	5.3	Nickel, alloyed	900 - 1600	270 - 470	28 - 49	Monel 400, Hasteloy, Inconel, Nimonic
	9.1	TIC Hard materials	1500 - 1700	450 - 500	48 - 51	Ferrotic, Ferrot Titanit
	9.2	Tungsten alloys	1400 - 1800	435 - 550	44 - 52	Densiment, Denal
	9.3	Alloys on Cobalt base	500 - 1200	150 - 350		Celsit
	9.4	Molybdenum alloyed	500 - 1200	150 - 350		
H		**Hardened Materials**				
	1.7.1	Steel (hardened), short chipping	1600 - 2000	470 - 570	49 - 55	02, D3, 4135, 414, P20
	1.7.2	Steel (hardened), long chipping	1600 - 2000	470 - 570	49 - 55	D2, D3
	1.8.1	Steel (hardened)		570 - 705	55 - 60	D2, D4
	1.8.2	Steel (hardened)			60 - 65	
O		**Synthetic Materials / Other**				
	8.1	Thermoplastics	<50			Polystyrene, Nylon PVC
	8.2	Thermosetting plastics	<80			Bakelite
	8.3	Reinforced plastic materials	800 - 1500	240 - 440		CFK, GFK, AFK
	10.1	Standard graphite	<100			R8340
	10.2	Wear resistant graphite	<100			R8510

Material application guide – Steel

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SFM = Recommended
SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
ECO		Prototex ECO-HT		B	Sp Pt	THL	29, 49	71, 91					148	170		
		Prototex ECO-HT *(Radial)*		B	Sp Pt	THL	50	92					149	171		
		Paradur ECO-HT		C	R45	THL	30, 51	72, 93					150	172		
		Paradur ECO-HT *(Axial)*		C	R45	THL	52	94					151	173		
		Paradur SECUR		C	R45	TIN							152			
Synchro		Prototex Synchrospeed		B	Sp Pt	TIN	31	73					153	174		
		Paradur Synchrospeed		C	R40	TIN/VAP	32	74					154	175		
		Paradur Synchrospeed *(Axial)*		C	R40	TIN/VAP							155	176		
Standard Application		Prototex		B	Sp Pt	Bright	33	75								
		Prototex		B	Sp Pt	TIN	33	75								
		Prototex H		B	Sp Pt	Bright	53	95	111				137, 156	177		
		Prototex H		B	Sp Pt	TIN							156			
		Prototex INOX		B	Sp Pt	VAP	36, 55	78, 98			119	125	139, 159	179		
		Prototex INOX		B	Sp Pt	THL	36	78								
		Prototex INOX		B	Sp Pt	TICN							159			
		Prototex TINI		B	Sp Pt	Bright	58	101					165			
		Prototex TI		B	Sp Pt	Bright	41	83			121	127	142			
		Prototex TI		B	Sp Pt	TICN	41	83								
		Prototex NI		B	Sp Pt	Bright	44	86			123	129	144			
		Prototex NI		B	Sp Pt	TICN	44	86								
		Paradur NI 10		C	R10	Bright	47, 61	89, 104					146			
		Paradur NI 10		C	R10	TICN	47	89								
		Paradur TI		C	R15	Bright	59	102			122	128	166			
		Paradur TI		C	R15	NIT	42	84					143			
		Paradur TI		E	R15	NIT	43	85								
		Paradur TI		C	R15	TICN	42	84					143			
		Paradur NI		C	R25	Bright	60	103			124	130	168			
		Paradur NI		C	R25	NIT	45	87					145			
		Paradur NI		E	R25	NIT	46	88								
		Paradur NI		C	R25	TICN	45	87					145			
		Paradur INOX		C	R40	VAP	37, 56	79, 99		114, 116	120	126	140, 161	180		
		Paradur INOX		E	R40	VAP	38	80								
		Paradur INOX		C	R40	THL	37	79		114, 116			140			
		Paradur INOX		C	R40	TICN							161			
		Paradur WSH		C	R45	Bright	34, 54	76, 96	112				138, 157			
		Paradur WSH		E	R45	Bright	35	77								

P - Steel*						
1.1	1.2	1.3	1.4	1.5	1.6.1	1.6.2
60 - 120 HB	100 - 200 HB	100 - 250 HB	150 - 250 HB	25 -38 Rc	38 - 44 Rc	44 - 49 Rc
Magnetic soft steel	Structural steel, case carburizing steel	Plain carbon steel	Alloy steel	Alloy steel, Tempered steel	Alloy steel, Tempered steel	Alloy steel, Tempered steel
Speed Range in SFM						
	120 - 150	120 - 150	75 - 100	45 - 60	30 - 40	
	120 - 150	120 - 150	75 - 100	45 - 60	30 - 40	
	120 - 150	120 - 150	75 - 100	45 - 60	30 - 40	
	120 - 150	120 - 150	75 - 100	45 - 60	30 - 40	
	120 - 150	120 - 150				
120 - 180	120 - 180	120 - 180	90 - 140	60 - 90	35 - 60	
120 - 180	120 - 180	120 - 180	90 - 140	60 - 90	35 - 60	
120 - 180	120 - 180	120 - 180	90 - 140	60 - 90	35 - 60	
45 - 60	45 - 60	45 - 60	30 - 45			
45 - 60	45 - 60	45 - 60	30 - 45			
45 - 60	45 - 60	45 - 60	30 - 45	15 - 30		
120 - 150	120 - 150	120 - 150	75 - 100	45 - 60		
		45 - 60	30 - 45	15 - 30		
		120 - 150	75 - 100	45 - 60		
		120 - 150	75 - 100	45 - 60		
				15 - 30	10 - 20	5 - 10
					10 - 20	
					30 - 40	
					10 - 20	
					30 - 40	
					10 - 20	5 - 10
					30 - 40	15 - 25
				15 - 30	10 - 20	5 - 10
				15 - 30	10 - 20	5 - 10
				15 - 30	10 - 20	5 - 10
				45 - 60	30 - 40	15 - 25
				15 - 30	10 - 20	5 - 10
				15 - 30	10 - 20	5 - 10
				15 - 30	10 - 20	5 - 10
				45 - 60	30 - 40	15 - 25
		45 - 60	30 - 45	15 - 30		
		45 - 60	30 - 45	15 - 30		
		120 - 150	75 - 100	45 - 60		
		120 - 150	75 - 100	45 - 60		
45 - 60	45 - 60	45 - 60	30 - 45			
45 - 60	45 - 60	45 - 60	30 - 45			

* For example materials please see pages 6-7

Material application guide – Steel

Page # in ■ = ANSI
Page # in ■ = DIN
SFM = Recommended
SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
Standard Application		**Paradur WSH**		C	R45	TIN	34	76					138, 157			
		Paradur WTH		C	R45	Bright				113, 115						
		Paradur WTH		C	R45	TIN				113, 115						
Pipe		**Paradur H**		C	St Flt	Bright									183	186
		Paradur 15		C	R15	VAP									184	187
		Paradur 30		C	R30	VAP									185	188
Thread Former		**Protodyn S**		CF		TIN	191	192					193, 198	201		
		Protodyn ECO-HT		CF		TIN							194	199		
		Protodyn S ECO-HT		CF		TIN							195			
		Protodyn S ECO-INOX		CF		TIN							196			
		Protodyn CAP *(Radial)*		CF		TIN							197	200		

P - Steel*						
1.1	1.2	1.3	1.4	1.5	1.6.1	1.6.2
60 - 120 HB	100 - 200 HB	100 - 250 HB	150 - 250 HB	25 -38 Rc	38 - 44 Rc	44 - 49 Rc
Magnetic soft steel	Structural steel, case carburizing steel	Plain carbon steel	Alloy steel	Alloy steel, Tempered steel	Alloy steel, Tempered steel	Alloy steel, Tempered steel
Speed Range in SFM						
120 - 150	120 - 150	120 - 150	75 - 100			
45 - 60	45 - 60	45 - 60	30 - 45			
120 - 150	120 - 150	120 - 150	75 - 100			
10 - 15	10 - 15	15 - 20	15 - 20	5 - 10		
			15 - 20	5 - 10	5 - 10	
10 - 15	10 - 15	15 - 20	15 - 20			
120 - 150	120 - 150	120 - 150	75 - 100	45 - 60		
120 - 150	120 - 150	120 - 150	75 - 100	45 - 60		
120 - 150	120 - 150	120 - 150	75 - 100	45 - 60		
120 - 150	120 - 150					
120 - 150	120 - 150	120 - 150	75 - 100	45 - 60		

* For example materials please see pages 6-7

Material application guide – Stainless Steel

Page # in ■ = ANSI
Page # in ■ = DIN
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SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
ECO		Prototex ECO-HT		B	Sp Pt	THL	29, 49	71, 91					148	170		
		Prototex ECO-HT *(Radial)*		B	Sp Pt	THL	50	92					149	171		
		Paradur ECO-HT		C	R45	THL	30, 51	72, 93					150	172		
		Paradur ECO-HT *(Axial)*		C	R45	THL	52	94					151	173		
Synchro		Prototex Synchrospeed		B	Sp Pt	TIN	31	73					153	174		
		Paradur Synchrospeed		C	R40	TIN/VAP	32	74					154	175		
		Paradur Synchrospeed *(Axial)*		C	R40	TIN/VAP							155	176		
Standard Application		Prototex INOX		B	Sp Pt	VAP	36, 55	78, 98			119	125	139, 159	179		
		Prototex INOX		B	Sp Pt	THL	36	78								
		Prototex INOX		B	Sp Pt	TICN							159			
		Prototex TINI		B	Sp Pt	Bright	58	101					165			
		Prototex TI		B	Sp Pt	Bright	41	83			121	127	142			
		Prototex TI		B	Sp Pt	TICN	41	83								
		Prototex NI		B	Sp Pt	Bright	44	86			123	129	144			
		Prototex NI		B	Sp Pt	TICN	44	86								
		Paradur TI		C	R15	Bright	59	102			122	128	166			
		Paradur TI		C	R15	NIT	42	84					143			
		Paradur TI		E	R15	NIT	43	85								
		Paradur TI		C	R15	TICN	42	84					143			
		Paradur NI		C	R25	Bright	60	103			124	130	168			
		Paradur NI		C	R25	NIT	45	87					145			
		Paradur NI		E	R25	NIT	46	88								
		Paradur NI		C	R25	TICN	45	87					145			
		Paradur INOX		C	R40	VAP	37, 56	79, 99		114, 116	120	126	140, 161	180		
		Paradur INOX		E	R40	VAP	38	80								
		Paradur INOX		C	R40	THL	37	79		114, 116			140			
		Paradur INOX		C	R40	TICN							161			
Pipe		Paradur 15		C	R15	VAP									184	187
		Paradur 30		C	R30	VAP									185	188
Thread Former		Protodyn S		CF		TIN	191	192					193, 198	201		
		Protodyn ECO-HT		CF		TIN							194	199		
		Protodyn S ECO-HT		CF		TIN							195			
		Protodyn S ECO-INOX		CF		TIN							196			
		Protodyn CAP *(Radial)*		CF		TIN							197	200		

M - Stainless Steel*			
2.1	2.2	2.3	2.4
120 - 250 HB	130 - 250 HB	130 - 320 HB	33 - 44 Rc
Free machining stainless steel	Austentitic	Ferritic, austenitic, martensitic	High tensile chrome-nickel alloys
Speed Range in SFM			
25 - 35	15 - 25	10 - 15	10 - 15
25 - 35	15 - 25	10 - 15	10 - 15
25 - 35	15 - 25	10 - 15	10 - 15
25 - 35	15 - 25	10 - 15	10 - 15
30 - 45	25 - 35	15 - 25	15 - 25
30 - 45	25 - 35	15 - 25	15 - 25
30 - 45	25 - 35	15 - 25	15 - 25
15 - 20	5 - 10	5 - 10	5 - 8
25 - 35	15 - 25	10 - 15	10 - 15
25 - 35	15 - 25	10 - 15	10 - 15
		5 - 10	5 - 8
			5 - 8
			10 - 15
			5 - 8
			10 - 15
			5 - 8
			5 - 8
			5 - 8
			10 - 15
		5 - 10	5 - 8
		5 - 10	5 - 8
		5 - 10	5 - 8
		10 - 15	10 - 15
15 - 20	5 - 10	5 - 10	5 - 8
15 - 20	5 - 10	5 - 10	5 - 8
25 - 35	15 - 25	10 - 15	10 - 15
25 - 35	15 - 25	10 - 15	10 - 15
			5 - 10
10 - 15	5 - 10	5 - 10	
25 - 35	15 - 25	10 - 15	
25 - 35	15 - 25	10 - 15	
25 - 35	15 - 25	10 - 15	
25 - 35	15 - 25	10 - 15	
25 - 35	15 - 25	10 - 15	

* For example materials please see pages 6-7

Material application guide – Cast Iron

Page # in ■ = ANSI
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(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
ECO		Prototex ECO-HT		B	Sp Pt	THL	29, 49	71, 91					148	170		
		Prototex ECO-HT *(Radial)*		B	Sp Pt	THL	50	92					149	171		
		Paradur ECO-HT		C	R45	THL	30, 51	72, 93					150	172		
		Paradur ECO-HT *(Axial)*		C	R45	THL	52	94					151	173		
Synchro		Prototex Synchrospeed		B	Sp Pt	TIN	31	73					153	174		
		Paradur Synchrospeed		C	R40	TIN/VAP	32	74					154	175		
		Paradur Synchrospeed *(Axial)*		C	R40	TIN/VAP							155	176		
Standard Application		Prototex		B	Sp Pt	Bright	33	75								
		Prototex		B	Sp Pt	TIN	33	75								
		Prototex H		B	Sp Pt	Bright	53	95	111				137, 156	177		
		Prototex H		B	Sp Pt	TIN							156			
		Paradur GG		C	St Flt	NID	39, 57	81, 100					141			
		Paradur GG		C	St Flt	TICN	39	81					163			
		Paradur GG (Axial)		C	St Flt	TICN	40	82					164			
		Paradur INOX		C	R40	VAP	37, 56	79, 99		114, 116	120	126	140, 161	180		
		Paradur INOX		E	R40	VAP	38	80								
		Paradur INOX		C	R40	THL	37	79		114, 116			140			
		Paradur INOX		C	R40	TICN							161			
		Paradur WSH		C	R45	Bright	34, 54	76, 96	112				138, 157			
		Paradur WSH		E	R45	Bright	35	77								
		Paradur WSH		C	R45	TIN	34	76					138, 157			
		Paradur WTH		C	R45	Bright				113, 115						
		Paradur WTH		C	R45	TIN				113, 115						
Pipe		Paradur H		C	St Flt	Bright									183	186
		Paradur 15		C	R15	VAP									184	187
		Paradur 30		C	R30	VAP									185	188
SC		Paradur HS		C	St Flt	TICN	63	106								

K - Cast Iron*				
3.1	3.2	3.3	3.4	3.5
50 - 150 HB	150 - 300 HB	150 - 200 HB	14 - 32 Rc	14 - 32 Rc
Cast Iron	Cast Iron	Ductile Iron	Ductile Iron	Compacted graphite iron
Speed Range in SFM				
60 - 90	45 - 60	**60 - 90**	**30 - 45**	30 - 35
60 - 90	45 - 60	**60 - 90**	**30 - 45**	30 - 35
60 - 90	45 - 60	**60 - 90**	**30 - 45**	30 - 35
60 - 90	45 - 60	**60 - 90**	**30 - 45**	30 - 35
75 - 110	30 - 60	**75 - 110**	**30 - 60**	50 - 65
75 - 110	30 - 60	**75 - 110**	**30 - 60**	50 - 65
75 - 110	30 - 60	**75 - 110**	**30 - 60**	50 - 65
		25 - 35	**10 - 20**	
		60 - 90	**30 - 45**	
		25 - 35	**10 - 20**	
		60 - 90	**30 - 45**	
30 - 45	**20 - 25**	25 - 35	10 - 20	**10 - 15**
60 - 90	**45 - 60**	60 - 90	30 - 45	**30 - 35**
60 - 90	**45 - 60**	60 - 90	30 - 45	**30 - 35**
		25 - 35	10 - 20	
		25 - 35	10 - 20	
		60 - 90	30 - 45	
		60 - 90	30 - 45	
		25 - 35	10 - 20	
		25 - 35	10 - 20	
		60 - 90	30 - 45	
		25 - 35	10 - 20	
		60 - 90	30 - 45	
15 - 20	10 - 15	**15 - 20**	**10 - 15**	5 - 10
15 - 20	**10 - 15**			**5 - 10**
		15 - 20	**10 - 15**	
120 - 180	75 - 100	90 - 120	60 - 90	45 - 60

* For example materials please see pages 6-7

Material application guide – Non-ferrous Materials

Page # in ■ = ANSI
Page # in ■ = DIN
SFM = Recommended
SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
ECO		Prototex ECO-HT		B	Sp Pt	THL	29, 49	71, 91					148	170		
		Prototex ECO-HT *(Radial)*		B	Sp Pt	THL	50	92					149	171		
		Paradur ECO-HT		C	R45	THL	30, 51	72, 93					150	172		
		Paradur ECO-HT *(Axial)*		C	R45	THL	52	94					151	173		
		Paradur SECUR		C	R45	TIN							152			
Synchro		Prototex Synchrospeed		B	Sp Pt	TIN	31	73					153	174		
		Paradur Synchrospeed		C	R40	TIN/VAP	32	74					154	175		
		Paradur Synchrospeed *(Axial)*		C	R40	TIN/VAP							155	176		
Standard Application		Prototex		B	Sp Pt	Bright	33	75								
		Prototex		B	Sp Pt	TIN	33	75								
		Prototex H		B	Sp Pt	Bright	53	95	111				137, 156	177		
		Prototex H		B	Sp Pt	TIN							156			
		Prototex TINI		B	Sp Pt	Bright	58	101					165			
		Paradur GG		C	St Flt	NID	39, 57	81, 100					141			
		Paradur GG		C	St Flt	TICN	39	81					163			
		Paradur GG *(Axial)*		C	St Flt	TICN	40	82					164			
		Paradur TI		C	R15	Bright	59	102			122	128	166			
		Paradur TI		C	R15	NIT	42	84					143			
		Paradur TI		E	R15	NIT	43	85								
		Paradur TI		C	R15	TICN	42	84					143			
		Paradur NI		C	R25	Bright	60	103			124	130	168			
		Paradur NI		C	R25	NIT	45	87					145			
		Paradur NI		E	R25	NIT	46	88								
		Paradur NI		C	R25	TICN	45	87					145			
		Paradur WLM		C	R35	Bright	48, 62	90, 105								
		Paradur WLM		C	R35	CRN	48	90								
		Paradur WSH		C	R45	Bright	34, 54	76, 96	112				138, 157			
		Paradur WSH		E	R45	Bright	35	77								
		Paradur WSH		C	R45	TIN	34	76					138, 157			
		Paradur WTH		C	R45	Bright				113, 115						
		Paradur WTH		C	R45	TIN				113, 115						
Pipe		Paradur H		C	St Flt	Bright									183	186
		Paradur 15		C	R15	VAP									184	187
		Paradur 30		C	R30	VAP									185	188
SC		Paradur HS		C	St Flt	TICN	63	106								
Thread Former		Protodyn S		CF		TIN	191	192					193, 198	201		
		Protodyn ECO-HT		CF		TIN							194	199		
		Protodyn S ECO-HT		CF		TIN							195			
		Protodyn CAP *(Radial)*		CF		TIN							197	200		

N - Non-ferrous Materials*													
6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	7.3.1	7.3.2	7.4	7.5.1	7.5.2	7.5.3
80-100 HB	100-200 HB	120-200 HB	14-47 Rc	120-250 HB	120-250 HB	60-100 HB	90-180 HB	91-180 HB	92-180 HB	93-180 HB		70-120 HB	
Copper, unalloyed	Short chip brass	Long chip brass	Cu-Al-Fe alloys	Cu-Al-Ni alloys (short chipping)	Cu-Al-Ni alloys (long chipping)	Al, Mg unalloyed	Al, alloyed Si<0.5%	Al, alloyed Si>=0.5%<4%	Al, alloyed Si>=4%<12%	Al, alloyed Si>=12%	Magnesium Standard alloy	Magnesium -high tensile strength	Heat resistant magnesium alloys
Speed Range in SFM													
45 - 60	120 - 180	90 - 120					**150 - 180**	**90 - 120**	**90 - 120**				
45 - 60	120 - 180	90 - 120					**150 - 180**	**90 - 120**	**90 - 120**				
45 - 60	120 - 180	90 - 120					**150 - 180**	**90 - 120**	**90 - 120**				
45 - 60	120 - 180	90 - 120					**150 - 180**	**90 - 120**	**90 - 120**				
						120 - 150	**150 - 180**	**90 - 120**					
60 - 90	**150 - 200**	**100 - 150**		**120 - 150**	**60 - 90**	**150 - 210**	**150 - 210**	**120 - 180**	**120 - 180**		**120 - 180**	**120 - 180**	**120 - 180**
60 - 90	150 - 200	100 - 150		120 - 150	60 - 90	**150 - 210**	**150 - 210**	**120 - 180**	**120 - 180**		120 - 180	120 - 180	120 - 180
60 - 90	150 - 200	100 - 150		120 - 150	60 - 90	**150 - 210**	**150 - 210**	**120 - 180**	**120 - 180**		120 - 180	120 - 180	120 - 180
25 - 35	75 - 100	**45 - 60**		45 - 75	**30 -45**	**30 - 45**	**45 - 75**	**60 - 90**	**60 - 90**	45 - 60	60 - 90	60 - 90	60 - 90
45 - 60	120 - 180	**90 - 120**		90 - 120	**45 - 75**	**120 - 150**	**150 - 180**	**90 - 120**	**90 - 120**	60 - 90	90 - 120	90 - 120	90 - 120
		45 - 60			30 - 45	30 - 45	75 - 100	**60 - 90**	**60 - 90**	45 - 60	60 - 90	60 - 90	60 - 90
		90 - 120			45 - 75	120 - 150	150 - 180	**90 - 120**	**90 - 120**	60 - 90	90 - 120	90 - 120	90 - 120
								60 - 90	60 - 90	45 - 60			
									60 - 90	45 - 60	**60 - 90**	**60 - 90**	**60 - 90**
									90 - 120	60 - 90	**90 - 120**	**90 - 120**	**90 - 120**
									90 - 120	60 - 90	**90 - 120**	**90 - 120**	**90 - 120**
								60 - 90	60 - 90	45 - 60			
								60 - 90	60 - 90	45 - 60			
								60 - 90	60 - 90	45 - 60			
								90 - 120	90 - 120	60 - 90			
								60 - 90	60 - 90	45 - 60			
								60 - 90	60 - 90	45 - 60			
								60 - 90	60 - 90	45 - 60			
								90 - 120	90 - 120	60 - 90			
25 - 35		45 - 60			30 - 45	**30 - 45**	**75 - 100**	**60 - 90**	**60 - 90**				
45 - 60		90 - 120			45 - 75	**120 - 150**	**150 - 180**	**90 - 120**	**90 - 120**				
							75 - 100	60 - 90	60 - 90				
							75 - 100	60 - 90	60 - 90				
							150 - 180	90 - 120	90 - 120				
							75 - 100	60 - 90	60 - 90				
							150 - 180	90 - 120	90 - 120				
	25 - 35	15 - 20		20 - 30				30 - 45	30 - 45	20 - 25	30 - 45	30 - 45	30 - 45
	25 - 35	15 - 20	**5 - 10**	**20 - 30**	15 - 20			**30 - 45**	**30 - 45**	**20 - 25**	**30 - 45**	**30 - 45**	**30 - 45**
10 - 15						**20 - 30**	**30 - 45**	**30 - 45**	**30 - 45**	20 - 25			
	120 - 180		**150 - 200**	30 - 45				210 - 240	120 - 210	**120 - 180**	**180 - 240**	**180 - 240**	**120 - 240**
45 - 60		90 - 120			45 - 75	**120 - 150**	**150 - 180**	**90 - 120**	**90 - 120**				
45 - 60		90 - 120			45 - 75	**120 - 150**	**150 - 180**	**90 - 120**	**90 - 120**				
45 - 60		90 - 120			45 - 75	**120 - 150**	**150 - 180**	**90 - 120**	**90 - 120**				
45 - 60		90 - 120			45 - 75	**120 - 150**	**150 - 180**	**90 - 120**	**90 - 120**				

* For example materials please see pages 6-7

Material application guide – High Temp Alloys and Titanium Alloys

Page # in ■ = ANSI
Page # in ■ = DIN
SFM = Recommended
SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
Synchro		Prototex Synchrospeed		B	Sp Pt	TIN	31	73					153	174		
		Paradur Synchrospeed		C	R40	TIN/VAP	32	74					154	175		
		Paradur Synchrospeed *(Axial)*		C	R40	TIN/VAP							155	176		
Standard Application		Prototex		B	Sp Pt	Bright	33	75								
		Prototex		B	Sp Pt	TIN	33	75								
		Prototex TINI		B	Sp Pt	Bright	58	101					165			
		Prototex TI		B	Sp Pt	Bright	41	83			121	127	142			
		Prototex TI		B	Sp Pt	TICN	41	83								
		Prototex NI		B	Sp Pt	Bright	44	86			123	129	144			
		Prototex NI		B	Sp Pt	TICN	44	86								
		Paradur NI 10		C	R10	Bright	47, 61	89, 104					146			
		Paradur NI 10		C	R10	TICN	47	89								
		Paradur TI		C	R15	Bright	59	102			122	128	166			
		Paradur TI		C	R15	NIT	42	84					143			
		Paradur TI		E	R15	NIT	43	85								
		Paradur TI		C	R15	TICN	42	84					143			
		Paradur NI		C	R25	Bright	60	103			124	130	168			
		Paradur NI		C	R25	NIT	45	87					145			
		Paradur NI		E	R25	NIT	46	88								
		Paradur NI		C	R25	TICN	45	87					145			
		Paradur WLM		C	R35	Bright	48, 62	90, 105								
		Paradur WLM		C	R35	CRN	48	90								
Pipe		Paradur 15		C	R15	VAP									184	187
		Paradur 30		C	R30	VAP									185	188
SC		Paradur HS		C	St Flt	TICN	63	106								
		Paradur HARD		D	St Flt	TICN	64	107								
Thread Former		Protodyn S		CF		TIN	191	192					193, 19	201		
		Protodyn ECO-HT		CF		TIN							194	199		
		Protodyn S ECO-HT		CF		TIN							195			
		Protodyn S ECO-INOX		CF		TIN							196			
		Protodyn CAP *(Radial)*		CF		TIN							197	200		

S - High Temp Alloys and Titanium Alloys*									
4.1	4.2	4.3	5.1	5.2	5.3	9.1	9.2	9.3	9.4
121 - 200 HB	15 - 28 Rc	29 - 44 Rc	121 - 150 HB	151 - 270 HB	29 - 49 Rc	49 - 51 Rc	45 - 52 Rc	150 - 350 HB	150 - 350 HB
Titanium, unalloyed	Titanium, alloyed	Titanium, alloyed	Nickel, unalloyed	Nickel, alloyed	Nickel, alloyed	TIC Hard materials	Tungsten alloys	Alloys on Cobalt base	Molybdenum alloyed
Speed Range in SFM									
60 - 90	60 - 90		60 - 90	25 - 35					
60 - 90			60 - 90						
60 - 90			60 - 90						
30 - 45			25 - 30						
60 - 90			60 - 90						
	25 - 35	15 - 20		10 - 15	5 - 10	6 - 12	5 - 10	3 - 5	10 - 15
	25 - 35	15 - 20							
	60 - 90	25 - 35							
				10 - 15	5 - 10				
				30 - 35	10 - 15				
					5 - 10		5 - 10		
					10 - 15		10 - 30		
	25 - 35	15 - 20					5 - 10	3 - 5	10 - 15
	25 - 35	15 - 20					5 - 10	3 - 5	10 - 15
	25 - 35	15 - 20					5 - 10	3 - 5	10 - 15
	60 - 90	25 - 35					10 - 30	5 - 10	20 - 25
				10 - 15	5 - 10		5 - 10	3 - 5	10 - 15
				10 - 15	5 - 10		5 - 10	3 - 5	10 - 15
				10 - 15	5 - 10		5 - 10	3 - 5	10 - 15
				30 - 35	10 - 15		10 - 30	5 - 10	20 - 25
30 - 45			25 - 35						
60 - 90			60 - 90						
	5 - 10	5 - 10		5 - 10	5 - 10				
10 - 15			10 - 15						
						25 - 35	15 - 20	12 - 18	45 - 60
						25 - 35			
			60 - 90	30 - 35					
			60 - 90	30 - 35					
			60 - 90	30 - 35					
			61 - 90	31 - 35					
			60 - 90	30 - 35					

* For example materials please see pages 6-7

Material application guide – Hardened Materials

Page # in ■ = ANSI
Page # in ■ = DIN
SFM = Recommended
SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
SC		Paradur HS		C	St Flt	TICN	63	106								
		Paradur HARD		D	St Flt	TICN	64	107								

Material application guide – Synthetic Materials / Other

Page # in ■ = ANSI
Page # in ■ = DIN
SFM = Recommended
SFM = Suitable for limited application
(Axial) = Axial coolant through
(Radial) = Radial coolant through

	Hole	Program		Lead	Helix	Coating	UNC / UNJC	UNF / UNJF	UNEF	UN / UNS	UNC STI	UNF STI	M	MF	NPT	NPTF
							Page #									
Synchro		Prototex Synchrospeed		B	Sp Pt	TIN	31	73					153	174		
		Paradur Synchrospeed		C	R40	TIN/VAP	32	74					154	175		
		Paradur Synchrospeed *(Axial)*		C	R40	TIN/VAP							155	176		
Standard Application		Prototex		B	Sp Pt	Bright	33	75								
		Prototex		B	Sp Pt	TIN	33	75								
		Prototex H		B	Sp Pt	Bright	53	95	111				137, 156	177		
		Prototex H		B	Sp Pt	TIN							156			
		Paradur GG		C	St Flt	NID	39, 57	81, 100					141			
		Paradur GG		C	St Flt	TICN	39	81					163			
		Paradur GG (Axial)		C	St Flt	TICN	40	82					164			
		Paradur WLM		C	R35	Bright	48, 62	90, 105								
		Paradur WLM		C	R35	CRN	48	90								
Pipe		Paradur H		C	St Flt	Bright									183	186
SC		Paradur HS		C	St Flt	TICN	63	106								

H - Hardened Materials*			
1.7.1	1.7.2	1.8.1	1.8.2
49 - 55 Rc	49 - 55 Rc	55 - 60 Rc	60 - 65 Rc
Steel (hardened), short chipping	Steel (hardened), long chipping	Steel (hardened)	Steel (hardened)
Speed Range in SFM			
30 - 45		**15 - 20**	
30 - 45		**15 - 20**	**10 - 15**

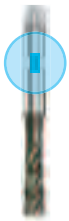
O - Synthetic Materials / Other*				
8.1	8.2	8.3	10.1	10.2
		240 - 440 HB		
Thermoplastics	Thermosetting plastics	Reinforced plastic materials	Standard graphite	Wear resistant graphite
Speed Range in SFM				
75 - 100				
75 - 100				
75 - 100				
60 - 90				
60 - 90				
60 - 90				
60 - 90				
			45 - 60	45 - 60
			45 - 60	45 - 60
			45 - 60	45 - 60
60 - 90				
60 - 90				
	10 - 15	**5 - 10**	**10 - 15**	**10 - 15**
	75 - 100	**45 - 60**	**75 - 100**	**75 - 100**

* For example materials please see pages 6-7

UNC / UNJC Taps in HSSE, HSSE-PM and Solid Carbide

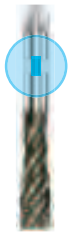
ECO Taps

Synchrospeed Taps

Type	PROTOTEX ECO-HT		PROTOTEX ECO-HT	PARADUR ECO-HT		PARADUR ECO-HT	PROTOTEX Synchro-speed	PARADUR Synchro-speed
Standard	DIN/ANSI	DIN	DIN	DIN/ANSI	DIN	DIN	DIN/ANSI	DIN/ANSI
Chamfer / Spiral	B	B	B	C/R45	C/R45	C/R45	B	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	THL	THL	TIN	TIN/VAP
			 Radial			 Axial		
Range	(#4...3/8)	(#2...1/4)	(1/4...)	(#4...3/8)	(#2...1/4)	(1/4...)	(#4...3/8)	(#4...3/8)
Catalog No.	AE2221002	E2221302	E2221342	AE2251302	E2251302	E2251312	AS2221005	AS2251005
Catalog Page	29	49	50	30	51	52	31	32

ECO Taps

Synchrospeed Taps

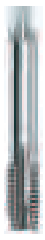
Type	PROTOTEX ECO-HT		PROTOTEX ECO-HT	PARADUR ECO-HT		PARADUR ECO-HT	PROTOTEX Synchro-speed	PARADUR Synchro-speed
Standard	DIN/ANSI	DIN	DIN	DIN/ANSI	DIN	DIN	DIN/ANSI	DIN/ANSI
Chamfer / Spiral	B	B	B	C/R45	C/R45	C/R45	B	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	THL	THL	TIN	TIN/VAP
			 Radial			 Axial		
Range	(1/2...3/4)	(5/16...5/8)	(5/16...5/8)	(1/2...3/4)	(5/16...5/8)	(5/16...3/4)	(1/2...3/4)	(1/2...3/4)
Catalog No.	AE2226002	E2226302	E2226342	AE2256302	E2256302	E2256312	AS2226005	AS2256005
Catalog Page	29	49	50	30	51	52	31	32

UNC / UNJC Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

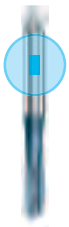
Type	PROTOTEX		PROTOTEX H	PROTOTEX INOX			PROTOTEX TINI	PROTOTEX TI		PROTOTEX NI	
Standard	ANSI		DIN	ANSI		DIN	DIN	ANSI		ANSI	
Chamfer / Spiral	B	B	B	B	B	B	B	B	B	B	B
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	TIN	Bright	VAP	THL	VAP	Bright	Bright	TICN	Bright	TICN
											
Range	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...1/4)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)
Catalog No.	A22210	A2221005	22310	A22203	A2220302	22213	22217	A22206	A2220606	A222002	A2220806
Catalog Page	33	33	53	36	36	55	58	41	41	44	44

Standard Application Taps

Type	PROTOTEX		PROTOTEX H	PROTOTEX INOX			PROTOTEX TINI	PROTOTEX TI		PROTOTEX NI	
Standard	ANSI		DIN	ANSI		DIN	DIN	ANSI		ANSI	
Chamfer / Spiral	B	B	B	B	B	B	B	B	B	B	B
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	TIN	Bright	VAP	THL	VAP	Bright	Bright	TICN	Bright	TICN
											
Range	(7/16...1)	(7/16...1)	(5/16...1 1/2)	(7/16...1)	(7/16...1)	(5/16...1)	(7/16...3/4)	(7/16...1)	(7/16...1)	(7/16...1)	(7/16...1)
Catalog No.	A22260	A2226005	22360	A22253	A2225302	22263	22267	A22256	A2225606	A222502	A2225806
Catalog Page	33	33	53	36	36	55	58	41	41	44	44

UNC / UNJC Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Type	PARADUR GG			PARADUR GG	PARADUR NI 10			PARADUR TI			
Standard	ANSI		DIN	DIN/ANSI	ANSI		DIN	ANSI			DIN
Chamfer / Spiral	C	C	C	C	C/R10	C/R10	C/R10	C/R15	C/R15	E/R15	C/R15
Tool Material	HSSE	HSSE	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE	HSSE-PM
Surface Treatment	NID	TICN	NID	TICN	Bright	TICN	Bright	NIT	TICN	NIT	Bright
				 Axial							
Range	(#2...3/8)	(#2...3/8)	(#6...1/4)	(#10...3/8)	(#2...3/8)	(#2...3/8)	(#4...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#6...3/8)
Catalog No.	A22314	A2231406	22314	AC2231416	A224101	A2240876	224101	A22406	A2240606	A2240661	22416
Catalog Page	39	39	57	40	47	47	61	42	42	43	59

Standard Application Taps

Type	PARADUR GG			PARADUR GG	PARADUR NI 10			PARADUR TI			
Standard	ANSI		DIN	DIN/ANSI	ANSI			ANSI			DIN
Chamfer / Spiral	C	C	C	C	C/R10	C/R10		C/R15	C/R15	E/R15	C/R15
Tool Material	HSSE	HSSE	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM		HSSE	HSSE	HSSE	HSSE-PM
Surface Treatment	NID	TICN	NID	TICN	Bright	TICN		NIT	TICN	NIT	Bright
				 Axial							
Range	(7/16...1)	(7/16...1)	(5/16...7/8)	(1/2...3/4)	(7/16...1)	(7/16...1)		(7/16...1)	(7/16...1)	(7/16...1)	(7/16...5/8)
Catalog No.	A22364	A2236406	22364	AC2236416	A224587	A2245876		A22456	A2245606	A2245661	22466
Catalog Page	39	39	57	40	47	47		42	42	43	59

UNC / UNJC Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Type	PARADUR NI				PARADUR WLM			PARADUR INOX			
Standard	ANSI			DIN	ANSI		DIN	ANSI			DIN
Chamfer / Spiral	C/R25	C/R25	E/R25	C/R25	C/R35	C/R35	C/R35	C/R40	C/R40	E/R40	C/R40
Tool Material	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	NIT	TICN	NIT	Bright	Bright	CRN	Bright	VAP	THL	VAP	VAP
											
Range	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...1/4)
Catalog No.	A224002	A2240806	A224003	224102	A22516	A2251604	22516	A22503	A2250302	A225033	22513
Catalog Page	45	45	46	60	48	48	62	37	37	38	56

Standard Application Taps

Type	PARADUR NI				PARADUR WLM			PARADUR INOX			
Standard	ANSI			DIN	ANSI		DIN	ANSI			DIN
Chamfer / Spiral	C/R25	C/R25	E/R25	C/R25	C/R35	C/R35	C/R35	C/R40	C/R40	E/R40	C/R40
Tool Material	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	NIT	TICN	NIT	Bright	Bright	CRN	Bright	VAP	THL	VAP	VAP
											
Range	(7/16...1)	(7/16...1)	(7/16...1)	(7/16...3/4)	(7/16...1)	(7/16...1)	(5/16...1/2)	(7/16...1 1/2)	(7/16...1 1/2)	(7/16...1 1/2)	(5/16...1 1/2)
Catalog No.	A224502	A2245806	A224503	224602	A22566	A2256604	22566	A22553	A2255302	A225533	22563
Catalog Page	45	45	46	60	48	48	62	37	37	38	56

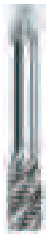
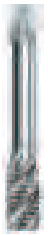
UNC / UNJC Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Solid Carbide Taps

Type	PARADUR WSH				PARADUR HS	PARADUR HARD
Standard	ANSI	ANSI	ANSI	DIN	DIN	DIN
Chamfer / Spiral	C/R45	C/R45	E/R45	C/R45	C	D
Tool Material	HSSE	HSSE	HSSE	HSSE	SC	SC
Surface Treatment	Bright	TIN	Bright	Bright	TICN	TICN
						
Range	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#2...3/8)	(#10...1/2)	(#10...1/2)
Catalog No.	A22517	A2251705	A2251760	225170	8231106	8231206
Catalog Page	34	34	35	54	63	64

Standard Application Taps

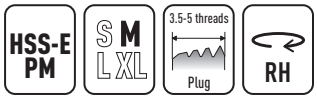
Type	PARADUR WSH			
Standard	ANSI	ANSI	ANSI	DIN
Chamfer / Spiral	C/R45	C/R45	E/R45	C/R45
Tool Material	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	TIN	Bright	Bright
				
Range	(7/16...1 1/2)	(7/16...1 1/2)	(7/16...1 1/2)	(5/16...1 1/2)
Catalog No.	A22567	A2256705	A2256760	225670
Catalog Page	34	34	35	54

NEW

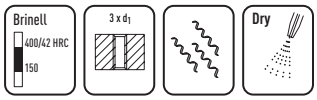
PROTOTEX ECO-HT

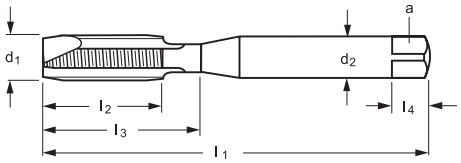
- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.

Characteristics



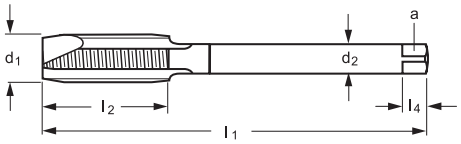
Application





DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2221002 THL
	inch	inch	inch	inch	inch	inch	inch			
No. 4-40	0.112	2.205	0.354	0.709	0.141	0.110	3/16	0.0925	3	-UNC4 *
No. 6-32	0.138	2.205	0.433	0.787	0.141	0.110	3/16	0.1122	3	-UNC6 *
No. 8-32	0.164	2.480	0.472	0.827	0.168	0.131	1/4	0.1378	3	-UNC8 *
No.10-24	0.190	2.756	0.512	0.984	0.194	0.152	1/4	0.1535	3	-UNC10 *
1/4-20	0.250	3.150	0.591	1.181	0.255	0.191	5/16	0.2008	3	-UNC1/4 *
5/16-18	0.313	3.543	0.709	1.378	0.318	0.238	3/8	0.2598	3	-UNC5/16 *
3/8-16	0.375	3.937	0.787	1.535	0.381	0.286	7/16	0.3150	3	-UNC3/8 *



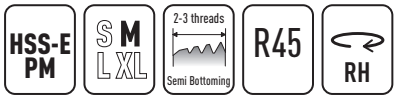
DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2226002 THL
	inch	inch	inch	inch	inch	inch	inch			
1/2-13	0.500	4.331	0.906	-	0.367	0.275	7/16	0.4252	4	-UNC1/2 *
5/8-11	0.625	4.331	0.984	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4.921	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *

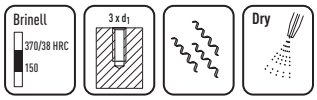
PARADUR ECO-HT

NEW

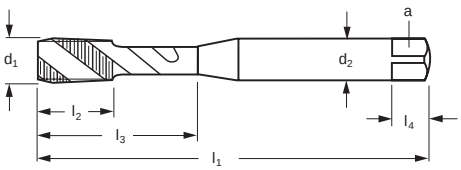
Characteristics



Application

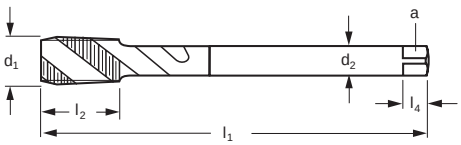


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2251302 THL
	inch	inch	inch	inch	inch	inch	inch			
No. 4-40	0.112	2.205	0.236	0.437	0.141	0.110	3/16	0.0925	3	-UNC4 *
No. 6-32	0.138	2.205	0.256	0.539	0.141	0.110	3/16	0.1122	3	-UNC6 *
No. 8-32	0.164	2.480	0.276	0.701	0.168	0.131	1/4	0.1378	3	-UNC8 *
No.10-24	0.190	2.756	0.315	0.831	0.194	0.152	1/4	0.1535	3	-UNC10 *
1/4-20	0.250	3.150	0.394	1.075	0.255	0.191	5/16	0.2008	3	-UNC1/4 *
5/16-18	0.313	3.543	0.472	1.378	0.318	0.238	3/8	0.2598	3	-UNC5/16 *
3/8-16	0.375	3.937	0.591	1.535	0.381	0.286	7/16	0.3150	3	-UNC3/8 *



DIN/ANSI - 2B

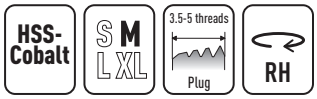
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2256302 THL
	inch	inch	inch	inch	inch	inch	inch			
1/2-13	0.500	4.331	0.709	-	0.367	0.275	7/16	0.4252	4	-UNC1/2 *
5/8-11	0.625	4.331	0.787	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4.921	0.984	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *

NEW

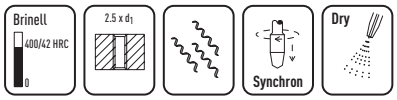
PROTOTEX Synchrospeed

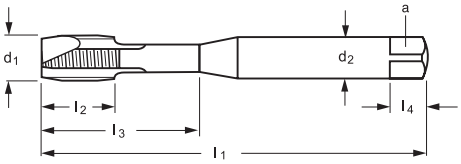
- Rigid tap through holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for dry or MQL machining.

Characteristics



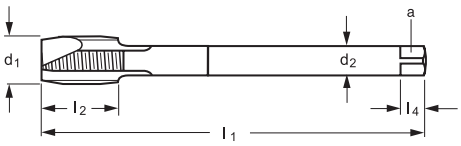
Application





DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2221005 TIN
	inch	inch	inch	inch	inch	inch	inch			
No. 4-40	0.112	2.205	0.252	0.709	0.141	0.110	3/16	0.0925	3	-UNC4 *
No. 6-32	0.138	2.205	0.311	0.787	0.141	0.110	3/16	0.1122	3	-UNC6 *
No. 8-32	0.164	2.480	0.311	0.827	0.168	0.131	1/4	0.1378	3	-UNC8 *
No.10-24	0.190	2.756	0.417	0.984	0.194	0.152	1/4	0.1535	3	-UNC10 *
1/4-20	0.250	3.150	0.500	1.181	0.255	0.191	5/16	0.2008	3	-UNC1/4 *
5/16-18	0.313	3.543	0.555	1.378	0.318	0.238	3/8	0.2598	3	-UNC5/16 *
3/8-16	0.375	3.937	0.626	1.535	0.381	0.286	7/16	0.3150	3	-UNC3/8 *



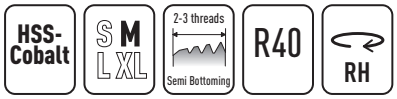
DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2226005 TIN
	inch	inch	inch	inch	inch	inch	inch			
1/2-13	0.500	4.331	0.768	-	0.367	0.275	7/16	0.4252	3	-UNC1/2 *
5/8-11	0.625	4.331	0.909	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4.921	1.000	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *

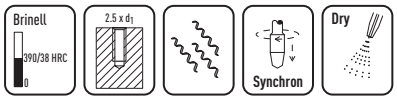
PARADUR Synchrospeed

NEW

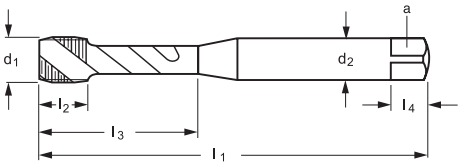
Characteristics



Application

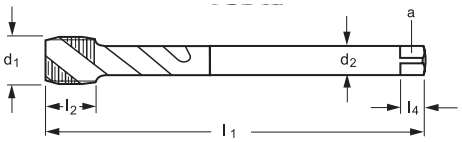


- Rigid tap blind holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN/VAP** (Titanium Nitride+Steam Oxide) has excellent wear resistance and cutting fluid retention.
- Suitable for dry or MQL machining.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2251005 TIN/vap
	inch	inch	inch	inch	inch	inch	inch			
No. 4-40	0.112	2.205	0.256	0.709	0.141	0.110	3/16	0.0925	3	-UNC4 *
No. 6-32	0.138	2.205	0.315	0.787	0.141	0.110	3/16	0.1122	3	-UNC6 *
No. 8-32	0.164	2.480	0.315	0.827	0.168	0.131	1/4	0.1378	3	-UNC8 *
No.10-24	0.190	2.756	0.433	0.984	0.194	0.152	1/4	0.1535	3	-UNC10 *
1/4-20	0.250	3.150	0.531	1.181	0.255	0.191	5/16	0.2008	3	-UNC1/4 *
5/16-18	0.313	3.543	0.591	1.378	0.318	0.238	3/8	0.2598	3	-UNC5/16 *
3/8-16	0.375	3.937	0.669	1.535	0.381	0.286	7/16	0.3150	3	-UNC3/8 *

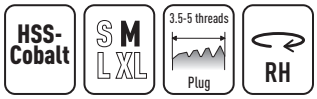


DIN/ANSI - 2B

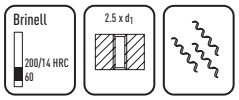
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2256005 TIN/vap
	inch	inch	inch	inch	inch	inch	inch			
1/2-13	0.500	4.331	0.807	-	0.367	0.275	7/16	0.4252	4	-UNC1/2 *
5/8-11	0.625	4.331	0.965	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4.921	1.063	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *

PROTOTEX

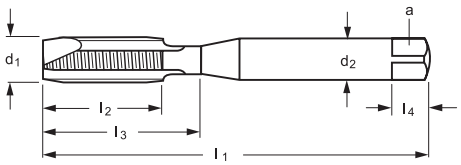
Characteristics



Application

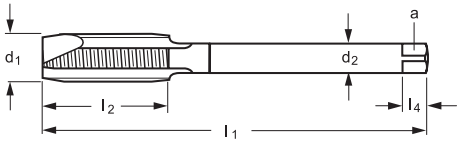


- General application tap for through holes in short and long-chipping materials up to 14HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22210	Code A2221005 TIN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2	-UNC2
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-UNC4	-UNC4
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	2	-UNC5	-UNC5
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	2	-UNC6	-UNC6
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	2	-UNC8	-UNC8
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	2	-UNC10	-UNC10
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8



ANSI B94.9 - 2B

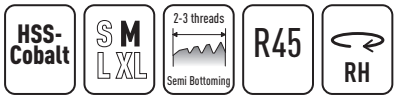
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22260	Code A2226005 TIN
	inch	inch	inch	inch	inch	inch	inch				
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16	-UNC7/16
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	3	-UNC1/2	-UNC1/2
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	3	-UNC9/16	-UNC9/16
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	3	-UNC5/8	-UNC5/8
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8	-UNC7/8
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1	-UNC1

1) without neck

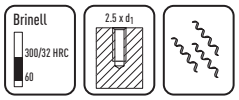
PARADUR WSH

NEW Ø

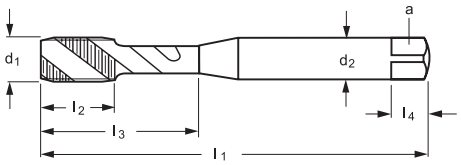
Characteristics



Application

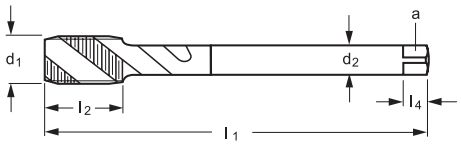


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22517	Code A2251705 TIN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4	-UNC4
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5	-UNC5
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8



ANSI B94.9 - 2B

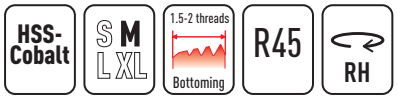
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22567	Code A2256705 TIN
	inch	inch	inch	inch	inch	inch	inch				
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16	-UNC7/16
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	3	-UNC1/2	-UNC1/2
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	3	-UNC9/16	-UNC9/16
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8	-UNC7/8
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1	-UNC1
1 1/8-7	1.125	5 7/16	1.654	-	0.896	0.672	7/8	0.9843	4	-UNC1.1/8 *	-UNC1.1/8 *
1 1/4-7	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1024	4	-UNC1.1/4 *	-UNC1.1/4 *
1 1/2-6	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.3386	4	-UNC1.1/2 *	-UNC1.1/2 *

1) without neck

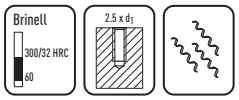
NEW

PARADUR WSH

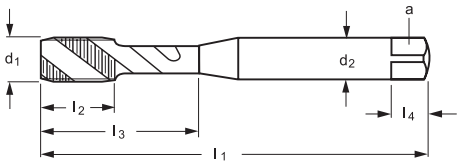
Characteristics



Application

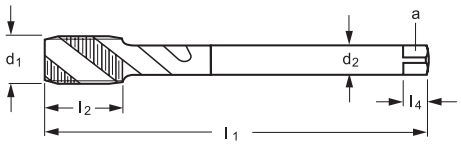


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.



ANSI B94.9 - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2251760
	inch	inch	inch	inch	inch	inch	inch			
[1] No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *
[1] No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4 *
[1] No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5 *
[1] No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6 *
[1] No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8 *
[1] No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10 *
1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4 *
5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16 *
3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8 *



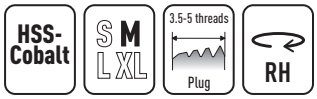
ANSI B94.9 - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2256760
	inch	inch	inch	inch	inch	inch	inch			
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16 *
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	3	-UNC1/2 *
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	3	-UNC9/16 *
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1 *
1 1/8-7	1.125	5 7/16	1.654	-	0.896	0.672	7/8	0.9843	4	-UNC1.1/8 *
1 1/4-7	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1024	4	-UNC1.1/4 *
1 1/2-6	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.3386	4	-UNC1.1/2 *

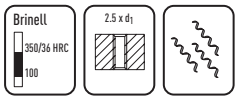
1) without neck

PROTOTEX INOX

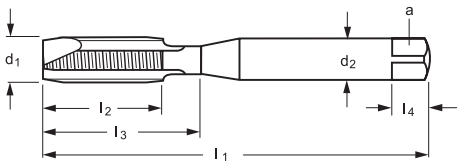
Characteristics



Application

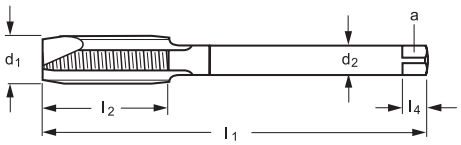


- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22203 vap	Code A2220302 THL
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2	-UNC2
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-UNC4	-UNC4
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	2	-UNC5	-UNC5
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	2	-UNC6	-UNC6
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	2	-UNC8	-UNC8
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8



ANSI B94.9 - 3B

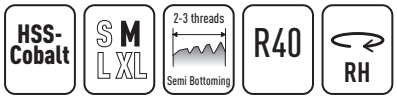
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22253 vap	Code A2225302 THL
		inch	inch	inch	inch	inch	inch	inch				
	7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16	-UNC7/16
	1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2
	9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16	-UNC9/16
	5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8
	3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4
	7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8	-UNC7/8
	1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1	-UNC1

1) without neck

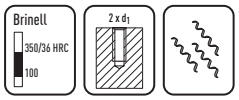
PARADUR INOX

NEW Ø

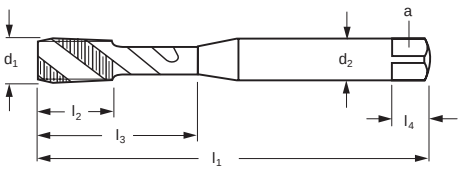
Characteristics



Application

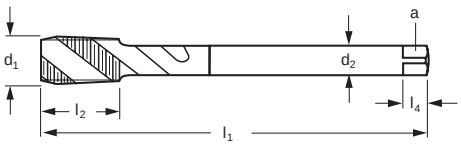


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22503 vap	Code A2250302 THL
		inch	inch	inch	inch	inch	inch	inch				
1)4)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2	-UNC2
1)4)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4	-UNC4
1)4)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5	-UNC5
1)4)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6
1)4)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8
1)4)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10
4)	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4
4)	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16
4)	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8



ANSI B94.9 - 3B

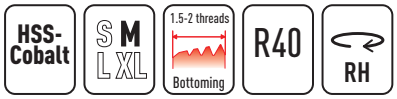
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22553 vap	Code A2255302 THL
		inch	inch	inch	inch	inch	inch	inch				
4)	7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16	-UNC7/16
4)	1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2
4)	9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16	-UNC9/16
4)	5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8
4)	3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4
4)	7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8	-UNC7/8
4)	1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1	-UNC1
4)	1 1/8-7	1.125	5 7/16	1.654	-	0.896	0.672	7/8	0.9843	5	-UNC1.1/8 *	-UNC1.1/8 *
4)	1 1/4-7	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1024	5	-UNC1.1/4 *	-UNC1.1/4 *
4)	1 1/2-6	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.3386	5	-UNC1.1/2 *	-UNC1.1/2 *

1) without neck
4) without back tapering

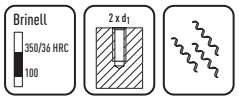
PARADUR INOX

NEW Ø

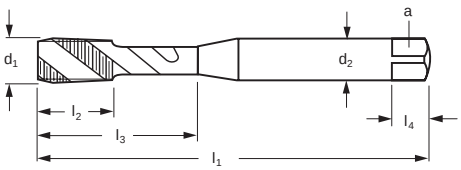
Characteristics



Application

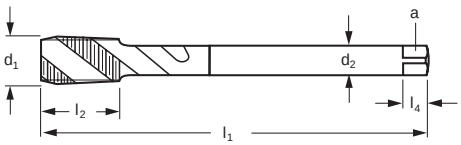


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A225033 vap
		inch	inch	inch	inch	inch	inch	inch			
1)4)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *
1)4)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4 *
1)4)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5 *
1)4)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6
1)4)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8
1)4)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10
4)	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4
4)	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16
4)	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8



ANSI B94.9 - 3B

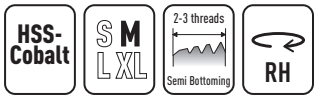
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A225533 vap
		inch	inch	inch	inch	inch	inch	inch			
4)	7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16
4)	1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2
4)	9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16
4)	5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8
4)	3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4
4)	7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *
4)	1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1 *
4)	1 1/8-7	1.125	5 7/16	1.654	-	0.896	0.672	7/8	0.9843	5	-UNC1.1/8 *
4)	1 1/4-7	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1024	5	-UNC1.1/4 *
4)	1 1/2-6	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.3386	5	-UNC1.1/2 *

1) without neck
4) without back tapering

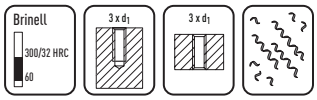
NEW

PARADUR GG

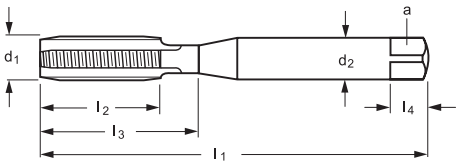
Characteristics



Application

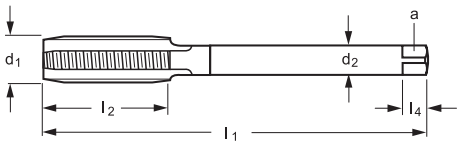


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **NID** (Nitride+Steam Oxide) shares the lubricity of oxide and the abrasion resistance of nitride.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22314 nid	Code A2231406 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4 *	-UNC4 *
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5 *	-UNC5 *
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6 *	-UNC6 *
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8 *	-UNC8 *
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	4	-UNC10 *	-UNC10 *
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	4	-UNC1/4 *	-UNC1/4 *
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	4	-UNC5/16 *	-UNC5/16 *
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	4	-UNC3/8 *	-UNC3/8 *



ANSI B94.9 - 2B

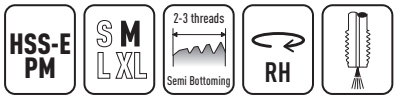
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22364 nid	Code A2236406 TICN
		inch	inch	inch	inch	inch	inch	inch				
	7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16 *	-UNC7/16 *
	1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2 *	-UNC1/2 *
	9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16 *	-UNC9/16 *
	5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *	-UNC5/8 *
	3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *	-UNC3/4 *
	7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *	-UNC7/8 *
	1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	5	-UNC1 *	-UNC1 *

1) without neck

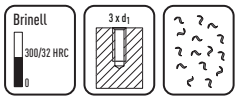
PARADUR GG

NEW

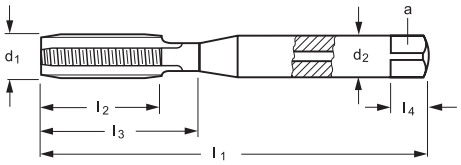
Characteristics



Application

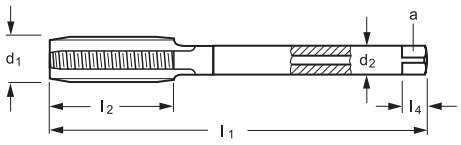


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AC2231416 TICN
	inch	inch	inch	inch	inch	inch	inch			
No.10-24	0.190	2.756	0.512	0.984	0.194	0.152	1/4	0.1535	4	-UNC10 *
1/4-20	0.250	3.150	0.591	1.181	0.255	0.191	5/16	0.2008	4	-UNC1/4 *
5/16-18	0.313	3.543	0.709	1.378	0.318	0.238	3/8	0.2598	4	-UNC5/16 *
3/8-16	0.375	3.937	0.787	1.535	0.381	0.286	7/16	0.3150	4	-UNC3/8 *



DIN/ANSI - 2B

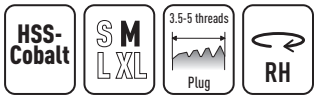
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AC2236416 TICN
	inch	inch	inch	inch	inch	inch	inch			
1/2-13	0.500	4.331	0.906	-	0.367	0.275	7/16	0.4252	4	-UNC1/2 *
5/8-11	0.625	4.331	0.984	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4.921	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *

PROTOTEX TI

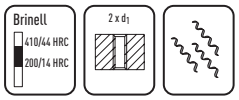
NEW Ø

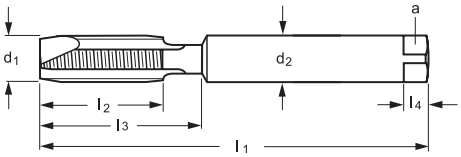
- A high degree of toughness and stability combine for successful machining of through holes in Ti-Alloys up to 44HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.

Characteristics



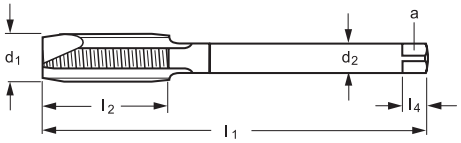
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22206	Code A2220606 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2	-UNC2
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-UNC4	-UNC4
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	2	-UNC5	-UNC5
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8



ANSI B94.9 - 3B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22256	Code A2225606 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16	-UNC7/16
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16	-UNC9/16
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1 *	-UNC1 *

1) without neck

PARADUR TI

NEW Ø

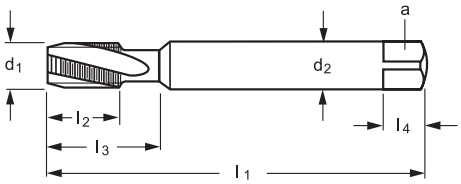
Characteristics

HSS-Cobalt | S M L XL | 2-3 threads Semi Bottoming | R15 | RH

Application

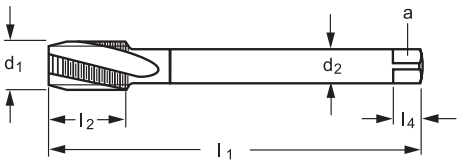
Brinell 410/44 HRC 200/14 HRC | 2 x d_1

- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22406 nit	Code A2240606 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2	-UNC2
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-UNC4	-UNC4
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5	-UNC5
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8



ANSI B94.9 - 3B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22456 nit	Code A2245606 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16	-UNC7/16
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16	-UNC9/16
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1 *	-UNC1 *

1) without neck

NEW

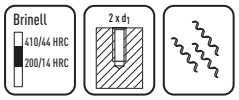
PARADUR TI

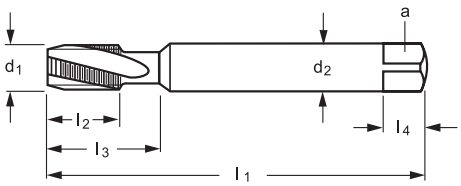
Characteristics

HSS-Cobalt | S M L XL | 1.5-2 threads Bottoming | R15 | RH

- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.

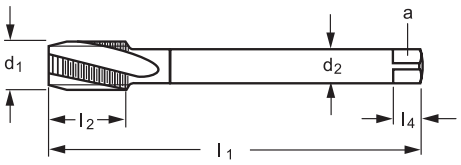
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2240661 nit
		inch	inch	inch	inch	inch	inch	inch			
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-UNC4 *
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5 *
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6 *
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8 *
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10 *
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4 *
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16 *
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8 *



ANSI B94.9 - 3B

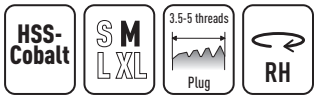
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2245661 nit
	inch	inch	inch	inch	inch	inch	inch			
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16 *
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2 *
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16 *
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4 *
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1 *

1) without neck

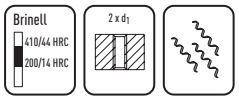
PROTOTEX NI

NEW

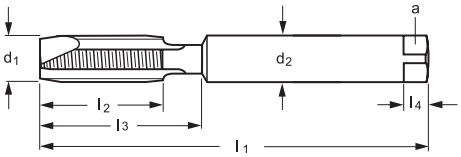
Characteristics



Application

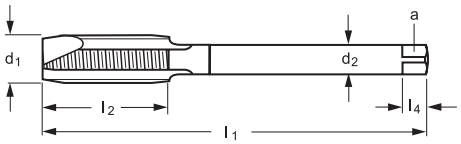


- A high degree of toughness and stability combine for successful machining of through holes in Ni-Alloys up to 44HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222002	Code A2220806 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2 *	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4	-UNC4 *
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5	-UNC5 *
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6 *
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8 *
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10 *
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4 *
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16 *
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8 *



ANSI B94.9 - 3B

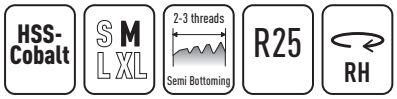
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222502	Code A2225806 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16	-UNC7/16 *
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2 *
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16	-UNC9/16 *
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8 *
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	4	-UNC3/4	-UNC3/4 *
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	4	-UNC7/8 *	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	4	-UNC1 *	-UNC1 *

1) without neck

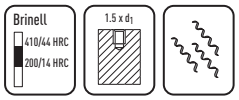
NEW

PARADUR NI

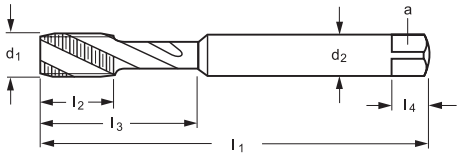
Characteristics



Application

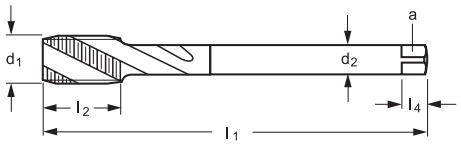


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224002 nit	Code A2240806 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4	-UNC4 *
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5	-UNC5 *
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6 *
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8 *
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10 *
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4 *
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16 *
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8 *



ANSI B94.9 - 3B

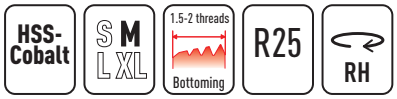
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224502 nit	Code A2245806 TICN
		inch	inch	inch	inch	inch	inch	inch				
	7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16	-UNC7/16 *
	1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2 *
	9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16	-UNC9/16 *
	5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8	-UNC5/8 *
	3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	5	-UNC3/4	-UNC3/4 *
	7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	5	-UNC7/8 *	-UNC7/8 *
	1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	5	-UNC1 *	-UNC1 *

1) without neck

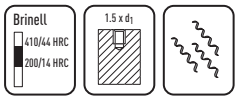
PARADUR NI

NEW Ø

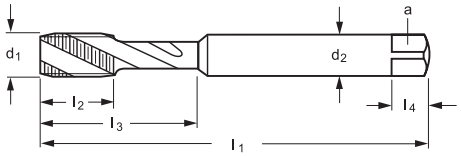
Characteristics



Application

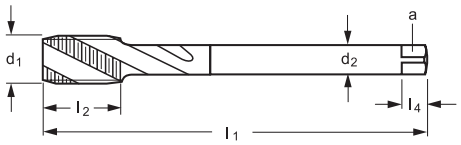


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.



ANSI B94.9 - 3B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224003 nit
	inch	inch	inch	inch	inch	inch	inch			
1) No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *
1) No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4 *
1) No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1043	3	-UNC5 *
1) No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	3	-UNC6
1) No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNC8
1) No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	3	-UNC10
1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-UNC1/4
5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-UNC5/16
3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	3	-UNC3/8



ANSI B94.9 - 3B

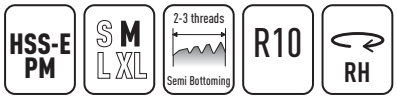
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224503 nit
	inch	inch	inch	inch	inch	inch	inch			
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	5	-UNC3/4
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	5	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	5	-UNC1 *

1) without neck

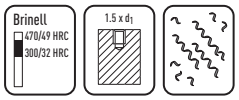
NEW

PARADUR NI 10

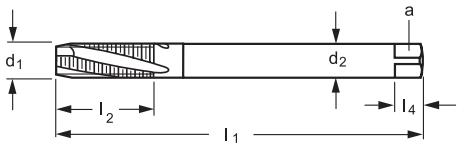
Characteristics



Application

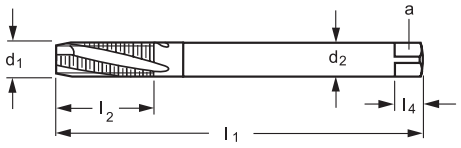


- Powdered metal, slow helix and a negative rake angle create the strength needed to machine tough materials up to 49HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Formerly known as PARADUR STAR



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224101	Code A2240876 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	3	-UNC2 *	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-UNC4	-UNC4 *
1)	No. 5-40	0.125	1 15/16	0.394	-	0.141	0.110	3/16	0.1043	3	-UNC5 *	-UNC5 *
1)	No. 6-32	0.138	2	0.472	-	0.141	0.110	3/16	0.1122	3	-UNC6	-UNC6 *
1)	No. 8-32	0.164	2 1/8	0.512	-	0.168	0.131	1/4	0.1378	3	-UNC8	-UNC8 *
1)	No.10-24	0.190	2 3/8	0.630	-	0.194	0.152	1/4	0.1535	3	-UNC10	-UNC10 *
1)	1/4-20	0.250	2 1/2	0.787	-	0.255	0.191	5/16	0.2008	3	-UNC1/4	-UNC1/4 *
1)	5/16-18	0.313	2 23/32	0.984	-	0.318	0.238	3/8	0.2598	3	-UNC5/16	-UNC5/16 *
1)	3/8-16	0.375	2 15/16	1.181	-	0.381	0.286	7/16	0.3150	3	-UNC3/8	-UNC3/8 *



ANSI B94.9 - 3B

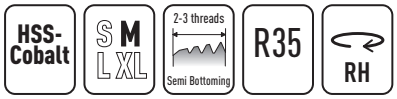
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224587	Code A2245876 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	4	-UNC7/16	-UNC7/16 *
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	4	-UNC1/2	-UNC1/2 *
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	4	-UNC9/16 *	-UNC9/16 *
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	4	-UNC5/8 *	-UNC5/8 *
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	5	-UNC3/4 *	-UNC3/4 *
7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	5	-UNC7/8 *	-UNC7/8 *
1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	5	-UNC1 *	-UNC1 *

1) without neck

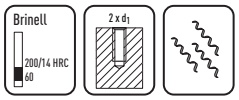
PARADUR WLM

NEW

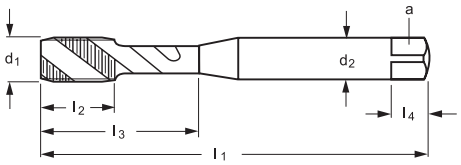
Characteristics



Application

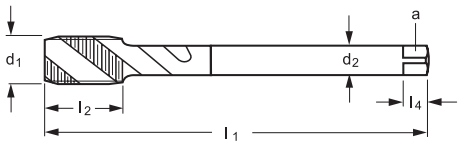


- Special tap for blind holes in soft, long chipping materials e.g. wrought Al, copper and soft construction steels.
- **CrN** (Chrome nitride) is an excellent choice for non-ferrous alloys that tend to adhere.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22516	Code A2251604 CRN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0728	2	-UNC2	-UNC2 *
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-UNC4	-UNC4 *
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1122	2	-UNC6	-UNC6 *
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	2	-UNC8	-UNC8 *
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1535	2	-UNC10	-UNC10 *
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	2	-UNC1/4	-UNC1/4 *
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	2	-UNC5/16	-UNC5/16 *
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3150	2	-UNC3/8	-UNC3/8 *



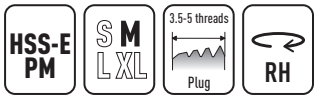
ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A22566	Code A2256604 CRN
		inch	inch	inch	inch	inch	inch	inch				
	7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3701	3	-UNC7/16	-UNC7/16 *
	1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4252	3	-UNC1/2	-UNC1/2 *
	9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.4803	3	-UNC9/16 *	-UNC9/16 *
	5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5315	3	-UNC5/8 *	-UNC5/8 *
	3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6496	3	-UNC3/4 *	-UNC3/4 *
	7/8-9	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.7677	3	-UNC7/8 *	-UNC7/8 *
	1-8	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.8760	3	-UNC1 *	-UNC1 *

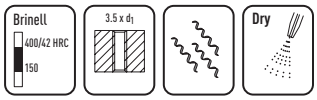
1) without neck

PROTOTEX ECO-HT

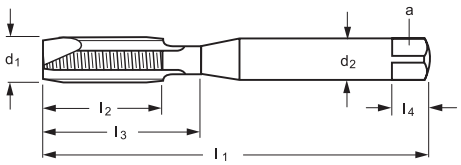
Characteristics



Application

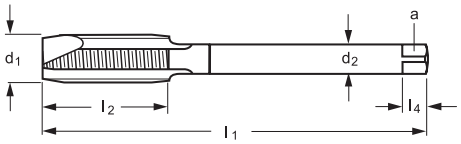


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2221302 THL
No. 2-56	2.184	45	7	12	2.8	2.1	5	1.85	3	-UNC2
No. 4-40	2.845	56	9	18	3.5	2.7	6	2.35	3	-UNC4
No. 6-32	3.505	56	11	20	4	3	6	2.85	3	-UNC6
No. 8-32	4.166	63	12	21	4.5	3.4	6	3.50	3	-UNC8
No.10-24	4.826	70	13	25	6	4.9	8	3.90	3	-UNC10
1/4-20	6.35	80	15	30	7	5.5	8	5.10	3	-UNC1/4

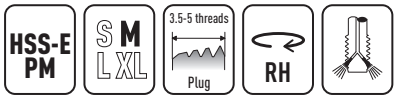


DIN 2184-1 - 2B

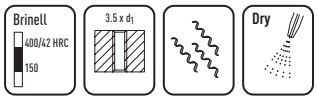
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2226302 THL
5/16-18	7.938	90	18	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	20	-	7	5.5	8	8.00	3	-UNC3/8
1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8

PROTOTEX ECO-HT

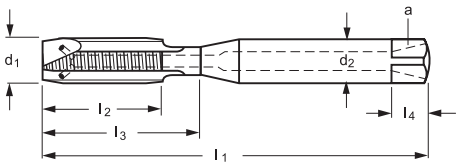
Characteristics



Application

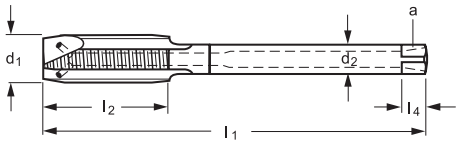


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Radial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2221342 THL
1/4-20	6.35	80	15	30	7	5.5	8	5.10	3	-UNC1/4

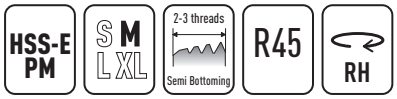


DIN 2184-1 - 2B

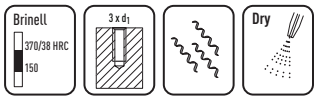
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2226342 THL
5/16-18	7.938	90	18	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	20	-	7	5.5	8	8.00	3	-UNC3/8
1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8

PARADUR ECO-HT

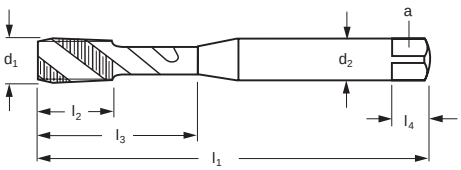
Characteristics



Application

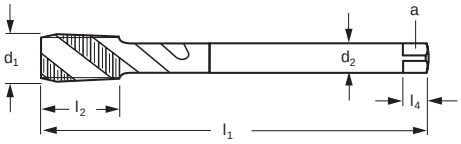


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2251302 THL
4)	No. 2-56	2.184	45	4	8.4	2.8	2.1	5	1.85	3	-UNC2
	No. 4-40	2.845	56	6	11	3.5	2.7	6	2.35	3	-UNC4
	No. 6-32	3.505	56	6.5	13.7	4	3	6	2.85	3	-UNC6
	No. 8-32	4.166	63	7	17.8	4.5	3.4	6	3.50	3	-UNC8
	No.10-24	4.826	70	8	20.7	6	4.9	8	3.90	3	-UNC10
	1/4-20	6.35	80	10	27.3	7	5.5	8	5.10	3	-UNC1/4



DIN 2184-1 - 2B

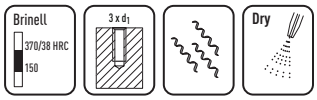
	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2256302 THL
	5/16-18	7.938	90	13	-	6	4.9	8	6.60	3	-UNC5/16
	3/8-16	9.525	100	15	-	7	5.5	8	8.00	3	-UNC3/8
	1/2-13	12.7	110	18	-	9	7	10	10.80	4	-UNC1/2
	5/8-11	15.875	110	20	-	12	9	12	13.50	4	-UNC5/8

4) without back tapering

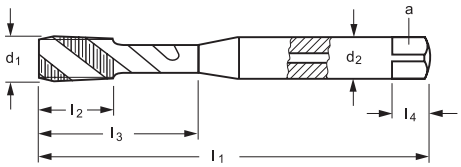
PARADUR ECO-HT

Characteristics

Application

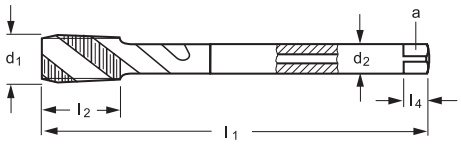


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Axial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



~DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2251312 THL
1/4-20	6.35	80	10	27.3	7	5.5	8	5.10	3	-UNC1/4

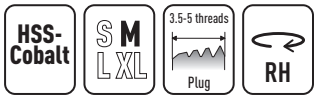


DIN 2184-1 - 2B

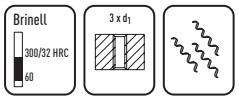
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2256312 THL
5/16-18	7.938	90	13	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	15	-	7	5.5	8	8.00	3	-UNC3/8
1/2-13	12.7	110	18	-	9	7	10	10.80	4	-UNC1/2
5/8-11	15.875	110	20	-	12	9	12	13.50	4	-UNC5/8
3/4-10	19.05	125	25	-	14	11	14	16.50	4	-UNC3/4

PROTOTEX H

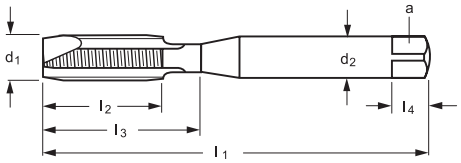
Characteristics



Application

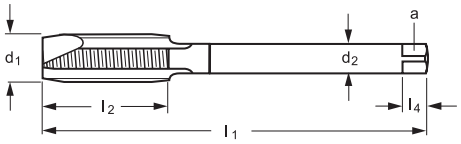


- General application tap for through holes in short and long-chipping materials up to 32HRc.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22310
No. 2-56	2.184	45	7	12	2.8	2.1	5	1.85	3	-UNC2
No. 3-48	2.515	50	8	12.5	2.8	2.1	5	2.10	3	-UNC3
No. 4-40	2.845	56	9	18	3.5	2.7	6	2.35	3	-UNC4
No. 5-40	3.175	56	10	18	3.5	2.7	6	2.65	3	-UNC5
No. 6-32	3.505	56	11	20	4	3	6	2.85	3	-UNC6
No. 8-32	4.166	63	12	21	4.5	3.4	6	3.50	3	-UNC8
No.10-24	4.826	70	13	25	6	4.9	8	3.90	3	-UNC10
No.12-24	5.486	80	15	30	6	4.9	8	4.50	3	-UNC12
1/4-20	6.35	80	15	30	7	5.5	8	5.10	3	-UNC1/4
5/16-18	7.938	90	18	35	8	6.2	9	6.60	3	-UNC5/16
3/8-16	9.525	100	20	39	10	8	11	8.00	3	-UNC3/8

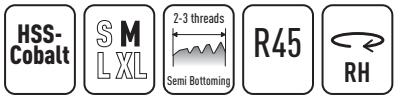


DIN 2184-1 - 2B

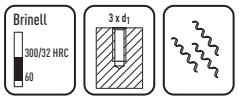
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22360
5/16-18	7.938	90	18	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	20	-	7	5.5	8	8.00	3	-UNC3/8
7/16-14	11.113	100	20	-	8	6.2	9	9.40	3	-UNC7/16
1/2-13	12.7	110	23	-	9	7	10	10.80	3	-UNC1/2
9/16-12	14.288	110	25	-	11	9	12	12.20	3	-UNC9/16
5/8-11	15.875	110	25	-	12	9	12	13.50	3	-UNC5/8
3/4-10	19.05	125	30	-	14	11	14	16.50	3	-UNC3/4
7/8-9	22.225	140	30	-	18	14.5	17	19.50	3	-UNC7/8
1-8	25.4	160	36	-	18	14.5	17	22.25	3	-UNC1
1 1/8-7	28.575	180	42	-	22	18	21	25.00	4	-UNC1.1/8
1 1/4-7	31.75	180	42	-	22	18	21	28.00	4	-UNC1.1/4
1 1/2-6	38.1	200	48	-	28	22	25	34.00	4	-UNC1.1/2

PARADUR WSH

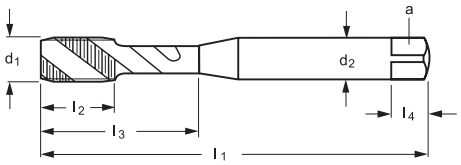
Characteristics



Application

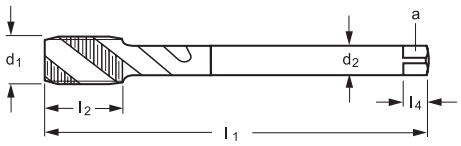


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 225170
No. 2-56	2.184	45	4	12	2.8	2.1	5	1.85	3	-UNC2
No. 3-48	2.515	50	4	12.5	2.8	2.1	5	2.10	3	-UNC3
No. 4-40	2.845	56	6	18	3.5	2.7	6	2.35	3	-UNC4
No. 5-40	3.175	56	6	18	3.5	2.7	6	2.65	3	-UNC5
No. 6-32	3.505	56	6.5	20	4	3	6	2.85	3	-UNC6
No. 8-32	4.166	63	7	21	4.5	3.4	6	3.50	3	-UNC8
No.10-24	4.826	70	8	25	6	4.9	8	3.90	3	-UNC10
No.12-24	5.486	80	10	30	6	4.9	8	4.50	3	-UNC12
1/4-20	6.35	80	10	30	7	5.5	8	5.10	3	-UNC1/4
5/16-18	7.938	90	12	35	8	6.2	9	6.60	3	-UNC5/16
3/8-16	9.525	100	15	39	10	8	11	8.00	3	-UNC3/8

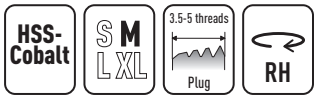


DIN 2184-1 - 2B

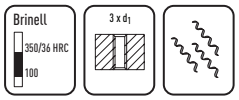
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 225670
5/16-18	7.938	90	13	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	15	-	7	5.5	8	8.00	3	-UNC3/8
7/16-14	11.113	100	15	-	8	6.2	9	9.40	3	-UNC7/16
1/2-13	12.7	110	18	-	9	7	10	10.80	4	-UNC1/2
9/16-12	14.288	110	20	-	11	9	12	12.20	4	-UNC9/16
5/8-11	15.875	110	20	-	12	9	12	13.50	4	-UNC5/8
3/4-10	19.05	125	25	-	14	11	14	16.50	4	-UNC3/4
7/8-9	22.225	140	25	-	18	14.5	17	19.50	4	-UNC7/8
1-8	25.4	160	30	-	18	14.5	17	22.25	4	-UNC1
1 1/8-7	28.575	180	35	-	22	18	21	25.00	4	-UNC1.1/8
1 1/4-7	31.75	180	35	-	22	18	21	28.00	4	-UNC1.1/4
1 1/2-6	38.1	200	40	-	28	22	25	34.00	4	-UNC1.1/2

PROTOTEX INOX

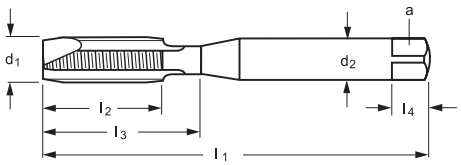
Characteristics



Application

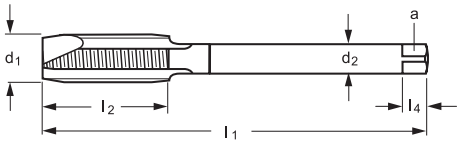


- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22213 vap
No. 2-56	2.184	45	7	12	2.8	2.1	5	1.85	2	-UNC2
No. 3-48	2.515	50	8	12.5	2.8	2.1	5	2.10	2	-UNC3
No. 4-40	2.845	56	9	18	3.5	2.7	6	2.35	2	-UNC4
No. 5-40	3.175	56	10	18	3.5	2.7	6	2.65	2	-UNC5
No. 6-32	3.505	56	11	20	4	3	6	2.85	2	-UNC6
No. 8-32	4.166	63	12	21	4.5	3.4	6	3.50	3	-UNC8
No.10-24	4.826	70	13	25	6	4.9	8	3.90	3	-UNC10
No.12-24	5.486	80	15	30	6	4.9	8	4.50	3	-UNC12
1/4-20	6.35	80	15	30	7	5.5	8	5.10	3	-UNC1/4

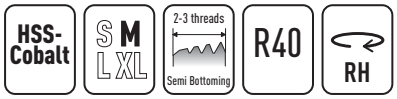


DIN 2184-1 - 2B

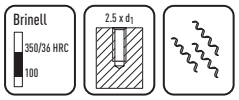
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22263 vap
5/16-18	7.938	90	18	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	20	-	7	5.5	8	8.00	3	-UNC3/8
7/16-14	11.113	100	20	-	8	6.2	9	9.40	3	-UNC7/16
1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
9/16-12	14.288	110	25	-	11	9	12	12.20	4	-UNC9/16
5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8
3/4-10	19.05	125	30	-	14	11	14	16.50	4	-UNC3/4
7/8-9	22.225	140	30	-	18	14.5	17	19.50	4	-UNC7/8
1-8	25.4	160	36	-	18	14.5	17	22.25	4	-UNC1

PARADUR INOX

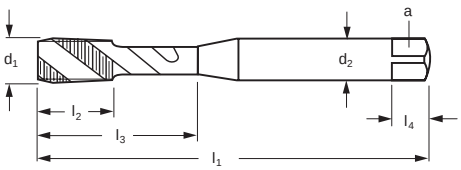
Characteristics



Application

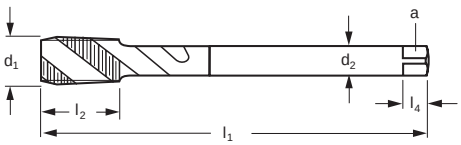


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22513 vap
4)	No. 2-56	2.184	45	4	12	2.8	2.1	5	1.85	3	-UNC2
	No. 3-48	2.515	50	4	12.5	2.8	2.1	5	2.10	3	-UNC3
	No. 4-40	2.845	56	6	18	3.5	2.7	6	2.35	3	-UNC4
	No. 5-40	3.175	56	6	18	3.5	2.7	6	2.65	3	-UNC5
	No. 6-32	3.505	56	6.5	20	4	3	6	2.85	3	-UNC6
	No. 8-32	4.166	63	7	21	4.5	3.4	6	3.50	3	-UNC8
	No.10-24	4.826	70	8	25	6	4.9	8	3.90	3	-UNC10
	No.12-24	5.486	80	10	30	6	4.9	8	4.50	3	-UNC12
	1/4-20	6.35	80	10	30	7	5.5	8	5.10	3	-UNC1/4



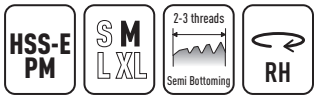
DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22563 vap
5/16-18	7.938	90	13	-	6	4.9	8	6.60	3	-UNC5/16
3/8-16	9.525	100	15	-	7	5.5	8	8.00	3	-UNC3/8
7/16-14	11.113	100	15	-	8	6.2	9	9.40	3	-UNC7/16
1/2-13	12.7	110	18	-	9	7	10	10.80	4	-UNC1/2
9/16-12	14.288	110	20	-	11	9	12	12.20	4	-UNC9/16
5/8-11	15.875	110	20	-	12	9	12	13.50	4	-UNC5/8
3/4-10	19.05	125	25	-	14	11	14	16.50	4	-UNC3/4
7/8-9	22.225	140	25	-	18	14.5	17	19.50	4	-UNC7/8
1-8	25.4	160	30	-	18	14.5	17	22.25	5	-UNC1
1 1/8-7	28.575	180	35	-	22	18	21	25.00	5	-UNC1.1/8
1 1/4-7	31.75	180	35	-	22	18	21	28.00	5	-UNC1.1/4
1 1/2-6	38.1	200	40	-	28	22	25	34.00	5	-UNC1.1/2

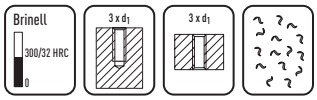
4) without back tapering

PARADUR GG

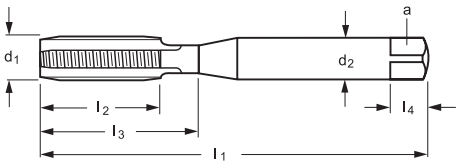
Characteristics



Application

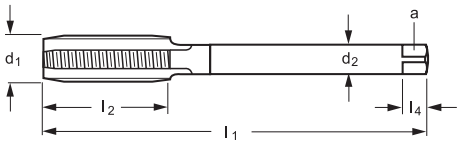


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **NID** (Nitride+Steam Oxide) shares the lubricity of oxide and the abrasion resistance of nitride.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22314 nid
No. 6-32	3.505	56	11	20	4	3	6	2.85	3	-UNC6
No. 8-32	4.166	63	12	21	4.5	3.4	6	3.50	3	-UNC8
No.10-24	4.826	70	13	25	6	4.9	8	3.90	4	-UNC10
1/4-20	6.35	80	15	30	7	5.5	8	5.10	4	-UNC1/4

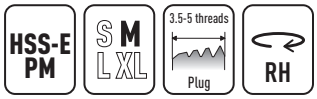


DIN 2184-1 - 2B

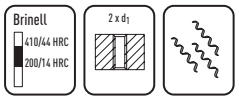
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22364 nid
5/16-18	7.938	90	18	-	6	4.9	8	6.60	4	-UNC5/16
3/8-16	9.525	100	20	-	7	5.5	8	8.00	4	-UNC3/8
7/16-14	11.113	100	20	-	8	6.2	9	9.40	4	-UNC7/16
1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
9/16-12	14.288	110	25	-	11	9	12	12.20	4	-UNC9/16
5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8
3/4-10	19.05	125	30	-	14	11	14	16.50	4	-UNC3/4
7/8-9	22.225	140	30	-	18	14.5	17	19.50	4	-UNC7/8

PROTOTEX TINI

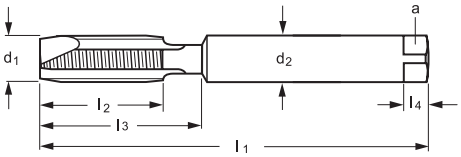
Characteristics



Application

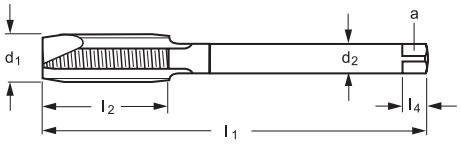


- A high degree of toughness and stability combine for successful machining of through holes in Ti / Ni-Alloys up to 44HRc.



~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22217
1)	No. 2-56	2.184	45	9	-	2.8	2.1	5	1.85	2	-UNC2
1)	No. 4-40	2.845	56	10	-	3.5	2.7	6	2.35	2	-UNC4
1)	No. 5-40	3.175	56	10	-	3.5	2.7	6	2.65	2	-UNC5
1)	No. 6-32	3.505	56	12	-	4	3	6	2.85	3	-UNC6
1)	No. 8-32	4.166	63	13	-	4.5	3.4	6	3.50	3	-UNC8
1)	No.10-24	4.826	70	16	-	6	4.9	8	3.90	3	-UNC10
	1/4-20	6.35	80	15	25	7	5.5	8	5.10	3	-UNC1/4
	5/16-18	7.938	90	18	29.5	8	6.2	9	6.60	3	-UNC5/16
	3/8-16	9.525	100	20	33.5	10	8	11	8.00	3	-UNC3/8



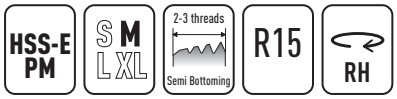
DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22267
	7/16-14	11.113	100	20	-	8	6.2	9	9.40	4	-UNC7/16
	1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
	9/16-12	14.288	110	25	-	11	9	12	12.20	4	-UNC9/16
	5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8
	3/4-10	19.05	125	30	-	14	11	14	16.50	4	-UNC3/4

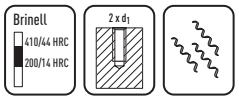
1) without neck

PARADUR TI

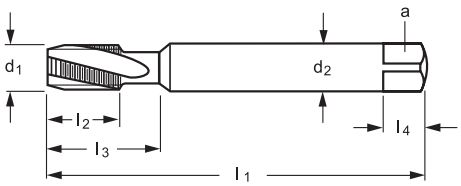
Characteristics



Application

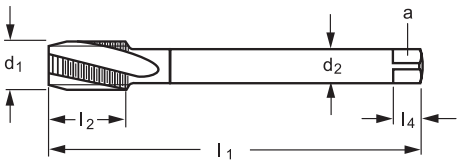


- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.



~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22416
1)	No. 6-32	3.505	56	12	-	4	3	6	2.85	3	-UNC6
1)	No. 8-32	4.166	63	13	-	4.5	3.4	6	3.50	3	-UNC8
1)	No.10-24	4.826	70	16	-	6	4.9	8	3.90	3	-UNC10
	No.12-24	5.486	80	15	23	6	4.9	8	4.50	3	-UNC12
	1/4-20	6.35	80	15	25	7	5.5	8	5.10	3	-UNC1/4
	5/16-18	7.938	90	18	29.5	8	6.2	9	6.60	3	-UNC5/16
	3/8-16	9.525	100	20	33.5	10	8	11	8.00	3	-UNC3/8



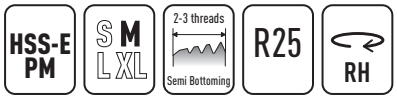
DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22466
	7/16-14	11.113	100	20	-	8	6.2	9	9.40	4	-UNC7/16
	1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
	5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8

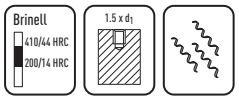
1) without neck

PARADUR NI

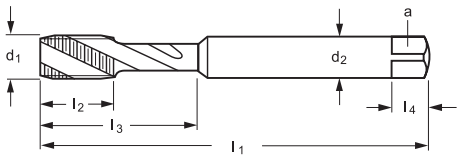
Characteristics



Application

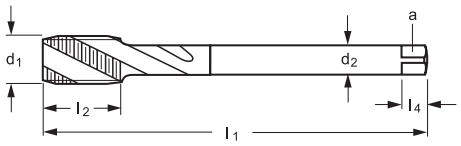


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.



~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 224102
1)	No. 2-56	2.184	45	9	-	2.8	2.1	5	1.85	3	-UNC2
1)	No. 3-48	2.515	50	9	-	2.8	2.1	5	2.10	3	-UNC3
1)	No. 4-40	2.845	56	10	-	3.5	2.7	6	2.35	3	-UNC4
1)	No. 5-40	3.175	56	10	-	3.5	2.7	6	2.65	3	-UNC5
1)	No. 6-32	3.505	56	12	-	4	3	6	2.85	3	-UNC6
1)	No. 8-32	4.166	63	13	-	4.5	3.4	6	3.50	3	-UNC8
1)	No.10-24	4.826	70	16	-	6	4.9	8	3.90	3	-UNC10
	1/4-20	6.35	80	15	25	7	5.5	8	5.10	3	-UNC1/4
	5/16-18	7.938	90	18	29.5	8	6.2	9	6.60	3	-UNC5/16
	3/8-16	9.525	100	20	33.5	10	8	11	8.00	4	-UNC3/8



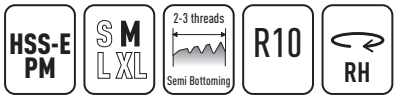
DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 224602
	7/16-14	11.113	100	20	-	8	6.2	9	9.40	4	-UNC7/16
	1/2-13	12.7	110	23	-	9	7	10	10.80	4	-UNC1/2
	9/16-12	14.288	110	25	-	11	9	12	12.20	4	-UNC9/16
	5/8-11	15.875	110	25	-	12	9	12	13.50	4	-UNC5/8
	3/4-10	19.05	125	30	-	14	11	14	16.50	5	-UNC3/4

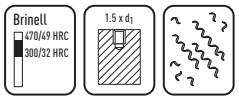
1) without neck

PARADUR NI 10

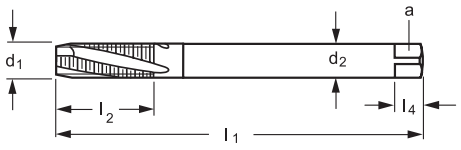
Characteristics



Application



- Powdered metal, slow helix and a negative rake angle create the strength needed to machine tough materials up to 49HRc.
- With rounded crest profile.



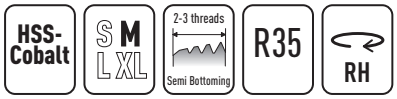
~DIN 2184-1 - 3B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 224101
1)	No. 4-40 UNJC	2.845	56	8	3.5	2.7	6	2.30	3	-UNJC4
1)	No. 6-32 UNJC	3.505	56	10	4	3	6	2.80	3	-UNJC6
1)	No. 8-32 UNJC	4.166	63	11	4.5	3.4	6	3.50	3	-UNJC8
1)	No.10-24 UNJC	4.826	70	13.5	6	4.9	8	3.90	3	-UNJC10
1)	1/4-20 UNJC	6.35	80	17.5	7	5.5	8	5.20	3	-UNJC1/4
1)	5/16-18 UNJC	7.938	90	21	8	6.2	9	6.70	3	-UNJC5/16
1)	3/8-16 UNJC	9.525	100	25	10	8	11	8.10	3	-UNJC3/8

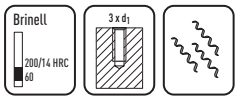
1) without neck

PARADUR WLM

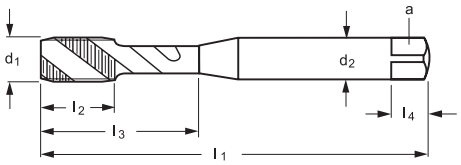
Characteristics



Application

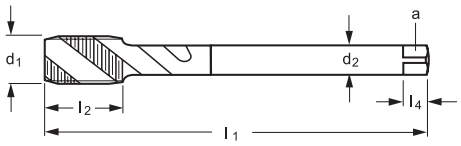


- Special tap for blind holes in soft, long chipping materials e.g. wrought Al, copper and soft construction steels.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22516
No. 2-56	2.184	45	4	12	2.8	2.1	5	1.85	2	-UNC2
No. 4-40	2.845	56	6	18	3.5	2.7	6	2.35	2	-UNC4
No. 5-40	3.175	56	6	18	3.5	2.7	6	2.65	2	-UNC5
No. 6-32	3.505	56	6.5	20	4	3	6	2.85	2	-UNC6
No. 8-32	4.166	63	7	21	4.5	3.4	6	3.50	2	-UNC8
No.10-24	4.826	70	8	25	6	4.9	8	3.90	2	-UNC10
No.12-24	5.486	80	10	30	6	4.9	8	4.50	2	-UNC12
1/4-20	6.35	80	10	30	7	5.5	8	5.10	2	-UNC1/4
5/16-18	7.938	90	12	35	8	6.2	9	6.60	2	-UNC5/16
3/8-16	9.525	100	15	39	10	8	11	8.00	2	-UNC3/8

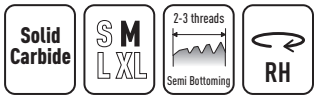


DIN 2184-1 - 2B

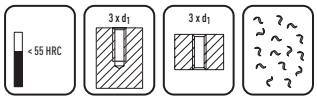
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 22566
5/16-18	7.938	90	13	-	6	4.9	8	6.60	2	-UNC5/16
3/8-16	9.525	100	15	-	7	5.5	8	8.00	2	-UNC3/8
7/16-14	11.113	100	15	-	8	6.2	9	9.40	3	-UNC7/16
1/2-13	12.7	110	18	-	9	7	10	10.80	3	-UNC1/2

PARADUR HS

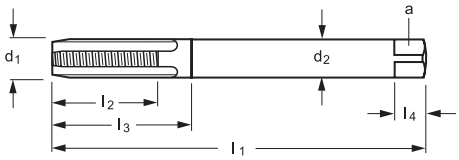
Characteristics



Application



- Solid carbide construction for short-chipping abrasive materials. Works quite well in glass-reinforced synthetics.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



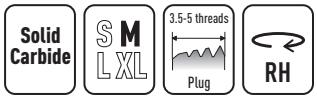
~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code 8231106 TICN
1)	No.10-24	4.826	70	16	6	4.9	8	3.90	3	-UNC10
1)	1/4-20	6.35	80	20	7	5.5	8	5.10	3	-UNC1/4
1)	5/16-18	7.938	90	25	8	6.2	9	6.60	3	-UNC5/16
1)	3/8-16	9.525	100	30	10	8	11	8.00	3	-UNC3/8
1)	1/2-13	12.7	110	36	12	9	12	10.80	3	-UNC1/2

1) without neck

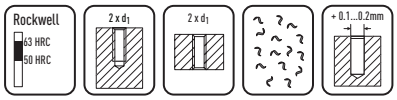
PARADUR HARD

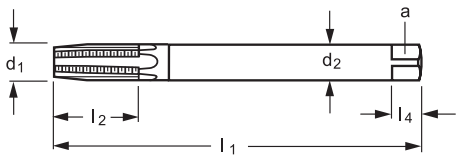
Characteristics



- Solid carbide combined with a special geometry to produce threads in hardened materials up to 63HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.

Application





~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code 8231206 TICN
1)	No.10-24	4.826	70	16	6	4.9	8	3.90	5	-UNC10
1)	1/4-20	6.35	80	19	7	5.5	8	5.10	5	-UNC1/4
1)	5/16-18	7.938	90	22	8	6.2	9	6.60	5	-UNC5/16
1)	3/8-16	9.525	100	24	10	8	11	8.00	5	-UNC3/8
1)	1/2-13	12.7	110	23	12	9	12	10.80	6	-UNC1/2

1) without neck

UNF / UNJF Taps in HSSE, HSSE-PM and Solid Carbide

ECO Taps

Synchrospeed Taps

Type	PROTOTEX ECO-HT			PARADUR ECO-HT			PROTOTEX Synchro-speed	PARADUR Synchro-speed
Standard	DIN/ANSI	DIN		DIN/ANSI	DIN		DIN/ANSI	DIN/ANSI
Chamfer / Spiral	B	B	B	C/R45	C/R45	C/R45	B	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	THL	THL	TIN	TIN/VAP
			Radial			Axial		
Range	(#6...3/8)	(#4...1/4)	(1/4...)	(#6...3/8)	(#4...1/4)	(1/4...)	(#6...3/8)	(#6...3/8)
Catalog No.	AE2321002	E2321302	E2321342	AE2351302	E2351302	E2351312	AS2321005	AS2351005
Catalog Page	71	91	92	72	93	94	73	74

ECO Taps

Synchrospeed Taps

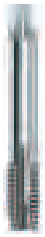
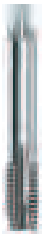
Type	PROTOTEX ECO-HT			PARADUR ECO-HT			PROTOTEX Synchro-speed	PARADUR Synchro-speed
Standard	DIN/ANSI	DIN		DIN/ANSI	DIN		DIN/ANSI	DIN/ANSI
Chamfer / Spiral	B	B	B	C/R45	C/R45	C/R45	B	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	THL	THL	TIN	TIN/VAP
			Radial			Axial		
Range	(7/16...5/8)	(5/16...5/8)	(5/16...1/2)	(7/16...5/8)	(5/16...5/8)	(5/16...5/8)	(7/16...5/8)	(7/16...5/8)
Catalog No.	AE2326002	E2326302	E2326342	AE2356302	E2356302	E2356312	AS2326005	AS2356005
Catalog Page	71	91	92	72	93	94	73	74

UNF / UNJF Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Type	PROTOTEX			PROTOTEX INOX			PROTOTEX TINI	PROTOTEX TI		PROTOTEX NI	
Standard	ANSI			ANSI		DIN	DIN	ANSI		ANSI	
Chamfer / Spiral	B	B		B	B	B	B	B	B	B	B
Tool Material	HSSE	HSSE		HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	TIN		VAP	THL	VAP	Bright	Bright	TICN	Bright	TICN
											
Range	(#0...3/8)	(#0...3/8)		(#0...3/8)	(#0...3/8)	(#5...1/4)	(#4...3/8)	(#0...3/8)	(#0...3/8)	(#0...3/8)	(#0...3/8)
Catalog No.	A23210	A2321005		A23203	A2320302	23213	23207	A23206	A2320606	A232002	A2320806
Catalog Page	75	75		78	78	98	101	83	83	86	86

Standard Application Taps

Type	PROTOTEX		PROTOTEX H	PROTOTEX INOX			PROTOTEX TINI	PROTOTEX TI		PROTOTEX NI	
Standard	ANSI		DIN	ANSI		DIN	DIN	ANSI		ANSI	
Chamfer / Spiral	B	B	B	B	B	B	B	B	B	B	B
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	TIN	Bright	VAP	THL	VAP	Bright	Bright	TICN	Bright	TICN
											
Range	(7/16...1)	(7/16...1)	(5/16...1 1/2)	(7/16...1)	(7/16...1)	(5/16...1)	(7/16...5/8)	(7/16...1)	(7/16...1)	(7/16...1)	(7/16...1)
Catalog No.	A23260	A2326005	23360	A23253	A2325302	23263	23257	A23256	A2325606	A232502	A2325806
Catalog Page	75	75	95	78	78	98	101	83	83	86	86

UNF / UNJF Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Type	PARADUR GG			PARADUR GG	PARADUR NI 10			PARADUR TI			
Standard	ANSI		DIN	DIN/ANSI	ANSI		DIN	ANSI			DIN
Chamfer / Spiral	C	C	C	C	C/R10	C/R10	C/R10	C/R15	C/R15	E/R15	C/R15
Tool Material	HSSE	HSSE	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE	HSSE-PM
Surface Treatment	NID	TICN	NID	TICN	Bright	TICN	Bright	NIT	TICN	NIT	Bright
				 Axial							
Range	(#0...3/8)	(#0...3/8)	(#6...1/4)	(#10...3/8)	(#0...3/8)	(#0...3/8)	(#6...3/8)	(#0...3/8)	(#0...3/8)	(#0...3/8)	(#6...3/8)
Catalog No.	A23314	A2331406	23314	AC2331416	A234101	A2340876	234101	A23406	A2340606	A2340661	23416
Catalog Page	81	81	100	82	89	89	104	84	84	85	102

Standard Application Taps

Type	PARADUR GG			PARADUR GG	PARADUR NI 10			PARADUR TI			
Standard	ANSI		DIN	DIN/ANSI	ANSI			ANSI			DIN
Chamfer / Spiral	C	C	C	C	C/R10	C/R10		C/R15	C/R15	E/R15	C/R15
Tool Material	HSSE	HSSE	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM		HSSE	HSSE	HSSE	HSSE-PM
Surface Treatment	NID	TICN	NID	TICN	Bright	TICN		NIT	TICN	NIT	Bright
				 Axial							
Range	(7/16...1)	(7/16...1)	(5/16...5/8)	(7/16...5/8)	(7/16...1)	(7/16...1)		(7/16...1)	(7/16...1)	(7/16...1)	(7/16...5/8)
Catalog No.	A23364	A2336406	23364	AC2336416	A234587	A2345876		A23456	A2345606	A2345661	23466
Catalog Page	81	81	100	82	89	89		84	84	85	102

UNF / UNJF Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Type	PARADUR NI				PARADUR WLM			PARADUR INOX			
Standard	ANSI			DIN	ANSI		DIN	ANSI			DIN
Chamfer / Spiral	C/R25	C/R25	E/R25	C/R25	C/R35	C/R35	C/R35	C/R40	C/R40	E/R40	C/R40
Tool Material	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	NIT	TICN	NIT	Bright	Bright	CRN	Bright	VAP	THL	VAP	VAP
											
Range	(#0...3/8)	(#0...3/8)	(#0...3/8)	(#6...3/8)	(#0...3/8)	(#0...3/8)	(#6...1/4)	(#0...3/8)	(#0...3/8)	(#0...3/8)	(#6...1/4)
Catalog No.	A234002	A2340806	A234003	234104	A23516	A2351604	23516	A23503	A2350302	A235033	23513
Catalog Page	87	87	88	103	90	90	105	79	79	80	99

Standard Application Taps

Type	PARADUR NI				PARADUR WLM			PARADUR INOX			
Standard	ANSI			DIN	ANSI		DIN	ANSI			DIN
Chamfer / Spiral	C/R25	C/R25	E/R25	C/R25	C/R35	C/R35	C/R35	C/R40	C/R40	E/R40	C/R40
Tool Material	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	NIT	TICN	NIT	Bright	Bright	CRN	Bright	VAP	THL	VAP	VAP
											
Range	(7/16...1)	(7/16...1)	(7/16...1)	(7/16...5/8)	(7/16...1)	(7/16...1)	(5/16...1/2)	(7/16...1 1/2)	(7/16...1 1/2)	(7/16...1 1/2)	(5/16...1)
Catalog No.	A234502	A2345806	A234503	234604	A23566	A2356604	23566	A23553	A2355302	A235533	23563
Catalog Page	87	87	88	103	90	90	105	79	79	80	99

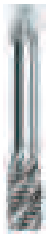
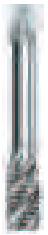
UNF / UNJF Taps in HSSE, HSSE-PM and Solid Carbide

Standard Application Taps

Solid Carbide Taps

Type	PARADUR WSH				PARADUR HS	PARADUR HARD
Standard	ANSI			DIN	DIN	DIN
Chamfer / Spiral	C/R45	C/R45	E/R45	C/R45	C	D
Tool Material	HSSE	HSSE	HSSE	HSSE	SC	SC
Surface Treatment	Bright	TIN	Bright	Bright	TICN	TICN
						
Range	(#0...3/8)	(#0...3/8)	(#0...3/8)	(#1...1/4)	(#10...1/2)	(#10...1/2)
Catalog No.	A23517	A2351705	A2351760	235170	8331106	8331206
Catalog Page	76	76	77	96	106	107

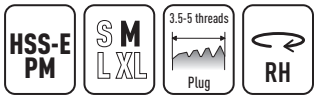
Standard Application Taps

Type	PARADUR WSH			
Standard	ANSI			DIN
Chamfer / Spiral	C/R45	C/R45	E/R45	C/R45
Tool Material	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	TIN	Bright	Bright
				
Range	(7/16...1 1/2)	(7/16...1 1/2)	(7/16...1 1/2)	(5/16...1 1/2)
Catalog No.	A23567	A2356705	A2356760	235670
Catalog Page	76	76	77	96

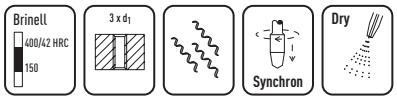
NEW

PROTOTEX ECO-HT

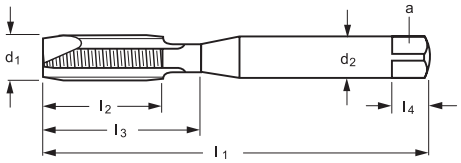
Characteristics



Application

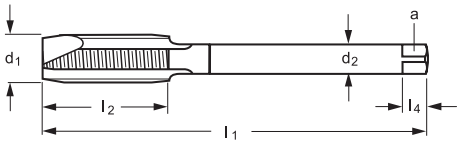


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2321002 THL
	inch	inch	inch	inch	inch	inch	inch			
No. 6-40	0.138	2.205	0.433	0.787	0.141	0.110	3/16	0.1161	3	-UNF6 *
No.10-32	0.190	2.756	0.512	0.984	0.194	0.152	1/4	0.1614	3	-UNF10 *
1/4-28	0.250	3.150	0.591	1.181	0.255	0.191	5/16	0.2165	3	-UNF1/4 *
5/16-24	0.313	3.543	0.709	1.378	0.318	0.238	3/8	0.2717	3	-UNF5/16 *
3/8-24	0.375	3.937	0.787	1.535	0.381	0.286	7/16	0.3346	3	-UNF3/8 *



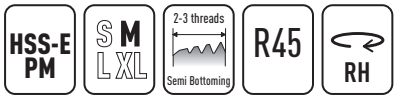
DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2326002 THL
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3.937	0.787	-	0.323	0.242	13/32	0.3898	3	-UNF7/16 *
1/2-20	0.500	3.937	0.827	-	0.367	0.275	7/16	0.4528	4	-UNF1/2 *
5/8-18	0.625	3.937	0.827	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *

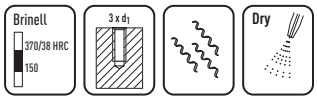
PARADUR ECO-HT

NEW

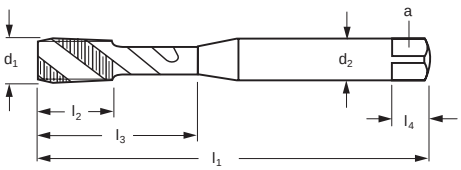
Characteristics



Application

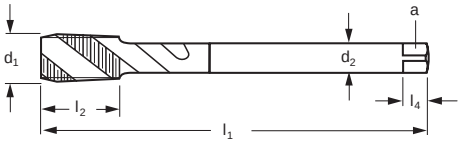


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2351302 THL
	inch	inch	inch	inch	inch	inch	inch			
No. 6-40	0.138	2.205	0.256	0.516	0.141	0.110	3/16	0.1161	3	-UNF6 *
No.10-32	0.190	2.756	0.315	0.791	0.194	0.152	1/4	0.1614	3	-UNF10 *
1/4-28	0.250	3.150	0.394	1.020	0.255	0.191	5/16	0.2165	3	-UNF1/4 *
5/16-24	0.313	3.543	0.472	1.378	0.318	0.238	3/8	0.2717	3	-UNF5/16 *
3/8-24	0.375	3.937	0.472	1.535	0.381	0.286	7/16	0.3346	3	-UNF3/8 *



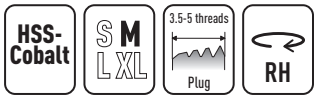
DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AE2356302 THL
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3.937	0.591	-	0.323	0.242	13/32	0.3898	3	-UNF7/16 *
1/2-20	0.500	3.937	0.512	-	0.367	0.275	7/16	0.4528	4	-UNF1/2 *
5/8-18	0.625	3.937	0.591	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *

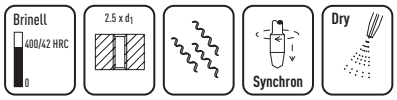
NEW

PROTOTEX Synchrospeed

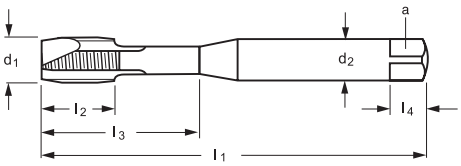
Characteristics



Application

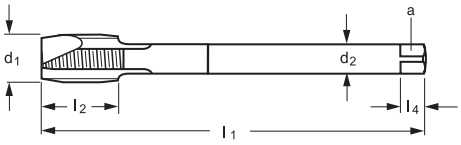


- Rigid tap through holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for dry or MQL machining.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2321005 TIN
	inch	inch	inch	inch	inch	inch	inch			
No. 6-40	0.138	2.205	0.252	0.787	0.141	0.110	3/16	0.1161	3	-UNF6 *
No.10-32	0.190	2.756	0.311	0.984	0.194	0.152	1/4	0.1614	3	-UNF10 *
1/4-28	0.250	3.150	0.358	1.181	0.255	0.191	5/16	0.2165	3	-UNF1/4 *
5/16-24	0.313	3.543	0.417	1.378	0.318	0.238	3/8	0.2717	3	-UNF5/16 *
3/8-24	0.375	3.937	0.417	1.535	0.381	0.286	7/16	0.3346	3	-UNF3/8 *



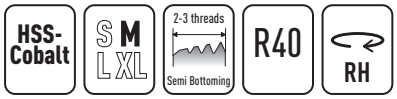
DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2326005 TIN
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3.937	0.500	-	0.323	0.242	13/32	0.3898	3	-UNF7/16 *
1/2-20	0.500	3.937	0.500	-	0.367	0.275	7/16	0.4528	3	-UNF1/2 *
5/8-18	0.625	3.937	0.555	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *

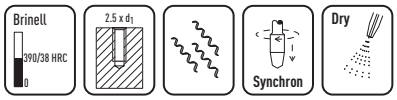
PARADUR Synchrospeed

NEW

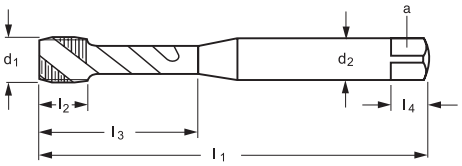
Characteristics



Application

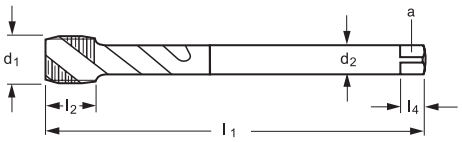


- Rigid tap blind holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN/VAP** (Titanium Nitride+Steam Oxide) has excellent wear resistance and cutting fluid retention.
- Suitable for dry or MQL machining.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2351005 TIN/vap
	inch	inch	inch	inch	inch	inch	inch			
No. 6-40	0.138	2.205	0.256	0.787	0.141	0.110	3/16	0.1161	3	-UNF6 *
No.10-32	0.190	2.756	0.335	0.984	0.194	0.152	1/4	0.1614	3	-UNF10 *
1/4-28	0.250	3.150	0.374	1.181	0.255	0.191	5/16	0.2165	3	-UNF1/4 *
5/16-24	0.313	3.543	0.433	1.378	0.318	0.238	3/8	0.2717	3	-UNF5/16 *
3/8-24	0.375	3.937	0.433	1.535	0.381	0.286	7/16	0.3346	3	-UNF3/8 *

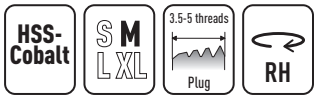


DIN/ANSI - 2B

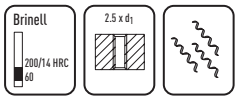
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AS2356005 TIN/vap
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3.937	0.531	1.535	0.323	0.242	13/32	0.3898	3	-UNF7/16 *
1/2-20	0.500	3.937	0.531	1.752	0.367	0.275	7/16	0.4528	4	-UNF1/2 *
5/8-18	0.625	3.937	0.591	1.969	0.480	0.360	9/16	0.5709	4	-UNF5/8 *

PROTOTEX

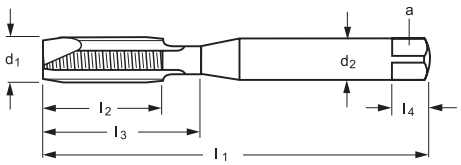
Characteristics



Application

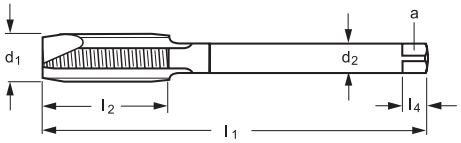


- General application tap for through holes in short and long-chipping materials up to 14HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23210	Code A2321005 TIN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0	-UNF0
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1	-UNF1
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	2	-UNF6	-UNF6
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	2	-UNF8	-UNF8
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	2	-UNF10	-UNF10
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8



ANSI B94.9 - 2B

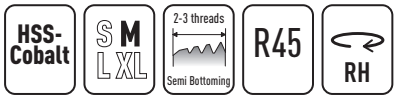
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23260	Code A2326005 TIN
	inch	inch	inch	inch	inch	inch	inch				
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16	-UNF7/16
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8	-UNF7/8
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1	-UNF1

1) without neck

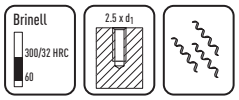
PARADUR WSH

NEW Ø

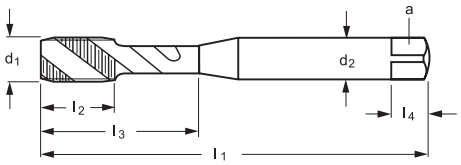
Characteristics



Application

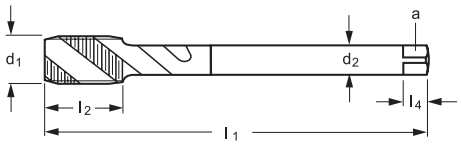


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23517	Code A2351705 TIN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	3	-UNF1 *	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8



ANSI B94.9 - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23567	Code A2356705 TIN
	inch	inch	inch	inch	inch	inch	inch				
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16	-UNF7/16
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	3	-UNF1/2	-UNF1/2
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	3	-UNF9/16	-UNF9/16
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8	-UNF7/8
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1	-UNF1
1 1/8-12	1.125	5 7/16	1.654	-	0.896	0.672	7/8	1.0433	5	-UNF1.1/8 *	-UNF1.1/8 *
1 1/4-12	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1614	5	-UNF1.1/4 *	-UNF1.1/4 *
1 1/2-12	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.4173	5	-UNF1.1/2 *	-UNF1.1/2 *

1) without neck

NEW

PARADUR WSH

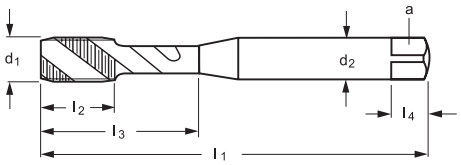
Characteristics

HSS-Cobalt | S M L XL | 1.5-2 threads Bottoming | R45 | RH

- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.

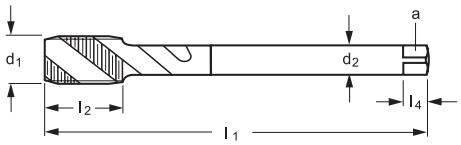
Application

Brinell 300/32 HRC 60 | 2.5 x d_1



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2351760
		inch	inch	inch	inch	inch	inch	inch			
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	3	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10 *
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12 *
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4 *
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16 *
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8 *



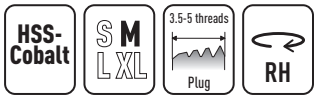
ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2356760
		inch	inch	inch	inch	inch	inch	inch			
	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16 *
	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	3	-UNF1/2 *
	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	3	-UNF9/16 *
	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *
	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4 *
	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8 *
	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1 *
	1 1/8-12	1.125	5 7/16	1.654	-	0.896	0.672	7/8	1.0433	5	-UNF1.1/8 *
	1 1/4-12	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1614	5	-UNF1.1/4 *
	1 1/2-12	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.4173	5	-UNF1.1/2 *

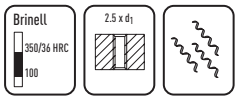
1) without neck

PROTOTEX INOX

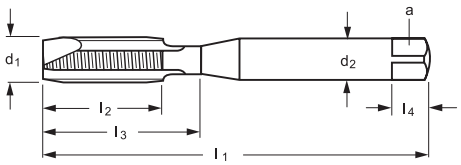
Characteristics



Application

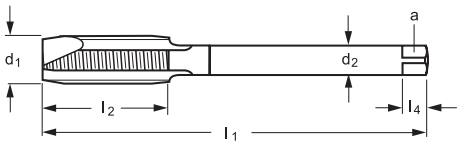


- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23203 vap	Code A2320302 THL
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0	-UNF0
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1	-UNF1
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	2	-UNF6	-UNF6
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23253 vap	Code A2325302 THL
		inch	inch	inch	inch	inch	inch	inch				
	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16	-UNF7/16
	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2
	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16
	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8
	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4
	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8	-UNF7/8
	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1	-UNF1

1) without neck

PARADUR INOX

NEW Ø

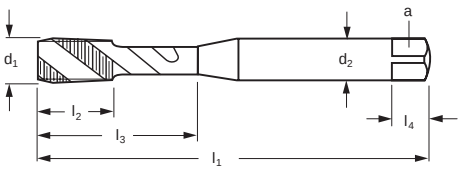
Characteristics

HSS-Cobalt | S M L XL | 2-3 threads, Semi Bottoming | R40 | RH

Application

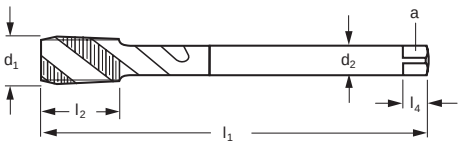
Brinell 350/36 HRC 100 | 2 x d_1

- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23503 vap	Code A2350302 THL
		inch	inch	inch	inch	inch	inch	inch				
1)4)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	3	-UNF0	-UNF0
1)4)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	3	-UNF1	-UNF1
1)4)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6
1)4)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8
1)4)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10
1)4)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12
4)	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4
4)	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16
4)	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8



ANSI B94.9 - 3B

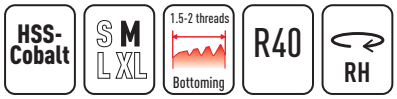
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23553 vap	Code A2355302 THL
		inch	inch	inch	inch	inch	inch	inch				
4)	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16	-UNF7/16
4)	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2
4)	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16
4)	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8
4)	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4
4)	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8	-UNF7/8
4)	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1	-UNF1
4)	1 1/8-12	1.125	5 7/16	1.654	-	0.896	0.672	7/8	1.0433	5	-UNF1.1/8 *	-UNF1.1/8 *
4)	1 1/4-12	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1614	5	-UNF1.1/4 *	-UNF1.1/4 *
4)	1 1/2-12	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.4173	5	-UNF1.1/2 *	-UNF1.1/2 *

1) without neck
4) without back tapering

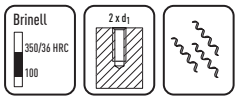
PARADUR INOX

NEW Ø

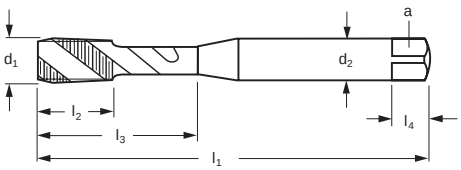
Characteristics



Application

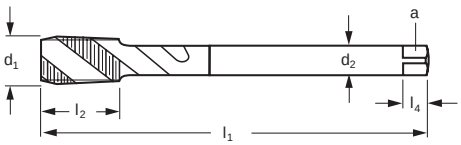


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A235033 vap
		inch	inch	inch	inch	inch	inch	inch			
1)4)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	3	-UNF0 *
1)4)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	3	-UNF1 *
1)4)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6
1)4)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8
1)4)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10
1)4)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12
4)	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4
4)	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16
4)	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8



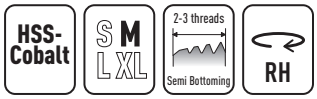
ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A235533 vap
		inch	inch	inch	inch	inch	inch	inch			
4)	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16
4)	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2
4)	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16
4)	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8
4)	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4
4)	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8 *
4)	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1 *
4)	1 1/8-12	1.125	5 7/16	1.654	-	0.896	0.672	7/8	1.0433	5	-UNF1.1/8 *
4)	1 1/4-12	1.250	5 3/4	1.654	-	1.021	0.766	1	1.1614	5	-UNF1.1/4 *
4)	1 1/2-12	1.500	6 3/8	1.969	-	1.233	0.925	1 1/8	1.4173	5	-UNF1.1/2 *

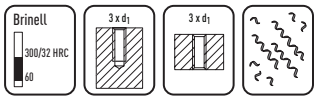
1) without neck
4) without back tapering

PARADUR GG

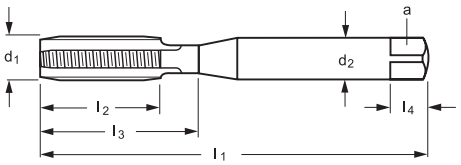
Characteristics



Application

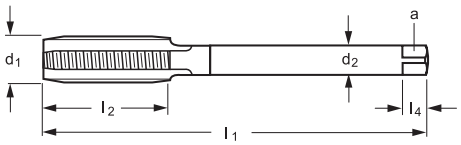


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **NID** (Nitride+Steam Oxide) shares the lubricity of oxide and the abrasion resistance of nitride.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23314 nid	Code A2331406 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	3	-UNF0 *	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	3	-UNF1 *	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6 *	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8 *	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	4	-UNF10 *	-UNF10 *
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	4	-UNF12 *	-UNF12 *
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	4	-UNF1/4 *	-UNF1/4 *
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	4	-UNF5/16 *	-UNF5/16 *
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	4	-UNF3/8 *	-UNF3/8 *



ANSI B94.9 - 2B

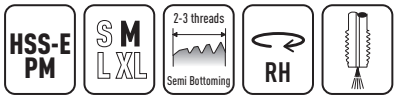
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23364 nid	Code A2336406 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16 *	-UNF7/16 *
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2 *	-UNF1/2 *
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16 *	-UNF9/16 *
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *	-UNF5/8 *
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4 *	-UNF3/4 *
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	5	-UNF7/8 *	-UNF7/8 *
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	5	-UNF1 *	-UNF1 *

1) without neck

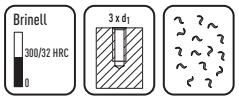
PARADUR GG

NEW

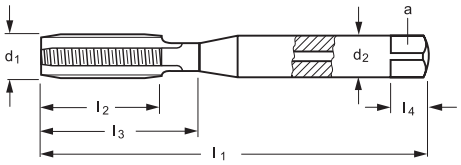
Characteristics



Application

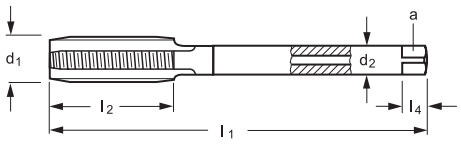


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.



DIN/ANSI - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AC2331416 TICN
	inch	inch	inch	inch	inch	inch	inch			
No.10-32	0.190	2.756	0.512	0.984	0.194	0.152	1/4	0.1614	4	-UNF10 *
1/4-28	0.250	3.150	0.591	1.181	0.255	0.191	5/16	0.2165	4	-UNF1/4 *
5/16-24	0.313	3.543	0.709	1.378	0.318	0.238	3/8	0.2717	4	-UNF5/16 *
3/8-24	0.375	3.937	0.787	1.535	0.381	0.286	7/16	0.3346	4	-UNF3/8 *



DIN/ANSI - 2B

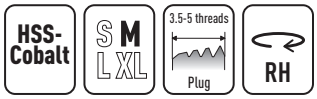
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AC2336416 TICN
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3.937	0.787	-	0.323	0.242	13/32	0.3898	4	-UNF7/16 *
1/2-20	0.500	3.937	0.827	-	0.367	0.275	7/16	0.4528	4	-UNF1/2 *
5/8-18	0.625	3.937	0.827	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *

PROTOTEX TI

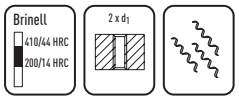
NEW Ø

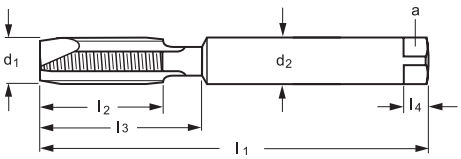
- A high degree of toughness and stability combine for successful machining of through holes in Ti-Alloys up to 44HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.

Characteristics



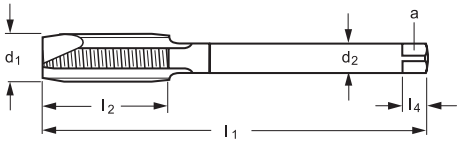
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23206	Code A2320606 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0	-UNF0
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1	-UNF1
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16A	-UNF5/16
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8



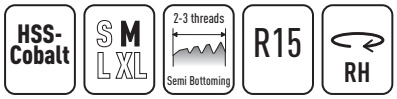
ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23256	Code A2325606 TICN
		inch	inch	inch	inch	inch	inch	inch				
	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16	-UNF7/16
	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2
	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16
	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8
	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4
	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8 *	-UNF7/8 *
	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	5	-UNF1 *	-UNF1 *

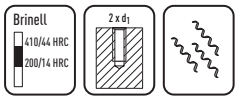
1) without neck

PARADUR TI

Characteristics

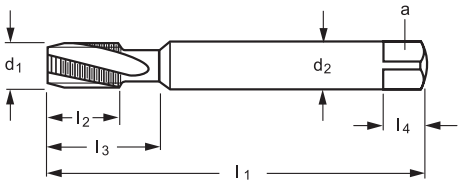


Application



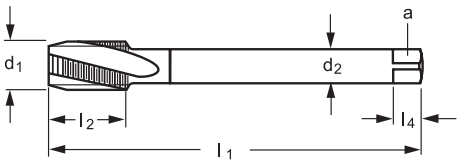
NEW Ø

- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23406 nit	Code A2340606 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0	-UNF0
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1	-UNF1
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8



ANSI B94.9 - 3B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23456 nit	Code A2345606 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16	-UNF7/16
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8 *	-UNF7/8 *
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1 *	-UNF1 *

1) without neck

NEW

PARADUR TI

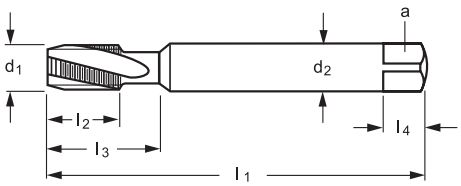
Characteristics

HSS-Cobalt | S M L XL | 1.5-2 threads Bottoming | R15 | RH

Application

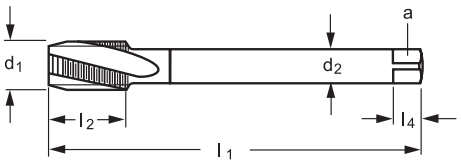
Brinell 410/44 HRC 200/14 HRC | 2 x d_1

- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- 1.5-2 thread lead "bottoming" chamferto achieve full thread depths close to the bottom of the core hole.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2340661 nit
		inch	inch	inch	inch	inch	inch	inch			
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10 *
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4 *
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16 *
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8 *



ANSI B94.9 - 3B

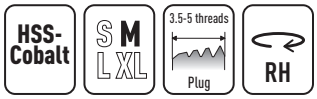
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A2345661 nit
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16 *
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2 *
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16 *
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4 *
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8 *
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1 *

1) without neck

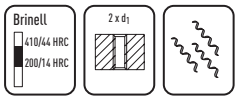
PROTOTEX NI

NEW

Characteristics



Application



- A high degree of toughness and stability combine for successful machining of through holes in Ni-Alloys up to 44HRc.
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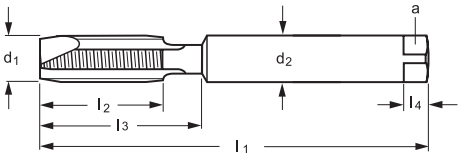
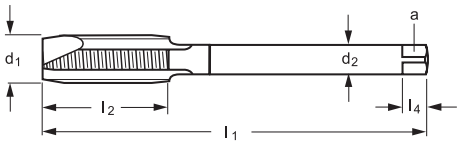


ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232002	Code A2320806 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1 *	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10 *
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12 *
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4 *
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16 *
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8 *



ANSI B94.9 - 3B

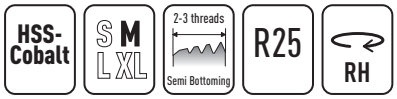
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232502	Code A2325806 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16	-UNF7/16 *
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2 *
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16 *
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8 *
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	4	-UNF3/4	-UNF3/4 *
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	4	-UNF7/8 *	-UNF7/8 *
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	5	-UNF1 *	-UNF1 *

1) without neck

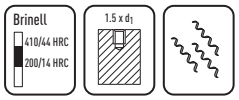
NEW

PARADUR NI

Characteristics



Application



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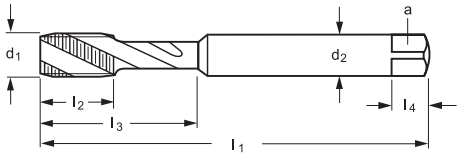
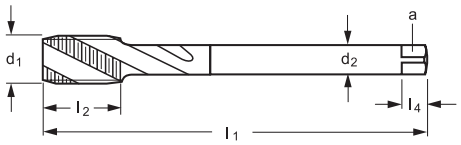
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234002 nit	Code A2340806 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1 *	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10 *
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12	-UNF12 *
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4 *
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16 *
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8 *



ANSI B94.9 - 3B

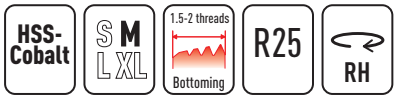
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234502 nit	Code A2345806 TICN
		inch	inch	inch	inch	inch	inch	inch				
	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16	-UNF7/16 *
	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2 *
	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16	-UNF9/16 *
	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8	-UNF5/8 *
	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	5	-UNF3/4	-UNF3/4 *
	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	5	-UNF7/8 *	-UNF7/8 *
	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	5	-UNF1 *	-UNF1 *

1) without neck

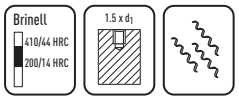
PARADUR NI

NEW Ø

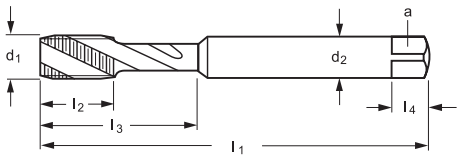
Characteristics



Application

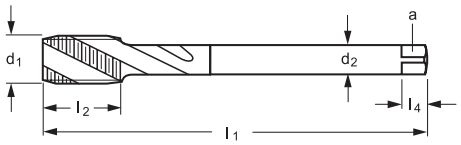


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- 1.5-2 thread lead "bottoming" chamfer to achieve full thread depths close to the bottom of the core hole.



ANSI B94.9 - 3B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234003 nit
	inch	inch	inch	inch	inch	inch	inch			
1) No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *
1) No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1 *
1) No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	3	-UNF6
1) No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	3	-UNF8
1) No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	3	-UNF10
1) No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12
1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	3	-UNF1/4
5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	3	-UNF5/16
3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	3	-UNF3/8



ANSI B94.9 - 3B

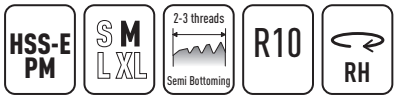
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234503 nit
	inch	inch	inch	inch	inch	inch	inch			
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	5	-UNF3/4
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	5	-UNF7/8 *
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	5	-UNF1 *

1) without neck

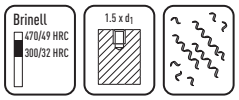
NEW

PARADUR NI 10

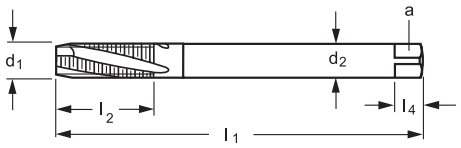
Characteristics



Application

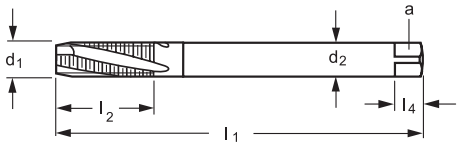


- Powdered metal, slow helix and a negative rake angle create the strength needed to machine tough materials up to 49HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Formerly known as PARADUR STAR



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234101	Code A2340876 TICN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	3	-UNF0 *	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	3	-UNF1 *	-UNF1 *
1)	No. 6-40	0.138	2	0.472	-	0.141	0.110	3/16	0.1161	3	-UNF6	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.512	-	0.168	0.131	1/4	0.1378	3	-UNF8	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.630	-	0.194	0.152	1/4	0.1614	3	-UNF10	-UNF10 *
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	3	-UNF12 *	-UNF12 *
1)	1/4-28	0.250	2 1/2	0.787	-	0.255	0.191	5/16	0.2165	3	-UNF1/4	-UNF1/4 *
1)	5/16-24	0.313	2 23/32	0.984	-	0.318	0.238	3/8	0.2717	3	-UNF5/16	-UNF5/16 *
1)	3/8-24	0.375	2 15/16	1.181	-	0.381	0.286	7/16	0.3346	3	-UNF3/8	-UNF3/8 *



ANSI B94.9 - 3B

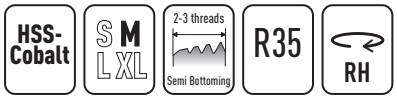
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234587	Code A2345876 TICN
	inch	inch	inch	inch	inch	inch	inch				
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	4	-UNF7/16	-UNF7/16 *
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	4	-UNF1/2	-UNF1/2 *
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	4	-UNF9/16 *	-UNF9/16 *
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	4	-UNF5/8 *	-UNF5/8 *
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	5	-UNF3/4 *	-UNF3/4 *
7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	5	-UNF7/8 *	-UNF7/8 *
1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	5	-UNF1 *	-UNF1 *

1) without neck

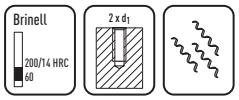
PARADUR WLM

NEW

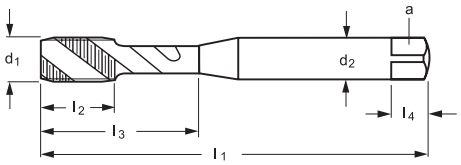
Characteristics



Application

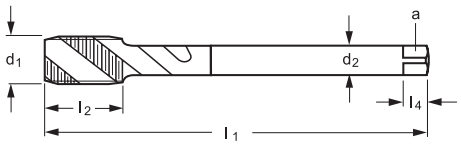


- Special tap for blind holes in soft, long chipping materials e.g. wrought Al, copper and soft construction steels.
- **CrN** (Chrome nitride) is an excellent choice for non-ferrous alloys that tend to adhere.



ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23516	Code A2351604 CRN
		inch	inch	inch	inch	inch	inch	inch				
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0492	2	-UNF0 *	-UNF0 *
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0610	2	-UNF1 *	-UNF1 *
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1161	2	-UNF6	-UNF6 *
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1378	2	-UNF8	-UNF8 *
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1614	2	-UNF10	-UNF10 *
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1811	2	-UNF12	-UNF12 *
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2165	2	-UNF1/4	-UNF1/4 *
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2717	2	-UNF5/16	-UNF5/16 *
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3346	2	-UNF3/8	-UNF3/8 *



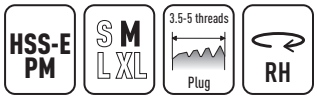
ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A23566	Code A2356604 CRN
		inch	inch	inch	inch	inch	inch	inch				
	7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.3898	3	-UNF7/16	-UNF7/16 *
	1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4528	3	-UNF1/2	-UNF1/2 *
	9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5079	3	-UNF9/16 *	-UNF9/16 *
	5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5709	3	-UNF5/8 *	-UNF5/8 *
	3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.6890	3	-UNF3/4 *	-UNF3/4 *
	7/8-14	0.875	4 11/16	1.260	-	0.697	0.523	3/4	0.8031	3	-UNF7/8 *	-UNF7/8 *
	1-12	1.000	5 1/8	1.457	-	0.800	0.600	13/16	0.9154	4	-UNF1 *	-UNF1 *

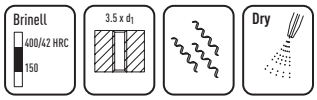
1) without neck

PROTOTEX ECO-HT

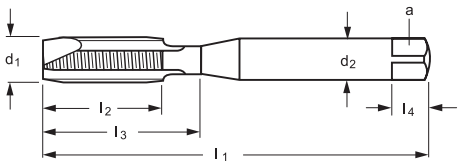
Characteristics



Application

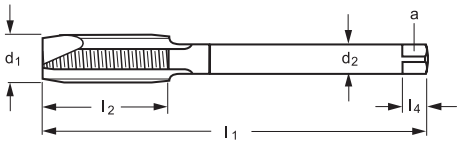


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2321302 THL
No. 4-48	2.845	56	9	18	3.5	2.7	6	2.40	3	-UNF4
No. 6-40	3.505	56	11	20	4	3	6	2.95	3	-UNF6
No. 8-36	4.166	63	12	21	4.5	3.4	6	3.50	3	-UNF8
No.10-32	4.826	70	13	25	6	4.9	8	4.10	3	-UNF10
1/4-28	6.35	80	15	30	7	5.5	8	5.50	3	-UNF1/4

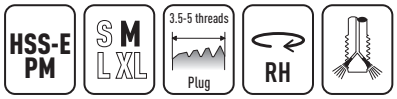


DIN 2184-1 - 2B

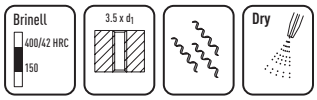
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2326302 THL
5/16-24	7.938	90	18	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	20	-	7	5.5	8	8.50	3	-UNF3/8
1/2-20	12.7	100	21	-	9	7	10	11.50	4	-UNF1/2
5/8-18	15.875	100	21	-	12	9	12	14.50	4	-UNF5/8

PROTOTEX ECO-HT

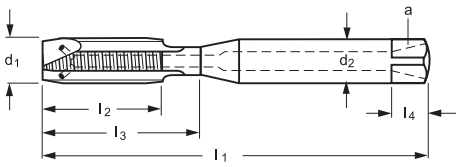
Characteristics



Application

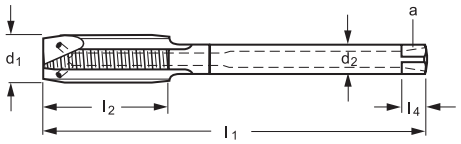


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Radial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2321342 THL
1/4-28	6.35	80	15	30	7	5.5	8	5.50	3	-UNF1/4

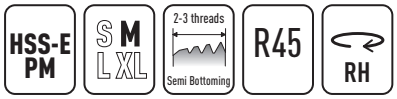


DIN 2184-1 - 2B

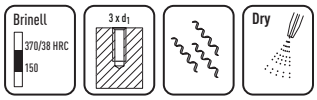
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2326342 THL
5/16-24	7.938	90	18	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	20	-	7	5.5	8	8.50	3	-UNF3/8
1/2-20	12.7	100	21	-	9	7	10	11.50	4	-UNF1/2

PARADUR ECO-HT

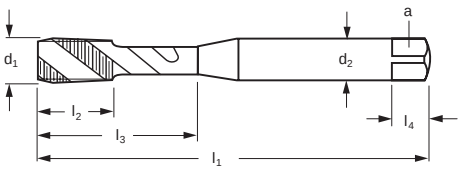
Characteristics



Application

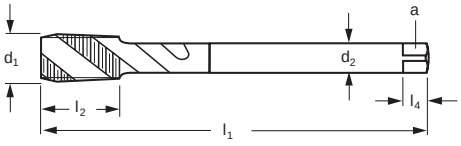


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



~DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2351302 THL
No. 4-48	2.845	56	6	11	3.5	2.7	6	2.40	3	-UNF4
No. 6-40	3.505	56	6.5	13.1	4	3	6	2.95	3	-UNF6
No. 8-36	4.166	63	7	17.4	4.5	3.4	6	3.50	3	-UNF8
No.10-32	4.826	70	8	20.7	6	4.9	8	4.10	3	-UNF10
1/4-28	6.35	80	10	25.9	7	5.5	8	5.50	3	-UNF1/4



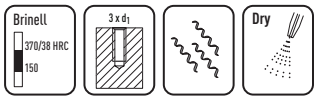
DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2356302 THL
5/16-24	7.938	90	13	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	15	-	7	5.5	8	8.50	3	-UNF3/8
1/2-20	12.7	100	13	-	9	7	10	11.50	4	-UNF1/2
5/8-18	15.875	100	15	-	12	9	12	14.50	4	-UNF5/8

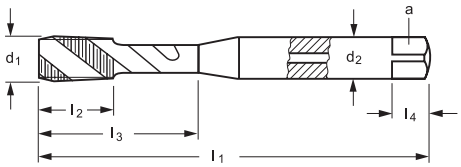
PARADUR ECO-HT

Characteristics

Application

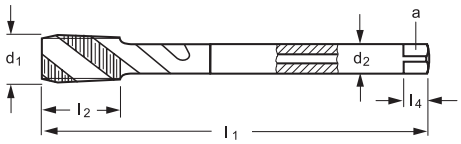


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Axial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



~DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2351312 THL
1/4-28	6.35	80	10	25.9	7	5.5	8	5.50	3	-UNF1/4

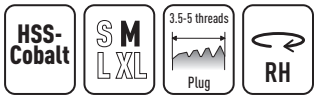


DIN 2184-1 - 2B

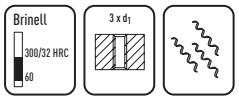
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2356312 THL
5/16-24	7.938	90	13	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	15	-	7	5.5	8	8.50	3	-UNF3/8
1/2-20	12.7	100	13	-	9	7	10	11.50	4	-UNF1/2
5/8-18	15.875	100	15	-	12	9	12	14.50	4	-UNF5/8

PROTOTEX H

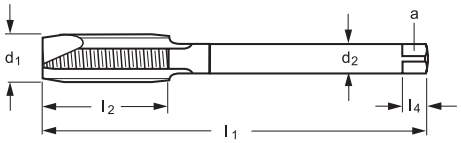
Characteristics



Application



- General application tap for through holes in short and long-chipping materials up to 32HRc.

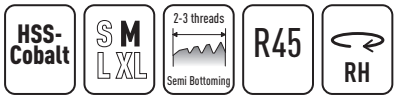


DIN 2184-1 - 2B

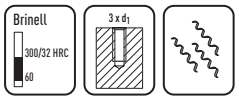
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23360
5/16-24	7.938	90	18	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	20	7	5.5	8	8.50	3	-UNF3/8
7/16-20	11.113	100	20	8	6.2	9	9.90	3	-UNF7/16
1/2-20	12.7	100	21	9	7	10	11.50	4	-UNF1/2
9/16-18	14.288	100	21	11	9	12	12.90	4	-UNF9/16
5/8-18	15.875	100	21	12	9	12	14.50	4	-UNF5/8
3/4-16	19.05	110	24	14	11	14	17.50	4	-UNF3/4
7/8-14	22.225	125	24	18	14.5	17	20.40	4	-UNF7/8
1-12	25.4	140	26	18	14.5	17	23.25	4	-UNF1
1 1/8-12	28.575	150	26	22	18	21	26.50	4	-UNF1.1/8
1 1/4-12	31.75	150	26	22	18	21	29.50	4	-UNF1.1/4
1 3/8-12	34.925	170	28	28	22	25	33.00	4	-UNF1.3/8
1 1/2-12	38.1	170	28	28	22	25	36.00	4	-UNF1.1/2

PARADUR WSH

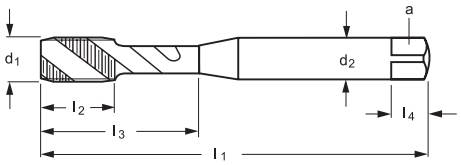
Characteristics



Application

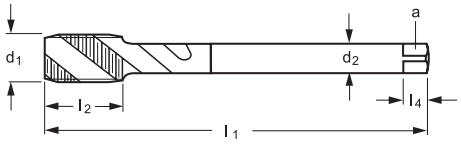


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 235170
No. 1-72	1.854	45	4	9	2.8	2.1	5	1.55	3	-UNF1
No. 2-64	2.184	45	4	12	2.8	2.1	5	1.85	3	-UNF2
No. 3-56	2.515	50	4	12.5	2.8	2.1	5	2.15	3	-UNF3
No. 4-48	2.845	56	6	18	3.5	2.7	6	2.40	3	-UNF4
No. 5-44	3.175	56	6	18	3.5	2.7	6	2.70	3	-UNF5
No. 6-40	3.505	56	6.5	20	4	3	6	2.95	3	-UNF6
No. 8-36	4.166	63	7	21	4.5	3.4	6	3.50	3	-UNF8
No.10-32	4.826	70	8	25	6	4.9	8	4.10	3	-UNF10
No.12-28	5.486	80	10	30	6	4.9	8	4.60	3	-UNF12
1/4-28	6.35	80	10	30	7	5.5	8	5.50	3	-UNF1/4



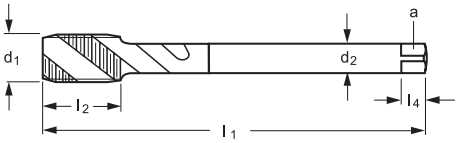
DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 235670
5/16-24	7.938	90	13	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	15	-	7	5.5	8	8.50	3	-UNF3/8
7/16-20	11.113	100	15	-	8	6.2	9	9.90	3	-UNF7/16
1/2-20	12.7	100	13	-	9	7	10	11.50	4	-UNF1/2
9/16-18	14.288	100	15	-	11	9	12	12.90	4	-UNF9/16
5/8-18	15.875	100	15	-	12	9	12	14.50	4	-UNF5/8
3/4-16	19.05	110	17	-	14	11	14	17.50	4	-UNF3/4
7/8-14	22.225	125	18	-	18	14.5	17	20.40	4	-UNF7/8
1-12	25.4	140	20	-	18	14.5	17	23.25	5	-UNF1
1 1/8-12	28.575	150	20	-	22	18	21	26.50	5	-UNF1.1/8
1 1/4-12	31.75	150	20	-	22	18	21	29.50	5	-UNF1.1/4
1 3/8-12	34.925	170	22	-	28	22	25	33.00	5	-UNF1.3/8

Continued on next page

Continuation - PARADUR WSH

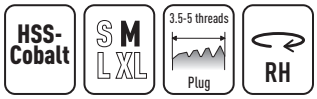
DIN 2184-1 - 2B



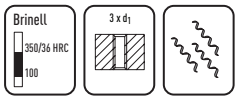
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 235670
1 1/2-12	38.1	170	22	-	28	22	25	36.00	5	-UNF1.1/2

PROTOTEX INOX

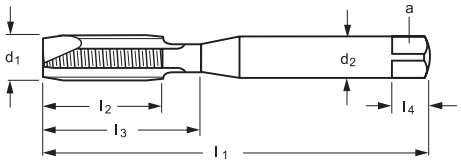
Characteristics



Application

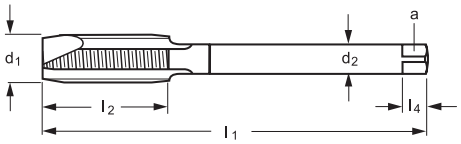


- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23213 vap
No. 5-44	3.175	56	10	18	3.5	2.7	6	2.70	2	-UNF5
No. 6-40	3.505	56	11	20	4	3	6	2.95	2	-UNF6
No. 8-36	4.166	63	12	21	4.5	3.4	6	3.50	2	-UNF8
No.10-32	4.826	70	13	25	6	4.9	8	4.10	3	-UNF10
No.12-28	5.486	80	15	30	6	4.9	8	4.60	3	-UNF12
1/4-28	6.35	80	15	30	7	5.5	8	5.50	3	-UNF1/4

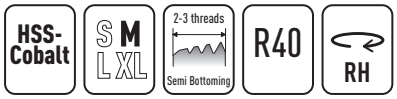


DIN 2184-1 - 2B

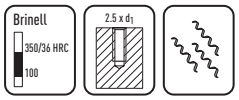
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23263 vap
5/16-24	7.938	90	18	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	20	-	7	5.5	8	8.50	3	-UNF3/8
7/16-20	11.113	100	20	-	8	6.2	9	9.90	3	-UNF7/16
1/2-20	12.7	100	21	-	9	7	10	11.50	4	-UNF1/2
9/16-18	14.288	100	21	-	11	9	12	12.90	4	-UNF9/16
5/8-18	15.875	100	21	-	12	9	12	14.50	4	-UNF5/8
3/4-16	19.05	110	24	-	14	11	14	17.50	4	-UNF3/4
7/8-14	22.225	125	24	-	18	14.5	17	20.40	4	-UNF7/8
1-12	25.4	140	26	-	18	14.5	17	23.25	4	-UNF1

PARADUR INOX

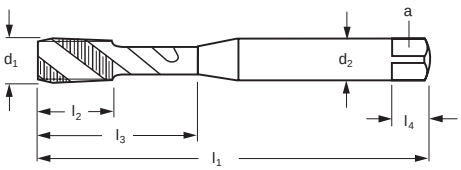
Characteristics



Application

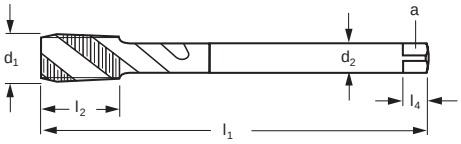


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23513 vap
No. 6-40	3.505	56	6.5	20	4	3	6	2.95	3	-UNF6
No. 8-36	4.166	63	7	21	4.5	3.4	6	3.50	3	-UNF8
No.10-32	4.826	70	8	25	6	4.9	8	4.10	3	-UNF10
No.12-28	5.486	80	10	30	6	4.9	8	4.60	3	-UNF12
1/4-28	6.35	80	10	30	7	5.5	8	5.50	3	-UNF1/4



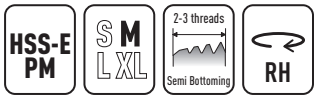
DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23563 vap
5/16-24	7.938	90	13	-	6	4.9	8	6.90	3	-UNF5/16
3/8-24	9.525	100	15	-	7	5.5	8	8.50	3	-UNF3/8
7/16-20	11.113	100	15	-	8	6.2	9	9.90	3	-UNF7/16
1/2-20	12.7	100	13	-	9	7	10	11.50	4	-UNF1/2
9/16-18	14.288	100	15	-	11	9	12	12.90	4	-UNF9/16
5/8-18	15.875	100	15	-	12	9	12	14.50	4	-UNF5/8
3/4-16	19.05	110	17	-	14	11	14	17.50	4	-UNF3/4
7/8-14	22.225	125	18	-	18	14.5	17	20.40	4	-UNF7/8
1-12	25.4	140	20	-	18	14.5	17	23.25	5	-UNF1

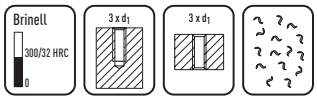
100

PARADUR GG

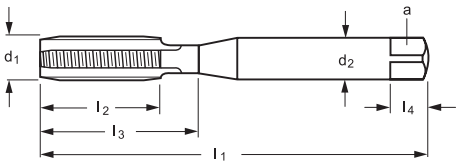
Characteristics



Application

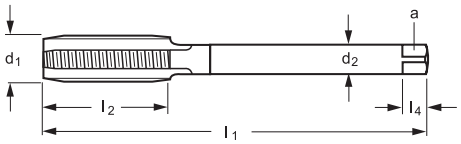


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **NID** (Nitride+Steam Oxide) shares the lubricity of oxide and the abrasion resistance of nitride.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23314 nid
No. 6-40	3.505	56	11	20	4	3	6	2.95	3	-UNF6
No. 8-36	4.166	63	12	21	4.5	3.4	6	3.50	3	-UNF8
No.10-32	4.826	70	13	25	6	4.9	8	4.10	4	-UNF10
1/4-28	6.35	80	15	30	7	5.5	8	5.50	4	-UNF1/4

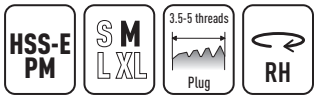


DIN 2184-1 - 2B

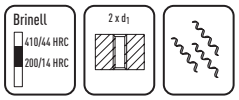
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23364 nid
5/16-24	7.938	90	18	-	6	4.9	8	6.90	4	-UNF5/16
3/8-24	9.525	100	20	-	7	5.5	8	8.50	4	-UNF3/8
7/16-20	11.113	100	20	-	8	6.2	9	9.90	4	-UNF7/16
1/2-20	12.7	100	21	-	9	7	10	11.50	4	-UNF1/2
9/16-18	14.288	100	21	-	11	9	12	12.90	4	-UNF9/16
5/8-18	15.875	100	21	-	12	9	12	14.50	4	-UNF5/8

PROTOTEX TINI

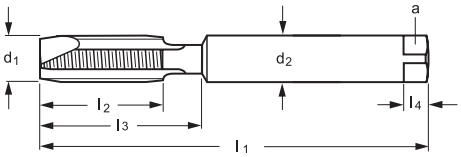
Characteristics



Application

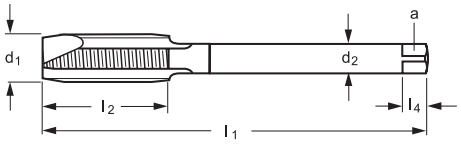


- A high degree of toughness and stability combine for successful machining of through holes in Ti / Ni-Alloys up to 44HRc.



~DIN 2184-1 - 3B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23207
1)	No. 4-48	2.845	56	10	-	3.5	2.7	6	2.40	2	-UNF4
1)	No. 5-44	3.175	56	10	-	3.5	2.7	6	2.70	2	-UNF5
1)	No. 6-40	3.505	56	12	-	4	3	6	2.95	3	-UNF6
1)	No. 8-36	4.166	63	13	-	4.5	3.4	6	3.50	3	-UNF8
1)	No.10-32	4.826	70	16	-	6	4.9	8	4.10	3	-UNF10
	1/4-28	6.35	80	15	25	7	5.5	8	5.50	3	-UNF1/4
	5/16-24	7.938	90	18	29.5	8	6.2	9	6.90	3	-UNF5/16
	3/8-24	9.525	100	20	33.5	10	8	11	8.50	3	-UNF3/8



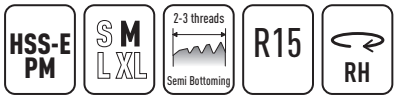
DIN 2184-1 - 3B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23257
	7/16-20	11.113	100	20	-	8	6.2	9	9.90	4	-UNF7/16
	1/2-20	12.7	100	23	-	9	7	10	11.50	4	-UNF1/2
	5/8-18	15.875	100	25	-	12	9	12	14.50	4	-UNF5/8

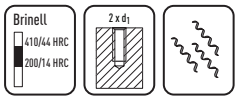
1) without neck

PARADUR TI

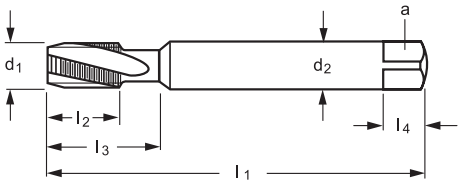
Characteristics



Application

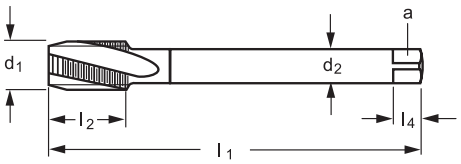


- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.



~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23416
1)	No. 6-40	3.505	56	12	-	4	3	6	2.95	3	-UNF6
1)	No. 8-36	4.166	63	13	-	4.5	3.4	6	3.50	3	-UNF8
1)	No.10-32	4.826	70	16	-	6	4.9	8	4.10	3	-UNF10
	No.12-28	5.486	80	15	23	6	4.9	8	4.60	3	-UNF12
	1/4-28	6.35	80	15	25	7	5.5	8	5.50	3	-UNF1/4
	5/16-24	7.938	90	18	29.5	8	6.2	9	6.90	3	-UNF5/16
	3/8-24	9.525	100	20	33.5	10	8	11	8.50	3	-UNF3/8



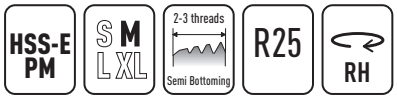
DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23466
	7/16-20	11.113	100	20	-	8	6.2	9	9.90	4	-UNF7/16
	1/2-20	12.7	100	23	-	9	7	10	11.50	4	-UNF1/2
	5/8-18	15.875	100	25	-	12	9	12	14.50	4	-UNF5/8

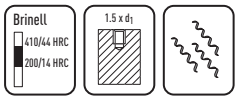
1) without neck

PARADUR NI

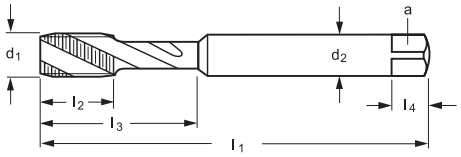
Characteristics



Application

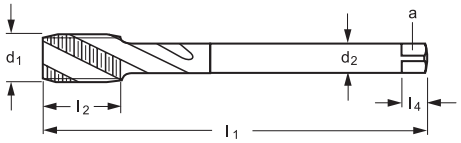


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.



~DIN 2184-1 - 3B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 234104
1)	No. 6-40	3.505	56	12	-	4	3	6	2.95	3	-UNF6
1)	No. 8-36	4.166	63	13	-	4.5	3.4	6	3.50	3	-UNF8
1)	No.10-32	4.826	70	16	-	6	4.9	8	4.10	3	-UNF10
	No.12-28	5.486	80	15	23	6	4.9	8	4.60	3	-UNF12
	1/4-28	6.35	80	15	25	7	5.5	8	5.50	3	-UNF1/4
	5/16-24	7.938	90	18	29.5	8	6.2	9	6.90	3	-UNF5/16
	3/8-24	9.525	100	20	33.5	10	8	11	8.50	4	-UNF3/8



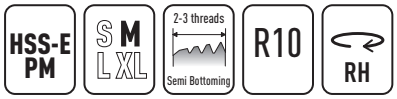
DIN 2184-1 - 3B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 234604
	7/16-20	11.113	100	20	-	8	6.2	9	9.90	4	-UNF7/16
	1/2-20	12.7	100	23	-	9	7	10	11.50	4	-UNF1/2
	5/8-18	15.875	100	25	-	12	9	12	14.50	4	-UNF5/8

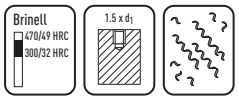
1) without neck

PARADUR NI 10

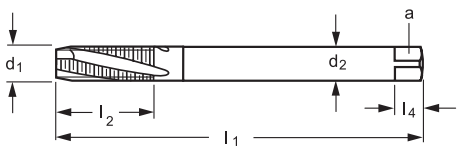
Characteristics



Application



- Powdered metal, slow helix and a negative rake angle create the strength needed to machine tough materials up to 49HRc.
- With rounded crest profile



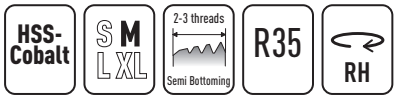
~DIN 2184-1 - 3B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 234101
1)	No. 6-40 UNJF	3.505	56	9.5	4	3	6	2.95	3	-UNJF6
1)	No. 8-36 UNJF	4.166	63	11	4.5	3.4	6	3.60	3	-UNJF8
1)	No.10-32 UNJF	4.826	70	12.5	6	4.9	8	4.15	3	-UNJF10
1)	1/4-28 UNJF	6.35	80	16	7	5.5	8	5.60	3	-UNJF1/4
1)	5/16-24 UNJF	7.938	90	19.5	8	6.2	9	7.00	3	-UNJF5/16
1)	3/8-24 UNJF	9.525	100	23	10	8	11	8.60	3	-UNJF3/8

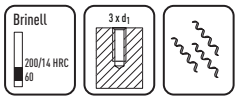
1) without neck

PARADUR WLM

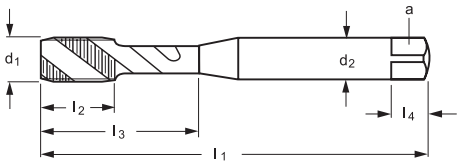
Characteristics



Application

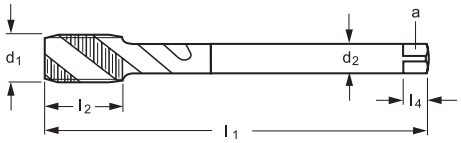


- Special tap for blind holes in soft, long chipping materials e.g. wrought Al, copper and soft construction steels.



DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23516
No. 6-40	3.505	56	6.5	20	4	3	6	2.95	2	-UNF6
No. 8-36	4.166	63	7	21	4.5	3.4	6	3.50	2	-UNF8
No.10-32	4.826	70	8	25	6	4.9	8	4.10	2	-UNF10
No.12-28	5.486	80	10	30	6	4.9	8	4.60	2	-UNF12
1/4-28	6.35	80	10	30	7	5.5	8	5.50	2	-UNF1/4

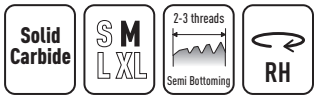


DIN 2184-1 - 2B

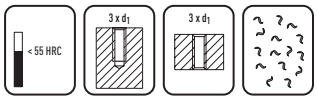
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 23566
5/16-24	7.938	90	13	-	6	4.9	8	6.90	2	-UNF5/16
3/8-24	9.525	100	15	-	7	5.5	8	8.50	3	-UNF3/8
7/16-20	11.113	100	15	-	8	6.2	9	9.90	3	-UNF7/16
1/2-20	12.7	100	13	-	9	7	10	11.50	3	-UNF1/2

PARADUR HS

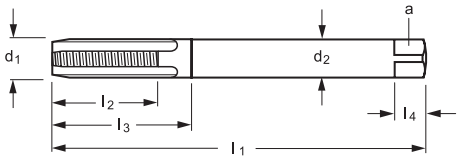
Characteristics



Application



- Solid carbide construction for short-chipping abrasive materials. Works quite well in glass-reinforced synthetics.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



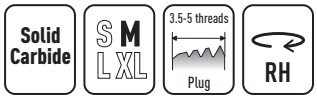
~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code 8331106 TICN
1)	No.10-32	4.826	70	16	-	6	4.9	8	4.10	3	-UNF10
1)	1/4-28	6.35	80	20	-	7	5.5	8	5.50	3	-UNF1/4
1)	5/16-24	7.938	90	25	-	8	6.2	9	6.90	3	-UNF5/16
1)	3/8-24	9.525	90	30	-	10	8	11	8.50	3	-UNF3/8
	1/2-20	12.7	100	20	44.5	12	9	12	11.50	4	-UNF1/2

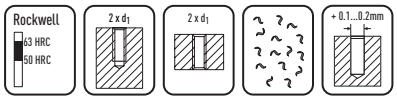
1) without neck

PARADUR HARD

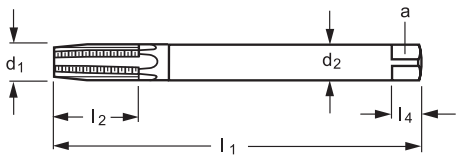
Characteristics



Application



- Solid carbide combined with a special geometry to produce threads in hardened materials up to 63HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



~DIN 2184-1 - 2B

	d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code 8331206 TICN
1)	No.10-32	4.826	70	16	6	4.9	8	4.10	5	-UNF10
1)	1/4-28	6.35	80	19	7	5.5	8	5.50	5	-UNF1/4
1)	5/16-24	7.938	90	22	8	6.2	9	6.90	5	-UNF5/16
1)	3/8-24	9.525	90	24	10	8	11	8.50	5	-UNF3/8
	1/2-20	12.7	100	20	12	9	12	11.50	6	-UNF1/2

1) without neck

UNEF Taps in HSSE

Standard Application Taps

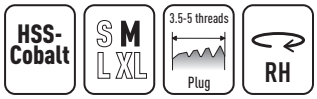
Type	PROTOTEX H	PARADUR WSH
Standard	DIN	DIN
Chamfer / Spiral	B	C/R45
Tool Material	HSSE	HSSE
Surface Treatment	Bright	Bright
		
Range	(1/4...1)	(1/4...1)
Catalog No.	233602	235672
Catalog Page	111	112

UN and UNS Taps in HSSE

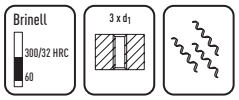
	UN				UNS			
Type	PARADUR INOX		PARADUR WTH		PARADUR INOX		PARADUR WTH	
Standard	DIN/ANSI		DIN/ANSI		DIN/ANSI		DIN/ANSI	
Chamfer / Spiral	C/R40	C/R40	C/R45	C/R45	C/R40	C/R40	C/R45	C/R45
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	VAP	THL	Bright	TIN	VAP	THL	Bright	TIN
								
Range	(1...1 3/4)	(1...1 3/4)	(1...1 3/4)	(1...1 3/4)	(1...)	(1...)	(1...)	(1...)
Catalog No.	AC225532	AC2255322	AC2256920	AC2256925	AC235532	AC2355322	AC2356920	AC2356925
Catalog Page	114	114	113	113	116	116	115	115

PROTOTEX H

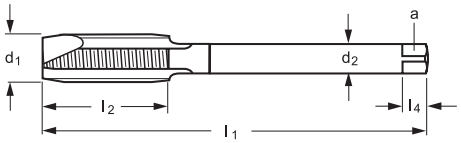
Characteristics



Application



- General application tap for through holes in short and long-chipping materials up to 32HRc.

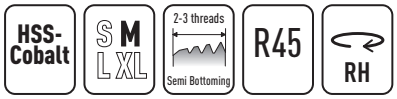


DIN 2184-1 - 2B

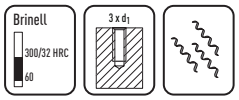
d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 233602
1/4-32	6.35	80	15	4.5	3.4	6	5.55	3	-UNEF1/4
5/16-32	7.938	90	18	6	4.9	8	7.10	3	-UNEF5/16
3/8-32	9.525	90	20	7	5.5	8	8.80	3	-UNEF3/8
7/16-28	11.113	90	20	8	6.2	9	10.20	3	-UNEF7/16
1/2-28	12.7	100	21	9	7	10	11.80	4	-UNEF1/2
9/16-24	14.288	100	21	11	9	12	13.20	4	-UNEF9/16
5/8-24	15.875	100	21	12	9	12	14.80	4	-UNEF5/8
11/16-24	17.462	110	24	14	11	14	16.40	4	-UNEF11/16
3/4-20	19.05	110	24	14	11	14	17.80	4	-UNEF3/4
7/8-20	22.225	125	24	18	14.5	17	21.00	4	-UNEF7/8
1-20	25.4	140	26	18	14.5	17	24.20	4	-UNEF1

PARADUR WSH

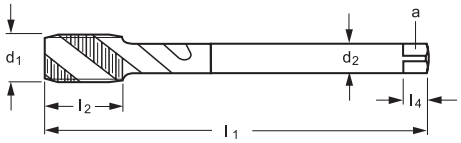
Characteristics



Application



- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.



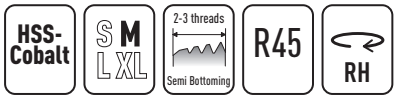
DIN 2184-1 - 2B

d_1-TPI	d_1 mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 235672
1/4-32	6.35	80	10	4.5	3.4	6	5.55	3	-UNEF1/4
5/16-32	7.938	90	13	6	4.9	8	7.10	3	-UNEF5/16
3/8-32	9.525	90	12	7	5.5	8	8.80	3	-UNEF3/8
7/16-28	11.113	90	15	8	6.2	9	10.20	3	-UNEF7/16
1/2-28	12.7	100	13	9	7	10	11.80	4	-UNEF1/2
9/16-24	14.288	100	15	11	9	12	13.20	4	-UNEF9/16
5/8-24	15.875	100	15	12	9	12	14.80	4	-UNEF5/8
11/16-24	17.462	110	17	14	11	14	16.40	4	-UNEF11/16
3/4-20	19.05	110	17	14	11	14	17.80	4	-UNEF3/4
7/8-20	22.225	125	18	18	14.5	17	21.00	4	-UNEF7/8
1-20	25.4	140	20	18	14.5	17	24.20	5	-UNEF1

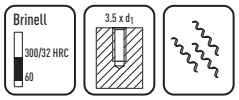
NEW

PARADUR WTH

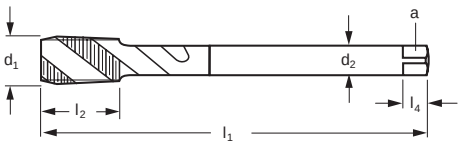
Characteristics



Application



- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.

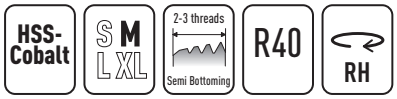


DIN/ANSI - 2B

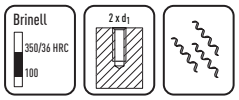
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code AC2256920	Code AC2256925 TIN
	inch	inch	inch	inch	inch	inch				
1-8	1.000	6.299	1.181	0.800	0.600	13/16	0.8780	4	-UN1 *	-UN1 *
1 1/8-8	1.125	7.087	1.181	0.896	0.672	7/8	1.0000	5	-UN1.1/8 *	-UN1.1/8 *
1 1/4-8	1.250	7.087	1.181	1.021	0.766	1	1.1220	5	-UN1.1/4 *	-UN1.1/4 *
1 3/8-8	1.375	7.874	1.181	1.108	0.831	1 1/16	1.2598	5	-UN1.3/8 *	-UN1.3/8 *
1 1/2-8	1.500	7.874	1.181	1.233	0.925	1 1/8	1.3780	5	-UN1.1/2 *	-UN1.1/2 *
1 5/8-8	1.625	7.874	1.299	1.305	0.979	1 1/8	1.5000	6	-UN1.5/8 *	-UN1.5/8 *
1 3/4-8	1.750	7.874	1.299	1.430	1.072	1 1/4	1.6339	6	-UN1.3/4 *	-UN1.3/4 *

PARADUR INOX

Characteristics

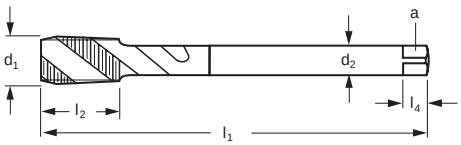


Application



NEW

- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



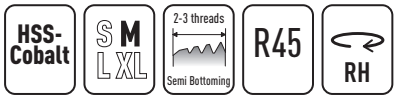
DIN/ANSI - 3B

d_1-TPI	d_1 inch	l_1 inch	l_2 inch	d_2 inch	a inch	l_4 inch		N	Code AC225532 vap	Code AC2255322 THL
1-8	1.000	6.299	1.181	0.800	0.600	13/16	0.8780	5	-UN1 *	-UN1 *
1 1/8-8	1.125	7.087	1.181	0.896	0.672	7/8	1.0000	5	-UN1.1/8 *	-UN1.1/8 *
1 1/4-8	1.250	7.087	1.181	1.021	0.766	1	1.1220	5	-UN1.1/4 *	-UN1.1/4 *
1 3/8-8	1.375	7.874	1.181	1.108	0.831	1 1/16	1.2598	5	-UN1.3/8 *	-UN1.3/8 *
1 1/2-8	1.500	7.874	1.181	1.233	0.925	1 1/8	1.3780	5	-UN1.1/2 *	-UN1.1/2 *
1 5/8-8	1.625	7.874	1.299	1.305	0.979	1 1/8	1.5000	6	-UN1.5/8 *	-UN1.5/8 *
1 3/4-8	1.750	7.874	1.299	1.430	1.072	1 1/4	1.6339	6	-UN1.3/4 *	-UN1.3/4 *

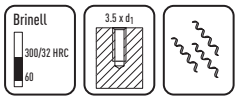
NEW

PARADUR WTH

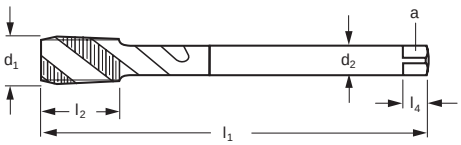
Characteristics



Application



- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.

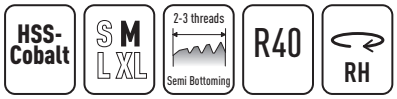


DIN/ANSI - 2B

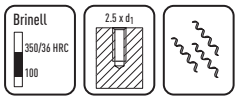
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code AC2356920	Code AC2356925 TIN
	inch	inch	inch	inch	inch	inch	inch				
1-14	1.000	5.512	0.787	-	0.800	0.600	13/16	0.9291	4	-UNS1 *	-UNS1 *

PARADUR INOX

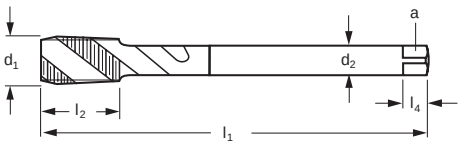
Characteristics



Application



- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



DIN/ANSI - 3B

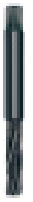
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code AC235532 vap	Code AC2355322 THL
	inch	inch	inch	inch	inch	inch				
1-14	1.000	5.512	0.787	0.800	0.600	13/16	0.9291	4	-UNS1 *	-UNS1 *


REINECKER

UNC STI and UNF STI Taps in HSSE

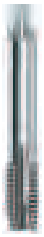
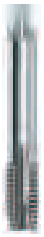
UNC STI

UNF STI

Type	PROTOTEX INOX INSERT	PROTOTEX TI INSERT	PROTOTEX NI INSERT	PARADUR INOX INSERT	PARADUR TI INSERT	PARADUR NI INSERT	PROTOTEX INOX INSERT	PROTOTEX TI INSERT	PROTOTEX NI INSERT	PARADUR INOX INSERT	PARADUR TI INSERT	PARADUR NI INSERT
Standard	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI
Chamfer / Spiral	B	B	B	C/R40	C/R15	C/R25	B	B	B	C/R40	C/R15	C/R25
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	VAP	Bright	Bright	VAP	NIT	NIT	VAP	Bright	Bright	VAP	NIT	NIT
												
Range	(#2...1/4)	(#2...1/4)	(#2...1/4)	(#2...1/4)	(#2...1/4)	(#2...1/4)	(#6...5/16)	(#6...5/16)	(#6...5/16)	(#6...5/16)	(#6...5/16)	(#6...5/16)
Catalog No.	A222030	A222060	A222089	A225030	A224060	A224089	A232030	A232060	A232020	A235030	A234060	A234000
Catalog Page	119	121	123	120	122	124	125	127	129	126	128	130

UNC STI

UNF STI

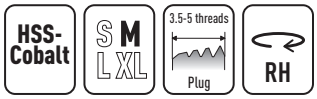
Type	PROTOTEX INOX INSERT	PROTOTEX TI INSERT	PROTOTEX NI INSERT	PARADUR INOX INSERT	PARADUR TI INSERT	PARADUR NI INSERT	PROTOTEX INOX INSERT	PROTOTEX TI INSERT	PROTOTEX NI INSERT	PARADUR INOX INSERT	PARADUR TI INSERT	PARADUR NI INSERT
Standard	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI
Chamfer / Spiral	B	B	B	C/R40	C/R15	C/R25	B	B	B	C/R40	C/R15	C/R25
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	VAP	Bright	Bright	VAP	NIT	NIT	VAP	Bright	Bright	VAP	NIT	NIT
												
Range	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)	(3/8...)
Catalog No.	A222539	A222569	A222589	A225539	A224569	A224589	A232530	A232560	A232589	A235539	A234560	A234589
Catalog Page	119	121	123	120	122	124	125	127	129	126	128	130

NEW

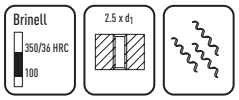
PROTOTEX INOX INSERT

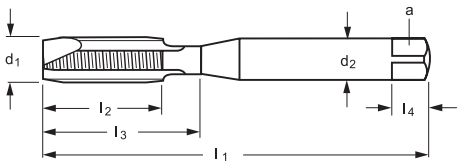
- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.

Characteristics



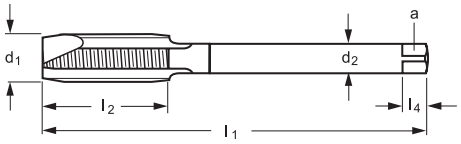
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222030 vap
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 2-56	0.109	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-STIUNC2
1)	STI No. 4-40	0.144	2	0.512	-	0.141	0.110	3/16	0.1201	2	-STIUNC4
1)	STI No. 6-32	0.179	2 3/8	0.709	-	0.194	0.152	1/4	0.1457	3	-STIUNC6
1)	STI No. 8-32	0.205	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNC8
	STI No.10-24	0.244	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNC10 *
	STI 1/4-20	0.315	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2638	3	-STIUNC1/4 *



ANSI B94.9 - 3B

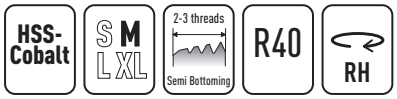
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222539 vap
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-16	0.456	3 3/8	0.945	-	0.367	0.275	7/16	0.3937	4	-STIUNC3/8 *

1) without neck

PARADUR INOX INSERT

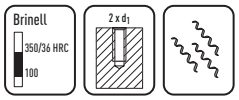
NEW

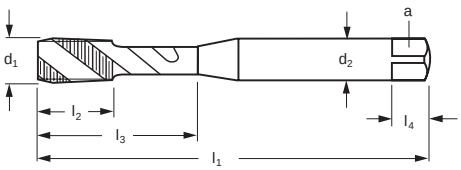
Characteristics



- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.

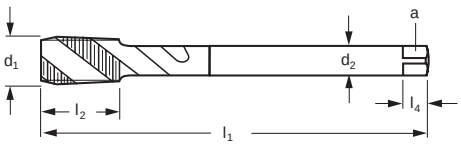
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A225030 vap
		inch	inch	inch	inch	inch	inch	inch			
1)4)	STI No. 2-56	0.109	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-STIUNC2
1)4)	STI No. 4-40	0.144	2	0.512	-	0.141	0.110	3/16	0.1201	3	-STIUNC4
1)4)	STI No. 6-32	0.179	2 3/8	0.709	-	0.194	0.152	1/4	0.1457	3	-STIUNC6
1)4)	STI No. 8-32	0.205	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNC8
4)	STI No.10-24	0.244	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNC10 *
4)	STI 1/4-20	0.315	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2638	3	-STIUNC1/4 *



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A225539 vap
		inch	inch	inch	inch	inch	inch	inch			
4)	STI 3/8-16	0.456	3 3/8	0.945	-	0.367	0.275	7/16	0.3937	3	-STIUNC3/8 *

1) without neck
4) without back tapering

PROTOTEX TI INSERT

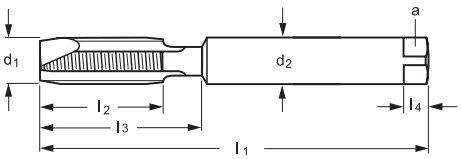
Characteristics

HSS-Cobalt | S M L XL | 3.5-5 threads Plug | RH

Application

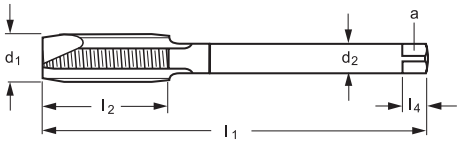
Brinell 410/44 HRC 200/14 HRC | 2 x d_1

- A high degree of toughness and stability combine for successful machining of through holes in Ti-Alloys up to 44HRc.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222060
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 2-56	0.109	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-STIUNC2 *
1)	STI No. 4-40	0.144	2	0.512	-	0.141	0.110	3/16	0.1201	3	-STIUNC4 *
1)	STI No. 6-32	0.179	2 3/8	0.709	-	0.194	0.152	1/4	0.1457	3	-STIUNC6
1)	STI No. 8-32	0.205	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNC8
	STI No.10-24	0.244	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNC10 *
	STI 1/4-20	0.315	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2638	3	-STIUNC1/4 *



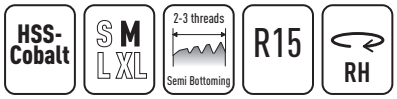
ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222569
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-16	0.456	3 3/8	0.945	-	0.367	0.275	7/16	0.3937	4	-STIUNC3/8 *

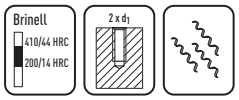
1) without neck

PARADUR TI INSERT

Characteristics

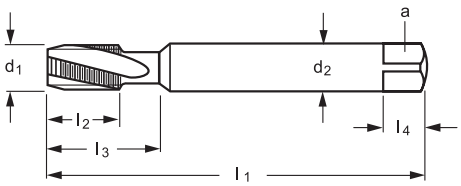


Application



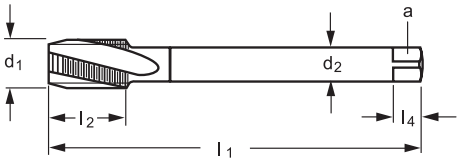
NEW

- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224060 nit
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 2-56	0.109	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	2	-STIUNC2 *
1)	STI No. 4-40	0.144	2	0.512	-	0.141	0.110	3/16	0.1201	3	-STIUNC4
1)	STI No. 6-32	0.179	2 3/8	0.709	-	0.194	0.152	1/4	0.1457	3	-STIUNC6
1)	STI No. 8-32	0.205	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNC8
	STI No.10-24	0.244	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNC10 *
	STI 1/4-20	0.315	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2638	3	-STIUNC1/4 *



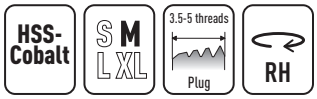
ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224569 nit
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-16	0.456	3 3/8	0.945	-	0.367	0.275	7/16	0.3937	4	-STIUNC3/8 *

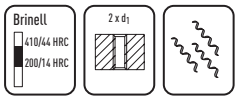
1) without neck

PROTOTEX NI INSERT

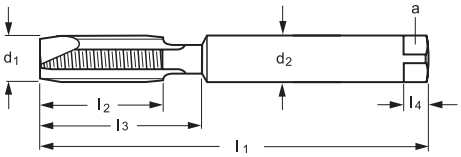
Characteristics



Application

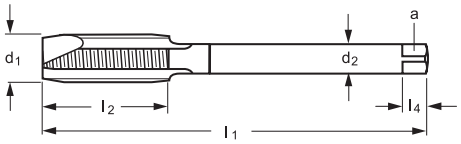


- A high degree of toughness and stability combine for successful machining of through holes in Ni-Alloys up to 44HRc.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222089
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 2-56	0.109	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-STIUNC2 *
1)	STI No. 4-40	0.144	2	0.512	-	0.141	0.110	3/16	0.1201	3	-STIUNC4 *
1)	STI No. 6-32	0.179	2 3/8	0.709	-	0.194	0.152	1/4	0.1457	3	-STIUNC6 *
1)	STI No. 8-32	0.205	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNC8 *
	STI No.10-24	0.244	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNC10 *
	STI 1/4-20	0.315	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2638	3	-STIUNC1/4 *



ANSI B94.9 - 3B

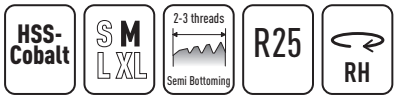
	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A222589
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-16	0.456	3 3/8	0.945	-	0.367	0.275	7/16	0.3937	4	-STIUNC3/8 *

1) without neck

PARADUR NI INSERT

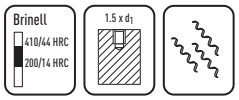
NEW

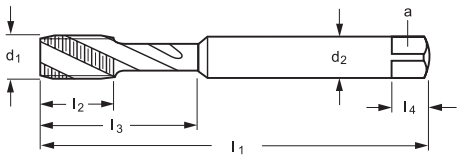
Characteristics



- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.

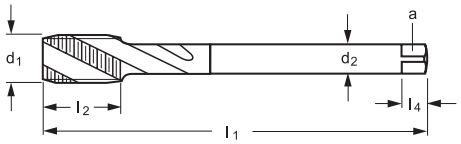
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224089 nit
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 2-56	0.109	1 7/8	0.394	-	0.141	0.110	3/16	0.0925	3	-STIUNC2 *
1)	STI No. 4-40	0.144	2	0.512	-	0.141	0.110	3/16	0.1201	3	-STIUNC4 *
1)	STI No. 6-32	0.179	2 3/8	0.709	-	0.194	0.152	1/4	0.1457	3	-STIUNC6 *
1)	STI No. 8-32	0.205	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNC8 *
	STI No.10-24	0.244	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNC10 *
	STI 1/4-20	0.315	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2638	3	-STIUNC1/4 *



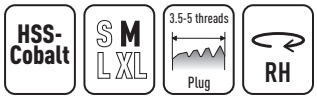
ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A224589 nit
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-16	0.456	3 3/8	0.945	-	0.367	0.275	7/16	0.3937	4	-STIUNC3/8 *

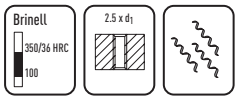
1) without neck

PROTOTEX INOX INSERT

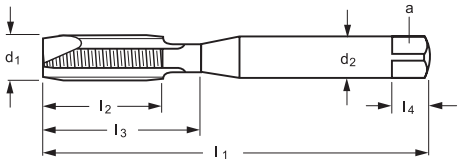
Characteristics



Application

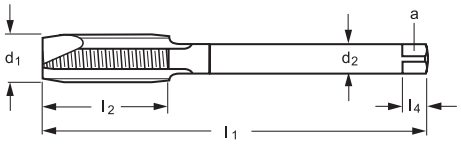


- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232030 vap
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 6-40	0.170	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	3	-STIUNF6 *
1)	STI No. 8-36	0.200	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNF8 *
	STI No.10-32	0.231	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNF10
	STI 1/4-28	0.296	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-STIUNF1/4
	STI 5/16-24	0.367	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3228	3	-STIUNF5/16



ANSI B94.9 - 3B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232530 vap
	inch	inch	inch	inch	inch	inch	inch			
STI 3/8-24	0.429	3 5/32	0.866	-	0.323	0.242	13/32	0.3858	4	-STIUNF3/8

1) without neck

126

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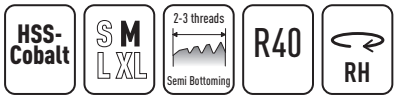
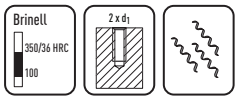
NEW

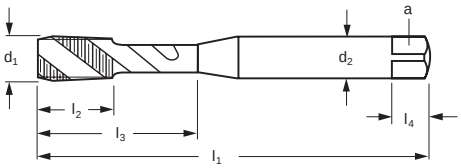
Characteristics



- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.

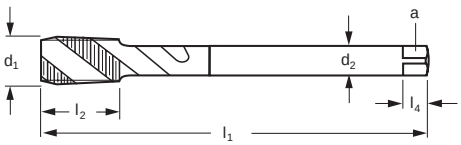
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A235030 vap
		inch	inch	inch	inch	inch	inch	inch			
1)4)	STI No. 6-40	0.170	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	3	-STIUNF6 *
1)4)	STI No. 8-36	0.200	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNF8 *
4)	STI No.10-32	0.231	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNF10
4)	STI 1/4-28	0.296	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-STIUNF1/4
4)	STI 5/16-24	0.367	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3228	3	-STIUNF5/16 *



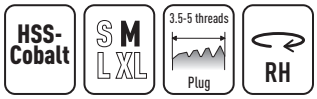
ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A235539 vap
		inch	inch	inch	inch	inch	inch	inch			
4)	STI 3/8-24	0.429	3 5/32	0.866	-	0.323	0.242	13/32	0.3858	3	-STIUNF3/8 *

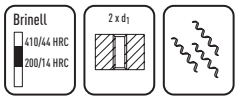
1) without neck
4) without back tapering

PROTOTEX TI INSERT

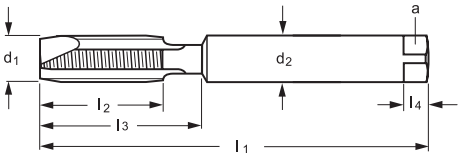
Characteristics



Application

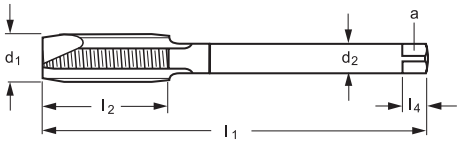


- A high degree of toughness and stability combine for successful machining of through holes in Ti-Alloys up to 44HRc.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232060
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 6-40	0.170	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	3	-STIUNF6 *
1)	STI No. 8-36	0.200	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNF8 *
	STI No.10-32	0.231	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNF10
	STI 1/4-28	0.296	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-STIUNF1/4
	STI 5/16-24	0.367	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3228	3	-STIUNF5/16



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232560
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-24	0.429	3 5/32	0.866	-	0.323	0.242	13/32	0.3858	3	-STIUNF3/8

1) without neck

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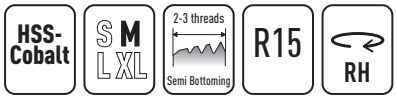
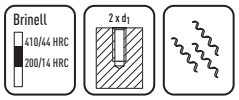
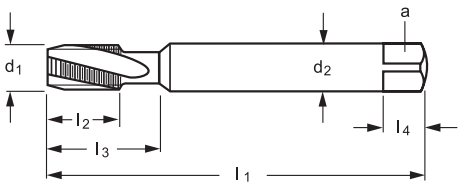
Characteristics



- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.

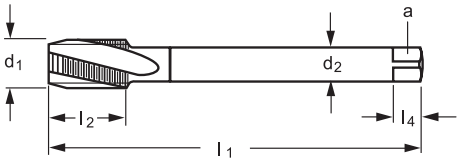
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234060 nit
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 6-40	0.170	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	3	-STIUNF6 *
1)	STI No. 8-36	0.200	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNF8 *
	STI No.10-32	0.231	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNF10
	STI 1/4-28	0.296	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-STIUNF1/4
	STI 5/16-24	0.367	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3228	3	-STIUNF5/16



ANSI B94.9 - 3B

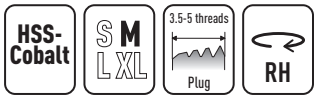
d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234560 nit
	inch	inch	inch	inch	inch	inch	inch			
STI 3/8-24	0.429	3 5/32	0.866	-	0.323	0.242	13/32	0.3858	3	-STIUNF3/8

1) without neck

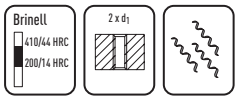
NEW

PROTOTEX NI INSERT

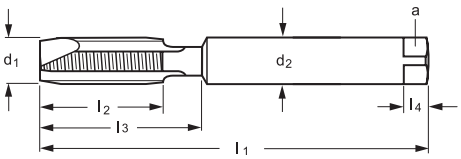
Characteristics



Application

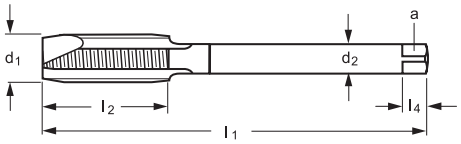


- A high degree of toughness and stability combine for successful machining of through holes in Ni-Alloys up to 44HRc.



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232020
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 6-40	0.170	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	3	-STIUNF6 *
1)	STI No. 8-36	0.200	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNF8 *
	STI No.10-32	0.231	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNF10
	STI 1/4-28	0.296	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-STIUNF1/4
	STI 5/16-24	0.367	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3228	3	-STIUNF5/16 *



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A232589
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-24	0.429	3 5/32	0.866	-	0.323	0.242	13/32	0.3858	3	-STIUNF3/8 *

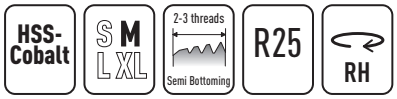
1) without neck

PARADUR NI INSERT

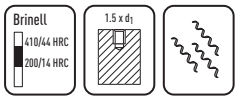
NEW

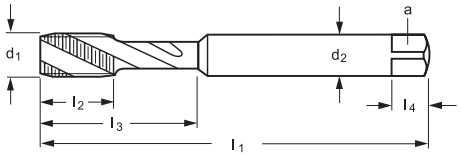
- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.

Characteristics



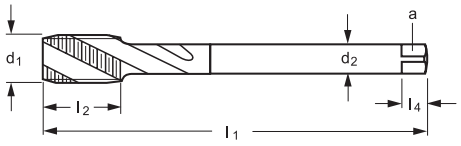
Application





ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234000 nit
		inch	inch	inch	inch	inch	inch	inch			
1)	STI No. 6-40	0.170	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	3	-STIUNF6 *
1)	STI No. 8-36	0.200	2 3/8	0.787	-	0.220	0.165	9/32	0.1732	3	-STIUNF8 *
	STI No.10-32	0.231	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2008	3	-STIUNF10
	STI 1/4-28	0.296	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2598	3	-STIUNF1/4
	STI 5/16-24	0.367	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3228	3	-STIUNF5/16 *



ANSI B94.9 - 3B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		N	Code A234589 nit
		inch	inch	inch	inch	inch	inch	inch			
	STI 3/8-24	0.429	3 5/32	0.866	-	0.323	0.242	13/32	0.3858	4	-STIUNF3/8 *

1) without neck

Metric Taps in HSSE and HSSE-PM

ECO Taps

Synchrospeed Taps

Type	PROTOTEX ECO-HT		PARADUR ECO-HT		PARADUR SECUR	PROTOTEX Synchro-speed	PARADUR Synchrospeed	
Standard	DIN		DIN		DIN	DIN	DIN	
Chamfer / Spiral	B	B	C/R45	C/R45	C/R45	B	C/R40	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	TIN	TIN	TIN/VAP	TIN/VAP
		Radial		Axial				Axial
Range	(M2...M10)	(M6...M10)	(M2...M10)	(M4...M10)	(M4...M10)	(M2...M10)	(M2...M10)	(M5...M10)
Catalog No.	E2021302	E2021342	E2051302	E2051312	E2051905	S2021305	S2051305	S2051315
Catalog Page	148	149	150	151	152	153	154	155

ECO Taps

Synchrospeed Taps

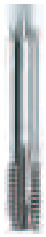
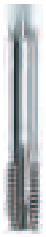
Type	PROTOTEX ECO-HT		PARADUR ECO-HT		PARADUR SECUR	PROTOTEX Synchro-speed	PARADUR Synchrospeed	
Standard	DIN		DIN		DIN	DIN	DIN	
Chamfer / Spiral	B	B	C/R45	C/R45	C/R45	B	C/R40	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	TIN	TIN	TIN/VAP	TIN/VAP
		Radial		Axial				Axial
Range	(M12...M30)	(M12...M16)	(M12...M42)	(M12...M24)	(M12...M30)	(M12...M24)	(M12...M24)	(M12...M20)
Catalog No.	E2026302	E2026342	E2056302	E2056312	E2056905	S2026305	S2056305	S2056315
Catalog Page	148	149	150	151	152	153	154	155

Metric Taps in HSSE and HSSE-PM

Standard Application Taps

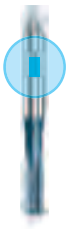
Type	PROTOTEX H		PROTOTEX INOX			PROTOTEX TINI	PROTOTEX TI	PROTOTEX NI	PARADUR GG	
Standard	ANSI		ANSI	DIN		DIN	ANSI	ANSI	ANSI	DIN
Chamfer / Spiral	B		B	B	B	B	B	B	C	C
Tool Material	HSSE		HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE-PM	HSSE-PM
Surface Treatment	Bright		VAP	VAP	TICN	Bright	Bright	Bright	NID	TICN
										
Range	(M3...M10)		(M3...M10)	(M1...M10)	(M2...M10)	(M1...M10)	(M3...M10)	(M3...M10)	(M3...M10)	(M3...M10)
Catalog No.	A20310		A2021303	20213	2021306	202161	A20216	A20218	A20314	2031406
Catalog Page	137		139	159	159	165	142	144	141	163

Standard Application Taps

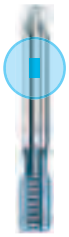
Type	PROTOTEX H			PROTOTEX INOX			PROTOTEX TINI	PROTOTEX TI	PROTOTEX NI	PARADUR GG	
Standard	ANSI	DIN		ANSI	DIN		DIN	ANSI	ANSI	ANSI	DIN
Chamfer / Spiral	B	B	B	B	B	B	B	B	B	C	C
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE-PM	HSSE-PM
Surface Treatment	Bright	Bright	TIN	VAP	VAP	TICN	Bright	Bright	Bright	NID	TICN
											
Range	(M12...M20)	(M2...M56)	(M6...M36)	(M12...M20)	(M5...M36)	(M5...M24)	(M12...M27)	(M12...M20)	(M12...M20)	(M12...M20)	(M12...M30)
Catalog No.	A20360	20360	2036005	A2026303	20263	2026306	202661	A20266	A20268	A20364	2036406
Catalog Page	137	156	156	139	159	159	165	142	144	141	163

Metric Taps in HSSE and HSSE-PM

Standard Application Taps

Type	PARADUR GG	PARADUR NI 10	PARADUR TI			PARADUR NI			PARADUR WLM	
Standard	DIN	ANSI	ANSI		DIN	ANSI		DIN	ANSI	DIN
Chamfer / Spiral	C	C/R10	C/R15	C/R15	C/R15	C/R25	C/R25	C/R25	C/R35	C/R35
Tool Material	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE-PM	HSSE	HSSE
Surface Treatment	TICN	Bright	NIT	TICN	Bright	NIT	TICN	Bright	Bright	Bright
	 Axial									
Range	(M4...M10)	(M3...M10)	(M3...M10)	(M3...M10)	(M1...M10)	(M3...M10)	(M3...M10)	(M2...M10)	(M3...M10)	(M1.6...M10)
Catalog No.	2031416	A204187	A20416	A2041606	20416	A20418	A2041806	204102	A2051600	20516
Catalog Page	164	146	143	143	166	145	145	168	147	169

Standard Application Taps

Type	PARADUR GG	PARADUR NI 10	PARADUR TI			PARADUR NI			PARADUR WLM	
Standard	DIN	ANSI	ANSI		DIN	ANSI		DIN	ANSI	DIN
Chamfer / Spiral	C	C/R10	C/R15	C/R15	C/R15	C/R25	C/R25	C/R25	C/R35	C/R35
Tool Material	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE-PM	HSSE	HSSE	HSSE-PM	HSSE	HSSE
Surface Treatment	TICN	Bright	NIT	TICN	Bright	NIT	TICN	Bright	Bright	Bright
	 Axial									
Range	(M12...M24)	(M12...M20)	(M12...M20)	(M12...M20)	(M12...M36)	(M12...M20)	(M12...M20)	(M12...M20)	(M12...M20)	(M6...M20)
Catalog No.	2036416	A204687	A20466	A2046606	20466	A20468	A2046806	204602	A2056600	20566
Catalog Page	164	146	143	143	166	145	145	168	147	169

Metric Taps in HSSE and HSSE-PM

Standard Application Taps

Type	PARADUR INOX				PARADUR WSH			
Standard	ANSI		DIN		ANSI		DIN	
Chamfer / Spiral	C/R40	C/R40	C/R40	C/R40	C/R45	C/R45	C/R45	C/R45
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	VAP	THL	VAP	TICN	Bright	TIN	Bright	TIN
								
Range	(M3...M10)	(M3...M10)	(M1.6...M10)	(M1.6...M10)	(M3...M10)	(M3...M10)	(M1.6...M10)	(M2...M10)
Catalog No.	A2051303	A2051302	20513	2051306	A2051700	A2051705	20517	205175
Catalog Page	140	140	161	161	138	138	157	157

Standard Application Taps

Type	PARADUR INOX				PARADUR WSH			
Standard	ANSI		DIN		ANSI		DIN	
Chamfer / Spiral	C/R40	C/R40	C/R40	C/R40	C/R45	C/R45	C/R45	C/R45
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	VAP	THL	VAP	TICN	Bright	TIN	Bright	TIN
								
Range	(M12...M20)	(M12...M20)	(M6...M42)	(M6...M30)	(M12...M20)	(M12...M20)	(M4...M36)	(M12...M20)
Catalog No.	A2056303	A2056302	20563	2056306	A2056700	A2056705	20567	205675
Catalog Page	140	140	161	161	138	138	157	157

Metric Fine Taps in HSSE and HSSE-PM

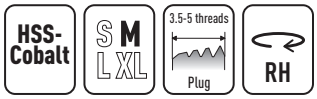
	ECO Taps				Synchrospeed Taps			Standard Application Taps		
Type	PROTOTEX ECO-HT		PARADUR ECO-HT		PROTOTEX Synchro-speed	PARADUR Synchrospeed		PROTOTEX H	PROTOTEX INOX	PARADUR INOX
Standard	DIN		DIN		DIN	DIN		DIN	DIN	DIN
Chamfer / Spiral	B	B	C/R45	C/R45	B	C/R40	C/R40	B	B	C/R40
Tool Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	THL	THL	THL	THL	TIN	TIN/VAP	TIN/VAP	Bright	VAP	VAP
		Radial		Axial			Axial			
Range	(M6...M22)	(M8...M20)	(M6...M22)	(M8...M20)	(M8...M16)	(M8...M16)	(M8...M16)	(M4...M48)	(M8...M27)	(M8...M27)
Catalog No.	E2126302	E2126342	E2156302	E2156312	S2126305	S2156305	S2156315	21360	21263	21563
Catalog Page	170	171	172	173	174	175	176	177	179	180

PROTOTEX H

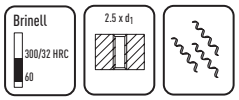
NEW

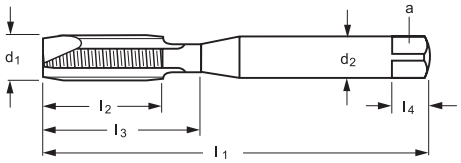
- General application tap for through holes in short and long-chipping materials up to 32HRc.

Characteristics



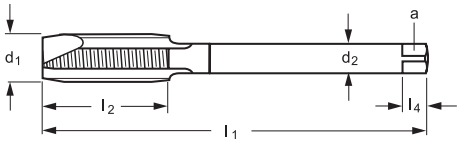
Application





ANSI B94.9 - ISO2/6H

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20310
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	3	-M10 *



ANSI B94.9 - ISO2/6H

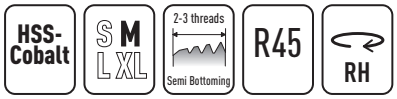
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20360
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	3	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	3	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *

1) without neck

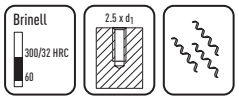
PARADUR WSH

NEW

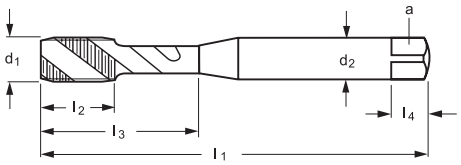
Characteristics



Application

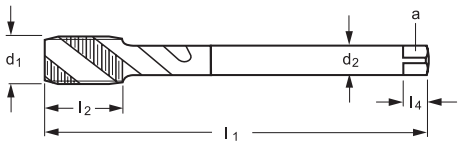


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



ANSI B94.9 - ISO2/6H

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2051700	Code A2051705 TIN
	mm	mm	inch	inch	inch	inch	inch	inch				
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	3	-M10 *	-M10 *



ANSI B94.9 - ISO2/6H

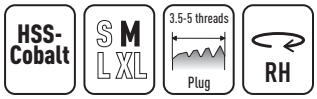
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2056700	Code A2056705 TIN
	mm	mm	inch	inch	inch	inch	inch	inch				
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *	-M20 *

1) without neck

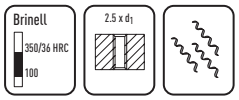
PROTOTEX INOX

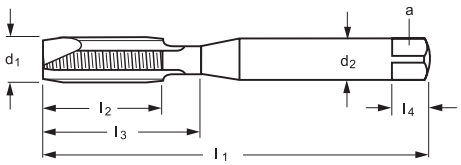
- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.

Characteristics



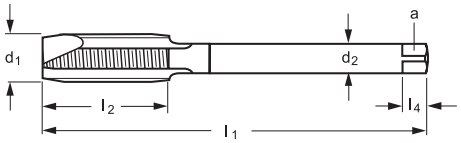
Application





ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2021303 vap
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	2	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	3	-M10 *



ANSI B94.9 - 6HX

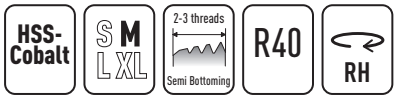
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2026303 vap
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *

1) without neck

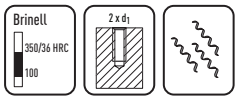
PARADUR INOX

NEW

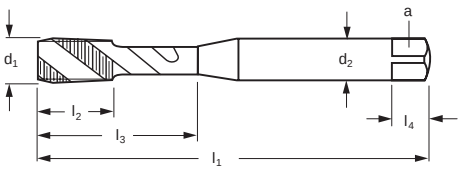
Characteristics



Application

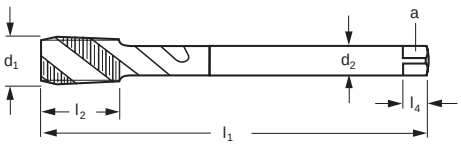


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2051303 vap	Code A2051302 THL
	mm	mm	inch	inch	inch	inch	inch	inch				
1)4)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *	-M3 *
1)4)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *	-M4 *
1)4)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	3	-M10 *	-M10 *



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2056303 vap	Code A2056302 THL
	mm	mm	inch	inch	inch	inch	inch	inch				
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *	-M20 *

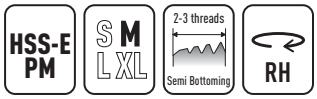
1) without neck
4) without back tapering

NEW

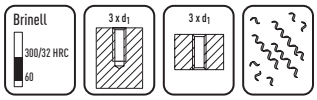
PARADUR GG

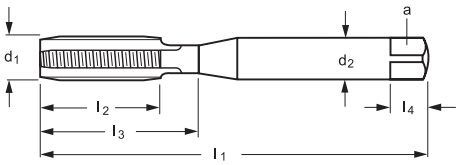
- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **NID** (Nitride+Steam Oxide) shares the lubricity of oxide and the abrasion resistance of nitride.

Characteristics



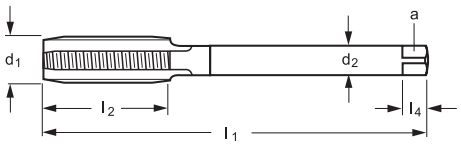
Application





ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20314 nid
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	4	-M5 *
	M 6	1	2 1/2	0.630	1.181	0.255	0.191	5/16	0.1969	4	-M6 *
	M 8	1.25	2 23/32	0.748	1.378	0.318	0.238	3/8	0.2677	4	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	4	-M10 *



ANSI B94.9 - 6HX

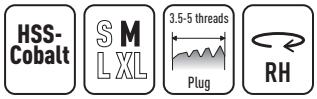
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20364 nid
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *

1) without neck

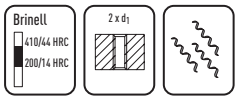
PROTOTEX TI

NEW

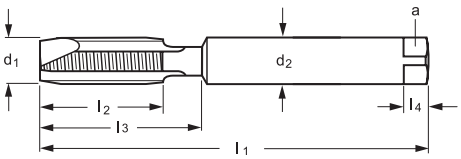
Characteristics



Application

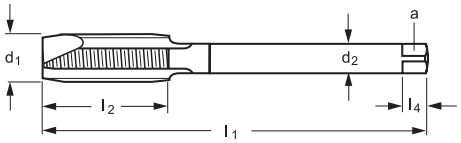


- A high degree of toughness and stability combine for successful machining of through holes in Ti-Alloys up to 44HRc.



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20216
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	2	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *
	M 10	1.5	2 15/16	0.748	1.299	0.381	0.286	7/16	0.3346	3	-M10 *



ANSI B94.9 - 6HX

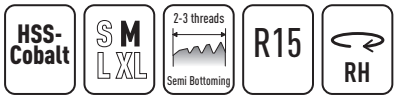
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20266
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *

1) without neck

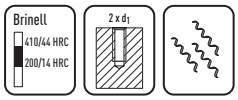
NEW

PARADUR TI

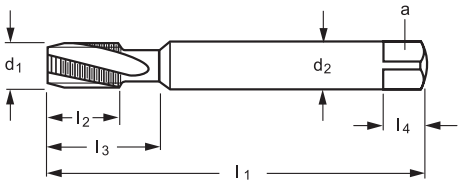
Characteristics



Application

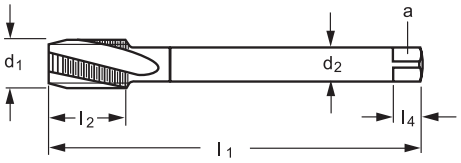


- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20416 nit	Code A2041606 TICN
	mm	mm	inch	inch	inch	inch	inch	inch				
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *	-M8 *
	M 10	1.5	2 15/16	0.748	1.299	0.381	0.286	7/16	0.3346	3	-M10 *	-M10 *



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20466 nit	Code A2046606 TICN
	mm	mm	inch	inch	inch	inch	inch	inch				
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *	-M20 *

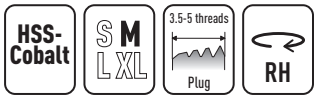
1) without neck

PROTOTEX NI

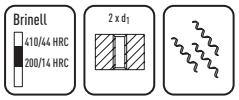
NEW

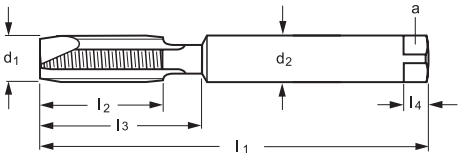
- A high degree of toughness and stability combine for successful machining of through holes in Ni-Alloys up to 44HRc.

Characteristics



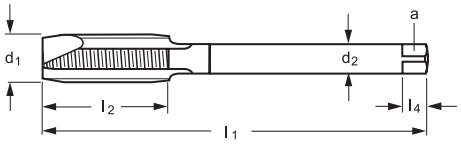
Application





ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20218
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *
	M 6	1	2 1/2	0.630	0.906	0.255	0.191	5/16	0.1969	3	-M6 *
	M 8	1.25	2 23/32	0.748	1.142	0.318	0.238	3/8	0.2677	3	-M8 *
	M 10	1.5	2 15/16	0.748	1.299	0.381	0.286	7/16	0.3346	3	-M10 *



ANSI B94.9 - 6HX

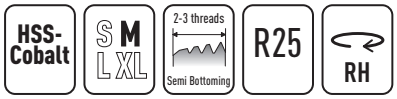
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20268
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	4	-M20 *

1) without neck

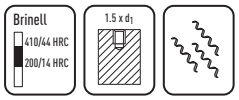
NEW

PARADUR NI

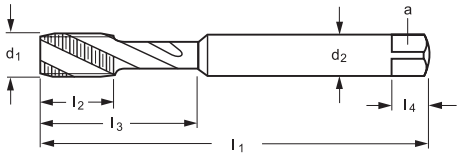
Characteristics



Application

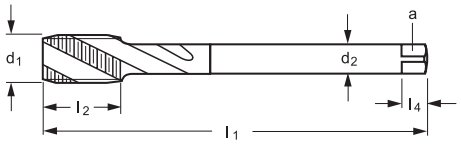


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.
- **NIT** (Nitride) is especially useful in tough or abrasive materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20418 nit	Code A2041806 TICN
	mm	mm	inch	inch	inch	inch	inch	inch				
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	3	-M6 *	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	3	-M8 *	-M8 *
	M 10	1.5	2 15/16	0.748	1.299	0.381	0.286	7/16	0.3346	4	-M10 *	-M10 *



ANSI B94.9 - 6HX

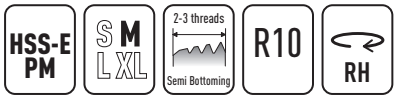
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A20468 nit	Code A2046806 TICN
	mm	mm	inch	inch	inch	inch	inch	inch				
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	5	-M20 *	-M20 *

1) without neck

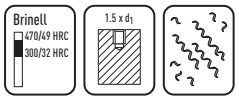
PARADUR NI 10

NEW

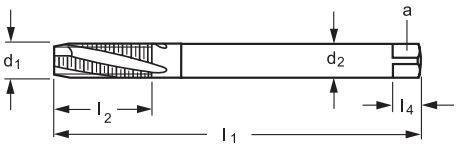
Characteristics



Application

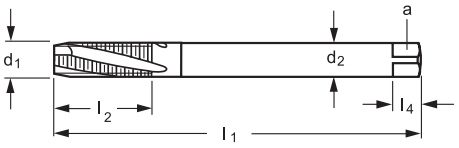


- Powdered metal, slow helix and a negative rake angle create the strength needed to machine tough materials up to 49HRc.



ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A204187
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	3	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	3	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	3	-M5 *
	M 6	1	2 1/2	0.630	1.181	0.255	0.191	5/16	0.1969	3	-M6 *
	M 8	1.25	2 23/32	0.748	1.378	0.318	0.238	3/8	0.2677	3	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	3	-M10 *



ANSI B94.9 - 6HX

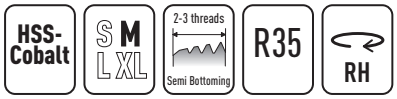
	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A204687
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	4	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	4	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	5	-M20 *

1) without neck

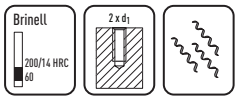
NEW

PARADUR WLM

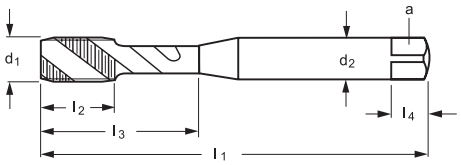
Characteristics



Application

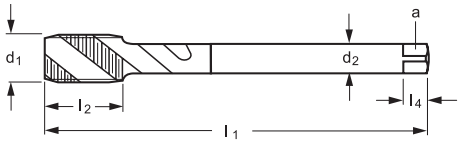


- Special tap for blind holes in soft, long chipping materials e.g. wrought Al, copper and soft construction steels.



ANSI B94.9 - ISO2/6H

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2051600
	mm	mm	inch	inch	inch	inch	inch	inch			
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.0984	2	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1299	2	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1654	2	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.1969	2	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2677	2	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3346	2	-M10 *



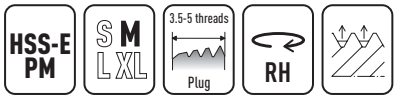
ANSI B94.9 - ISO2/6H

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		N	Code A2056600
	mm	mm	inch	inch	inch	inch	inch	inch			
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4016	3	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	3	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.6890	3	-M20 *

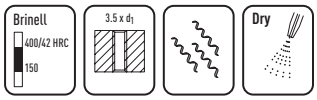
1) without neck

PROTOTEX ECO-HT

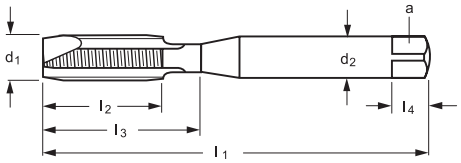
Characteristics



Application

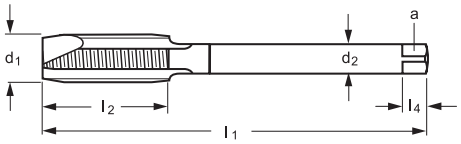


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2021302 THL
M 2	0.4	45	6	9	2.8	2.1	5	1.60	3	-M2
M 2.5	0.45	50	8	12.5	2.8	2.1	5	2.05	3	-M2.5
M 3	0.5	56	9	18	3.5	2.7	6	2.50	3	-M3
M 4	0.7	63	12	21	4.5	3.4	6	3.30	3	-M4
M 5	0.8	70	13	25	6	4.9	8	4.20	3	-M5
M 6	1	80	15	30	6	4.9	8	5.00	3	-M6
M 8	1.25	90	18	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	20	39	10	8	11	8.50	3	-M10

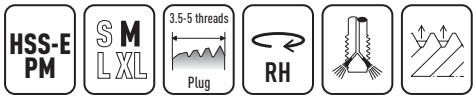


DIN 376 - 6HX

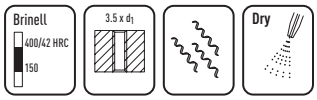
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2026302 THL
M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
M 14	2	110	25	-	11	9	12	12.00	4	-M14
M 16	2	110	25	-	12	9	12	14.00	4	-M16
M 18	2.5	125	30	-	14	11	14	15.50	4	-M18
M 20	2.5	140	30	-	16	12	15	17.50	4	-M20
M 24	3	160	36	-	18	14.5	17	21.00	4	-M24
M 27	3	160	36	-	20	16	19	24.00	4	-M27
M 30	3.5	180	42	-	22	18	21	26.50	4	-M30

PROTOTEX ECO-HT

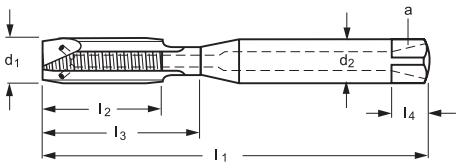
Characteristics



Application

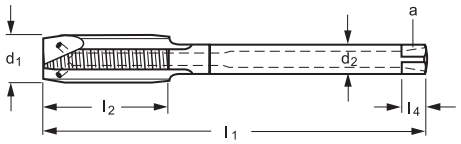


- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Radial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2021342 THL
M 6	1	80	15	30	6	4.9	8	5.00	3	-M6
M 8	1.25	90	18	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	20	39	10	8	11	8.50	3	-M10



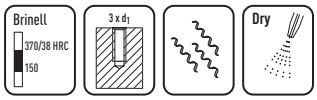
DIN 376 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2026342 THL
M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
M 16	2	110	25	-	12	9	12	14.00	4	-M16

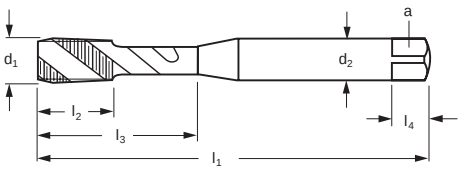
PARADUR ECO-HT

Characteristics

Application

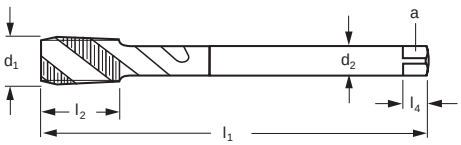


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



~DIN 371 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2051302 THL
4)	M 2	0.4	45	4	7.6	2.8	2.1	5	1.60	3	-M2
4)	M 2.5	0.45	50	4	9.3	2.8	2.1	5	2.05	3	-M2.5
	M 3	0.5	56	6	11	3.5	2.7	6	2.50	3	-M3
	M 4	0.7	63	7	14.8	4.5	3.4	6	3.30	3	-M4
	M 5	0.8	70	8	20.7	6	4.9	8	4.20	3	-M5
	M 6	1	80	10	25	6	4.9	8	5.00	3	-M6
	M 8	1.25	90	12	35	8	6.2	9	6.80	3	-M8
	M 10	1.5	100	15	39	10	8	11	8.50	3	-M10



DIN 376 - 6HX

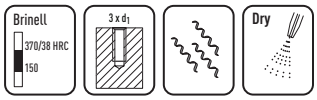
	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2056302 THL
	M 12	1.75	110	16	-	9	7	10	10.20	4	-M12
	M 14	2	110	20	-	11	9	12	12.00	4	-M14
	M 16	2	110	20	-	12	9	12	14.00	4	-M16
	M 18	2.5	125	25	-	14	11	14	15.50	4	-M18
	M 20	2.5	140	25	-	16	12	15	17.50	4	-M20
	M 24	3	160	30	-	18	14.5	17	21.00	4	-M24
	M 27	3	160	30	-	20	16	19	24.00	5	-M27
	M 30	3.5	180	35	-	22	18	21	26.50	5	-M30
	M 36	4	200	40	-	28	22	25	32.00	5	-M36
	M 42	4.5	200	45	-	32	24	27	37.50	5	-M42

4) without back tapering

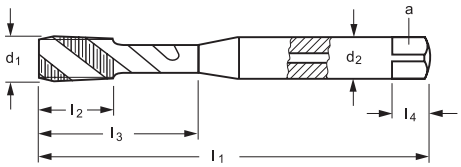
PARADUR ECO-HT

Characteristics

Application

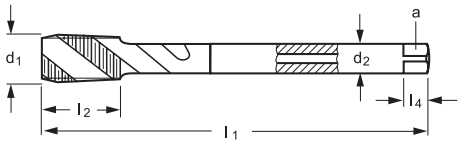


- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Axial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



~DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2051312 THL
M 4	0.7	63	7	14.8	4.5	3.4	6	3.30	3	-M4
M 5	0.8	70	8	20.7	6	4.9	8	4.20	3	-M5
M 6	1	80	10	25	6	4.9	8	5.00	3	-M6
M 8	1.25	90	12	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	15	39	10	8	11	8.50	3	-M10



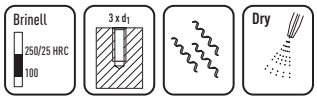
DIN 376 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2056312 THL
M 12	1.75	110	16	-	9	7	10	10.20	4	-M12
M 16	2	110	20	-	12	9	12	14.00	4	-M16
M 20	2.5	140	25	-	16	12	15	17.50	4	-M20
M 24	3	160	30	-	18	14.5	17	21.00	4	-M24

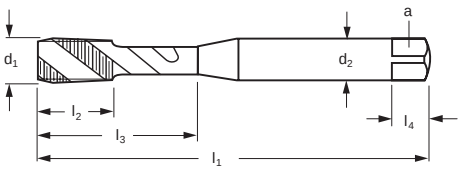
PARADUR SECUR

Characteristics

Application

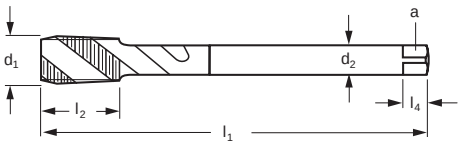


- Long-chipping materials that bird-nest are the target of this tap. A unique geometry provides the means to help control chips.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for dry or MQL machining.



~DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2051905 TIN
M 4	0.7	63	7	14.8	4.5	3.4	6	3.30	3	-M4
M 5	0.8	70	8	20.7	6	4.9	8	4.20	3	-M5
M 6	1	80	10	25	6	4.9	8	5.00	3	-M6
M 8	1.25	90	12	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	15	39	10	8	11	8.50	3	-M10

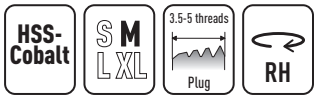


DIN 376 - 6HX

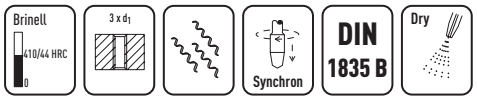
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2056905 TIN
M 12	1.75	110	16	-	9	7	10	10.20	4	-M12
M 16	2	110	20	-	12	9	12	14.00	4	-M16
M 20	2.5	140	25	-	16	12	15	17.50	4	-M20
M 24	3	160	30	-	18	14.5	17	21.00	4	-M24
M 30	3.5	180	35	-	22	18	21	26.50	5	-M30

PROTOTEX Synchrospeed

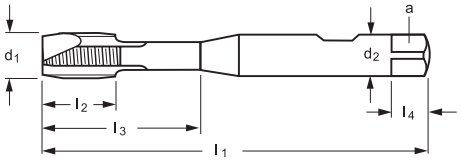
Characteristics



Application

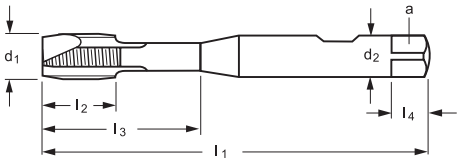


- Rigid tap through holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for dry or MQL machining.



~DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2021305 TIN
M 2	0.4	70	4	9	6	4.9	8	1.60	3	-M2
M 2.5	0.45	70	4.5	12.5	6	4.9	8	2.05	3	-M2.5
M 3	0.5	70	5	18	6	4.9	8	2.50	3	-M3
M 4	0.7	70	7	21	6	4.9	8	3.30	3	-M4
M 5	0.8	70	8	25	6	4.9	8	4.20	3	-M5
M 6	1	80	10	30	6	4.9	8	5.00	3	-M6
M 8	1.25	90	12.5	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	15	39	10	8	11	8.50	3	-M10

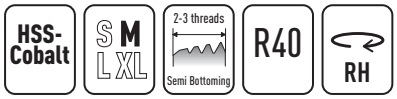


~DIN 376 - 6HX

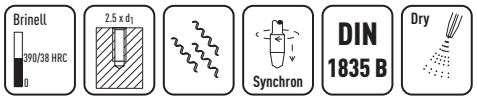
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2026305 TIN
M 12	1.75	110	17.5	42	12	9	12	10.20	3	-M12
M 14	2	110	20	49	14	11	14	12.00	3	-M14
M 16	2	110	20	55	16	12	15	14.00	4	-M16
M 20	2.5	140	25	-	16	12	15	17.50	4	-M20
M 24	3	160	30	-	20	16	19	21.00	4	-M24

PARADUR Synchrospeed

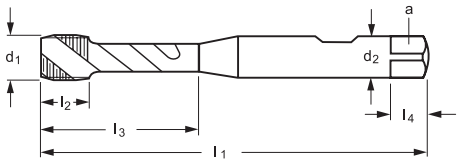
Characteristics



Application

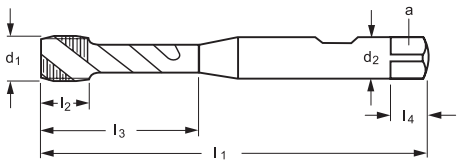


- Rigid tap blind holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN/VAP** (Titanium Nitride+Steam Oxide) has excellent wear resistance and cutting fluid retention.
- Suitable for dry or MQL machining.



~DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2051305 TIN/vap
M 2	0.4	70	4	7.6	6	4.9	8	1.60	3	-M2
M 2.5	0.45	70	4.5	9.3	6	4.9	8	2.05	3	-M2.5
M 3	0.5	70	5	11	6	4.9	8	2.50	3	-M3
M 4	0.7	70	7	14.8	6	4.9	8	3.30	3	-M4
M 5	0.8	70	8.5	20.7	6	4.9	8	4.20	3	-M5
M 6	1	80	10.5	25	6	4.9	8	5.00	3	-M6
M 8	1.25	90	13.5	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	16	39	10	8	11	8.50	3	-M10



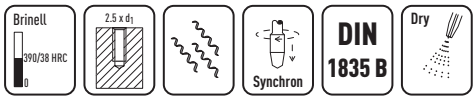
~DIN 376 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2056305 TIN/vap
M 12	1.75	110	18.5	42	12	9	12	10.20	3	-M12
M 14	2	110	21	49	14	11	14	12.00	3	-M14
M 16	2	110	21	55	16	12	15	14.00	4	-M16
M 20	2.5	140	26.5	-	16	12	15	17.50	4	-M20
M 24	3	160	32	-	20	16	19	21.00	4	-M24

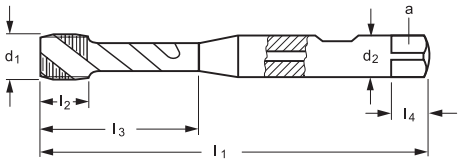
PARADUR Synchrospeed

Characteristics

Application

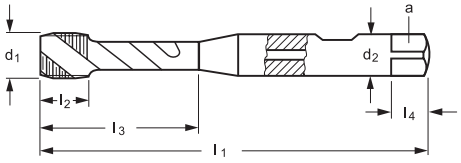


- Rigid tap blind holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN/VAP** (Titanium Nitride+Steam Oxide) has excellent wear resistance and cutting fluid retention.
- Axial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



~DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2051315 TIN/vap
M 5	0.8	70	8.5	20.7	6	4.9	8	4.20	3	-M5
M 6	1	80	10.5	25	6	4.9	8	5.00	3	-M6
M 8	1.25	90	13.5	35	8	6.2	9	6.80	3	-M8
M 10	1.5	100	16	39	10	8	11	8.50	3	-M10

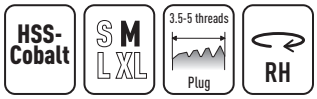


~DIN 376 - 6HX

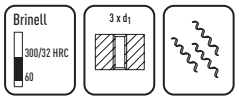
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2056315 TIN/vap
M 12	1.75	110	18.5	42	12	9	12	10.20	3	-M12
M 14	2	110	21	49	14	11	14	12.00	3	-M14
M 16	2	110	21	55	16	12	15	14.00	4	-M16
M 20	2.5	140	26.5	-	16	12	15	17.50	4	-M20

PROTOTEX H

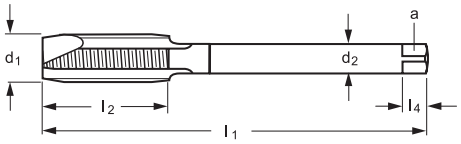
Characteristics



Application



- General application tap for through holes in short and long-chipping materials up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.

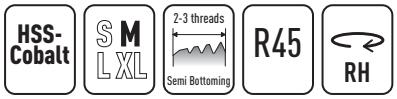


DIN 376 - ISO2/6H

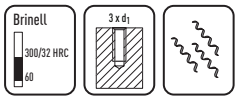
d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20360	Code 2036005 TIN
M 2	0.4	45	6	1.4	1.12	4	1.60	3	-M2	
M 2.5	0.45	50	8	1.8	1.4	4	2.05	3	-M2.5	
M 3	0.5	56	9	2.2	1.8	4	2.50	3	-M3	
M 4	0.7	63	12	2.8	2.1	5	3.30	3	-M4	
M 5	0.8	70	13	3.5	2.7	6	4.20	3	-M5	
M 6	1	80	15	4.5	3.4	6	5.00	3	-M6	-M6
M 7	1	80	15	5.5	4.3	7	6.00	3	-M7	
M 8	1.25	90	18	6	4.9	8	6.80	3	-M8	-M8
M 9	1.25	90	18	7	5.5	8	7.80	3	-M9	
M 10	1.5	100	20	7	5.5	8	8.50	3	-M10	-M10
M 12	1.75	110	23	9	7	10	10.20	3	-M12	-M12
M 14	2	110	25	11	9	12	12.00	3	-M14	-M14
M 16	2	110	25	12	9	12	14.00	3	-M16	-M16
M 18	2.5	125	30	14	11	14	15.50	4	-M18	-M18
M 20	2.5	140	30	16	12	15	17.50	4	-M20	-M20
M 22	2.5	140	30	18	14.5	17	19.50	4	-M22	
M 24	3	160	36	18	14.5	17	21.00	4	-M24	-M24
M 27	3	160	36	20	16	19	24.00	4	-M27	-M27
M 30	3.5	180	42	22	18	21	26.50	4	-M30	-M30
M 33	3.5	180	42	25	20	23	29.50	4	-M33	
M 36	4	200	48	28	22	25	32.00	4	-M36	-M36
M 39	4	200	48	32	24	27	35.00	4	-M39	
M 42	4.5	200	54	32	24	27	37.50	4	-M42	
M 45	4.5	220	54	36	29	32	40.50	4	-M45	
M 48	5	250	60	36	29	32	43.00	4	-M48	
M 52	5	250	60	40	32	35	47.00	4	-M52	
M 56	5.5	250	66	40	32	35	50.50	4	-M56	

PARADUR WSH

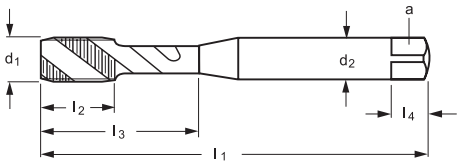
Characteristics



Application

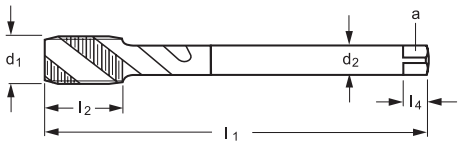


- General application tap for blind holes in long-chipping materials e.g. low-med alloy steels up to 32HRc.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



DIN 371 - ISO2/6H

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20517	Code 205175 TIN
1)	M 1.6	0.35	40	6	-	2.5	2.1	5	1.25	2	-M1.6	
	M 2	0.4	45	4	9	2.8	2.1	5	1.60	3	-M2	-M2
	M 2.2	0.45	45	4	12	2.8	2.1	5	1.75	3	-M2.2	
	M 2.3	0.4	45	4	12	2.8	2.1	5	1.85	3	-M2.3	
	M 2.5	0.45	50	4	12.5	2.8	2.1	5	2.05	3	-M2.5	-M2.5
	M 2.6	0.45	50	4	12.5	2.8	2.1	5	2.15	3	-M2.6	
	M 3	0.5	56	6	18	3.5	2.7	6	2.50	3	-M3	-M3
	M 3.5	0.6	56	6.5	20	4	3	6	2.90	3	-M3.5	-M3.5
	M 4	0.7	63	7	21	4.5	3.4	6	3.30	3	-M4	-M4
	M 4.5	0.75	70	8	25	6	4.9	8	3.70	3	-M4.5	
	M 5	0.8	70	8	25	6	4.9	8	4.20	3	-M5	-M5
	M 6	1	80	10	30	6	4.9	8	5.00	3	-M6	-M6
	M 7	1	80	10	30	7	5.5	8	6.00	3	-M7	
	M 8	1.25	90	12	35	8	6.2	9	6.80	3	-M8	-M8
	M 10	1.5	100	15	39	10	8	11	8.50	3	-M10	-M10



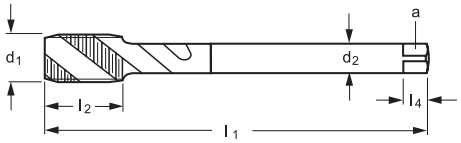
DIN 376 - ISO2/6H

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20567	Code 205675 TIN
	M 4	0.7	63	7	2.8	2.1	5	3.30	3	-M4	
	M 5	0.8	70	8	3.5	2.7	6	4.20	3	-M5	
	M 6	1	80	10	4.5	3.4	6	5.00	3	-M6	
	M 8	1.25	90	13	6	4.9	8	6.80	3	-M8	
	M 9	1.25	90	13	7	5.5	8	7.80	3	-M9	
	M 10	1.5	100	15	7	5.5	8	8.50	3	-M10	
	M 11	1.5	100	15	8	6.2	9	9.50	3	-M11	
	M 12	1.75	110	16	9	7	10	10.20	4	-M12	-M12
	M 14	2	110	20	11	9	12	12.00	4	-M14	-M14

Continued on next page

1) without neck

Continuation - PARADUR WSH



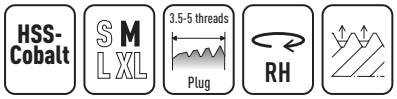
DIN 376 - ISO2/6H

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20567	Code 205675 TIN
M 16	2	110	20	12	9	12	14.00	4	-M16	-M16
M 18	2.5	125	25	14	11	14	15.50	4	-M18	-M18
M 20	2.5	140	25	16	12	15	17.50	4	-M20	-M20
M 22	2.5	140	25	18	14.5	17	19.50	4	-M22	
M 24	3	160	30	18	14.5	17	21.00	4	-M24	
M 27	3	160	30	20	16	19	24.00	4	-M27	
M 30	3.5	180	35	22	18	21	26.50	4	-M30	
M 33	3.5	180	35	25	20	23	29.50	4	-M33	
M 36	4	200	40	28	22	25	32.00	4	-M36	

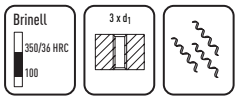
1) without neck

PROTOTEX INOX

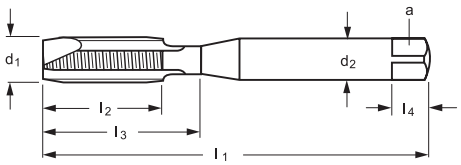
Characteristics



Application

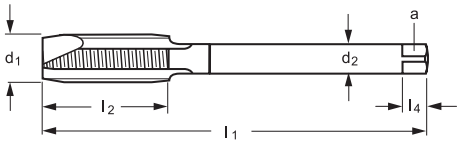


- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



DIN 371 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20213 vap	Code 2021306 TICN
1)	M 1	0.25	40	5	-	2.5	2.1	5	0.75	2	-M1	
1)	M 1.2	0.25	40	5	-	2.5	2.1	5	0.95	2	-M1.2	
1)	M 1.4	0.3	40	6.5	-	2.5	2.1	5	1.10	2	-M1.4	
1)	M 1.6	0.35	40	7	-	2.5	2.1	5	1.25	2	-M1.6	
1)	M 1.8	0.35	40	7	-	2.5	2.1	5	1.45	2	-M1.8	
	M 2	0.4	45	6	9	2.8	2.1	5	1.60	2	-M2	-M2
	M 2.2	0.45	45	7	12	2.8	2.1	5	1.75	2	-M2.2	
	M 2.3	0.4	45	7	12	2.8	2.1	5	1.85	2	-M2.3	
	M 2.5	0.45	50	8	12.5	2.8	2.1	5	2.05	2	-M2.5	-M2.5
	M 2.6	0.45	50	8	12.5	2.8	2.1	5	2.15	2	-M2.6	
	M 3	0.5	56	9	18	3.5	2.7	6	2.50	2	-M3	-M3
	M 3.5	0.6	56	11	20	4	3	6	2.90	2	-M3.5	-M3.5
	M 4	0.7	63	12	21	4.5	3.4	6	3.30	3	-M4	-M4
	M 4.5	0.75	70	13	25	6	4.9	8	3.70	3	-M4.5	
	M 5	0.8	70	13	25	6	4.9	8	4.20	3	-M5	-M5
	M 6	1	80	15	30	6	4.9	8	5.00	3	-M6	-M6
	M 7	1	80	15	30	7	5.5	8	6.00	3	-M7	
	M 8	1.25	90	18	35	8	6.2	9	6.80	3	-M8	-M8
	M 9	1.25	90	18	35	9	7	10	7.80	3	-M9	
	M 10	1.5	100	20	39	10	8	11	8.50	3	-M10	-M10



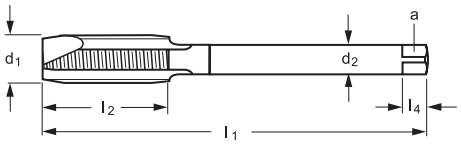
DIN 376 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20263 vap	Code 2026306 TICN
M 5	0.8	70	13	3.5	2.7	6	4.20	3	-M5	-M5
M 6	1	80	15	4.5	3.4	6	5.00	3	-M6	-M6
M 8	1.25	90	18	6	4.9	8	6.80	3	-M8	-M8

Continued on next page

1) without neck

Continuation - PROTOTEX INOX



DIN 376 - 6HX

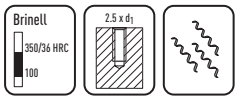
d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20263 vap	Code 2026306 TICN
M 10	**1.5**	100	20	7	5.5	8	8.50	3	-M10	-M10
M 12	**1.75**	110	23	9	7	10	10.20	4	-M12	-M12
M 14	**2**	110	25	11	9	12	12.00	4	-M14	-M14
M 16	**2**	110	25	12	9	12	14.00	4	-M16	-M16
M 18	**2.5**	125	30	14	11	14	15.50	4	-M18	
M 20	**2.5**	140	30	16	12	15	17.50	4	-M20	-M20
M 22	**2.5**	140	30	18	14.5	17	19.50	4	-M22	
M 24	**3**	160	36	18	14.5	17	21.00	4	-M24	-M24
M 27	**3**	160	36	20	16	19	24.00	4	-M27	
M 30	**3.5**	180	42	22	18	21	26.50	4	-M30	
M 33	**3.5**	180	42	25	20	23	29.50	5	-M33	
M 36	**4**	200	48	28	22	25	32.00	5	-M36	

1) without neck

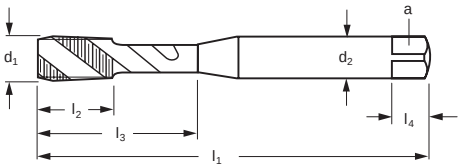
PARADUR INOX

Characteristics

Application

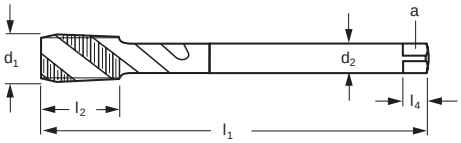


- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



DIN 371 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20513 vap	Code 2051306 TICN
1)4)	M 1.6	0.35	40	6	-	2.5	2.1	5	1.25	3	-M1.6	
1)4)	M 1.8	0.35	40	6	-	2.5	2.1	5	1.45	3	-M1.8	
4)	M 2	0.4	45	4	9	2.8	2.1	5	1.60	3	-M2	-M2
4)	M 2.2	0.45	45	4	12	2.8	2.1	5	1.75	3	-M2.2	
4)	M 2.5	0.45	50	4	12.5	2.8	2.1	5	2.05	3	-M2.5	-M2.5
4)	M 2.6	0.45	50	4	12.5	2.8	2.1	5	2.15	3	-M2.6	
	M 3	0.5	56	6	18	3.5	2.7	6	2.50	3	-M3	-M3
	M 3.5	0.6	56	6.5	20	4	3	6	2.90	3	-M3.5	
	M 4	0.7	63	7	21	4.5	3.4	6	3.30	3	-M4	-M4
	M 4.5	0.75	70	8	25	6	4.9	8	3.70	3	-M4.5	
	M 5	0.8	70	8	25	6	4.9	8	4.20	3	-M5	-M5
	M 6	1	80	10	30	6	4.9	8	5.00	3	-M6	-M6
	M 7	1	80	10	30	7	5.5	8	6.00	3	-M7	
	M 8	1.25	90	12	35	8	6.2	9	6.80	3	-M8	-M8
	M 10	1.5	100	15	39	10	8	11	8.50	3	-M10	-M10



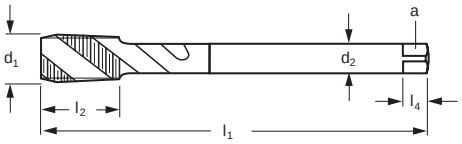
DIN 376 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20563 vap	Code 2056306 TICN
	M 6	1	80	10	4.5	3.4	6	5.00	3	-M6	-M6
	M 8	1.25	90	13	6	4.9	8	6.80	3	-M8	-M8
	M 10	1.5	100	15	7	5.5	8	8.50	3	-M10	-M10
	M 12	1.75	110	16	9	7	10	10.20	4	-M12	-M12
	M 14	2	110	20	11	9	12	12.00	4	-M14	
	M 16	2	110	20	12	9	12	14.00	4	-M16	-M16
	M 18	2.5	125	25	14	11	14	15.50	4	-M18	
	M 20	2.5	140	25	16	12	15	17.50	4	-M20	-M20
	M 22	2.5	140	25	18	14.5	17	19.50	4	-M22	

Continued on next page

1) without neck
4) without back tapering

Continuation - PARADUR INOX



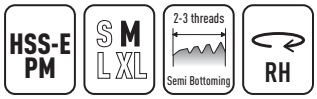
DIN 376 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20563 vap	Code 2056306 TICN
M 24	**3**	160	30	18	14.5	17	21.00	4	-M24	-M24
M 27	**3**	160	30	20	16	19	24.00	5	-M27	
M 30	**3.5**	180	35	22	18	21	26.50	5	-M30	-M30
M 33	**3.5**	180	35	25	20	23	29.50	5	-M33	
M 36	**4**	200	40	28	22	25	32.00	5	-M36	
M 42	**4.5**	200	45	32	24	27	37.50	5	-M42	

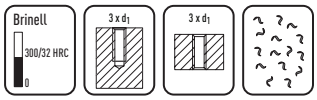
1) without neck
4) without back tapering

PARADUR GG

Characteristics



Application



- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.

DIN 371 - 6HX

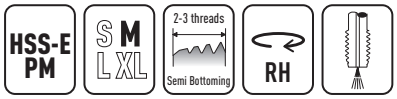
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 2031406 TICN
M 3	0.5	56	9	18	3.5	2.7	6	2.50	3	-M3
M 3.5	0.6	56	11	20	4	3	6	2.90	3	-M3.5
M 4	0.7	63	12	21	4.5	3.4	6	3.30	3	-M4
M 5	0.8	70	13	25	6	4.9	8	4.20	4	-M5
M 6	1	80	15	30	6	4.9	8	5.00	4	-M6
M 8	1.25	90	18	35	8	6.2	9	6.80	4	-M8
M 10	1.5	100	20	39	10	8	11	8.50	4	-M10

DIN 376 - 6HX

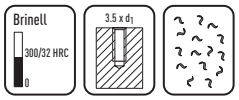
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 2036406 TICN
M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
M 14	2	110	25	-	11	9	12	12.00	4	-M14
M 16	2	110	25	-	12	9	12	14.00	4	-M16
M 18	2.5	125	30	-	14	11	14	15.50	4	-M18
M 20	2.5	140	30	-	16	12	15	17.50	4	-M20
M 24	3	160	36	-	18	14.5	17	21.00	5	-M24
M 30	3.5	180	42	-	22	18	21	26.50	5	-M30

PARADUR GG

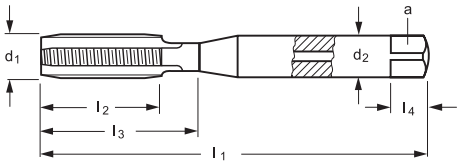
Characteristics



Application

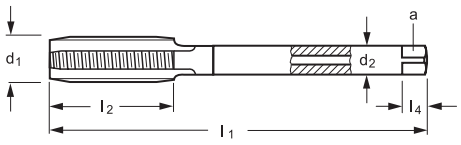


- Specially designed tap for through and blind holes in grey cast and ductile iron.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.



DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 2031416 TICN
M 4	0.7	63	12	21	4.5	3.4	6	3.30	3	-M4
M 5	0.8	70	13	25	6	4.9	8	4.20	4	-M5
M 6	1	80	15	30	6	4.9	8	5.00	4	-M6
M 7	1	80	15	30	7	5.5	8	6.00	4	-M7
M 8	1.25	90	18	35	8	6.2	9	6.80	4	-M8
M 10	1.5	100	20	39	10	8	11	8.50	4	-M10

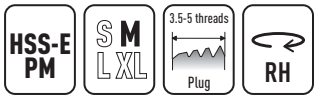


DIN 376 - 6HX

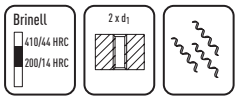
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 2036416 TICN
M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
M 14	2	110	25	-	11	9	12	12.00	4	-M14
M 16	2	110	25	-	12	9	12	14.00	4	-M16
M 18	2.5	125	30	-	14	11	14	15.50	4	-M18
M 20	2.5	140	30	-	16	12	15	17.50	4	-M20
M 22	2.5	140	30	-	18	14.5	17	19.50	4	-M22
M 24	3	160	36	-	18	14.5	17	21.00	5	-M24

PROTOTEX TINI

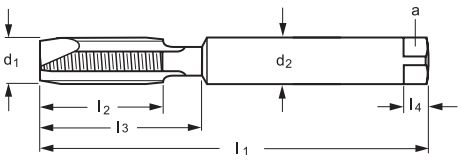
Characteristics



Application

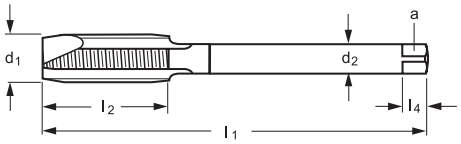


- A high degree of toughness and stability combine for successful machining of through holes in Ti / Ni-Alloys up to 44HRc.
- ≤ M 1.4: 5HX, ≥ M 1.6: 6HX



~DIN 371 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 202161
1)	M 1	0.25	40	5	-	2.5	2.1	5	0.75	2	-M1
1)	M 1.2	0.25	40	5	-	2.5	2.1	5	0.95	2	-M1.2
1)	M 1.4	0.3	40	5	-	2.5	2.1	5	1.10	2	-M1.4
1)	M 1.6	0.35	40	5	-	2.5	2.1	5	1.25	2	-M1.6
1)	M 1.8	0.35	40	5	-	2.5	2.1	5	1.45	2	-M1.8
1)	M 2	0.4	45	8	-	2.8	2.1	5	1.60	2	-M2
1)	M 2.2	0.45	45	8	-	2.8	2.1	5	1.75	2	-M2.2
1)	M 2.5	0.45	50	9	-	2.8	2.1	5	2.05	2	-M2.5
1)	M 3	0.5	56	10	-	3.5	2.7	6	2.50	2	-M3
1)	M 3.5	0.6	56	12	-	4	3	6	2.90	3	-M3.5
1)	M 4	0.7	63	13	-	4.5	3.4	6	3.30	3	-M4
1)	M 4.5	0.75	70	13	-	6	4.9	8	3.70	3	-M4.5
1)	M 5	0.8	70	16	-	6	4.9	8	4.20	3	-M5
	M 6	1	80	15	23	6	4.9	8	5.00	3	-M6
	M 8	1.25	90	18	29.5	8	6.2	9	6.80	3	-M8
	M 10	1.5	100	20	33.5	10	8	11	8.50	3	-M10



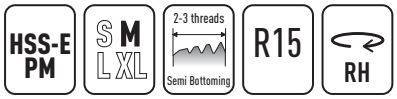
DIN 376 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 202661
	M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
	M 14	2	110	25	-	11	9	12	12.00	4	-M14
	M 16	2	110	25	-	12	9	12	14.00	4	-M16
	M 20	2.5	140	30	-	16	12	15	17.50	4	-M20
	M 24	3	160	36	-	18	14.5	17	21.00	4	-M24
	M 27	3	160	36	-	20	16	19	24.00	4	-M27

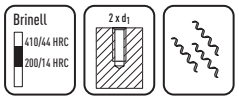
1) without neck

PARADUR TI

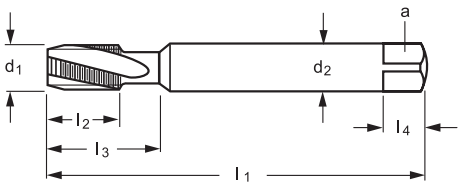
Characteristics



Application

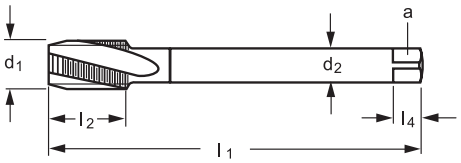


- A high degree of toughness and stability combine for successful machining of blind holes in Ti-Alloys up to 44HRc.
- ≤ M 1.4: 5HX, ≥ M 1.6: 6HX



~DIN 371 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20416
1)	M 1	0.25	40	5	-	2.5	2.1	5	0.75	3	-M1
1)	M 1.2	0.25	40	5	-	2.5	2.1	5	0.95	3	-M1.2
1)	M 1.4	0.3	40	5	-	2.5	2.1	5	1.10	3	-M1.4
1)	M 1.6	0.35	40	5	-	2.5	2.1	5	1.25	3	-M1.6
1)	M 1.8	0.35	40	5	-	2.5	2.1	5	1.45	3	-M1.8
1)	M 2	0.4	45	8	-	2.8	2.1	5	1.60	3	-M2
1)	M 2.2	0.45	45	8	-	2.8	2.1	5	1.75	3	-M2.2
1)	M 2.5	0.45	50	9	-	2.8	2.1	5	2.05	3	-M2.5
1)	M 3	0.5	56	10	-	3.5	2.7	6	2.50	3	-M3
1)	M 3.5	0.6	56	12	-	4	3	6	2.90	3	-M3.5
1)	M 4	0.7	63	13	-	4.5	3.4	6	3.30	3	-M4
1)	M 4.5	0.75	70	16	-	6	4.9	8	3.70	3	-M4.5
1)	M 5	0.8	70	16	-	6	4.9	8	4.20	3	-M5
	M 6	1	80	15	23	6	4.9	8	5.00	3	-M6
	M 8	1.25	90	18	29.5	8	6.2	9	6.80	3	-M8
	M 10	1.5	100	20	33.5	10	8	11	8.50	3	-M10



DIN 376 - 6HX

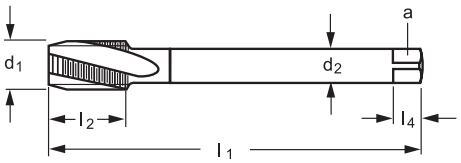
	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20466
	M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
	M 14	2	110	25	-	11	9	12	12.00	4	-M14
	M 16	2	110	25	-	12	9	12	14.00	4	-M16
	M 20	2.5	140	30	-	16	12	15	17.50	4	-M20
	M 24	3	160	36	-	18	14.5	17	21.00	5	-M24
	M 27	3	160	36	-	20	16	19	24.00	5	-M27

Continued on next page

1) without neck

Continuation - PARADUR TI

DIN 376 - 6HX

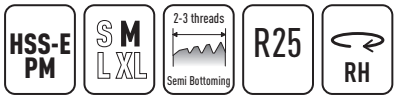


d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20466
M 30	**3.5**	180	42	-	22	18	21	26.50	5	-M30
M 33	**3.5**	180	42	-	25	20	23	29.50	5	-M33
M 36	**4**	200	48	-	28	22	25	32.00	5	-M36

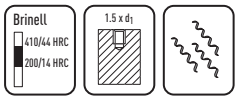
1) without neck

PARADUR NI

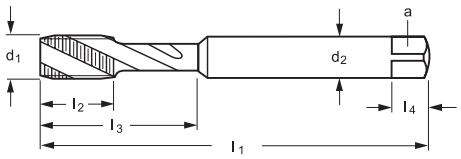
Characteristics



Application

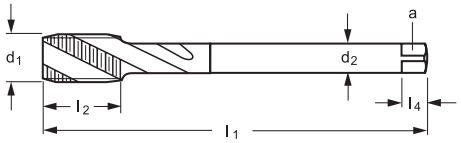


- A high degree of toughness and stability combine for successful machining of blind holes in Ni-Alloys up to 44HRc.



~DIN 371 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 204102
1)	M 2	0.4	45	8	-	2.8	2.1	5	1.60	3	-M2
1)	M 2.5	0.45	50	9	-	2.8	2.1	5	2.05	3	-M2.5
1)	M 3	0.5	56	10	-	3.5	2.7	6	2.50	3	-M3
1)	M 3.5	0.6	56	12	-	4	3	6	2.90	3	-M3.5
1)	M 4	0.7	63	13	-	4.5	3.4	6	3.30	3	-M4
1)	M 5	0.8	70	16	-	6	4.9	8	4.20	3	-M5
	M 6	1	80	15	23	6	4.9	8	5.00	3	-M6
	M 8	1.25	90	18	29.5	8	6.2	9	6.80	3	-M8
	M 10	1.5	100	20	33.5	10	8	11	8.50	4	-M10



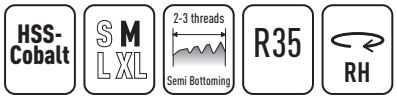
DIN 376 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 204602
	M 12	1.75	110	23	-	9	7	10	10.20	4	-M12
	M 14	2	110	25	-	11	9	12	12.00	4	-M14
	M 16	2	110	25	-	12	9	12	14.00	4	-M16
	M 18	2.5	125	30	-	14	11	14	15.50	5	-M18
	M 20	2.5	140	30	-	16	12	15	17.50	5	-M20

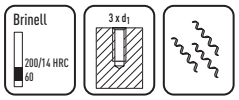
1) without neck

PARADUR WLM

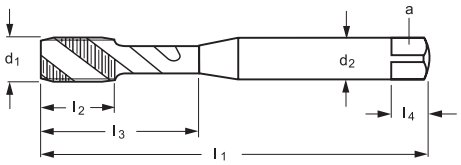
Characteristics



Application

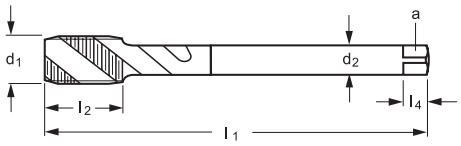


- Special tap for blind holes in soft, long chipping materials e.g. wrought Al, copper and soft construction steels.



DIN 371 - ISO2/6H

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20516
1)	M 1.6	0.35	40	6	-	2.5	2.1	5	1.25	2	-M1.6
	M 2	0.4	45	4	9	2.8	2.1	5	1.60	2	-M2
	M 2.3	0.4	45	4	12	2.8	2.1	5	1.85	2	-M2.3
	M 2.5	0.45	50	4	12.5	2.8	2.1	5	2.05	2	-M2.5
	M 3	0.5	56	6	18	3.5	2.7	6	2.50	2	-M3
	M 3.5	0.6	56	6.5	20	4	3	6	2.90	2	-M3.5
	M 4	0.7	63	7	21	4.5	3.4	6	3.30	2	-M4
	M 5	0.8	70	8	25	6	4.9	8	4.20	2	-M5
	M 6	1	80	10	30	6	4.9	8	5.00	2	-M6
	M 7	1	80	10	30	7	5.5	8	6.00	2	-M7
	M 8	1.25	90	12	35	8	6.2	9	6.80	2	-M8
	M 10	1.5	100	15	39	10	8	11	8.50	2	-M10



DIN 376 - ISO2/6H

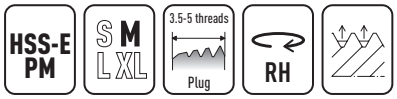
	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 20566
	M 6	1	80	10	-	4.5	3.4	6	5.00	2	-M6
	M 8	1.25	90	13	-	6	4.9	8	6.80	2	-M8
	M 10	1.5	100	15	-	7	5.5	8	8.50	2	-M10
	M 12	1.75	110	16	-	9	7	10	10.20	3	-M12
	M 14	2	110	20	-	11	9	12	12.00	3	-M14
	M 16	2	110	20	-	12	9	12	14.00	3	-M16
	M 18	2.5	125	25	-	14	11	14	15.50	3	-M18
	M 20	2.5	140	25	-	16	12	15	17.50	3	-M20

1) without neck

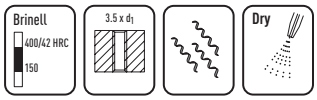
170

PROTOTEX ECO-HT

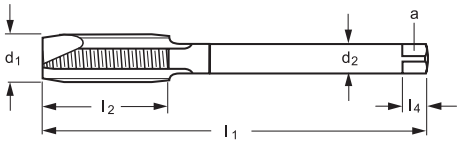
Characteristics



Application



- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.

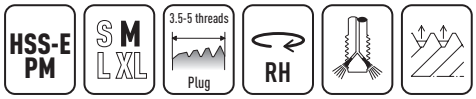


DIN 374 - 6HX

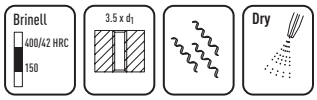
d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2126302 THL
M6	0.75	80	15	4.5	3.4	6	5.25	3	-M6X0.75
M8	1	90	18	6	4.9	8	7.00	3	-M8X1
M10	1	90	20	7	5.5	8	9.00	3	-M10X1
M12	1	100	21	9	7	10	11.00	4	-M12X1
M10	1.25	100	20	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	21	9	7	10	10.75	4	-M12X1.25
M12	1.5	100	21	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	21	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	21	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	24	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	24	16	12	15	18.50	4	-M20X1.5
M22	1.5	125	24	18	14.5	17	20.50	4	-M22X1.5

PROTOTEX ECO-HT

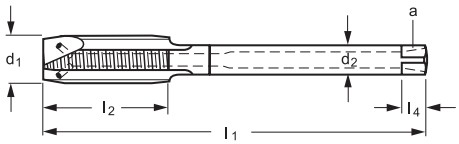
Characteristics



Application



- High performance spiral point tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Radial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.



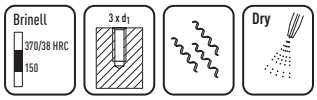
DIN 374 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2126342 THL
M8	1	90	18	6	4.9	8	7.00	3	-M8X1
M10	1	90	20	7	5.5	8	9.00	3	-M10X1
M12	1	100	21	9	7	10	11.00	4	-M12X1
M10	1.25	100	20	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	21	9	7	10	10.75	4	-M12X1.25
M12	1.5	100	21	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	21	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	21	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	24	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	24	16	12	15	18.50	4	-M20X1.5

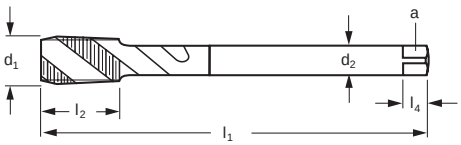
PARADUR ECO-HT

Characteristics

Application



- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Suitable for dry or MQL machining.



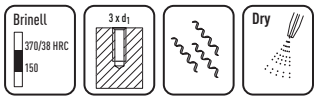
DIN 374 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2156302 THL
M6	0.75	80	10	4.5	3.4	6	5.25	3	-M6X0.75
M8	1	90	13	6	4.9	8	7.00	3	-M8X1
M10	1	90	12	7	5.5	8	9.00	3	-M10X1
M12	1	100	13	9	7	10	11.00	4	-M12X1
M10	1.25	100	15	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	13	9	7	10	10.75	4	-M12X1.25
M12	1.5	100	13	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	15	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	15	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	17	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	17	16	12	15	18.50	4	-M20X1.5
M22	1.5	125	18	18	14.5	17	20.50	5	-M22X1.5

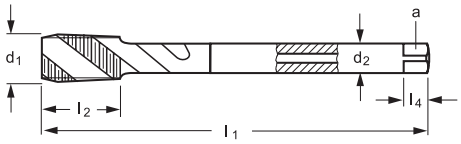
PARADUR ECO-HT

Characteristics

Application



- High performance spiral flute tap with a wide application range. Optimum choice for high volume production.
- **THL** (Hardlube) has excellent chip formation characteristics and provides increased productivity gains.
- Axial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.

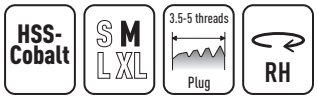


DIN 374 - 6HX

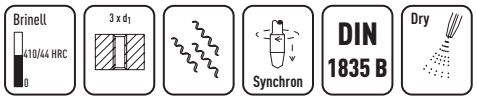
d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code E2156312 THL
M8	1	90	13	6	4.9	8	7.00	3	-M8X1
M10	1	90	12	7	5.5	8	9.00	3	-M10X1
M12	1	100	13	9	7	10	11.00	4	-M12X1
M10	1.25	100	15	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	13	9	7	10	10.75	4	-M12X1.25
M12	1.5	100	13	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	15	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	15	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	17	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	17	16	12	15	18.50	4	-M20X1.5

PROTOTEX Synchrospeed

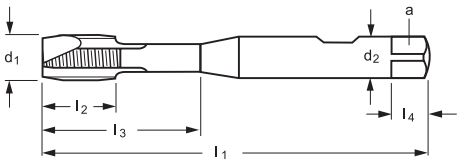
Characteristics



Application



- Rigid tap through holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for dry or MQL machining.

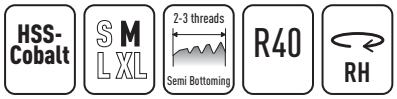


~DIN 371 - 6HX

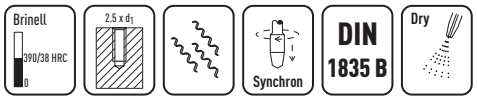
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2126305 TIN
M8	1	90	10	35	8	6.2	9	7.00	3	-M8X1
M10	1	90	10	39	10	8	11	9.00	3	-M10X1
M10	1.25	100	12.5	39	10	8	11	8.75	3	-M10X1.25
M12	1.25	100	12.5	42	12	9	12	10.75	3	-M12X1.25
M12	1.5	100	15	42	12	9	12	10.50	3	-M12X1.5
M14	1.5	100	15	49	14	11	14	12.50	3	-M14X1.5
M16	1.5	100	15	50	16	12	15	14.50	4	-M16X1.5

PARADUR Synchrospeed

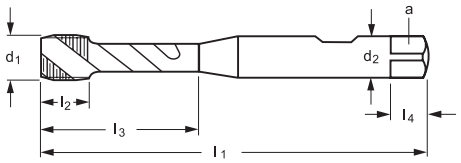
Characteristics



Application



- Rigid tap blind holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN/VAP** (Titanium Nitride+Steam Oxide) has excellent wear resistance and cutting fluid retention.
- Suitable for dry or MQL machining.



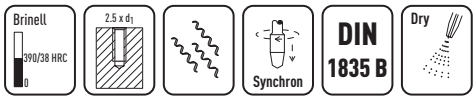
~DIN 371 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2156305 TIN/vap
M8	1	90	10.5	35	8	6.2	9	7.00	3	-M8X1
M10	1	90	10.5	39	10	8	11	9.00	3	-M10X1
M10	1.25	100	13.5	39	10	8	11	8.75	3	-M10X1.25
M12	1.25	100	13.5	42	12	9	12	10.75	3	-M12X1.25
M12	1.5	100	16	42	12	9	12	10.50	3	-M12X1.5
M14	1.5	100	16	49	14	11	14	12.50	4	-M14X1.5
M16	1.5	100	16	50	16	12	15	14.50	4	-M16X1.5

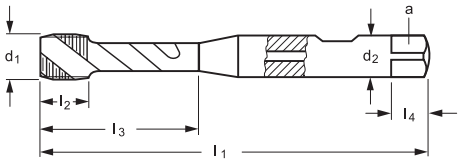
PARADUR Synchrospeed

Characteristics

Application



- Rigid tap blind holes faster and longer. Aggressive relief and a shortened guide portion boosts output in a wide range of materials.
- **TIN/VAP** (Titanium Nitride+Steam Oxide) has excellent wear resistance and cutting fluid retention.
- Axial coolant through for improved cooling and chip evacuation.
- Suitable for dry or MQL machining.

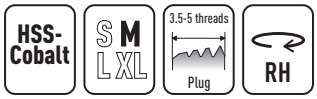


~DIN 371 - 6HX

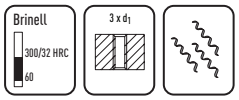
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h6 mm	a h12 mm	l_4 mm		N	Code S2156315 TIN/vap
M8	1	90	10.5	35	8	6.2	9	7.00	3	-M8X1
M10	1	90	10.5	39	10	8	11	9.00	3	-M10X1
M12	1.5	100	16	42	12	9	12	10.50	3	-M12X1.5
M14	1.5	100	16	49	14	11	14	12.50	4	-M14X1.5
M16	1.5	100	16	50	16	12	15	14.50	4	-M16X1.5

PROTOTEX H

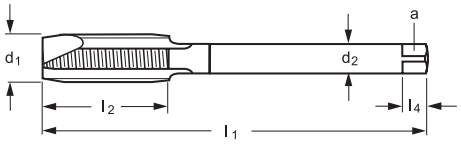
Characteristics



Application



- General application tap for through holes in short and long-chipping materials up to 32HRc.

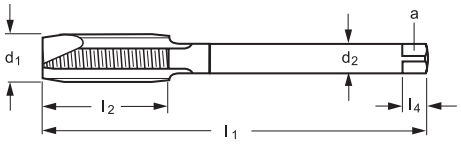


DIN 374 - ISO2/6H

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 21360
M4	0.5	63	12	2.8	2.1	5	3.50	3	-M4X0.5
M5	0.5	70	13	3.5	2.7	6	4.50	3	-M5X0.5
M6	0.5	80	15	4.5	3.4	6	5.50	3	-M6X0.5
M8	0.5	80	15	6	4.9	8	7.50	3	-M8X0.5
M10	0.5	90	20	7	5.5	8	9.50	3	-M10X0.5
M12	0.5	100	21	9	7	10	11.50	4	-M12X0.5
M6	0.75	80	15	4.5	3.4	6	5.25	3	-M6X0.75
M8	0.75	80	15	6	4.9	8	7.25	3	-M8X0.75
M10	0.75	90	20	7	5.5	8	9.25	3	-M10X0.75
M8	1	90	18	6	4.9	8	7.00	3	-M8X1
M9	1	90	18	7	5.5	8	8.00	3	-M9X1
M10	1	90	20	7	5.5	8	9.00	3	-M10X1
M12	1	100	21	9	7	10	11.00	4	-M12X1
M14	1	100	21	11	9	12	13.00	4	-M14X1
M16	1	100	21	12	9	12	15.00	4	-M16X1
M18	1	110	24	14	11	14	17.00	4	-M18X1
M20	1	125	24	16	12	15	19.00	4	-M20X1
M22	1	125	24	18	14.5	17	21.00	4	-M22X1
M24	1	140	26	18	14.5	17	23.00	4	-M24X1
M27	1	140	26	20	16	19	26.00	4	-M27X1
M30	1	150	26	22	18	21	29.00	4	-M30X1
M10	1.25	100	20	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	21	9	7	10	10.75	4	-M12X1.25
M14	1.25	100	21	11	9	12	12.75	4	-M14X1.25
M12	1.5	100	21	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	21	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	21	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	24	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	24	16	12	15	18.50	4	-M20X1.5
M22	1.5	125	24	18	14.5	17	20.50	4	-M22X1.5
M24	1.5	140	26	18	14.5	17	22.50	4	-M24X1.5
M25	1.5	140	26	18	14.5	17	23.50	4	-M25X1.5
M26	1.5	140	26	18	14.5	17	24.50	4	-M26X1.5
M27	1.5	140	26	20	16	19	25.50	4	-M27X1.5
M28	1.5	140	26	20	16	19	26.50	4	-M28X1.5
M30	1.5	150	26	22	18	21	28.50	4	-M30X1.5

Continued on next page

Continuation - PROTOTEX H

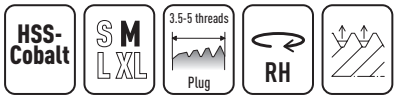


DIN 374 - ISO2/6H

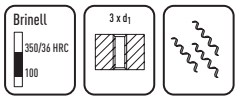
d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 21360
M32	1.5	150	26	22	18	21	30.50	4	-M32X1.5
M33	1.5	160	28	25	20	23	31.50	4	-M33X1.5
M34	1.5	170	28	28	22	25	32.50	4	-M34X1.5
M35	1.5	170	28	28	22	25	33.50	4	-M35X1.5
M36	1.5	170	28	28	22	25	34.50	4	-M36X1.5
M38	1.5	170	28	28	22	25	36.50	5	-M38X1.5
M40	1.5	170	28	32	24	27	38.50	5	-M40X1.5
M42	1.5	170	28	32	24	27	40.50	5	-M42X1.5
M45	1.5	180	28	36	29	32	43.50	5	-M45X1.5
M48	1.5	190	28	36	29	32	46.50	5	-M48X1.5
M50	1.5	190	28	36	29	32	48.50	5	-M50X1.5
M18	2	125	30	14	11	14	16.00	4	-M18X2
M20	2	140	30	16	12	15	18.00	4	-M20X2
M22	2	140	26	18	14.5	17	20.00	4	-M22X2
M24	2	140	26	18	14.5	17	22.00	4	-M24X2
M27	2	140	26	20	16	19	25.00	4	-M27X2
M30	2	150	26	22	18	21	28.00	4	-M30X2
M32	2	150	26	22	18	21	30.00	4	-M32X2
M33	2	160	28	25	20	23	31.00	4	-M33X2
M36	2	170	28	28	22	25	34.00	4	-M36X2
M39	2	170	28	32	24	27	37.00	4	-M39X2
M40	2	170	28	32	24	27	38.00	4	-M40X2
M42	2	170	28	32	24	27	40.00	4	-M42X2
M36	3	200	39	28	22	25	33.00	4	-M36X3
M42	3	200	42	32	24	27	39.00	4	-M42X3
M48	3	225	45	36	29	32	45.00	4	-M48X3

PROTOTEX INOX

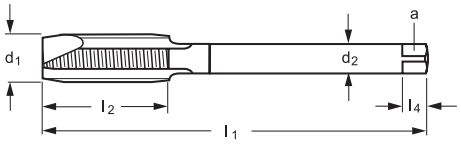
Characteristics



Application



- Through holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



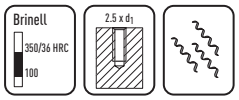
DIN 374 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 21263 vap
M8	0.5	80	15	-	6	4.9	8	7.50	3	-M8X0.5
M8	0.75	80	15	-	6	4.9	8	7.25	3	-M8X0.75
M10	0.75	90	20	-	7	5.5	8	9.25	3	-M10X0.75
M8	1	90	18	-	6	4.9	8	7.00	3	-M8X1
M10	1	90	20	-	7	5.5	8	9.00	3	-M10X1
M12	1	100	21	-	9	7	10	11.00	4	-M12X1
M14	1	100	21	-	11	9	12	13.00	4	-M14X1
M16	1	100	21	-	12	9	12	15.00	4	-M16X1
M10	1.25	100	20	-	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	21	-	9	7	10	10.75	4	-M12X1.25
M12	1.5	100	21	-	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	21	-	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	21	-	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	24	-	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	24	-	16	12	15	18.50	4	-M20X1.5
M22	1.5	125	24	-	18	14.5	17	20.50	4	-M22X1.5
M24	1.5	140	26	-	18	14.5	17	22.50	4	-M24X1.5
M20	2	140	30	-	16	12	15	18.00	4	-M20X2
M24	2	140	26	-	18	14.5	17	22.00	4	-M24X2
M27	2	140	26	-	20	16	19	25.00	4	-M27X2

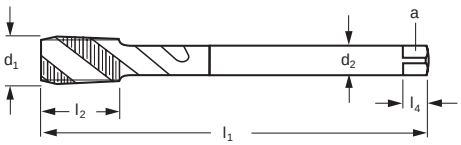
PARADUR INOX

Characteristics

Application



- Blind holes in stainless steel and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



DIN 374 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		N	Code 21563 vap
M8	0.5	80	10	-	6	4.9	8	7.50	3	-M8X0.5
M8	0.75	80	10	-	6	4.9	8	7.25	3	-M8X0.75
M10	0.75	90	12	-	7	5.5	8	9.25	3	-M10X0.75
M8	1	90	13	-	6	4.9	8	7.00	3	-M8X1
M10	1	90	12	-	7	5.5	8	9.00	3	-M10X1
M12	1	100	13	-	9	7	10	11.00	4	-M12X1
M14	1	100	15	-	11	9	12	13.00	4	-M14X1
M10	1.25	100	15	-	7	5.5	8	8.75	3	-M10X1.25
M12	1.25	100	13	-	9	7	10	10.75	4	-M12X1.25
M12	1.5	100	13	-	9	7	10	10.50	4	-M12X1.5
M14	1.5	100	15	-	11	9	12	12.50	4	-M14X1.5
M16	1.5	100	15	-	12	9	12	14.50	4	-M16X1.5
M18	1.5	110	17	-	14	11	14	16.50	4	-M18X1.5
M20	1.5	125	17	-	16	12	15	18.50	4	-M20X1.5
M22	1.5	125	18	-	18	14.5	17	20.50	5	-M22X1.5
M24	1.5	140	20	-	18	14.5	17	22.50	5	-M24X1.5
M20	2	140	25	-	16	12	15	18.00	4	-M20X2
M24	2	140	20	-	18	14.5	17	22.00	5	-M24X2
M27	2	140	20	-	20	16	19	25.00	5	-M27X2

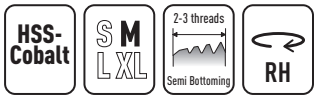
NPT and NPTF Taps in HSSE

	NPT			NPTF		
Type	PARADUR H	PARADUR 15	PARADUR 30	PARADUR H	PARADUR 15	PARADUR 30
Standard	DIN/ANSI	DIN/ANSI	DIN/ANSI	DIN/ANSI	DIN/ANSI	DIN/ANSI
Chamfer / Spiral	C	C/R15	C/R30	C	C/R15	C/R30
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	Bright	VAP	VAP	Bright	VAP	VAP
						
Range	(1/16... 3/4)	(1/16... 3/4)	(1/16... 3/4)	(1/16... 3/4)	(1/16... 3/4)	(1/16... 3/4)
Catalog No.	AC25361	A254602	A25563	AC26361	A264602	A26563
Catalog Page	183	184	185	186	187	188

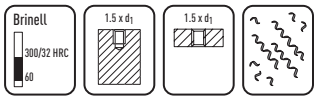
NEW

PARADUR H

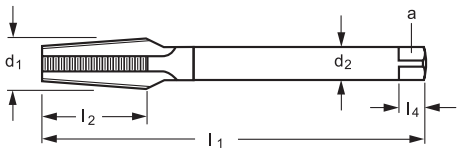
Characteristics



Application



- General application tap for short and long-chipping materials up to 32HRc.

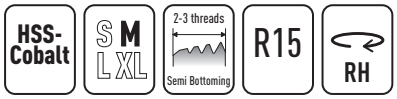


DIN/ANSI

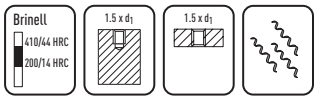
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code AC25361
	inch	inch	inch	inch	inch	inch			
1/16-27	0.304	3.150	0.551	0.313	0.234	3/8	0.2421	3	-NPT1/16 *
1/8-27	0.396	3.543	0.551	0.438	0.328	3/8	0.3307	4	-NPT1/8 *
1/4-18	0.526	3.937	0.787	0.563	0.421	7/16	0.4370	4	-NPT1/4 *
3/8-18	0.662	4.331	0.787	0.700	0.531	1/2	0.5630	5	-NPT3/8 *
1/2-14	0.825	4.921	1.024	0.688	0.515	5/8	0.7047	5	-NPT1/2 *
3/4-14	1.035	5.512	1.024	0.906	0.679	11/16	0.9173	5	-NPT3/4 *

PARADUR 15 NPT

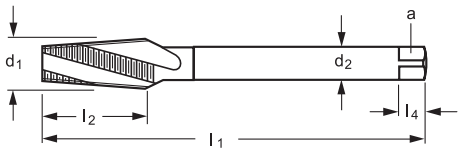
Characteristics



Application



- For producing pipe threads in tough materials such as Ti / Ni-Alloys.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.

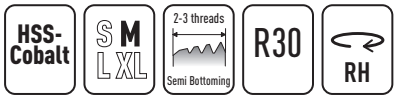


DIN/ANSI

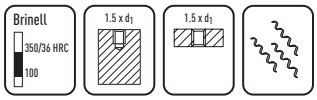
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code A254602 vap
	inch	inch	inch	inch	inch	inch			
1/16-27	**0.304**	3.150	0.551	0.313	0.234	3/8	0.2421	3	-NPT1/16
1/8-27	**0.396**	3.543	0.551	0.438	0.328	3/8	0.3307	4	-NPT1/8
1/4-18	**0.526**	3.937	0.787	0.563	0.421	7/16	0.4370	4	-NPT1/4
3/8-18	**0.662**	4.331	0.787	0.700	0.531	1/2	0.5630	5	-NPT3/8
1/2-14	**0.825**	4.921	1.024	0.688	0.515	5/8	0.7047	5	-NPT1/2
3/4-14	**1.035**	5.512	1.024	0.906	0.679	11/16	0.9173	5	-NPT3/4

PARADUR 30 NPT

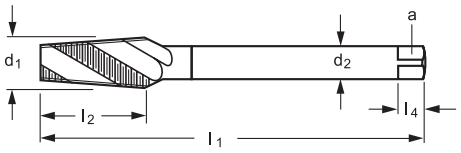
Characteristics



Application



- For producing pipe threads in stainless steels and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



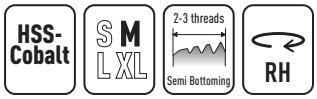
DIN/ANSI

d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code A25563 vap
	inch	inch	inch	inch	inch	inch			
1/16-27	0.304	3.150	0.551	0.313	0.234	3/8	0.2421	3	-NPT1/16
1/8-27	0.396	3.543	0.551	0.438	0.328	3/8	0.3307	4	-NPT1/8
1/4-18	0.526	3.937	0.787	0.563	0.421	7/16	0.4370	4	-NPT1/4
3/8-18	0.662	4.331	0.787	0.700	0.531	1/2	0.5630	5	-NPT3/8
1/2-14	0.825	4.921	1.024	0.688	0.515	5/8	0.7047	5	-NPT1/2
3/4-14	1.035	5.512	1.024	0.906	0.679	11/16	0.9173	5	-NPT3/4

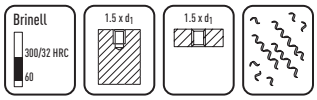
PARADUR H

NEW

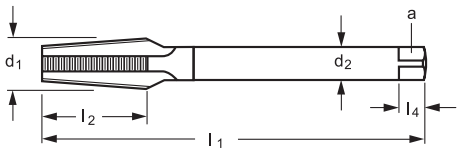
Characteristics



Application



- General application tap for short and long-chipping materials up to 32HRc.

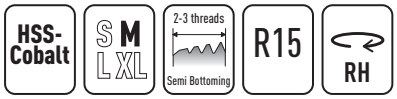


DIN/ANSI

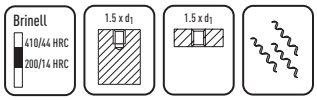
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code AC26361
	inch	inch	inch	inch	inch	inch			
1/16-27	0.301	3.150	0.551	0.313	0.234	3/8	0.2402	3	-NPTF1/16 *
1/8-27	0.393	3.543	0.551	0.438	0.328	3/8	0.3307	4	-NPTF1/8 *
1/4-18	0.524	3.937	0.787	0.563	0.421	7/16	0.4331	4	-NPTF1/4 *
3/8-18	0.660	4.331	0.787	0.700	0.531	1/2	0.5709	5	-NPTF3/8 *
1/2-14	0.824	4.921	1.024	0.688	0.515	5/8	0.6890	5	-NPTF1/2 *
3/4-14	1.034	5.512	1.024	0.906	0.679	11/16	0.9055	5	-NPTF3/4 *

PARADUR 15 NPTF

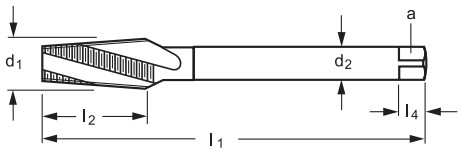
Characteristics



Application



- For producing pipe threads in tough materials such as Ti / Ni-Alloys.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.

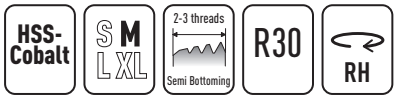


DIN/ANSI

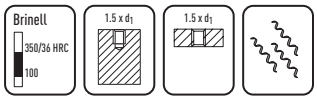
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code A264602 vap
	inch	inch	inch	inch	inch	inch			
1/16-27	**0.301**	3.150	0.551	0.313	0.234	3/8	0.2402	3	-NPTF1/16
1/8-27	**0.393**	3.543	0.551	0.438	0.328	3/8	0.3307	4	-NPTF1/8
1/4-18	**0.524**	3.937	0.787	0.563	0.421	7/16	0.4331	4	-NPTF1/4
3/8-18	**0.660**	4.331	0.787	0.700	0.531	1/2	0.5709	5	-NPTF3/8
1/2-14	**0.824**	4.921	1.024	0.688	0.515	5/8	0.6890	5	-NPTF1/2
3/4-14	**1.034**	5.512	1.024	0.906	0.679	11/16	0.9055	5	-NPTF3/4

PARADUR 30 NPTF

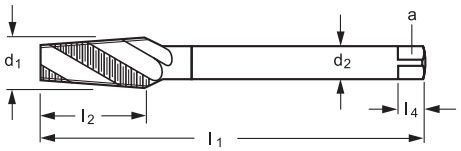
Characteristics



Application



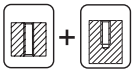
- For producing pipe threads in stainless steels and alloy-steels up to 36HRc.
- **VAP** (Steam Oxide) helps retain cutting fluids and works well in ferrous materials.



DIN/ANSI

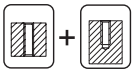
d_1-TPI	d_1	l_1	l_2	d_2	a	l_4		N	Code A26563 vap
	inch	inch	inch	inch	inch	inch			
1/16-27	**0.301**	3.150	0.551	0.313	0.234	3/8	0.2402	3	-NPTF1/16
1/8-27	**0.393**	3.543	0.551	0.438	0.328	3/8	0.3307	4	-NPTF1/8
1/4-18	**0.524**	3.937	0.787	0.563	0.421	7/16	0.4331	4	-NPTF1/4
3/8-18	**0.660**	4.331	0.787	0.700	0.531	1/2	0.5709	5	-NPTF3/8
1/2-14	**0.824**	4.921	1.024	0.688	0.515	5/8	0.6890	5	-NPTF1/2
3/4-14	**1.034**	5.512	1.024	0.906	0.679	11/16	0.9055	5	-NPTF3/4

Thread Formers in HSSE



UNC | UNF | M | MF

Type	PROTODYN S				PROTODYN ECO-HT	PROTODYN S ECO-HT	PROTODYN S ECO-INOX	PROTODYN CAP	PROTODYN S
Standard	ANSI			DIN	DIN	DIN	DIN	DIN	DIN
Chamfer / Spiral	CF	CF	CF	CF	CF	CF	CF	CF	CF
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	TIN	TIN	TIN	TIN	TIN	TIN	TIN	TIN	TIN
								 Radial	
Range	(#2...3/8)	(#0...3/8)	(M3...M10)	(M2...M10)	(M2...M10)	(M2...M10)	(M2...M10)	(M5...M10)	(M4...M6)
Catalog No.	A2261705	A2361705	A2061705	D2061705	E2061105	E2061705	E2061305	E2061745	D2161705
Catalog Page	191	192	193	198	194	195	196	197	201



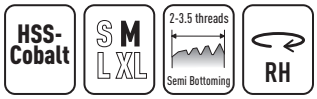
UNC | UNF | M | MF

Type	PROTODYN S				PROTODYN ECO-HT		PROTODYN S ECO-INOX	PROTODYN CAP	PROTODYN S	PROTODYN ECO-HT	PROTODYN CAP
Standard	ANSI			DIN	DIN		DIN	DIN	DIN	DIN	DIN
Chamfer / Spiral	CF	CF	CF	CF	CF		CF	CF	CF	CF	CF
Tool Material	HSSE	HSSE	HSSE	HSSE	HSSE		HSSE	HSSE	HSSE	HSSE	HSSE
Surface Treatment	TIN	TIN	TIN	TIN	TIN		TIN	TIN	TIN	TIN	TIN
								 Radial			 Radial
Range	(7/16...3/4)	(7/16...3/4)	(M12...M20)	(M12...M24)	(M12...M16)		(M12...)	(M12...M16)	(M8...M24)	(M8...M16)	(M8...M16)
Catalog No.	A2266705	A2366705	A2066705	D2066705	E2066105		E2066305	E2066745	D2166705	E2166105	E2166745
Catalog Page	191	192	193	198	194		196	197	201	199	200

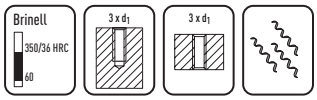
PROTODYN S

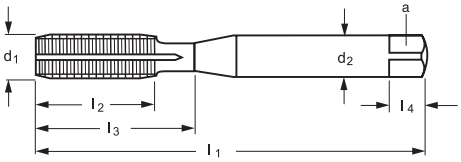
- General application thread former with lubrication grooves.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.

Characteristics



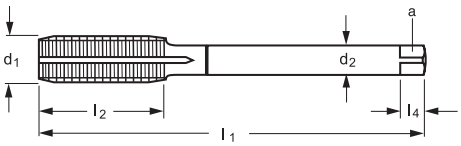
Application





ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		Code A2261705 TIN
		inch	inch	inch	inch	inch	inch	inch		
1)	No. 2-56	0.086	1 3/4	0.315	-	0.141	0.110	3/16	0.0776	-UNC2
1)	No. 4-40	0.112	1 7/8	0.394	-	0.141	0.110	3/16	0.1004	-UNC4
1)	No. 5-40	0.125	1 15/16	0.433	-	0.141	0.110	3/16	0.1130	-UNC5
1)	No. 6-32	0.138	2	0.512	-	0.141	0.110	3/16	0.1240	-UNC6
1)	No. 8-32	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1496	-UNC8
1)	No.10-24	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1693	-UNC10
	1/4-20	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2264	-UNC1/4
	5/16-18	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2854	-UNC5/16
	3/8-16	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3445	-UNC3/8



ANSI B94.9 - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		Code A2266705 TIN
	inch	inch	inch	inch	inch	inch	inch		
7/16-14	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.4055	-UNC7/16
1/2-13	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4646	-UNC1/2
9/16-12	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5236	-UNC9/16 *
5/8-11	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.5512	-UNC5/8 *
3/4-10	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.7047	-UNC3/4 *

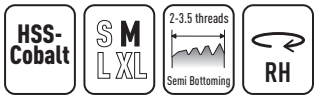
1) without neck

PROTODYN S

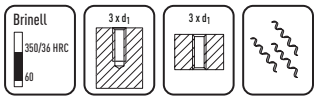
NEW Ø

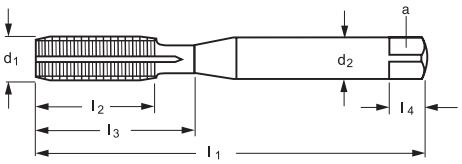
- General application thread former with lubrication grooves.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.

Characteristics



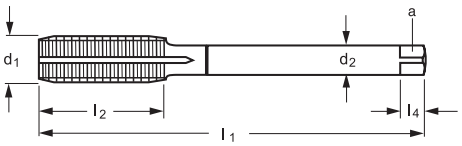
Application





ANSI B94.9 - 2B

	d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		Code A2361705 TIN
		inch	inch	inch	inch	inch	inch	inch		
1)	No. 0-80	0.060	1 5/8	0.217	-	0.141	0.110	3/16	0.0539	-UNF0
1)	No. 1-72	0.073	1 11/16	0.276	-	0.141	0.110	3/16	0.0669	-UNF1
1)	No. 6-40	0.138	2	0.512	-	0.141	0.110	3/16	0.1260	-UNF6
1)	No. 8-36	0.164	2 1/8	0.591	-	0.168	0.131	1/4	0.1516	-UNF8
1)	No.10-32	0.190	2 3/8	0.709	-	0.194	0.152	1/4	0.1752	-UNF10
1)	No.12-28	0.216	2 3/8	0.787	-	0.220	0.165	9/32	0.1988	-UNF12
	1/4-28	0.250	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2323	-UNF1/4
	5/16-24	0.313	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2933	-UNF5/16
	3/8-24	0.375	2 15/16	0.748	1.398	0.381	0.286	7/16	0.3543	-UNF3/8



ANSI B94.9 - 2B

d_1-TPI	d_1	l_1	l_2	l_3	d_2	a	l_4		Code A2366705 TIN
	inch	inch	inch	inch	inch	inch	inch		
7/16-20	0.438	3 5/32	0.866	-	0.323	0.242	13/32	0.4134	-UNF7/16
1/2-20	0.500	3 3/8	0.945	-	0.367	0.275	7/16	0.4764	-UNF1/2
9/16-18	0.563	3 19/32	1.024	-	0.429	0.322	1/2	0.5394	-UNF9/16 *
5/8-18	0.625	3 13/16	1.102	-	0.480	0.360	9/16	0.6004	-UNF5/8 *
3/4-16	0.750	4 1/4	1.181	-	0.590	0.442	11/16	0.7244	-UNF3/4 *

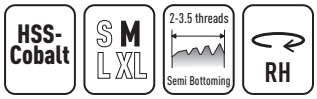
1) without neck

NEW

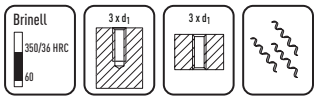
PROTODYN S

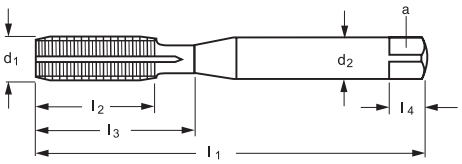
- General application thread former with lubrication grooves.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.

Characteristics



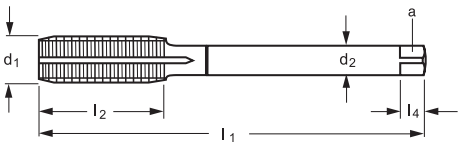
Application





ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		Code A2061705 TIN
	mm	mm	inch	inch	inch	inch	inch	inch		
1)	M 3	0.5	1 15/16	0.433	-	0.141	0.110	3/16	0.1102	-M3 *
1)	M 4	0.7	2 1/8	0.591	-	0.168	0.131	1/4	0.1457	-M4 *
1)	M 5	0.8	2 3/8	0.709	-	0.194	0.152	1/4	0.1831	-M5 *
	M 6	1	2 1/2	0.630	1.102	0.255	0.191	5/16	0.2185	-M6 *
	M 8	1.25	2 23/32	0.748	1.299	0.318	0.238	3/8	0.2913	-M8 *
	M 10	1.5	2 15/16	0.748	1.535	0.381	0.286	7/16	0.3661	-M10 *



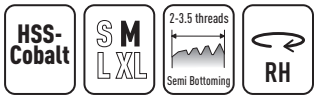
ANSI B94.9 - 6HX

	d_1	P	l_1	l_2	l_3	d_2	a	l_4		Code A2066705 TIN
	mm	mm	inch	inch	inch	inch	inch	inch		
	M 12	1.75	3 3/8	0.945	-	0.367	0.275	7/16	0.4409	-M12 *
	M 16	2	3 13/16	1.102	-	0.480	0.360	9/16	0.5945	-M16 *
	M 20	2.5	4.468	1.181	-	0.652	0.489	11/16	0.7441	-M20 *

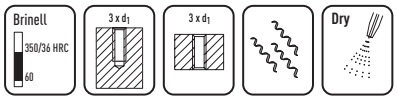
1) without neck

PROTODYN ECO-HT

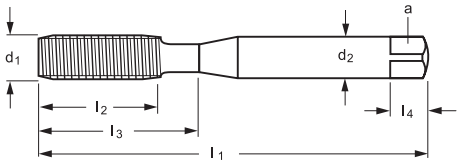
Characteristics



Application

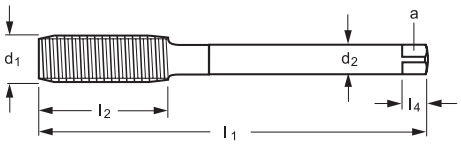


- High performance thread former with an extremely smooth surface.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for MQL machining.



DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2061105 TIN
M 2	0.4	45	6	11	2.8	2.1	5	1.82	-M2
M 2.5	0.45	50	8	12.5	2.8	2.1	5	2.30	-M2.5
M 3	0.5	56	9	18	3.5	2.7	6	2.80	-M3
M 3.5	0.6	56	11	20	4	3	6	3.25	-M3.5
M 4	0.7	63	12	21	4.5	3.4	6	3.70	-M4
M 5	0.8	70	13	25	6	4.9	8	4.65	-M5
M 6	1	80	15	30	6	4.9	8	5.55	-M6
M 8	1.25	90	18	35	8	6.2	9	7.40	-M8
M 10	1.5	100	20	39	10	8	11	9.30	-M10

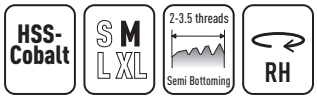


DIN 2174 - 6HX

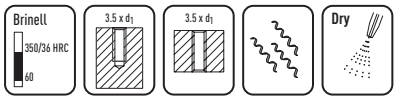
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2066105 TIN
M 12	1.75	110	23	-	9	7	10	11.20	-M12
M 14	2	110	25	-	11	9	12	13.10	-M14
M 16	2	110	25	-	12	9	12	15.10	-M16

PROTODYN S ECO-HT

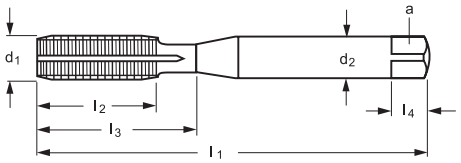
Characteristics



Application



- High performance thread former with lubrication grooves and an extremely smooth surface.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for MQL machining.



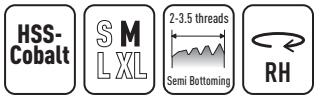
DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2061705 TIN
M 2	0.4	45	6	11	2.8	2.1	5	1.82	-M2
M 2.5	0.45	50	8	12.5	2.8	2.1	5	2.30	-M2.5
M 3	0.5	56	9	18	3.5	2.7	6	2.80	-M3
M 4	0.7	63	12	21	4.5	3.4	6	3.70	-M4
M 5	0.8	70	13	25	6	4.9	8	4.65	-M5
M 6	1	80	15	30	6	4.9	8	5.55	-M6
M 8	1.25	90	18	35	8	6.2	9	7.40	-M8
M 10	1.5	100	20	39	10	8	11	9.30	-M10

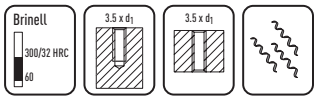
196

PROTODYN S ECO-INOX

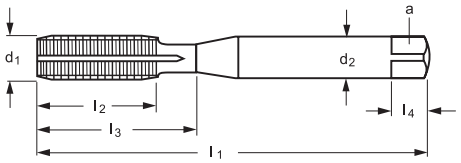
Characteristics



Application

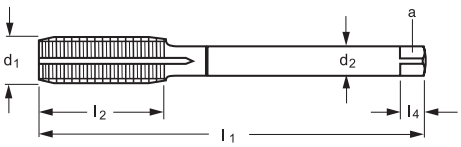


- Has a modified polygon form designed for thread forming in stainless steel using soluble oil.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



DIN 2174 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2061305 TIN
1)	M 2	0.4	45	6	-	2.8	2.1	5	1.82	-M2
1)	M 2.5	0.45	50	8	-	2.8	2.1	5	2.30	-M2.5
	M 3	0.5	56	9	18	3.5	2.7	6	2.80	-M3
	M 4	0.7	63	12	21	4.5	3.4	6	3.70	-M4
	M 5	0.8	70	13	25	6	4.9	8	4.65	-M5
	M 6	1	80	15	30	6	4.9	8	5.55	-M6
	M 8	1.25	90	18	35	8	6.2	9	7.40	-M8
	M 10	1.5	100	20	39	10	8	11	9.30	-M10



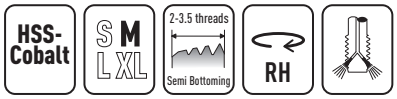
DIN 2174 - 6HX

	d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2066305 TIN
	M 12	1.75	110	23	-	9	7	10	11.20	-M12

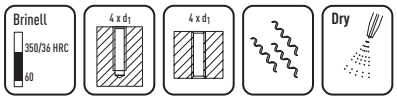
1) without neck

PROTODYN CAP

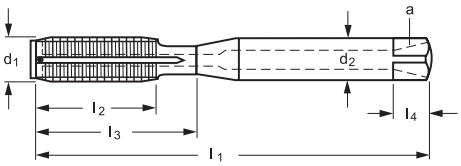
Characteristics



Application

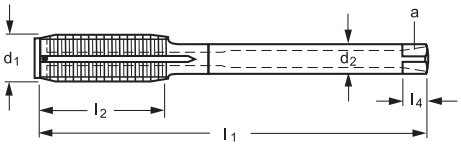


- Patented design of a laser-welded cap allows you to get radial coolant right at the chamfer, a critical factor in thread forming.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Radial coolant through for improved cooling and chip evacuation.
- Suitable for MQL machining.



DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2061745 TIN
M 5	0.8	70	13	25	6	4.9	8	4.65	-M5
M 6	1	80	15	30	6	4.9	8	5.55	-M6
M 8	1.25	90	18	35	8	6.2	9	7.40	-M8
M 10	1.5	100	20	39	10	8	11	9.30	-M10



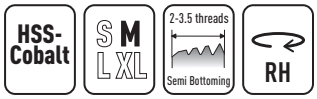
DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2066745 TIN
M 12	1.75	110	23	-	9	7	10	11.20	-M12
M 16	2	110	25	-	12	9	12	15.10	-M16

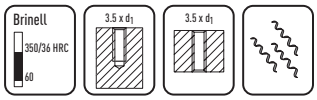
198

PROTODYN S

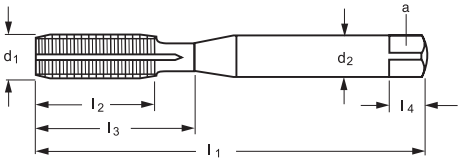
Characteristics



Application

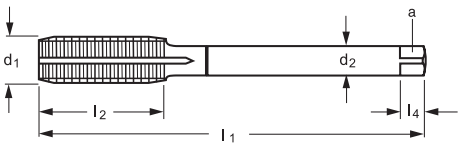


- General application thread former with lubrication grooves.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code D2061705 TIN
M 2	0.4	45	6	11	2.8	2.1	5	1.82	-M2
M 2.5	0.45	50	8	12.5	2.8	2.1	5	2.30	-M2.5
M 3	0.5	56	9	18	3.5	2.7	6	2.80	-M3
M 3.5	0.6	56	11	20	4	3	6	3.25	-M3.5
M 4	0.7	63	12	21	4.5	3.4	6	3.70	-M4
M 5	0.8	70	13	25	6	4.9	8	4.65	-M5
M 6	1	80	15	30	6	4.9	8	5.55	-M6
M 7	1	80	15	30	7	5.5	8	6.55	-M7
M 8	1.25	90	18	35	8	6.2	9	7.40	-M8
M 10	1.5	100	20	39	10	8	11	9.30	-M10

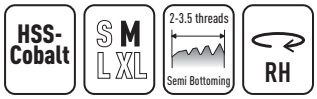


DIN 2174 - 6HX

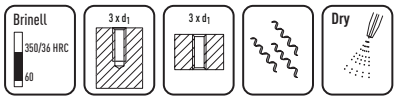
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code D2066705 TIN
M 12	1.75	110	23	-	9	7	10	11.20	-M12
M 14	2	110	25	-	11	9	12	13.10	-M14
M 16	2	110	25	-	12	9	12	15.10	-M16
M 18	2.5	125	30	-	14	11	14	16.90	-M18
M 20	2.5	140	30	-	16	12	15	18.90	-M20
M 24	3	160	36	-	18	14.5	17	22.70	-M24

PROTODYN ECO-HT

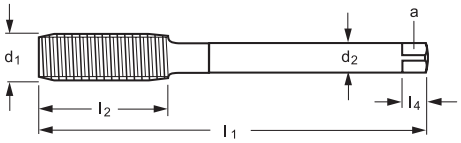
Characteristics



Application



- High performance thread former with an extremely smooth surface.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Suitable for MQL machining.



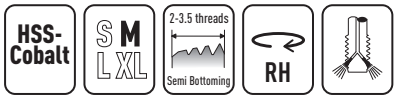
DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2166105 TIN
M8	1	90	18	6	4.9	8	7.55	-M8X1
M10	1	90	20	7	5.5	8	9.55	-M10X1
M12	1	100	21	9	7	10	11.55	-M12X1
M12	1.5	100	21	9	7	10	11.30	-M12X1.5
M14	1.5	100	21	11	9	12	13.30	-M14X1.5
M16	1.5	100	21	12	9	12	15.30	-M16X1.5

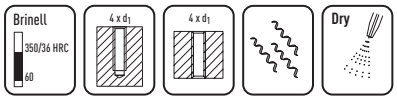
200

PROTODYN CAP

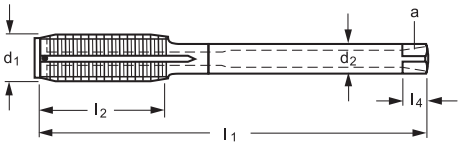
Characteristics



Application



- Patented design of a laser-welded cap allows you to get radial coolant right at the chamfer, a critical factor in thread forming.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.
- Radial coolant through for improved cooling and chip evacuation.
- Suitable for MQL machining.

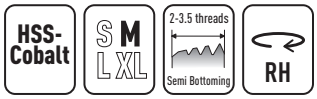


DIN 2174 - 6HX

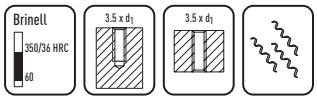
d_1 mm	P mm	l_1 js16 mm	l_2 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code E2166745 TIN
M8	1	90	18	6	4.9	8	7.55	-M8X1
M10	1	90	20	7	5.5	8	9.55	-M10X1
M12	1	100	21	9	7	10	11.55	-M12X1
M12	1.5	100	21	9	7	10	11.30	-M12X1.5
M14	1.5	100	21	11	9	12	13.30	-M14X1.5
M16	1.5	100	21	12	9	12	15.30	-M16X1.5

PROTODYN S

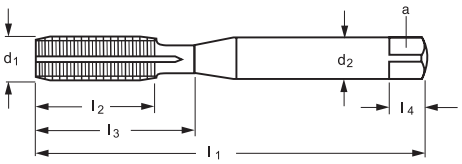
Characteristics



Application

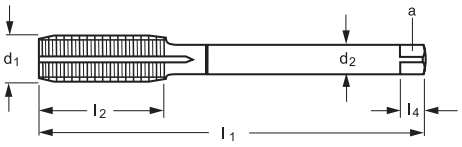


- General application thread former with lubrication grooves.
- **TIN** (Titanium Nitride) is a universal coating for increased speeds and feeds over bright tooling.



DIN 2174 - 6HX

d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code D2161705 TIN
M4	0.5	63	12	21	4.5	3.4	6	3.80	-M4X0.5
M5	0.5	70	13	25	6	4.9	8	4.80	-M5X0.5
M6	0.5	80	15	30	6	4.9	8	5.80	-M6X0.5



DIN 2174 - 6HX

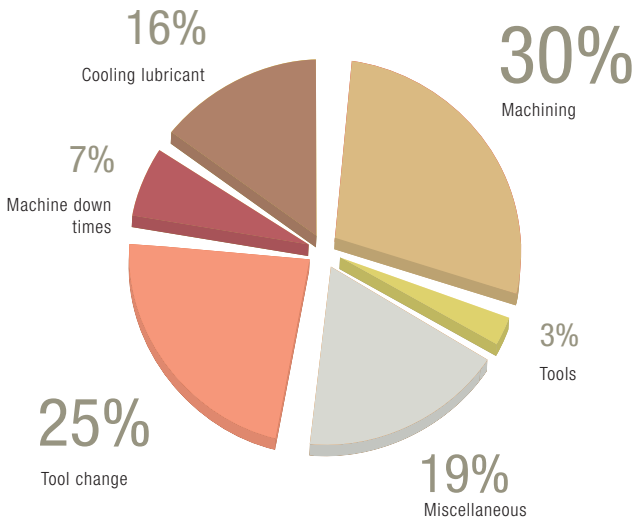
d_1 mm	P mm	l_1 js16 mm	l_2 mm	l_3 ± 1 mm	d_2 h9 mm	a h12 mm	l_4 mm		Code D2166705 TIN
M8	0.5	80	15	-	6	4.9	8	7.80	-M8X0.5
M8	0.75	80	15	-	6	4.9	8	7.65	-M8X0.75
M8	1	90	18	-	6	4.9	8	7.55	-M8X1
M10	1	90	20	-	7	5.5	8	9.55	-M10X1
M12	1	100	21	-	9	7	10	11.55	-M12X1
M10	1.25	100	20	-	7	5.5	8	9.40	-M10X1.25
M12	1.25	100	21	-	9	7	10	11.40	-M12X1.25
M12	1.5	100	21	-	9	7	10	11.30	-M12X1.5
M14	1.5	100	21	-	11	9	12	13.30	-M14X1.5
M16	1.5	100	21	-	12	9	12	15.30	-M16X1.5
M18	1.5	110	24	-	14	11	14	17.30	-M18X1.5
M20	1.5	125	24	-	16	12	15	19.30	-M20X1.5
M22	1.5	125	24	-	18	14.5	17	21.30	-M22X1.5
M24	1.5	140	26	-	18	14.5	17	23.30	-M24X1.5

Effectively reducing production costs

The investment in high-quality tools (at 3% of the overall production costs) has a very positive effect on the remaining 97% of the production costs. The following diagram illustrates the extent to which this capital investment pays off.

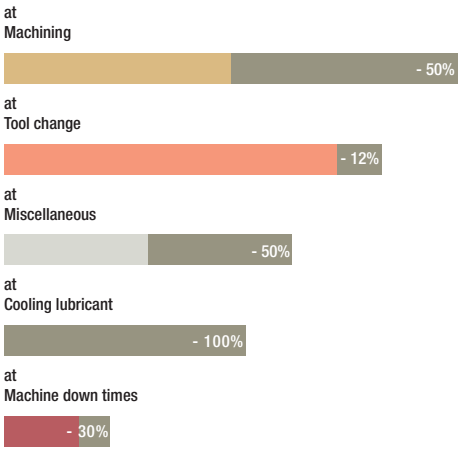
Division of production costs

The price of a tool represents only 3% of the entire production costs.



Saving costs

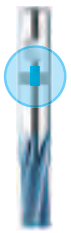
Its output does infl uence to a greater extent the remaining 97%.



Solid Carbide Thread Mills

Type	10				
Thread type	M - MF	M - MF	M - MF	M - MF	MF
Range	M3-M16	M3-M16	M4-M16	M6-M16	M6X0.5 - M28X2
Shank	DIN 6535HA	DIN 6535HA	DIN 6535HB	DIN 6535HB	DIN 6535HB
Surface Treatment	Bright	TICN	TICN	TICN	TICN
				 Axial	 Axial
Thread depth	⩽2xd1	⩽2xd1	⩽2xd1	⩽2xd1	⩽2xd1
λ_s	10°	10°	10°	10°	10°
Remarks	With countersink for chamfering internal threads				Internal threads
Catalog No.	H505100	H5051006	H5051106	H5051116	H5151116
Catalog Page	210	210	210	211	219

Type	10				27				20
Thread type	M - MF	MF	MF	MF	M - MF	M - MF	MF	MF	M - MF
Range	M6-M16	M6X0.5 - M28X2	M6X0.5 - M28X2	M6X0.5 - M28X2	M6 - M24	M6 - M14	M10X1 - M20X2	M10X1 - M20X2	M10X1 - M20X3
Shank	DIN 6535HB	DIN 6535HA	DIN 6535HA	DIN 6535HB	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HB
Surface Treatment	TICN	Bright	TICN	TICN	TICN	TICN	Bright	TICN	TICN
	 Axial				 Axial	 Axial	 Axial	 Axial	
Thread depth	⩽2xd1	⩽2xd1	⩽2xd1	⩽2xd1	⩽2xd1	⩽1.5xd1	⩽2xd1	⩽2xd1	⩽2xd1
λ_s	10°	10°	10°	10°	27°	27°	27°	27°	20°
Remarks	Internal threads				Internal threads				External threads
Catalog No.	H5041116	H515100	H5151006	H5151106	H5045016	H5035016	H515501	H5155016	H5150106
Catalog Page	209	218	218	218	214	215	221	221	213

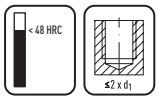
Type	10							
Thread type	UNC	UNF	G / Rp	G / Rp	G / Rp	G / Rp	NPT	NPTF
Range	1/4 UNC - 1 UNC	10 UNF - 3/4 UNF	G(Rp) 1/8 - G(Rp) 2	G(Rp) 1/8 - G(Rp) 2	G(Rp) 1/8 - G(Rp) 2	G(Rp) 1/8 - G(Rp) 2	1/16 NPT - 2 NPT	1/16 NPT - 2 NPT
Shank	DIN 6535HB	DIN 6535HB	DIN 6535HA	DIN 6535HA	DIN 6535HB	DIN 6535HB	DIN 6535HB	DIN 6535HB
Surface Treatment	TICN	TICN	Bright	TICN	TICN	TICN	TICN	TICN
	 Axial	 Axial				 Axial		
Thread depth	⩽2xd1	⩽2xd1	⩽1.5xd1	⩽1.5xd1	⩽1.5xd1	⩽1.5xd1		
λ_s	10°	10°	10°	10°	10°	10°	10°	10°
Remarks	Internal threads		Internal and external threads				Internal threads	
Catalog No.	H5251116	H5351116	H545200	H5452006	H5452106	H5452116	H5551106	H5651106
Catalog Page	206	206	223	223	223	224	222	222

Type	10		NI 27			
Thread type	M - MF	M - MF	MJ	MJ	UNJF	UNJF
Range	M6 - M16	M12X1 - M14X1.5	MJ4 - MJ6	MJ8 - MJ12	10-32 UNJF - 1/4 UNJF	5/16 UNJF - 1/2 UNJF
Shank	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA
Surface Treatment	TAX	TAX	TICN	TICN	TICN	TICN
				 Axial		 Axial
Thread depth	⩽1.5xd1	⩽1.5xd1	⩽1.5xd1	⩽1.5xd1	⩽1.5xd1	⩽1.5xd1
λ_s	10°	10°	27°	27°	27°	27°
Remarks	Hard machining internal threads		Internal threads in Titanium and Nickel alloys			
Catalog No.	H5053008	H5153008	H5036006	H5036016	H5336006	H5336016
Catalog Page	212	220	216	217	207	208

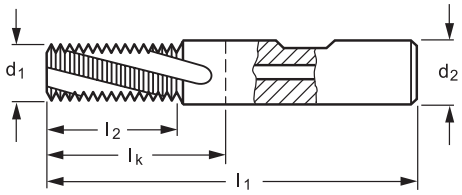
10

Characteristics

Application

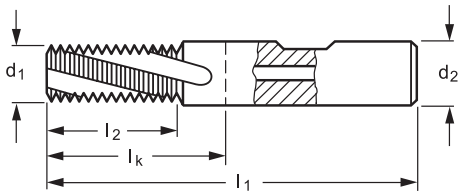


- All-purpose thread mill for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.



DIN 6535HB

	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5251116 TICN
1/4-UNC	20	4.8	13.97	57	21	6	3	-UNC1/4
5/16-UNC	18	5.5	14.11	57	21	6	3	-UNC5/16
3/8-UNC	16	7.5	19.05	63	27	8	4	-UNC3/8
7/16-UNC	14	8	19.95	63	27	8	4	-UNC7/16
1/2-UNC	13	10	21.49	72	32	10	4	-UNC1/2
9/16-UNC	12	10	21.16	72	32	10	4	-UNC9/16
5/8-UNC	11	12	25.4	83	38	12	4	-UNC5/8
3/4-UNC	10	14	33.02	83	38	14	5	-UNC3/4
7/8-UNC	9	16	36.69	92	44	16	5	-UNC7/8
1-8-UNC	8	18	38.1	104	54	20	5	-UNC1
8-UN	8	20	44.45	116	60	20	5	-UN1X8



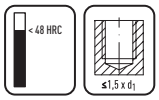
DIN 6535HB

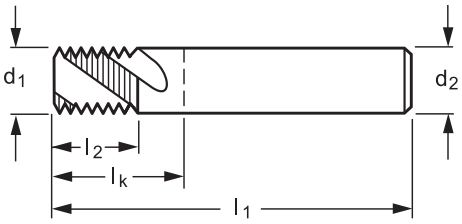
	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5351116 TICN
10-32 UNF	32	3.6	10.32	54	17	6	3	-UNF10
1/4-UNF	28	4.8	13.61	57	21	6	3	-UNF1/4
5/16-UNF 3/8-UNF	24	6	13.75	57	21	6	3	-UNF5/16
7/16-UNF 1/2-UNF	20	8	19.05	63	27	8	4	-UNF7/16
9/16-UNF 5/8-UNF	18	10	22.57	72	32	10	4	-UNF9/16
3/4-UNF	16	14	31.75	83	38	14	5	-UNF3/4

Ni 27

Characteristics

Application





- Specially designed thread mill for internal thread production in Titanium and Nickel-Cobalt alloys up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- With rounded crest profile.

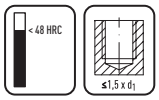
DIN 6535HA

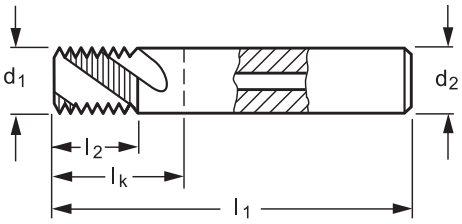
	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5336006 TICN
10-32 UNJF	32	3.6	7.94	54	18	6	3	-UNJF10
1/4-UNJF	28	4.8	9.98	54	18	6	3	-UNJF1/4

Ni 27

Characteristics

Application





- Specially designed thread mill for internal thread production in Titanium and Nickel-Cobalt alloys up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.
- With rounded crest profile.

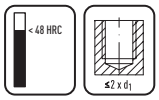
DIN 6535HA

	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5336016 TICN
5/16-UNJF	24	6.2	12.7	58	22	8	3	-UNJF5/16
3/8-UNJF	24	8	14.82	58	22	8	3	-UNJF3/8
7/16-UNJF	20	9.2	17.78	72	26	10	4	-UNJF7/16
1/2-UNJF	20	10.5	19.05	73	28	12	4	-UNJF1/2

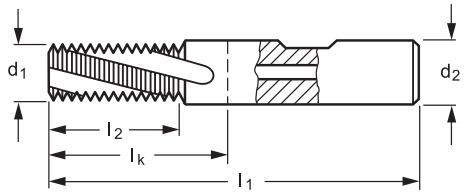
10

Characteristics

Application



- All-purpose thread mill for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.

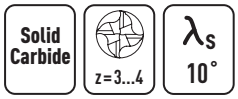


DIN 6535HB

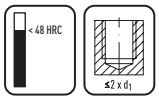
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5041116 TICN
M 6	1	4.5	13	57	21	6	4	-M6
M 8	1.25	6	17.5	65	29	6	4	-M8
M 10	1.5	7.5	21	72	36	8	4	-M10
M 12	1.75	9.5	26.25	80	40	10	4	-M12
M 14	2	10	30	83	43	10	5	-M14
M 16	2	12	34	92	47	12	5	-M16

10

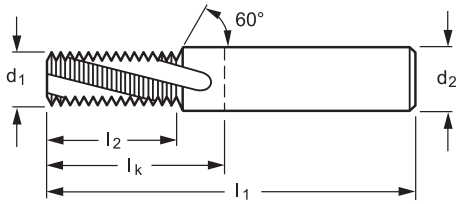
Characteristics



Application



- All-purpose thread mill with chamfering capability for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



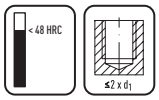
DIN 6535HA | DIN 6535HA | DIN 6535HB

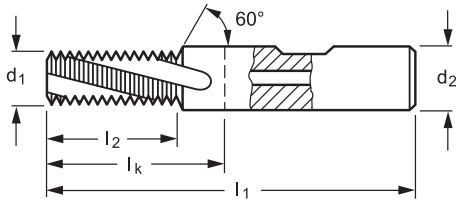
	P	d_1	l_2	l_1	l_k	d_2 h6	N	Code H505100	Code H5051006 TICN	Code H5051106 TICN
	mm	mm	mm	mm	mm	mm				
M 3	0.5	2.3	6.5	57	21	6	3	-M3	-M3	
M 4	0.7	3.2	8.4	57	21	6	3	-M4	-M4	-M4
M 5	0.8	4.1	11.2	57	21	6	3	-M5	-M5	-M5
M 6	1	4.8	13	63	27	8	3	-M6	-M6	-M6
M 8	1.25	6.5	17.5	72	32	10	3	-M8	-M8	-M8
M 10	1.5	8.2	21	83	38	12	3	-M10	-M10	-M10
M 12	1.75	9.9	26.25	83	38	14	4	-M12	-M12	-M12
M 14	2	11.6	30	92	44	16	4	-M14	-M14	-M14
M 16	2	13.6	34	92	44	18	4	-M16	-M16	-M16

10

Characteristics

Application





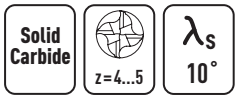
- All-purpose thread mill with chamfering capability for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.

DIN 6535HB

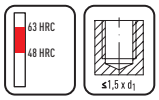
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5051116 TICN
M 6	1	4.8	13	63	27	8	3	-M6
M 8	1.25	6.5	17.5	72	32	10	3	-M8
M 10	1.5	8.2	21	83	38	12	3	-M10
M 12	1.75	9.9	26.25	83	38	14	4	-M12
M 14	2	11.6	30	92	44	16	4	-M14
M 16	2	13.6	34	92	44	18	4	-M16

10

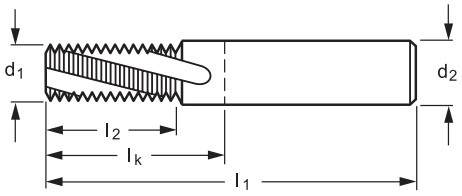
Characteristics



Application



- Specially designed thread mill for internal thread production in hardened materials from 48-63HRc.
- **TAX** (Titanium Aluminum Nitride) is a mono-layer coating with high hardness and heat resistance.

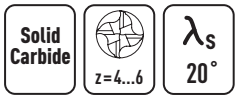


DIN 6535HA

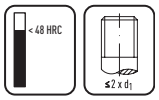
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5053008 TAX
M 6	1	4.5	10	57	21	6	4	-M6
M 8	1.25	6	12.5	57	21	6	5	-M8
M 10	1.5	8	16.5	63	27	8	5	-M10
M 12	1.75	9	19.25	72	32	10	5	-M12
M 16	2	12	26	83	38	12	5	-M16

20

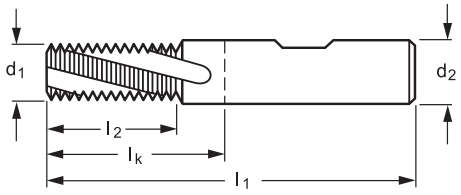
Characteristics



Application



- All-purpose thread mill for producing external threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



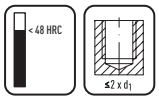
DIN 6535HB

P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5150106 TICN
1	10	16	72	32	10	4	-M10X1
1.5	12	22.5	83	38	12	5	-M12X1.5
1	16	30	92	44	16	6	-M16X1
1.25	16	30	92	44	16	6	-M16X1.25
1.5	16	30	92	44	16	6	-M16X1.5
1.75	16	29.75	92	44	16	6	-M16X1.75
2	16	30	92	44	16	6	-M16X2
3	20	42	104	54	20	6	-M20X3

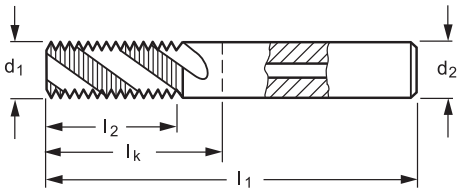
27

Characteristics

Application



- All-purpose thread mill for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.



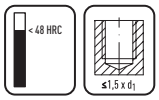
DIN 6535HA

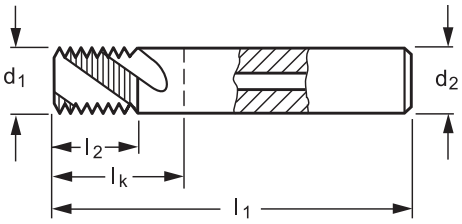
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5045016 TICN
M 6	1	4.5	13	57	21	6	3	-M6
M 8	1.25	6	17.5	65	29	6	3	-M8
M 10	1.5	7.5	21	72	36	8	3	-M10
M 12	1.75	9.5	26.25	80	40	10	3	-M12
M 14	2	10	30	83	43	10	4	-M14
M 16	2	12	34	92	47	12	4	-M16
⩾M20x2.5	2.5	16	32.5	92	44	16	4	-M20
⩾M24x3	3	19	39	104	54	20	4	-M24

27

Characteristics

Application





- All-purpose thread mill with a stub design for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.

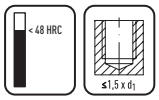
DIN 6535HA

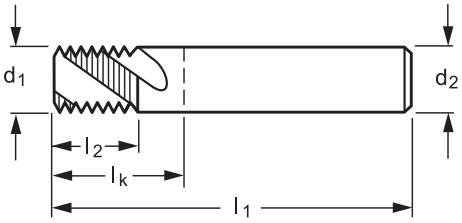
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5035016 TICN
M 6	1	4.5	9	51	15	6	4	-M6
M 8	1.25	6	12.5	55	19	6	4	-M8
M 10	1.5	7.5	15	59	23	8	4	-M10
M 12	1.75	9.5	19.25	70	30	10	4	-M12
M 14	2	10	22	72	32	10	5	-M14

Ni 27

Characteristics

Application





- Specially designed thread mill for internal thread production in Titanium and Nickel-Cobalt alloys up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- With rounded crest profile

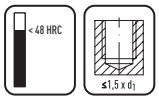
DIN 6535HA

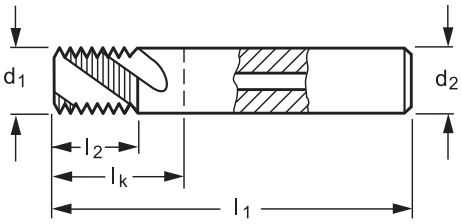
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5036006 TICN
MJ4	0.7	3	6.3	54	18	6	3	-MJ4
MJ5	0.8	3.9	8	54	18	6	3	-MJ5
MJ6	1	4.8	9	54	20	6	3	-MJ6

Ni 27

Characteristics

Application





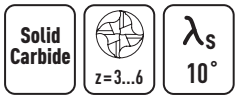
- Specially designed thread mill for internal thread production in Titanium and Nickel-Cobalt alloys up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.
- With rounded crest profile.

DIN 6535HA

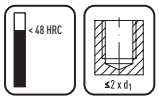
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5036016 TICN
MJ8	**1.25**	6.3	12.5	58	22	8	4	-MJ8
MJ10	**1.5**	7.5	15	58	22	8	4	-MJ10
MJ12	**1.75**	9.5	19.25	72	26	10	4	-MJ12

10

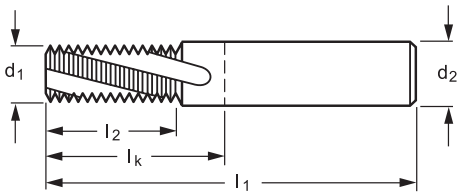
Characteristics



Application



- All-purpose thread mill for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.



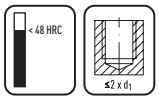
DIN 6535HA | DIN 6535HA | DIN 6535HB

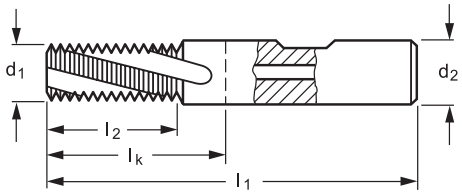
	P	d_1	l_2	l_1	l_k	d_2 h6	N	Code H515100	Code H5151006 TICN	Code H5151106 TICN
	mm	mm	mm	mm	mm	mm				
≥M6x0.5	0.5	4.8	10	57	21	6	3	-M6X0.5	-M6X0.5	-M6X0.5
≥M8x0.75	0.75	6	12	57	21	6	3	-M8X0.75	-M8X0.75	-M8X0.75
≥M8x1	1	6	12	57	21	6	3	-M8X1	-M8X1	-M8X1
≥M10x0.5	0.5	8	16	63	27	8	4	-M10X0.5	-M10X0.5	-M10X0.5
≥M10x1	1	8	16	63	27	8	4	-M10X1	-M10X1	-M10X1
≥M12x1	1	10	20	72	32	10	4	-M12X1	-M12X1	-M12X1
≥M12x1.25	1.25	10	20	72	32	10	4	-M12X1.25	-M12X1.25	-M12X1.25
≥M12x1.5	1.5	10	21	72	32	10	4	-M12X1.5	-M12X1.5	-M12X1.5
≥M14x1	1	12	22	83	38	12	4	-M14X1	-M14X1	-M14X1
≥M14x1.5	1.5	12	22.5	83	38	12	4	-M14X1.5	-M14X1.5	-M14X1.5
≥M16x1	1	14	26	83	38	14	5	-M16X1	-M16X1	-M16X1
≥M16x1.5	1.5	14	27	83	38	14	5	-M16X1.5	-M16X1.5	-M16X1.5
≥M18x1	1	16	30	92	44	16	5	-M18X1	-M18X1	-M18X1
≥M18x1.5	1.5	16	30	92	44	16	5	-M18X1.5	-M18X1.5	-M18X1.5
≥M20x2	2	16	30	92	44	16	5	-M20X2	-M20X2	-M20X2
≥M20x2.5	2.5	16	42.5	105	57	16	5	-M20X2.5	-M20X2.5	-M20X2.5
≥M24x3	3	19	51	125	75	20	5	-M24X3	-M24X3	-M24X3
≥M24x2	2	20	36	104	54	20	5	-M24X2	-M24X2	-M24X2
≥M28x2	2	25	46	121	65	25	6	-M28X2	-M28X2	-M28X2

10

Characteristics

Application





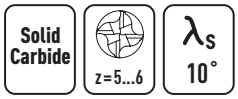
- All-purpose thread mill for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.

DIN 6535HB

	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5151116 TICN
≥M6x0.5	0.5	4.8	10	57	21	6	3	-M6X0.5
≥M8x0.75	0.75	6	12	57	21	6	3	-M8X0.75
≥M8x1	1	6	12	57	21	6	3	-M8X1
≥M10x0.5	0.5	8	16	63	27	8	4	-M10X0.5
≥M10x1	1	8	16	63	27	8	4	-M10X1
≥M12x1	1	10	20	72	32	10	4	-M12X1
≥M12x1.25	1.25	10	20	72	32	10	4	-M12X1.25
≥M12x1.5	1.5	10	21	72	32	10	4	-M12X1.5
≥M14x1	1	12	22	83	38	12	4	-M14X1
≥M14x1.5	1.5	12	22.5	83	38	12	4	-M14X1.5
≥M16x1	1	14	26	83	38	14	5	-M16X1
≥M16x1.5	1.5	14	27	83	38	14	5	-M16X1.5
≥M18x1	1	16	30	92	44	16	5	-M18X1
≥M18x1.5	1.5	16	30	92	44	16	5	-M18X1.5
≥M20x2	2	16	30	92	44	16	5	-M20X2
≥M20x2.5	2.5	16	42.5	105	57	16	5	-M20X2.5
≥M24x3	3	19	51	125	75	20	5	-M24X3
≥M24x2	2	20	36	104	54	20	5	-M24X2
≥M28x2	2	25	46	121	65	25	6	-M28X2

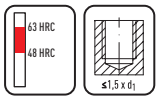
10

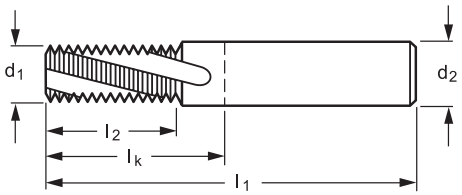
Characteristics



- Specially designed thread mill for internal thread production in hardened materials from 48-63HRc.
- **TAX** (Titanium Aluminum Nitride) is a mono-layer coating with high hardness and heat resistance.

Application



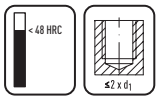


DIN 6535HA

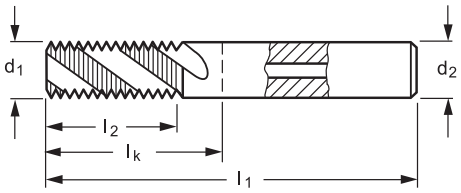
	P mm	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5153008 TAX
⩾M12x1	1	10	20	72	32	10	5	-M12X1
⩾M14x1.5	1.5	12	27	83	38	12	6	-M14X1.5

Characteristics

Application



- All-purpose thread mill for producing internal threads in all material groups up to 48HRc.
- **TICN** (Titanium Carbon-Nitride) is a universal coating with high toughness and shock resistance.
- Axial coolant through for improved cooling and chip evacuation.

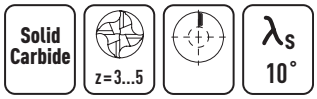


DIN 6535HA | DIN 6535HA

	P	d_1	l_2	l_1	l_k	d_2 h6	N	Code H515501	Code H5155016 TICN
	mm	mm	mm	mm	mm	mm			
≥M10x1	1	8	16	63	27	8	3	-M10X1	-M10X1
≥M12x1	1	10	20	72	32	10	3	-M12X1	-M12X1
≥M12x1.5	1.5	10	21	72	32	10	3	-M12X1.5	-M12X1.5
≥M14x1	1	12	22	83	38	12	3	-M14X1	-M14X1
≥M14x1.5	1.5	12	22.5	83	38	12	3	-M14X1.5	-M14X1.5
≥M16x1	1	14	26	83	38	14	4	-M16X1	-M16X1
≥M16x1.5	1.5	14	27	83	38	14	4	-M16X1.5	-M16X1.5
≥M18x1	1	16	30	92	44	16	4	-M18X1	-M18X1
≥M18x1.5	1.5	16	30	92	44	16	4	-M18X1.5	-M18X1.5
≥M20x2	2	16	30	92	44	16	4	-M20X2	-M20X2

10

Characteristics



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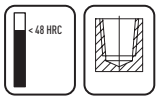
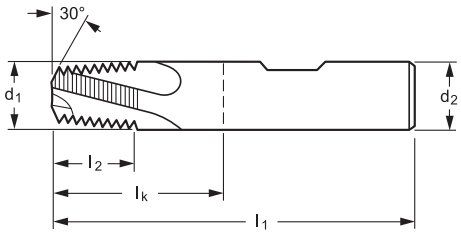
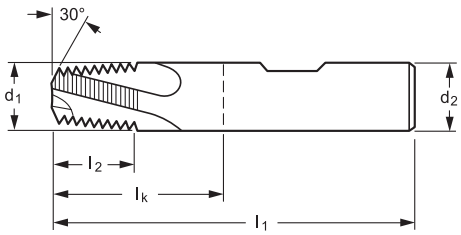
Application





DIN 6535HB

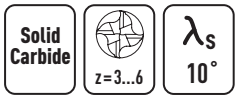
	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5551106 TICN
1/16-NPT	27	5.5	11.5	57	21	6	3	-NPT1/16
1/8-NPT	27	7.9	11.5	58	22	8	3	-NPT1/8
1/4 - 3/8-NPT	18	9.9	15.92	66	26	10	3	-NPT1/4-3/8
1/2 - 3/4-NPT	14	15.9	20.46	82	34	16	4	-NPT1/2-3/4
1 - 2-NPT	11.5	19.9	27.12	92	42	20	5	-NPT1-2



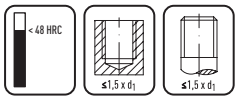
DIN 6535HB

	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5651106 TICN
1/16-NPTF	27	5.5	11.5	57	21	6	3	-NPTF1/16
1/8-NPTF	27	7.9	11.5	58	22	8	3	-NPTF1/8
1/4 - 3/8-NPTF	18	9.9	15.92	66	26	10	3	-NPTF1/4-3/8
1/2 - 3/4-NPTF	14	15.9	20.46	82	34	16	4	-NPTF1/2-3/4
1 - 2-NPTF	11.5	19.9	27.12	92	42	20	5	-NPTF1-2

Characteristics



Application



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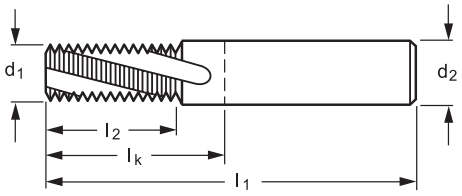


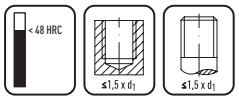
DIN 6535HA | DIN 6535HA | DIN 6535HB

	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H545200	Code H5452006 TICN	Code H5452106 TICN
G1/8 Rp1/8	28	6	15.42	57	21	6	3	-G1/8	-G1/8	-G1/8
G1/4 Rp1/4	19	10	20.05	72	32	10	4	-G1/4	-G1/4	-G1/4
G3/8 Rp3/8	19	14	26.72	83	38	14	5	-G3/8	-G3/8	-G3/8
G1/2 G5/8 Rp1/2 Rp5/8	14	16	30.8	92	44	16	5	-G1/2	-G1/2	-G1/2
G5/8 G3/4 G7/8 Rp5/8 Rp3/4 Rp7/8	14	20	36.28	104	54	20	5	-G5/8	-G5/8	-G5/8
G1- G2 Rp1 - Rp2	11	20	46.18	125	75	20	5	-G1X20	-G1X20	
G1- G2 Rp1 - Rp2	11	25	46.18	121	65	25	6	-G1X25	-G1X25	-G1X25

10

Characteristics

Application



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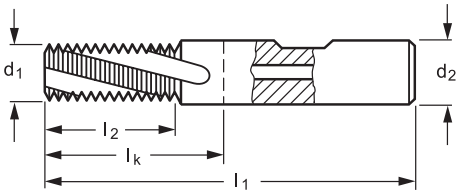


DIN 6535HB

	P No per Inch	d_1 mm	l_2 mm	l_1 mm	l_k mm	d_2 h6 mm	N	Code H5452116 TICN
G1/8 Rp1/8	28	6	15.42	57	21	6	3	-G1/8
G1/4 Rp1/4	19	10	20.05	72	32	10	4	-G1/4
G3/8 Rp3/8	19	14	26.72	83	38	14	5	-G3/8
G1/2 G5/8 Rp1/2 Rp5/8	14	16	30.8	92	44	16	5	-G1/2
G5/8 G3/4 G7/8 Rp5/8 Rp3/4 Rp7/8	14	20	36.28	104	54	20	5	-G5/8
G1- G2 Rp1 - Rp2	11	25	46.18	121	65	25	6	-G1X25

PROTOTYP High Speed Steels

The most commonly used cutting materials for taps is high speed steels. They offer the following advantages:
– High toughness
– Easy machining
– Low costs

Four groups of High Speed Steels are used for PROTOTYP tools

HSS High Speed Steel for general purposes. (Hand taps)

HSS-Cobalt High Speed Steel with 5 % Co. to withstand higher stress, especially thermal stress. (High performance machine taps)

HSS-E Co8 High Speed Steel with 8 % Co. gives maximum thermal loading. corresponds to the American standard designation M42. (Special tools)

HSS-E PM High Speed Steel with a very high alloy content. manufactured using powder metallurgy. Advantages: High purity and evenness of microstructure, high wear resistance and ability to withstand thermal loading. (High performance taps, special tools)

PROTOTYP Tool designation	Material no.	Abbreviation	Old standard designation	American standard designation AISI-ASTM	French standard designation AFNOR	British standard designation BS	Italian standard designation UNI	C	Cr	W	Mo	V	Co
HSS	1.3343	S 6-5-2	DMo5	M2	-	BM2	HS 6-5-2	0.82	4.0	6.5	5.0	2.0	-
HSS-Cobalt	1.3243	S 6-5-2-5	EMo5 Co5	M35	6.5.2.5	-	HS 6-5-2-5	0.82	4.5	6.0	5.0	2.0	5.0
HSS-E Co8	1.3247	S 2-10-1-8	-	M42	-	BM42	HS 2-9-1-8	1.08	4.0	1.5	9.5	9.5	8.25
HSS-E PM	Commercial designation ASP												

PROTOTYP Carbides

Carbides are being used to an increasing extent as the cutting material of choice for rotary tools. They demonstrate the following advantages, compared with the High Speed Steels traditionally used in this sector:

– Higher hardness and wear-resistance
– Greater hardness at high temperatures (heat-resistance)
– Greater stiffness (2.5 to 3 times the Young‘s modulus of HSS)
– Sharper cutting edges (no grinding burrs)

Carbide structure

Carbides consist primarily of tungsten carbide (WC) as the hard material and cobalt (Co) as the bonding agent. The cobalt content is usually between 6 and 12 %. The rule of thumb here is:

The higher the cobalt content, the greater the toughness but the lower the wear-resistance and vice versa.

A further defining factor in carbides is the grain size. Hardness increases as the grain size decreases.

Surface treatment properties

Surface treatment properties

	Nitrided	Steam Oxide	Nitrided+Steam Oxide
Catalog code	nit	vap	nid
Coating material	FeN	Fe_3O_4	FeN+Fe_3O_4
Micro-hardness (HV0.05)	1300	400	1300
Coating thickness (0.001 mm)	approx. 20	max. 5	approx. 25
Internal stress			
Application temperature max. (°C)	550	550	550
Color	grey	grey-black	grey-black
Treatment structure	Diffusion zone	Conversion into substrate	Diffusion + substrate

Coating properties

	Hard Chroming	Titanium Nitride	Titanium Nitride-Steam Oxide	Titanium Carbonitride
Catalog code	hcr	TIN	TIN-VAP	TICN
Coating material	Cr	TiN	TIN / Fe_3O_4	Ti(C)N
Micro-hardness (HV0.05)	1100	2300	2.300 / 400	3000
Coating thickness (0.001 mm)	max. 5	3-4	3-4 / max. 5	3-4
Internal stress		-2.5	-2.5	-4.0
Application temperature max. (°C)	550	600	600 / 550	400
Color	silver	gold	gold / grey-black	violet-grey
Treatment structure	Monolayer	Monolayer	Monolayer / Conversion into substrate	Mulitlayer

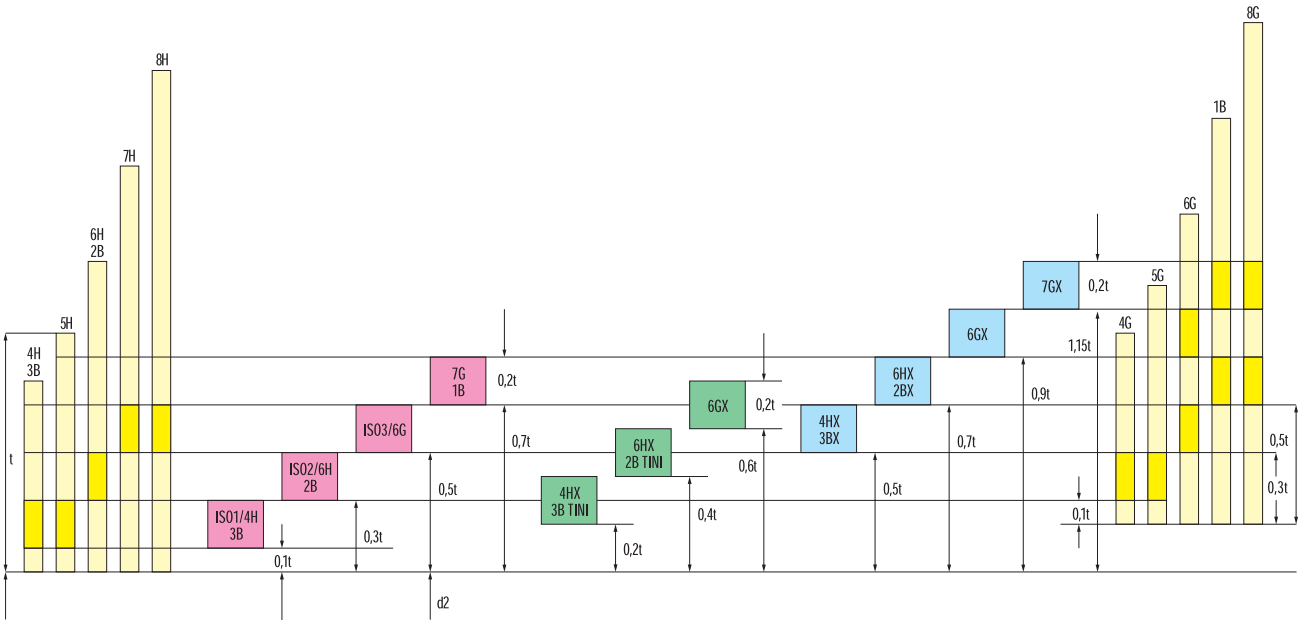
Coating properties

	Chromium Nitride	Titanium-Aluminum Nitride		Hardlube	Hard Carbon	Diamond
Catalog code	CRN	TAFT	TAX	THL	HDC	Diamond
Coating material	CrN	TiAlN	TiAlN	TiAlN+WC/C	C	Diamond
Micro-hardness (HV0.05)	1750	3000	3500	3000/1000	6000	>8000
Coating thickness (0.001 mm)	max. 3-4	3-4	1-2	5-6	1.5-2	4-6
Internal stress	-2	-2	-4	-2.0/-1.0		
Application temperature max. (°C)	700	800	800	800	600	700
Color	silver grey	violet-grey	turquoise	dark-grey	glossy-black	black
Treatment structure	Monolayer	Multilayer	Monolayer	Multilayer	Monolayer	Monolayer

Tolerance classes

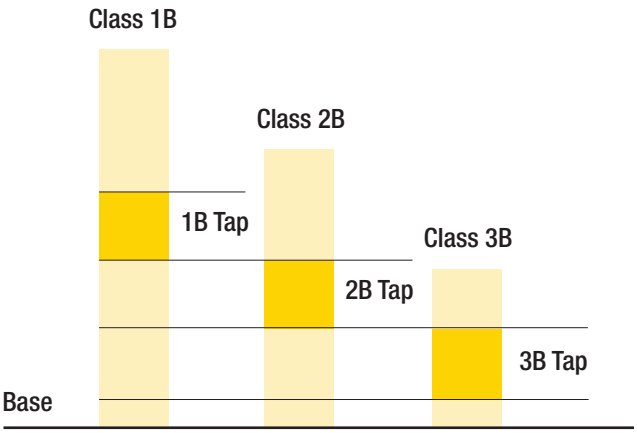
Taps / Internal Thread Formers acc. to DIN / ISO / ANSI

D_2 = pitch diameter
t = tolerance unit



- Internal thread
- Taps
- Taps with specific P.D. (pitch diameter)
- Internal Thread Formers

Tolerance classes and charts



PROTOTYP has determined that the tolerance of the tap should be manufactured as close as possible to the finished internal thread tolerance. This practice ensures that the threads produced will comply to the gage tolerances providing that the working conditions such as machine, workholding, and workpiece match the application.

PROTOTYP taps are marked with the appropriate tolerance class for their intended use. The U.S. H and D thread class limits are not marked on the tap.

UNC and UNF tolerances for the various "H" limits are shown in the chart below.

M and MF tolerances for the various "D" limits are shown on the proceeding page.

Manufacturing H-limits for PROTOTYP UNC and UNF taps

UNC

Size	Thread per inch	Tap limit 2B	Tap limit 3B
No 1	64	H2/H3	H1/H2
No 2	56	H2/H3	H1/H2
No 3	48	H2/H3	H1/H2
No 4	40	H2/H3	H2
No 5	40	H2/H3	H2
No 6	32	H3/H4	H2
No 7	32	H3/H4	H2
No 10	24	H3/H4	H2/H3
No 12	24	H3/H4	H2/H3
1/4	20	H4/H5	H3
5/16	18	H4/H5	H3
3/8	16	H4/H5	H3/H4
7/16	14	H4/H5	H3/H4
1/2	13	H5/H6	H4
9/16	12	H5/H6	H4
5/8	11	H5/H6	H4
3/4	10	H6/H7	H4/H5
7/8	9	H6/H7	H4/H5
1	8	H6/H7	H5

UNF

Size	Thread per inch	Tap limit 2B	Tap limit 3B
No 0	80	H1/H2	H1
No 1	72	H2/H3	H1/H2
No 2	64	H2/H3	H1/H2
No 3	56	H2/H3	H1/H2
No 4	48	H2/H3	H2
No 5	44	H2/H3	H2
No 6	40	H2/H3	H2
No 8	36	H2/H3	H2
No 10	32	H2/H3	H2
No 12	28	H3/H4	H2/H3
1/4	28	H3/H4	H2/H3
5/16	24	H3/H4	H3
3/8	24	H3/H4	H3
7/16	20	H4/H5	H3
1/2	20	H4/H5	H3
9/16	18	H4/H5	H3/H4
5/8	18	H5/H6	H3/H4
3/4	16	H5/H6	H4
7/8	14	H5/H6	H4
1	12	H5/H6	H4/H5

Manufacturing D-limits for PROTOTYP metric taps

Metric Coarse thread	Size	Pitch	ISO1/4H	ISO2/6H
M	1.6	0.35	D2	D2/D3
M	1.8	0.35	D2	D2/D3
M	2	0.4	D2	D3
M	2.2	0.45	D2	D3
M	2.5	0.45	D2	D3
M	3	0.5	D2	D3
M	3.5	0.6	D2	D3/D4
M	4	0.7	D2/D3	D3/D4
M	4.5	0.75	D2/D3	D3/D4
M	5	0.8	D2/D3	D3/D4
M	6	1	D2/D3	D4/D5
M	7	1	D2/D3	D4/D5
M	8	1.25	D3	D4/D5
M	10	1.5	D3	D4/D5
M	12	1.75	D3/D4	D5/D6
M	14	2	D3/D4	D5/D6
M	16	2	D3/D4	D5/D6
M	18	2.5	D4	D6/D7
M	20	2.5	D4	D6/D7
M	22	2.5	D4	D7/D8
M	24	3	D4/D5	D7/D8
M	27	3	D4/D5	D7/D8
M	30	3.5	D4/D5	D8/D9
M	33	3.5	D4/D5	D8/D9
M	36	4	D5	D8/D9
M	39	4	D5	D8/D9
M	42	4.5	D5	D8/D9
M	45	4.5	D5	D8/D9
M	48	5	D5/D6	D9/D10
M	52	5	D5/D6	D9/D10

Metric Fine thread	Size	Pitch	ISO1/4H	ISO2/6H
MF	3	0.35	D2	D3
MF	4	0.5	D2	D3
MF	6	0.5	D2/D3	D3/D4
MF	6	0.75	D2/D3	D4
MF	8	0.75	D2/D3	D4
MF	8	1	D3	D4/D5
MF	10	1.25	D3	D4/D5
MF	12	1	D3	D4/D5
MF	12	1.5	D3/D4	D5/D6
MF	14	1.25	D3	D4/D5
MF	18	2	D3/D4	D6/D7
MF	20	1.5	D3/D4	D5/D6
MF	24	1.5	D3/D4	D5/D6
MF	24	2	D4	D6/D7
MF	36	3	D4/D5	D7/D8
MF	42	2	D4	D6/D7
MF	42	3	D4/D5	D7/D8
MF	52	3	D4/D5	D7/D8

Tolerance chart-oversize 6G taps – OS “G“ values for oversize 6G taps

Pitch	mm	inch
0.35-0.4	0.019	0.00075
0.4-0.5	0.020	0.00079
0.6	0.021	0.00083
0.7-0.75	0.022	0.00087
0.8	0.024	0.00094
1	0.026	0.00100
1.25	0.028	0.00110
1.5	0.032	0.00130

Pitch	mm	inch
1.75	0.034	0.0013
2	0.038	0.0015
2.5	0.042	0.0017
3	0.048	0.0019
3.25	0.053	0.0021
4	0.060	0.0024
4.5	0.063	0.0025
5	0.071	0.0028

UNJ thread form

Inch screw threads - UNJ profile. Controlled root radius with increased minor diameter.

The UNJ thread standard (ASME B1.15) defines a system of threads for highly stressed applications requiring fatigue strength. It was derived from a military specification (MIL-S-8879) originally published in December 1965. MIL-S-8879 was primarily thought of and used for aerospace fastener and threaded component applications. Due to the increase in both its use and types´of applications, the American Society of Mechanical Engineers developed and published ASME b1.15 in 1995.

Form

UNJ screw threads are of the same form as Unified Screw Threads to ASME/ANSI B1.1 except:

External threads:

The root has a maximum and minimum prescribed continuous radius, and is not merely rounded due to tool wear.

Internal threads:

The minor diameter is increased to accommodate the maximum root radius of the external thread. There is no radius requirement for either the crest or the root of the internal thread.

Please see pages 242-243 for proper ”J“ thread tap drill size

Designation

UNJ product threads are identified by the letter “J” in the thread symbol, and a thread class symbol including an “A“ for external threads or a “B“ for internal threads.

Use of Unified Tooling.

Many of the UNJ thread form characteristics are the same as for UN threads. Therefore, some of the tooling used to produced one form can be used to produce the other. External UNJ threads must be produced with a prescribed root radius; therefore, standard unified screw thread (UN) tooling may not be used.

Internal UNJ threads are not required to have a root radius; therefore, ground-thread taps designed to produce unified screw threads of the proper class of fit may be used. The letter “J“ need not to be marked on the tap. The larger product minor diameter of the UNJ internal thread requires the use of a larger tap drill than is used when producing unified screw threads.

For those manufacturers that require a radius, PROTO-TYP offers a UNJC and a UNJF tap with the radius see page 61 for UNJC and page 104 for UNJF.

Hardness conversion table

Tensile strength [N/mm²]	Hardness Brinell [HB]	Hardness Rockwell [HRC]	Hardness Vickers [HV 10]	PSI [psi]
150	50		50	22
200	60		60	29
250	80		80	37
300	90		95	43
350	100		110	50
400	120		125	58
450	130		140	66
500	150		155	73
550	165		170	79
600	175		185	85
650	190		200	92
700	200		220	98
750	215		235	105
800	230	22	250	112
850	250	25	265	120
900	270	27	280	128
950	280	29	295	135
1,000	300	31	310	143
1,050	310	33	325	150
1,100	320	34	340	158
1,150	340	36	360	164
1,200	350	38	375	170
1,250	370	40	390	177
1,300	380	41	405	185
1,350	400	43	420	192
1,400	410	44	435	200
1,450	430	45	450	207
1,500	440	46	465	214
1,550	(450)	48	480	221
1,600	(470)	49	495	228
		51	530	247
		53	560	265
		55	595	283
		57	635	
		59	680	
		61	720	
		63	770 (820)	
		64	800 (850)	
		65	830 (885)	
		66	870 (920)	
		67	900 (955)	
		68	940 (990)	
		69	980 (1025)	

Bracket- values are valid for HSS(E)

Tapping drill sizes for taps

UNC

Unified national coarse thread UNC

Nominal size ASME B1.1	Minor Ø Internal thread 2B Tolerance min mm	max mm	Drill hole Ø DIN 336 ISO 2306	Minor Ø Internal thread 2B Tolerance min inch	max inch	Drill hole Ø inch	US Std. Tap Drill
1-64 UNC	1.425	1.582	1.55	0.0561	0.0623	0.0610	53
2-56 UNC	1.694	1.872	1.85	0.0667	0.0737	0.0728	50
3-48 UNC	1.941	2.146	2.10	0.0764	0.0845	0.0827	45
4-40 UNC	2.156	2.385	2.35	0.0849	0.0939	0.0925	43
5-40 UNC	2.487	2.697	2.65	0.0979	0.1062	0.1043	38
6-32 UNC	2.642	2.896	2.85	0.1040	0.1140	0.1122	36
8-32 UNC	3.302	3.531	3.50	0.1300	0.1390	0.1378	29
10-24 UNC	3.683	3.962	3.90	0.1450	0.1560	0.1535	24
12-24 UNC	4.343	4.597	4.50	0.1710	0.1810	0.1772	16
1/4-20 UNC	4.976	5.268	5.10	0.1959	0.2074	0.2008	7
5/16-18 UNC	6.411	6.734	6.60	0.2524	0.2651	0.2598	G
3/8-16 UNC	7.805	8.164	8.00	0.3073	0.3214	0.3150	O
7/16-14 UNC	9.149	9.550	9.40	0.3602	0.3760	0.3701	U
1/2-13 UNC	10.584	11.013	10.80	0.4167	0.4336	0.4252	27/64
9/16-12 UNC	11.996	12.456	12.20	0.4723	0.4904	0.4803	31/64
5/8-11 UNC	13.376	13.868	13.50	0.5266	0.5460	0.5315	17/32
3/4-10 UNC	16.299	16.833	16.50	0.6417	0.6627	0.6496	21/32
7/8-9 UNC	19.169	19.748	19.50	0.7547	0.7775	0.7677	49/64
1-8 UNC	21.963	22.598	22.25	0.8647	0.8897	0.8760	7/8
1 1/8-7 UNC	24.648	25.348	25.00	0.9704	0.9980	0.9843	63/64
1 1/4-7 UNC	27.823	28.524	28.00	1.0954	1.1230	1.1024	1 7/64
1 1/2-6 UNC	33.518	34.295	34.00	1.3196	1.3502	1.3386	1 21/64
1 3/4-5 UNC	38.951	39.814	39.50	1.5335	1.5675	1.5551	1 35/64
2-4.5 UNC	44.689	45.598	45.00	1.7594	1.7952	1.7717	1 25/32

Tapping drill sizes for taps

UNF

Unified national fine thread UNF

Nominal size ASME B1.1	Minor Ø Internal thread 2B Tolerance min mm	max mm	Nominal Ø DIN 336 ISO 2306	Minor Ø Internal thread 2B Tolerance min inch	max inch	Nominal Ø inch	US Std. Tap Drill
0-80 UNF	1.181	1.306	1.25	0.0465	0.0514	0.0492	3/64
1-72 UNF	1.473	1.613	1.55	0.0580	0.0635	0.0610	53
2-64 UNF	1.755	1.913	1.85	0.0691	0.0753	0.0728	49
3-56 UNF	2.024	2.197	2.15	0.0797	0.0865	0.0846	45
4-48 UNF	2.271	2.459	2.40	0.0894	0.0968	0.0945	3/32
5-44 UNF	2.550	2.741	2.70	0.1004	0.1079	0.1063	36
6-40 UNF	2.819	3.023	2.95	0.1110	0.1190	0.1161	32
8-36 UNF	3.404	3.607	3.50	0.1340	0.1420	0.1378	28
10-32 UNF	3.962	4.166	4.10	0.1560	0.1640	0.1614	20
12-28 UNF	4.496	4.724	4.60	0.1770	0.1860	0.1811	14
1/4-28 UNF	5.367	5.580	5.50	0.2113	0.2197	0.2165	7/32
5/16-24 UNF	6.792	7.038	6.90	0.2674	0.2771	0.2717	I
3/8-24 UNF	8.379	8.626	8.50	0.3299	0.3396	0.3346	Q
7/16-20 UNF	9.738	10.030	9.90	0.3834	0.3949	0.3898	25/64
1/2-20 UNF	11.326	11.618	11.50	0.4459	0.4574	0.4528	29/64
9/16-18 UNF	12.761	13.084	12.90	0.5024	0.5151	0.5079	33/64
5/8-18 UNF	14.348	14.671	14.50	0.5649	0.5776	0.5709	9/16
3/4-16 UNF	17.330	17.689	17.50	0.6823	0.6964	0.6890	11/16
7/8-14 UNF	20.262	20.663	20.40	0.7977	0.8135	0.8031	13/16
1-12 UNF	23.109	23.569	23.25	0.9098	0.9279	0.9154	59/64
1 1/8-12 UNF	26.284	26.744	26.50	1.0348	1.0529	1.0433	1 3/64
1 1/4-12 UNF	29.459	29.919	29.50	1.1598	1.1779	1.1614	1 11/64
1 3/8-12 UNF	32.634	33.094	33.00	1.2848	1.3029	1.2992	1 19/64
1 1/2-12 UNF	35.809	36.269	36.10	1.4098	1.4279	1.4219	1 27/64

Tapping drill sizes for taps

UNEF

Unified national extra fine thread UNEF

Nominal size ASME B1.1	Minor Ø Internal thread 2B Tolerance min mm	Minor Ø Internal thread 2B Tolerance max mm	Nominal Ø DIN 336 ISO 2306	Minor Ø Internal thread 2B Tolerance min inch	Minor Ø Internal thread 2B Tolerance max inch	Nominal Ø inch
1/4-32 UNEF	5.491	5.679	5.55	0.2162	0.2236	0.2185
5/16-32 UNEF	7.079	7.267	7.10	0.2787	0.2861	0.2795
3/8-32 UNEF	8.666	8.854	8.80	0.3412	0.3486	0.3465
7/16-28 UNEF	10.130	10.343	10.20	0.3988	0.4072	0.4016
1/2-28 UNEF	11.718	11.931	11.80	0.4613	0.4697	0.4646
9/16-24 UNEF	13.142	13.388	13.20	0.5174	0.5271	0.5197
5/8-24 UNEF	14.729	14.976	14.80	0.5799	0.5896	0.5827
11/16-24 UNEF	16.317	16.563	16.40	0.6424	0.6521	0.6457
3/4-20 UNEF	17.675	17.967	17.80	0.6959	0.7074	0.7008
7/8-20 UNEF	20.850	21.142	21.00	0.8209	0.8324	0.8268
1-20 UNEF	24.025	24.317	24.20	0.9459	0.9574	0.9528

UN

Unified national threads of selected diameters UN pitch-8

Nominal size ASME B1.1	Minor Ø Internal thread 2B Tolerance min mm	Minor Ø Internal thread 2B Tolerance max mm	Nominal Ø DIN 336 ISO 2306	Minor Ø Internal thread 2B Tolerance min inch	Minor Ø Internal thread 2B Tolerance max inch	Nominal Ø inch
1 1/8-8 UN	25.138	25.962	25.40	0.9897	1.0221	1.0000
1 1/4-8 UN	28.313	29.126	28.50	1.1147	1.1467	1.1220
1 3/8-8 UN	31.488	32.123	32.00	1.2397	1.2647	1.2598
1 1/2-8 UN	34.663	35.456	35.00	1.3647	1.3959	1.3780
1 5/8-8 UN	37.838	38.623	38.10	1.4897	1.5206	1.5000
1 3/4-8 UN	41.013	41.790	41.50	1.6147	1.6453	1.6339
1 7/8-8 UN	44.188	44.957	44.45	1.7397	1.7700	1.7500
2-8 UN	47.363	48.125	48.00	1.8647	1.8947	1.8898
2 1/4-8 UN	53.713	54.462	54.00	2.1147	2.1442	2.1260

Tapping drill sizes for taps

M

Metric ISO thread DIN 13 M

Nominal size	Pitch	Minor Ø Internal thread 6H Tolerance		Nominal Ø	Minor Ø Internal thread 6H Tolerance		Nominal Ø
	mm	min mm	max mm	DIN 336 mm	min inch	max inch	inch
M1	0.25	0.729	0.785	0.75	0.0287	0.0309	0.0295
M1.2	0.25	0.929	0.985	0.95	0.0366	0.0388	0.0374
M1.4	0.30	1.075	1.142	1.10	0.0423	0.0450	0.0433
M1.6	0.35	1.221	1.321	1.25	0.0481	0.0520	0.0492
M1.7	0.35	1.321	1.421	1.35	0.0520	0.0559	0.0531
M1.8	0.35	1.421	1.521	1.45	0.0559	0.0599	0.0571
M2	0.40	1.567	1.679	1.60	0.0617	0.0661	0.0630
M2.2	0.45	1.713	1.838	1.75	0.0674	0.0724	0.0689
M2.3	0.40	1.813	1.938	1.85	0.0714	0.0763	0.0728
M2.5	0.45	2.013	2.138	2.05	0.0792	0.0842	0.0807
M2.6	0.45	2.113	2.238	2.15	0.0832	0.0881	0.0846
M3	0.50	2.459	2.599	2.50	0.0968	0.1023	0.0984
M3.5	0.60	2.850	3.010	2.90	0.1122	0.1185	0.1142
M4	0.70	3.242	3.422	3.30	0.1276	0.1347	0.1299
M4.5	0.75	3.688	3.878	3.70	0.1452	0.1527	0.1457
M5	0.80	4.134	4.334	4.20	0.1628	0.1706	0.1654
M6	1.00	4.917	5.153	5.00	0.1936	0.2029	0.1969
M7	1.00	5.917	6.153	6.00	0.2330	0.2423	0.2362
M8	1.25	6.647	6.912	6.80	0.2617	0.2721	0.2677
M9	1.25	7.647	7.912	7.80	0.3011	0.3115	0.3071
M10	1.50	8.376	8.676	8.50	0.3298	0.3416	0.3346
M11	1.50	9.376	9.676	9.50	0.3691	0.3810	0.3740
M12	1.75	10.106	10.441	10.20	0.3979	0.4110	0.4016
M14	2.00	11.835	12.210	12.00	0.4659	0.4807	0.4724
M16	2.00	13.835	14.210	14.00	0.5447	0.5594	0.5512
M18	2.50	15.294	15.744	15.50	0.6021	0.6198	0.6102
M20	2.50	17.294	17.744	17.50	0.6809	0.6986	0.6890
M22	2.50	19.294	19.744	19.50	0.7596	0.7773	0.7677
M24	3.00	20.752	21.252	21.00	0.8170	0.8367	0.8268
M27	3.00	23.752	24.252	24.00	0.9351	0.9548	0.9449

Tapping drill sizes for taps

M

Metric ISO thread DIN 13 M

Nominal size	Pitch	Minor Ø Internal thread 6H Tolerance		Nominal Ø	Minor Ø Internal thread 6H Tolerance		Nominal Ø
	mm	min mm	max mm	DIN 336 mm	min inch	max inch	inch
M30	3.50	26.211	26.771	26.50	1.0319	1.0540	1.0433
M33	3.50	29.211	29.771	29.50	1.1500	1.1721	1.1614
M36	4.00	31.670	32.270	32.00	1.2468	1.2705	1.2598
M39	4.00	34.670	35.270	35.00	1.3650	1.3886	1.3780
M42	4.50	37.129	37.799	37.50	1.4618	1.4881	1.4764
M45	4.50	40.129	40.799	40.50	1.5799	1.6062	1.5945
M48	5.00	42.587	43.297	43.00	1.6767	1.7046	1.6929
M52	5.00	46.587	47.297	47.00	1.8341	1.8621	1.8504
M56	5.50	50.046	50.796	50.50	1.9703	1.9998	1.9882
M60	5.50	54.046	54.796	54.50	2.1278	2.1573	2.1457
M64	6.00	57.505	58.305	58.00	2.2640	2.2955	2.2835
M68	6.00	62.505	62.305	62.00	2.4608	2.4530	2.4409

Tapping drill sizes for taps

MF

Metric ISO fine thread DIN 13 MF

Nominal size	Minor Ø Internal thread 6H Tolerance min mm	Minor Ø Internal thread 6H Tolerance max mm	Nominal Ø DIN 336 mm	Minor Ø Internal thread 6H Tolerance min inch	Minor Ø Internal thread 6H Tolerance max inch	Nominal Ø inch
M2x0.25	1.729	1.785	1.75	0.0681	0.0703	0.0689
M2.2x0.25	1.929	1.985	1.95	0.0760	0.0781	0.0768
M2.3x0.25	2.029	2.085	2.05	0.0799	0.0821	0.0807
M2.5x0.35	2.121	2.221	2.15	0.0835	0.0874	0.0846
M3x0.25	2.729	2.785	2.75	0.1074	0.1096	0.1083
M3x0.35	2.621	2.721	2.65	0.1032	0.1071	0.1043
M3.5x0.35	3.121	3.221	3.15	0.1229	0.1268	0.1240
M4x0.35	3.621	3.721	3.65	0.1426	0.1465	0.1437
M4x0.5	3.459	3.599	3.50	0.1362	0.1417	0.1378
M4.5x0.5	3.959	4.099	4.00	0.1559	0.1614	0.1575
M5x0.35	4.621	4.721	4.65	0.1819	0.1859	0.1831
M5x0.5	4.459	4.599	4.50	0.1755	0.1811	0.1772
M5x0.75	4.188	4.378	4.20	0.1649	0.1724	0.1654
M6x0.5	5.459	5.599	5.50	0.2149	0.2204	0.2165
M6x0.75	5.188	5.378	5.25	0.2043	0.2117	0.2067
M7x0.5	6.459	6.599	6.50	0.2543	0.2598	0.2559
M7x0.75	6.188	6.378	6.25	0.2436	0.2511	0.2461
M8x0.5	7.459	7.599	7.50	0.2937	0.2992	0.2953
M8x0.75	7.188	7.378	7.25	0.2830	0.2905	0.2854
M8x1	6.917	7.153	7.00	0.2723	0.2816	0.2756
M9x0.75	8.188	8.378	8.25	0.3224	0.3298	0.3248
M9x1	7.917	8.153	8.00	0.3117	0.3210	0.3150
M10x0.5	9.459	9.599	9.50	0.3724	0.3779	0.3740
M10x0.75	9.188	9.378	9.25	0.3617	0.3692	0.3642
M10x1	8.917	9.153	9.00	0.3511	0.3604	0.3543
M10x1.25	8.647	8.912	8.75	0.3404	0.3509	0.3445
M11x1	9.917	10.153	10.00	0.3905	0.3997	0.3937
M12x0.5	11.459	11.599	11.50	0.4511	0.4567	0.4528
M12x1	10.917	11.153	11.00	0.4298	0.4391	0.4331
M12x1.25	10.647	10.912	10.75	0.4192	0.4296	0.4232
M12x1.5	10.376	10.676	10.50	0.4085	0.4203	0.4134
M13x1	11.917	12.153	12.00	0.4692	0.4785	0.4724
M14x0.75	13.188	13.378	13.20	0.5192	0.5267	0.5197
M14x1	12.917	13.153	13.00	0.5086	0.5179	0.5118
M14x1.25	12.647	12.912	12.75	0.4979	0.5083	0.5020
M14x1.5	12.376	12.676	12.50	0.4873	0.4991	0.4921

Tapping drill sizes for taps

MF

Metric ISO fine thread DIN 13 MF

Nominal size	Minor Ø Internal thread 6H Tolerance min mm	Minor Ø Internal thread 6H Tolerance max mm	Nominal Ø DIN 336 mm	Minor Ø Internal thread 6H Tolerance min inch	Minor Ø Internal thread 6H Tolerance max inch	Nominal Ø inch
M15x1	13.917	14.153	14.00	0.5479	0.5572	0.5512
M15x1.5	13.376	13.676	13.50	0.5266	0.5384	0.5315
M16x0.75	15.188	15.378	15.20	0.5980	0.6054	0.5984
M16x1	14.917	15.153	15.00	0.5873	0.5966	0.5906
M16x1.25	14.647	14.912	14.80	0.5767	0.5871	0.5827
M16x1.5	14.376	14.676	14.50	0.5660	0.5778	0.5709
M17x1	15.917	16.153	16.00	0.6267	0.6360	0.6299
M18x1	16.917	17.153	17.00	0.6660	0.6753	0.6693
M18x1.5	16.376	16.676	16.50	0.6447	0.6565	0.6496
M18x2	15.835	16.210	16.00	0.6234	0.6382	0.6299
M20x1	18.917	19.153	19.00	0.7448	0.7541	0.7480
M20x1.5	18.376	18.676	18.50	0.7235	0.7353	0.7283
M20x2	17.835	18.210	18.00	0.7022	0.7169	0.7087
M22x1	20.917	21.153	21.00	0.8235	0.8328	0.8268
M22x1.5	20.376	20.676	20.50	0.8022	0.8140	0.8071
M22x2	19.835	20.210	20.00	0.7809	0.7957	0.7874
M24x1	22.917	23.153	23.00	0.9023	0.9116	0.9055
M24x1.5	22.376	22.676	22.50	0.8810	0.8928	0.8858
M24x2	21.835	22.210	22.00	0.8596	0.8744	0.8661
M25x1	22.917	23.153	23.00	0.9023	0.9116	0.9055
M25x1.5	23.376	23.676	23.50	0.9203	0.9321	0.9252
M26x1.5	24.376	24.676	24.50	0.9597	0.9715	0.9646
M27x1	25.917	26.153	26.00	1.0204	1.0297	1.0236
M27x1.5	25.376	25.676	25.50	0.9991	1.0109	1.0039
M27x2	24.835	25.210	25.00	0.9778	0.9925	0.9843
M28x1.5	26.376	26.676	26.50	1.0384	1.0502	1.0433
M28x2	25.835	26.210	26.00	1.0171	1.0319	1.0236
M30x1	28.917	29.153	29.00	1.1385	1.1478	1.1417
M30x1.5	28.376	28.676	28.50	1.1172	1.1290	1.1220
M30x2	27.835	28.210	28.00	1.0959	1.1106	1.1024
M32x1.5	30.376	30.676	30.50	1.1959	1.2077	1.2008
M32x2	29.835	30.210	30.00	1.1746	1.1894	1.1811
M33x1.5	31.376	31.676	31.50	1.2353	1.2471	1.2402
M33x2	30.835	31.210	31.00	1.2140	1.2287	1.2205
M34x1.5	32.376	32.676	32.50	1.2746	1.2865	1.2795
M35x1.5	33.376	33.676	33.50	1.3140	1.3258	1.3189

Tapping drill sizes for taps

MF

Metric ISO fine thread DIN 13 MF

Nominal size	Minor Ø Internal thread 6H Tolerance min mm	Minor Ø Internal thread 6H Tolerance max mm	Nominal Ø DIN 336 mm	Minor Ø Internal thread 6H Tolerance min inch	Minor Ø Internal thread 6H Tolerance max inch	Nominal Ø inch
M36x1.5	34.376	34.676	34.50	1.3534	1.3652	1.3583
M36x2	33.835	34.210	34.00	1.3321	1.3468	1.3386
M36x3	32.752	33.252	33.00	1.2895	1.3091	1.2992
M38x1.5	36.376	36.676	36.50	1.4321	1.4439	1.4370
M39x1.5	37.376	37.676	37.50	1.4715	1.4833	1.4764
M39x2	36.835	37.210	37.00	1.4502	1.4650	1.4567
M39x3	35.752	36.252	36.00	1.4076	1.4273	1.4173
M40x1.5	38.376	38.676	38.50	1.5109	1.5227	1.5157
M40x2	37.835	38.210	38.00	1.4896	1.5043	1.4961
M40x3	36.752	37.252	37.00	1.4469	1.4666	1.4567
M42x1.5	40.376	40.676	40.50	1.5896	1.6014	1.5945
M42x2	39.835	40.210	40.00	1.5683	1.5831	1.5748
M42x3	38.752	39.252	39.00	1.5257	1.5454	1.5354
M45x1.5	43.376	43.676	43.50	1.7077	1.7195	1.7126
M45x2	42.835	43.210	43.00	1.6864	1.7012	1.6929
M45x3	41.752	42.252	42.00	1.6438	1.6635	1.6535
M48x1.5	46.376	46.676	46.50	1.8258	1.8376	1.8307
M48x2	45.835	46.210	46.00	1.8045	1.8193	1.8110
M48x3	44.752	45.252	45.00	1.7619	1.7816	1.7717
M50x1.5	48.376	48.676	48.50	1.9046	1.9164	1.9094
M50x2	47.835	48.210	48.00	1.8833	1.8980	1.8898
M50x3	46.752	47.252	47.00	1.8406	1.8603	1.8504
M52x1.5	50.376	50.676	50.50	1.9833	1.9951	1.9882
M52x2	49.835	50.210	50.00	1.9620	1.9768	1.9685
M52x3	46.587	47.087	47.00	1.8341	1.8538	1.8504
M56x1.5	54.376	54.676	54.50	2.1408	2.1526	2.1457
M56x2	53.835	54.210	54.00	2.1195	2.1342	2.1260
M56x3	52.752	53.252	53.00	2.0769	2.0966	2.0866
M58x1.5	56.376	56.676	56.50	2.2195	2.2313	2.2244
M60x1.5	66.376	66.676	66.50	2.6132	2.6250	2.6181
M60x2	57.835	58.210	58.00	2.2770	2.2917	2.2835
M60x3	56.752	57.252	57.00	2.2343	2.2540	2.2441

Tapping drill sizes for taps

UNJC

Unified Coarse thread (modified Aerospace)

Nominal size ASME B1.15	Minor Ø Internal thread 3B Tolerance min mm	Minor Ø Internal thread 3B Tolerance max mm	Nominal Ø mm	Minor Ø Internal thread 3B Tolerance min inch	Minor Ø Internal thread 3B Tolerance max inch	Nominal Ø inch
1-64 UNJC	1.467	1.570	1.50	0.0578	0.0618	0.0591
2-56 UNJC	1.742	1.860	1.80	0.0686	0.0732	0.0709
3-48 UNJC	1.999	2.137	2.05	0.0787	0.0841	0.0807
4-40 UNJC	2.226	2.391	2.30	0.0877	0.0941	0.0906
5-40 UNJC	2.556	2.721	2.65	0.1006	0.1071	0.1043
6-32 UNJC	2.732	2.938	2.80	0.1075	0.1157	0.1102
8-32 UNJC	3.393	3.599	3.50	0.1336	0.1417	0.1378
10-24 UNJC	3.795	4.064	3.90	0.1494	0.1600	0.1535
12-24 UNJC	4.455	4.704	4.60	0.1754	0.1852	0.1811
1/4-20 UNJC	5.113	5.387	5.20	0.2013	0.2121	0.2047
5/16-18 UNJC	6.563	6.833	6.70	0.2584	0.2690	0.2638
3/8-16 UNJC	7.978	8.255	8.10	0.3141	0.3250	0.3189
7/16-14 UNJC	9.344	9.637	9.50	0.3679	0.3794	0.3740
1/2-13 UNJC	10.796	11.093	10.90	0.4251	0.4367	0.4291
9/16-12 UNJC	12.226	12.480	12.30	0.4813	0.4913	0.4843
5/8-11 UNJC	13.625	13.902	13.70	0.5364	0.5473	0.5394
3/4-10 UNJC	16.575	16.880	16.75	0.6526	0.6646	0.6594

Tapping drill sizes for taps

UNJF

Unified Fine thread (modified Aerospace)

Nominal size ASME B1.15	Minor Ø Internal thread 3B Tolerance min mm	Minor Ø Internal thread 3B Tolerance max mm	Nominal Ø mm	Minor Ø Internal thread 3B Tolerance min inch	Minor Ø Internal thread 3B Tolerance max inch	Nominal Ø inch
0-80 UNJF	1.215	1.297	1.25	0.0478	0.0511	0.0492
1-72 UNJF	1.510	1.602	1.55	0.0595	0.0631	0.0610
2-64 UNJF	1.797	1.900	1.85	0.0708	0.0748	0.0728
3-56 UNJF	2.073	2.191	2.10	0.0816	0.0863	0.0827
4-48 UNJF	2.329	2.467	2.40	0.0917	0.0971	0.0945
5-44 UNJF	2.613	2.763	2.70	0.1029	0.1088	0.1063
6-40UNJF	2.886	3.051	2.95	0.1136	0.1201	0.1161
8-36 UNJF	3.479	3.662	3.60	0.1370	0.1442	0.1417
10-32 UNJF	4.053	4.253	4.15	0.1596	0.1674	0.1634
12-28 UNJF	4.602	4.815	4.70	0.1812	0.1896	0.1850
1/4-28 UNJF	5.466	5.662	5.60	0.2152	0.2229	0.2205
5/16-24 UNJF	6.907	7.110	7.00	0.2719	0.2799	0.2756
3/8-24 UNJF	8.494	8.680	8.60	0.3344	0.3417	0.3386
7/16-20 UNJF	9.875	10.083	10.00	0.3888	0.3970	0.3937
1/2-20 UNJF	11.463	11.660	11.50	0.4513	0.4591	0.4528
9/16-18 UNJF	12.913	13.123	13.00	0.5084	0.5166	0.5118
5/8-18 UNJF	14.500	14.702	14.50	0.5709	0.5788	0.5709

Tapping drill sizes for taps

MJ

Aerospace

Nominal size DIN ISO 5855	Minor Ø Internal thread 6H Tolerance min mm	max mm	Nominal Ø mm	Minor Ø Internal thread 6H Tolerance min inch	max inch	Nominal Ø inch
MJ3x0.5	2.513	2.653*	2.60	0.0989	0.1044	0.1024
MJ4x0.7	3.318	3.498*	3.40	0.1306	0.1377	0.1339
MJ5x0.8	4.221	4.421*	4.30	0.1662	0.1741	0.1693
MJ6x1	5.026	5.215	5.10	0.1979	0.2053	0.2008
MJ8x1.25	6.782	6.994	6.90	0.2670	0.2754	0.2717
MJ10x1.5	8.539	8.779	8.70	0.3362	0.3456	0.3425
MJ12x1.75	10.295	10.563	10.50	0.4053	0.4159	0.4134
MJ16x2	14.051	14.351	14.30	0.5532	0.5650	0.5630

* 5H max

STI-UNC

Unified national coarse thread for screw thread inserts STI-UNC

Nominal size NASM 33537	Minor Ø Internal thread 3B Tolerance min mm	max mm	Nominal Ø mm	Minor Ø Internal thread 3B Tolerance min inch	max inch	Nominal Ø inch
STI 2-56 UNC	2.282	2.441	2.35	0.0899	0.0961	0.0925
STI 3-48 UNC	2.630	2.804	2.70	0.1035	0.1104	0.1063
STI 4-40 UNC	2.982	3.180	3.05	0.1174	0.1252	0.1201
STI 5-40 UNC	3.312	3.487	3.40	0.1304	0.1373	0.1339
STI 6-32 UNC	3.677	3.879	3.70	0.1448	0.1527	0.1457
STI 8-32 UNC	4.338	4.524	4.40	0.1708	0.1781	0.1732
STI 10-24 UNC	5.055	5.283	5.10	0.1990	0.2080	0.2008
STI 12-24 UNC	5.715	5.944	5.80	0.2250	0.2340	0.2283
STI 1/4-20 UNC	6.625	6.868	6.70	0.2608	0.2704	0.2638
STI 5/16-18 UNC	8.244	8.489	8.40	0.3245	0.3342	0.3307
STI 3/8-16 UNC	9.869	10.127	10.00	0.3885	0.3987	0.3937
STI 7/16-14 UNC	11.505	11.783	11.70	0.4529	0.4639	0.4606
STI 1/2-13 UNC	13.123	13.393	13.30	0.5167	0.5273	0.5236

Tapping drill sizes for taps

STI-UNF

Unified national fine thread for screw thread inserts STI-UNF

Nominal size NASM 33537	Minor Ø Internal thread 3B Tolerance min mm	Minor Ø Internal thread 3B Tolerance max mm	Nominal Ø mm	Minor Ø Internal thread 3B Tolerance min inch	Minor Ø Internal thread 3B Tolerance max inch	Nominal Ø inch
STI 2-64 UNF	2.270	2.405	2.30	0.0894	0.0947	0.0906
STI 3-56 UNF	2.614	2.758	2.65	0.1029	0.1086	0.1043
STI 4-48 UNF	2.962	3.122	3.00	0.1166	0.1229	0.1181
STI 5-44 UNF	3.300	3.467	3.30	0.1299	0.1365	0.1299
STI 6-40 UNF	3.644	3.818	3.70	0.1435	0.1503	0.1457
STI 8-36 UNF	4.321	4.498	4.40	0.1701	0.1771	0.1732
STI 10-32 UNF	4.999	5.184	5.10	0.1968	0.2041	0.2008
STI 1/4-28 UNF	6.545	6.721	6.60	0.2577	0.2646	0.2598
STI 5/16-24 UNF	8.166	8.351	8.20	0.3215	0.3288	0.3228
STI 3/8-24 UNF	9.754	9.931	9.80	0.3840	0.3910	0.3858
STI 7/16-20 UNF	11.387	11.585	11.40	0.4483	0.4561	0.4488
STI 1/2-20 UNF	12.970	13.172	13.00	0.5106	0.5186	0.5118

STI-M

STI-Metric ISO thread DIN 13 M

Nominal size	Pitch mm	Minor Ø Internal thread 6H mod Tolerance min mm	Minor Ø Internal thread 6H mod Tolerance max mm	Nominal Ø DIN 336 mm	Minor Ø Internal thread 6H mod Tolerance min inch	Minor Ø Internal thread 6H mod Tolerance max inch	Nominal Ø inch
STI M3	0.50	3.109	3.221	3.15	0.1224	0.1268	0.1240
STI M3.5	0.60	3.630	3.755	3.70	0.1429	0.1479	0.1457
STI M4	0.70	4.152	4.292	4.20	0.1635	0.1690	0.1654
STI M5	0.80	5.174	5.334	5.25	0.2037	0.2100	0.2067
STI M6	1.00	6.217	6.407	6.30	0.2448	0.2523	0.2480
STI M8	1.25	8.271	8.483	8.40	0.3256	0.3340	0.3307
STI M10	1.50	10.324	10.560	10.50	0.4065	0.4158	0.4134
STI M12	1.75	12.380	12.645	12.50	0.4874	0.4978	0.4921
STI M14	2.00	14.433	14.733	14.50	0.5682	0.5800	0.5709
STI M16	2.00	16.433	16.733	16.50	0.6470	0.6588	0.6496
STI M18	2.50	18.542	18.897	18.80	0.7300	0.7440	0.7402
STI M20	2.50	20.542	20.897	20.80	0.8087	0.8227	0.8189
STI M22	2.50	22.542	22.897	22.80	0.8875	0.9014	0.8976
STI M24	3.00	24.649	25.049	24.75	0.9704	0.9862	0.9744

Tapping drill sizes for taps

STI-MF

STI-Metric fine ISO thread DIN 13 MF

Nominal size	Minor Ø Internal thread 6H mod Tolerance min mm	Minor Ø Internal thread 6H mod Tolerance max mm	Nominal Ø DIN 336 mm	Minor Ø Internal thread 6H mod Tolerance min inch	Minor Ø Internal thread 6H mod Tolerance max inch	Nominal Ø inch
STI M8x1	8.217	8.407	8.30	0.3235	0.3310	0.3268
STI M10x1	10.217	10.407	10.30	0.4023	0.4097	0.4055
STI M10x1.25	10.271	10.483	10.40	0.4044	0.4127	0.4094
STI M12x1.25	12.271	12.483	12.40	0.4831	0.4914	0.4882
STI M12x1.5	12.324	12.560	12.50	0.4852	0.4945	0.4921
STI M14x1.5	14.324	14.560	14.50	0.5639	0.5732	0.5709
STI M16x1.5	16.324	16.560	16.50	0.6427	0.6520	0.6496
STI M18x1.5	18.324	18.560	18.50	0.7214	0.7307	0.7283
STI M18x2	18.433	18.733	18.50	0.7257	0.7375	0.7283
STI M20x1.5	20.324	20.560	20.50	0.8002	0.8095	0.8071

G

British standard pipe thread DIN ISO 228 G

Nominal size	Pitch TPI	Minor Ø Internal thread min mm	Minor Ø Internal thread max mm	Nominal Ø DIN 336 ISO 2306	Minor Ø Internal thread min inch	Minor Ø Internal thread max inch	Nominal Ø inch
G 1/16	28	6.561	6.843	6.80	0.2583	0.2694	0.2677
G 1/8	28	8.566	8.848	8.80	0.3373	0.3484	0.3465
G 1/4	19	11.445	11.890	11.80	0.4506	0.4681	0.4646
G 3/8	19	14.950	15.395	15.25	0.5886	0.6061	0.6004
G 1/2	14	18.632	19.173	19.00	0.7335	0.7548	0.7480
G 5/8	14	20.588	21.129	21.00	0.8105	0.8318	0.8268
G 3/4	14	24.118	24.659	24.50	0.9495	0.9708	0.9646
G 7/8	14	27.878	28.419	28.25	1.0975	1.1188	1.1122
G 1	11	30.292	30.932	30.75	1.1926	1.2178	1.2106
G 1 1/8	11	34.940	35.580	35.50	1.3756	1.4008	1.3976
G 1 1/4	11	38.953	39.593	39.50	1.5336	1.5588	1.5551
G 1 3/8	11	41.366	42.006	41.90	1.6286	1.6538	1.6496
G 1 1/2	11	44.846	45.486	45.25	1.7656	1.7908	1.7815
G 1 3/4	11	50.789	51.429	51.00	1.9996	2.0248	2.0079
G 2	11	56.657	57.297	57.00	2.2306	2.2558	2.2441
G 2 1/4	11	62.753	63.393	63.00	2.4706	2.4958	2.4803
G 2 1/2	11	72.227	72.867	72.60	2.8436	2.8688	2.8583
G 3	11	84.927	85.567	85.00	3.3436	3.3688	3.3465

Tapping drill sizes for taps

Rp

Whitworth standard parallel internal pipe thread DIN EN 10226-1

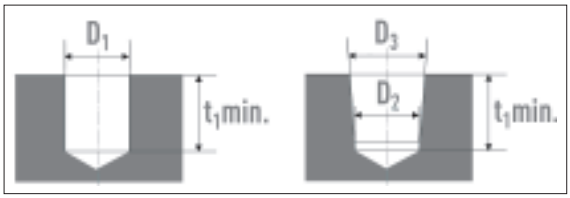
Nominal size	Pitch TPI	Minor Ø Internal thread min mm	Minor Ø Internal thread max mm	Nominal Ø DIN 336 ISO 2306	Minor Ø Internal thread min inch	Minor Ø Internal thread max inch	Nominal Ø inch
Rp 1/16	28	6.490	6.632	6.55	0.2555	0.2611	0.2579
Rp 1/8	28	8.495	8.637	8.60	0.3345	0.3400	0.3386
Rp 1/4	19	11.341	11.549	11.50	0.4465	0.4547	0.4528
Rp 3/8	19	14.846	15.054	15.00	0.5845	0.5927	0.5906
Rp 1/2	14	18.490	18.774	18.50	0.7279	0.7391	0.7283
Rp 5/8	14	20.446	20.730	20.50	0.8049	0.8161	0.8071
Rp 3/4	14	23.976	24.260	24.00	0.9439	0.9551	0.9449
Rp 1	11	30.112	30.472	30.25	1.1855	1.1997	1.1909
Rp 1 1/4	11	38.773	39.133	39.00	1.5265	1.5407	1.5354
Rp 1 1/2	11	44.629	45.063	45.00	1.7570	1.7741	1.7717
Rp 2	11	56.440	56.874	56.50	2.2220	2.2391	2.2244
Rp 2 1/2	11	72.010	72.444	72.20	2.8350	2.8521	2.8425
Rp 3	11	84.710	85.144	85.00	3.3350	3.3521	3.3465

Tapping drill sizes for taps

NPT

American standard pipe thread taper thread, taper 1:16

Nominal size ASME B1.20.1	D_1 mm	D_2 mm	D_3 mm	T_1 mm	D_1 inch	D_2 inch	D_3 inch	T_1 inch
1/16-27 NPT	6.15	5.95	6.39	10.7	0.2421	0.2343	0.2516	0.4213
1/8-27 NPT	8.40	8.31	8.74	10.8	0.3307	0.3272	0.3441	0.4252
1/4-18 NPT	11.10	10.73	11.36	15.6	0.4370	0.4224	0.4472	0.6142
3/8-18 NPT	14.30	14.15	14.80	16.0	0.5630	0.5571	0.5827	0.6299
1/2-14 NPT	17.90	17.47	18.32	20.8	0.7047	0.6878	0.7213	0.8189
3/4-14 NPT	23.30	22.79	23.67	21.3	0.9173	0.8972	0.9319	0.8386
1-11 1/2 NPT	29.00	28.64	29.69	25.6	1.1417	1.1276	1.1689	1.0079
1 1/4-11 1/2 NPT	37.70	37.37	38.45	26.1	1.4843	1.4713	1.5138	1.0276
1 1/2-11 1/2 NPT	43.70	43.44	44.52	26.1	1.7205	1.7102	1.7528	1.0276
2-11 1/2 NPT	55.60	55.45	56.56	26.5	2.1890	2.1831	2.2268	1.0433
2 1/2-8 NPT	66.30	66.14	67.62	36.3	2.6102	2.6039	2.6622	1.4291
3-8 NPT	82.30	81.90	83.52	38.5	3.2402	3.2244	3.2882	1.5157



NPTF

American standard pipe thread taper thread, dry seal, taper 1:16

Nominal size ASME B1.20.1	D_1 mm	D_2 mm	D_3 mm	T_1 mm	D_1 inch	D_2 inch	D_3 inch	T_1 inch
1/16-27 NPTF	6.1	5.97	6.41	10.3	0.2402	0.2350	0.2524	0.4055
1/8-27 NPTF	8.4	8.33	8.77	10.3	0.3307	0.3280	0.3453	0.4055
1/4-18 NPTF	11.0	10.77	11.40	15.0	0.4331	0.4240	0.4488	0.5906
3/8-18 NPTF	14.5	14.19	14.84	15.3	0.5709	0.5587	0.5843	0.6024
1/2-14 NPTF	17.5	17.48	18.33	19.9	0.6890	0.6882	0.7217	0.7835
3/4-14 NPTF	23.0	22.84	23.72	20.4	0.9055	0.8992	0.9339	0.8031
1-11 1/2 NPTF	29.0	28.62	29.76	24.5	1.1417	1.1268	1.1717	0.9646
1 1/4-11 1/2 NPTF	37.5	37.44	38.52	25.0	1.4764	1.4740	1.5165	0.9843
1 1/2-11 1/2 NPTF	43.5	43.50	44.59	25.0	1.7126	1.7126	1.7555	0.9843
2-11 1/2 NPTF	56.0	55.51	56.62	25.4	2.2047	2.1854	2.2291	1.0000
2 1/2-8 NPTF	66.0	66.03	67.71	38.0	2.5984	2.5996	2.6657	1.4961
3-8 NPTF	82.0	81.80	83.62	40.0	3.2283	3.2205	3.2921	1.5748

Tapping drill sizes for taps

PG

Steel conduit thread DIN 40430

Nominal size	Pitch TPI	Minor Ø Internal thread min mm	Minor Ø Internal thread max mm	Nominal Ø mm	Minor Ø Internal thread min inch	Minor Ø Internal thread max inch	Nominal Ø inch
Pg7	20	11.29	11.43	11.40	0.4445	0.4500	0.4488
Pg9	18	13.85	14.01	14.00	0.5455	0.5516	0.5512
Pg11	18	17.25	17.41	17.25	0.6793	0.6854	0.6791
Pg13.5	18	19.05	19.21	19.00	0.7502	0.7563	0.7480
Pg16	18	21.15	21.31	21.25	0.8329	0.8390	0.8366
Pg21	16	26.79	27.03	27.00	1.0546	1.0642	1.0630
Pg29	16	35.49	35.73	35.50	1.3971	1.4067	1.3976
Pg36	16	45.49	45.73	45.50	1.7908	1.8004	1.7913
Pg42	16	52.49	52.73	52.50	2.0664	2.0760	2.0669
Pg48	16	57.79	58.03	58.00	2.2751	2.2846	2.2835

Tapping drill sizes for taps

BSW

British Standard Whitworth thread - B.S. 84

Nominal size	Minor Ø Internal thread medium class min mm	Minor Ø Internal thread medium class max mm	Nominal Ø mm	Minor Ø Internal thread medium class min inch	Minor Ø Internal thread medium class max inch	Nominal Ø inch
1/16-60	1.045	1.231	1.20	0.0411	0.0485	0.0472
3/32-48	1.703	1.911	1.90	0.0671	0.0752	0.0748
1/8-40	2.362	2.590	2.50	0.0930	0.1020	0.0984
5/32-32	2.952	3.213	3.10	0.1162	0.1265	0.1220
3/16-24	3.407	3.745	3.60	0.1341	0.1474	0.1417
7/32-24	4.201	4.539	4.50	0.1654	0.1787	0.1772
1/4-20	4.724	5.155	5.00	0.1860	0.2030	0.1969
5/16-18	6.131	6.591	6.50	0.2414	0.2595	0.2559
3/8-16	7.493	7.988	7.90	0.2950	0.3145	0.3110
7/16-14	8.790	9.330	9.20	0.3460	0.3673	0.3622
1/2-12	9.989	10.590	10.50	0.3933	0.4169	0.4134
9/16-12	11.577	12.178	12.00	0.4558	0.4794	0.4724
5/8-11	12.919	13.558	13.40	0.5086	0.5338	0.5276
3/4-10	15.798	16.484	16.40	0.6220	0.6490	0.6457
7/8-9	18.612	19.354	19.25	0.7328	0.7620	0.7579
1-8	21.335	22.148	22.00	0.8400	0.8720	0.8661
1 1/8-7	23.929	24.833	24.75	0.9421	0.9777	0.9744
1 1/4-7	27.104	28.008	27.50	1.0671	1.1027	1.0827
1 3/8-6	29.505	30.529	30.00	1.1616	1.2019	1.1811
1 1/2-6	32.680	33.704	33.50	1.2866	1.3269	1.3189
1 5/8-5	34.771	35.965	35.50	1.3689	1.4159	1.3976
1 3/4-5	37.946	39.140	39.00	1.4939	1.5409	1.5354
1 7/8-4 1/2	40.398	41.705	41.50	1.5905	1.6419	1.6339
2-4 1/2	43.573	44.880	44.50	1.7155	1.7669	1.7520
2 1/4-4	49.020	50.468	50.00	1.9299	1.9869	1.9685
2 1/2-4	55.370	56.818	56.00	2.1799	2.2369	2.2047
2 3/4-3 1/2	60.559	62.188	61.00	2.3842	2.4483	2.4016
3-3 1/2	66.909	68.538	68.00	2.6342	2.6983	2.6772

Tapping drill sizes for taps

BSF

British Standard Fine Thread - B.S. 84

	Minor Ø Internal thread medium class		Nominal Ø	Minor Ø Internal thread medium class		Nominal Ø
	min	max		min	max	
Nominal size	mm	mm	mm	inch	inch	inch
3/16-32	3.745	4.006	4.00	0.1475	0.1577	0.1575
7/32-28	4.394	4.677	4.60	0.1730	0.1841	0.1811
1/4-26	5.099	5.396	5.30	0.2007	0.2124	0.2087
5/16-22	6.459	6.817	6.70	0.2543	0.2684	0.2638
3/8-20	7.900	8.331	8.20	0.3110	0.3280	0.3228
7/16-18	9.306	9.766	9.60	0.3664	0.3845	0.3780
1/2-16	10.667	11.162	11.00	0.4200	0.4394	0.4331
9/16-16	12.255	12.750	12.60	0.4825	0.5020	0.4961
5/8-14	13.553	14.093	14.00	0.5336	0.5548	0.5512
3/4-12	16.340	16.941	16.80	0.6433	0.6670	0.6614
7/8-12	19.269	19.909	19.80	0.7586	0.7838	0.7795
1-10	22.148	22.834	22.70	0.8720	0.8990	0.8937
1 1/8-9	24.962	25.704	25.50	0.9827	1.0120	1.0039
1 1/4-9	28.137	28.879	28.50	1.1077	1.1370	1.1220
1 3/8-8	30.860	31.673	31.50	1.2150	1.2470	1.2402
1 1/2-8	34.035	34.848	34.50	1.3400	1.3720	1.3583
1 5/8-8	37.211	38.024	37.50	1.4650	1.4970	1.4764

Tapping drill sizes for taps

BA

British Association Standard thread

Nominal size B.S. 949:Part 2	Pitch mm	Minor Ø Internal thread min mm	Minor Ø Internal thread max mm	Nominal Ø mm	Minor Ø Internal thread min inch	Minor Ø Internal thread max inch	Nominal Ø inch
BA0	1.00	4.800	5.175	5.10	0.1890	0.2037	0.2008
BA1	0.90	4.220	4.560	4.50	0.1661	0.1795	0.1772
BA2	0.81	3.728	4.033	4.00	0.1468	0.1588	0.1575
BA3	0.73	3.224	3.499	3.40	0.1269	0.1378	0.1339
BA4	0.66	2.808	3.058	3.00	0.1106	0.1204	0.1181
BA5	0.59	2.492	2.712	2.60	0.0981	0.1068	0.1024
BA6	0.53	2.164	2.364	2.30	0.0852	0.0931	0.0906
BA7	0.48	1.924	2.104	2.00	0.0757	0.0828	0.0787
BA8	0.43	1.684	1.844	1.80	0.0663	0.0726	0.0709
BA9	0.39	1.432	1.577	1.50	0.0564	0.0621	0.0591
BA10	0.35	1.280	1.410	1.30	0.0504	0.0555	0.0512
BA11	0.31	1.128	1.243	1.20	0.0444	0.0489	0.0472
BA12	0.28	0.964	1.069	1.00	0.0380	0.0421	0.0394
BA13	0.25	0.900	0.995	0.95	0.0354	0.0392	0.0374
BA14	0.23	0.724	0.809	0.75	0.0285	0.0319	0.0295

Tapping drill sizes for Thread Formers

UNC

Unified national coarse thread UNC

Nominal size ASME B1.1	Nominal Ø mm	Nominal Ø inch
2-56 UNC	1.97	0.0776
3-48 UNC	2.26	0.0890
4-40 UNC	2.55	0.1004
5-40 UNC	2.87	0.1130
6-32 UNC	3.15	0.1240
8-32 UNC	3.80	0.1496
10-24 UNC	4.30	0.1693
12-24 UNC	5.00	0.1969
1/4-20 UNC	5.75	0.2264
5/16-18 UNC	7.25	0.2854
3/8-16 UNC	8.75	0.3445
7/16-14 UNC	10.30	0.4055
1/2-13 UNC	11.80	0.4646
9/16-12 UNC	13.30	0.5236
5/8-11 UNC	14.80	0.5827
3/4-10 UNC	17.90	0.7047

UNF

Unified national fine thread UNF

Nominal size ASME B1.1	Nominal Ø mm	Nominal Ø inch
2-64 UNF	2.00	0.0787
3-56 UNF	2.30	0.0906
4-48 UNF	2.60	0.1024
5-44 UNF	2.90	0.1142
6-40 UNF	3.20	0.1260
8-36 UNF	3.85	0.1516
10-32 UNF	4.45	0.1752
12-28 UNF	5.05	0.1988
1/4-28 UNF	5.90	0.2323
5/16-24 UNF	7.45	0.2933
3/8-24 UNF	9.00	0.3543
7/16-20 UNF	10.50	0.4134
1/2-20 UNF	12.10	0.4764
9/16-18 UNF	13.70	0.5394
5/8-18 UNF	15.25	0.6004
3/4-16 UNF	18.40	0.7244
7/8-14 UNF	21.40	0.8425
1-12 UNF	24.45	0.9626

UNEF

Unified national extra fine thread UNEF

Nominal size ASME B1.1	Nominal Ø mm	Nominal Ø inch
1/4-32 UNEF	6.00	0.2362
5/16-32 UNEF	7.60	0.2992
3/8-32 UNEF	9.10	0.3583
7/16-28 UNEF	10.70	0.4213
1/2-28 UNEF	12.30	0.4843
9/16-24 UNEF	13.80	0.5433
5/8-24 UNEF	15.40	0.6063
3/4-20 UNEF	18.50	0.7283
7/8-20 UNEF	21.60	0.8504
1-20 UNEF	24.80	0.9764

Tapping drill sizes for Thread Formers

M

Metric ISO thread DIN 13 M

Nominal size	Pitch mm	Nominal Ø mm	Nominal Ø inch
M1	0.25	0.88	0.0346
M1.2	0.25	1.08	0.0425
M1.4	0.30	1.26	0.0496
M1.6	0.35	1.45	0.0571
M1.7	0.35	1.55	0.0610
M1.8	0.35	1.65	0.0650
M2	0.40	1.82	0.0717
M2.2	0.45	2.00	0.0787
M2.3	0.40	2.10	0.0827
M2.5	0.45	2.30	0.0906
M2.6	0.45	2.40	0.0945
M3	0.50	2.80	0.1102
M3.5	0.60	3.25	0.1280
M4	0.70	3.70	0.1457
M5	0.80	4.65	0.1831
M6	1.00	5.55	0.2185
M8	1.25	7.40	0.2913
M10	1.50	9.30	0.3661
M12	1.75	11.20	0.4409
M14	2.00	13.10	0.5157
M16	2.00	15.10	0.5945
M18	2.50	16.90	0.6654
M20	2.50	18.90	0.7441
M22	2.50	20.90	0.8228
M24	3.00	22.70	0.8937

MF

Metric ISO fine thread DIN 13 MF

Nominal size	Nominal Ø mm	Nominal Ø inch
M4x0.5	3.80	0.1496
M5x0.5	4.80	0.1890
M6x0.5	5.80	0.2283
M6x0.75	5.65	0.2224
M7x0.75	6.65	0.2618
M8x0.75	7.65	0.3012
M8x1	7.55	0.2972
M10x0.75	9.65	0.3799
M10x1	9.55	0.3760
M10x1.25	9.40	0.3701
M12x1	11.55	0.4547
M12x1.25	11.40	0.4488
M12x1.5	11.30	0.4449
M14x1	13.55	0.5335
M14x1.5	13.30	0.5236
M16x1	15.55	0.6122
M16x1.5	15.30	0.6024
M18x1	17.55	0.6909
M18x1.5	17.30	0.6811
M20x1.5	19.30	0.7598
M20x2	19.10	0.7520
M22x1.5	21.30	0.8386
M22x2	21.10	0.8307
M24x1.5	23.30	0.9173
M24x2	23.10	0.9094

Tapping drill sizes for Thread Formers

STI-M

STI-Metric ISO thread DIN 13 M

Nominal size	Pitch mm	Nominal Ø mm	Nominal Ø inch
STI M3	0.50	3.40	0.1339
STI M4	0.70	4.60	0.1811
STI M5	0.80	5.65	0.2224
STI M6	1.00	6.85	0.2697
STI M8	1.25	9.05	0.3563
STI M10	1.50	11.30	0.4449
STI M12	1.75	13.50	0.5315

G

British standard pipe thread DIN ISO 228 G

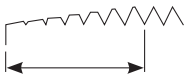
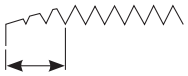
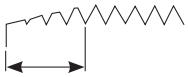
Nominal size	Pitch TPI	Nominal Ø mm	Nominal Ø inch
G 1/16	28	7.25	0.2854
G 1/8	28	9.25	0.3642
G 1/4	19	12.50	0.4921
G 3/8	19	16.00	0.6299
G 1/2	14	20.00	0.7874
G 5/8	14	22.00	0.8661
G 3/4	14	25.50	1.0039
G 7/8	14	29.25	1.1516
G 1	11	32.00	1.2598

BSW

British Standard Whitworth thread - B.S. 84

Nominal size	Nominal Ø mm	Nominal Ø inch
3/32-48	2.10	0.0827
1/8-40	2.85	0.1122
5/32-32	3.55	0.1398
3/16-24	4.20	0.1654
1/4-20	5.70	0.2244
5/16-18	7.20	0.2835
3/8-16	8.70	0.3425
7/16-14	10.20	0.4016
1/2-12	11.60	0.4567
9/16-12	13.20	0.5197
5/8-11	14.70	0.5787
11/16-11	16.25	0.6398
3/4-10	17.70	0.6969
7/8-9	20.75	0.8169
1-8	23.75	0.9350

Taps – Form of Chamfer

Chamfer Form	Diagram	Chamfer length**	Lead angle χ_r =	Typical flute configuration	Suitable for
A	 Form A = Taper	6.0 up to 8	5°	Straight flutes	Blind and through holes in materials forming short chips
B	 Form B = Spiral Point Plug	3.5 up to 5	8°	Straight flutes, with spiral point	Through holes in materials forming medium and long chips
C	 Form C = Semi-Bottoming	2.0 up to 3	15°	Straight or spiral flutes	Blind and through holes in materials forming short and long chips
D	 Form D = Plug	3.5 up to 5	8°		Blind holes with chip clearance or through holes
E*	 Form E = Bottoming	1.5 up to 2	23°		Blind holes with extremely short lead

*Avoid chamfer form E if possible
** Counting the no. of ground relief threads is a simple measuring method for determining the length of chamfer

Special construction

Owing to constant technical development caused by the use of special machines, machining centers and also due to difficult-to-machine materials, more and more special threading tools of high quality are demanded.

For decades, we have manufactured special tools to the high performance standard, tools which also have constantly been modified and improved in quality. With our long experience in the construction of threading tools, with our technical high-quality production, our testing equipment and our technical staff, we are able to solve difficult thread cutting problems.

In order to be able to offer the best tool and to avoid time-consuming questions, we ask you to give us the following details:

1. Type of thread
2. Dimension, tolerance
3. Single or multistart thread
4. For special profiles: drawing of profile, if possible
5. Material to be machined (designation and strength)
6. Through or blind hole (if possible a drawing of the workpiece or part of it)
7. Tapping attachment: make, type (with or without length compensation, radial and axial float)
8. Machine: make, type, driving force
9. Horizontal, vertical machining
10. Lubrication and type or dry machining

In case a detailed agreement about the construction is necessary, we shall send you a drawing for your acceptance.

Types of thread

Types shown in the catalog

UNC	Unified national coarse thread
UNJC	Unified national "J" coarse thread
UNF	Unified national fine thread
UNJF	Unified national "J" fine thread
UNEF	Unified national extra fine thread
UNS	Unified national threads of special diameters, pitches, and lengths of engagement
UN	Unified national threads of selected diameters pitch combinations 4-6-8-12-16-20-28-32
NPT	American standard pipe taper thread
NTPF	American standard pipe taper thread, dry seal
STI-UNC	Unified national coarse thread for screw thread inserts
STI-UNF	Unified national fine thread for screw thread inserts
M	Metric ISO thread DIN 13
MJ	Metric MJ thread DIN ISO 5855
MF	Metric ISO fine thread DIN 13
G = PF	British standard pipe thread DIN ISO 228
Rp = PS	British standard parallel internal pipe thread ISO 7/1

Additional types of thread

FG	Bycicle thread
Vg	Valve thread
NN	Sewing machine thread
S	Buttress thread
Pg	Steel conduit thread
TR	Trapezoidal thread
W	Whitworth thread DIN 49301
STI-M	Metric ISO thread for screw thread inserts
STI-MF	Metric ISO fine thread for screw thread inserts
Rc = PT	British standard taper pipe thread ISO 7/I and DIN EN 10226-2
Rd	Round thread
E	Electrical thread
Glasg	Threads in glass
Gl	Radius thread for glass containers

American thread types (Cylindrical unified threads)

V	A 60° "V" thread with truncated crests and roots

National threads (out of use)

NC	American national coarse thread
NF	American national fine thread
NEF	American national extra-fine thread
N	American national selected diameter-pitch-combinations 8, 12 and 16
NS	American national special thread

Cylindrical pipe threads

NC	American national coarse thread
NGO	American national gas outlet thread
NGS	American national gas straight thread
NPSC	American standard straight pipe thread in couplings
NPSF	American standard internal straight pipe thread (dryseal)
NPSG	American standard straight pipe thread for Oil and Grease Cup
NPSH	American standard straight pipe thread for hose couplings and nipples
NPSI	American standard intermediate internal straight pipe thread (dryseal)
NPSL	American standard straight pipe thread for locknuts and locknut-pipe thread
NPSM	American standard straight pipe thread for mechanical joints

Conical pipe threads

NPTC	Taper pipe thread for discharge valves of compressed chlorine gas cylinders
NPTG	Taper pipe thread for discharge valves of compressed gas cylinders (all gases except chlorine)
NPTR	American standard taper pipe thread for railing fittings
PTF-SAE	Dryseal SAE short taper pipe thread
Short ANPT	Military aeronautical pipe thread
NGT	National gas taper threads (Series NGT)
SGT	Special gas taper threads

Types of thread

Trapezoidal and buttress screw threads

ACME-C	Acme threads
	Acme-C for special purposes
	Acme-G for general purposes
STUB	Stub acme threads, short
N.BUTT	National buttress screw thread

API threads

CSG	Casing (short round thread)
LCSG	Casing (long round thread)
BCSG	Casing (buttress thread)
XCSG	Casing (extreme line)
LP	Line pipe
TBG	Tubing (non-upset)
UP TBG	Tubing (external-upset)
NC ROTARY	Number style gages
REG ROTARY	Regular style gages
REG LH ROTARY	Regular left-hand style gages
FH ROTARY	Full-hole style gages
IF ROTARY	Internal flush rotary

British types of thread

BSF	British standard fine thread series
BSPT	British standard taper pipe thread
	ISO 7/1 and DIN EN 10226-2
BSP	British standard parallel pipe thread ISO 228 (G)
BSPP	British standard parallel internal pipe thread
	ISO 7/1 (Rp)
WHIT	British Whitworth standard special thread
BA	British association Standard thread
CEI	Cycle engineers' institution thread
BSC	British standard cycle thread

French types of thread

Si	Metric thread, modified
GAZ	Pipe thread, parallel

Thread Milling:
Sure and Efficient with PROTOTYP

Focus on Process Reliability

Thread milling is technology with a future. In the most varied fields of application it offers the user considerable advantages over other processes. These advantages are to be found above all in exceptionally high process reliability. Thread milling is a very reliable and sure process for the manufacture of internal and external threads. However, it requires machine tools with helical interpolation.

Programming can take place manually via line code, canned cycle or better still, with the aid of our CCS machining data program.

NC program starting point

Axial infeed to depth of thread

Entry loop 180°

Versatility reduces costs

Thread mills can reduce tool costs considerably, since the most varied thread versions can be produced with a single tool.

- Different dimensions with the same pitch
- Blind and through hole threads
- Right-hand and left-hand threads
- Different tolerance classes

Accurate thread depth

Since thread mills do not have a chamfer (lead), the depth of thread can be programmed accurately. The user can consistantly achieve accurate thread depths.

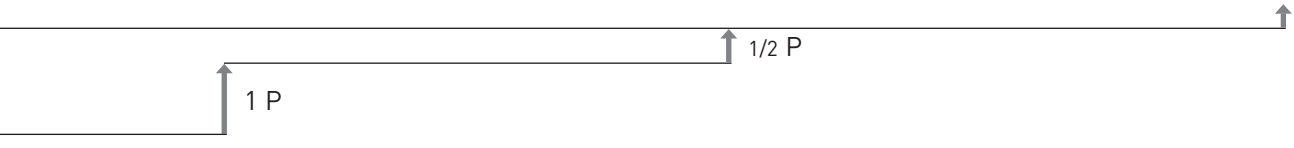
Further technical features:

- Exact thread position
- Threading on angled surfaces is possible
- Minimum torque even for large thread dimensions

Thread milling 360°

Exit loop 180°

Departure from the finished thread

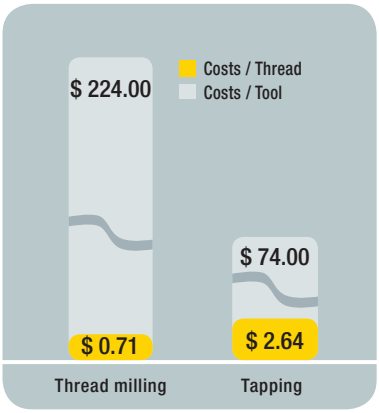


Solid carbide thread mills

An investment, which pays off

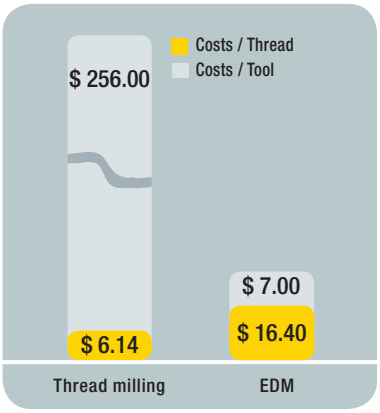
- Reduction of multiple tools: a tool for different thread diameters, for right and left-hand threads, for different materials making long or short chips
- Increased process reliability due to controlled chip formation
- High productivity due to high machining speeds and tooth feed
- Reduced machine wear, no reversal of spindle is necessary
- Dry machining is possible with coated thread mills
- No special tap chucks required
- Regrinding is possible achieving tool cost reduction

Compare
Thread milling with tapping
Dimension NPTF 1/16-27
Material 316 / 22 HRC



Method	Thread Milling	Tapping
Costs / Tool	$ 224.00	$ 74.00
Time / Hole	14.2 sec	17.4 sec
Machine hourly rate	$ / h 100.00	$ / h 50.00
Holes / Tool	249	31
Costs /Hole	$ 0.71	$ 2.64

Compare
Thread milling with EDM
Dimension M10-6H
Material H11 / 57 HRC



Initial situation:
Thread production in an already hardened workpiece

Method	Thread milling	EDM
Costs / Tool	$ 256.00	$ 7.00
Time / Hole	1 min 18 sec	18 min
Machine hourly rate	$ / h 100.00	$ / h 50.00
Holes / Tool	63	5
Costs /Hole	$ 6.14	$ 16.40

Thread Mills for shallow thread depths

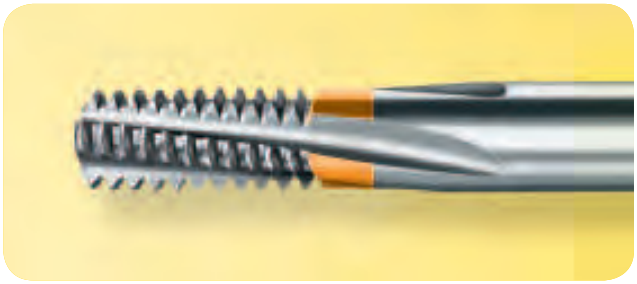
The new thread mill cutter with a short cutting length, is an economical alternative for threads with a max. 1.5 X depth.

Thread Mills for use in Nickel alloys

Specifically for thread production in high-value and expensive components made of nickel (e.g. in the aerospace industry) Prototyp offers a newly developed solid carbide thread mill with a radius profile. It gives the user extremely high process reliability.

Thread Milling in the Aerospace Industry:
Process-safe manufacturing of threads
for a high-pressure compressor ring.
Material: Greek Ascoloy
Tensile strength: 200 PSI, 44 HRC

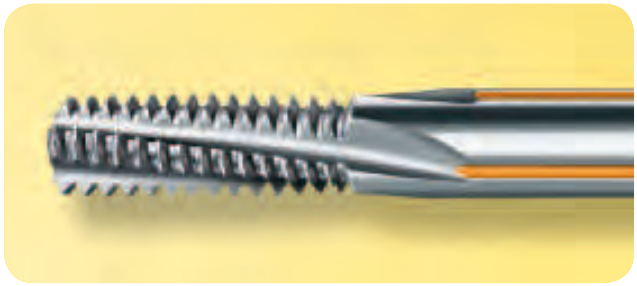
Modification Examples of Thread Mills



Measure: Relief-Grind on the Shank End of the Threaded Flute Part.
Effect: At the relevant machining depth the incomplete turn (run out) is removed.

Measure: Reduction of the threaded part i.e. the flute run out.
Effect: A deeper thread is produced in axial division by a reduction of the cutting pressure.

Measure: Removal of alternate thread profile (teeth).
Effect: Reduction of the cutting pressure in difficult or unstable applications.



Measure: Grinding of axial cooling grooves in the shank.
Effect: Suitable for machining through holes, coolant option for small shank diameters.

Marking of our taps

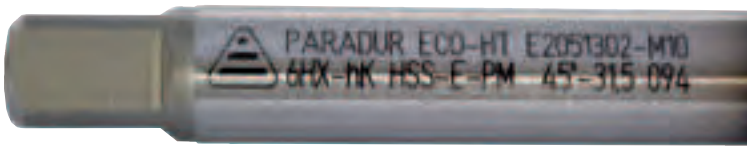
Taps HSS-Cobalt

PARADUR WSH	Machine tap, spiral flutes
C 3/4-10 UNC-2B	Lead: C, dimension: 3/4-10, tolerance class: 2B
HSS-E	High speed steel class E (Cobalt min. 5%)
22/02	Production reference number
45°-31.5	Spiral angle, flute length in mm in case of spiral flutes
A22567	Code number

PROTOTEX INOX	Machine tap, spiral point
B 1/2-13 UNC-3B	Lead: B, dimension: 1/2-13, tolerance class: 3B
HSS-E	High speed steel class: E (Cobalt min. 5%)
128-S12	Production reference number
A22253	Code number

Internal Thread Formers HSS-Cobalt

PROTODYN S	Internal thread former with lubrication grooves
C 1/2 -13 UNC-2B	Lead: C, dimension: 1/2 -13, tolerance class: 2B
HSS-E	High speed steel class E (Cobalt min. 5%)
14/01	Production reference number
A2266705	Code number
D. Ø 0.4600	Drill size dia. in inch



Thread Mills, Solid Carbide

Protostar 10	Thread mill with internal threads, bright
Stg.2	Pitch
K10/30F	Solid carbide K10/30F
Rprg.12.35	Programming radius Rprg. to enter into the tool memory
H51 5100	Code number
25X45	Cutting edge diameter X thread length

Trouble shooting

Dimensional accuracy

a) Oversize pitch diameter

Cause	Solution
Incorrect tap	1. Use correct GH limit. 2. Use longer chamfered taps. 3. Consider less free cutting style.
Chip packing	1. Use spiral point or spiral fluted taps. 2. Reduce number of flutes to create extra chip space. 3. Use larger drill size. 4. In blind hole applications, allow deeper holes where applicable or shorten the thread length of the parts. 5. Use recommended lubricant.
Galling	1. Apply surface treatment such as steam oxide, TiN, or chrome. 2. Use recommended lubricant. 3. Reduce tapping speed. 4. Use correct tap for the material being tapped.
Operating Conditions	1. Ensure correct tapping speeds to avoid torn threads. 2. Check alignment of tap and drilled hole. 3. Use lead screw tapper. 4. Use tapping machine with adequate horsepower. 5. Check misalignment of tap and drilled hole due to loose spindle or worn holder.
Tool condition	1. Check accuracy of chamfer lead grinding. 2. Ensure correct cutting angles. 3. Land widths too narrow. 4. Check burrs from regrinding not present.

b) Oversize minor diameter

Cause	Solution
Hole size	1. Use smaller drill size. 2. Avoid tapered hole. 3. Use taps with correct chamfer.

c) Undersize pitch diameter

Cause	Solution
Incorrect tap	1. Use oversize taps. a. for cutting materials such as copper alloy, aluminum alloy, and cast iron. b. for cutting tubing which will have “spring back” action after tapping. 2. Use taps with correct chamfer angle. 3. Use taps with higher cutting angle.
Damaged	1. Use proper reversing speed to avoid damaging the tapped thread on exiting the hole.
Leftover chips	1. Improve operating conditions to eliminate leftover chips in the hole. 2. Remove left over chips prior to gage checking.

d) Undersize minor diameter

Cause	Solution
Hole size	1. Use larger drill size.

Surface finish

a) Torn or rough threads

Cause	Solution
Dull tap	1. Resharpen
Chamfer too short	1. Increase chamfer length.
Incorrect rake angle	1. Use correct rake angle suitable for material being tapped
Galling	1. Use thread relieved taps 2. Reduce land width 3. Apply surface treatment such as steam oxide, TiN, or chrome. 4. Use recommended lubricant. 5. Reduce tapping speed.

Trouble shooting

a) Torn or rough threads

Cause	Solution
Galling	6. Use larger drill size. 7. Check alignment between tap and hole.
Chip packing	1. Use spiral pointed or spiral fluted taps. 2. Use larger drill size.

b) Chatter marks on thread

Cause	Solution
Cutting too freely	1. Use lower rake angle. 2. Reduce amount of thread relief.
Tool condition	1. Use taps with wider land.

Tool life

a) Breakage

Cause	Solution
Incorrect tap	1. Tapping too deep. Avoid chip packing in the flutes or selection bottom of the hole. Use spiral-pointed, spiral-fluted or fluteless taps. 2. Use correct surface treatment such as steam oxide, TiN, or chrome.
Excessive tapping torque	1. Hole too small – use correct size drill 2. Shorten thread length. 3. Increase rake angle. 4. Use a tap with more thread relief and reduced land width. 5. Use spiral pointed or spiral fluted taps.
Operating Conditions	1. Reduce tapping speed. 2. Avoid misalignment between tap and the hole and tapered hole. 3. Use floating type of tapping holder. 4. Use tapping holder with torque adjustment. 5. Avoid hitting bottom of the hole.
Tool condition	1. Use taps with wider land width. 2. Remove all worn sections when regrinding the flutes. 3. Regrind tool more frequently.

b) Chipping

Cause	Solution
Incorrect tap selection	1. Use tap with lower rake angle. 2. Consider different tool steel.

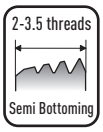
b) Chipping cont.

Cause	Solution
Incorrect tap selection	3. Reduce hardness of the tap. 4. Increase chamfer length. 5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps.
Operating conditions	1. Reduce tapping speed. 2. Avoid misalignment between tap and hole. 3. Avoid sudden reverse in blind hole tapping. 4. Avoid galling. 5. Use larger drill size. 6. Ensure adequate lubricant. 7. Check for hard spots in the workpiece.

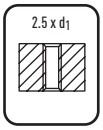
c) Excessive Wear

Cause	Solution
Incorrect tap selection	1. Consider specially designed taps. 2. Change to a style of tap made from PM material. 3. Apply special surface treatment such as steam oxide, TiN, TiCN or CrN. 4. Increase chamfer length.
Operating conditions	1. Reduce tapping speed. 2. Apply adequate lubrication. 3. Avoid work hardening the material being tapped. 4. Use larger drill size.
Tool condition	1. Ensure correct rake angle. 2. Minimize heat in grinding process to avoid de-tempering.

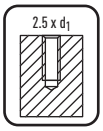
Icons for Machine Taps and Thread Formers



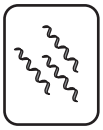
Chamfer form,
e.g. CF = 2-3.5 threads Semi-Bottoming



For through holes with
max. thread length of e.g. 2.5xd1

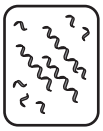


For blind holes with max. thread
length of e.g. 2.5xd1



For long chipping materials

For short chipping materials



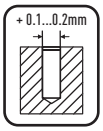
For long and short
chipping materials

Suitable for MQL, Minimum Quantity
Lubrication supply

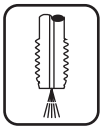
Only for rigid tapping

Helix angle for example
Right-hand 30.

Left hand threads



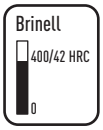
Core hole, if possible enlarge
by 0.1 to 0.2 mm



Through coolant, axial flow

Through coolant, radial flow

Controllled minor diameter,
not cutting



Material hardness or tensile strength, e.g.
max 400HB or 42HRc

Overall length:
S = short, M = Standard,
L = long, XL = extra long

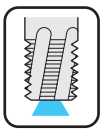
Tool material (HSS-Cobalt)

Icons for Thread Mills

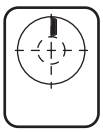
Tool material

Helix angle

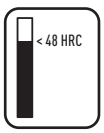
Number of flutes



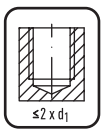
Through coolant, axial flow



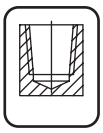
Tool is non-center cutting



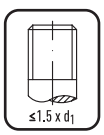
Tool recommendation,
hardness specifi cally
(e.g. < 48HRC)



Thread Mill for
internal thread
(e.g. max. depth of cut 2 x d1)



Thread Mill for tapered
internal thread



Thread Mill for
external threads
(e.g. max. depth of cut 1.5 x d1)

Prototyp nomenclature

Designation – Threading tools

PROTOTEX = Taps with spiral point for through holes

PARADUR = Taps for blind holes or in short chipping materials for blind holes and through holes

PROTODYN = Internal Thread Formers

Application

ECO = For economic wet and dry machining (mist coolant supply)

Synchrospeed = For rigid tapping without floating chucks

WSH = For deep threads in soft materials

WTH = For extremely deep threads in soft materials

H = For high temperature resistant materials

INOX = For stainless steel and high alloyed steel

TI = For titanium alloys and similar materials

NI = For nickel alloys and similar materials

TINI = For titanium alloys and nickel alloys

WLM = For long chipping soft materials

GG = For cast iron

HS = For abrasive, short chipping materials

HARD = For the machining of materials up to 63 HRc

S = With lubrication grooves

INSERT = For screw thread inserts (Helicoils)

5CP0003US

WALTER USA, Inc.
W22 N23855 RidgeView Parkway West • Waukesha, WI 53188, USA
Phone: +1 800 945 5554 • Fax: +1 866 782 6365
E-mail: service.us@walter-tools.com • www.walter-tools.com