

GUHRING

The Tool Company



HIGH PERFORMANCE TAPS

COBALT ● PM ● CARBIDE ● CUT & FORM TAPS

2009 Catalog



Navigating Your Way to Proper Tool Selection

GUHRING has marked its Standard Tap Series with color rings to help you quickly and confidently choose the correct tool for your job. Each ring relates to the unique machining behaviors of different materials as dictated by their type and condition. The role of material type and condition in selecting the proper tap for each application cannot be overstated.

So how do you use the GUHRING Tap Compass™ to find your way to improved tapping performance?

- The GUHRING Tap Compass™ lists a wide range of workpiece materials by type and condition, and identifies a “Recommended” and “Alternate” color ring for each group. Just find your material, and you will find your ring.
- Once you know the optimum color ring for your material, you will need to answer 3 quick questions to pinpoint your route to the proper tool:

What type of hole are you tapping? Through hole or Blind hole.
 What type of thread do you need? UNC, UNF, M or MF.
 What tool standard do you require? ANSI or DIN.

- With your answers in hand, you are ready to navigate to your color ring's Series pages and find the exact style and size of tap you need for your job.

It's that easy! The Tap Compass begins on page 14.

On the entry pages for each color ring section you will find the recommended tapping speeds for your job – again specified by material type and condition. In the technical section of the catalog you will also find a broad overview of potential speeds for both cut and form taps. Please note: each application presents many variables - we have done our best to provide speeds based on our tool geometry for the average application.

For additional information about Guhring threading products or any of our other families of high-performance cutting tools, visit www.guhring.com or contact us directly at (800) 776-6170.



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



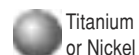
High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

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Through hole taps

Index

	Series	Thread-Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
UNC										
	3901	UNC		2B	ANSI	B	Cobalt	bright finish	26	
	3961	UNC		2B	ANSI	B	Cobalt	MolyGlide®	26	
	873	UNC		2B	DIN 371	B	Cobalt	bright finish	26	
	878	UNC		2B	DIN 376	B	Cobalt	bright finish	26	
UNF										
	3902	UNF		2B	ANSI	B	Cobalt	bright finish	27	
	3962	UNF		2B	ANSI	B	Cobalt	MolyGlide®	27	
	908	UNF		2B	DIN 374	B	Cobalt	bright finish	27	
METRIC										
	3900	Metric		6H	ANSI	B	Cobalt	bright finish	28	
	3960	Metric		6H	ANSI	B	Cobalt	MolyGlide®	28	
	803	Metric		ISO 2 (6H)	DIN 371	B	Cobalt	bright finish	28	
	815	Metric		ISO 2 (6H)	DIN 376	B	Cobalt	bright finish	29	
METRIC FINE										
	827	Metric Fine		ISO 2 (6H)	DIN 374	B	Cobalt	bright finish	30	
	830	Metric Fine		ISO 2 (6H)	DIN 374	C	Cobalt	bright finish	31	
UNC										
	3913	UNC		2B	ANSI	B	Cobalt	bright finish	38	
	3916	UNC		2B	ANSI	B	Cobalt	TiN coated	38	
	3946	UNC		2B	ANSI	B	Cobalt	TiCN coated	38	
	2881	UNC		2B	DIN 371	B	Cobalt	oxide finish	38	
	2883	UNC		2B	DIN 376	B	Cobalt	oxide finish	38	



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Cast Iron



Aluminum and Alloys



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Through hole taps



	Series	Thread-Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
UNF										
	3914	UNF		2B	ANSI	B	Cobalt	bright finish	39	
	3917	UNF		2B	ANSI	B	Cobalt	TiN coated	39	
	3947	UNF		2B	ANSI	B	Cobalt	TiCN coated	39	
NEW	2885	UNF		2B	DIN 374	B	Cobalt	oxide finish	39	
METRIC										
	3912	Metric		6H	ANSI	B	Cobalt	bright finish	40	
	3915	Metric		6H	ANSI	B	Cobalt	TiN coated	40	
	3945	Metric		6H	ANSI	B	Cobalt	TiCN coated	40	
NEW	2876	Metric		6H	DIN 371	B	Cobalt	oxide finish	40	
METRIC FINE										
NEW	3973	Metric Fine		6H	ANSI	B	Cobalt	TiN coated	41	
NEW	2879	Metric Fine		ISO 2 (6H)	DIN 374	B	Cobalt	oxide finish	41	
OVERSIZED										
NEW	3982	UNC / oversized		H7	ANSI	B	Cobalt	TiN coated	50	
NEW	3986	UNC / oversized		H11	ANSI	B	Cobalt	TiN coated	50	
NEW	3983	UNF / oversized		H7	ANSI	B	Cobalt	TiN coated	51	
NEW	3987	UNF / oversized		H11	ANSI	B	Cobalt	TiN coated	51	
STI										
NEW	3990	UNC / STI		3B	STI Tap	B	Cobalt	TiN coated	54	
NEW	3991	UNF / STI		3B	STI Tap	B	Cobalt	TiN coated	54	
UNC										
	3907	UNC		2B	ANSI	B	PM cobalt	TiN coated	58	
	1980	UNC		2B	DIN 371	B	Cobalt	bright finish	58	
	1985	UNC		2B	DIN 376	B	Cobalt	bright finish	58	



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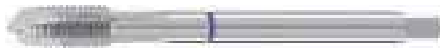


Titanium or Nickel

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Through hole taps

	Series	Thread-Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
UNF										
	3908	UNF		2B	ANSI	B	PM cobalt	TiN coated	59	
	1990	UNF		2B	DIN 374	B	Cobalt	bright finish	59	
METRIC										
	3906	Metric		6H	ANSI	B	PM cobalt	TiN coated	60	
	877	Metric		ISO 2 (6H)	DIN 371	B	PM cobalt	bright finish	61	
	879	Metric		ISO 2 (6H)	DIN 376	B	PM cobalt	bright finish	60	
	1870	Metric		ISO 2 (6H)	DIN 371	B	Cobalt	bright finish	61	
	1872	Metric		ISO 2 (6H)	DIN 376	B	Cobalt	bright finish	60	
METRIC FINE										
	1873	Metric Fine		ISO 2 (6H)	DIN 374	B	Cobalt	bright finish	61	
UNC										
	3992	UNC		2B	DIN / ANSI	B	PM cobalt	TiN coated	68	
UNF										
	3994	UNF		2B	DIN / ANSI	B	PM cobalt	TiN coated	68	
METRIC										
	804	Metric		6H	DIN 371	B	Cobalt	bright finish	69	
	1914	Metric		ISO 2 (6H)	DIN 371	B	Cobalt	TiCN coated	69	
	816	Metric		ISO 2 (6H)	DIN 376	B	Cobalt	bright finish	69	
	1915	Metric		ISO 2 (6H)	DIN 376	B	Cobalt	TiCN coated	69	
METRIC FINE										
	828	Metric Fine		ISO 2 (6H)	DIN 374	B	Cobalt	bright finish	70	
UNC										
	3937	UNC		2B	ANSI	C	Cobalt	FIREX® coated	78	
	1979	UNC		2B	DIN 371	C	Cobalt	oxide finish	78	
	1984	UNC		2B	DIN 376	C	Cobalt	oxide finish	78	



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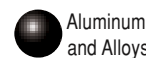
Stainless Steels



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Titanium or Nickel

Through hole taps



	Series	Thread-Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
UNF										
	3938	UNF		2B	ANSI	C	Cobalt	FIREX® coated	79	
	1989	UNF		2B	DIN 374	C	Cobalt	oxide finish	79	
METRIC										
	3936	Metric		6HX	ANSI	C	Cobalt	FIREX® coated	80	
	969	Metric		ISO2(6H)	DIN 371	C	Carbide	bright finish	82	
	1883	Metric		ISO2(6H)	DIN 376	C	Carbide	bright finish	82	
	1858	Metric		ISO2(6H)	DIN 371	C	Carbide	bright finish	80	
	1859	Metric		ISO2(6H)	DIN 376	C	Carbide	bright finish	80	
	318	Metric		6HX	DIN 371	C	Cobalt	TiAlN oated	82	
	1890	Metric		6HX	DIN 371	C	Cobalt	oxide finish	82	
	319	Metric		6HX	DIN 376	C	Cobalt	TiAlN oated	82	
	1897	Metric		6HX	DIN 376	C	Cobalt	oxide finish	82	
METRIC FINE										
	972	Metric Fine		ISO2(6H)	DIN 371	C	Carbide	bright finish	83	
	1861	Metric Fine		ISO2(6H)	DIN 371	C	Carbide	bright finish	81	
	1860	Metric Fine		ISO2(6H)	DIN 374	C	Carbide	bright finish	81	
	347	Metric Fine		6HX	DIN 374	C	Cobalt	TiAlN coated	83	
	1904	Metric Fine		6HX	DIN 374	C	Cobalt	oxide finish	83	
UNC										
	3925	UNC		2B	ANSI	B	Cobalt	bright finish	86	
	3928	UNC		2B	ANSI	B	Cobalt	TiN coated	86	
	3967	UNC		2B	ANSI	B	Cobalt	MolyGlide®	86	



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Titanium or Nickel

For a complete description of workpiece materials and which color ring they fall under, please see the Tap Compass at the beginning of the catalog



Through hole taps

Index

	Series	Thread-Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
UNF										
	3926	UNF		2B	ANSI	B	Cobalt	bright finish	86	
	3929	UNF		2B	ANSI	B	Cobalt	TiN coated	86	
	3968	UNF		2B	ANSI	B	Cobalt	MolyGlide®	86	
METRIC										
	3924	Metric		6H	ANSI	B	Cobalt	bright finish	87	
	3927	Metric		6H	ANSI	B	Cobalt	TiN coated	87	
	3966	Metric		6H	ANSI	B	Cobalt	MolyGlide®	87	
	1858	Metric		ISO 2 (6H)	DIN 371	C	Carbide	bright finish	87	
	1859	Metric		ISO 2 (6H)	DIN 376	C	Carbide	bright finish	87	
METRIC FINE										
	1860	Metric Fine		ISO 2 (6H)	DIN 371	C	Carbide	bright finish	88	
	1861	Metric Fine		ISO 2 (6H)	DIN 376	C	Carbide	bright finish	88	
UNC										
	2918	UNC		2BX	DIN 371	B	PM cobalt	bright finish	94	
2904	2905‡	UNC		2BX	DIN 371	B	PM cobalt	bright finish	94	
UNF										
	2919	UNF		2BX	DIN 371	B	PM cobalt	bright finish	94	
2906	2907‡	UNF		2BX	DIN 371	B	PM cobalt	bright finish	94	
METRIC										
	2916	Metric		6HX	DIN 371	B	PM cobalt	bright finish	95	
2900	2901‡	Metric		6HX	DIN 371	B	PM cobalt	bright finish	95	
METRIC FINE										
	2917	Metric Fine		6HX	DIN 371	B	PM cobalt	bright finish	95	
2902	2903‡	Metric Fine		6HX	DIN 371	B	PM cobalt	bright finish	95	

‡ Design change - Crossed out series numbers are being replaced with the numbers with this symbol: ‡ Older series numbers available while supplies last.



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Blind hole taps



	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Helix	Substrate	Finish	Page No.	
UNC											
	3904	UNC		2B	ANSI	C	40° helix	Cobalt	bright finish	32	
	3964	UNC		2B	ANSI	C	40° helix	Cobalt	Mo-lyGlide®	32	
	876	UNC		2B	DIN 371	C	40° helix	Cobalt	bright finish	32	
	881	UNC		2B	DIN 376	C	40° helix	Cobalt	bright finish	32	
UNF											
	3905	UNF		2B	ANSI	C	40° helix	Cobalt	bright finish	33	
	3965	UNF		2B	ANSI	C	40° helix	Cobalt	Mo-lyGlide®	33	
	911	UNF		2B	DIN 374	C	40° helix	Cobalt	bright finish	33	
METRIC											
	3903	Metric		6H	ANSI	C	40° helix	Cobalt	bright finish	34	
	3963	Metric		6H	ANSI	C	40° helix	Cobalt	Mo-lyGlide®	34	
	810	Metric		ISO 2 (6H)	DIN 371	C	40° helix	Cobalt	bright finish	34	
	822	Metric		ISO 2 (6H)	DIN 376	C	40° helix	Cobalt	bright finish	34	
METRIC FINE											
	830	Metric Fine		ISO 2 (6H)	DIN 374	C		Cobalt	bright finish	31	
	833	Metric Fine		ISO 2 (6H)	DIN 374	C	15° helix	Cobalt	bright finish	35	
	834	Metric Fine		ISO 2 (6H)	DIN 374	C	40° helix	Cobalt	bright finish	35	
UNC											
	3977	UNC		2B	ANSI	E	40° helix	Cobalt	TiN coated	44	
	3919	UNC		2B	ANSI	C	40° helix	Cobalt	bright finish	42	
	3922	UNC		2B	ANSI	C	40° helix	Cobalt	TiN coated	42	
	3949	UNC		2B	ANSI	C	40° helix	Cobalt	TiCN coated	42	
	3954	UNC		2B	ANSI	C	40° helix	Cobalt	TiN coated	45	
	1837	UNC		2B	DIN 371	C(K)	40° helix	Cobalt	TiN coated	42	



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Blind hole taps

	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Helix	Substrate	Finish	Page No.	
UNF											
NEW	3978	UNF		2B	ANSI	E	40° helix	Cobalt	TiN coated	44	
	3920	UNF		2B	ANSI	C	40° helix	Cobalt	bright finish	43	
	3923	UNF		2B	ANSI	C	40° helix	Cobalt	TiN coated	43	
	3950	UNF		2B	ANSI	C	40° helix	Cobalt	TiCN coated	43	
NEW	3955	UNF		2B	ANSI	C	40° helix	Cobalt	TiN coated	45	
	1838	UNF		2B	DIN 374	C(K)	40° helix	Cobalt	TiN coated	43	
METRIC											
NEW	3976	Metric		6H	ANSI	E	40° helix	Cobalt	TiN coated	48	
	3918	Metric		6H	ANSI	C	40° helix	Cobalt	bright finish	46	
	3921	Metric		6H	ANSI	C	40° helix	Cobalt	TiN coated	46	
	3948	Metric		6H	ANSI	C	40° helix	Cobalt	TiCN coated	46	
	2790	Metric		ISO 2 (6H)	DIN 371	E	40° helix	Cobalt	bright finish	48	
	889	Metric		ISO 2 (6H)	DIN 371	C	40° helix	Cobalt	bright finish	46	
	2791	Metric		ISO 2 (6H)	DIN 376	E	40° helix	Cobalt	bright finish	48	
	890	Metric		ISO 2 (6H)	DIN 376	C	40° helix	Cobalt	bright finish	46	
METRIC FINE											
NEW	3974	Metric Fine		6H	ANSI	C	40° helix	Cobalt	TiN coated	47	
	2792	Metric Fine		ISO 2 (6H)	DIN 374	E	40° helix	Cobalt	bright finish	48	
	2424	Metric Fine		ISO 2 (6H)	DIN 374	C	40° helix	Cobalt	bright finish	47	
OVERSIZED											
NEW	3980	UNC / oversized		H7	ANSI	C	40° helix	Cobalt	TiN coated	52	
NEW	3984	UNC / oversized		H11	ANSI	C	40° helix	Cobalt	TiN coated	52	
NEW	3981	UNF / oversized		H7	ANSI	C	40° helix	Cobalt	TiN coated	53	
NEW	3985	UNF / oversized		H11	ANSI	C	40° helix	Cobalt	TiN coated	53	



General Purpose



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High Tensile, Tool Steels



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Blind hole taps



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	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Helix	Substrate	Finish	Page No.	
STI											
NEW	3988	UNC / STI		3B	STI Tap	C	40° helix	Cobalt	TiN coated	55	
NEW	3989	UNF / STI		3B	STI Tap	C	40° helix	Cobalt	TiN coated	55	
UNC											
	3910	UNC		2B	ANSI	C	40° helix	PM cobalt	TiN coated	62	
	1981	UNC		2B	DIN 376	C	40° helix	Cobalt	bright finish	62	
	1986	UNC		2B	DIN 376	C	40° helix	Cobalt	bright finish	62	
UNF											
	3911	UNF		2B	ANSI	C	40° helix	PM cobalt	TiN coated	63	
	2867	UNF		2B	DIN 374	C	40° helix	Cobalt	bright finish	63	
METRIC											
	3909	Metric		6H	ANSI	C	40° helix	PM cobalt	TiN coated	64	
	909	Metric		ISO 2 (6H)	DIN 371	C	40° helix	PM cobalt	bright finish	64	
	910	Metric		ISO 2 (6H)	DIN 376	C	40° helix	PM cobalt	bright finish	64	
	2896	Metric		ISO 2 (6H)	DIN 371	C	15° helix	Cobalt	TiN coated	65	
	2895	Metric		ISO 2 (6H)	DIN 376	C	15° helix	Cobalt	TiN coated	65	
METRIC FINE											
	936	Metric Fine		ISO 2 (6H)	DIN 374	C	40° helix	PM cobalt	bright finish	64	
	2897	Metric Fine		ISO 2 (6H)	DIN 374	C	15° helix	Cobalt	TiN coated	65	
UNC											
NEW	3993	UNC		2B	DIN / ANSI	C	40° helix	PM cobalt	TiN coated	71	
UNF											
NEW	3995	UNF		2B	DIN / ANSI	C	40° helix	PM cobalt	TiN coated	71	
METRIC											
	1188	Metric		6HX	DIN 371	C	15° helix	PM cobalt	TiCN coated	74	
	1194	Metric		6HX	DIN 374	C	15° helix	PM cobalt	TiCN coated	74	



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Blind hole taps

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	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Helix	Substrate	Finish	Page No.	
	811	Metric		ISO 2 (6H)	DIN 371	C	40° helix	Cobalt	bright finish	72	
	823	Metric		ISO 2 (6H)	DIN 376	C	40° helix	Cobalt	bright finish	73	
	935	Metric		ISO 2 (6H)	DIN 376	C	15° helix	PM cobalt	bright finish	73	
	1894	Metric		ISO 2 (6H)	DIN 371	C	40° helix	Cobalt	bright finish	72	
	1916	Metric		ISO 2 (6H)	DIN 371	C	40° helix	Cobalt	TiCN coated	72	
	1901	Metric		ISO 2 (6H)	DIN 376	C	40° helix	Cobalt	bright finish	72	
	1917	Metric		ISO 2 (6H)	DIN 376	C	40° helix	Cobalt	TiCN coated	73	
	2944	Metric		ISO 2 (6H)	Guhning Std.	D	0° helix	Carbide	TiCN coated	73	
METRIC FINE											
	1200	Metric Fine		6HX	DIN 376	C	15° helix	PM cobalt	TiCN coated	74	
	835	Metric Fine		ISO 2 (6H)	DIN 374	C	40° helix	Cobalt	bright finish	75	
	1907	Metric Fine		ISO 2 (6H)	DIN 374	C	40° helix	Cobalt	bright finish	75	
UNC											
	3937	UNC		2B	ANSI	C		Cobalt	FIREX® coated	78	
	1979	UNC		2B	DIN 371	C		Cobalt	oxide finish	78	
	1984	UNC		2B	DIN 376	C		Cobalt	oxide finish	78	
UNF											
	3938	UNF		2B	ANSI	C		Cobalt	FIREX® coated	79	
	1989	UNF		2B	DIN 374	C		Cobalt	oxide finish	79	
METRIC											
	3936	Metric		6HX	ANSI	C		Cobalt	FIREX® coated	80	
	1858	Metric		ISO2(6H)	DIN 371	C		Carbide	bright finish	80	
	1859	Metric		ISO2(6H)	DIN 376	C		Carbide	bright finish	80	
	318	Metric		6HX	DIN 371	C		Cobalt	TiAlN coated	82	
	319	Metric		6HX	DIN 376	C		Cobalt	TiAlN coated	82	



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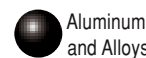
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Index

	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Helix	Substrate	Finish	Page No.	
METRIC FINE											
	972	Metric Fine		ISO2(6H)	DIN 371	C		Carbide	bright finish	83	
	1861	Metric Fine		ISO2(6H)	DIN 371	C		Carbide	bright finish	81	
	1860	Metric Fine		ISO2(6H)	DIN 374	C		Carbide	bright finish	81	
	347	Metric Fine		6HX	DIN 374	C		Cobalt	TiAlN coated	83	
	1904	Metric Fine		6HX	DIN 374	C		Cobalt	oxide finish	83	
UNC											
	3931	UNC		2B	ANSI	C	45° helix	Cobalt	bright finish	89	
	3934	UNC		2B	ANSI	C	45° helix	Cobalt	TiN coated	89	
	3970	UNC		2B	ANSI	C	45° helix	Cobalt	Mo-lyGlide®	89	
UNF											
	3932	UNF		2B	ANSI	C	45° helix	Cobalt	bright finish	89	
	3935	UNF		2B	ANSI	C	45° helix	Cobalt	TiN coated	89	
	3971	UNF		2B	ANSI	C	45° helix	Cobalt	Mo-lyGlide®	89	
METRIC											
	3930	Metric		6H	ANSI	C	45° helix	Cobalt	bright finish	90	
	3933	Metric		6H	ANSI	C	45° helix	Cobalt	TiN coated	90	
	3969	Metric		6H	ANSI	C	45° helix	Cobalt	Mo-lyGlide®	90	
	969	Metric		ISO 2 (6H)	DIN 371	C		Carbide	bright finish	90	
	971	Metric		ISO 2 (6H)	DIN 371	C	15° helix	Carbide	bright finish	90	
	1883	Metric		ISO 2 (6H)	DIN 376	C		Carbide	bright finish	90	
METRIC FINE											
	972	Metric Fine		ISO 2 (6H)	DIN 371	C		Carbide	bright finish	91	
	977	Metric Fine		ISO 2 (6H)	DIN 371	C	15° helix	Carbide	bright finish	91	
	978	Metric Fine		ISO 2 (6H)	DIN 374	C	15° helix	Carbide	bright finish	91	



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

For a complete description of workpiece materials and which color ring they fall under, please see the Tap Compass at the beginning of the catalog



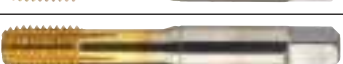
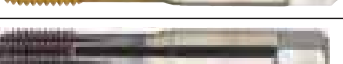
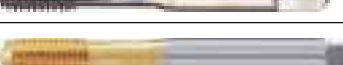
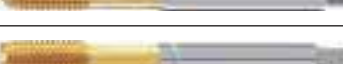
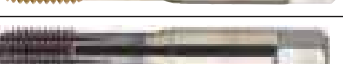
Blind hole taps

	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Helix	Substrate	Finish	Page No.	
UNC											
	2922	UNC	 Ni	2BX	DIN 371	C	10° helix	PM cobalt	TiAlN coated	96	
	2912	UNC	 Ti	2BX	DIN 371	C	15° helix	PM cobalt	TiCN coated	96	
UNF											
	2923	UNF	 Ni	2BX	DIN 371	C	10° helix	PM cobalt	TiAlN coated	96	
	2914	UNF	 Ti	2BX	DIN 371	C	15° helix	PM cobalt	TiCN coated	96	
METRIC											
	2920	Metric	 Ni	6HX	DIN 371	C	10° helix	PM cobalt	TiAlN coated	97	
2908	2908‡	Metric	 Ti	6HX	DIN 371	C	15° helix	PM cobalt	TiCN coated	97	
METRIC FINE											
	2921	Metric Fine	 Ni	6HX	DIN 371	C	10° helix	PM cobalt	TiAlN coated	97	
	2910	Metric Fine	 Ti	6HX	DIN 371	C	15° helix	PM cobalt	TiCN coated	97	

‡ Design change - Crossed out series numbers are being replaced with the numbers with this symbol: ‡ Older series numbers available while supplies last.



Form taps

	Series	Thread Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
UNC										
	3959	UNC		2BX	ANSI	E	Cobalt	TiN coated	106	
	3940	UNC		2BX	ANSI	C	Cobalt	TiN coated	106	
	3943	UNC		2BX	ANSI	C	Cobalt	TiCN coated	106	
	1582	UNC		2BX	DIN 371	C	Cobalt	TiN coated	107	
	1583	UNC		2BX	DIN 376	C	Cobalt	TiN coated	107	
UNF										
	3972	UNF		2BX	ANSI	E	Cobalt	TiN coated	108	
	3941	UNF		2BX	ANSI	C	Cobalt	TiN coated	107	
	3944	UNF		2BX	ANSI	C	Cobalt	TiCN coated	107	



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

Form taps



	Series	Thread-Type	Color Ring	Class of Fit	Standard	Chamfer Lead	Substrate	Finish	Page No.	
	1584	UNF		2BX	DIN 371	C	Cobalt	TiN coated	108	
	1585	UNF		2BX	DIN 376	C	Cobalt	TiN coated	108	
METRIC										
	3979	Metric		6HX	ANSI	E	Cobalt	TiN coated	109	
	3939	Metric		6HX	ANSI	C	Cobalt	TiN coated	109	
	3942	Metric		6HX	ANSI	C	Cobalt	TiCN coated	109	
	1927	Metric		6HX	DIN 371	E	Carbide	*TiCN coated	110	
	1972	Metric		6HX	DIN 371	C	Carbide	*TiCN coated	110	
	1931	Metric		6HX	DIN 376	C	Carbide	*TiCN coated	111	
	323	Metric		6HX	DIN 371	C	PM cobalt	TiCN coated	110	
	1717	Metric		6HX	DIN 371	C	PM cobalt	AlCrN	110	
	919	Metric		6HX	DIN 371	C	Cobalt	TiN coated	110	
	342	Metric		6HX	DIN 376	C	PM cobalt	TiN coated	111	
	1719	Metric		6HX	DIN 376	C	PM cobalt	AlCrN	111	
METRIC FINE										
	3975	Metric Fine		6HX	ANSI	C	Cobalt	TiN coated	111	
	1581	Metric Fine		6HX	DIN 374	C	Carbide	*TiCN coated	113	
	1721	Metric Fine		6HX	DIN 371	C	PM cobalt	AlCrN	113	
	338	Metric Fine		6HX	DIN 374	C	PM cobalt	TiN coated	112	
	1723	Metric Fine		6HX	DIN 374	C	PM cobalt	AlCrN	112	
	927	Metric Fine		6HX	DIN 374	C	Cobalt	TiN coated	112	

* All carbide form taps will be changing to TiCN coating as inventory levels are replenished



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

For a complete description of workpiece materials and which color ring they fall under, please see the Tap Compass at the beginning of the catalog

Material			Condition	Hardness		GUHRING COLOR RING	
				HRC	Brinell	Recommended	Alternate(s)
 Unalloyed Carbon Steels		1005, 1006, 1008, 1009, 1010, 1011, 1012, 1013, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1025, 1026, 1029	Normalized, Hot rolled, Annealed, Cold drawn	-	≤ 180		
			Hot rolled, Normalized, Annealed, Cold drawn	≤ 20	≤ 230		
			Annealed, Cold drawn	≤ 30	≤ 280		
		1030, 1033, 1035, 1037, 1038, 1039, 1040, 1042, 1043, 1044, 1045, 1046, 1049, 1050, 1053, 1055, 1059	Hot rolled, Normalized, Annealed, Cold Drawn	-	≤ 180		
				≤ 20	≤ 230		
			Annealed, Cold drawn, Quenched and Tempered	≤ 30	≤ 280		
			Normalized, Annealed, Quenched and Tempered	≤ 35	≤ 320		
			Quenched and Tempered	≤ 38	≤ 350		
		1060, 1064, 1065, 1069, 1070, 1071, 1074, 1075, 1078, 1080, 1084, 1085, 1086, 1090, 1095	Hot rolled, Normalized, Annealed, Cold drawn	≤ 38	≤ 230		
			Hot rolled, Annealed, Cold drawn, Quenched and Tempered	≤ 20	≤ 280		
			Normalized, Annealed, Quenched and Tempered	≤ 35	≤ 320		
			Quenched and Tempered	≤ 38	≤ 350		
Free Machining Leaded Steels	Low Carbon	10L10, 10L15, 10L17, 10L20, 10L23, 11L15, 11L16, 11L17, 12L11, 12L12, 12L13, 12L14, 12L15, 51L15, 1L17, 51L20	Hot rolled, Normalized, Annealed, Cold drawn	-	≤ 150		
				-	≤ 200		
				≤ 25	≤ 250		
	Medium Carbon	10L25, 10L30, 10L35, 10L40, 10L42, 10L45, 10L49, 10L50, 10L55, 86L20, 86L40, 11L37, 11L38, 11L39, 11L41, 11L44, 11L46, 41L25, 41L30, 41L35, 41L40, 41L42, 41L47, 41L50	Hot rolled, Normalized, Annealed, Cold drawn	-	≤ 200		
				≤ 25	≤ 250		
			Cold drawn, Quenched and Tempered	≤ 33	≤ 300		
				≤ 38	≤ 350		
Resulphurized Steels	Low Carbon	1108, 1109, 1110, 1114, 1115, 1116, 1118, 1119, 1120, 1126, 1211, 1212, 1213, 1215	Hot rolled, Annealed	-	≤ 150		
			Cold drawn	-	≤ 200		
	Medium Carbon	1132, 1137, 1138, 1139, 1140, 1141, 1144, 1145, 1146, 1151	Hot rolled, Normalized, Annealed, Cold drawn	-	≤ 180		
				≤ 20	≤ 230		
			Cold drawn, Quenched and Tempered	≤ 30	≤ 280		
				Quenched and Tempered	≤ 35	≤ 320	
			≤ 38		≤ 350		

 General Purpose

 Alloyed & Unalloyed Steels

 Stainless Steels

 High Tensile, Tool Steels

 Cast Iron

 Aluminum and Alloys

 Titanium or Nickel



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

Material			Condition	Hardness		GUHRING COLOR RING	
				HRC	Brinell	Recommended	Alternate(s)
 Carbon Manganese Steels	Low Carbon	1513, 1518, 1522	Normalized, Hot rolled, Annealed, Cold drawn	-	≤ 180		
			Annealed, Cold drawn	≤ 20	≤ 230		
			Hot rolled, Normalized, Annealed, Cold drawn	≤ 30	≤ 280		
	Medium Carbon	1524, 1525, 1526, 1527, 1536, 1541	Hot rolled, Normalized, Annealed, Cold drawn	-	≤ 180		
				≤ 20	≤ 230		
			Hot rolled, Annealed, Cold drawn, Normalized, Quenched and Tempered	≤ 30	≤ 280		
			Normalized, Annealed, Quenched and Tempered	≤ 35	≤ 320		
			Quenched and Tempered	≤ 38	≤ 350		
	High Carbon	1547, 1548 (46Mn5), 1551 (52Mn4), 1552 (52Mn5), 1561, 1566 (66Mn4), 1572 (80Mn4)	Hot rolled, Normalized, Annealed, Cold Drawn	≤ 20	≤ 230		
			Hot rolled, Annealed, Cold drawn, Normalized, Quenched and Tempered	≤ 30	≤ 280		
			Normalized, Annealed, Quenched and Tempered	≤ 35	≤ 320		
			Quenched and Tempered	≤ 38	≤ 350		
Structural Steels	Yield Strength in 1000 PSI	30, 35, 42, 45, 50	Hot rolled, Normalized, Stress relieved	-	≤ 150		
		55, 60, 65	Hot rolled, Normalized, Stress relieved, Quenched and Tempered	-	≤ 200		
		70, 75, 80		≤ 25	≤ 250		
		85, 90, 100, 110		≤ 38	≤ 300		
		135, 140, 145, 150, 160	Quenched and Tempered	≤ 38	≤ 350		
Boron Treated Steels	Low Carbon Manganese Steels	10B08, 10B15, 10B16, 10B21, 10B22, 10B23	Normalized, Hot rolled, Annealed, Cold drawn	-	≤ 180		
				≤ 20	≤ 230		
			Annealed, Cold drawn	≤ 30	≤ 280		
	Medium Carbon Manganese Steels	10B30, 10B35, 10B37, 10B38, 10B39, 10B40, 10B41, 10B45, 10B50, 10B62, 13B20, 15B22, 15B47	Hot rolled, Normalized, Annealed, Cold drawn	-	≤ 180		
				≤ 20	≤ 230		
			Hot rolled, Cold drawn, Annealed, Normalized, Quenched and Tempered	≤ 30	≤ 280		
			Normalized, Annealed, Quenched and Tempered	≤ 35	≤ 320		
			Quenched and Tempered	≤ 38	≤ 350		

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General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys

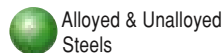


Titanium or Nickel

Material			Condition	Hardness		GUHRING COLOR RING		
				HRC	Brinell	Recommended	Alternate(s)	
 Boron Treated Steels	Low Carbon Alloyed Steels	32B15, 41B18, 51B15, 51B17, 51B20, 86B20, 86B22, 94B15, 94B17	Hot rolled, Annealed, Cold drawn	≤ 20	≤ 230			
			Hot rolled, Annealed, Cold drawn, Normalized	≤ 30	≤ 280			
			Normalized, Quenched and Tempered	≤ 35	≤ 320			
	≤38	≤ 350						
	Medium Carbon Alloyed Steels	51B30, 51B32, 51B40, 51B55, 92B55, 50B40, 50B44, 50B46, 50B50, 50B60, 51B60, 81B45, 86B45, 94B30, 94B40	Hot rolled, Annealed, Cold drawn	≤ 20	≤ 230			
			Normalized, Cold drawn, Annealed, Quenched and Tempered	≤ 30	≤ 280			
			Normalized, Quenched and Tempered	≤ 35	≤ 320			
	≤ 38	≤ 350						
Alloy Steels	Low Carbon	2317, 2512, 2515, 2517, 3115, 3120, 3215, 3220, 3312, 3316, 3325, 4012, 4023, 4024, 4027, 4028, 4118, 4119, 4125, 4317, 4320, 4419, 4422, 4427, 4608, 4615, 4617, 4620, 4621, 4626, 4718, 4720, 4815, 4817, 4820, 5015, 5115, 5117, 5120, 6115, 6118, 6120, 6125, 8115, 8615, 8617, 8620, 8622, 8625, 8627, 8720, 8822, 9310, 9315, 9317	Hot rolled, Annealed, Cold drawn	≤ 20	≤ 230			
			Hot rolled, Normalized, Annealed, Cold drawn	≤ 30	≤ 280			
			Normalized, Quenched and Tempered	≤ 35	≤ 320			
				≤38	≤ 350			
	Medium Carbon	1330, 1335, 1340, 1345, 3140, 3145, 3150, 3230, 3240, 3335, 3340, 3435, 3450, 4032, 4037, 4063, 4130, 4135, 4137, 4140, 4142, 4145, 4147, 4150, 4161, 4337, 4340, 4640, 5045, 5046, 5060, 5130, 5132, 5135, 5140, 5145, 5157, 5150, 5155, 5160, 6130, 6135, 6140, 6145, 6150, 7140, 6145, 6150, 7140, 8630, 8632, 8635, 8637, 8640, 8642, 8645, 8650, 8650, 8660, 8735, 8740, 8742, 9250, 9254, 9255, 9260, 9262, 9840, 9850, 2340	Hot rolled, Annealed, Cold drawn	≤ 20	≤ 230			
			Annealed, Normalized, Cold drawn, Quenched and Tempered	≤ 30	≤ 280			
			Normalized, Quenched and Tempered	≤ 35	≤ 320			
				≤ 38	≤ 350			
	Stainless Steels, Wrought	Ferritic	405, 409, 429, 430, 434, 436, 442, 446	Annealed	-	≤ 185		
		Austenitic	201, 202, 301, 302B, 304, 304L, 305, 308, 309, 309S, 310, 310S, 314, 316, 316L, 317, 321, 330, 347, 348, 384, 385, Nitronic 32, Nitronic 33, Nitronic 40, Nitronic 50, Nitronic 60		-	≤ 180		
Annealed, Cold drawn				≤ 20	≤ 230			
Cold drawn				≤ 30	≤ 280			
Martensitic		1403, 410, 414, 420, 422, 431, 440A, 440B, 440C, 501, 502, Greek Ascology	Annealed	-	≤ 180			
				≤ 20	≤ 230			
				≤ 30	≤ 280			
			Quenched and Tempered	≤ 35	≤ 320			
				≤ 38	≤ 350			

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Material			Condition	Hardness		GUHRING COLOR RING	
				HRC	Brinell	Recommended	Alternate(s)
 Stainless Steels, Wrought	Precipitation Hardening	15-5PH, 16-6PH, 17-4PH, 17-7PH, 17-14CuMo, AF-71, AFC-77, AM-363, AM363, AM350, AM355, Custom450, Custom 455, HNM, PH13-8 Mo, PH14-8 Mo, PH15-7Mo, Stainless W	Annealed	-	≤ 200		
				≤ 25	≤ 250		
			Hardened	≤ 33	≤ 300		
				≤ 38	≤ 350		

Tap Compass

Free Machining Stainless Steels	Medium Carbon	430F, 430F Se	Annealed	-	≤ 180		
		203 Ez, 303, 303 Se, 303 Ma, 303 Pb, 303 PlusX		≤ 28	≤ 270		
		416, 416 Se, 416 PlusX, 420F, 420F Se, 440F, 440F Se	Annealed	-	≤ 180		
			Annealed, Cold drawn	≤ 23	≤ 240		
			Quenched and Tempered	≤ 35	≤ 320		

Tool Steels	High Speed Steels	M1, M2, M6, M10, T1, T2, T6	Annealed	≤ 25	≤ 250		
		M3-1, M3-2, M4, M7, M30, M33, M34, M36, M41, M42, M43, M44, M46, M47, T4, T5, T8, T15		-	≤ 220		
				≤ 29	≤ 270		
	Hot Works	H10, H11, H12, H13, H14, H19		-	≤ 200		
				≤ 25	≤ 250		
		H21, H22, H23, H24, H25, H26, H41, H42, H43	Quenched and Tempered	≤ 38	≤ 350		
			Cold Works	A7, D2, D3, D4, D5, D7	-	≤ 200	
	A2, A3, A4, A5, A6, A8, A9, A10, O1, O2, O6, O7						
		Stock Resisting		S1, S2, S4, S5, S6, S7			-
	Mold	P2, P3, P4, P5, P6, P20, P21	-	≤ 150			
			Special Purpose	F1, F2, L2, L3, L6	-	≤ 200	
	≤ 25	≤ 250					

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General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

Material				Condition		Hardness		GUHRING COLOR RING	
						HRC	Brinell	Recommended	Alternate(s)
 Tool Steels	Water Hardening	W1, W2, W5	Annealed		≤ 25	≤ 250			
	Nitriding	Nitralloy 125, Nitralloy 135, Nitralloy 135Mod, Nitralloy 225, Nitralloy 230, Nitralloy EZ, Nitralloy N, Nitrex 1							
			Normalized, Quenched and Tempered		≤ 30	≤ 280			

		ASTM	SAE					
Gray Cast Iron		A159 G1800, A48 class 20	J431 G1800	As cast, Annealed	-	≤ 180		
		A159 G2500, A48 class 25	J431 G2500	As cast	≤ 25	≤ 250		
		A159 G3000, A48 class 30, 25, 40	J431 G3000					
		A159 G3500, A48 class 45	J431 G3500					
		A159 G4000, A48 class 50	J431 G4000					
		A48 class 45						
		A48 class 55		As cast, Quenched and Tempered	≤ 35	≤ 320		
		A48 class 60						

		UNS	ASTM	SAE	DIN					
Ductile Cast Iron	Ferritic	F32800	A536 60-40-18	J434 D4018		Annealed	-	≤ 190		
		F33100	A536 65-45-12	J434 D4512						
	Ferritic / Pearlitic	F33800	A536 80-55-06	J434 D5506		As cast	-	≤ 220		
					GGG50, GGG60					
	Pearlitic / Martensitic	F34800	A536 100-70-03	J434 D7003	GGG70	Normalized and Tempered	≤ 33	≤ 300		
	Martensitic	F36200	A536 120-90-02	J434 DQ&T	GGG80	Quenched and Tempered	≤ 36	≤ 330		

		UNS	SAE					
High Alloy Cast Iron	Austenitic	F41000, F41001, F41006	A436 Type 1, A436 Type 1b, A436 Type 5	As cast	-	≤ 220		
		F41002, F41004, F41007	A436 Type 2, A436 Type 3, A436 Type 6		-	≤ 215		
		F41003, F41005	A436 Type 2b, A436 Type 4		≤ 25	≤ 250		

		UNS	SAE					
High Alloy Ductile Cast Iron	Austenitic	F43000, F43002, F43004, F43006, F43007, F43010	A439 D2, A439 D2C, A439 D3A, A439 D5, A439 D5B, A571 D2M	Annealed	-	≤ 200		
		F43001, F43003, F43005	A439 D2B, A439 D3, A439 D4		≤ 28	≤ 270		



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

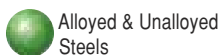
Material				Condition	Hardness		GUHRING COLOR RING	
		UNS	ASTM / SAE		HRC	Brinell	Recommended	Alternate(s)
 Malleable Cast Iron	Ferritic	F20000	A602 G M3210, J158 G M3210, A47 G 32510, A47 G 3201	Malleablized	-	≤ 160		
	Pearlitic	F22830, F23130, F23530, F20001, F20002	A220 G 40010, J125 pearlitic malleable, A220 G 45006, A220 G 45008, A220 G 50005, A602 G M4504, J158 G M4504, A602 G M5003, J158 G M5003	Malleablized and Heat Treated	-	≤ 200		
					≤ 23	≤ 240		
	Martensitic	F20003, F2410, F20004, F25530	A602 G M5503, J158 G M5503, A220 G 60004, A602 G M7002, J158 G M7002, A220 G 70003, A220 G 80002, A602 G M8501, J158 G M8501, A220 G 90001		≤ 26	≤ 255		
					≤ 27	≤ 260		
					≤ 30	≤ 280		
					≤ 35	≤ 320		

Tap Compass

Tap Compass

Aluminum	Al Alloys, Wrought	Low Silicon	EC 1060, 1100, 1145, 1175, 1235, 2011, 2014, 2017, 2018, 2021, 2024, 2025, 2117, 2218, 2219, 2618, 3003, 3004, 3005, 4032, 5005, 5050, 5052, 5056, 5083, 5086, 5154, 5252, 5254, 5454, 5456, 5457, 5652, 5657, 6053, 6061, 6063, 6066, 6070, 6101, 6151, 6253, 6262, 6463, 6951, 7001, 7004, 7005, 7039, 7049, 7050, 7075, 7079, 7175, 7178	Cold drawn	-	30 to 80 500 kg		
				Solution treated and Aged	-	75 to 150 500 kg		
	Al Alloys, Wrought	≤ 7%	A140, 201.0, 208.0, 213.0, 222.0, 224.0, 242.0, 295.0, B295.0, 308.0, 319.0, 328.0, A332.0, F332.0, 333.0, 354.0, 355.0, C355.0, 356.0, A356.0, 357.0, 359.0, B443.0, 514.0, A514.0, 520.0, 535.0, 705.0, 707.0, A712.0, D712.0, 713.0, 771.0, 8500, A850.0, B850.0	As cast	-	40 to 100 500 kg		
				Solution treated and Aged	-	70 to 125 500 kg		
	Die Casting	7-10% Silicon	360.0, A360.0, 380.0, A380.0, C443.0, 518.0	As cast	-	40 to 100 500 kg		
				Solution treated and Aged	-	70 to 125 500 kg		
		7-14% Silicon	383.0, A384.0, 413.0, A413.0	As cast	-	40 to 100 500 kg		
				Solution treated and Aged	-	70 to 125 500 kg		
		≤ 14% Silicon	390.0, 392.0	As cast	-	40 to 100 500 kg		
				Solution treated and Aged	-	70 to 125 500 kg		

Titanium Alloys, Wrought	Commercially Pure	99.5	Annealed	-	≤ 170			
		99.2, 99.0, Ti-0.2Pd		-	≤ 200			
		99.0, 98.0, Ti-0.2Pd		≤ 29	≤ 275			
	Alpha and Alpha-Beta Alloys	Ti-8Mn, Ti2Al-11Sn-5Zr-1Mo, Ti-5Al-2, 5Sn ELI, Ti-5Al-6Sn-2Zr-1Mo, Ti-6Al-2Cu-1Ta-0.8Mo, Ti-6Al-2Sn-4Zr-2Mo, Ti-6Al-2Sn-4Zr-2Mo-2.5Si, Ti-6Al-2Sn-4Zr-6Mo		≤ 37	≤ 340			
		Ti-6Al-4V, Ti-6Al-4V ELI		≤ 38	≤ 350			
		Ti-5Al-2Sn-2Zr-4Mo-4Cr (Ti-17), Ti-6Al-6V-2Sn, Ti-7Al-4Mo, Ti-8Al-1Mo-1V		≤ 40	≤ 370			
		Ti-1Al-8V-5Fe		≤ 41	≤ 380			



Material			Condition	Hardness		COLOR RING	
				HRC	Brinell	Recommended	Alternate(s)
 Titanium Alloys, Wrought	Alpha and Alpha-Beta Alloys	Ti-6Al-4V, Ti-6Al-4V ELI, Ti-6Al-2Sn-4Zr-2Mo, Ti-6Al-2Sn-4Zr-2Mo-.2Si, Ti-6Al-2Sn-4Zr-6Mo	Solutions treated and Aged	≤ 41	≤ 380		 
		Ti-1Al-8V-5Fe, Ti-3Al-2.5V, Ti-5Al-2Sn-2Zr-4Mo-4Cr (Ti-17), Ti-6Al-6V-2Sn, Ti-7Al-4Mo		≤ 46	≤ 440		 
	Beta Alloys	Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-8Mo-8V-2Fe-3Al, Ti-11.5Mo-6Zr-4.5Sn, Ti-10-2Fe-3Al, Ti-13V-11Cr-3Al	Annealed or Solution treated	≤ 38	≤ 350		 
			Solutions treated and Aged	≤ 46	≤ 440		 
Titanium Alloys, Cast	Commercially Pure	99.0, Ti-0.2Pd, ASMT B367 Grades C-1, C-2, C-7A, C-7B	As Cast, As Cast and Annealed	-	≤ 200		 
		99.0, Ti-0.2Pd, ASMT B367 Grades C-3, C-4, C-8A, C-8B		≤25	≤ 250		 
	Alpha and Alpha-Beta Alloys	Ti-5Al-2Sn, Ti-6Al-4V, Ti-6Al-2Sn-4Zr-2Mo, Ti-8Al-1Mo-1V, ASMT B367 Grades C-5, C-6		≤35	≤ 320		 
				≤ 38	≤ 350		 
Chromium-Nickel	Alpha and Alpha-Beta Alloys	A560 ² 40 ² 375 Grade 50Cr-50Ni, 60Cr-40Ni	As Cast	≤ 41	≤ 375		 
Nickel Alloys, Cast	Wrought and Cast	Nickel 200, Nickel 201, Nickel 205, Nickel 211, Nickel 220, Nickel 230	Anneald, Cold drawn	-	≤ 170		 
		MONEL Alloy 400, MONEL Alloy 401, MONEL Alloy 404, MONEL Alloy R405; A2996 Grades CZ-100, M-35; A494 Grades CZ-100, M-35	Anneald, Cold drawn, As Cast	≤ 25	≤ 250		 
		Incoloy Alloys, Inconel Alloys, Hastelloy Alloys, Rene, DURANICKEL Alloy 301, MONEL Alloy 502, MONEL Alloy K500, NI-SPAN-C Alloy 902, PERMANICKEL Alloy 300	Solution treated	≤ 35	≤ 320		 
			Aged	≤ 39	≤ 360		 



General Purpose



Alloyed & Unalloyed Steels



Stainless Steels



High Tensile, Tool Steels



Cast Iron



Aluminum and Alloys



Titanium or Nickel

Material Hardness & Tensile Strength Cross-Reference Chart*

HARDNESS				TENSILE STRENGTH
Brinell	Vickers	Rockwell		PSI
		HRB	HRC	

76	80			
80.7	85	41.0		
85.5	90	48.0		
90.2	95	52.0		
95	100	58.2		
98.8	105			
105	110	62.3		
109	115			
114	120	66.7		57,000
119	125			59,000
124	130	71.2		61,000
128	135			63,000
133	140	75.0		66,000
138	145			68,000
143	150	78.7		70,000
147	155			72,000
152	160	81.7		73,000
156	165			74,000
162	170	85.0		79,000
166	175			81,000
171	180	87.1		83,000
176	185			86,000
181	190	89.5		88,000
185	195			90,000
190	200	91.6		91,000
195	205	92.6		92,000
199	210	93.5		95,000
204	215	94.0		98,000
209	220	95.0		102,000
214	225	96.0		105,000
219	230	96.7		107,000
223	235			109,000
228	240	98.1	20.3	111,000
233	245		21.3	113,000
238	250	99.5	22.2	116,000
242	255		23.1	118,000
247	260	101	24.0	122,000
252	265		24.8	124,000
257	270	102	25.6	126,000
261	275		26.4	129,000
266	280	104	27.1	131,000
271	285		27.8	134,000
276	290	105	28.5	138,000
280	295		29.2	139,000
285	300		29.8	142,000
295	310		31.0	146,000
304	320		32.2	150,000
314	330		33.3	154,000
323	340		34.4	159,000
333	350		35.5	164,000
342	360		36.6	169,000
352	370		37.7	176,000
361	380		38.8	181,000
371	390		39.8	185,000
380	400		40.8	191,000
390	410		41.8	198,000
399	420		42.7	202,000
409	430		43.6	205,000
418	440		44.5	208,000
428	450		45.3	212,000
437	460		46.1	219,000
447	470		46.9	225,000
456	480		47.7	232,000
463	490		48.4	235,000
475	500		49.1	238,000
485	510		49.8	245,000
494	520		50.5	250,000
504	530		51.1	254,000
513	540		51.7	259,000

HARDNESS				TENSILE STRENGTH
Brinell	Vickers	Rockwell		PSI
		HRB	HRC	

523	550		52.3	264,000
532	560		53.0	269,000
542	570		53.6	274,000
551	580		54.1	279,000
561	590		54.7	284,000
570	600		55.2	287,000
580	610		55.7	292,000
589	620		56.3	294,000
599	630		56.8	304,000
608	640		57.3	310,000
618	650		57.8	315,000
	660		58.3	326,000
	670		58.8	
	680		59.2	
	690		59.7	
	700		60.1	
	720		61.0	
	740		61.8	
	760		62.5	
	780		63.3	
	800		64.0	
	820		64.7	
	840		65.3	
	860		65.9	
	880		66.4	
	900		67.0	
	920		67.5	
	940		68.0	

* Figures listed are approximate. Actual conversions may vary by material and alloy content.

$$\text{PSI (pound / in}^2\text{)} = \text{N/mm}^2 \times 145.0377$$

$$\text{N/mm}^2 = \text{pound / in}^2 \div 145.0377$$

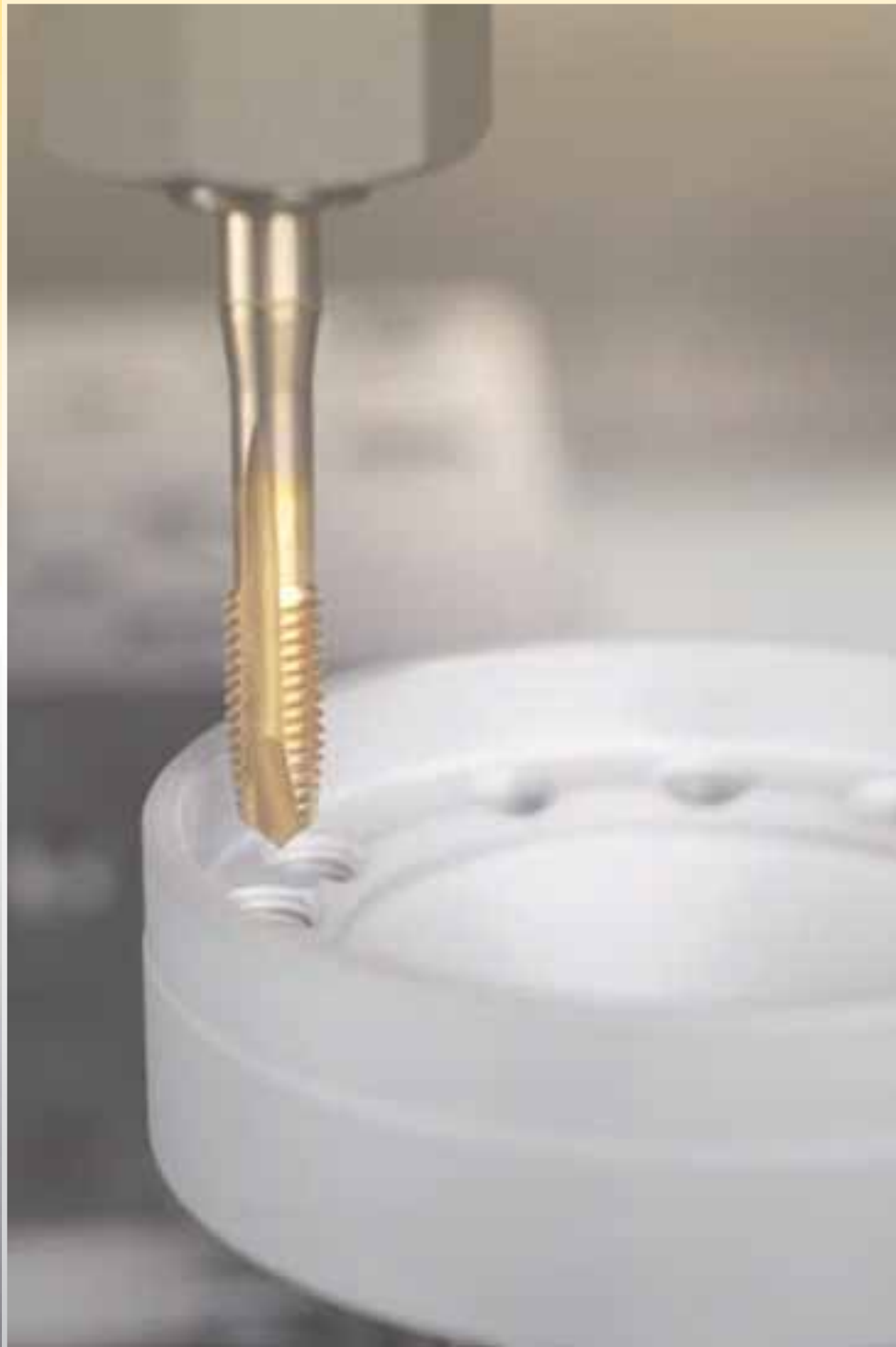
GUHRING



Cut Taps



GUHRING



YELLOW RING CUT TAPS

- **Through hole**

UNC	Page 26
UNF	Page 27
Metric	Page 28
Metric fine	Page 30

- **Blind hole**

UNC	Page 32
UNF	Page 33
Metric	Page 34
Metric fine	Page 35

Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds

Material Hardness		SFM	
HRC	Brinell	Bright finish	Hard coated
--	≤ 180	38 - 50	50 - 90
≤ 20	≤ 230	20 - 40	35 - 80



General Purpose

UNC

2B
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

ANSI length - ANSI shank

Series 3901 - Cobalt, UNC, spiral point, bright finish

Series 3961 - Cobalt, UNC, spiral point, MolyGlide® coated

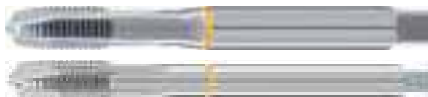


	No.	Shank dia.	Square Size	Overall Length	2B Approx.	Series	M Series	Order
Size	Flutes	inch	inch	inch	Limits	3901	3961	No.
4-40	3	0.141	0.110	1.882	H2/H3			2.845
5-40	3	0.141	0.110	1.941	H2/H3			3.175
6-32	3	0.141	0.110	2.000	H3/H4			3.505
8-32	3	0.168	0.131	2.130	H3/H4			4.166
10-24	3	0.194	0.152	2.382	H3/H4			4.826
12-24	3	0.220	0.165	2.382	H3/H4			5.486
1/4-20	3	0.255	0.191	2.500	H4/H5			6.350
5/16-18	3	0.318	0.238	2.720	H4/H5			7.938
3/8-16	3	0.381	0.286	2.941	H5/H6			9.525
7/16-14	3	0.323	0.242	3.157	H5/H6			11.113
1/2-13	3	0.367	0.275	3.381	H5/H6			12.700
9/16-12	3	0.429	0.322	3.591	H5/H6			14.288
5/8-11	3	0.480	0.360	3.811	H5/H6			15.875
3/4-10	4	0.590	0.442	4.252	H5/H6			19.050
7/8-9	4	0.697	0.523	4.689	H6/H7			22.225
1-8	4	0.800	0.600	5.130	H6/H7			25.400

DIN length - DIN shank

Series 873 - Cobalt, UNC, spiral point, bright finish, DIN 371

Series 878 - Cobalt, UNC, spiral point, bright finish, DIN 376



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	DIN 371 Series	DIN 376 Series	Order
Size	Flutes	mm	mm	mm	Limits	873	878	No.
2-56	3	2.800	2.100	45.000	H2/H3			2.184
3-48	3	2.800	2.100	50.000	H2/H3			2.515
4-40	3	3.500	2.700	56.000	H2/H3			2.845
5-40	3	3.500	2.700	56.000	H2/H3			3.175
6-32	3	4.000	3.000	56.000	H3/H4			3.505
8-32	3	4.500	3.400	63.000	H3/H4			4.166
10-24	3	6.000	4.900	70.000	H3/H4			4.826
12-24	3	6.000	4.900	80.000	H3/H4			5.486
1/4-20	3	7.000	5.500	80.000	H4/H5			6.350
5/16-18	3	8.000	6.200	90.000	H4/H5			7.938
3/8-16	3	9.000	7.000	100.000	H5/H6			9.525
7/16-14	3	8.000	6.200	100.000	H5/H6			11.113
1/2-13	3	9.000	7.000	110.000	H5/H6			12.700
9/16-12	3	11.000	9.000	110.000	H5/H6		°	14.288
5/8-11	3	12.000	9.000	110.000	H5/H6			15.875
3/4-10	4	14.000	11.000	125.000	H5/H6		°	19.050
7/8-9	4	18.000	14.500	140.000	H6/H7		°	22.225
1-8	4	18.000	14.500	160.000	H6/H7		°	25.400
1 1/4-7	4	22.000	18.000	180.000	H7/H8			31.750
1 1/2-6	4	32.000	24.000	200.000	H7/H8		°	38.100

General Purpose



ANSI length - ANSI shank

Series 3902 - Cobalt, UNF, spiral point, bright finish

Series 3962 - Cobalt, UNF, spiral point, MolyGlide® coated



UNF

2B
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3902	Series 3962	Order No.
4-48	3	0.141	0.110	1.882	H2/H3			2.845
5-44	3	0.141	0.110	1.941	H2/H3			3.175
6-40	3	0.141	0.110	2.000	H2/H3			3.505
8-36	3	0.168	0.131	2.130	H2/H3			4.166
10-32	3	0.194	0.152	2.382	H3/H4			4.826
12-28	3	0.220	0.165	2.382	H3/H4			5.486
1/4-28	3	0.255	0.191	2.500	H3/H4			6.350
5/16-24	3	0.318	0.238	2.720	H3/H4			7.938
3/8-24	3	0.381	0.286	2.941	H3/H4			9.525
7/16-20	3	0.323	0.242	3.157	H4/H5			11.113
1/2-20	3	0.367	0.275	3.381	H4/H5			12.700
9/16-18	3	0.429	0.322	3.591	H4/H5			14.288
5/8-18	3	0.480	0.360	3.811	H4/H5			15.875
3/4-16	4	0.590	0.442	4.252	H5/H6			19.050
7/8-14	4	0.697	0.523	4.689	H6/H7			22.225
1-12	4	0.800	0.600	5.130	H6/H7			25.400

DIN length - DIN shank

Series 908 - Cobalt, UNF, spiral point, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 Series 908	Order No.
4-48	3	2.200	n.a.	56.000	H2/H3		2.845
5-44	3	2.500	2.100	56.000	H2/H3	o	3.175
6-40	3	2.500	2.100	56.000	H2/H3	o	3.505
8-36	3	2.800	2.100	63.000	H2/H3	o	4.166
10-32	3	3.500	2.700	70.000	H3/H4		4.826
12-28	3	4.000	3.000	80.000	H3/H4	o	5.486
1/4-28	3	4.500	3.400	80.000	H3/H4		6.350
5/16-24	3	6.000	4.900	90.000	H3/H4		7.938
3/8-24	3	7.000	5.500	90.000	H3/H4		9.525
7/16-20	3	8.000	6.200	90.000	H4/H5		11.113
1/2-20	3	9.000	7.000	100.000	H4/H5		12.700
9/16-18	3	11.000	9.000	100.000	H4/H5	o	14.288
5/8-18	3	12.000	9.000	100.000	H4/H5		15.875
3/4-16	4	14.000	11.000	110.000	H5/H6	o	19.050
7/8-14	4	18.000	14.500	125.000	H6/H7		22.225
1 1/8-12	4	22.000	18.000	150.000	H6/H7	o	28.575
1 1/4-12	4	22.000	18.000	150.000	H6/H7	o	31.750



General Purpose

METRIC

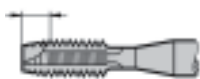
ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

ANSI length - ANSI shank

Series 3900 - Cobalt, Metric, spiral point, bright finish

Series 3960 - Cobalt, Metric, spiral point, MolyGlide® coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	Series 3900	Series 3960	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3			2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3			3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4			4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4			5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5			6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5			8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5			10.000
M12 X 1.75	3	0.367	0.275	3.381	D5/D6			12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6			14.000
M16 X 2.00	3	0.480	0.360	3.811	D6/D7			16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7			18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7			20.000

DIN length - DIN shank

Series 803 - Cobalt, Metric, spiral point, bright finish, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 803	Order No.
M1.4 X 0.30	2	2.500	2.100	40.000	D2/D3	°	1.400
M1.6 X 0.35	2	2.500	2.100	40.000	D2/D3	°	1.600
M1.7 X 0.35	2	2.500	2.100	40.000	D2/D3		1.700
M1.8 X 0.35	2	2.500	2.100	40.000	D2/D3		1.800
M2 X 0.40	3	2.800	2.100	45.000	D2/D3		2.000
M2.2 X 0.45	3	2.800	2.100	45.000	D2/D3	°	2.200
M2.3 X 0.40	3	2.800	2.100	45.000	D2/D3	°	2.300
M2.5 X 0.45	3	2.800	2.100	50.000	D2/D3	°	2.500
M2.6 X 0.45	3	2.800	2.100	50.000	D2/D3	°	2.600
M3 X 0.50	3	3.500	2.700	56.000	D2/D3		3.000
M3.5 X 0.60	3	4.000	3.000	56.000	D3/D4	°	3.500
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°	4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4		5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5		6.000
M7 X 1.00	3	7.000	5.500	80.000	D4/D5		7.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5		8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5		10.000

General Purpose



DIN length - DIN shank

Series 815 - Cobalt, Metric, spiral point, bright finish, DIN 376



METRIC

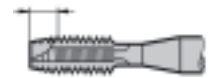
ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

Cut Taps

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 815	Order No.
M1.6 x 0.35	2	1.200	n.a.	40.000	D2/D3	°	1.600
M1.8 x 0.35	2	1.200	n.a.	40.000	D2/D3	°	1.800
M2 x 0.40	3	1.400	n.a.	45.000	D2/D3	°	2.000
M2.5 x 0.45	3	1.800	n.a.	50.000	D2/D3		2.500
M2.6 x 0.45	3	1.800	n.a.	50.000	D2/D3	°	2.600
M3 x 0.50	3	2.200	n.a.	56.000	D2/D3		3.000
M3.5 x 0.60	3	2.500	2.100	56.000	D3/D4		3.500
M4 x 0.70	3	2.800	2.100	63.000	D3/D4		4.000
M5 x 0.80	3	3.500	2.700	70.000	D3/D4	°	5.000
M6 x 1.00	3	4.500	3.400	80.000	D4/D5	°	6.000
M7 x 1.00	3	5.500	4.300	80.000	D4/D5	°	7.000
M8 x 1.25	3	6.000	4.900	90.000	D4/D5		8.000
M10 x 1.50	3	7.000	5.500	100.000	D4/D5		10.000
M12 x 1.75	3	9.000	7.000	110.000	D5/D6		12.000
M14 x 2.00	3	11.000	9.000	110.000	D5/D6	°	14.000
M16 x 2.00	3	12.000	9.000	110.000	D6/D7	°	16.000
M18 x 2.50	4	14.000	11.000	125.000	D6/D7		18.000
M20 x 2.50	4	16.000	12.000	140.000	D6/D7		20.000
M22 x 2.50	4	18.000	14.500	140.000	D6/D7		22.000
M24 x 3.00	4	18.000	14.500	160.000	D7/D8	°	24.000
M27 x 3.00	4	20.000	16.000	160.000	D7/D8	°	27.000
M30 x 3.50	4	22.000	18.000	180.000	D8/D9	°	30.000
M36 x 4.00	4	28.000	22.000	200.000	D8/D9		36.000



General Purpose

METRIC FINE

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

DIN length - DIN shank

Series 827 - Cobalt, Metric Fine, spiral point, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 827	Order No.
M3 x 0.35	3	2.200	n.a.	56.000	D2/D3		3.002
M3.5 x 0.35	3	2.500	2.100	56.000	D3/D4	o	3.502
M4 x 0.50	3	2.800	2.100	63.000	D3/D4		4.003
M5 x 0.50	3	3.500	2.700	70.000	D3/D4		5.003
M6 x 0.50	3	4.500	3.400	80.000	D3/D4		6.003
M6 x 0.75	3	4.500	3.400	80.000	D3/D4		6.004
M7 x 0.75	3	5.500	4.300	80.000	D3/D4		7.004
M8 x 0.50	3	6.000	4.900	80.000	D3/D4		8.003
M8 x 0.75	3	6.000	4.900	80.000	D3/D4		8.004
M8 x 1.00	3	6.000	4.900	90.000	D4/D5		8.005
M9 x 1.00	3	7.000	5.500	90.000	D4/D5		9.005
M10 x 0.75	3	7.000	5.500	90.000	D4/D5		10.004
M10 x 1.00	3	7.000	5.500	90.000	D4/D5		10.005
M10 x 1.25	3	7.000	5.500	100.000	D4/D5		10.006
M11 x 1.00	3	8.000	6.200	90.000	D4/D5		11.005
M12 x 1.00	3	9.000	7.000	100.000	D4/D5		12.005
M12 x 1.25	3	9.000	7.000	100.000	D4/D5		12.006
M12 x 1.50	3	9.000	7.000	100.000	D5/D6		12.007
M14 x 1.00	3	11.000	9.000	100.000	D4/D5		14.005
M14 x 1.25	3	11.000	9.000	100.000	D4/D5		14.006
M14 x 1.50	3	11.000	9.000	100.000	D4/D5		14.007
M15 x 1.00	3	12.000	9.000	100.000	D4/D5	o	15.005
M15 x 1.50	3	12.000	9.000	100.000	D4/D5	o	15.007
M16 x 1.00	3	12.000	9.000	100.000	D4/D5	o	16.005
M16 x 1.50	3	12.000	9.000	100.000	D4/D5	o	16.007
M18 x 1.00	4	14.000	11.000	110.000	D4/D5	o	18.005
M18 x 1.50	4	14.000	11.000	110.000	D4/D5		18.007
M18 x 2.00	4	14.000	11.000	125.000	D6/D7		18.008
M20 x 1.00	4	16.000	12.000	125.000	D6/D7		20.005
M20 x 1.50	4	16.000	12.000	125.000	D6/D7	o	20.007
M20 x 2.00	4	16.000	12.000	140.000	D6/D7	o	20.008
M22 x 1.00	4	18.000	14.500	125.000	D6/D7	o	22.005
M22 x 1.50	4	18.000	14.500	125.000	D6/D7	o	22.007
M22 x 2.00	4	18.000	14.500	140.000	D6/D7	o	22.008
M24 x 1.00	4	18.000	14.500	140.000	D6/D7	o	24.005
M24 x 1.50	4	18.000	14.500	140.000	D6/D7	o	24.007
M24 x 2.00	4	18.000	14.500	140.000	D6/D7	o	24.008
M26 x 1.50	4	18.000	14.500	140.000	D7/D8		26.007
M27 x 1.50	4	20.000	16.000	140.000	D7/D8	o	27.007
M27 x 2.00	4	20.000	16.000	140.000	D7/D8	o	27.008
M28 x 1.50	4	20.000	16.000	140.000	D7/D8	o	28.007
M30 x 1.50	4	22.000	18.000	150.000	D7/D8		30.007
M30 x 2.00	4	22.000	18.000	150.000	D7/D8	o	30.008
M32 x 1.50	4	22.000	18.000	150.000	D7/D8	o	32.007
M33 x 1.50	4	25.000	20.000	160.000	D7/D8	o	33.007
M35 x 1.50	4	28.000	22.000	170.000	D8/D9	o	35.007
M36 x 1.50	4	28.000	22.000	170.000	D8/D9	o	36.007

General Purpose



DIN length - DIN shank

Series 830 - Cobalt, Metric Fine, straight flute, bright finish, DIN 374



METRIC FINE

ISO2 (6H)
Class of Fit



Through or
Blind Hole

0° Helix

Chamfer Lead



C · 2 - 3

Cut Taps

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 830	Order No.
M3 x 0.35	3	2.200		56.000	D2/D3	°	3.002
M3.5 x 0.35	3	2.500	2.100	56.000	D3/D4	°	3.502
M4 x 0.50	3	2.800	2.100	63.000	D3/D4	°	4.003
M5 x 0.50	3	3.500	2.700	70.000	D3/D4	°	5.003
M6 x 0.50	3	4.500	3.400	80.000	D3/D4	°	6.003
M6 x 0.75	3	4.500	3.400	80.000	D3/D4	°	6.004
M7 x 0.75	3	5.500	4.300	80.000	D3/D4	°	7.004
M8 x 0.50	3	6.000	4.900	80.000	D3/D4	°	8.003
M8 x 0.75	3	6.000	4.900	80.000	D3/D4	°	8.004
M8 x 1.00	3	6.000	4.900	90.000	D4/D5	°	8.005
M9 x 1.00	3	7.000	5.500	90.000	D4/D5	°	9.005
M10 x 0.75	3	7.000	5.500	90.000	D4/D5	°	10.004
M10 x 1.00	3	7.000	5.500	90.000	D4/D5	°	10.005
M10 x 1.25	3	7.000	5.500	100.000	D4/D5	°	10.006
M11 x 1.00	3	8.000	6.200	90.000	D4/D5	°	11.005
M12 x 1.00	3	9.000	7.000	100.000	D4/D5	°	12.005
M12 x 1.25	3	9.000	7.000	100.000	D4/D5		12.006
M12 x 1.50	3	9.000	7.000	100.000	D5/D6	°	12.007
M14 x 1.00	3	11.000	9.000	100.000	D4/D5	°	14.005
M14 x 1.25	3	11.000	9.000	100.000	D4/D5		14.006
M14 x 1.50	3	11.000	9.000	100.000	D4/D5	°	14.007
M15 x 1.00	3	12.000	9.000	100.000	D4/D5	°	15.005
M16 x 1.00	3	12.000	9.000	100.000	D4/D5	°	16.005
M16 x 1.50	3	12.000	9.000	100.000	D4/D5	°	16.007
M18 x 1.00	4	14.000	11.000	110.000	D4/D5	°	18.005
M18 x 1.50	4	14.000	11.000	110.000	D4/D5	°	18.007
M18 x 2.00	4	14.000	11.000	125.000	D6/D7	°	18.008
M20 x 1.00	4	16.000	12.000	125.000	D6/D7	°	20.005
M20 x 1.50	4	16.000	12.000	125.000	D6/D7		20.007
M20 x 2.00	4	16.000	12.000	140.000	D6/D7	°	20.008
M22 x 1.00	4	18.000	14.500	125.000	D6/D7	°	22.005
M22 x 1.50	4	18.000	14.500	125.000	D6/D7	°	22.007
M24 x 1.00	4	18.000	14.500	140.000	D6/D7	°	24.005
M24 x 1.50	4	18.000	14.500	140.000	D6/D7	°	24.007
M24 x 2.00	4	18.000	14.500	140.000	D6/D7	°	24.008
M26 x 1.50	4	18.000	14.500	140.000	D7/D8	°	26.007
M27 x 1.50	4	20.000	16.000	140.000	D7/D8	°	27.007
M27 x 2.00	4	20.000	16.000	140.000	D7/D8	°	27.008
M28 x 1.50	4	20.000	16.000	140.000	D7/D8	°	28.007
M30 x 1.50	4	22.000	18.000	150.000	D7/D8	°	30.007
M30 x 2.00	4	22.000	18.000	150.000	D7/D8	°	30.008
M32 x 1.50	4	22.000	18.000	150.000	D7/D8	°	32.007
M35 x 1.50	6	28.000	22.000	170.000	D8/D9	°	35.007
M36 x 1.50	6	28.000	22.000	170.000	D8/D9	°	36.007
M38 x 1.50	6	28.000	22.000	170.000	D8/D9	°	38.007



General Purpose

UNC

2B
Class of Fit



Blind Hole

40° Helix

**Semi-bottoming
Chamfer Lead**



C · 2-3

ANSI length - ANSI shank

Series 3904 - Cobalt, UNC, 40° helix, bright finish

Series 3964 - Cobalt, UNC, 40° helix, MolyGlide® coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3904	Series 3964	Order No.
4-40	3	0.141	0.110	1.882	H2/H3			2.845
5-40	3	0.141	0.110	1.941	H2/H3			3.175
6-32	3	0.141	0.110	2.000	H3/H4			3.505
8-32	3	0.168	0.131	2.130	H3/H4			4.166
10-24	3	0.194	0.152	2.382	H3/H4			4.826
12-24	3	0.220	0.165	2.382	H3/H4			5.486
1/4-20	3	0.255	0.191	2.500	H4/H5			6.350
5/16-18	3	0.318	0.238	2.720	H4/H5			7.938
3/8-16	3	0.381	0.286	2.941	H5/H6			9.525
7/16-14	3	0.323	0.242	3.157	H5/H6			11.113
1/2-13	3	0.367	0.275	3.381	H5/H6			12.700
9/16-12	3	0.429	0.322	3.591	H5/H6			14.288
5/8-11	3	0.480	0.360	3.811	H5/H6			15.875
3/4-10	4	0.590	0.442	4.252	H5/H6			19.050
7/8-9	4	0.697	0.523	4.689	H6/H7			22.225
1-8	4	0.800	0.600	5.130	H6/H7			25.400

DIN length - DIN shank

Series 876 - Cobalt, UNC, 40° helix, bright finish, DIN 371

Series 881 - Cobalt, UNC, 40° helix, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 Series 876	DIN 376 Series 881	Order No.
2-56	3	2.800	2.100	45.000	H2/H3	°		2.184
4-40	3	3.500	2.700	56.000	H2/H3			2.845
6-32	3	4.000	3.000	56.000	H3/H4			3.505
8-32	3	4.500	3.400	63.000	H3/H4	°		4.166
10-24	3	6.000	4.900	70.000	H3/H4	°		4.826
1/4-20	3	7.000	5.500	80.000	H4/H5	°		6.350
5/16-18	3	8.000	6.200	90.000	H4/H5			7.938
3/8-16	3	9.000	7.000	100.000	H5/H6	°		9.525
7/16-14	3	8.000	6.200	100.000	H5/H6		°	11.113
1/2-13	3	9.000	7.000	110.000	H5/H6			12.700
9/16-12	3	11.000	9.000	110.000	H5/H6			14.288
5/8-11	3	12.000	9.000	110.000	H5/H6		°	15.875
3/4-10	4	14.000	11.000	125.000	H5/H6		°	19.050
7/8-9	4	18.000	14.500	140.000	H6/H7			22.225
1-8	4	18.000	14.500	160.000	H6/H7		°	25.400

General Purpose



ANSI length - ANSI shank

Series 3905 - Cobalt, UNF, 40° helix, bright finish

Series 3965 - Cobalt, UNF, 40° helix, MolyGlide® coated



UNF

2B
Class of Fit



Blind Hole

40° Helix

**Semi-bottoming
Chamfer Lead**



C · 2-3

Cut Taps

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3905	Series 3965	Order No.
4-48	3	0.141	0.110	1.882	H2/H3			2.845
5-44	3	0.141	0.110	1.941	H2/H3			3.175
6-40	3	0.141	0.110	2.000	H2/H3			3.505
8-36	3	0.168	0.131	2.130	H2/H3			4.166
10-32	3	0.194	0.152	2.382	H3/H4			4.826
12-28	3	0.220	0.165	2.382	H3/H4			5.486
1/4-28	3	0.255	0.191	2.500	H3/H4			6.350
5/16-24	3	0.318	0.238	2.720	H3/H4			7.938
3/8-24	3	0.381	0.286	2.941	H3/H4			9.525
7/16-20	3	0.323	0.242	3.157	H4/H5			11.113
1/2-20	3	0.367	0.275	3.381	H4/H5			12.700
9/16-18	3	0.429	0.322	3.591	H4/H5			14.288
5/8-18	3	0.480	0.360	3.811	H4/H5			15.875
3/4-16	4	0.590	0.442	4.252	H5/H6			19.050
7/8-14	4	0.697	0.523	4.689	H6/H7			22.225
1-12	4	0.800	0.600	5.130	H6/H7			25.400

DIN length - DIN shank

Series 911 - Cobalt, UNF, 40° helix, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 Series 911	Order No.
3-56	3	1.800	na	50.000	H2/H3	°	2.515
4-48	3	2.200	na	56.000	H2/H3	°	2.845
5-44	3	2.500	2.100	56.000	H2/H3	°	3.175
6-40	3	2.500	2.100	56.000	H2/H3	°	3.505
8-36	3	2.800	2.100	63.000	H2/H3		4.166
10-32	3	3.500	2.700	70.000	H3/H4		4.826
1/4-28	3	4.500	3.400	80.000	H3/H4	°	6.350
5/16-24	3	6.000	4.900	90.000	H3/H4	°	7.938
3/8-24	3	7.000	5.500	90.000	H3/H4		9.525
7/16-20	3	8.000	6.200	90.000	H4/H5	°	11.113
1/2-20	3	9.000	7.000	100.000	H4/H5	°	12.700
9/16-18	3	11.000	9.000	100.000	H4/H5		14.288
5/8-18	3	12.000	9.000	100.000	H4/H5	°	15.875
3/4-16	4	14.000	11.000	110.000	H5/H6		19.050
7/8-14	4	18.000	14.500	125.000	H6/H7	°	22.225

General Purpose

METRIC

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

ANSI length - ANSI shank

Series 3903 - Cobalt, Metric, 40° helix, bright finish

Series 3963 - Cobalt, Metric, 40° helix, MolyGlide® coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	Series 3903	Series 3963	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3			2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3			3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4			4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4			5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5			6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5			8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5			10.000
M12 X 1.75	3	0.367	0.275	3.381	D5/D6			12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6			14.000
M16 X 2.00	3	0.480	0.360	3.811	D6/D7			16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7			18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7			20.000

DIN length - DIN shank

Series 822 - Cobalt, Metric, 40° helix, bright finish, DIN 376

Series 810 - Cobalt, Metric, 40° helix, bright finish, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 822	DIN 371 Series 810	Order No.
M2 x 0.40	3	2.800	2.100	45.000	D2/D3			2.000
M2.2 x 0.45	3	2.800	2.100	45.000	D2/D3			2.200
M2.3 x 0.40	3	2.800	2.100	45.000	D2/D3		°	2.300
M2.5 x 0.45	3	2.800	2.100	50.000	D2/D3		°	2.500
M2.6 x 0.45	3	2.800	2.100	50.000	D2/D3		°	2.600
M3 x 0.50	3	3.500	2.700	56.000	D2/D3		°	3.000
M3.5 x 0.60	3	4.000	3.000	56.000	D3/D4		°	3.500
M4 x 0.70	3	4.500	3.400	63.000	D3/D4			4.000
M5 x 0.80	3	6.000	4.900	70.000	D3/D4			5.000
M6 x 1.00	3	6.000	4.900	80.000	D4/D5		°	6.000
M8 x 1.25	3	8.000	6.200	90.000	D4/D5			8.000
M10 x 1.50	3	10.000	8.000	100.000	D4/D5			10.000
M3 x 0.50	3	2.200	n.a.	56.000	D2/D3	°		3.000
M3.5 x 0.60	3	2.500	2.100	56.000	D3/D4	°		3.500
M4 x 0.70	3	2.800	2.100	63.000	D3/D4			4.000
M5 x 0.80	3	3.500	2.700	70.000	D3/D4	°		5.000
M6 x 1.00	3	4.500	3.400	80.000	D4/D5	°		6.000
M7 x 1.00	3	5.500	4.300	80.000	D4/D5			7.000
M8 x 1.25	3	6.000	4.900	90.000	D4/D5			8.000
M10 x 1.50	3	7.000	5.500	100.000	D4/D5			10.000
M12 x 1.75	3	9.000	7.000	110.000	D5/D6	°		12.000
M14 x 2.00	3	11.000	9.000	110.000	D5/D6	°		14.000
M16 x 2.00	3	12.000	9.000	110.000	D6/D7	°		16.000
M18 x 2.50	4	14.000	11.000	125.000	D6/D7	°		18.000

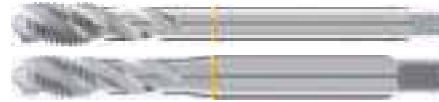
General Purpose



DIN length - DIN shank (cont'd)

Series 822 - Cobalt, Metric, 40° helix, bright finish, DIN 376

Series 810 - Cobalt, Metric, 40° helix, bright finish, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 822	DIN 371 Series 810	Order No.
M20 x 2.50	4	16.000	12.000	140.000	D6/D7	°		20.000
M22 x 2.50	4	18.000	14.500	140.000	D6/D7			22.000
M24 x 3.00	4	18.000	14.500	160.000	D7/D8	°		24.000
M27 x 3.00	4	20.000	16.000	160.000	D7/D8	°		27.000
M30 x 3.50	4	22.000	18.000	180.000	D8/D9	°		30.000

**METRIC /
METRIC
FINE**

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix
15° Helix

Semi-bottoming
Chamfer Lead



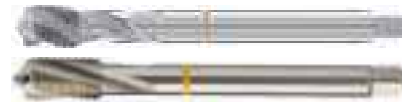
C · 2-3

Cut Taps

DIN length - DIN shank

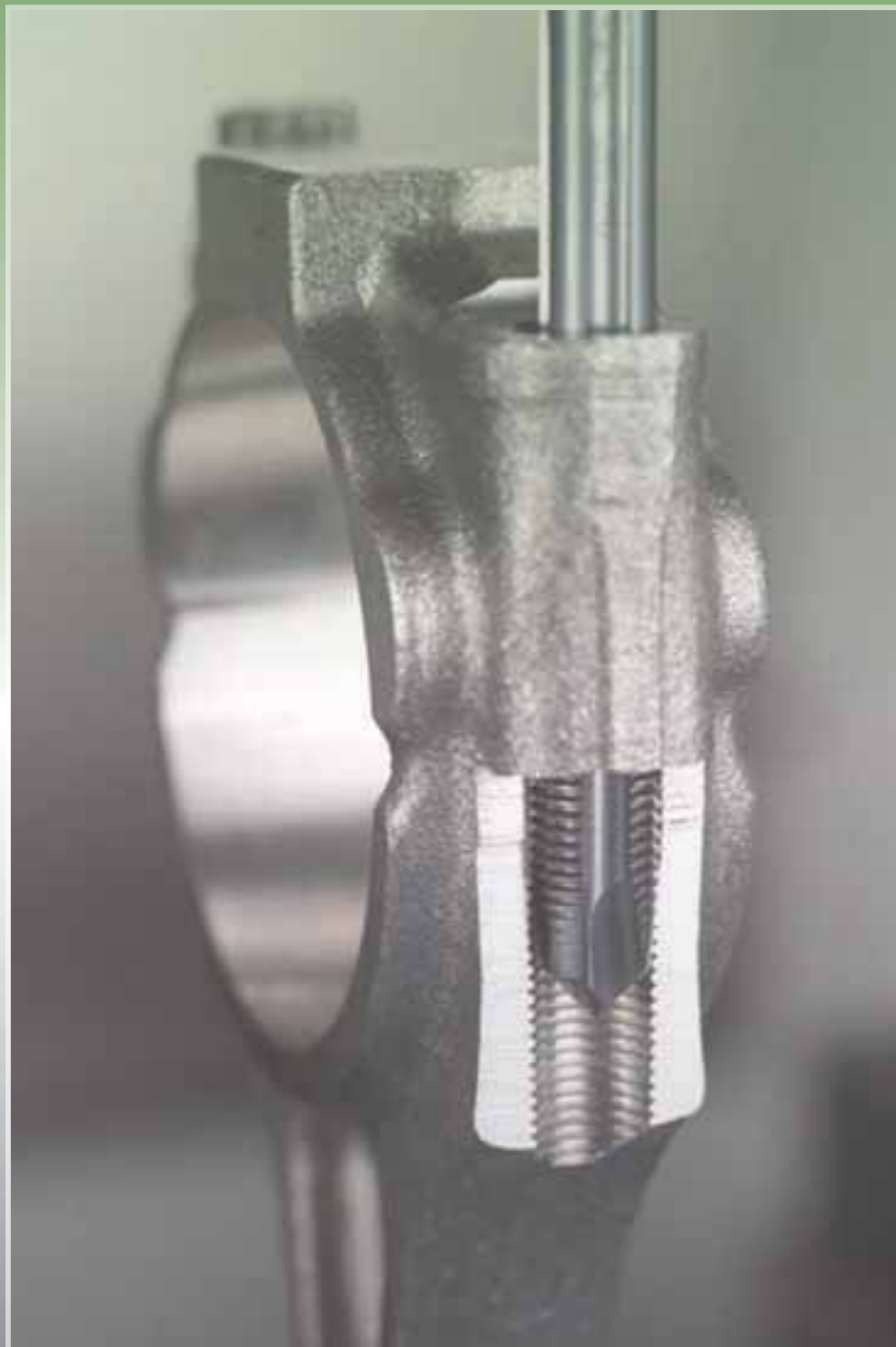
Series 834 - Cobalt, Metric Fine, 40° helix, bright finish, DIN 374

Series 833 - Cobalt, Metric Fine, 15° helix, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 834	DIN 374 Series 833	Order No.
M3 x 0.35	3	2.200	n.a.	56.000	D2/D3	°		3.002
M3.5 x 0.35	3	2.500	2.100	56.000	D3/D4	°		3.502
M4 x 0.50	3	2.800	2.100	63.000	D3/D4	°	°	4.003
M5 x 0.50	3	3.500	2.700	70.000	D3/D4	°	°	5.003
M6 x 0.50	3	4.500	3.400	80.000	D3/D4	°		6.003
M6 x 0.75	3	4.500	3.400	80.000	D3/D4	°	°	6.004
M8 x 0.75	3	6.000	4.900	80.000	D3/D4	°	°	8.004
M8 x 1.00	3	6.000	4.900	90.000	D4/D5	°	°	8.005
M10 x 1.00	3	7.000	5.500	90.000	D4/D5	°		10.005
M10 x 1.25	3	7.000	5.500	100.000	D4/D5	°	°	10.006
M12 x 1.00	3	9.000	7.000	100.000	D4/D5		°	12.005
M12 x 1.25	3	9.000	7.000	100.000	D4/D5			12.006
M12 x 1.50	3	9.000	7.000	100.000	D5/D6	°	°	12.007
M14 x 1.00	3	11.000	9.000	100.000	D4/D5	°		14.005
M14 x 1.25	3	11.000	9.000	100.000	D4/D5		°	14.006
M14 x 1.50	3	11.000	9.000	100.000	D4/D5			14.007
M16 x 1.00	3	12.000	9.000	100.000	D4/D5	°	°	16.005
M16 x 1.50	3	12.000	9.000	100.000	D4/D5			16.007
M18 x 1.00	4	14.000	11.000	110.000	D4/D5		°	18.005
M18 x 1.50	4	14.000	11.000	110.000	D4/D5	°	°	18.007
M20 x 1.00	4	16.000	12.000	125.000	D6/D7		°	20.005
M20 x 1.50	4	16.000	12.000	125.000	D6/D7		°	20.007
M22 x 1.50	4	18.000	14.500	125.000	D6/D7		°	22.007
M24 x 1.50	4	18.000	14.500	140.000	D6/D7		°	24.007
M24 x 2.00	4	18.000	14.500	140.000	D6/D7	°		24.008
M26 x 1.50	4	18.000	14.500	140.000	D7/D8	°	°	26.007
M27 x 1.50	4	20.000	16.000	140.000	D7/D8	°	°	27.007
M27 x 2.00	4	20.000	16.000	140.000	D7/D8	°	°	27.008
M30 x 1.50	4	22.000	18.000	150.000	D7/D8	°	°	30.007
M30 x 2.00	4	22.000	18.000	150.000	D7/D8	°	°	30.008

GUHRING



GREEN RING CUT TAPS

• Through hole

UNC	Page 38
UNF	Page 39
Metric	Page 40
Metric fine	Page 41

• Blind hole

UNC	Page 42
UNF	Page 43
Metric	Page 46
Metric fine	Page 47

• Oversized

Through hole	Page 50
Blind hole	Page 52

• STI Taps

Through hole	Page 54
Blind hole	Page 55

Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds

Material Hardness		SFM	
HRC	Brinell	Bright finish	Hard coated
≤ 25	≤ 250	35 - 45	50 - 65
≤ 30	≤ 280	15 - 30	25 - 55
≤ 35	≤ 320	12 - 24	18 - 35



Universal Applications - Alloyed & Unalloyed Steels

UNC

2B
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

ANSI length - ANSI shank

Series 3913 - Cobalt, UNC, spiral point, bright finish

Series 3916 - Cobalt, UNC, spiral point, TiN coated

Series 3946 - Cobalt, UNC, spiral point, TiCN coated

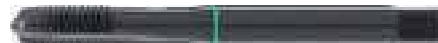


Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3913	Series 3916	Series 3946	Order No.
2-56	3	0.141	0.110	1.751	H2/H3				2.184
3-48	3	0.141	0.110	1.811	H2/H3				2.515
4-40	3	0.141	0.110	1.882	H2/H3				2.845
5-40	3	0.141	0.110	1.941	H2/H3				3.175
6-32	3	0.141	0.110	2.000	H3/H4				3.505
8-32	3	0.168	0.131	2.130	H3/H4				4.166
10-24	3	0.194	0.152	2.382	H3/H4				4.826
12-24	3	0.220	0.165	2.382	H3/H4				5.486
1/4-20	3	0.255	0.191	2.500	H4/H5				6.350
5/16-18	3	0.318	0.238	2.720	H4/H5				7.938
3/8-16	3	0.381	0.286	2.941	H5/H6				9.525
7/16-14	3	0.323	0.242	3.157	H5/H6				11.113
1/2-13	4	0.367	0.275	3.381	H5/H6				12.700
5/8-11	4	0.480	0.360	3.811	H5/H6				15.875
3/4-10	4	0.590	0.442	4.252	H5/H6				19.050
7/8-9	4	0.697	0.523	4.689	H6/H7				22.225
1-8	4	0.800	0.600	5.130	H6/H7				25.400
1 1/4-7	4	1.021	0.766	5.748	H7/H8				31.750
1 1/2-6	6	1.233	0.925	6.378	H7/H8				38.100

DIN length - DIN shank

Series 2881 - Cobalt, UNC, spiral point, steam oxide finish, DIN 371

Series 2883 - Cobalt, UNC, spiral point, steam oxide finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 Series 2881	DIN 376 Series 2883	Order No.
4-40	3	3.500	2.700	56.000	H2/H3			2.845
5-40	3	3.500	2.700	56.000	H3/H4	°		3.175
6-32	3	4.000	3.000	56.000	H3/H4	°		3.505
8-32	3	4.500	3.400	63.000	H3/H4			4.166
10-24	3	6.000	4.900	70.000	H3/H4			4.826
12-24	3	6.000	4.900	80.000	H4/H5			5.486
1/4-20	3	7.000	5.500	80.000	H4/H5			6.350
5/16-18	3	8.000	6.200	90.000	H5/H6			7.938
3/8-16	3	10.000	7.000	100.000	H4/H5			9.525
7/16-14	3	8.000	6.200	100.000	H5/H6		°	11.113
1/2-13	3	9.000	7.000	110.000	H5/H6		°	12.700
5/8-11	3	12.000	9.000	110.000	H5/H6		°	15.875
3/4-10	4	14.000	11.000	125.000	H5/H6		°	19.050
7/8-9	4	18.000	14.500	140.000	H6/H7		°	22.225
1-8	4	18.000	14.500	160.000	H6/H7			25.400

Universal Applications - Alloyed & Unalloyed Steels



ANSI length - ANSI shank

Series 3914 - Cobalt, UNF, spiral point, bright finish

Series 3917 - Cobalt, UNF, spiral point, TiN coated

Series 3947 - Cobalt, UNF, spiral point, TiCN coated



UNF

2B
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

Cut Taps

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3914	Series 3917	Series 3947	Order No.
2-64	3	0.141	0.110	1.751	H2/H3				2.184
3-56	3	0.141	0.110	1.811	H2/H3				2.515
4-48	3	0.141	0.110	1.882	H2/H3				2.845
5-44	3	0.141	0.110	1.941	H2/H3				3.175
6-40	3	0.141	0.110	2.000	H2/H3				3.505
8-36	3	0.168	0.131	2.130	H2/H3				4.166
10-32	3	0.194	0.152	2.382	H3/H4				4.826
12-28	3	0.220	0.165	2.382	H3/H4				5.486
1/4-28	3	0.255	0.191	2.500	H3/H4				6.350
5/16-24	3	0.318	0.238	2.720	H3/H4				7.938
3/8-24	3	0.381	0.286	2.941	H3/H4				9.525
7/16-20	3	0.323	0.242	3.157	H4/H5				11.113
1/2-20	4	0.367	0.275	3.381	H4/H5				12.700
5/8-18	4	0.480	0.360	3.811	H4/H5				15.875
3/4-16	4	0.590	0.442	4.252	H5/H6				19.050
7/8-14	4	0.697	0.523	4.689	H6/H7				22.225
1-12	4	0.800	0.600	5.130	H6/H7				25.400
1 1/4-12	4	1.021	0.766	5.748	H7/H8				31.750
1 1/2-12	6	1.233	0.925	6.378	H7/H8				38.100

NEW!

DIN length - DIN shank

Series 2885 - Cobalt, UNF, spiral point, steam oxide finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 Series 2885	Order No.
4-48	3	2.200	n.a.	56.000	H2/H3		2.845
6-40	3	2.500	2.100	56.000	H2/H3		3.505
10-32	3	3.500	2.700	70.000	H3/H4		4.826
12-28	3	4.000	3.000	80.000	H3/H4		5.486
1/4-28	3	4.500	3.400	80.000	H3/H4		6.350
3/8-24	3	7.000	5.500	90.000	H3/H4		9.525
5/8-18	3	12.000	9.000	100.000	H4/H5		15.875
7/8-14	4	18.000	14.500	125.000	H6/H7	°	22.225
1-12	4	18.000	14.500	140.000	H6/H7	°	25.400



Universal Applications - Alloyed & Unalloyed Steels

METRIC

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

ANSI length - ANSI shank

Series 3912 - Cobalt, Metric, spiral point, bright finish

Series 3915 - Cobalt, Metric, spiral point, TiN coated

Series 3945 - Cobalt, Metric, spiral point, TiCN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	Series 3912	Series 3915	Series 3945	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3				2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3				3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4				4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4				5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5				6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5				8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5				10.000
M12 X 1.75	4	0.367	0.275	3.381	D5/D6				12.000
M14 X 2.00	4	0.429	0.322	3.591	D5/D6				14.000
M16 X 2.00	4	0.480	0.360	3.811	D6/D7				16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7				18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7				20.000

DIN length - DIN shank

Series 2876 - Cobalt, Metric, spiral point, steam oxide finish, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 2876	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3	°	3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°	4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4	°	5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5	°	6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5		8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5		10.000
M12 X 1.75	3	12.000	9.000	110.000	D5/D6	°	12.000

Universal Applications - Alloyed & Unalloyed Steels



ANSI length - ANSI shank

Series 3973 - Cobalt, Metric Fine, spiral point, TiN coated

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	S Series 3973	Order No.
M8 X 1.00	3	0.318	0.238	2.720	D4/D5		8.005
M10 X 1.00	3	0.381	0.286	2.941	D4/D5		10.005
M10 X 1.25	3	0.381	0.286	2.941	D4/D5		10.006
M12 X 1.00	4	0.367	0.275	3.381	D4/D5		12.005
M12 X 1.25	4	0.367	0.275	3.381	D4/D5		12.006
M12 X 1.50	4	0.367	0.275	3.381	D5/D6		12.007
M14 X 1.25	4	0.429	0.322	3.591	D4/D5		14.006
M14 X 1.50	4	0.429	0.322	3.591	D4/D5		14.007
M16 X 1.50	4	0.480	0.360	3.811	D4/D5		16.007
M18 X 1.50	4	0.542	0.406	4.031	D4/D5		18.007
M20 X 1.50	4	0.652	0.489	4.469	D6/D7		20.007

METRIC FINE

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

Cut Taps

DIN length - DIN shank

Series 2879 - Cobalt, Metric Fine, spiral point, oxide finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 2879	Order No.
M3 X 0.35	3	2.200	2.200	56.000	D2/D3	°	3.002
M5 X 0.50	3	3.500	2.700	70.000	D3/D4	°	5.003
M6 X 0.75	3	4.500	3.400	80.000	D3/D4	°	6.004
M8 X 0.75	3	6.000	4.900	80.000	D3/D4	°	8.004
M8 X 1.00	3	6.000	4.900	90.000	D4/D5		8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5	°	10.005
M12 X 1.00	4	9.000	7.000	100.000	D4/D5	°	12.005
M14 X 1.50	4	11.000	9.000	100.000	D4/D5	°	14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5	°	16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5	°	18.007
M20 X 1.50	4	16.000	12.000	125.000	D6/D7	°	20.007



Universal Applications - Alloyed & Unalloyed Steels

UNC

2B

Class of Fit



Blind Hole

40° Helix

Semi-bottoming Chamfer Lead



C · 2-3

ANSI length - ANSI shank

Series 3919 - Cobalt, UNC, 40° helix, bright finish

Series 3922 - Cobalt, UNC, 40° helix, TiN coated

Series 3949 - Cobalt, UNC, 40° helix, TiCN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3919	Series 3922	Series 3949	Order No.
2-56	3	0.141	0.110	1.751	H2/H3				2.184
3-48	3	0.141	0.110	1.811	H2/H3				2.515
4-40	3	0.141	0.110	1.882	H2/H3				2.845
5-40	3	0.141	0.110	1.941	H2/H3				3.175
6-32	3	0.141	0.110	2.000	H3/H4				3.505
8-32	3	0.168	0.131	2.130	H3/H4				4.166
10-24	3	0.194	0.152	2.382	H3/H4				4.826
12-24	3	0.220	0.165	2.382	H3/H4				5.486
1/4-20	3	0.255	0.191	2.500	H4/H5				6.350
5/16-18	3	0.318	0.238	2.720	H4/H5				7.938
3/8-16	3	0.381	0.286	2.941	H5/H6				9.525
7/16-14	3	0.323	0.242	3.157	H5/H6				11.113
1/2-13	3	0.367	0.275	3.381	H5/H6				12.700
5/8-11	4	0.480	0.360	3.811	H5/H6				15.875
3/4-10	4	0.590	0.442	4.252	H5/H6				19.050
7/8-9	4	0.697	0.523	4.689	H6/H7				22.225
1-8	4	0.800	0.600	5.130	H6/H7				25.400
1 1/4-7	4	1.021	0.766	5.748	H7/H8				31.750
1 1/2-6	6	1.233	0.925	6.378	H7/H8				38.100

DIN length - DIN shank

Series 1837 - Cobalt, UNC, 40° helix, TiN coated, DIN 371, C(K) chamfer lead



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 Series 1837	Order No.
10-24	3	6.000	4.900	70.000	H3/H4	°	4.826
12-24	3	6.000	4.900	80.000	H3/H4	°	5.486
1/4-20	3	7.000	5.500	80.000	H4/H5	°	6.350
5/16-18	3	8.000	6.200	90.000	H4/H5		7.938
3/8-16	3	10.000	8.000	100.000	H5/H6	°	9.525

TECH TIP: C(K) Chamfer Lead

A C/K Chamfer lead is the same length as the C chamfer lead in that it incorporates 2 – 3 threads into the lead length. As an optional standard this chamfer form is found on semi-bottoming taps with a 40 degree R.H. helix. After complete production of the tap (including hard coating) with the C chamfer form – there is an additional flute grind through the cutting chamfer at approximately a 20 degree helix. This chamfer will show its best results when used in moderately tough materials that tend to produce long chips. The “helix correction” helps to cause an immediate irregular chip flow as the chip formation is starting. This irregular chip flow helps to break the chip and allow it to flow more freely up the flute. This geometry is very useful in applications where “birdnesting” is a common problem.

Universal Applications - Alloyed & Unalloyed Steels



ANSI length - ANSI shank

Series 3920 - Cobalt, UNF, 40° helix, bright finish

Series 3923 - Cobalt, UNF, 40° helix, TiN coated

Series 3950 - Cobalt, UNF, 40° helix, TiCN coated



UNF

2B
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



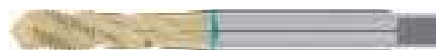
C · 2-3

Cut Taps

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	Series 3920	Series 3923	Series 3950	Order No.
2-64	3	0.141	0.110	1.751	H2/H3				2.184
3-56	3	0.141	0.110	1.811	H2/H3				2.515
4-48	3	0.141	0.110	1.882	H2/H3				2.845
5-44	3	0.141	0.110	1.941	H2/H3				3.175
6-40	3	0.141	0.110	2.000	H2/H3				3.505
8-36	3	0.168	0.131	2.130	H2/H3				4.166
10-32	3	0.194	0.152	2.382	H3/H4				4.826
12-28	3	0.220	0.165	2.382	H3/H4				5.486
1/4-28	3	0.255	0.191	2.500	H3/H4				6.350
5/16-24	3	0.318	0.238	2.720	H3/H4				7.938
3/8-24	3	0.381	0.286	2.941	H3/H4				9.525
7/16-20	3	0.323	0.242	3.157	H4/H5				11.113
1/2-20	3	0.367	0.275	3.381	H4/H5				12.700
5/8-18	4	0.480	0.360	3.811	H4/H5				15.875
3/4-16	4	0.590	0.442	4.252	H5/H6				19.050
7/8-14	4	0.697	0.523	4.689	H6/H7				22.225
1-12	4	0.800	0.600	5.130	H6/H7				25.400
1 1/4-12	4	1.021	0.766	5.748	H6/H7				31.750
1 1/2-12	6	1.233	0.925	6.378	H6/H7				38.100

DIN length - DIN shank

Series 1838 - Cobalt, UNF, 40° helix, TiN coated, DIN 374, C(K) chamfer lead



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 S Series 1838	Order No.
10-32	3	3.500	2.700	70.000	H3/H4	°	4.826
12-28	3	4.000	3.000	80.000	H3/H4	°	5.486
1/4-28	3	4.500	3.400	80.000	H3/H4	°	6.350
5/16-24	3	6.000	4.900	90.000	H3/H4		7.938
3/8-24	3	7.000	5.500	90.000	H3/H4		9.525
7/16-20	3	8.000	6.200	100.000	H4/H5		11.113
1/2-20	3	9.000	7.000	100.000	H4/H5	°	12.700
5/8-18	4	12.000	9.000	100.000	H4/H5		15.875
7/8-14	4	18.000	14.500	125.000	H6/H7	°	22.225
1-12	4	18.000	14.500	140.000	H6/H7	°	25.400



Universal Applications - Alloyed & Unalloyed Steels

**UNC /
UNF**

**2B
Class of Fit**



Blind Hole

40° Helix

**Full-bottoming
Chamfer Lead**



E · 1.5 - 2

ANSI length - ANSI shank

Series 3977 - Cobalt, UNC, 40° helix, TiN coated, Form E

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3977	Order No.
2-56	3	0.141	0.110	1.751	H2/H3		2.184
3-48	3	0.141	0.110	1.811	H2/H3		2.515
4-40	3	0.141	0.110	1.882	H2/H3		2.845
5-40	3	0.141	0.110	1.941	H2/H3		3.175
6-32	3	0.141	0.110	2.000	H3/H4		3.505
8-32	3	0.168	0.131	2.130	H3/H4		4.166
10-24	3	0.194	0.152	2.382	H3/H4		4.826
12-24	3	0.220	0.165	2.382	H3/H4		5.486
1/4-20	3	0.255	0.191	2.500	H4/H5		6.350
5/16-18	3	0.318	0.238	2.720	H4/H5		7.938
3/8-16	3	0.381	0.286	2.941	H5/H6		9.525
7/16-14	3	0.323	0.242	3.157	H5/H6		11.113
1/2-13	3	0.367	0.275	3.381	H5/H6		12.700
9/16-12	3	0.429	0.322	3.591	H5/H6		14.288
5/8-11	4	0.480	0.360	3.811	H5/H6		15.875
3/4-10	4	0.590	0.442	4.252	H5/H6		19.050
7/8-9	4	0.697	0.523	4.689	H6/H7		22.225
1-8	4	0.800	0.600	5.130	H6/H7		25.400
1 1/4-7	4	1.021	0.766	5.748	H7/H8		31.750
1 1/2-6	6	1.233	0.925	6.378	H7/H8		38.100

ANSI length - ANSI shank

Series 3978 - Cobalt, UNF, 40° helix, TiN coated, Form E

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3978	Order No.
2-64	3	0.141	0.110	1.751	H2/H3		2.184
3-56	3	0.141	0.110	1.811	H2/H3		2.515
4-48	3	0.141	0.110	1.882	H2/H3		2.845
5-44	3	0.141	0.110	1.941	H2/H3		3.175
6-40	3	0.141	0.110	2.000	H2/H3		3.505
8-36	3	0.168	0.131	2.130	H2/H3		4.166
10-32	3	0.194	0.152	2.382	H3/H4		4.826
12-28	3	0.220	0.165	2.382	H3/H4		5.486
1/4-28	3	0.255	0.191	2.500	H3/H4		6.350
5/16-24	3	0.318	0.238	2.720	H3/H4		7.938
3/8-24	3	0.381	0.286	2.941	H3/H4		9.525
7/16-20	3	0.323	0.242	3.157	H4/H5		11.113
1/2-20	3	0.367	0.275	3.381	H4/H5		12.700
9/16-18	3	0.429	0.322	3.591	H4/H5		14.288
5/8-18	4	0.480	0.360	3.811	H4/H5		15.875
3/4-16	4	0.590	0.442	4.252	H5/H6		19.050
7/8-14	4	0.697	0.523	4.689	H6/H7		22.225
1-12	4	0.800	0.600	5.130	H6/H7		25.400
1 1/4-12	4	1.021	0.766	5.748	H6/H7		31.750
1 1/2-12	6	1.233	0.925	6.378	H6/H7		38.100

**NEW!
ANSI
Form E
"full-bottoming"
style taps**

Universal Applications - Alloyed & Unalloyed Steels



NEW!

ANSI length - ANSI shank

Series 3954 - Cobalt, UNC, 40° helix, TiN coated, axial coolant through



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3954	Order No.
1/4-20	3	0.255	0.191	2.500	H4/H5		6.350
5/16-18	3	0.318	0.238	2.720	H4/H5		7.938
3/8-16	3	0.381	0.286	2.941	H5/H6		9.525
7/16-14	3	0.323	0.242	3.157	H5/H6		11.113
1/2-13	3	0.367	0.275	3.381	H5/H6		12.700
5/8-11	4	0.480	0.360	3.811	H5/H6		15.875
3/4-10	4	0.590	0.442	4.252	H5/H6		19.050

UNC / UNF

2B Class of Fit



Blind Hole

40° Helix

Semi-bottoming Chamfer Lead



C · 2-3

Cut Taps

NEW!

ANSI length - ANSI shank

Series 3955 - Cobalt, UNF, 40° helix, TiN coated, axial coolant through



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3955	Order No.
1/4-28	3	0.255	0.191	2.500	H3/H4		6.350
5/16-24	3	0.318	0.238	2.720	H3/H4		7.938
3/8-24	3	0.381	0.286	2.941	H3/H4		9.525
7/16-20	3	0.323	0.242	3.157	H4/H5		11.113
1/2-20	3	0.367	0.275	3.381	H4/H5		12.700
5/8-18	4	0.480	0.360	3.811	H4/H5		15.875
3/4-16	4	0.590	0.442	4.252	H5/H6		19.050



Universal Applications - Alloyed & Unalloyed Steels

METRIC

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

ANSI length - ANSI shank

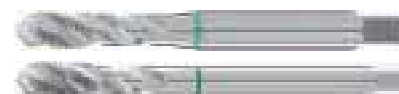
Series 3918 - Cobalt, Metric, 40° helix, bright finish
Series 3921 - Cobalt, Metric, 40° helix, TiN coated
Series 3948 - Cobalt, Metric, 40° helix, TiCN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	Series 3918	Series 3921	Series 3948	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3				2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3				3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4				4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4				5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5				6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5				8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5				10.000
M12 X 1.75	3	0.367	0.275	3.381	D5/D6				12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6				14.000
M16 X 2.00	4	0.480	0.360	3.811	D6/D7				16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7				18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7				20.000

DIN length - DIN shank

Series 889 - Cobalt, Metric, 40° helix, bright finish, DIN 371
Series 890 - Cobalt, Metric, 40° helix, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 889	DIN 376 Series 890	Order No.
M2 X 0.40	3	2.800	2.100	45.000	D2/D3	°		2.000
M2.2 X 0.45	3	2.800	2.100	45.000	D2/D3			2.200
M2.5 X 0.45	3	2.800	2.100	50.000	D2/D3	°		2.500
M2.6 X 0.45	3	2.800	2.100	50.000	D2/D3	°		2.600
M3 X 0.50	3	3.500	2.700	56.000	D2/D3	°		3.000
M3.5 X 0.60	3	4.000	3.000	56.000	D3/D4	°		3.500
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°		4.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°		4.000
M5 X 0.80	3	6.000	4.900	70.000	D4/D5	°		5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5	°		10.000
M3 X 0.50	3	2.200	n.a.	56.000	D2/D3		°	3.000
M4 X 0.70	3	2.800	2.100	63.000	D3/D4		°	4.000
M5 X 0.80	3	3.500	2.700	70.000	D3/D4		°	5.000
M6 X 1.00	3	4.500	3.400	80.000	D4/D5		°	6.000
M8 X 1.25	3	6.000	4.900	90.000	D4/D5		°	8.000
M10 X 1.50	3	7.000	5.500	100.000	D4/D5			10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6		°	12.000
M14 X 2.00	3	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7			16.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7			20.000
M24 X 3.00	4	18.000	14.500	160.000	D7/D8			24.000

Universal Applications - Alloyed & Unalloyed Steels



ANSI length - ANSI shank

Series 3974 - Cobalt, Metric Fine, 40° helix, TiN coated

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	S Series 3974	Order No.
M8 X 1.00	3	0.318	0.238	2.720	D4/D5		8.005
M10 X 1.00	3	0.381	0.286	2.941	D4/D5		10.005
M10 X 1.25	3	0.381	0.286	2.941	D4/D5		10.006
M12 X 1.00	3	0.367	0.275	3.381	D4/D5		12.005
M12 X 1.25	3	0.367	0.275	3.381	D4/D5		12.006
M12 X 1.50	3	0.367	0.275	3.381	D5/D6		12.007
M14 X 1.25	3	0.429	0.322	3.591	D4/D5		14.006
M14 X 1.50	3	0.429	0.322	3.591	D4/D5		14.007
M16 X 1.50	4	0.480	0.360	3.811	D4/D5		16.007
M18 X 1.50	4	0.542	0.406	4.031	D4/D5		18.007
M20 X 1.50	4	0.652	0.489	4.469	D6/D7		20.007

METRIC FINE

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

Cut Taps

DIN length - DIN shank

Series 2424 - Cobalt, Metric Fine, 40° helix, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 2424	Order No.
M5 X 0.50	3	3.500	2.700	70.000	D3/D4	°	5.003
M6 X 0.75	3	4.500	3.400	80.000	D3/D4	°	6.004
M8 X 1.00	3	6.000	4.900	90.000	D4/D5	°	8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5		10.005
M10 X 1.25	3	7.000	5.500	100.000	D4/D5	°	10.006
M12 X 1.00	3	9.000	7.000	100.000	D4/D5	°	12.005
M12 X 1.25	3	9.000	7.000	100.000	D4/D5	°	12.006
M12 X 1.50	3	9.000	7.000	100.000	D5/D6	°	12.007
M14 X 1.00	3	11.000	9.000	100.000	D4/D5		14.005
M14 X 1.50	3	11.000	9.000	100.000	D4/D5		14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5		16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5		18.007
M20 X 1.50	4	16.000	12.000	125.000	D6/D7		20.007
M24 X 1.50	4	18.000	14.500	140.000	D6/D7	°	24.007
M24 X 2.00	4	18.000	14.500	140.000	D6/D7		24.008



Universal Applications - Alloyed & Unalloyed Steels

METRIC

6H
Class of Fit



Blind Hole

40° Helix

Full-bottoming
Chamfer Lead



E · 1.5 - 2

ANSI length - ANSI shank

Series 3976 - Cobalt, Metric, 40° helix, TiN coated, Form E



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3976	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3		2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3		3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4		4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4		5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5		6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5		8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5		10.000
M12 X 1.75	3	0.367	0.275	3.381	D5/D6		12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6		14.000
M16 X 2.00	4	0.480	0.360	3.811	D6/D7		16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7		18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7		20.000

DIN length - DIN shank

Series 2790 - Cobalt, Metric, 40° helix, bright finish, DIN 371, Form E

Series 2791 - Cobalt, Metric, 40° helix, bright finish, DIN 376, Form E



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 ● Series 2790	DIN 376 ● Series 2791	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3			3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4			4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5			10.000
M4 X 0.70	3	2.800	2.100	63.000	D3/D4		°	4.000
M5 X 0.80	3	3.500	2.700	70.000	D3/D4		°	5.000
M6 X 1.00	3	4.500	3.400	80.000	D4/D5		°	6.000
M8 X 1.25	3	6.000	4.900	90.000	D4/D5		°	8.000
M10 X 1.50	3	7.000	5.500	100.000	D4/D5		°	10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	3	11.000	9.000	110.000	D5/D6			14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7		°	16.000

NEW!
ANSI
Form E
"full-bottoming"
style taps

Universal Applications - Alloyed & Unalloyed Steels



DIN length - DIN shank

Series 2792 - Cobalt, Metric Fine, 40° helix, bright finish, DIN 374, Form E



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 ● Series 2792	Order No.
M8 X 1.00	3	6.000	4.900	90.000	D4/D5	○	8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5		10.005
M12 X 1.00	3	9.000	7.000	100.000	D4/D5		12.005
M12 X 1.25	3	9.000	7.000	100.000	D4/D5	○	12.006
M12 X 1.50	3	9.000	7.000	100.000	D5/D6		12.007
M14 X 1.00	3	11.000	9.000	100.000	D4/D5	○	14.005
M14 X 1.25	3	11.000	9.000	100.000	D4/D5	○	14.006
M14 X 1.50	3	11.000	9.000	100.000	D4/D5	○	14.007

METRIC FINE

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Full-bottoming
Chamfer Lead



E · 1.5 - 2

Cut Taps



Universal Applications - Alloyed & Unalloyed Steels

UNC

H7 / H11
Tolerance



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5



ANSI length - ANSI shank

Series 3982 - Cobalt, UNC, spiral point, TiN coated, H7 class of fit

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H7 Limits	S Series 3982	Order No.
6-32	3	0.141	0.110	2.000	H7		3.505
8-32	3	0.168	0.131	2.130	H7		4.166
10-24	3	0.194	0.152	2.382	H7		4.826
12-24	3	0.220	0.165	2.382	H7		5.486
1/4-20	3	0.255	0.191	2.500	H7		6.350
5/16-18	3	0.318	0.238	2.720	H7		7.938
3/8-16	3	0.381	0.286	2.941	H7		9.525
7/16-14	3	0.323	0.242	3.157	H7		11.113
1/2-13	4	0.367	0.275	3.381	H7		12.700
5/8-11	4	0.480	0.360	3.811	H7		15.875



ANSI length - ANSI shank

Series 3986 - Cobalt, UNC, spiral point, TiN coated, H11 class of fit

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H11 Limits	S Series 3986	Order No.
6-32	3	0.141	0.110	2.000	H11		3.505
8-32	3	0.168	0.131	2.130	H11		4.166
10-24	3	0.194	0.152	2.382	H11		4.826
12-24	3	0.220	0.165	2.382	H11		5.486
1/4-20	3	0.255	0.191	2.500	H11		6.350
5/16-18	3	0.318	0.238	2.720	H11		7.938
3/8-16	3	0.381	0.286	2.941	H11		9.525
7/16-14	3	0.323	0.242	3.157	H11		11.113
1/2-13	4	0.367	0.275	3.381	H11		12.700
5/8-11	4	0.480	0.360	3.811	H11		15.875

TECH TIP: Oversized taps

Oversized Taps are taps that are typically +0.003"/+0.005" larger than standard pitch diameter. An H7 thread limit tap is +0.003" oversize from the basic pitch diameter while an H11 thread limit tap is +0.005" oversize. Typically, oversized taps are used for threading parts that will be subsequently plated or heat treated after tapping.

Universal Applications - Alloyed & Unalloyed Steels



NEW!



ANSI length - ANSI shank

Series 3983 - Cobalt, UNF, spiral point, TiN coated, H7 class of fit

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H7 Limits	S Series 3983	Order No.
6-40	3	0.141	0.110	2.000	H7		3.505
8-36	3	0.168	0.131	2.130	H7		4.166
10-32	3	0.194	0.152	2.382	H7		4.826
12-28	3	0.220	0.165	2.382	H7		5.486
1/4-28	3	0.255	0.191	2.500	H7		6.350
5/16-24	3	0.318	0.238	2.720	H7		7.938
3/8-24	3	0.381	0.286	2.941	H7		9.525
7/16-20	3	0.323	0.242	3.157	H7		11.113
1/2-20	4	0.367	0.275	3.381	H7		12.700
5/8-18	4	0.480	0.360	3.811	H7		15.875

UNF

H7 / H11 Tolerance



Through Hole

0° Helix

Plug Tap Chamfer Lead



B · 3.5 - 5

Cut Taps

NEW!



ANSI length - ANSI shank

Series 3987 - Cobalt, UNF, spiral point, TiN coated, H11 class of fit

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H11 Limits	S Series 3987	Order No.
6-40	3	0.141	0.110	2.000	H11		3.505
8-36	3	0.168	0.131	2.130	H11		4.166
10-32	3	0.194	0.152	2.382	H11		4.826
12-28	3	0.220	0.165	2.382	H11		5.486
1/4-28	3	0.255	0.191	2.500	H11		6.350
5/16-24	3	0.318	0.238	2.720	H11		7.938
3/8-24	3	0.381	0.286	2.941	H11		9.525
7/16-20	3	0.323	0.242	3.157	H11		11.113
1/2-20	4	0.367	0.275	3.381	H11		12.700
5/8-18	4	0.480	0.360	3.811	H11		15.875



Universal Applications - Alloyed & Unalloyed Steels

UNC

H7 / H11
Tolerance



Blind Hole

40° Helix

Chamfer Lead



C · 2-3

ANSI length - ANSI shank

Series 3980 - Cobalt, UNC, 40° helix, TiN coated, H7 tolerance

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H7 Limits	S Series 3980	Order No.
6-32	3	0.141	0.110	2.000	H7		3.505
8-32	3	0.168	0.131	2.130	H7		4.166
10-24	3	0.194	0.152	2.382	H7		4.826
12-24	3	0.220	0.165	2.382	H7		5.486
1/4-20	3	0.255	0.191	2.500	H7		6.350
5/16-18	3	0.318	0.238	2.720	H7		7.938
3/8-16	3	0.381	0.286	2.941	H7		9.525
7/16-14	3	0.323	0.242	3.157	H7		11.113
1/2-13	3	0.367	0.275	3.381	H7		12.700
5/8-11	4	0.480	0.360	3.811	H7		15.875

NEW!



ANSI length - ANSI shank

Series 3984 - Cobalt, UNC, 40° helix, TiN coated, H11 tolerance

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H11 Limits	S Series 3984	Order No.
6-32	3	0.141	0.110	2.000	H11		3.505
8-32	3	0.168	0.131	2.130	H11		4.166
10-24	3	0.194	0.152	2.382	H11		4.826
12-24	3	0.220	0.165	2.382	H11		5.486
1/4-20	3	0.255	0.191	2.500	H11		6.350
5/16-18	3	0.318	0.238	2.720	H11		7.938
3/8-16	3	0.381	0.286	2.941	H11		9.525
7/16-14	3	0.323	0.242	3.157	H11		11.113
1/2-13	3	0.367	0.275	3.381	H11		12.700
5/8-11	4	0.480	0.360	3.811	H11		15.875

TECH TIP: Oversized taps

Oversized Taps are taps that are typically +0.003"/+0.005" larger than standard pitch diameter. An H7 thread limit tap is +0.003" oversize from the basic pitch diameter while an H11 thread limit tap is +0.005" oversize. Typically, oversized taps are used for threading parts that will be subsequently plated or heat treated after tapping.

Universal Applications - Alloyed & Unalloyed Steels



ANSI length - ANSI shank

Series 3981 - Cobalt, UNF, 40° helix, TiN coated, H7 tolerance



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H7 Limits	S Series 3981	Order No.
6-40	3	0.141	0.110	2.000	H7		3.505
8-36	3	0.168	0.131	2.130	H7		4.166
10-32	3	0.194	0.152	2.382	H7		4.826
12-28	3	0.220	0.165	2.382	H7		5.486
1/4-28	3	0.255	0.191	2.500	H7		6.350
5/16-24	3	0.318	0.238	2.720	H7		7.938
3/8-24	3	0.381	0.286	2.941	H7		9.525
7/16-20	3	0.323	0.242	3.157	H7		11.113
1/2-20	3	0.367	0.275	3.381	H7		12.700
5/8-18	4	0.480	0.360	3.811	H7		15.875

UNF

H7 / H11
Tolerance



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

Cut Taps

ANSI length - ANSI shank

Series 3985 - Cobalt, UNF, 40° helix, TiN coated, H11 tolerance



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	Actual H11 Limits	S Series 3985	Order No.
6-40	3	0.141	0.110	2.000	H11		3.505
8-36	3	0.168	0.131	2.130	H11		4.166
10-32	3	0.194	0.152	2.382	H11		4.826
12-28	3	0.220	0.165	2.382	H11		5.486
1/4-28	3	0.255	0.191	2.500	H11		6.350
5/16-24	3	0.318	0.238	2.720	H11		7.938
3/8-24	3	0.381	0.286	2.941	H11		9.525
7/16-20	3	0.323	0.242	3.157	H11		11.113
1/2-20	3	0.367	0.275	3.381	H11		12.700
5/8-18	4	0.480	0.360	3.811	H11		15.875



Universal Applications - Alloyed & Unalloyed Steels

**UNC /
UNF**

**3B
Class of Fit
STI Tap**



Through Hole

0° Helix

**Plug Tap
Chamfer Lead**



B · 3.5 - 5

ANSI length - ANSI shank

Series 3990 - Cobalt, UNC, spiral point, TiN coated, STI style tap

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	3B Approx. Limits	S Series 3990	Order No.
4-40	3	0.141	0.110	2.000	H2/H3		2.845
6-32	3	0.194	0.152	2.380	H3/H4		3.505
8-32	3	0.220	0.165	2.380	H3/H4		4.166
1/4-20	3	0.318	0.238	2.720	H4/H5		6.350
3/8-16	3	0.367	0.275	3.381	H5/H6		9.525
1/2-13	4	0.480	0.360	3.810	H5/H6		12.700

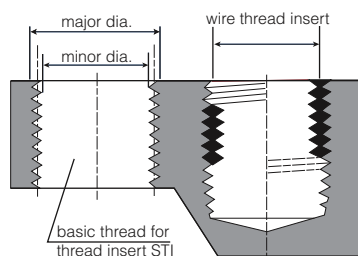
NEW!



ANSI length - ANSI shank

Series 3991 - Cobalt, UNF, spiral point, TiN coated, STI style tap

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	3B Approx. Limits	S Series 3991	Order No.
10-32	3	0.255	0.191	2.500	H3/H4		4.826
1/4-28	3	0.272	0.238	2.720	H3/H4		6.350
5/16-24	3	0.381	0.286	2.940	H3/H4		7.938



TECH TIP: Heli-Coil STI Taps

An STI Tap thread tap is designed to create an oversized hole so it can accommodate the required Heli-Coil insert.

Screw Thread Inserts are helically formed coils of diamond-shaped stainless steel or phosphorous bronze wire that screw into a threaded hole to form a mating internal thread. Screw thread inserts are a convenient way of repairing stripped out threads and are also used to provide stronger threads in soft materials than what can be obtained by directly tapping the base material. Aluminum, zinc die cast, magnesium and even wood are some materials an STI may be used in.

UNC Tap Size	Drill or countersink dia. inch
2-56	0.0906
3-48	0.1063
4-40	0.1220
5-40	1.1339
6-32	0.1496
8-32	0.1732
10-24	0.2047
12-24	0.2283
1/4-20	0.2638
5/16-18	0.3307
3/8-16	0.3937
7/16-14	0.4567
1/2-13	0.5236
9/16-12	0.5906
5/8-11	0.6496
3/4-10	0.7776
7/8-9	0.9055
1-8	1.0312
1 1/8-7	1.1614
1 1/4-7	1.2812
1 3/8-6	1.4173
1 1/2-6	1.5469

Universal Applications - Alloyed & Unalloyed Steels



ANSI length - ANSI shank

Series 3988 - Cobalt, UNC, 40° helix, TiN coated, STI style tap

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	3B Approx. Limits	S Series 3988	Order No.
4-40	3	0.141	0.110	2.000	H2/H3		2.845
6-32	3	0.194	0.152	2.380	H3/H4		3.505
8-32	3	0.220	0.165	2.380	H3/H4		4.166
1/4-20	3	0.318	0.238	2.720	H4/H5		6.350
3/8-16	3	0.367	0.275	3.381	H5/H6		9.525
1/2-13	4	0.480	0.360	3.810	H5/H6		12.700

UNC / UNF

3B
Class of Fit
STI Tap



Blind Hole

40° Helix

Semi-bottoming Chamfer Lead



C · 2-3

Cut Taps

ANSI length - ANSI shank

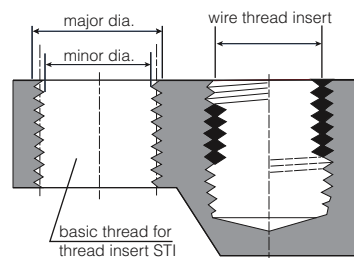
Series 3989 - Cobalt, UNF, 40° helix, TiN coated, STI style tap

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	3B Approx. Limits	S Series 3989	Order No.
10-32	3	0.255	0.191	2.500	H3/H4		4.826
1/4-28	3	0.272	0.238	2.720	H3/H4		6.350
5/16-24	3	0.381	0.286	2.940	H3/H4		7.938

UNF Tap Size	Drill or countersink dia. inch
2-64	0.0906
3-56	0.1063
4-48	0.1181
5-44	0.1299
6-40	0.1457
8-36	0.1732
10-32	0.2008
12-28	0.2244
1/4-28	0.2598
5/16-24	0.3230
3/8-24	0.3858
7/16-20	0.4528
1/2-20	0.5156
9/16-18	0.5781
5/8-18	0.6406
3/4-16	0.7677
7/8-14	0.8906
1-12	1.0236
1 1/8-12	1.1481
1 1/4-12	1.2736
1 3/8-12	1.3976
1 1/2-12	1.5236



GUHRING



BLUE RING CUT TAPS

•Through hole

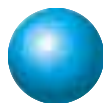
UNC	Page 58
UNF	Page 59
Metric	Page 60
Metric fine	Page 61

•Blind hole

UNC	Page 62
UNF	Page 63
Metric	Page 64
Metric fine	Page 65

Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds			
Material Hardness		SFM	
HRC	Brinell	Bright finish	Hard coated
--	≤ 180	25 - 35	40 - 55
≤ 23	≤ 240	20 - 30	35 - 45
≤ 30	≤ 280	18 - 25	25 - 40
≤ 35	≤ 320	12 - 15	20 - 30
Tool Steels			
≤ 25	≤ 250	5 - 15	10 - 28



Stainless Steel and Aerospace Alloys

UNC

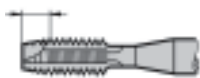
2B
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

ANSI length - ANSI shank

Series 3907 - PM cobalt, UNC, spiral point, TiN coated

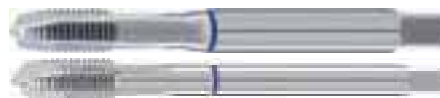


Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3907	Order No.
4-40	3	0.141	0.110	1.882	H2/H3		2.845
5-40	3	0.141	0.110	1.941	H2/H3		3.175
6-32	3	0.141	0.110	2.000	H3/H4		3.505
8-32	3	0.168	0.131	2.130	H3/H4		4.166
10-24	3	0.194	0.152	2.382	H3/H4		4.826
12-24	3	0.220	0.165	2.382	H3/H4		5.486
1/4-20	3	0.255	0.191	2.500	H4/H5		6.350
5/16-18	3	0.318	0.238	2.720	H4/H5		7.938
3/8-16	3	0.381	0.286	2.941	H5/H6		9.525
7/16-14	3	0.323	0.242	3.157	H5/H6		11.113
1/2-13	4	0.367	0.275	3.381	H5/H6		12.700
9/16-12	4	0.429	0.322	3.591	H5/H6		14.288
5/8-11	4	0.480	0.360	3.811	H5/H6		15.875
3/4-10	4	0.590	0.442	4.252	H5/H6		19.050
7/8-9	4	0.697	0.523	4.689	H6/H7		22.225
1-8	4	0.800	0.600	5.130	H6/H7		25.400

DIN length - DIN shank

Series 1980 - Cobalt, UNC, spiral point, bright finish, DIN 371

Series 1985 - Cobalt, UNC, spiral point, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 Series 1980	DIN 376 Series 1985	Order No.
4-40	3	3.500	2.700	56.000	H2/H3			2.845
6-32	3	4.000	3.000	56.000	H3/H4			3.505
8-32	3	4.500	3.400	63.000	H3/H4			4.166
10-24	3	6.000	4.900	70.000	H3/H4	°		4.826
12-24	3	6.000	4.900	80.000	H3/H4	°		5.486
1/4-20	3	7.000	5.500	80.000	H4/H5			6.350
5/16-18	3	8.000	6.200	90.000	H4/H5			7.938
3/8-16	3	9.000	7.000	100.000	H5/H6			9.525
1/2-13	3	9.000	7.000	110.000	H5/H6			12.700
9/16-12	4	11.000	9.000	110.000	H5/H6		°	14.288
5/8-11	4	12.000	9.000	110.000	H5/H6			15.875
3/4-10	4	14.000	11.000	125.000	H5/H6			19.050
7/8-9	4	18.000	14.500	140.000	H6/H7			22.225
1-8	4	18.000	14.500	160.000	H6/H7			25.400

Stainless Steel and Aerospace Alloys



ANSI length - ANSI shank

Series 3908 - PM cobalt, UNF, spiral point, TiN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3908	Order No.
4-48	3	0.141	0.110	1.882	H2/H3		2.845
5-44	3	0.141	0.110	1.941	H2/H3		3.175
6-40	3	0.141	0.110	2.000	H2/H3		3.505
8-36	3	0.168	0.131	2.130	H2/H3		4.166
10-32	3	0.194	0.152	2.382	H3/H4		4.826
12-28	3	0.220	0.165	2.382	H3/H4		5.486
1/4-28	3	0.255	0.191	2.500	H3/H4		6.350
5/16-24	3	0.318	0.238	2.720	H3/H4		7.938
3/8-24	3	0.381	0.286	2.941	H3/H4		9.525
7/16-20	3	0.323	0.242	3.157	H4/H5		11.113
1/2-20	4	0.367	0.275	3.381	H4/H5		12.700
9/16-18	4	0.429	0.322	3.591	H4/H5		14.288
5/8-18	4	0.480	0.360	3.811	H4/H5		15.875
3/4-16	4	0.590	0.442	4.252	H5/H6		19.050
7/8-14	4	0.697	0.523	4.689	H6/H7		22.225
1-12	4	0.800	0.600	5.130	H6/H7		25.400

UNF

2B
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

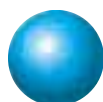
Cut Taps

DIN length - DIN shank

Series 1990 - Cobalt, UNF, spiral point, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 ● Series 1990	Order No.
6-40	3	2.500	2.100	56.000	H2/H3	○	3.505
8-36	3	2.800	2.100	63.000	H2/H3	○	4.166
10-32	3	3.500	2.700	70.000	H3/H4		4.826
12-28	3	4.000	3.000	80.000	H3/H4	○	5.486
1/4-28	3	4.500	3.400	80.000	H3/H4	○	6.350
3/8-24	3	7.000	5.500	90.000	H3/H4	○	9.525



Stainless Steel and Aerospace Alloys

METRIC

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

ANSI length - ANSI shank

Series 3906 - PM cobalt, Metric, spiral point, TiN coated

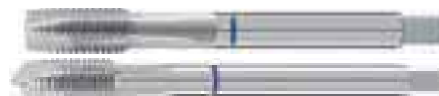


Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	S Series 3906	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3		2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3		3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4		4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4		5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5		6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5		8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5		10.000
M12 X 1.75	4	0.367	0.275	3.381	D5/D6		12.000
M14 X 2.00	4	0.429	0.322	3.591	D5/D6		14.000
M16 X 2.00	4	0.480	0.360	3.811	D6/D7		16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7		18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7		20.000

DIN length - DIN shank

Series 879 - PM cobalt, Metric, spiral point, bright finish, DIN 376

Series 1872 - Cobalt, Metric, spiral point, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 879	DIN 376 Series 1872	Order No.
M3 X 0.50	3	2.200	n.a.	56.000	D2/D3			3.000
M4 X 0.70	3	2.800	2.100	63.000	D3/D4			4.000
M5 X 0.80	3	3.500	2.700	70.000	D3/D4			5.000
M6 X 1.00	3	4.500	3.400	80.000	D4/D5			6.000
M8 X 1.25	3	6.000	4.900	90.000	D4/D5			8.000
M10 X 1.50	3	7.000	5.500	100.000	D4/D5			10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	3	11.000	9.000	110.000	D5/D6	°	°	14.000
M16 X 2.00	3	12.000	9.000	110.000	D6/D7	°		16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7			18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7			20.000
M22 X 2.50	4	18.000	14.500	140.000	D6/D7		°	22.000
M24 X 3.00	4	18.000	14.500	160.000	D7/D8			24.000
M30 X 3.50	4	22.000	18.000	180.000	D8/D9			30.000

Stainless Steel and Aerospace Alloys



DIN length - DIN shank

Series 877 - PM cobalt, Metric, spiral point, bright finish, DIN 371

Series 1870 - Cobalt, Metric, spiral point, bright finish, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 877	DIN 371 Series 1870	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3		°	3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4		°	4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4		°	5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5			10.000

**METRIC /
METRIC
FINE**

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

Cut Taps

DIN length - DIN shank

Series 1873 - Cobalt, Metric Fine, spiral point, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 1873	Order No.
M3 X 0.35	3	2.200	n.a.	56.000	D2/D3	°	3.002
M4 X 0.50	3	2.800	2.100	63.000	D3/D4	°	4.003
M5 X 0.50	3	3.500	2.700	70.000	D3/D4	°	5.003
M6 X 0.75	3	4.500	3.400	80.000	D3/D4	°	6.004
M8 X 1.00	3	6.000	4.900	90.000	D4/D5		8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5		10.005
M12 X 1.00	3	9.000	7.000	100.000	D4/D5	°	12.005
M14 X 1.50	3	11.000	9.000	100.000	D4/D5		14.007
M16 X 1.50	3	12.000	9.000	100.000	D4/D5	°	16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5	°	18.007
M24 X 2.00	4	18.000	14.500	140.000	D6/D7	°	24.008



Stainless Steel and Aerospace Alloys

UNC

2B
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

ANSI length - ANSI shank

Series 3910 - PM cobalt, UNC, 40° helix, TiN coated

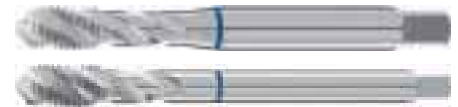


Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3910	Order No.
4-40	3	0.141	0.110	1.882	H2/H3		2.845
5-40	3	0.141	0.110	1.941	H2/H3		3.175
6-32	3	0.141	0.110	2.000	H3/H4		3.505
8-32	3	0.168	0.131	2.130	H3/H4		4.166
10-24	3	0.194	0.152	2.382	H3/H4		4.826
12-24	3	0.220	0.165	2.382	H3/H4		5.486
1/4-20	3	0.255	0.191	2.500	H4/H5		6.350
5/16-18	3	0.318	0.238	2.720	H4/H5		7.938
3/8-16	3	0.381	0.286	2.941	H5/H6		9.525
7/16-14	3	0.323	0.242	3.157	H5/H6		11.113
1/2-13	3	0.367	0.275	3.381	H5/H6		12.700
9/16-12	4	0.429	0.322	3.591	H5/H6		14.288
5/8-11	4	0.480	0.360	3.811	H5/H6		15.875
3/4-10	4	0.590	0.442	4.252	H5/H6		19.050
7/8-9	4	0.697	0.523	4.689	H6/H7		22.225
1-8	4	0.800	0.600	5.130	H6/H7		25.400

DIN length - DIN shank

Series 1981 - Cobalt, UNC, 40° helix, bright finish, DIN 371

Series 1986 - Cobalt, UNC, 40° helix, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 Series 1981	DIN 376 Series 1986	Order No.
2-56	3	2.800	2.100	45.000	H2/H3			2.184
4-40	3	3.500	2.700	56.000	H2/H3			2.845
5-40	3	3.500	2.700	56.000	H2/H3	°		3.175
6-32	3	4.000	3.000	56.000	H3/H4			3.505
8-32	3	4.500	3.400	63.000	H3/H4	°		4.166
10-24	3	6.000	4.900	70.000	H3/H4	°		4.826
1/4-20	3	7.000	5.500	80.000	H4/H5			6.350
5/16-18	3	8.000	6.200	90.000	H4/H5			7.938
3/8-16	3	9.000	7.000	100.000	H5/H6			9.525
7/16-14	3	8.000	6.200	100.000	H5/H6		°	11.113
1/2-13	3	9.000	7.000	110.000	H5/H6			12.700
9/16-12	3	11.000	9.000	110.000	H5/H6		°	14.288
5/8-11	4	12.000	9.000	110.000	H5/H6			15.875
3/4-10	4	14.000	11.000	125.000	H5/H6			19.050
7/8-9	4	18.000	14.500	140.000	H6/H7			22.225

Stainless Steel and Aerospace Alloys



ANSI length - ANSI shank

Series 3911 - PM cobalt, UNF, 40° helix, TiN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3911	Order No.
4-48	3	0.141	0.110	1.882	H2/H3		2.845
5-44	3	0.141	0.110	1.941	H2/H3		3.175
6-40	3	0.141	0.110	2.000	H2/H3		3.505
8-36	3	0.168	0.131	2.130	H2/H3		4.166
10-32	3	0.194	0.152	2.382	H3/H4		4.826
12-28	3	0.220	0.165	2.382	H3/H4		5.486
1/4-28	3	0.255	0.191	2.500	H3/H4		6.350
5/16-24	3	0.318	0.238	2.720	H3/H4		7.938
3/8-24	3	0.381	0.286	2.941	H3/H4		9.525
7/16-20	3	0.323	0.242	3.157	H4/H5		11.113
1/2-20	3	0.367	0.275	3.381	H4/H5		12.700
9/16-18	4	0.429	0.322	3.591	H4/H5		14.288
5/8-18	4	0.480	0.360	3.811	H4/H5		15.875
3/4-16	4	0.590	0.442	4.252	H5/H6		19.050
7/8-14	4	0.697	0.523	4.689	H6/H7		22.225
1-12	4	0.800	0.600	5.130	H6/H7		25.400

UNF

2B
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

Cut Taps

DIN length - DIN shank

Series 2867 - Cobalt, UNF, 40° helix, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 374 Series 2867	Order No.
3-56	3	1.800	n.a.	50.000	H2/H3	°	2.515
4-48	3	2.200	n.a.	56.000	H2/H3	°	2.845
5-44	3	2.500	2.100	56.000	H2/H3	°	3.175
6-40	3	2.500	2.100	56.000	H2/H3	°	3.505
8-36	3	2.800	2.100	63.000	H2/H3	°	4.166
10-32	3	3.500	2.700	70.000	H3/H4	°	4.826
12-28	3	4.000	3.000	80.000	H3/H4	°	5.486
1/4-28	3	4.500	3.400	80.000	H3/H4	°	6.350
5/16-24	3	6.000	4.900	90.000	H3/H4	°	7.938
3/8-24	3	7.000	5.500	90.000	H3/H4	°	9.525
7/16-20	3	8.000	6.200	90.000	H4/H5	°	11.113
1/2-20	3	9.000	7.000	100.000	H4/H5	°	12.700
5/8-18	4	12.000	9.000	100.000	H4/H5	°	15.875
7/8-14	4	18.000	14.500	125.000	H6/H7		22.225
1-12	4	18.000	14.500	140.000	H6/H7		25.400



Stainless Steel and Aerospace Alloys

METRIC

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

ANSI length - ANSI shank

Series 3909 - PM cobalt, Metric, 40° helix, TiN coated

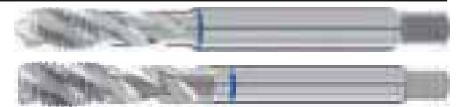


Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	S Series 3909	Order No.
M2 X 0.40	3	0.141	0.110	1.752	D2/D3		2.000
M3 X 0.50	3	0.141	0.110	1.941	D2/D3		3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4		4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4		5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5		6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5		8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5		10.000
M12 X 1.75	3	0.367	0.275	3.381	D5/D6		12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6		14.000
M16 X 2.00	4	0.480	0.360	3.811	D6/D7		16.000
M18 X 2.50	4	0.542	0.406	4.031	D6/D7		18.000
M20 X 2.50	4	0.652	0.489	4.469	D6/D7		20.000

DIN length - DIN shank

Series 909 - PM cobalt, Metric, 40° helix, bright finish, DIN 371

Series 910 - PM cobalt, Metric, 40° helix, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 909	DIN 376 Series 910	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3			3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°		4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4	°		5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5			10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	3	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7			16.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7		°	20.000
M24 X 3.00	4	18.000	14.500	160.000	D7/D8		°	24.000

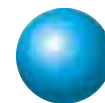
DIN length - DIN shank

Series 936 - PM cobalt, Metric Fine, 40° helix, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 936	Order No.
M8 X 1.00	3	6.000	4.900	90.000	D4/D5		8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5		10.005
M12 X 1.00	3	9.000	7.000	100.000	D4/D5	°	12.005
M12 X 1.50	3	9.000	7.000	100.000	D5/D6		12.007
M14 X 1.50	3	11.000	9.000	100.000	D4/D5		14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5		16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5		18.007
M20 X 1.50	4	16.000	12.000	125.000	D6/D7	°	20.007

Stainless Steel and Aerospace Alloys



DIN length - DIN shank

Series 2895 - Cobalt, Metric, 15° helix, TiN coated, DIN 376

Series 2896 - Cobalt, Metric, 15° helix, TiN coated, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 S Series 2895	DIN 371 S Series 2896	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3			3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4			4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5		o	8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5		o	10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6	o		12.000
M14 X 2.00	3	11.000	9.000	110.000	D5/D6	o		14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7			16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7	o		18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7			20.000
M22 X 2.50	4	18.000	14.500	140.000	D6/D7	o		22.000
M24 X 3.00	4	18.000	14.500	160.000	D7/D8	o		24.000

**METRIC /
METRIC
FINE**

**ISO2 (6H)
Class of Fit**



Blind Hole

15° Helix

**Semi-bottoming
Chamfer Lead**



C · 2-3

Cut Taps

DIN length - DIN shank

Series 2897 - Cobalt, Metric Fine, 15° helix, TiN coated, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 S Series 2897	Order No.
M4 X 0.50	3	2.800	2.100	63.000	D3/D4	o	4.003
M5 X 0.50	3	3.500	2.700	70.000	D3/D4	o	5.003
M6 X 0.50	3	4.500	3.400	80.000	D3/D4	o	6.003
M6 X 0.75	3	4.500	3.400	80.000	D3/D4	o	6.004
M8 X 1.00	3	6.000	4.900	90.000	D4/D5		8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5	o	10.005
M12 X 1.00	3	9.000	7.000	100.000	D4/D5	o	12.005
M12 X 1.50	3	9.000	7.000	100.000	D5/D6	o	12.007
M14 X 1.50	3	11.000	9.000	100.000	D4/D5		14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5		16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5	o	18.007
M20 X 1.50	4	16.000	12.000	125.000	D6/D7	o	20.007
M22 X 1.50	4	18.000	14.500	125.000	D6/D7	o	22.007
M24 X 1.50	4	18.000	14.500	140.000	D6/D7	o	24.007

GUHRING



RED RING CUT TAPS

•Through hole

UNC	Page 68
UNF	Page 68
Metric	Page 69
Metric fine	Page 70

•Blind hole

UNC	Page 71
UNF	Page 71
Metric	Page 72
Metric fine	Page 74

Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds			
Material Hardness		SFM	
HRC	Brinell	Bright finish	Hard coated
≤ 30	≤ 280	25 - 35	35 - 50
≤ 35	≤ 320	18 - 25	28 - 40
≤ 38	≤ 350	10 - 20	14 - 35
< 60	*(Series 2944 only)		4 - 7
Tool Steels			
≤ 25	≤ 250	8 - 20	15 - 35



High-Tensile, Heat-Treatable Hardened and Tool Steels

**UNC /
UNF**

**2B
Class of Fit**



Through Hole

0° Helix

**Plug Tap
Chamfer Lead**



B · 3.5 - 5

DIN length - ANSI shank

Series 3992 - PM cobalt, UNC, spiral point, TiN coated

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3992	Order No.
4-40	3	0.141	0.110	2.205	H2/H3		2.845
5-40	3	0.141	0.110	2.205	H2/H3		3.175
6-32	3	0.141	0.110	2.205	H3/H4		3.505
8-32	3	0.168	0.131	2.480	H3/H4		4.166
10-24	3	0.194	0.152	2.756	H3/H4		4.826
12-24	3	0.220	0.165	3.150	H3/H4		5.486
1/4-20	3	0.255	0.191	3.150	H4/H5		6.350
5/16-18	3	0.318	0.238	3.543	H4/H5		7.938
3/8-16	3	0.381	0.286	3.937	H5/H6		9.525
7/16-14	3	0.323	0.242	3.937	H5/H6		11.113
1/2-13	4	0.367	0.275	4.331	H5/H6		12.700
5/8-11	4	0.480	0.360	4.331	H5/H6		15.875
3/4-10	4	0.590	0.442	4.921	H5/H6		19.050
7/8-9	4	0.697	0.523	5.512	H6/H7		22.225
1-8	4	0.800	0.600	6.299	H6/H7		25.400
1 1/4-7	4	1.021	0.766	7.087	H7/H8		31.750
1 1/2-6	5	1.233	0.925	7.874	H7/H8		38.100

DIN length - ANSI shank

Series 3994 - PM cobalt, UNF, spiral point, TiN coated

NEW!



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3994	Order No.
4-48	3	0.141	0.110	2.205	H2/H3		2.845
5-44	3	0.141	0.110	2.205	H2/H3		3.175
6-40	3	0.141	0.110	2.205	H2/H3		3.505
8-36	3	0.168	0.131	2.480	H2/H3		4.166
10-32	3	0.194	0.152	2.756	H3/H4		4.826
12-28	3	0.220	0.165	3.150	H3/H4		5.486
1/4-28	3	0.255	0.191	3.150	H3/H4		6.350
5/16-24	3	0.318	0.238	3.543	H3/H4		7.938
3/8-24	3	0.381	0.286	3.543	H3/H4		9.525
7/16-20	3	0.323	0.242	3.937	H4/H5		11.113
1/2-20	4	0.367	0.275	3.937	H4/H5		12.700
5/8-18	4	0.480	0.360	3.937	H4/H5		15.875
3/4-16	4	0.590	0.442	4.331	H5/H6		19.050
7/8-14	4	0.697	0.523	4.921	H6/H7		22.225
1-12	4	0.800	0.600	5.512	H6/H7		25.400
1 1/4-12	4	1.021	0.766	5.901	H6/H7		31.750
1 1/2-12	5	1.233	0.925	6.699	H6/H7		38.100

**NEW!
DIN length
ANSI shank
taps**

High-Tensile, Heat-Treatable Hardened and Tool Steels



DIN length - DIN shank

Series 804 - Cobalt, Metric, spiral point, bright finish, DIN 371
Series 1914 - Cobalt, Metric, spiral point, TiCN coated, DIN 371



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 804	DIN 371 Series 1914	Order No.
M2 x 0.40	3	2.800	2.100	45.000	D2/D3			2.000
M2.2 x 0.45	3	2.800	2.100	45.000	D2/D3	o	o	2.200
M2.3 x 0.40	3	2.800	2.100	45.000	D2/D3		o	2.300
M2.5 x 0.45	3	2.800	2.100	50.000	D2/D3	o		2.500
M2.6 x 0.45	3	2.800	2.100	50.000	D2/D3	o	o	2.600
M3 x 0.50	3	3.500	2.700	56.000	D2/D3	o	o	3.000
M3.5 x 0.60	3	4.000	3.000	56.000	D3/D4			3.500
M4 x 0.70	3	4.500	3.400	63.000	D3/D4	o	o	4.000
M5 x 0.80	3	6.000	4.900	70.000	D3/D4		o	5.000
M6 x 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 x 1.25	3	8.000	6.200	90.000	D4/D5		o	8.000
M10 x 1.50	3	10.000	8.000	100.000	D4/D5			10.000

METRIC

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead

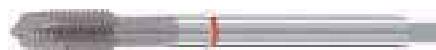


B · 3.5 - 5

Cut Taps

DIN length - DIN shank

Series 816 - Cobalt, Metric, spiral point, bright finish, DIN 376
Series 1915 - Cobalt, Metric, spiral point, TiCN coated, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 816	DIN 376 Series 1915	Order No.
M3 x 0.50	3	2.200	n.a.	56.000	D2/D3	o	o	3.000
M4 x 0.70	3	2.800	2.100	63.000	D3/D4	o	o	4.000
M5 x 0.80	3	3.500	2.700	70.000	D3/D4	o	o	5.000
M6 x 1.00	3	4.500	3.400	80.000	D4/D5	o	o	6.000
M8 x 1.25	3	6.000	4.900	90.000	D4/D5	o	o	8.000
M10 x 1.50	3	7.000	5.500	100.000	D4/D5		o	10.000
M12 x 1.75	3	9.000	7.000	110.000	D5/D6	o	o	12.000
M14 x 2.00	3	11.000	9.000	110.000	D5/D6		o	14.000
M16 x 2.00	3	12.000	9.000	110.000	D6/D7		o	16.000
M18 x 2.50	4	14.000	11.000	125.000	D6/D7	o	o	18.000
M20 x 2.50	4	16.000	12.000	140.000	D6/D7	o		20.000
M24 x 3.00	4	18.000	14.500	160.000	D7/D8		o	24.000



High-Tensile, Heat-Treatable Hardened and Tool Steels

**METRIC
FINE**

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

**Plug Tap
Chamfer Lead**



B · 3.5 - 5

DIN length - DIN shank

Series 828 - Cobalt, Metric Fine, spiral point, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 828	Order No.
M3 x 0.35	3	2.200	n.a.	56.000	D2/D3	°	3.002
M4 x 0.50	3	2.800	2.100	63.000	D3/D4	°	4.003
M5 x 0.50	3	3.500	2.700	70.000	D3/D4	°	5.003
M6 x 0.75	3	4.500	3.400	80.000	D3/D4		6.004
M8 x 0.75	3	6.000	4.900	80.000	D3/D4	°	8.004
M8 x 1.00	3	6.000	4.900	90.000	D4/D5	°	8.005
M10 x 1.00	3	7.000	5.500	90.000	D4/D5	°	10.005
M12 x 1.50	3	9.000	7.000	100.000	D5/D6		12.007
M14 x 1.50	3	11.000	9.000	100.000	D4/D5		14.007
M16 x 1.50	3	12.000	9.000	100.000	D4/D5	°	16.007
M18 x 1.50	4	14.000	11.000	110.000	D4/D5	°	18.007
M20 x 1.50	4	16.000	12.000	125.000	D6/D7		20.007
M22 x 1.50	4	18.000	14.500	125.000	D6/D7	°	22.007

High-Tensile, Heat-Treatable Hardened and Tool Steels



DIN length - ANSI shank

Series 3993 - PM cobalt, UNC, 40° helix, TiN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3993	Order No.
4-40	3	0.141	0.110	2.205	H2/H3		2.845
5-40	3	0.141	0.110	2.205	H2/H3		3.175
6-32	3	0.141	0.110	2.205	H3/H4		3.505
8-32	3	0.168	0.131	2.480	H3/H4		4.166
10-24	3	0.194	0.152	2.756	H3/H4		4.826
12-24	3	0.220	0.165	3.150	H3/H4		5.486
1/4-20	3	0.255	0.191	3.150	H4/H5		6.350
5/16-18	3	0.318	0.238	3.543	H4/H5		7.938
3/8-16	3	0.381	0.286	3.937	H5/H6		9.525
7/16-14	3	0.323	0.242	3.937	H5/H6		11.113
1/2-13	3	0.367	0.275	4.331	H5/H6		12.700
5/8-11	4	0.480	0.360	4.331	H5/H6		15.875
3/4-10	4	0.590	0.442	4.921	H5/H6		19.050
7/8-9	5	0.697	0.523	5.512	H6/H7		22.225
1-8	5	0.800	0.600	6.299	H6/H7		25.400
1 1/4-7	5	1.021	0.766	7.087	H7/H8		31.750
1 1/2-6	6	1.233	0.925	7.874	H7/H8		38.100

**UNC /
UNF**

**2B
Class of Fit**



Blind Hole

40° Helix

**Semi-bottoming
Chamfer Lead**



C · 2-3

Cut Taps

DIN length - ANSI shank

Series 3995 - PM cobalt, UNF, 40° helix, TiN coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	2B Approx. Limits	S Series 3995	Order No.
4-48	3	0.141	0.110	2.205	H2/H3		2.845
5-44	3	0.141	0.110	2.205	H2/H3		3.175
6-40	3	0.141	0.110	2.205	H2/H3		3.505
8-36	3	0.168	0.131	2.480	H2/H3		4.166
10-32	3	0.194	0.152	2.756	H3/H4		4.826
12-28	3	0.220	0.165	3.150	H3/H4		5.486
1/4-28	3	0.255	0.191	3.150	H3/H4		6.350
5/16-24	3	0.318	0.238	3.543	H3/H4		7.938
3/8-24	3	0.381	0.286	3.543	H3/H4		9.525
7/16-20	3	0.323	0.242	3.937	H4/H5		11.113
1/2-20	3	0.367	0.275	3.937	H4/H5		12.700
5/8-18	4	0.480	0.360	3.937	H4/H5		15.875
3/4-16	4	0.590	0.442	4.331	H5/H6		19.050
7/8-14	5	0.697	0.523	4.921	H6/H7		22.225
1-12	5	0.800	0.600	5.512	H6/H7		25.400
1 1/4-12	5	1.021	0.766	5.901	H6/H7		31.750
1 1/2-12	6	1.233	0.925	7.874	H6/H7		38.100

**NEW!
DIN length
ANSI shank
taps**



High-Tensile, Heat-Treatable Hardened and Tool Steels

METRIC

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

DIN length - DIN shank

Series 811 - Cobalt, Metric, 40° helix, bright finish, DIN 371

Series 1916 - Cobalt, Metric, 40° helix, TiCN coated, DIN 371



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H)	DIN 371	DIN 371	Order
Size	Flutes	mm	mm	mm	Approx. Limits	Series	Series	No.
M2 X 0.40	3	2.800	2.100	45.000	D2/D3	811	1916	2.000
M2.5 X 0.45	3	2.800	2.100	50.000	D2/D3	811	1916	2.500
M2.6 X 0.45	3	2.800	2.100	50.000	D2/D3	811	1916	2.600
M3 X 0.50	3	3.500	2.700	56.000	D2/D3	811	1916	3.000
M3.5 X 0.60	3	4.000	3.000	56.000	D3/D4	811	1916	3.500
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	811	1916	4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4	811	1916	5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5	811	1916	6.000
M7 X 1.00	3	7.000	5.500	80.000	D4/D5	811	1916	7.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5	811	1916	8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5	811	1916	10.000

DIN length - DIN shank

Series 1894 - Cobalt, Metric, 40° helix, bright finish, DIN 371, axial coolant through

Series 1901 - Cobalt, Metric, 40° helix, bright finish, DIN 376, axial coolant through



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H)	DIN 371	DIN 376	Order
Size	Flutes	mm	mm	mm	Approx. Limits	Series	Series	No.
M5 X 0.80	3	6.000	4.900	70.000	D3/D4	1894	1901	5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5	1894	1901	6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5	1894	1901	8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5	1894	1901	10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6	1894	1901	12.000
M14 x 2.00	3	11.000	9.000	110.000	D5/D6	1894	1901	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7	1894	1901	16.000
M18 x 2.50	4	16.000	12.000	140.000	D6/D7	1894	1901	18.000
M20 x 2.50	4	18.000	14.500	160.000	D6/D7	1894	1901	20.000

High-Tensile, Heat-Treatable Hardened and Tool Steels



DIN length - DIN shank

Series 823 - Cobalt, Metric, 40° helix, bright finish, DIN 376, chamfer type C
Series 1917 - Cobalt, Metric, 40° helix, TiCN coated, DIN 376, chamfer type C



METRIC

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 823	DIN 376 Series 1917	Order No.
M3 X 0.50	3	2.200	n.a.	56.000	D2/D3		°	3.000
M4 X 0.70	3	2.800	2.100	63.000	D3/D4		°	4.000
M5 X 0.80	3	3.500	2.700	70.000	D3/D4			5.000
M6 X 1.00	3	4.500	3.400	80.000	D4/D5		°	6.000
M8 X 1.25	3	6.000	4.900	90.000	D4/D5		°	8.000
M10 X 1.50	3	7.000	5.500	100.000	D4/D5		°	10.000
M12 X 1.75	3	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	3	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7		°	16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7	°	°	18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7	°		20.000
M22 X 2.50	5	18.000	14.500	140.000	D6/D7	°	°	22.000
M24 X 3.00	5	18.000	14.500	160.000	D7/D8		°	24.000
M30 X 3.50	5	22.000	18.000	180.000	D7/D8	°	°	30.000

DIN length - DIN shank

Series 2944 - carbide, Metric, TiCN coated, straight flute, chamfer type D



D · 3.5-5

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	Series 2944	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3		3.000
M4 X 0.70	4	4.500	3.400	63.000	D3/D4		4.000
M5 X 0.80	4	6.000	4.900	70.000	D3/D4		5.000
M6 X 1.00	4	6.000	4.900	80.000	D4/D5		6.000
M8 X 1.25	5	8.000	6.200	90.000	D4/D5		8.000
M10 X 1.50	5	10.000	8.000	100.000	D4/D5		10.000
M12 X 1.75	5	12.000	9.000	110.000	D5/D6		12.000

TECH TIP: Type D Form

A type D chamfer form has a 3.5 - 5 thread chamfer lead. This chamfer can be used in both through holes and in blind holes when the tap drill depth permits this chamfer length. This is especially useful when tapping harder materials due to the extended chamfer length which distributes the thread cutting process over more cutting edges. The D chamfer form is usually found on rigid, straight fluted tap designs.



High-Tensile, Heat-Treatable Hardened and Tool Steels

METRIC / METRIC FINE

6HX
Class of Fit



Blind Hole

15° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

DIN length - DIN shank

Series 1188 - PM Cobalt, Metric, 15° helix, TiCN coated, DIN 371, axial coolant
Series 1194 - PM Cobalt, Metric, 15° helix, TiCN coated, DIN 376, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 371 Series 1188	DIN 376 Series 1194	Order No.
M6 X 1.00	3	6.000	4.900	80.000	D4/D5	°		6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5	°		8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5	°		10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6		°	12.000
M14 X 2.00	4	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7		°	16.000
M20 X 2.50	5	16.000	12.000	140.000	D6/D7		°	20.000
M24 X 3.00	5	18.000	14.500	160.000	D7/D8		°	24.000

DIN length - DIN shank

Series 935 - PM cobalt, Metric, 15° helix, bright finish, DIN 376



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 935	Order No.
M12 X 1.75	3	9.000	7.000	110.000	D5/D6		12.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7	°	16.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7		20.000

DIN length - DIN shank

Series 1200 - PM Cobalt, Metric Fine, 15° helix, TiCN coated, DIN 376, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 374 Series 1200	Order No.
M9 X 1	4	7.000	5.500	90.000	D4/D5	°	9.005
M10 X 1	4	7.000	5.500	90.000	D4/D5	°	10.005
M12 X 1	4	9.000	7.000	100.000	D4/D5	°	12.005
M12 X 1.25	4	9.000	7.000	100.000	D4/D5	°	12.006
M12 X 1.50	4	9.000	7.000	100.000	D5/D6	°	12.007
M14 X 1.50	4	11.000	9.000	100.000	D4/D5	°	14.007
M16 X 1.50	5	12.000	9.000	100.000	D4/D5	°	16.007
M18 X 1.50	5	14.000	11.000	110.000	D4/D5	°	18.007
M20 X 1.50	6	16.000	12.000	125.000	D6/D7	°	20.007
M24 X 1.50	6	18.000	14.500	140.000	D6/D7	°	24.007

High-Tensile, Heat-Treatable Hardened and Tool Steels



DIN length - DIN shank

Series 835 - Cobalt, Metric Fine, 40° helix, bright finish, DIN 374



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 835	Order No.
M6 X 0.75	3	4.500	3.400	80.000	D3/D4	°	6.004
M8 X 0.75	3	6.000	4.900	80.000	D3/D4	°	8.004
M8 X 1.00	3	6.000	4.900	90.000	D4/D5		8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5		10.005
M12 X 1.00	3	9.000	7.000	100.000	D4/D5	°	12.005
M12 X 1.50	3	9.000	7.000	100.000	D5/D6		12.007
M14 X 1.50	3	11.000	9.000	100.000	D4/D5	°	14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5	°	16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5		18.007
M20 X 1.50	4	16.000	12.000	125.000	D6/D7	°	20.007
M22 X 1.50	5	18.000	14.500	125.000	D6/D7	°	22.007
M24 X 1.50	5	18.000	14.500	140.000	D6/D7		24.007

METRIC FINE

ISO2 (6H)
Class of Fit



Blind Hole

40° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

Cut Taps

DIN length - DIN shank

Series 1907 - Cobalt, Metric Fine, 40° helix, bright finish, DIN 374, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 1907	Order No.
M6 X 0.75	3	4.500	3.400	80.000	D3/D4	°	6.004
M8 X 0.75	3	6.000	4.900	80.000	D3/D4	°	8.004
M8 X 1.00	3	6.000	4.900	90.000	D4/D5	°	8.005
M10 X 1.00	3	7.000	5.500	90.000	D4/D5	°	10.005
M12 X 1.00	3	9.000	7.000	100.000	D4/D5	°	12.005
M12 X 1.50	3	9.000	7.000	100.000	D5/D6	°	12.007
M14 X 1.50	3	11.000	9.000	100.000	D4/D5	°	14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5	°	16.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5	°	18.007
M20 X 1.50	4	16.000	12.000	125.000	D6/D7	°	20.007

GUHRING



WHITE RING CUT TAPS

- **Through hole**

UNC

Page 78

UNF

Page 79

Metric

Page 80

Metric fine

Page 81

- **Blind hole**

Metric

Page 82

Metric fine

Page 83

Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds			
Material Hardness		SFM	
HRC	Brinell	Bright finish	Hard coated
--	≤ 180	50 - 70	70 - 100
≤ 25	≤ 250	25 - 50	40 - 85
≤ 35	≤ 320	16 - 22	25 - 35



Cast Iron and Abrasive Materials

UNC

2B

Class of Fit



Through or
Blind Hole

0° Helix

Straight Flute
Chamfer Lead



C · 2 - 3

ANSI length - ANSI shank

Series 3937 - Cobalt, UNC, straight flute, FIREX® coated



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	 Series	Order
Size	Flutes	inch	inch	inch	Limits	3937	No.
6-32	3	0.141	0.110	2.000	H3/H4		3.505
8-32	3	0.168	0.131	2.130	H3/H4		4.166
10-24	4	0.194	0.152	2.382	H3/H4		4.826
12-24	4	0.220	0.165	2.382	H3/H4		5.486
1/4-20	4	0.255	0.191	2.500	H4/H5		6.350
5/16-18	4	0.318	0.238	2.720	H4/H5		7.938
3/8-16	4	0.381	0.286	2.941	H5/H6		9.525
7/16-14	4	0.323	0.242	3.157	H5/H6		11.113
1/2-13	4	0.367	0.275	3.381	H5/H6		12.700
5/8-11	4	0.480	0.360	3.811	H5/H6		15.875

DIN length - DIN shank

Series 1979 - Cobalt, UNC, straight flute, oxide finish, DIN 371

Series 1984 - Cobalt, UNC, straight flute, oxide finish, DIN 376



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	 DIN 371 Series	 DIN 376 Series	Order
Size	Flutes	mm	dec.	mm	Limits	1979	1984	No.
2-56	3	2.800	2.100	45.000	H2/H3	°		2.184
3-48	3	2.800	2.100	50.000	H2/H3	°		2.515
4-40	3	3.500	2.700	56.000	H2/H3	°		2.845
5-40	3	3.500	2.700	56.000	H2/H3	°		3.175
6-32	3	4.000	3.000	56.000	H3/H4	°		3.505
8-32	3	4.500	3.400	63.000	H3/H4	°		4.166
10-24	4	6.000	4.900	70.000	H3/H4	°		4.826
12-24	4	6.000	4.900	80.000	H3/H4	°		5.486
1/4-20	4	7.000	5.500	80.000	H4/H5	°		6.350
5/16-18	4	8.000	6.200	90.000	H4/H5	°		7.938
3/8-16	4	9.000	7.000	100.000	H5/H6	°		9.525
7/16-14	4	8.000	6.200	100.000	H5/H6		°	11.113
1/2-13	4	9.000	7.000	110.000	H5/H6			12.700
9/16-12	4	11.000	9.000	110.000	H5/H6		°	14.288
5/8-11	4	12.000	9.000	110.000	H5/H6		°	15.875
3/4-10	5	14.000	11.000	125.000	H5/H6			19.050
7/8-9	5	18.000	14.500	140.000	H6/H7		°	22.225
1-8	5	18.000	14.500	160.000	H6/H7			25.400

Cast Iron and Abrasive Materials



ANSI length - ANSI shank

Series 3938 - Cobalt, UNF, straight flute, FIREX® coated



UNF

2B
Class of Fit



Through or
Blind Hole

0° Helix

Straight Flute
Chamfer Lead



C · 2 - 3

Cut Taps

	No.	Shank dia.	Square Size	Overall Length	2B Approx.	 Series	Order
Size	Flutes	inch	inch	inch	Limits	3938	No.
6-40	3	0.141	0.110	2.000	H2/H3		3.505
8-36	3	0.168	0.131	2.130	H2/H3		4.166
10-32	4	0.194	0.152	2.382	H3/H4		4.826
12-28	4	0.220	0.165	2.382	H3/H4		5.486
1/4-28	4	0.255	0.191	2.500	H3/H4		6.350
5/16-24	4	0.318	0.238	2.720	H3/H4		7.938
3/8-24	4	0.381	0.286	2.941	H3/H4		9.525
7/16-20	4	0.323	0.242	3.157	H4/H5		11.113
1/2-20	4	0.367	0.275	3.381	H4/H5		12.700
5/8-18	4	0.480	0.360	3.811	H4/H5		15.875

DIN length - DIN shank

Series 1989 - Cobalt, UNF, straight flute, oxide finish, DIN 374



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	 DIN 374 Series	Order
Size	Flutes	mm	dec.	mm	Limits	1989	No.
3-56	3	1.800	na	50.000	H2/H3	°	2.515
4-48	3	2.200	na	56.000	H2/H3	°	2.845
6-40	3	2.500	2.100	56.000	H2/H3	°	3.505
8-36	3	2.800	2.100	63.000	H2/H3	°	4.166
10-32	4	3.500	2.700	70.000	H3/H4	°	4.826
12-28	4	4.000	3.000	80.000	H3/H4	°	5.486
1/4-28	4	4.500	3.400	80.000	H3/H4	°	6.350
5/16-24	4	6.000	4.900	90.000	H3/H4		7.938
3/8-24	4	7.000	5.500	90.000	H3/H4		9.525
7/16-20	4	8.000	6.200	90.000	H4/H5	°	11.113
1/2-20	4	9.000	7.000	100.000	H4/H5	°	12.700
9/16-18	4	11.000	9.000	100.000	H4/H5		14.288
3/4-16	5	14.000	11.000	110.000	H5/H6	°	19.050
7/8-14	5	18.000	14.500	125.000	H6/H7		22.225
1-12	5	18.000	14.500	140.000	H6/H7	°	25.400



Cast Iron and Abrasive Materials

METRIC

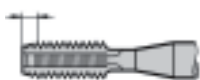
ISO2 (6H)
Class of Fit



Through or
Blind Hole

0° Helix

Straight Flute
Chamfer Lead



C · 2 - 3

ANSI length - ANSI shank

Series 3936 - Cobalt, Metric, straight flute, FIREX® coated



	No.	Shank dia.	Square Size	Overall Length	6HX Approx.	F Series	Order
Size	Flutes	inch	inch	inch	Limits	3936	No.
M3 X 0.50	3	0.141	0.110	1.941	D2/D3		3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4		4.000
M5 X 0.80	4	0.194	0.152	2.382	D3/D4		5.000
M6 X 1.00	4	0.255	0.191	2.500	D4/D5		6.000
M8 X 1.25	4	0.318	0.238	2.720	D4/D5		8.000
M10 X 1.50	4	0.381	0.286	2.941	D4/D5		10.000
M12 X 1.75	4	0.367	0.275	3.381	D5/D6		12.000
M14 X 2.00	4	0.429	0.322	3.591	D5/D6		14.000
M16 X 2.00	4	0.480	0.360	3.811	D6/D7		16.000

DIN length - DIN shank

Series 1858 - Carbide, Metric, straight flute, bright finish, DIN 371, radial coolant through

Series 1859 - Carbide, Metric, straight flute, bright finish, DIN 376, radial coolant through



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6HX) Approx.	DIN 371 Series	DIN 376 Series	Order
Size	Flutes	mm	dec.	mm	Limits	1858	1859	No.
M5 X 0.80	4	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	4	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	4	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	4	10.000	8.000	100.000	D4/D5			10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6		°	12.000
M14 X 2.00	4	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7		°	16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7		°	18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7		°	20.000

Cast Iron and Abrasive Materials



DIN length - DIN shank

Series 1860 - Carbide, Metric Fine, straight flute, bright finish, DIN 374, radial coolant



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H) Approx.	DIN 374 ○ Series	Order
Size	Flutes	mm	dec.	mm	Limits	1860	No.
M12 X 1.50	4	9.000	7.000	100.000	D5/D6	°	12.007
M14 X 1.50	4	11.000	9.000	100.000	D4/D5		14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5	°	16.007

**METRIC
FINE**

ISO2 (6H)
Class of Fit



Through or
Blind Hole

0° Helix

**Straight Flute
Chamfer Lead**



C · 2 - 3

DIN length - DIN shank

Series 1861 - Carbide, Metric Fine, straight flute, bright finish, DIN 371, radial coolant



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H) Approx.	DIN 371 ○ Series	Order
Size	Flutes	mm	dec.	mm	Limits	1861	No.
M5 X 0.50	4	6.000	4.900	70.000	D3/D4		5.003
M8 X 1.00	4	8.000	6.200	90.000	D4/D5	°	8.005
M10 X 1.00	4	10.000	8.000	90.000	D4/D5		10.005

Cut Taps



Cast Iron and Abrasive Materials

METRIC FINE

6HX
Class of Fit



Blind Hole

0° Helix

Straight Flute
Chamfer Lead



C · 2 - 3

DIN length - DIN shank

Series 318 - Cobalt, Metric, straight flute, TiAlN coated, DIN 371, axial coolant

Series 1890 - Cobalt, Metric, straight flute, oxide finish, DIN 371, axial coolant



	No.	Shank dia.	Square Size	Overall Length	6HX Approx.	DIN 371 Series	DIN 371 Series	Order
Size	Flutes	mm	dec.	mm	Limits	318	1890	No.
M5 X 0.80	4	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	4	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	4	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	4	10.000	8.000	100.000	D4/D5		°	10.000

DIN length - DIN shank

Series 319 - Cobalt, Metric, straight flute, TiAlN coated, DIN 376, axial coolant

Series 1897 - Cobalt, Metric, straight flute, oxide finish, DIN 376, axial coolant



	No.	Shank dia.	Square Size	Overall Length	6HX Approx.	DIN 376 Series	DIN 376 Series	Order
Size	Flutes	mm	dec.	mm	Limits	319	1897	No.
M12 X 1.75	4	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	4	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7		°	16.000
M18 X 2.50	5	14.000	11.000	125.000	D6/D7		°	18.000
M20 X 2.50	5	16.000	12.000	140.000	D6/D7		°	20.000

DIN length - DIN shank

Series 1904 - Cobalt, Metric Fine, straight flute, oxide finish, DIN 374, axial coolant

Series 347 - Cobalt, Metric Fine, straight flute, TiAlN coated, DIN 374, axial coolant



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H) Approx.	DIN 374 Series	DIN 374 Series	Order
Size	Flutes	mm	dec.	mm	Limits	1904	347	No.
M8 X 1.00	4	6.000	4.900	90.000	D4/D5	°		8.005
M10 X 1.00	4	7.000	5.500	90.000	D4/D5	°	°	10.005
M12 X 1.00	4	9.000	7.000	100.000	D4/D5	°	°	12.005
M12 X 1.50	4	9.000	7.000	100.000	D5/D6	°		12.007
M14 X 1.50	4	11.000	9.000	100.000	D4/D5			14.007
M16 X 1.50	4	12.000	9.000	100.000	D4/D5			16.007
M18 X 1.50	5	14.000	11.000	110.000	D4/D5	°		18.007
M20 X 1.50	5	16.000	12.000	125.000	D6/D7		°	20.007
M22 X 1.50	5	18.000	14.500	125.000	D6/D7			22.007
M24 X 1.50	5	18.000	14.500	140.000	D6/D7		°	24.007

Cast Iron and Abrasive Materials



DIN length - DIN shank

Series 969 - Carbide, Metric, straight flute, bright finish, DIN 371, axial coolant

Series 1883 - Carbide, Metric, straight flute, bright finish, DIN 376, axial coolant



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H) Approx.	DIN 371 Series	DIN 376 Series	Order
Size	Flutes	mm	dec.	mm	Limits	969	1883	No.
*M3 X 0.50	3	3.500	2.700	56.000	D2/D3	°		3.000
*M4 X 0.70	3	4.500	3.400	63.000	D3/D4			4.000
M5 X 0.80	4	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	4	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	4	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	4	10.000	8.000	100.000	D4/D5			10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	4	11.000	9.000	110.000	D5/D6			14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7			16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7		°	18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7			20.000

* Sizes <M5 do not have coolant ducts through the tap

**METRIC /
METRIC
FINE**

ISO2 (6H)
Class of Fit



Blind Hole

0° Helix

**Straight Flute
Chamfer Lead**



C · 2 - 3

Cut Taps

DIN length - DIN shank

Series 972 - Carbide, Metric Fine, straight flute, bright finish, DIN 371, axial coolant



	No.	Shank dia.	Square Size	Overall Length	ISO2 (6H) Approx.	DIN 371 Series	Order
Size	Flutes	mm	dec.	mm	Limits	972	No.
*M4 X 0.50	3	4.500	3.400	63.000	D3/D4	°	4.003
M5 X 0.50	4	6.000	4.900	70.000	D3/D4	°	5.003
M8 X 1.00	4	8.000	6.200	90.000	D4/D5	°	8.005
M10 X 1.00	4	10.000	8.000	90.000	D4/D5	°	10.005

* Sizes <M5 do not have coolant ducts through the tap

GUHRING



BLACK RING CUT TAPS

•Through hole

UNC	Page 86
UNF	Page 86
Metric	Page 87
Metric fine	Page 88

•Blind hole

UNC	Page 89
UNF	Page 89
Metric	Page 90
Metric fine	Page 91

Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds			
Material Specs		SFM	
Silicon Content (cast Al)	Brinell Hardness (wrought Al)	Bright finish	Hard coated
< 6%	n/a	30 - 50	50 - 75
6 - 10%	n/a	25 - 35	40 - 50
> 10%	n/a	--	25 - 35
n/a	30 - 80	50 - 65	65 - 100
n/a	75-150	35 - 50	50 - 65



Aluminum and Aluminum Alloys

**UNC /
UNF**

**2B
Class of Fit**



Through Hole

0° Helix

**Plug Tap
Chamfer Lead**



B · 3.5 - 5

ANSI length - ANSI shank

Series 3925 - Cobalt, UNC, spiral point, bright finish
Series 3928 - Cobalt, UNC, spiral point, TiN coated
Series 3967 - Cobalt, UNC, spiral point, MolyGlide® coated



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	Series 3925	Series 3928	Series 3967	Order No.
Size	Flutes	inch	inch	inch	Limits				
6-32	3	0.141	0.110	2.000	H3/H4				3.505
8-32	3	0.168	0.131	2.130	H3/H4				4.166
10-24	3	0.194	0.152	2.382	H3/H4				4.826
12-24	3	0.220	0.165	2.382	H3/H4				5.486
1/4-20	3	0.255	0.191	2.500	H4/H5				6.350
5/16-18	3	0.318	0.238	2.720	H4/H5				7.938
3/8-16	3	0.381	0.286	2.941	H5/H6				9.525
7/16-14	3	0.323	0.242	3.157	H5/H6				11.113
1/2-13	3	0.367	0.275	3.381	H5/H6				12.700
5/8-11	3	0.480	0.360	3.811	H5/H6				15.875

ANSI length - ANSI shank

Series 3926 - Cobalt, UNF, spiral point, bright finish
Series 3929 - Cobalt, UNF, spiral point, TiN coated
Series 3968 - Cobalt, UNF, spiral point, MolyGlide® coated



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	Series 3926	Series 3929	Series 3968	Order No.
Size	Flutes	inch	inch	inch	Limits				
6-40	3	0.141	0.110	2.000	H2/H3				3.505
8-36	3	0.168	0.131	2.130	H2/H3				4.166
10-32	3	0.194	0.152	2.382	H3/H4				4.826
12-28	3	0.220	0.165	2.382	H3/H4				5.486
1/4-28	3	0.255	0.191	2.500	H3/H4				6.350
5/16-24	3	0.318	0.238	2.720	H3/H4				7.938
3/8-24	3	0.381	0.286	2.941	H3/H4				9.525
7/16-20	3	0.323	0.242	3.157	H4/H5				11.113
1/2-20	3	0.367	0.275	3.381	H4/H5				12.700
5/8-18	3	0.480	0.360	3.811	H4/H5				15.875

Aluminum and Aluminum Alloys



ANSI length - ANSI shank

Series 3924 - Cobalt, Metric, spiral point, bright finish, chamfer type B

Series 3927 - Cobalt, Metric, spiral point, TiN coated, chamfer type B

Series 3966 - Cobalt, Metric, spiral point, MolyGlide® coated, chamfer type B



METRIC

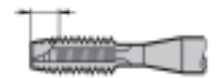
ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



B · 3.5 - 5

DIN length - DIN shank

Series 1858 - Carbide, Metric, bright finish, DIN 371, radial coolant, chamfer type C

Series 1859 - Carbide, Metric, bright finish, DIN 376, radial coolant, chamfer type C



C · 2 - 3

Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	Series 3924	Series 3927	Series 3966	Order No.
M3 X 0.50	3	0.141	0.110	1.941	D2/D3				3.000
M4 X 0.70	3	0.168	0.131	2.130	D3/D4				4.000
M5 X 0.80	3	0.194	0.152	2.382	D3/D4				5.000
M6 X 1.00	3	0.255	0.191	2.500	D4/D5				6.000
M8 X 1.25	3	0.318	0.238	2.720	D4/D5				8.000
M10 X 1.50	3	0.381	0.286	2.941	D4/D5				10.000
M12 X 1.75	3	0.367	0.275	3.381	D5/D6				12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6				14.000
M16 X 2.00	3	0.480	0.360	3.811	D6/D7				16.000

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 1858	DIN 376 Series 1859	Order No.
M5 X 0.80	4	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	4	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	4	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	4	10.000	8.000	100.000	D4/D5			10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6		°	12.000
M14 X 2.00	4	11.000	9.000	110.000	D5/D6		°	14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7		°	16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7		°	18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7		°	20.000



Aluminum and Aluminum Alloys

METRIC FINE

ISO2 (6H)
Class of Fit



Through Hole

0° Helix

Plug Tap
Chamfer Lead



C · 2 - 3

DIN length - DIN shank

Series 1860 - Carbide, Metric Fine, bright finish, DIN 371, radial coolant

Series 1861 - Carbide, Metric Fine, bright finish, DIN 376, radial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 ● Series	DIN 376 ● Series	Order No.
						1860	1861	
M5 X 0.80	4	6.000	4.900	70.000	D5/D6			5.003
M8 X 1.25	4	8.000	6.200	90.000	D4/D5		°	8.005
M10 X 1.50	4	10.000	8.000	100.000	D4/D5	°		10.005
M12 X 1.75	4	9.000	7.000	110.000	D3/D4			12.007
M14 X 2.00	4	11.000	9.000	110.000	D4/D5			14.007
M16 X 2.00	4	12.000	9.000	110.000	D4/D5	°		16.007

Aluminum and Aluminum Alloys



ANSI length - ANSI shank

Series 3931 - Cobalt, UNC, 45° helix, bright finish

Series 3934 - Cobalt, UNC, 45° helix, TiN coated

Series 3970 - Cobalt, UNC, 45° helix, MolyGlide® coated



**UNC /
UNF**

**2B
Class of Fit**



Blind Hole

45° Helix

**Semi-bottoming
Chamfer Lead**



C · 2-3

	No.	Shank dia.	Square Size	Overall Length	2B Approx.	Series	Series	Series	Order
Size	Flutes	inch	inch	inch	Limits	3931	3934	3970	No.
6-32	2	0.141	0.110	2.000	H3/H4				3.505
8-32	2	0.168	0.131	2.130	H3/H4				4.166
10-24	2	0.194	0.152	2.382	H3/H4				4.826
12-24	2	0.220	0.165	2.382	H3/H4				5.486
1/4-20	2	0.255	0.191	2.500	H4/H5				6.350
5/16-18	2	0.318	0.238	2.720	H4/H5				7.938
3/8-16	2	0.381	0.286	2.941	H5/H6				9.525
7/16-14	2	0.323	0.242	3.157	H5/H6				11.113
1/2-13	2	0.367	0.275	3.381	H5/H6				12.700
5/8-11	3	0.480	0.360	3.813	H5/H6				15.875

ANSI length - ANSI shank

Series 3932 - Cobalt, UNF, 45° helix, bright finish

Series 3935 - Cobalt, UNF, 45° helix, TiN coated

Series 3971 - Cobalt, UNF, 45° helix, MolyGlide® coated



	No.	Shank dia.	Square Size	Overall Length	2B Approx.	Series	Series	Series	Order
Size	Flutes	inch	inch	inch	Limits	3932	3935	3971	No.
6-40	2	0.141	0.110	2.000	H2/H3				3.505
8-36	2	0.168	0.131	2.130	H2/H3				4.166
10-32	2	0.194	0.152	2.382	H3/H4				4.826
12-28	2	0.220	0.165	2.382	H3/H4				5.486
1/4-28	2	0.255	0.191	2.500	H3/H4				6.350
5/16-24	2	0.318	0.238	2.720	H3/H4				7.938
3/8-24	2	0.381	0.286	2.941	H3/H4				9.525
7/16-20	2	0.323	0.242	3.157	H4/H5				11.113
1/2-20	2	0.367	0.275	3.381	H4/H5				12.700
5/8-18	3	0.480	0.360	3.811	H4/H5				15.875



Aluminum and Aluminum Alloys

METRIC

ISO2 (6H)
Class of Fit



Blind Hole

45° Helix
15° Helix

Semi-bottoming
Chamfer Lead



C · 2-3

ANSI length - ANSI shank

Series 3930 - Cobalt, Metric, 45° helix, bright finish

Series 3933 - Cobalt, Metric, 45° helix, TiN coated

Series 3969 - Cobalt, Metric, 45° helix, MolyGlide® coated



Size	No. Flutes	Shank dia. inch	Square Size inch	Overall Length inch	ISO2 (6H) Approx. Limits	Series 3930	Series 3933	Series 3969	Order No.
M3 X 0.50	2	0.141	0.110	1.941	D2/D3				3.000
M4 X 0.70	2	0.168	0.131	2.130	D3/D4				4.000
M5 X 0.80	2	0.194	0.152	2.382	D3/D4				5.000
M6 X 1.00	2	0.255	0.191	2.500	D4/D5				6.000
M8 X 1.25	2	0.318	0.238	2.720	D4/D5				8.000
M10 X 1.50	2	0.381	0.286	2.941	D4/D5				10.000
M12 X 1.75	2	0.367	0.275	3.381	D5/D6				12.000
M14 X 2.00	3	0.429	0.322	3.591	D5/D6				14.000
M16 X 2.00	3	0.480	0.360	3.811	D6/D7				16.000

DIN length - DIN shank

Series 971 - Carbide, Metric, 15° helix, bright finish, DIN 371, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 376 Series 971	Order No.
*M3 X 0.50	3	3.500	2.700	56.000	D2/D3	°	3.000
*M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°	4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4		5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5		6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5		8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5		10.000

* Sizes <M5 do not have coolant ducts through the tap

DIN length - DIN shank

Series 969 - Carbide, Metric, bright finish, DIN 371, axial coolant

Series 1883 - Carbide, Metric, bright finish, DIN 376, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 969	DIN 376 Series 1883	Order No.
*M3 X 0.50	3	3.500	2.700	56.000	D2/D3	°		3.000
*M4 X 0.70	3	4.500	3.400	63.000	D3/D4			4.000
M5 X 0.80	4	6.000	4.900	70.000	D3/D4			5.000
M6 X 1.00	4	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	4	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	4	10.000	8.000	100.000	D4/D5			10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6			12.000
M14 X 2.00	4	11.000	9.000	110.000	D5/D6			14.000
M16 X 2.00	4	12.000	9.000	110.000	D6/D7			16.000
M18 X 2.50	4	14.000	11.000	125.000	D6/D7		°	18.000
M20 X 2.50	4	16.000	12.000	140.000	D6/D7			20.000

* Sizes <M5 do not have coolant ducts through the tap

Aluminum and Aluminum Alloys



DIN length - DIN shank

Series 978 - Carbide, Metric Fine, 15° helix, bright finish, DIN 374, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 374 Series 978	Order No.
M12 X 1.50	3	9.000	7.000	100.000	D5/D6	°	12.007
M14 X 1.50	3	11.000	9.000	100.000	D4/D5	°	14.007
M18 X 1.50	4	14.000	11.000	110.000	D4/D5	°	18.007

METRIC FINE

ISO2 (6H)
Class of Fit



Blind Hole

15° Helix
0° Helix

Semi-bottoming
Chamfer Lead



C · 2-3



C · 2-3

DIN length - DIN shank

Series 972 - Carbide, Metric Fine, straight flute, bright finish, DIN 371, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 972	Order No.
*M4 X 0.50	3	4.500	3.400	63.000	D3/D4	°	4.003
M5 X 0.50	4	6.000	4.900	70.000	D3/D4	°	5.003
M8 X 1.00	4	8.000	6.200	90.000	D4/D5	°	8.005
M10 X 1.00	3	10.000	8.000	90.000	D4/D5	°	10.005

* Sizes <M5 do not have coolant ducts through the tap

DIN length - DIN shank

Series 977 - Carbide, Metric Fine, 15° helix, bright finish, DIN 371, axial coolant



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371 Series 977	Order No.
*M4 X 0.50	3	4.500	3.400	63.000	D3/D4	°	4.003
M5 X 0.50	3	6.000	4.900	70.00	D3/D4	°	5.003
M6 X 0.50	3	6.000	4.900	80.000	D3/D4	°	6.003
M8 X 1.00	3	8.000	6.200	90.000	D4/D5	°	8.005
M10 X 1.00	3	10.000	8.000	90.000	D4/D5	°	10.005

* Sizes <M5 do not have coolant ducts through the tap

GUHRING



TI / NI CUT TAPS

•Through hole

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•Blind hole

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Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds			
Material Hardness		SFM	
HRC	Brinell	Bright finish	Hard coated
Ti / Ti Alloys			
--	140 - 275	12 - 25	as conditions permit
--	300 - 380	6 - 12	
Ni Alloys			
--	200 - 300	6 - 12	as conditions permit
--	> 300	3 - 6	



Titanium, Ti Alloys and Nickel, Ni Alloys

**UNC /
UNF**

**2BX
Class of Fit**



Through Hole

0° Helix

**Plug Tap
Chamfer Lead**



B · 3.5 - 5

DIN length - DIN shank

Series 2905† - PM cobalt, UNC, spiral point, TiCN coated, DIN 371, 2B class of fit, for Titanium
Series 2918 - PM cobalt, UNC, spiral point, TiAIN coated, DIN 371, 3B class of fit, for Nickel



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 C Ti Series 2905	3B Approx. Limits	DIN 371 A Ni Series 2918	Order No.
6-32	3	4.000	3.000	56.000	H3/H4		H2		3.505
8-32	3	4.500	3.400	63.000	H3/H4		H2		4.166
10-24	3	6.000	4.900	70.000	H3/H4		H3		4.826
12-24	3	6.000	4.900	80.000	H3/H4		H3		5.486
1/4-20	3	7.000	5.500	80.000	H4/H5		H3		6.350
5/16-18	4	8.000	6.200	90.000	H4/H5		H3		7.938
3/8-16	4	9.000	7.000	100.000	H5/H6		H3		9.525

† Series 2905 replaces series 2904, due to a design change. Series 2904 inventory will be available while supplies last.

DIN length - DIN shank

Series 2907† - PM cobalt, UNF, spiral point, TiCN coated, DIN 371, 2B class of fit, for Titanium
Series 2919 - PM cobalt, UNF, spiral point, TiAIN coated, DIN 371, 3B class of fit, for Nickel



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 C Ti Series 2907	3B Approx. Limits	DIN 371 A Ni Series 2919	Order No.
6-40	3	4.000	3.000	56.000	H2/H3		H2		3.505
8-36	3	4.500	3.400	63.000	H2/H3		H2		4.166
10-32	3	6.000	4.900	70.000	H3/H4		H2		4.826
12-28	3	6.000	4.900	80.000	H3/H4		H3		5.486
1/4-28	3	7.000	5.500	80.000	H3/H4		H3		6.350
5/16-24	4	8.000	6.200	90.000	H3/H4		H3		7.938
3/8-24	4	9.000	8.000	90.000	H3/H4		H3		9.525

† Series 2907 replaces series 2906, due to a design change. Series 2906 inventory will be available while supplies last.

Titanium, Ti Alloys and Nickel, Ni Alloys



DIN length - DIN shank

Series 2901‡ - PM cobalt, Metric, spiral point, TiCN coated, DIN 371, for Titanium

Series 2916 - PM cobalt, Metric, spiral point, TiAlN coated, DIN 371, for Nickel



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371  Ti Series 2901	DIN 371  Ni Series 2916	Order No.
M3 X 0.50	3	2.800	2.700	56.000	D2/D3			3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	o	o	4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4	o		5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5			8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5	o	o	10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6	o	o	12.000
M16 X 2.0	4	12.000	9.000	110.000	D6/D7	o	o	16.000

‡ Series 2901 replaces series 2900, due to a design change. Series 2900 inventory will be available while supplies last.

**METRIC /
METRIC
FINE**

**6HX
Class of Fit**



Through Hole

0° Helix

**Plug Tap
Chamfer Lead**



B · 3.5 - 5

Cut Taps

DIN length - DIN shank

Series 2903‡ - PM cobalt, Metric Fine, spiral point, TiCN coated, DIN 371, for Titanium

Series 2917 - PM cobalt, Metric Fine, spiral point, TiAlN coated, DIN 371, for Nickel



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371  Ti Series 2903	DIN 371  Ni Series 2917	Order No.
M3 X 0.35	3	3.500	2.700	56.000	D2/D3	o	o	3.002
M4 X 0.50	3	4.500	3.400	63.000	D3/D4	o	o	4.003
M5 X 0.50	3	6.000	4.900	70.000	D3/D4	o	o	5.003
M6 X 0.50	3	6.000	4.900	80.000	D3/D4	o	o	6.003
M6 X 0.75	3	6.000	4.900	80.000	D3/D4		o	6.004
M8 X 0.50	3	8.000	6.200	80.000	D3/D4	o	o	8.003
M8 X 0.75	3	8.000	6.200	80.000	D3/D4	o	o	8.004
M8 X 1.00	3	8.000	6.200	90.000	D4/D5	o	o	8.005
M10 X 1.00	3	10.000	8.000	90.000	D4/D5	o	o	10.005
M10 X 1.25	3	10.000	8.000	100.000	D4/D5	o		10.006

‡ Series 2903 replaces series 2902, due to a design change. Series 2902 inventory will be available while supplies last.



Titanium, Ti Alloys and Nickel, Ni Alloys



**UNC /
UNF**

**2BX
Class of Fit**



Blind Hole

15° / 10° Helix

**Semi-bottoming
Chamfer Lead**



C · 2-3

DIN length - DIN shank

Series 2912 - PM cobalt, UNC, 15° helix, TiCN coated, DIN 371, 2B class of fit, for Titanium

Series 2922 - PM cobalt, UNC, 10° helix, TiAlN coated, DIN 371, 3B class of fit, for Nickel

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 C Ti Series 2912	3B Approx. Limits	DIN 371 A Ni Series 2922	Order No.
4-40	3	3.500	2.700	56.000	H2/H3		H2		2.845
5-40	3	3.500	2.700	56.000	H2/H3		H2		3.175
6-32	3	4.000	3.000	56.000	H3/H4		H2		3.505
8-32	3	4.500	3.400	63.000	H3/H4		H2		4.166
10-24	3	6.000	4.900	70.000	H3/H4		H3		4.826
12-24	3	6.000	4.900	80.000	H3/H4		H3		5.486
1/4-20	3	7.000	5.500	80.000	H4/H5		H3		6.350
5/16-18	3	8.000	6.200	90.000	H4/H5		H3		7.938
3/8-16	4	10.000	8.000	100.000	H5/H6		H3		9.525
7/16-14*	4	8.000	6.200	100.000	H5/H6		H3		11.113
1/2-13*	4	9.000	7.000	110.000	H5/H6		H3		12.700
5/8-11*	4	12.000	9.000	110.000	H5/H6		H3		15.875



DIN length - DIN shank

Series 2914 - PM cobalt, UNF, 15° helix, TiCN coated, DIN 371, 2B class of fit, for Titanium

Series 2923 - PM cobalt, UNF, 10° helix, TiAlN coated, DIN 371, 3B class of fit, for Nickel

Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	2B Approx. Limits	DIN 371 C Ti Series 2914	3B Approx. Limits	DIN 371 A Ni Series 2923	Order No.
4-48	3	0.138	0.106	2.205	H2/H3		H1		2.845
5-44	3	0.138	0.106	2.205	H2/H3		H1		3.175
6-40	3	4.000	3.000	56.000	H2/H3		H2		3.505
8-36	3	4.500	3.400	63.000	H2/H3		H2		4.166
10-32	3	6.000	4.900	70.000	H3/H4		H2		4.826
12-28	3	6.000	4.900	80.000	H3/H4		H3		5.486
1/4-28	3	7.000	5.500	80.000	H3/H4		H3		6.350
5/16-24	3	8.000	6.200	90.000	H3/H4		H3		7.938
3/8-24	4	10.000	8.000	90.000	H3/H4		H3		9.525
7/16-20*	4	8.000	6.200	100.000	H4/H5		H3		11.113
1/2-20*	4	9.000	7.000	110.000	H4/H5		H3		12.700
5/8-18*	4	12.000	9.000	110.000	H4/H5		H3		15.875

*Denotes sizes manufactured to DIN 376 standards.

Titanium, Ti Alloys and Nickel, Ni Alloys



DIN length - DIN shank

Series 2909† - PM cobalt, Metric, 15° helix, TiCN coated, DIN 371, for Titanium

Series 2920 - PM cobalt, Metric, 10° helix, TiAlN coated, DIN 371, for Nickel



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371  Ti Series 2909	DIN 371  Ni Series 2920	Order No.
M3 X 0.50	3	3.500	2.700	56.000	D2/D3	°		3.000
M4 X 0.70	3	4.500	3.400	63.000	D3/D4	°		4.000
M5 X 0.80	3	6.000	4.900	70.000	D3/D4	°		5.000
M6 X 1.00	3	6.000	4.900	80.000	D4/D5			6.000
M8 X 1.25	3	8.000	6.200	90.000	D4/D5	°		8.000
M10 X 1.50	3	10.000	8.000	100.000	D4/D5	°		10.000
M12 X 1.75	4	9.000	7.000	110.000	D5/D6	°	°	12.000
M16 X 2.0	4	12.000	9.000	110.000	D6/D7	°	°	16.000

† Series 2909 replaces series 2908, due to a design change. Series 2908 inventory will be available while supplies last.

**METRIC /
METRIC
FINE**

**6HX
Class of Fit**



Blind Hole

Cut Taps

15° / 10° Helix

DIN length - DIN shank

Series 2910 - PM cobalt, Metric Fine, 15° helix, TiCN coated, DIN 371, for Titanium

Series 2921 - PM cobalt, Metric Fine, 10° helix, TiAlN coated, DIN 371, for Nickel



Size	No. Flutes	Shank dia. mm	Square Size mm	Overall Length mm	ISO2 (6H) Approx. Limits	DIN 371  Ti Series 2910	DIN 371  Ni Series 2921	Order No.
M3 X 0.35	3	3.500	2.700	56.000	D2/D3	°		3.002
M4 X 0.50	3	4.500	3.400	63.000	D3/D4	°		4.003
M5 X 0.50	3	6.000	4.900	70.000	D3/D4	°		5.003
M6 X 0.50	3	6.000	4.900	80.000	D3/D4	°		6.003
M6 X 0.75	3	6.000	4.900	80.000	D3/D4	°		6.004
M8 X 0.50	3	8.000	6.200	80.000	D3/D4			8.003
M8 X 0.75	3	8.000	6.200	80.000	D3/D4	°		8.004
M8 X 1.00	3	8.000	6.200	90.000	D4/D5	°		8.005
M10 X 1.00	3	10.000	8.000	90.000	D4/D5	°		10.005
M10 X 1.25	3	10.000	8.000	100.000	D4/D5			10.006



C · 2-3

**Semi-bottoming
Chamfer Lead**

GUHRING



Form Taps



Fluteless taps and thread forming

Fluteless taps are used for the forming of internal threads without chip removal. In contrast to conventional tapping where material is cut from the workpiece, thread forming is a pressure deformation process without chip removal for the production of internal threads. During the process the material is cold formed without interrupting the grain flow.

According to DIN 8583, thread forming is described as "pressing the thread into the workpiece with a tool possessing a spiral working area". The spiral threaded, polygonal portion of the fluteless tap is "screwed" into the pre-drilled workpiece with an appropriate constant feed rate equal to the thread pitch. The thread profile is pressed gradually via the forming lead into the material of the workpiece so to speak. Subsequently, the pressure in the deformation zone exceeds the compression limit, the workpiece becomes ductile and is deformed. The material yields radially, "flows" along the thread profile in the unoccupied base of the tool and forms the minor diameter of the nut thread. The flow process creates the process specific form pockets (claws).

The tapping size hole diameter is heavily dependent on the formability of the material, the workpiece geometry and the required effective depth of the thread. In comparison to conventional tapping, a larger diameter tapping size hole should be selected. With a larger diameter tapping size hole the load on the tool is reduced while increasing the tool life. Thanks to the uninterrupted grain flow, the loading capacity of the thread remains sufficient with a 50% effective thread depth.

The partially formed crests of the thread with decreasing effective thread depth are a typical characteristic of threads produced by the thread forming process. With the flanks of the thread fully formed, they have no influence on the

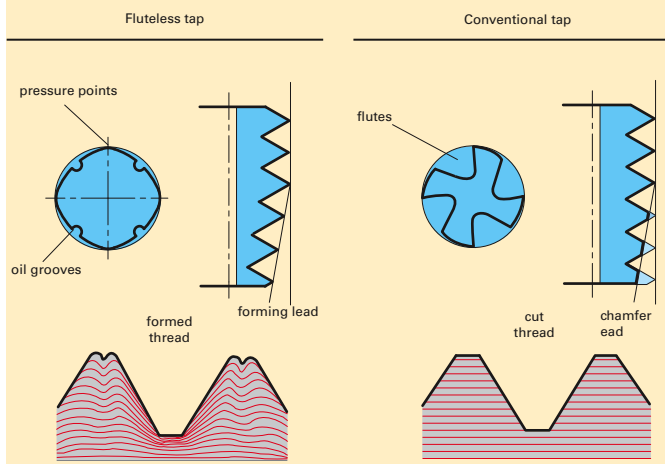
tensile strength of the thread. If necessary, the required deformation level of the thread should be determined by performing a test.

Lubrication is of significant importance. The lubrication prevents material from building up on the thread flanks and ensures that the necessary torque for the forming process is not too high. Therefore, under no circumstances should there ever be a break-down in lubrication! Preference should be given to lubricants such as cooling agents of oils containing graphite such as those used in rolling processes. Always follow the rule: "The better the lubrication the easier the thread forming process!"

It offers the following advantages:

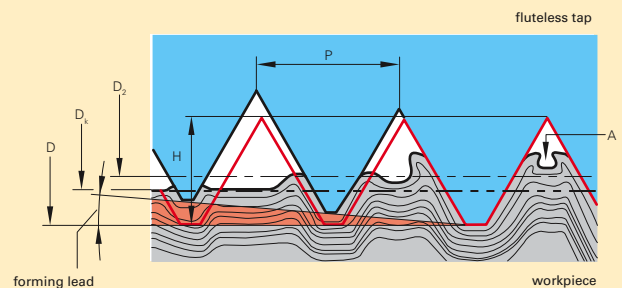
- no chip formation.
- one tool for the production of threads in through and blind holes.
- application in wide range of materials.
- no cutting errors.
- pitch and angle of thread errors that can occur with thread cutting are eliminated.
- internal threads produced by thread forming possess a higher tensile strength particularly at the thread flanks thanks to the so-called "uninterrupted grain flow" and the cold forming process.
- the surface of the thread is improved.
- fluteless taps can be applied at higher speeds because the formability of many materials increases with the forming speed. This does not have a negative effect on the tool life.
- reduced danger of breakage through rigid design

Process
The production of internal threads without chip removal (thread forming) in comparison to conventional tapping



Flow characteristics of the material during thread forming and the deformation process

D = nom.-Ø
D₂ = flank-Ø
D_k = hole-Ø
H = profile height
P = pitch
A = form pocket (claw)
— finished nut thread



Guhring's new fluteless taps - Characteristics and advantages

Conventional fluteless taps, produced by a grinding process only, show traces of microscopic, very fine grinding marks on the surface of the tool. This also applies to the threaded portion of the tool required to perform the thread forming operation.

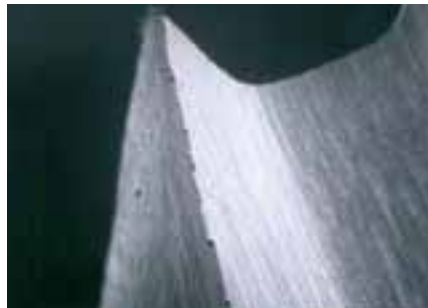
This surface topography (structure) has a negative effect on the friction between the tool and the material to be re-formed as well as on the herewith associated heat development, on the necessary torque and last but not least on the wear of the pressure points of the fluteless tap. In addition, the "grinding marks" encourage the build-up of the material to be re-formed in the thread flanks of the fluteless tap. This is also called cold welding.

Thanks to a special process to improve the surface topography (structure), Guhring's new Profile fluteless taps no longer possess these "grinding marks". This has been confirmed in research and tool life studies in varying materials under production conditions.

For the user, a longer tool life and increased cutting speeds are the benefits of this special process. The tool life can be increased considerably depending on the material to be machined and the application conditions. A 100% increase in tool life is not unusual.

The improved surface topography is not only of benefit to tools with bright finish. Particularly coated tools also benefit from the new process. Outer contour and forming lead greatly determine the performance of the fluteless tap. Numerous tests have shown that fluteless taps with optimal pressure point geometry and quantity achieve increased tool life and dimensional accuracy.

Further improvements in quality are achieved when the fluteless tap is produced completely in one setting and with one grinding wheel - set-up with a special roll. Pitch errors between the thread crests and former lead transition area do not occur as with the conventional grinding process.

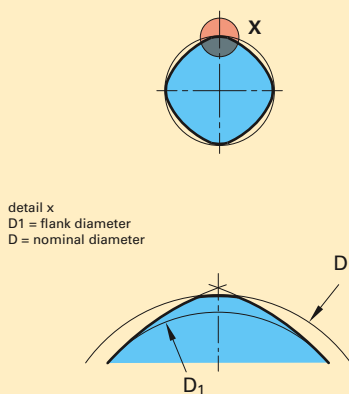


Surface of a conventional fluteless tap

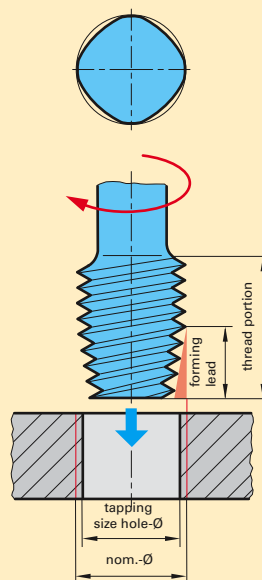


Optimised surface of a Guhring Profile fluteless tap

Cross section of fluteless tap



The principle



Types of tapping size hole

with fluteless taps without oil grooves
for thread depth $\leq 1 \times D$



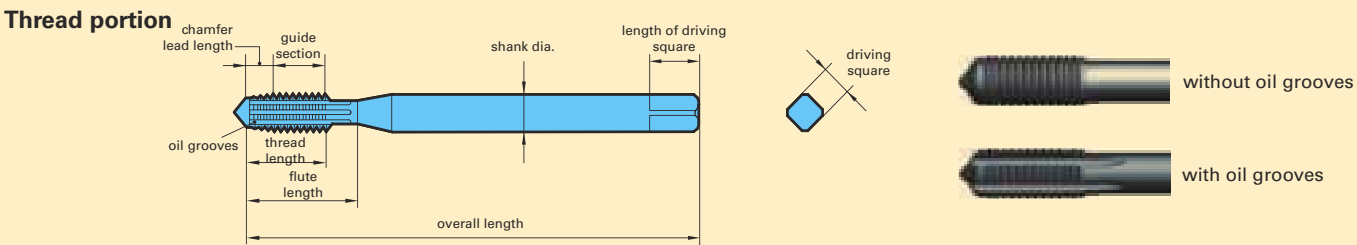
for thread depth $\geq 1 \times D$



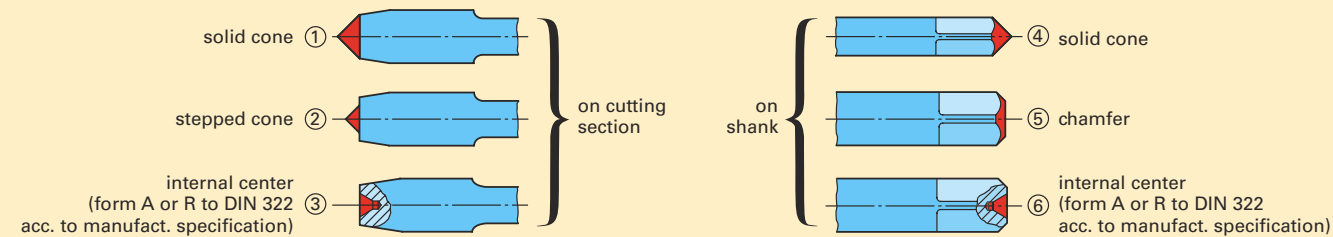
with fluteless taps with oil grooves
for all thread depths



Definitions, angles, centers, thread tolerances and fits



Types of centres (standard, to DIN 2197/DIN 2175)



Thread dia. range mm	Center on cutting section		Center on shank
	with chamfer forms A, C, D, E	with chamfer form B	
≤ 5.6	①	①	④ ⑤ ⑥
> 5.6 ... 12.8	① ② ③	① ② ③	④ ⑤ ⑥
> 12.8	③	③	⑥

Thread tolerances and fits

Fits between internal and external threads are separated by a diagonal stroke, as for example 6H/6g (internal/external thread). The fit has to be selected in conjunction with the appropriate thread connection.

The tolerance zones of the tolerance classes fine, medium and coarse are allocated to three screw-in lengths short S), normal (N) and long (L). Generally, the following rules apply for selecting a tolerance class:

Fine tolerance zone (S):

For precision threads, when only a small variation in the fit is permitted.

Screw-in lengths

The quality of thread connection is also affected by the screw-in length. The ISO tolerance system was, especially as regards the pitch diameter, divided into three groups, i.e.

- S (Short) = short screw-in length
- N (Normal) = normal screw-in length
- L (Long) = long screw-in length

Medium tolerance zone (N):

General application

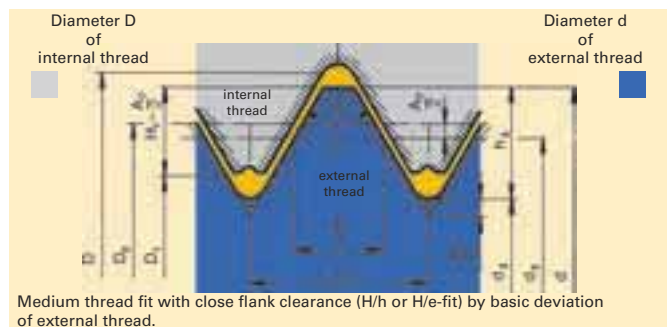
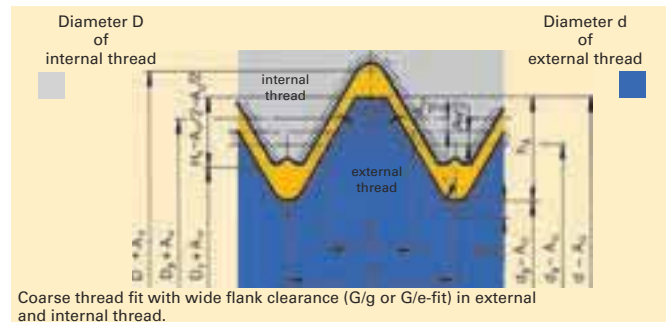
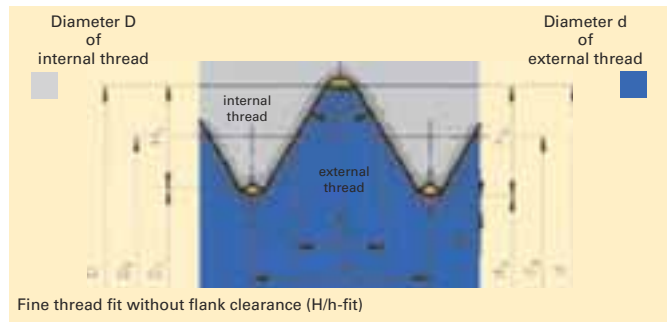
Coarse tolerance zone (L):

There are no special precision requirements and in cases where production difficulties may occur, e.g. thread production in hot-rolled rods, deep blind holes or plastic components.

The following fit should be selected for normal screw-in length N:

To ensure a tighter fit of thread connections, we recommend for short screw-in lengths a narrower fit.

Thread fit with varying flank clearance



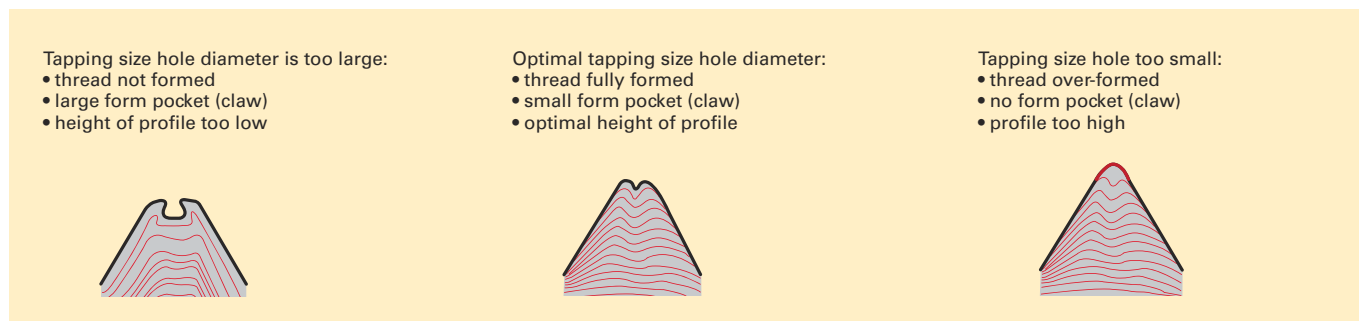
Explanation of symbols

D	= major diameter of internal thread
D1	= nominal diameter of tapping size hole
D2	= effective diameter of internal thread
d	= major diameter of external thread
d2	= effective diameter of external thread
d3	= root diameter of external thread
P	= pitch
s	= pitch angle
H	= peak to valley height of thread profile
Ao	= positive tolerance
Au	= negative tolerance

Tapping size hole diameter

With fluteless tapping, the tapping size hole diameter influences the distinction of the formed thread. A too small tapping size hole diameter results in an over-forming of the thread which must definitely be prevented because this can

lead to tool breakage. A too large tapping size hole is acceptable with certain tolerances because formed threads have a sufficient loading capacity from a 50% bearing depth.



Cooling lubricants with fluteless taps

With fluteless taps the main task of the coolant is lubrication. The better the lubrication with the maximum concentration, the longer the tool life.

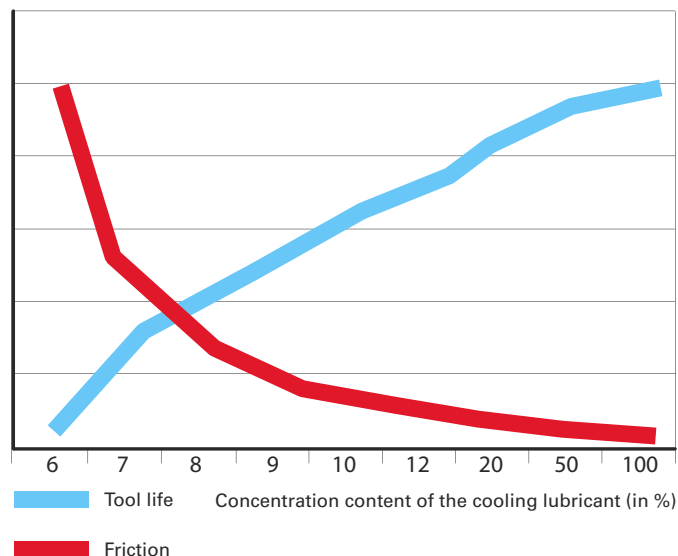
There are two different types of lubricant:

Oil based lubricants

These are mineral oils with the best lubricating characteristics. They reduce friction and achieve optimal life.

Soluble lubricants

These soluble lubricants are a concentrate thinned to an emulsion prior to the use with water. The concentration must not be below 6%. A content more than 12% is ideal in order to achieve a long life thanks to a good lubrication effect.



GUHRING



FORM TAPS

- **Fluteless Taps**

UNC

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Metric fine

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Note: Items marked as International Stock may become stocked in USA if sufficient volume is recognized.

Recommended Tapping Speeds														
General Steels				Stainless Steels				Cast Aluminum			Wrought Aluminum			
Material Hardness		SFM		Material Hardness		SFM		Silicon Content	SFM		Material Hardness		SFM	
HRC	Brinell	Nitrided	Hard coated	HRC	Brinell	Nitrided	Hard coated	%	Bright finish	Hard coated	HRC	Brinell	Bright finish	Hard coated
--	≤ 180	100	165	--	180	50	65	< 6	130	190	--	30 - 80	165	190
≤ 20	≤ 230	80	130	≤ 23	240	50	65	6 - 10	80	130	--	75 - 150	100	130
≤ 25	≤ 250	65	115	≤ 30	280	30	50	> 10	--	--				
≤ 30	≤ 280	50	100											
≤ 35	≤ 320	30	65											



Thread Forming Taps

UNC

ANSI length - ANSI shank

Series 3940 - Cobalt, UNC, form tap, TiN coated, Form C chamfer
Series 3943 - Cobalt, UNC, form tap, TiCN coated, Form C chamfer



2BX
Class of Fit



**Through or
Blind Hole**

Chamfer Lead



C · 2-3

Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	2BX Approx. Limits	 Series 3940	 Series 3943	Order No.
4-40	4	0.141	0.110	1.882	H4/H5			2.845
5-40	4	0.141	0.110	1.941	H4/H5			3.175
6-32	4	0.141	0.110	2.000	H5/H6			3.505
8-32	4	0.168	0.131	2.130	H5/H6			4.166
10-24	4	0.194	0.152	2.382	H6/H7			4.826
12-24	4	0.220	0.165	2.382	H6/H7			5.486
1/4-20	4	0.255	0.191	2.500	H7/H8			6.350
5/16-18	5	0.318	0.238	2.720	H8/H9			7.938
3/8-16	5	0.381	0.286	2.941	H8/H9			9.525
7/16-14	5	0.323	0.242	3.157	H9/H10			11.113
1/2-13	5	0.367	0.275	3.381	H10/H11			12.700
5/8-11	5	0.480	0.360	3.811	H11/H12			15.875
3/4-10	7	0.590	0.442	4.252	H12/H13			19.050

ANSI length - ANSI shank

Series 3959 - Cobalt, UNC, straight flute, TiN coated, Form E chamfer



E · 1.5 - 2

Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	2BX Approx. Limits	 Series 3959	Order No.
4-40	4	0.141	0.110	1.882	H4/H5		2.845
6-32	4	0.141	0.110	2.000	H5/H6		3.505
8-32	4	0.168	0.131	2.130	H5/H6		4.166
10-24	4	0.194	0.152	2.382	H6/H7		4.826
1/4-20	4	0.255	0.191	2.500	H7/H8		6.350
5/16-18	5	0.318	0.238	2.720	H8/H9		7.938
3/8-16	5	0.381	0.286	2.941	H8/H9		9.525
7/16-14	5	0.323	0.242	3.157	H9/H10		11.113
1/2-13	5	0.367	0.275	3.381	H10/H11		12.700
5/8-11	5	0.480	0.360	3.811	H11/H12		15.875

Thread Forming Taps



DIN length - DIN shank

Series 1582 - Cobalt, UNC, form tap, TiN coated, DIN 371

Series 1583 - Cobalt, UNC, form tap, TiN coated, DIN 376



**UNC /
UNF**
2BX
Class of Fit



**Through or
Blind Hole**

Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	2BX Approx. Limits	DIN 371  Series 1582	DIN 376  Series 1583	Order No.
10-24	4	6.000	4.900	70.000	H6/H7	°		4.826
12-24	4	6.000	4.900	80.000	H6/H7	°		5.486
1/4-20	4	7.000	5.500	80.000	H7/H8			6.350
5/16-18	5	8.000	6.200	90.000	H8/H9			7.938
3/8-16	5	10.000	8.000	100.000	H8/H9			9.525
7/16-14	5	8.000	6.200	100.000	H9/H10	°		11.113
1/2-13	5	9.000	7.000	110.000	H10/H11			12.700
9/16-12	5	11.000	9.000	110.000	H10/H11		°	14.288
5/8-11	5	12.000	9.000	110.000	H11/H12		°	15.875
3/4-10	7	14.000	11.000	125.000	H12/H13		°	19.050

ANSI length - ANSI shank

Series 3941 - Cobalt, UNF, form tap, TiN coated

Series 3944 - Cobalt, UNF, form tap, TiCN coated



Chamfer Lead



C · 2-3

Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	2BX Approx. Limits	 Series 3941	 Series 3944	Order No.
4-48	4	0.141	0.110	1.882	H4/H5			2.845
5-44	4	0.141	0.110	1.941	H4/H5			3.175
6-40	4	0.141	0.110	2.000	H5/H6			3.505
8-36	4	0.168	0.131	2.130	H4/H5			4.166
10-32	4	0.194	0.152	2.382	H5/H6			4.826
12-28	4	0.220	0.165	2.382	H6/H7			5.486
1/4-28	4	0.255	0.191	2.500	H6/H7			6.350
5/16-24	5	0.318	0.238	2.720	H7/H8			7.938
3/8-24	5	0.381	0.286	2.941	H7/H8			9.525
7/16-20	5	0.323	0.242	3.157	H8/H9			11.113
1/2-20	5	0.367	0.275	3.381	H8/H9			12.700
5/8-18	5	0.480	0.360	3.811	H9/H10			15.875
3/4-16	7	0.590	0.442	4.252	H10/H11			19.050

Form Taps



Thread Forming Taps

UNF

2BX
Class of Fit



Through or
Blind Hole

ANSI length - ANSI shank

Series 3972 - Cobalt, UNF, form tap, TiN coated, Form E chamfer



Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	2BX Approx. Limits	S Series 3972	Order No.
10-32	4	0.194	0.152	2.382	H5/H6		4.826
1/4-28	4	0.255	0.191	2.500	H6/H7		6.350
5/16-24	5	0.318	0.238	2.720	H7/H8		7.938
3/8-24	5	0.381	0.286	2.941	H7/H8		9.525
7/16-20	5	0.323	0.242	3.157	H8/H9		11.113
1/2-20	5	0.367	0.275	3.381	H8/H9		12.700
5/8-18	5	0.480	0.360	3.811	H9/H10		15.875

DIN length - DIN shank

Series 1584 - Cobalt, UNF, form tap, TiN coated, DIN 371, Form C chamfer



Chamfer Lead



E · 1.5 - 2



C · 2-3

Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	2BX Approx. Limits	DIN 371 S Series 1584	Order No.
10-32	4	6.000	4.900	70.000	H5/H6	°	4.826
12-28	4	6.000	4.900	80.000	H6/H7	°	5.486
1/4-28	4	7.000	5.500	80.000	H6/H7	°	6.350
5/16-24	5	8.000	6.200	90.000	H7/H8	°	7.938
3/8-24	5	10.000	8.000	100.000	H7/H8		9.525

DIN length - DIN shank

Series 1585 - Cobalt, UNF, form tap, TiN coated, DIN 376, Form C chamfer



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	2BX Approx. Limits	DIN 376 S Series 1585	Order No.
7/16-20	5	8.000	6.200	100.000	H8/H9		11.113
1/2-20	5	9.000	7.000	100.000	H8/H9		12.700
9/16-18	5	11.000	9.000	100.000	H8/H9	°	14.288
5/8-18	5	12.000	9.000	100.000	H9/H10	°	15.875
3/4-16	7	14.000	11.000	110.000	H10/H11	°	19.050

Thread Forming Taps



ANSI length - ANSI shank

Series 3939 - Cobalt, Metric, form tap, TiN coated
Series 3942 - Cobalt, Metric, form tap, TiCN coated



METRIC

6HX
Class of Fit



Through or
Blind Hole

Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	6HX Approx. Limits	S Series 3939	C Series 3942	Order No.
M3 X 0.50	4	0.141	0.110	1.941	D5/D6			3.000
M4 X 0.70	4	0.168	0.131	2.130	D6/D7			4.000
M5 X 0.80	4	0.194	0.152	2.382	D7/D8			5.000
M6 X 1.00	4	0.255	0.191	2.500	D8/D9			6.000
M8 X 1.25	5	0.318	0.238	2.720	D9/D10			8.000
M10 X 1.50	5	0.381	0.286	2.941	D10/D11			10.000
M12 X 1.75	5	0.367	0.275	3.381	D11/D12			12.000
M14 X 2.00	5	0.429	0.322	3.591	D13/D14			14.000
M16 X 2.00	5	0.480	0.360	3.811	D13/D14			16.000



ANSI length - ANSI shank

Series 3979 - Cobalt, Metric, form tap, TiN coated, Form E chamfer



Chamfer Lead



C · 2-3



E · 1.5 - 2

Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	6HX Approx. Limits	S Series 3979	Order No.
M3 X 0.50	3	0.141	0.110	1.941	D5/D6		3.000
M4 X 0.70	3	0.168	0.131	2.130	D6/D7		4.000
M5 X 0.80	3	0.194	0.152	2.382	D7/D8		5.000
M6 X 1.00	3	0.255	0.191	2.500	D8/D9		6.000
M8 X 1.25	3	0.318	0.238	2.720	D9/D10		8.000
M10 X 1.50	3	0.381	0.286	2.941	D10/D11		10.000
M12 X 1.75	3	0.367	0.275	3.381	D11/D12		12.000

Form Taps



Thread Forming Taps



METRIC

6HX
Class of Fit



Through or
Blind Hole

DIN length - DIN shank

Series 919 - Cobalt, Metric, form tap, TiN coated, DIN 371, form C chamfer

Series 1717 - PM cobalt, Metric, form tap, AlCrN, DIN 371, radial coolant, form C chamfer

Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 371 S Series 919	DIN 371 P Series 1717	Order No.
M3 X 0.50	4	3.500	2.700	56.000	D5/D6			3.000
M3.5 X 0.60	4	4.000	3.000	56.000	D6/D7	o		3.500
M4 X 0.70	4	4.500	3.400	63.000	D6/D7			4.000
M5 X 0.80	4	6.000	4.900	70.000	D7/D8		o	5.000
M6 X 1.00	4	6.000	4.900	80.000	D8/D9			6.000
M8 X 1.25	5	8.000	6.200	90.000	D9/D10			8.000
M10 X 1.50	5	10.000	8.000	100.000	D10/D11			10.000



DIN length - DIN shank

Series 323 - PM cobalt, Metric, form tap, TiN coated, DIN 371, radial coolant, form C chamfer

Chamfer Lead



C · 2-3



E · 1.5 - 2

Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 371 S Series 323	Order No.
M5 X 0.80	4	6.000	4.900	70.000	D7/D8	o	5.000
M6 X 1.00	4	6.000	4.900	80.000	D8/D9		6.000
M8 X 1.25	5	8.000	6.200	90.000	D9/D10		8.000
M10 X 1.50	5	10.000	8.000	100.000	D10/D11	o	10.000



DIN length - DIN shank

Series 1972 - Carbide, Metric, form tap, **TiCN coated DIN 371, radial coolant, form C chamfer

Series 1927 - Carbide, Metric, form tap, **TiCN coated, DIN 371, radial coolant, Form E chamfer

Size	No. Lube Grooves	Shank dia. inch	Square Size inch	Overall Length inch	6HX Approx. Limits	DIN 371 S Series 1972	DIN 371 S Series 1927	Order No.
*M3 X 0.50	4	3.500	2.700	56.000	D5/D6	o		3.000
*M4 X 0.70	4	4.500	3.400	63.000	D6/D7	o		4.000
M5 X 0.80	4	6.000	4.900	70.000	D7/D8	o	o	5.000
M6 X 1.00	4	6.000	4.900	80.000	D8/D9			6.000
M8 X 1.25	5	8.000	6.200	90.000	D9/D10			8.000
M10 X 1.50	5	10.000	8.000	100.000	D10/D11			10.000

* Sizes <M5 do not have coolant ducts through the tap

**All carbide form taps will be changing to TiCN coating as inventory levels are replenished.

Thread Forming Taps



DIN length - DIN shank

Series 342 - PM cobalt, Metric, form tap, TiN coated, DIN 376, radial coolant

Series 1719 - PM cobalt, Metric, form tap, AlCrN, DIN 376, radial coolant



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 376 S Series 342	DIN 376 P Series 1719	Order No.
M12 X 1.75	5	9.000	7.000	110.000	D11/D12	°		12.000
M14 X 2.00	5	11.000	9.000	110.000	D13/D14			14.000
M16 X 2.00	5	12.000	9.000	110.000	D13/D14	°		16.000
M12 X 1.75	5	9.000	7.000	110.000	D11/D12		°	12.000
M14 X 2.00	5	11.000	9.000	110.000	D13/D14		°	14.000
M16 X 2.00	5	12.000	9.000	110.000	D13/D14		°	16.000
M20 X 2.50	7	16.000	12.000	140.000	D14/D15		°	20.000

METRIC / METRIC FINE

6HX Class of Fit



Through or Blind Hole

DIN length - DIN shank

Series 1931 - Carbide, Metric, form tap, **TiCN coated, DIN 376, radial coolant



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 376 S Series 1931	Order No.
M12 X 1.75	5	9.000	7.000	110.000	D11/D12	°	12.000
M14 X 2.00	5	11.000	9.000	110.000	D13/D14	°	14.000
M16 X 2.00	5	12.000	9.000	110.000	D13/D14	°	16.000
M18 X 2.50	6	14.000	11.000	125.000	D14/D15	°	18.000
M20 X 2.50	7	16.000	12.000	140.000	D14/D15	°	20.000

Chamfer Lead



C · 2-3

Form Taps

** All carbide form taps will be changing to TiCN coating as inventory levels are replenished.



ANSI length - ANSI shank

Series 3975 - Cobalt, Metric Fine, form tap, TiN coated



Size	No. Lube Grooves	Shank dia. inch	Square Size inch	OAL inch	6HX Approx. Limits	S Series 3975	Order No.
M8 X 1.00	5	0.318	0.238	2.720	D7/D8		8.005
M10 X 1.00	5	0.381	0.286	2.941	D7/D8		10.005
M10 X 1.25	5	0.381	0.286	2.941	D7/D8		10.006
M12 X 1.00	5	0.367	0.275	3.381	D7/D8		12.005
M12 X 1.25	5	0.367	0.275	3.381	D7/D8		12.006
M12 X 1.50	5	0.367	0.275	3.381	D8/D9		12.007
M14 X 1.25	5	0.429	0.322	3.591	D9/D10		14.006
M14 X 1.50	5	0.429	0.322	3.591	D10/D11		14.007
M16 X 1.50	5	0.480	0.360	3.811	D10/D11		16.007



Thread Forming Taps

METRIC FINE

6HX
Class of Fit



Through or
Blind Hole

Chamfer Lead



C · 2-3

DIN length - DIN shank

Series 927 - Cobalt, Metric Fine, form tap, TiN coated, DIN 374



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 374 S Series 927	Order No.
M6 X 0.75	4	4.500	3.400	80.000	D6/D7	°	6.004
M8 X 0.75	5	6.000	4.900	80.000	D7/D8	°	8.004
M8 X 1.00	5	6.000	4.900	90.000	D7/D8		8.005
M10 X 1.00	5	7.000	5.500	90.000	D7/D8	°	10.005
M10 X 1.25	5	7.000	5.500	100.000	D7/D8		10.006
M12 X 1.00	5	9.000	7.000	100.000	D7/D8	°	12.005
M12 X 1.25	5	9.000	7.000	100.000	D7/D8	°	12.006
M12 X 1.50	5	9.000	7.000	100.000	D8/D9		12.007
M14 X 1.00	5	11.000	9.000	100.000	D8/D9	°	14.005
M14 X 1.50	5	11.000	9.000	100.000	D10/D11		14.007
M16 X 1.00	5	12.000	9.000	100.000	D10/D11	°	16.005
M16 X 1.50	5	12.000	9.000	100.000	D10/D11	°	16.007
M18 X 1.00	7	14.000	11.000	110.000	D10/D11	°	18.005
M18 X 1.50	7	14.000	11.000	110.000	D10/D11	°	18.007
M20 X 1.00	7	16.000	12.000	125.000	D11/D12	°	20.005
M20 X 1.50	7	16.000	12.000	125.000	D11/D12	°	20.007

DIN length - DIN shank

Series 338 - PM cobalt, Metric Fine, form tap, TiN coated, DIN 374, radial coolant

Series 1723 - PM cobalt, Metric Fine, form tap, AlCrN, DIN 374, radial coolant



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 374 S Series 338	DIN 374 P Series 1723	Order No.
M8 X 1.00	5	6.000	4.900	90.000	D7/D8	°		8.005
M10 X 1.00	5	7.000	5.500	90.000	D7/D8	°		10.005
M12 X 1.00	5	9.000	7.000	100.000	D7/D8	°	°	12.005
M12 X 1.25	5	9.000	7.000	100.000	D7/D8			12.006
M12 X 1.50	5	9.000	7.000	100.000	D8/D9	°	°	12.007
M14 X 1.50	5	11.000	9.000	100.000	D10/D11		°	14.007
M16 X 1.50	5	12.000	9.000	100.000	D10/D11			16.007
M18 X 1.50	7	14.000	11.000	110.000	D10/D11		°	18.007
M20 X 1.50	7	16.000	12.000	125.000	D11/D12		°	20.007
M24 X 1.50	7	18.000	14.500	140.000	D11/D12		°	24.007

Thread Forming Taps



DIN length - DIN shank

Series 1721 - PM cobalt, Metric Fine, form tap, AlCrN, DIN 371, radial coolant



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 371 P Series 1721	Order No.
M8 X 1.00	5	8.000	6.200	90.000	D7/D8	°	8.005
M10 X 1.00	5	10.000	8.000	90.000	D7/D8	°	10.005
M10 X 1.25	5	10.000	8.000	100.000	D7/D8		10.006

METRIC FINE

6HX
Class of Fit



Through or Blind Hole

DIN length - DIN shank

Series 1581 - Carbide, Metric Fine, form tap, **TiCN coated, DIN 374, radial coolant



Size	No. Lube Grooves	Shank dia. mm	Square Size mm	Overall Length mm	6HX Approx. Limits	DIN 374 S Series 1581	Order No.
M12 X 1.00	5	9.000	7.000	100.000	D7/D8	°	12.005
M12 X 1.50	5	9.000	7.000	100.000	D8/D9		12.007
M14 X 1.00	5	11.000	9.000	100.000	D8/D9	°	14.005
M14 X 1.25	5	11.000	9.000	100.000	D9/D10	°	14.006
M14 X 1.50	5	11.000	9.000	100.000	D10/D11	°	14.007
M16 X 1.50	5	12.000	9.000	100.000	D10/D11	°	16.007
M18 X 1.50	7	14.000	11.000	110.000	D10/D11	°	18.007
M20 X 1.50	7	16.000	12.000	125.000	D11/D12	°	20.007
M24 X 1.50	7	18.000	14.500	140.000	D11/D12	°	24.007

Chamfer Lead

C · 2-3



Form Taps

** All carbide form taps will be changing to TiCN coating as inventory levels are replenished.

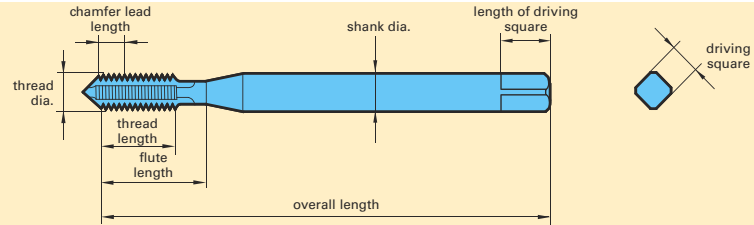
GUHRING



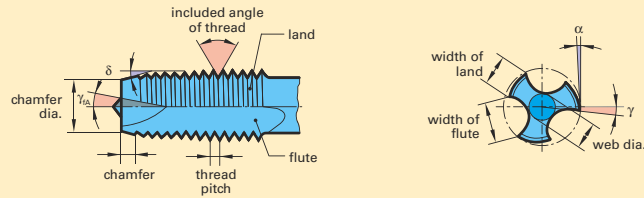
Technical Information



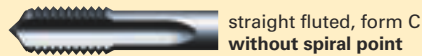
Definitions and angles, centers and flute forms



δ = try square
 γ_{fA} = spiral point angle
 α = clearance angle
 γ = rake angle



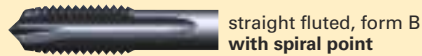
Flute forms



straight fluted, form C
without spiral point



helix angle
15°



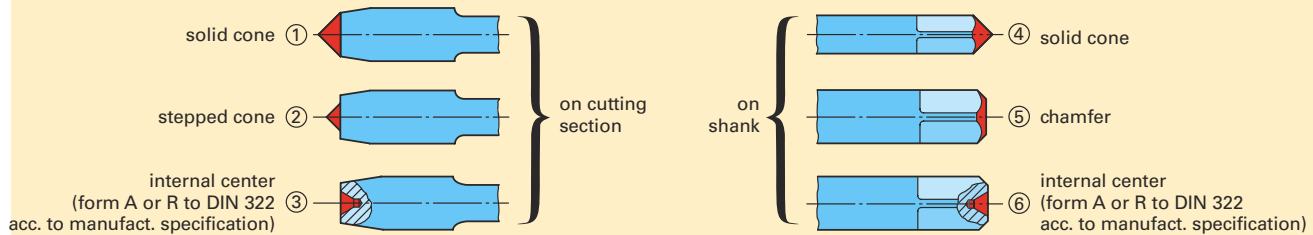
straight fluted, form B
with spiral point



helix angle
40°

Types of centers (standard, to DIN 2197/DIN 2175)

Note: DIN standard taps ≥ 10.0 mm diameter are manufactured with male centers

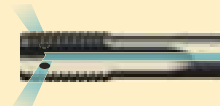


Thread dia. range mm	Center on cutting section		Center on shank
	with chamfer forms A, C, D, E	with chamfer form B	
≤ 4.2	①	①	④ ⑤ ⑥
$> 4.2 \dots 5.6$	① ②	①	④ ⑤ ⑥
$> 5.6 \dots 10.0$	① ② ③	① ② ③	④ ⑤ ⑥
> 10.0	③	③	⑥

Coolant duct geometries



axial coolant
delivery
with axial coolant
duct exit



axial coolant
delivery with radial
coolant duct exit in the flutes
at the chamfer

Chamfer forms, selection and application

Application recommendations

While in the first instance, the type of tapped hole required determines the chamfer, generally the tap geometry - i.e. form, number and direction of flutes, cutting angle, etc. - depend on the material to be machined and on the application. Basically, taps up to M16 for tapping ISO metric threads or for the engineering industry in general, have 3 flutes, and above this size 4 or more flutes.

Taps with left-hand flutes and taps with spiral points remove the chips in the cutting direction or direction of feed and are therefore especially suitable for tapping through holes. Taps with straight flutes and long chamfer lead (form D) also give good results.

As far as blind holes are concerned we recommend taps with right-hand spiral flutes or straight fluted taps with a short chamfer lead length. Tools with right-hand spiral flutes

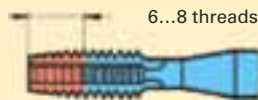
have the chip flow in the backward direction, i.e. up the flutes. The chamfer lead length is designed in such a way so that during the return movement chips do not jam and are reliably sheared off.

The tapping of aluminium, grey cast iron and brass requires taps with a short chamfer lead length, regardless of whether through or blind holes are required. In these materials a long chamfer lead length would act as a core drill with chip breaker grooves and would only drill the tapping size hole to the major diameter instead of cutting a thread.

Straight fluted taps without spiral point are general purpose tools and have the disadvantage of not showing optimum results in particular materials. It's well worth the effort to take the trouble of ascertaining the most suitable tool for any given metal-cutting task.

Chamfer forms to DIN 2197

Form A



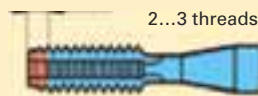
long, 6 - 8 threads
for short
through holes

Form B



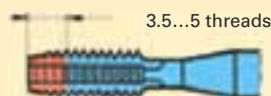
medium, 3.5 - 5.5 threads,
with spiral point,
for all through holes
in medium and long-chipping materials

Form C



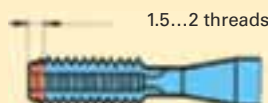
short, 2 - 3 threads
for blind holes
and generally for
aluminium, grey cast iron
and brass

Form D



medium, 3.5 - 5 threads
for short
through holes and blind holes
where tap drill clearance permits.

Form E



extremely short, 1.5-2 threads,
for blind holes with
little run-out depth.
Avoid use if possible.

Form F



extremely short, 1-1.5 threads,
for blind holes with
little run-out depth.
Avoid use if possible.

Tap Tolerances and Approximate Limits

UNC/UNF Taps

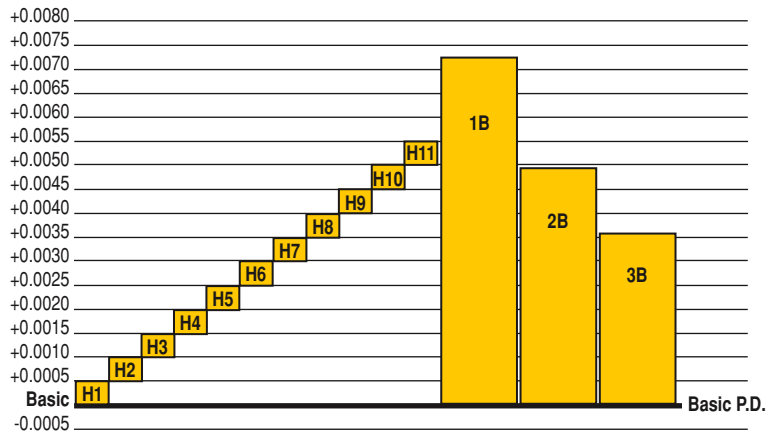
Screw size and fractional threads are typically specified as one of three classes of fit. Class 1B – for low precision, or threads that are typically used in areas where dirt and grime are a constant factor; Class 2B for general threading applications (by far the most common); and Class 3B for precision threads generally found in medical, aerospace and applicable automotive applications.

- As seen in the chart – these classes of fit do overlap even though they are progressive in accuracy. To further break down the accuracy of these threads we have “H” limits in increments of 0.0005”

- Every size/pitch tap has a specific or given basic pitch diameter that is the basis for the “H” limits and the class of fit for that size.

- As you can see in the chart – the class of fit will give you minimum and maximum pitch diameter limits that need to be maintained during manufacturing (typically these are your thread gauge limits). By seeing the “H” limits illustrated you are better able to understand what area of the class of fit you are actually working within.

(This chart does not show a specific size tap – its purpose is to give a visual understanding of how the “H” limits work within the different classes of fit).



Metric Taps

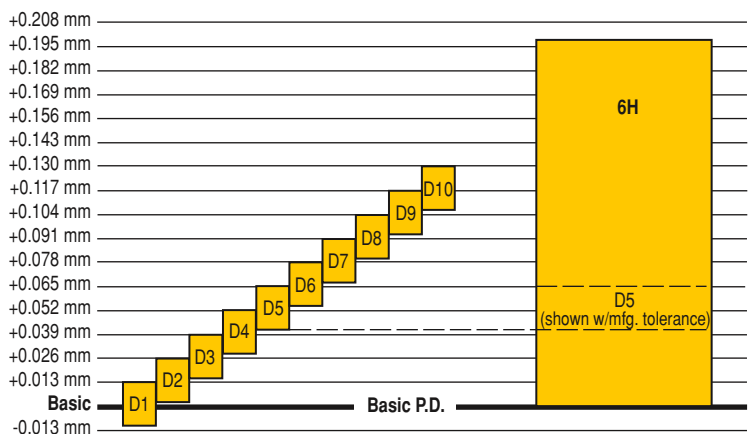
Metric threads have their own classifications for class of fit and the thread limits within them. When discussing UNC/UNF threads we worked with 3B, 2B and 1B Classes of fit and had “H” limits which helped define the accuracy within each class. To help understand Metric tolerancing it may be easiest to look at the similarities between both Metric and Fractional tolerancing.

- A metric 6H class of fit is quite similar to the fractional 2B class of fit - as is the metric 4H to the fractional 3B. We will focus on the 6H class of fit as this is our standard offering in metric sizes. (Please note that special classes of fit can be produced for any given application upon request).

- Again – the class of fit will give you minimum and maximum pitch diameter limits that need to be maintained during manufacturing. Within the class of fit – metric thread limits are further broken down into “D” limits. Each “D” limit equals 0.013mm (0.013mm = 0.00051” – extremely similar to that of fractional “H” limit tolerancing).

- As you look at this chart you can see how the “D” limits help control what area of the class of fit you are working within.

(This chart does not show a specific size tap – its purpose is to give a visual understanding of how the “D” limits work within a class of fit).



Taps for ISO metric threads DIN EN 22857 (extract)



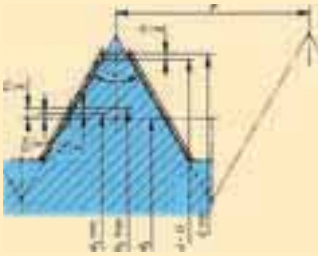
Profile of the nut thread

Basic profile:

D	major diameter
D ₁	nom. dia. of tapping size hole
D ₂	basic pitch diameter
P	pitch of diameter
α	included angle of thread
H	height of peak to peak
	thread profile
EI	basic deviation of pitch, zero
	with tolerance zone H, positive
	with tolerance zone G

Tolerances:

T_{D1} tolerance on tapping size hole dia
 T_{D2} tolerance on tap pitch dia.



Profile of the tap

Basic profile:

$d=D$	major diameter
$d \text{ min.}$	d min. permissible min. tap major dia.
J_s	minimum clearance on major diameter
$d_s=D_s$	basic pitch diameter
$d_s \text{ min.}$	minimum tap pitch diameter
$d_s \text{ max.}$	maximum tap pitch diameter
E_s	upper deviation of pitch diameter
E_m	lower deviation of pitch diameter

Tolerance:

T_{d2} tolerance on tap pitch diameter

With the aim of unifying threads on an international basis, the ISO thread was brought out and has been accepted by all concerned. Today the ISO metric thread is the most common type. As you can see, our tap program demonstrates this fact in the clearest possible way.

Taps with deviating tolerances according to DIN 802 part 1 will be given additional marking "X" (6 HX, 6 GX).

We recommend the application of taps in accordance with the adjacent table:

Metric tolerance qualities (figure identification)

Tolerance qualities of external threads are defined by the table to the right, those of nut threads by the table on the lower right.

Tolerance positions (letter identification)

ISO metric internal threads are identified by capital letters A to H, ISO metric external threads by small letters a to h. Tolerance zones A to G have positive and a to g negative basic pitch deviations in contrast to the tolerance zones H and h which commence at zero. Generally, tolerance zones H and g are used. For threads destined for surface treatment tolerance zones G and e are applied.

When manufacturing ISO-external threads the deviations that are determined for the major diameter with regard to the tolerance zones a to g have to be taken into account.

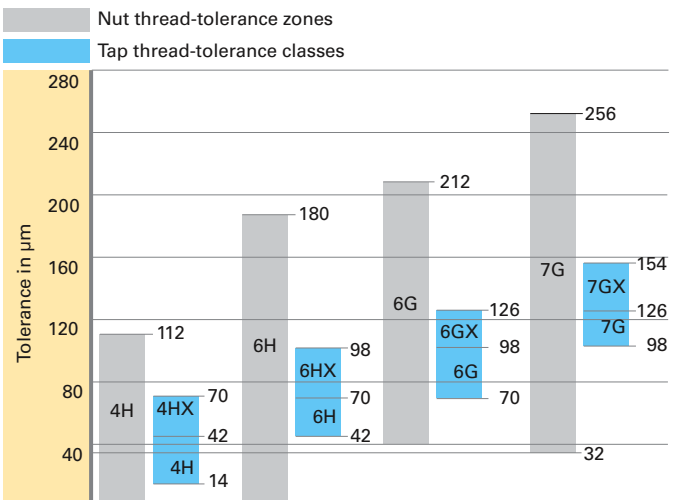
Tolerance zones (nut thread)/

Tolerance classes (tap thread)

Quality and position of tolerance determine the tolerance zone, which is identified by the appropriate figures and letters.

The abbreviation for the tolerance class of tap corresponds to the tolerance zone of the internal thread for which the tap is used in most cases. Therefore, it is not identical with the tolerance zone of the cut nut thread in every application.

Tolerance zone / tolerance class allocation



DIN EN 22857		Tolerance zone of internal thread to be cut					DIN 802 part 1 (withdrawn))
Application class of tap Designation* Reference							Tolerance class of tap
Class 1	ISO 1	4H	5H				4H
Class 2	ISO 2			6H			6H
Class 3	ISO 3				6G		6G
–	–					7G	7G

* The tolerance of the 3 application classes is calculated in accordance to the following data dependent on one tolerance unit t the value of which corresponds to the value of the basic pitch diameter TD2 in tolerance class 5 of the nut thread (polished to a pitch of 0.2 mm):

$t = t_{p_5}$ Tolerance class 5 of nut thread

Taps for ISO metric threads DIN EN 22857 (extract)

Thread clearances and fits

Fits between internal and external threads are separated by a diagonal stroke, as for example 6H/6g (internal/external thread). The fit has to be selected in conjunction with the appropriate thread connection.

The tolerance zones of the tolerance classes fine, medium and coarse are allocated to three screw-in lengths short (S), normal (N) and long (L). Generally, the following rules apply for selecting a tolerance class:

Fine tolerance zone (S):

For precision threads, when only a small variation in the fit is permitted.

Medium tolerance zone (N):

General application

Coarse tolerance zone (L):

There are no special precision requirements and in cases where production difficulties may occur, e.g. thread production in hot-rolled rods, deep blind holes or plastic components.

Screw-in lengths

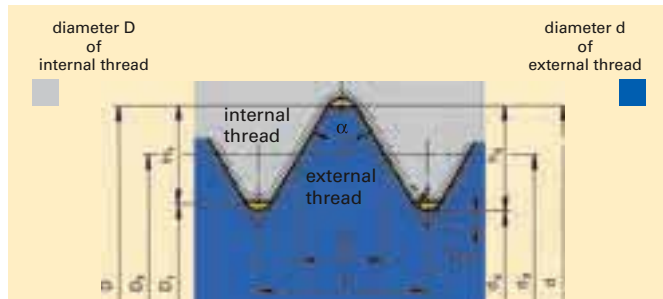
The quality of thread connection is also affected by the screw-in length. The ISO tolerance system was, especially as regards the pitch diameter, divided into three groups, i.e.

S	(Short)	= short screw-in length
N	(Normal)	= normal screw-in length
L	(Long)	= long screw-in length

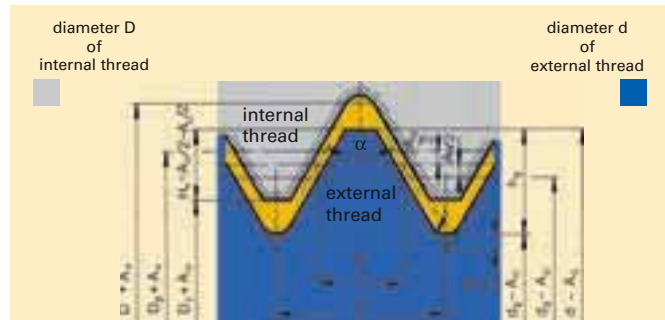
The following fit should be selected for normal screw-in length N:

To ensure a tighter fit of thread connections, we recommend for short screw-in lengths a narrower fit. As far as long screw-in lengths are concerned, fits with a larger tolerance must be used to compensate for pitch deviations.

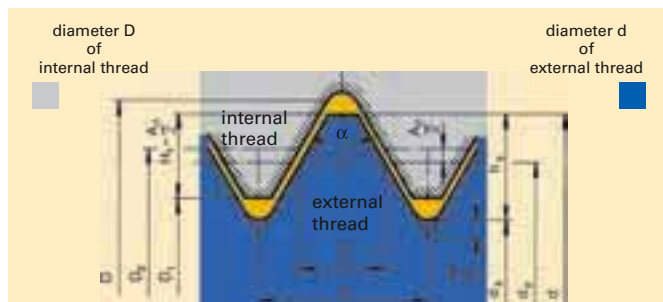
Thread fits with different flank clearance



Zero profile of thread fit without flank clearance (H/h-fit).



Thread fit with wide flank clearance (G/g-fit or G/e-fit) in external and internal thread.



Thread fit with narrow flank (H/g- or H/e-fit) by basic deviation of external thread.

Explanation of symbols

D	=	$\varnothing$ nom. of internal thread
D_1	=	Tapping size hole $\varnothing$ of internal thread
D_2	=	Basic pitch $\varnothing$ of internal thread
d	=	$\varnothing$ nom. of external thread
d_2	=	Basic pitch $\varnothing$ of external thread
d_1	=	Tapping size hole $\varnothing$ of external thread
P	=	Pitch
α	=	Included angle of thread
H	=	Height of peak to peak thread profile
A_o	=	Upper tolerance limit
A_u	=	Lower tolerance limit

Cutting rate recommendations for taps

Material group		Pounds/inch ²	Hardness HB	Cutting speed SFM		
				HSS-E	HSS-E-PM	Solid carbide
	Structural steels	123,250	–	33 - 49	49 - 66	98 - 164 
	Free-cutting steels	145,000	–	33 - 66	49 - 82	98 - 164 
	Unalloyed case hardened steels	108,750	–	33 - 49	49 - 66	98 - 164 
	Unalloyed heat-treatable steels	123,250	–	33 - 49	49 - 66	98 - 164 
	Alloyed case hardened steels	123,250 - 174,000	–	26 - 39	33 - 49	82 - 131 
	Alloyed heat-treatable steels	123,250 - 174,000	–	26 - 39	33 - 49	82 - 131 
	Alloyed tool steels	145,000	–	20 - 33	26 - 39	82 - 131 
	High speed tool steels	95,275 - 145,000	–	20 - 33	26 - 39	82 - 131 
	Stainless- and acid-resistant steels, sulphured austenitic martensitic	123,250	–	20 - 39	26 - 49	98 - 164 
		123,250	–	20 - 39	26 - 49	98 - 164 
		123,250	–	20 - 39	26 - 49	98 - 164 
	Structural steels	116,000	–	33 - 49	49 - 66	98 - 164 
	Free-cutting steels	145,000	–	33 - 66	49 - 82	98 - 164 
	Case hardened steels	145,000	–	33 - 49	49 - 66	98 - 164 
	Heat-treatable steels	174,000	–	33 - 49	49 - 66	98 - 164 
	Nitriding steels	174,000	–	33 - 49	49 - 66	98 - 164 
	Spheroidal graphite iron		≤ 240	33 - 66	49 - 82	98 - 164 
	Aluminium and Al-alloys	58,000	–	49 - 66	66 - 82	98 - 164
	Al wrought alloys	58,000	–	49 - 66	66 - 82	98 - 164
	Al cast alloys ≤ 10 % Si > 10 % Si	87,000	–	49 - 66	66 - 82	98 - 164
		87,000	–	49 - 66	66 - 82	82 - 131
	Cast iron		≤ 240	49 - 66	66 - 82	98 - 131
	Spheroidal graphite iron		≤ 240	49 - 66	66 - 82	98 - 131
	Malleable cast iron		< 300	49 - 66	66 - 82	98 - 131
	Brass, short-chipping long-chipping	87,000	–	33 - 49	49 - 66	82 - 98
		87,000	–	33 - 49	49 - 66	82 - 98
	Plastics		–	16 - 33	23 - 39	33 - 66
	Magnesium-alloys	65,250	–	98 - 164	--	131 - 197
	Titanium and Ti-alloys	174,000	–	--	7 - 26	-
	Ni-alloys	174,000	–	--	7 - 26	-

* With coated tools cutting speed may be increased by up to 50%.

Application alternatives

If the optimal tap for your application is not available, perhaps you can use a tap with another color ring. The table below gives you a view to possible alternatives.

We recommend a machining test with the selected alternative tool! Cutting speed, tool life and machining quality may not fit the performance of the optimally suited tool.

possibly can be replaced by tools with colour ring ...						
						
Tools with color ring ...		–		++		–
		–	–	+	–	–
		–	–	+	–	–
		++	+	+		+
		+	–	+	–	–
		–	–	+	–	–

++ optimally suited + limited suited – not suited

Cutting Rate recommendations for fluteless taps

Thanks to the development of modern tool materials, geometries, coatings and recently the Guhring developed improved tool surface the scope of malleable materials able to be fluteless tapped is expanding. The table "Cutting rate recommendations" below provides an overview of materials that can be machined with Guhring's "Profile" fluteless taps. In many cases, a test in harder or more brittle materi-

als is worth while in order to benefit from the advantages of fluteless tapping in these materials. Please contact our technical specialists for advice.

Cutting rate recommendations

Material group	Pounds / inch ²	Hardness HB	Cutting speed SFM		
			HSS-E	HSS-E-PM	Solid carbide
 Structural steels	123,250	–	33 - 49	49 - 66	66 - 98
 Free-cutting steels	145,000	–	33 - 66	49 - 82	66 - 98
 Unalloyed case hardened steels	108,750	–	33 - 49	49 - 66	66 - 98
 Unalloyed heat-treatable steels	123,250	–	33 - 49	49 - 66	66 - 98
 Alloyed case hardened steels	123,250 - 174,000	–	26 - 39	33 - 49	49 - 66
 Alloyed heat-treatable steels	123,250 - 174,000	–	26 - 39	33 - 49	49 - 66
 Alloyed tool steels	145,000	–	20 - 33	26 - 39	33 - 49
 High speed tool steels	95,275 - 145,000	–	20 - 33	26 - 39	33 - 49
 Stainless- and acid-resistant steels, sulphured	123,250	–	20 - 39	26 - 49	39 - 66
 austenitic	123,250	–	13 - 26	26 - 49	39 - 66
 martensitic	123,250	–	13 - 26	26 - 49	39 - 66
 Structural steels	116,000	–	33 - 49	49 - 66	66 - 98
 Free-cutting steels	145,000	–	33 - 66	49 - 82	66 - 98
 Case hardened steels	145,000	–	33 - 49	49 - 66	66 - 98
 Heat-treatable steels	174,000	–	33 - 49	49 - 66	66 - 98
 Nitriding steels	174,000	–	33 - 49	49 - 66	66 - 98
 Spheroidal graphite iron		≤ 240	33 - 66	49 - 82	66 - 98
 Aluminium and Al-alloys	58,000	–	49 - 66	66 - 82	98 - 164
 Al wrought alloys	58,000	–	49 - 66	66 - 82	98 - 164
 Al cast alloys ≤ 10 % Si	87,000	–	49 - 66	66 - 82	98 - 164
 > 10 % Si	87,000	–	–	–	–
 Cast iron		≤ 240	–	–	–
 Spheroidal graphite iron		≤ 240	49 - 66	66 - 82	98 - 131
 Malleable cast iron		< 300	49 - 66	66 - 82	98 - 131
 Brass, short-chipping	87,000	–	33 - 49	49 - 66	82 - 98
 long-chipping	87,000	–	33 - 49	49 - 66	82 - 98
 Plastics		–	–	–	–
 Magnesium-alloys	65,250	–	–	–	–
 Titanium and Ti-alloys	174,000	–	7 - 20	7 - 26	26 - 39
 Ni-alloys	174,000	–	7 - 20	7 - 26	26 - 39

Cutting Speeds Conversion for Taps

Tap Sizes	Surface Feet per Minute																	
	5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
	Revolutions per Minute																	
UNC/UNF Taps																		
No. 2	212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
No. 3	191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
No. 4	174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5116
No. 5	147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
No. 6	136	273	409	553	691	829	1106	1382	1659	1935	2212	2488	2766	3042	3318	3595	3871	4148
No. 8	119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
No. 10	101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
No. 12	87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4	76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1968	2139	2292
5/16	62	123	185	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	50	101	151	204	255	305	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	43	87	130	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	38	76	115	153	191	229	305	382	458	535	611	688	764	840	917	993	1070	1146
9/16	34	68	102	137	172	206	274	342	410	478	547	616	683	752	820	888	952	1020
5/8	32	64	96	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
11/16	28	55	83	111	138	167	222	278	333	389	444	500	556	611	667	722	778	833
3/4	25	51	76	102	128	153	203	255	305	357	407	458	509	560	611	662	713	764
7/8	22	43	65	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1	19	38	57	76	96	115	153	191	230	268	305	344	382	420	458	497	535	573
1 1/8	17	34	51	68	84	102	136	170	204	238	272	306	340	373	407	441	475	509
1 1/4	15	31	46	61	76	92	122	153	183	214	244	275	305	336	367	397	428	458
1 3/8	14	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417
1 1/2	13	25	38	51	63	76	102	127	153	178	204	229	255	280	305	331	356	382
Metric Taps																		
M 2.0	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M 3.0	162	324	486	647	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M 3.5	138	277	415	554	692	830	1107	1384	1661	1938	2214	2491	2768	3045	3322	3599	3875	4152
M 4.0	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M 5.0	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2909
M 6.0	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M 7.0	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M 8.0	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M 10.0	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M 12.0	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M 14.0	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M 16.0	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M 18.0	27	54	81	108	135	162	216	269	323	377	431	485	539	593	647	700	754	808
M 20.0	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M 22.0	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M 24.0	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M 27.0	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M 30.0	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485

DIN characteristic features for taps

Master standards for dimensions to DIN 2184

The standard DIN 2184 stipulates the major dimensions for taps and fluteless taps required for the thread production with nominal diameter $d_1 > 0.9 \dots 113 \text{ mm}$. Part 1 is the master standard for dimensions for a long tool design, part 2 the master standard for dimensions for the short tool design. According to the nominal

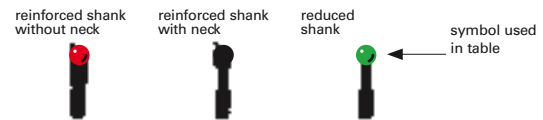
diameter range and dependent on the pitch, the number of teeth and the ratio total length these master standards include: the max. thread length, the shank designs "reinforced shank" and "reduced shank". A detailed illustration of shank designs and characteristic features can be found below.

Taps

DIN 2184-1				DIN 2184-1			
Machine taps, long		Hand taps and machine taps, short					
ISO metric thread	ISO metric fine thread	ISO metric thread	ISO metric fine thread	ISO metric thread	ISO metric fine thread	ISO metric thread	ISO metric fine thread
DIN 371 DIN 376	DIN 371 DIN 374	DIN 352	DIN 2181	DIN 352	DIN 2181	DIN 352	DIN 2181
UNC/BSW* thread	UNF thread	G-thread	UNC/BSW* thread	UNF thread	G thread	Pg thread	
~DIN 371 ~DIN 376	~DIN 371 ~DIN 374	DIN 5156	~DIN 352	~DIN 2181	DIN 5157	DIN 40 432	

Fluteless taps

DIN 2184-1				
DIN 2174		DIN 2184-1		
ISO metric thread	ISO metric fine thread	UNC thread	UNF thread	G thread
previously DIN 371 DIN 376	previously DIN 371 DIN 374	previously ~DIN 371 ~DIN 376	previously ~DIN 371 ~DIN 374	previously DIN 5156



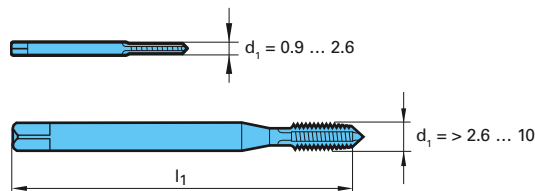
Shank designs for thread cutting tools

Thread type	DIN		contained in the master standards	Nominal diameter ranges mm			
	Taps	Fluteless taps		0.9 ... 2.6	>2.6 ... 6.35	>6.35 ... 10.0	>10.0
M ISO metric threads	DIN 371		2184-1	●	●	●	—
	DIN 376		2184-1	●	●	●	●
	DIN 352		2184-2	●	●	●	●
	DIN 2174		2184-1	●	●	●	●
MF ISO metric fine threads	DIN 371		2184-1	●	●	●	—
	DIN 374		2184-1	—	●	●	●
	DIN 2181		2184-2	●	●	●	●
	DIN 2174		2184-1	●	●	●	●
UNC/BSW threads	~DIN 371		2184-1	●	●	●	—
	~DIN 376		2184-1	●	●	●	●
	~DIN 352		2184-2	●	●	●	●
UNF threads	~DIN 371		2184-1	●	●	●	—
	~DIN 374		2184-1	—	●	●	●
	~DIN 2181		2184-2	●	●	●	●

Characteristic features of the individual standards

DIN 371

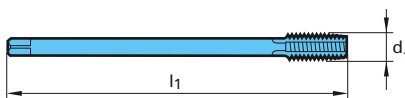
in the master standard
DIN 2184-1



Standard for machine taps with reinforced shank for standard ISO metric threads and ISO metric fine threads. Long design. Shank design in accordance with diameter ranges shown above (mm).

DIN 376

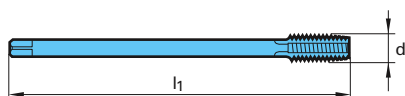
in the master standard
DIN 2184-1



Standard for machine taps with reduced shank for standard ISO metric threads. Long design. Diameter range $d_1 = 1.6 \dots 68 \text{ mm}$ ($\leq \text{Ø M3}$, shank without square)

DIN 374

in the master standard
DIN 2184-1



Standard for machine taps with reduced shank for ISO metric fine threads. Long design. Diameter range $d_1 = 3 \dots 52 \text{ mm}$

Guhring Substrate and Coating Descriptions

High speed steels

Only high quality tool materials are used to produce HSS tools. Systematic selection of alloying elements ensure the tool possesses the optimal characteristics for the individual tasks. These elements include:

Tungsten, Molybdenum: increase heat- and wear-resistance

Vanadium: increases wear-resistance of finishing tools

Cobalt: enables increased hardening temperatures and heat-resistance.

Carbide

Carbide, similar to steel, is a less than precise and indeed a very general term for an entire material group. Carbide can be produced in an infinite number of variations with different characteristics through the combination of at least two basic constituents.

Carbide production

Carbide consists of a hardness carrier – tungsten carbide plus maybe one or more carbides – and an extremely tough component: Cobalt (Co). Cobalt basically serves as a cementing or binding agent in which the carbide particles are distributed.

Our carbide division has a state-of-the-art laboratory at its disposal to ensure our carbide always corresponds with customer requirements. From the raw material to the finished product, samples are continuously examined in order to guarantee and document the highest quality and process reliability in accordance with the certification.

High-performance thin-film PVD coatings from Guhring

	Type	Identifying Color	Coating Process	Coating Temperature	Layer Structure	Thickness (µm)	Nano-hardness (HV 0.05)	Friction Coefficient (fetting)	Thermal Stability
S TiN Titanium Nitride	Hard • Wear-resistant	Gold	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	2400	0.50	1100° F 595° C
G TiCN Titanium Carbonitride	Hard • Wear-resistant	Gray Violet	PVD Physical Vapor Deposition	930° F 500° C	Gradient	1.5 - 5.0	3000	0.25	840° F 450° C
A TiAlN Titanium Aluminum Nitride	Hard • Wear-resistant	Black Violet	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	3300	0.50	1470° F 800° C
F FIREX® Special TiN-TiAlN	Hard • Wear-resistant	Red Violet	PVD Physical Vapor Deposition	930° F 500° C	Multilayer	1.5 - 5.0	3000-3300	0.50	1470° F 800° C
nano-FIREX® Special TiN-TiAlN	Hard • Wear-resistant	Red Violet	PVD Physical Vapor Deposition	930° F 500° C	Micro-thin Multilayer	1.5 - 5.0	3300	0.50	1470° F 800° C
A Super-A™ Aluminum Titanium Nitride	Hard • Wear-resistant	Dark Gray	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	3800	0.60	1650° F 900° C
M Mo-IyGlide® MoS ₂ -Based	Soft • Lubricating	Silver	PVD Physical Vapor Deposition	305° F 150° C	Monolayer	1.0	n.a.	0.10	1470° F 800° C
ICE® Cr-Based	Hard • Wear-resistant	Metallic Silver	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	3500	0.60	1832° F 1000° C

UNC / UNF Tap Drill Sizes

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
3-48	0.0772	5/64	47	1.960	81
3-48	0.0776			1.970	79
3-48	0.0780			1.980	78
3-48	0.0783			1.990	76
3-48	0.0787			2.000	75
3-48	0.0791			2.010	74
3-48	0.0795			2.020	72
3-48	0.0799			2.030	71
3-48	0.0803			2.040	69
3-48	0.0807			2.050	68
3-48	0.0811	46	46	2.060	66
3-48	0.0815			2.070	65
3-48	0.0819			2.080	63
3-48	0.0823			2.090	62
3-48	0.0827			2.100	60
3-48	0.0831	45	45	2.110	59
3-56	0.0803			2.040	81
3-56	0.0807			2.050	79
3-56	0.0811			2.060	77
3-56	0.0815			2.070	75
3-56	0.0819	46	46	2.080	74
3-56	0.0823			2.090	72
3-56	0.0827			2.100	70
3-56	0.0831			2.110	69
3-56	0.0835			2.120	67
3-56	0.0839	45	45	2.130	65
3-56	0.0843			2.140	63
3-56	0.0846			2.150	62
3-56	0.0850			2.160	60
3-56	0.0854			2.170	59
4-40	0.0858	44	44	2.180	81
4-40	0.0862			2.190	79
4-40	0.0866			2.200	78
4-40	0.0870			2.210	77
4-40	0.0874			2.220	76
4-40	0.0878	43	43	2.230	75
4-40	0.0882			2.240	73
4-40	0.0886			2.250	72
4-40	0.0890			2.260	71
4-40	0.0894			2.270	70
4-40	0.0898	42	42	2.280	68
4-40	0.0902			2.290	67
4-40	0.0906			2.300	66
4-40	0.0909			2.310	65
4-40	0.0913			2.320	64
4-40	0.0917	41	41	2.330	63
4-40	0.0921			2.340	61
4-40	0.0925			2.350	60
4-40	0.0929			2.360	59
4-48	0.0902			2.290	81
4-48	0.0906	39	39	2.300	79
4-48	0.0909			2.310	78
4-48	0.0913			2.320	76
4-48	0.0917			2.330	75
4-48	0.0921			2.340	74
4-48	0.0925	40	40	2.350	72
4-48	0.0929			2.360	71
4-48	0.0933			2.370	69
4-48	0.0937			2.380	68
4-48	0.0941			2.390	66
4-48	0.0945	41	41	2.400	65
4-48	0.0949			2.410	63
4-48	0.0953			2.420	62
4-48	0.0957			2.430	60
4-48	0.0961			2.440	59
5-40	0.0988	38	38	2.510	81
5-40	0.0992			2.520	79
5-40	0.0996			2.530	78
5-40	0.1000			2.540	77
5-40	0.1004			2.550	76
5-40	0.1008	37	37	2.560	75
5-40	0.1012			2.570	73
5-40	0.1016			2.580	72
5-40	0.1020			2.590	71
5-40	0.1024			2.600	70
5-40	0.1028	36	36	2.610	68
5-40	0.1031			2.620	67
5-40	0.1035			2.630	66
5-40	0.1039			2.640	65
5-40	0.1043			2.650	64
5-40	0.1047	35	35	2.660	63
5-40	0.1051			2.670	61
5-40	0.1055			2.680	60
5-40	0.1059			2.690	59
5-44	0.1012	38	38	2.570	81
5-44	0.1016			2.580	79
5-44	0.1020			2.590	78
5-44	0.1024			2.600	77
5-44	0.1028			2.610	75
5-44	0.1031	37	37	2.620	74
5-44	0.1035			2.630	73

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
5-44	0.1039	7/64	35	2.640	71
5-44	0.1043			2.650	70
5-44	0.1047			2.660	69
5-44	0.1051			2.670	67
5-44	0.1055			2.680	66
5-44	0.1059			2.690	65
5-44	0.1063			2.700	63
5-44	0.1067			2.710	62
5-44	0.1071			2.720	61
5-44	0.1075			2.730	59
6-32	0.1051	3/32	33	2.670	81
6-32	0.1055			2.680	80
6-32	0.1059			2.690	79
6-32	0.1063			2.700	78
6-32	0.1067			2.710	77
6-32	0.1071			2.720	76
6-32	0.1075			2.730	75
6-32	0.1079			2.740	74
6-32	0.1083			2.750	73
6-32	0.1087			2.760	72
6-32	0.1091	1/8	32	2.770	71
6-32	0.1094			2.780	70
6-32	0.1098			2.790	69
6-32	0.1102			2.800	68
6-32	0.1106			2.810	67
6-32	0.1110			2.820	67
6-32	0.1114			2.830	66
6-32	0.1118			2.840	65
6-32	0.1122			2.850	64
6-32	0.1126			2.860	63
6-32	0.1130	5/64	31	2.870	62
6-32	0.1134			2.880	61
6-32	0.1138			2.890	60
6-32	0.1142			2.900	59
6-40	0.1118			2.840	81
6-40	0.1122			2.850	79
6-40	0.1126			2.860	78
6-40	0.1130			2.870	77
6-40	0.1134			2.880	76
6-40	0.1138			2.890	75
6-40	0.1142	3/32	33	2.900	73
6-40	0.1146			2.910	72
6-40	0.1150			2.920	71
6-40	0.1154			2.930	70
6-40	0.1157			2.940	69
6-40	0.1161			2.950	67
6-40	0.1165			2.960	66
6-40	0.1169			2.970	65
6-40	0.1173			2.980	64
6-40	0.1177			2.990	63
6-40	0.1181	1/4	30	3.000	61
6-40	0.1185			3.010	60
6-40	0.1189			3.020	59
8-32	0.1311			3.330	81
8-32	0.1315			3.340	80
8-32	0.1319			3.350	79
8-32	0.1323			3.360	78
8-32	0.1327			3.370	77
8-32	0.1331			3.380	76
8-32	0.1335			3.390	75
8-32	0.1339			3.400	74
8-32	0.1343			3.410	73
8-32	0.1346	9/64	29	3.420	72
8-32	0.1350			3.430	71
8-32	0.1354			3.440	70
8-32	0.1358			3.450	69
8-32	0.1362			3.460	68
8-32	0.1366			3.470	67
8-32	0.1370			3.480	67
8-32	0.1374			3.490	66
8-32	0.1378			3.500	65
8-32	0.1382			3.510	64
8-32	0.1386	5/32	28	3.520	63
8-32	0.1390			3.530	62
8-32	0.1394			3.540	61
8-32	0.1398			3.550	60
8-32	0.1402			3.560	59
8-36	0.1346			3.420	81
8-36	0.1350			3.430	80
8-36	0.1354			3.440	79
8-36	0.1358			3.450	78
8-36	0.1362			3.460	77
8-36	0.1366			3.470	76
8-36	0.1370			3.480	75
8-36	0.1374			3.490	74
8-36	0.1378			3.500	73
8-36	0.1382	3/16	27	3.510	72
8-36	0.1386			3.520	70
8-36	0.1390			3.530	69
8-36	0.1394			3.540	68
8-36	0.1398			3.550	67

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
8-36	0.1402	9/64	28	3.560	66
8-36	0.1406			3.570	65
8-36	0.1409			3.580	64
8-36	0.1413			3.590	63
8-36	0.1417			3.600	62
8-36	0.1421			3.610	61
8-36	0.1425			3.620	60
10-24	0.1461			3.710	81
10-24	0.1465			3.720	80
10-24	0.1469			3.730	80
10-24	0.1472	26	26	3.740	79
10-24	0.1476			3.750	78
10-24	0.1480			3.760	78
10-24	0.1484			3.770	77
10-24	0.1488			3.780	76
10-24	0.1492			3.790	75
10-24	0.1496	25	25	3.800	75
10-24	0.1500			3.810	74
10-24	0.1504			3.820	73
10-24	0.1508			3.830	72
10-24	0.1512			3.840	72
10-24	0.1516	24	24	3.850	71
10-24	0.1520			3.860	70
10-24	0.1524			3.870	69
10-24	0.1528			3.880	69
10-24	0.1531			3.890	68
10-24	0.1535	23	23	3.900	67
10-24	0.1539			3.910	67
10-24	0.1543			3.920	66
10-24	0.1547			3.930	65
10-24	0.1551			3.940	64
10-24	0.1555			3.950	64
10-24	0.1559	5/32	22	3.960	63
10-24	0.1563			3.970	62
10-24	0.1567			3.980	62
10-24	0.1571			3.990	61
10-24	0.1575			4.000	60
10-24	0.1579			4.010	59
10-24	0.1583	22	22	4.020	59
10-32	0.1571			3.990	81
10-32	0.1575			4.000	80
10-32	0.1579			4.010	79
10-32	0.1583			4.020	78
10-32	0.1587			4.030	77
10-32	0.1591	21	21	4.040	76
10-32	0.1594			4.050	75
10-32	0.1598			4.060	74
10-32	0.1602			4.070	73
10-32	0.1606	20	20	4.080	72
10-32	0.1610			4.090	71
10-32	0.1614			4.100	70
10-32	0.1618			4.110	69
10-32	0.1622			4.120	68
10-32	0.1626			4.130	67
10-32	0.1630			4.140	67
10-32	0.1634			4.150	66
10-32	0.1638			4.160	65
10-32	0.1642			4.170	64
10-32	0.1646			4.180	63
10-32	0.1650			4.190	62
10-32	0.1654	19	19	4.200	61
10-32	0.1657			4.210	60
10-32	0.1661			4.220	59
12-24	0.1720	11/64	17	4.370	81
12-24	0.1724			4.380	81
12-24	0.1728			4.390	80
12-24	0.1732			4.400	79
12-24	0.1736			4.410	78
12-24	0.1740			4.420	78
12-24	0.1744			4.430	77
12-24	0.1748			4.440	76
12-24	0.1752			4.450	75
12-24	0.1756			4.460	75
12-24	0.1760			4.470	74
12-24	0.1764			4.480	73
12-24	0.1768			4.490	72
12-24	0.1772	16	16	4.500	72
12-24	0.1776			4.510	71
12-24	0.1780			4.520	70
12-24	0.1783			4.530	70
12-24	0.1787			4.540	69
12-24	0.1791	15	15	4.550	68
12-24	0.1795			4.560	67
12-24	0.1799			4.570	67
12-24	0.1803			4.580	66
12-24	0.1807			4.590	65
12-24	0.1811			4.600	64
12-24	0.1815	14	14	4.610	64
12-24	0.1819			4.620	63
12-24	0.1823			4.630	62
12-24	0.1827			4.640	62

UNC / UNF Tap Drill Sizes

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
12-24	0.1831			4.650	61
12-24	0.1835			4.660	60
12-24	0.1839			4.670	59
12-24	0.1843			4.680	59
12-28	0.1783			4.530	81
12-28	0.1787			4.540	80
12-28	0.1791			4.550	80
12-28	0.1795			4.560	79
12-28	0.1799		15	4.570	78
12-28	0.1803			4.580	77
12-28	0.1807			4.590	76
12-28	0.1811			4.600	75
12-28	0.1815			4.610	74
12-28	0.1819		14	4.620	74
12-28	0.1823			4.630	73
12-28	0.1827			4.640	72
12-28	0.1831			4.650	71
12-28	0.1835			4.660	70
12-28	0.1839			4.670	69
12-28	0.1843			4.680	68
12-28	0.1846			4.690	68
12-28	0.1850		13	4.700	67
12-28	0.1854			4.710	66
12-28	0.1858			4.720	65
12-28	0.1862			4.730	64
12-28	0.1866			4.740	63
12-28	0.1870			4.750	63
12-28	0.1874		3/16	4.760	62
12-28	0.1878			4.770	61
12-28	0.1882			4.780	60
12-28	0.1886			4.790	59
1/4-20	0.1988		8	5.050	79
1/4-20	0.1992			5.060	78
1/4-20	0.2008			5.100	76
1/4-20	0.2012		7	5.110	75
1/4-20	0.2028			5.150	73
1/4-20	0.2031		13/64	5.160	72
1/4-20	0.2039		6	5.180	71
1/4-20	0.2047			5.200	70
1/4-20	0.2055		5	5.220	69
1/4-20	0.2067			5.250	67
1/4-20	0.2087			5.300	64
1/4-20	0.2091		4	5.310	63
1/4-20	0.2106			5.350	61
1/4-28	0.2126			5.400	81
1/4-28	0.2130		3	5.410	80
1/4-28	0.2146			5.450	76
1/4-28	0.2165			5.500	72
1/4-28	0.2185			5.550	68
1/4-28	0.2189		7/32	5.560	67
1/4-28	0.2205			5.600	64
1/4-28	0.2209		2	5.610	63
1/4-28	0.2224			5.650	59
5/16-18	0.2539			6.450	81
5/16-18	0.2559			6.500	78
5/16-18	0.2571		F	6.530	77
5/16-18	0.2579			6.550	76
5/16-18	0.2598			6.600	73
5/16-18	0.2610		G	6.630	71
5/16-18	0.2618			6.650	70
5/16-18	0.2638			6.700	67
5/16-18	0.2657		17/64	6.750	65
5/16-18	0.2677			6.800	62
5/16-18	0.2697			6.850	59
5/16-24	0.2697			6.850	79
5/16-24	0.2717		I	6.900	75
5/16-24	0.2736			6.950	72
5/16-24	0.2756			7.000	68
5/16-24	0.2768		J	7.030	66
5/16-24	0.2776			7.050	64
5/16-24	0.2795			7.100	61
3/8-16	0.3091			7.850	81
3/8-16	0.3110			7.900	79
3/8-16	0.3126		5/16	7.940	77
3/8-16	0.3130			7.950	76
3/8-16	0.3150			8.000	74
3/8-16	0.3161		O	8.030	73
3/8-16	0.3169			8.050	72
3/8-16	0.3189			8.100	69
3/8-16	0.3209			8.150	67
3/8-16	0.3228		P	8.200	64
3/8-16	0.3248			8.250	62
3/8-16	0.3268			8.300	59
3/8-24	0.3327			8.450	78
3/8-24	0.3346			8.500	75
3/8-24	0.3366			8.550	71
3/8-24	0.3386			8.600	67
3/8-24	0.3406			8.650	64
3/8-24	0.3425			8.700	60
7/16-14	0.3622			9.200	81
7/16-14	0.3642			9.250	79

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
7/16-14	0.3661			9.300	77
7/16-14	0.3677		U	9.340	75
7/16-14	0.3681			9.350	75
7/16-14	0.3701			9.400	73
7/16-14	0.3720			9.450	71
7/16-14	0.3740			9.500	68
7/16-14	0.3748		3/8	9.520	68
7/16-14	0.3760			9.550	66
7/16-14	0.3772		V	9.580	65
7/16-14	0.3780			9.600	64
7/16-14	0.3799			9.650	62
7/16-14	0.3819			9.700	60
7/16-20	0.3858		W	9.800	80
7/16-20	0.3878			9.850	77
7/16-20	0.3898			9.900	73
7/16-20	0.3906		25/64	9.920	72
7/16-20	0.3917			9.950	71
7/16-20	0.3937			10.000	67
7/16-20	0.3957			10.050	64
7/16-20	0.3969		X	10.080	63
7/16-20	0.3976			10.100	61
1/2-13	0.4193			10.650	81
1/2-13	0.4213			10.700	79
1/2-13	0.4220		27/64	10.720	78
1/2-13	0.4232			10.750	77
1/2-13	0.4252			10.800	75
1/2-13	0.4272			10.850	73
1/2-13	0.4291			10.900	71
1/2-13	0.4311			10.950	69
1/2-13	0.4331			11.000	67
1/2-13	0.4350			11.050	65
1/2-13	0.4370		7/16	11.100	63
1/2-13	0.4374			11.110	63
1/2-13	0.4390			11.150	61
1/2-13	0.4409			11.200	59
1/2-20	0.4488			11.400	79
1/2-20	0.4508			11.450	76
1/2-20	0.4528			11.500	73
1/2-20	0.4531		29/64	11.510	72
1/2-20	0.4547			11.550	70
1/2-20	0.4567			11.600	67
1/2-20	0.4587			11.650	64
1/2-20	0.4606			11.700	61
9/16-12	0.4744			12.050	81
9/16-12	0.4764			12.100	80
9/16-12	0.4783			12.150	78
9/16-12	0.4803			12.200	76
9/16-12	0.4823			12.250	74
9/16-12	0.4843		31/64	12.300	72
9/16-12	0.4862			12.350	70
9/16-12	0.4882			12.400	69
9/16-12	0.4902			12.450	67
9/16-12	0.4921			12.500	65
9/16-12	0.4941			12.550	63
9/16-12	0.4961			12.600	61
9/16-12	0.4980			12.650	60
9/16-18	0.5039			12.800	81
9/16-18	0.5059			12.850	78
9/16-18	0.5079			12.900	76
9/16-18	0.5098			12.950	73
9/16-18	0.5118			13.000	70
9/16-18	0.5138			13.050	67
9/16-18	0.5157		33/64	13.100	65
9/16-18	0.5177			13.150	62
9/16-18	0.5197			13.200	59
5/8-11	0.5295			13.450	81
5/8-11	0.5311		17/32	13.490	80
5/8-11	0.5315			13.500	79
5/8-11	0.5335			13.550	77
5/8-11	0.5354			13.600	76
5/8-11	0.5374			13.650	74
5/8-11	0.5394			13.700	72
5/8-11	0.5413			13.750	71
5/8-11	0.5433			13.800	69
5/8-11	0.5453			13.850	67
5/8-11	0.5469		35/64	13.890	66
5/8-11	0.5472			13.900	66
5/8-11	0.5492			13.950	64
5/8-11	0.5512			14.000	62
5/8-11	0.5531			14.050	61
5/8-11	0.5551			14.100	59
5/8-18	0.5669			14.400	81
5/8-18	0.5689			14.450	78
5/8-18	0.5709			14.500	75
5/8-18	0.5728			14.550	72
5/8-18	0.5748			14.600	70
5/8-18	0.5768			14.650	67
5/8-18	0.5780		37/64	14.680	65
5/8-18	0.5787			14.700	64
5/8-18	0.5807			14.750	61
5/8-18	0.5827			14.800	59

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
3/4-10	0.6457			16.400	80
3/4-10	0.6476			16.450	79
3/4-10	0.6496			16.500	77
3/4-10	0.6516			16.550	76
3/4-10	0.6535			16.600	74
3/4-10	0.6555			16.650	73
3/4-10	0.6563		21/32	16.670	72
3/4-10	0.6575			16.700	71
3/4-10	0.6594			16.750	70
3/4-10	0.6614			16.800	68
3/4-10	0.6634			16.850	67
3/4-10	0.6654			16.900	65
3/4-10	0.6673			16.950	64
3/4-10	0.6693			17.000	62
3/4-10	0.6713			17.050	61
3/4-10	0.6720		43/64	17.070	60
3/4-10	0.6732			17.100	59
3/4-16	0.6850			17.400	80
3/4-16	0.6870			17.450	78
3/4-16	0.6874		11/16	17.460	77
3/4-16	0.6890			17.500	75
3/4-16	0.6909			17.550	73
3/4-16	0.6929			17.600	70
3/4-16	0.6949			17.650	68
3/4-16	0.6969			17.700	65
3/4-16	0.6988			17.750	63
3/4-16	0.7008			17.800	61
7/8-9	0.7579			19.250	81
7/8-9	0.7598			19.300	80
7/8-9	0.7618			19.350	78
7/8-9	0.7638			19.400	77
7/8-9	0.7657		49/64	19.450	76
7/8-9	0.7677			19.500	74
7/8-9	0.7697			19.550	73
7/8-9	0.7717			19.600	72
7/8-9	0.7736			19.650	70
7/8-9	0.7756			19.700	69
7/8-9	0.7776			19.750	67
7/8-9	0.7795			19.800	66
7/8-9	0.7811		25/32	19.840	65
7/8-9	0.7815			19.850	

Metric Tap Drill Sizes

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
M3x0.35	0.1035			2.630	81
M3x0.35	0.1039		37	2.640	79
M3x0.35	0.1043			2.650	77
M3x0.35	0.1047			2.660	75
M3x0.35	0.1051			2.670	73
M3x0.35	0.1055			2.680	70
M3x0.35	0.1059			2.690	68
M3x0.35	0.1063			2.700	66
M3x0.35	0.1067		36	2.710	64
M3x0.35	0.1071			2.720	62
M3x0.35	0.1075			2.730	59
M3x0.50	0.0976			2.480	80
M3x0.50	0.0980		40	2.490	79
M3x0.50	0.0984			2.500	77
M3x0.50	0.0988			2.510	75
M3x0.50	0.0992			2.520	74
M3x0.50	0.0996		39	2.530	72
M3x0.50	0.1000			2.540	71
M3x0.50	0.1004			2.550	69
M3x0.50	0.1008			2.560	68
M3x0.50	0.1012			2.570	66
M3x0.50	0.1016		38	2.580	65
M3x0.50	0.1020			2.590	63
M3x0.50	0.1024			2.600	62
M3x0.50	0.1028			2.610	60
M3x0.50	0.1031			2.620	59
M3.5x0.60	0.1130		33	2.870	81
M3.5x0.60	0.1134			2.880	80
M3.5x0.60	0.1138			2.890	78
M3.5x0.60	0.1142			2.900	77
M3.5x0.60	0.1146			2.910	76
M3.5x0.60	0.1150			2.920	74
M3.5x0.60	0.1154			2.930	73
M3.5x0.60	0.1157			2.940	72
M3.5x0.60	0.1161		32	2.950	71
M3.5x0.60	0.1165			2.960	69
M3.5x0.60	0.1169			2.970	68
M3.5x0.60	0.1173			2.980	67
M3.5x0.60	0.1177			2.990	65
M3.5x0.60	0.1181			3.000	64
M3.5x0.60	0.1185			3.010	63
M3.5x0.60	0.1189			3.020	62
M3.5x0.60	0.1193			3.030	60
M3.5x0.60	0.1197			3.040	59
M4x0.50	0.1370			3.480	80
M4x0.50	0.1374			3.490	79
M4x0.50	0.1378			3.500	77
M4x0.50	0.1382			3.510	75
M4x0.50	0.1386			3.520	74
M4x0.50	0.1390			3.530	72
M4x0.50	0.1394			3.540	71
M4x0.50	0.1398			3.550	69
M4x0.50	0.1402			3.560	68
M4x0.50	0.1406		9/64	3.570	66
M4x0.50	0.1409			3.580	65
M4x0.50	0.1413			3.590	63
M4x0.50	0.1417			3.600	62
M4x0.50	0.1421			3.610	60
M4x0.50	0.1425			3.620	59
M4x0.70	0.1283		30	3.260	81
M4x0.70	0.1287			3.270	80
M4x0.70	0.1291			3.280	79
M4x0.70	0.1295			3.290	78
M4x0.70	0.1299			3.300	77
M4x0.70	0.1303			3.310	76
M4x0.70	0.1307			3.320	75
M4x0.70	0.1311			3.330	74
M4x0.70	0.1315			3.340	73
M4x0.70	0.1319			3.350	71
M4x0.70	0.1323			3.360	70
M4x0.70	0.1327			3.370	69
M4x0.70	0.1331			3.380	68
M4x0.70	0.1335			3.390	67
M4x0.70	0.1339			3.400	66
M4x0.70	0.1343			3.410	65
M4x0.70	0.1346			3.420	64
M4x0.70	0.1350			3.430	63
M4x0.70	0.1354			3.440	62
M4x0.70	0.1358		29	3.450	60
M4x0.70	0.1362			3.460	59
M5x0.50	0.1764			4.480	80
M5x0.50	0.1768			4.490	79
M5x0.50	0.1772		16	4.500	77
M5x0.50	0.1776			4.510	75
M5x0.50	0.1780			4.520	74
M5x0.50	0.1783			4.530	72
M5x0.50	0.1787			4.540	71
M5x0.50	0.1791			4.550	69
M5x0.50	0.1795			4.560	68
M5x0.50	0.1799		15	4.570	66
M5x0.50	0.1803			4.580	65

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
M5x0.50	0.1807			4.590	63
M5x0.50	0.1811			4.600	62
M5x0.50	0.1815			4.610	60
M5x0.50	0.1819		14	4.620	59
M5x0.80	0.1638			4.160	81
M5x0.80	0.1642			4.170	80
M5x0.80	0.1646			4.180	79
M5x0.80	0.1650			4.190	78
M5x0.80	0.1654			4.200	77
M5x0.80	0.1657			4.210	76
M5x0.80	0.1661		19	4.220	75
M5x0.80	0.1665			4.230	74
M5x0.80	0.1669			4.240	73
M5x0.80	0.1673			4.250	72
M5x0.80	0.1677			4.260	71
M5x0.80	0.1681			4.270	70
M5x0.80	0.1685			4.280	69
M5x0.80	0.1689			4.290	68
M5x0.80	0.1693		18	4.300	67
M5x0.80	0.1697			4.310	66
M5x0.80	0.1701			4.320	65
M5x0.80	0.1705			4.330	64
M5x0.80	0.1709			4.340	64
M5x0.80	0.1713			4.350	63
M5x0.80	0.1717			4.360	62
M5x0.80	0.1720		11/64	4.370	61
M5x0.80	0.1724			4.380	60
M5x0.80	0.1728		17	4.390	59
M6x0.50	0.2165			5.500	77
M6x0.50	0.2185			5.550	69
M6x0.50	0.2189		7/32	5.560	68
M6x0.50	0.2205			5.600	62
M6x0.50	0.2209		2	5.610	60
M6x0.75	0.2055		5	5.220	80
M6x0.75	0.2067			5.250	77
M6x0.75	0.2087			5.300	72
M6x0.75	0.2091		4	5.310	71
M6x0.75	0.2106			5.350	67
M6x0.75	0.2126			5.400	62
M6x0.75	0.2130		3	5.410	61
M6x1.00	0.1949			4.950	81
M6x1.00	0.1953			4.960	80
M6x1.00	0.1957			4.970	79
M6x1.00	0.1961		9	4.980	79
M6x1.00	0.1965			4.990	78
M6x1.00	0.1969			5.000	77
M6x1.00	0.1988			5.050	73
M6x1.00	0.1992		8	5.060	72
M6x1.00	0.2008			5.100	69
M6x1.00	0.2012		7	5.110	69
M6x1.00	0.2028			5.150	65
M6x1.00	0.2031		13/64	5.160	65
M6x1.00	0.2039		6	5.180	63
M6x1.00	0.2047			5.200	62
M6x1.00	0.2055		5	5.220	60
M7x0.75	0.2461		D	6.250	77
M7x0.75	0.2480			6.300	72
M7x0.75	0.2500		1/4	6.350	67
M7x0.75	0.2520			6.400	62
M7x1.00	0.2343		15/64	5.950	81
M7x1.00	0.2362			6.000	77
M7x1.00	0.2378		B	6.040	74
M7x1.00	0.2382			6.050	73
M7x1.00	0.2402			6.100	69
M7x1.00	0.2421		C	6.150	65
M7x1.00	0.2441			6.200	62
M8x0.50	0.2949		M	7.490	79
M8x0.50	0.2953			7.500	77
M8x0.50	0.2969		19/64	7.540	71
M8x0.50	0.2972			7.550	69
M8x0.50	0.2992			7.600	62
M8x0.75	0.2854			7.250	77
M8x0.75	0.2874			7.300	72
M8x0.75	0.2894			7.350	67
M8x0.75	0.2902		L	7.370	65
M8x0.75	0.2913			7.400	62
M8x1.00	0.2736			6.950	81
M8x1.00	0.2756			7.000	77
M8x1.00	0.2768		J	7.030	75
M8x1.00	0.2776			7.050	73
M8x1.00	0.2795			7.100	69
M8x1.00	0.2811		9/32	7.140	66
M8x1.00	0.2815			7.150	65
M8x1.00	0.2835			7.200	62
M8x1.25	0.2638			6.700	80
M8x1.25	0.2657		17/64	6.750	77
M8x1.25	0.2677			6.800	74
M8x1.25	0.2697			6.850	71
M8x1.25	0.2717		I	6.900	68
M8x1.25	0.2736			6.950	65
M8x1.25	0.2756			7.000	62

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
M8x1.25	0.2768		J	7.030	60
M8x1.25	0.2776			7.050	59
M9x1.00	0.3130			7.950	81
M9x1.00	0.3150			8.000	77
M9x1.00	0.3161		O	8.030	75
M9x1.00	0.3169			8.050	73
M9x1.00	0.3189			8.100	69
M9x1.00	0.3209			8.150	65
M9x1.00	0.3228		P	8.200	62
M10x0.75	0.3642			9.250	77
M10x0.75	0.3661			9.300	72
M10x0.75	0.3677		U	9.340	68
M10x0.75	0.3681			9.350	67
M10x0.75	0.3701			9.400	62
M10x1.00	0.3524			8.950	81
M10x1.00	0.3543			9.000	77
M10x1.00	0.3563			9.050	73
M10x1.00	0.3579		T	9.090	70
M10x1.00	0.3583			9.100	69
M10x1.00	0.3594	23/64		9.130	67
M10x1.00	0.3602			9.150	65
M10x1.00	0.3622			9.200	62
M10x1.25	0.3425			8.700	80
M10x1.25	0.3437	11/32		8.730	78
M10x1.25	0.3445			8.750	77
M10x1.25	0.3465			8.800	74
M10x1.25	0.3480		S	8.840	71
M10x1.25	0.3484			8.850	71
M10x1.25	0.3504			8.900	68
M10x1.25	0.3524			8.950	65
M10x1.25	0.3543			9.000	62
M10x1.25	0.3563			9.050	59
M10x1.50	0.3319		Q	8.430	81
M10x1.50	0.3327			8.450	80
M10x1.50	0.3346			8.500	77
M10x1.50	0.3366			8.550	74
M10x1.50	0.3386			8.600	72
M10x1.50	0.3390		R	8.610	71
M10x1.50	0.3406			8.650	69
M10x1.50	0.3425			8.700	67
M10x1.50	0.3437	11/32		8.730	65
M10x1.50	0.3445			8.750	64
M10x1.50	0.3465			8.800	62
M10x1.50	0.3480		S	8.840	60
M10x1.50	0.3484			8.850	59
M11x1.00	0.3917			9.950	81
M11x1.00	0.3937			10.000	77
M11x1.00	0.3957			10.050	73
M11x1.00	0.3969		X	10.080	71
M11x1.00	0.3976			10.100	69
M11x1.00	0.3996			10.150	65
M11x1.00	0.4016			10.200	62
M12x1.00	0.4311			10.950	81
M12x1.00	0.4331			11.000	77
M12x1.00	0.4350			11.050	73
M12x1.00	0.4370			11.100	69
M12x1.00	0.4374	7/16		11.110	69
M12x1.00	0.4390			11.150	65
M12x1.00	0.4409			11.200	62
M12x1.25	0.4213			10.700	80
M12x1.25	0.4220	27/64		10.720	79
M12x1.25	0.4232			10.750	77
M12x1.25	0.4252			10.800	74
M12x1.25	0.4272			10.850	71
M12x1.25	0.4291			10.900	68
M12x1.25	0.4311			10.950	65
M12x1.25	0.4331			11.000	62
M12x1.25	0.4350			11.050	59
M12x1.50	0.4114			10.450	80
M12x1.50	0.4130		Z	10.490	77
M12x1.50	0.4134			10.500	77
M12x1.50	0.4154			10.550	74
M12x1.50	0.4173			10.600	72
M12x1.50	0.4193			10.650	69
M12x1.50	0.4213			10.700	67
M12x1.50	0.4220	27/64		10.720	66
M12x1.50	0.4232			10.750	64
M12x1.50	0.4252			10.800	62
M12x1.50	0.4272			10.850	59
M12x1.75	0.3996			10.150	81
M12x1.75	0.4016			10.200	79
M12x1.75	0.4035			10.250	77
M12x1.75	0.4039		Y	10.260	77
M12x1.75	0.4055			10.300	75
M12x1.75	0.4063	13/32		10.320	74
M12x1.75	0.4075			10.350	73
M12x1.75	0.4094			10.400	70
M12x1.75	0.4114			10.450	68
M12x1.75	0.4130		Z	10.490	66
M12x1.75	0.4134			10.500	66
M12x1.75	0.4154			10.550	64

Metric Tap Drill Sizes

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
M12x1.75	0.4173			10.600	62
M12x1.75	0.4193			10.650	59
M14x1.00	0.5098			12.950	81
M14x1.00	0.5118			13.000	77
M14x1.00	0.5138			13.050	73
M14x1.00	0.5157	33/64		13.100	69
M14x1.00	0.5177			13.150	65
M14x1.00	0.5197			13.200	62
M14x1.25	0.5000	1/2		12.700	80
M14x1.25	0.5020			12.750	77
M14x1.25	0.5039			12.800	74
M14x1.25	0.5059			12.850	71
M14x1.25	0.5079			12.900	68
M14x1.25	0.5098			12.950	65
M14x1.25	0.5118			13.000	62
M14x1.25	0.5138			13.050	59
M14x1.50	0.4902			12.450	80
M14x1.50	0.4921			12.500	77
M14x1.50	0.4941			12.550	74
M14x1.50	0.4961			12.600	72
M14x1.50	0.4980			12.650	69
M14x1.50	0.5000	1/2		12.700	67
M14x1.50	0.5020			12.750	64
M14x1.50	0.5039			12.800	62
M14x1.50	0.5059			12.850	59
M14x2.00	0.4685			11.900	81
M14x2.00	0.4689	15/32		11.910	80
M14x2.00	0.4705			11.950	79
M14x2.00	0.4724			12.000	77
M14x2.00	0.4744			12.050	75
M14x2.00	0.4764			12.100	73
M14x2.00	0.4783			12.150	71
M14x2.00	0.4803			12.200	69
M14x2.00	0.4823			12.250	67
M14x2.00	0.4843	31/64		12.300	65
M14x2.00	0.4862			12.350	64
M14x2.00	0.4882			12.400	62
M14x2.00	0.4902			12.450	60
M15x1.00	0.5492			13.950	81
M15x1.00	0.5512			14.000	77
M15x1.00	0.5531			14.050	73
M15x1.00	0.5551			14.100	69
M15x1.00	0.5571			14.150	65
M15x1.00	0.5591			14.200	62
M15x1.50	0.5295			13.450	80
M15x1.50	0.5311	17/32		13.490	77
M15x1.50	0.5315			13.500	77
M15x1.50	0.5335			13.550	74
M15x1.50	0.5354			13.600	72
M15x1.50	0.5374			13.650	69
M15x1.50	0.5394			13.700	67
M15x1.50	0.5413			13.750	64
M15x1.50	0.5433			13.800	62
M15x1.50	0.5453			13.850	59
M16x1.00	0.5886			14.950	81
M16x1.00	0.5906			15.000	77
M16x1.00	0.5925			15.050	73
M16x1.00	0.5937	19/32		15.080	71
M16x1.00	0.5945			15.100	69
M16x1.00	0.5965			15.150	65
M16x1.00	0.5984			15.200	62
M16x1.50	0.5689			14.450	80
M16x1.50	0.5709			14.500	77
M16x1.50	0.5728			14.550	74
M16x1.50	0.5748			14.600	72
M16x1.50	0.5768			14.650	69
M16x1.50	0.5787			14.700	67
M16x1.50	0.5807			14.750	64
M16x1.50	0.5827			14.800	62
M16x1.50	0.5846			14.850	59
M16x2.00	0.5469	35/64		13.890	81
M16x2.00	0.5472			13.900	81
M16x2.00	0.5492			13.950	79
M16x2.00	0.5512			14.000	77
M16x2.00	0.5531			14.050	75
M16x2.00	0.5551			14.100	73
M16x2.00	0.5571			14.150	71
M16x2.00	0.5591			14.200	69
M16x2.00	0.5610			14.250	67
M16x2.00	0.5626	9/16		14.290	66
M16x2.00	0.5630			14.300	65
M16x2.00	0.5650			14.350	64
M16x2.00	0.5669			14.400	62
M16x2.00	0.5689			14.450	60
M18x1.00	0.6673			16.950	81
M18x1.00	0.6693			17.000	77
M18x1.00	0.6713			17.050	73
M18x1.00	0.6720	43/64		17.070	72
M18x1.00	0.6732			17.100	69
M18x1.00	0.6752			17.150	65

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
M18x1.00	0.6772			17.200	62
M18x1.50	0.6476			16.450	80
M18x1.50	0.6496			16.500	77
M18x1.50	0.6516			16.550	74
M18x1.50	0.6535			16.600	72
M18x1.50	0.6555			16.650	69
M18x1.50	0.6563	21/32		16.670	68
M18x1.50	0.6575			16.700	67
M18x1.50	0.6594			16.750	64
M18x1.50	0.6614			16.800	62
M18x1.50	0.6634			16.850	59
M18x2.00	0.6260			15.900	81
M18x2.00	0.6280			15.950	79
M18x2.00	0.6299			16.000	77
M18x2.00	0.6319			16.050	75
M18x2.00	0.6339			16.100	73
M18x2.00	0.6358			16.150	71
M18x2.00	0.6378			16.200	69
M18x2.00	0.6398			16.250	67
M18x2.00	0.6406	41/64		16.270	67
M18x2.00	0.6417			16.300	65
M18x2.00	0.6437			16.350	64
M18x2.00	0.6457			16.400	62
M18x2.00	0.6476			16.450	60
M18x2.50	0.6063			15.400	80
M18x2.50	0.6083			15.450	79
M18x2.50	0.6094	39/64		15.480	78
M18x2.50	0.6102			15.500	77
M18x2.50	0.6122			15.550	75
M18x2.50	0.6142			15.600	74
M18x2.50	0.6161			15.650	72
M18x2.50	0.6181			15.700	71
M18x2.50	0.6201			15.750	69
M18x2.50	0.6220			15.800	68
M18x2.50	0.6240			15.850	66
M18x2.50	0.6248	5/8		15.870	66
M18x2.50	0.6260			15.900	65
M18x2.50	0.6280			15.950	63
M18x2.50	0.6299			16.000	62
M18x2.50	0.6319			16.050	60
M18x2.50	0.6339			16.100	59
M20x1.50	0.7264			18.450	80
M20x1.50	0.7283			18.500	77
M20x1.50	0.7303			18.550	74
M20x1.50	0.7323			18.600	72
M20x1.50	0.7343	47/64		18.650	69
M20x1.50	0.7362			18.700	67
M20x1.50	0.7382			18.750	64
M20x1.50	0.7402			18.800	62
M20x1.50	0.7421			18.850	59
M20x2.00	0.7047			17.900	81
M20x2.00	0.7067			17.950	79
M20x2.00	0.7087			18.000	77
M20x2.00	0.7106			18.050	75
M20x2.00	0.7126			18.100	73
M20x2.00	0.7146			18.150	71
M20x2.00	0.7165			18.200	69
M20x2.00	0.7185			18.250	67
M20x2.00	0.7189	23/32		18.260	67
M20x2.00	0.7205			18.300	65
M20x2.00	0.7224			18.350	64
M20x2.00	0.7244			18.400	62
M20x2.00	0.7264			18.450	60
M20x2.50	0.6850			17.400	80
M20x2.50	0.6870			17.450	79
M20x2.50	0.6874	11/16		17.460	78
M20x2.50	0.6890			17.500	77
M20x2.50	0.6909			17.550	75
M20x2.50	0.6929			17.600	74
M20x2.50	0.6949			17.650	72
M20x2.50	0.6969			17.700	71
M20x2.50	0.6988			17.750	69
M20x2.50	0.7008			17.800	68
M20x2.50	0.7028			17.850	66
M20x2.50	0.7031	45/64		17.860	66
M20x2.50	0.7047			17.900	65
M20x2.50	0.7067			17.950	63
M20x2.50	0.7087			18.000	62
M20x2.50	0.7106			18.050	60
M20x2.50	0.7126			18.100	59
M22x1.00	0.8248			20.950	81
M22x1.00	0.8268			21.000	77
M22x1.00	0.8280	53/64		21.030	75
M22x1.00	0.8287			21.050	73
M22x1.00	0.8307			21.100	70
M22x1.00	0.8327			21.150	68
M22x1.00	0.8346			21.200	66
M22x1.00	0.8366			21.250	64
M22x1.00	0.8386			21.300	62
M22x1.00	0.8406			21.350	60
M22x1.00	0.8425			21.400	58
M22x1.00	0.8437	27/32		21.430	66
M22x1.00	0.8445			21.450	65
M22x1.00	0.8465			21.500	63
M22x1.00	0.8484			21.550	61
M22x1.00	0.8504			21.600	60
M22x1.00	0.8524			21.650	60
M22x1.00	0.8543			21.700	59

81-59% Theoretical Percentage of Thread					
Tap Size	dec	Fract	Wire/ Let	mm	Theor %
M22x1.50	0.8110	13/16		20.600	72
M22x1.50	0.8126			20.640	70
M22x1.50	0.8130			20.650	69
M22x1.50	0.8150			20.700	67
M22x1.50	0.8169			20.750	64
M22x1.50	0.8189			20.800	62
M22x1.50	0.8209			20.850	59
M22x2.00	0.7835			19.900	81
M22x2.00	0.7854			19.950	79
M22x2.00	0.7874			20.000	77
M22x2.00	0.7894			20.050	75
M22x2.00	0.7913			20.100	73
M22x2.00	0.7933			20.150	71
M22x2.00	0.7953			20.200	69
M22x2.00	0.7969	51/64		20.240	68
M22x2.00	0.7972			20.250	67
M22x2.00	0.7992			20.300	65
M22x2.00	0.8012			20.350	64
M22x2.00	0.8031			20.400	62
M22x2.00	0.8051			20.450	60
M22x2.50	0.7638			19.400	80
M22x2.50	0.7657	49/64		19.450	79
M22x2.50	0.7677			19.500	77
M22x2.50	0.7697			19.550	75
M22x2.50	0.7717			19.600	74
M22x2.50	0.7736			19.650	72
M22x2.50	0.7756			19.700	71
M22x2.50	0.7776			19.750	69
M22x2.50	0.7795			19.800	68
M22x2.50	0.7811	25/32		19.840	67
M22x2.50	0.7815			19.850	66
M22x2.50	0.7835			19.900	65
M22x2.50	0.7854			19.950	63
M22x2.50	0.7874			20.000	62
M22x2.50	0.7894			20.050	60
M22x2.50	0.7913			20.100	59
M24x1.00	0.9035			22.950	81
M24x1.00	0.9055	29/32		23.000	77
M24x1.00	0.9063			23.020	75
M24x1.00	0.9075			23.050	73
M24x1.00	0.9094			23.100	69
M24x1.00	0.9114			23.150	65
M24x1.00	0.9134			23.200	62
M24x1.50	0.8839			22.450	80
M24x1.50	0.8858			22.500	77
M24x1.50	0.8878			22.550	74
M24x1.50	0.8898			22.600	72
M24x1.50	0.8917			22.650	69
M24x1.50	0.8937			22.700	67
M24x1.50	0.8957			22.750	64
M24x1.50	0.8976			22.800	62
M24x1.50	0.8996			22.850	59
M24x2.00	0.8622			21.900	81
M24x2.00	0.8642			21.950	79
M24x2.00	0.8661			22.000	77
M24x2.00	0.8681			22.050	75
M24x2.00	0.8701			22.100	73
M24x2.00	0.8720			22.150	71
M24x2.00	0.8740			22.200	69
M24x2.00	0.8748	7/8		22.220	69
M24x2.00	0.8760			22.250	67
M24x2.00	0.8780			22.300	65
M24x2.00	0.8799			22.350	64
M24x2.00	0.8819			22.400	62
M24x2.00	0.8839			22.450	60
M24x3.00	0.8209			20.850	81
M24x3.00	0.8228			20.900	80
M24x3.00	0.8248			20.950	78
M24x3.00	0.8268	53/64		21.000	77
M24x3.00	0.8280			21.030	76
M24x3.00	0.8287			21.050	76
M24x3.00	0.8307			21.100	74
M24x3.00	0.8327			21.150	73
M24x3.00	0.8346			21.200	72
M24x3.00	0.8366			21.250	71
M24x3.00	0.8386			21.300	69
M24x3.00	0.8406			21.350	68
M24x3.00	0.8425			21.400	67
M24x3.00	0.8437	27/32		21.430	66
M24x3.00	0.8445			21.450	65
M24x3.00	0.8465			21.500	64
M24x3.00	0.8484			21.550	63
M24x3.00	0.8504			21.600	62
M24x3.00	0.8524			21.650	60
M24x3.00	0.8543			21.700	59

Drill Size for Thread Forming

DRILL SIZE FOR THREAD FORMING @ 55% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.91	M 10	1.25	9.53	4	40	2.61
M 1.1	0.25	1.01	M 10	1.50	9.44	4	48	2.65
M 1.2	0.25	1.11	M 11	0.75	10.72	5	40	2.94
M 1.4	0.30	1.29	M 11	1.00	10.63	5	44	2.96
M 1.6	0.35	1.47	M 11	1.50	10.44	6	32	3.21
M 1.7	0.35	1.57	M 12	1.00	11.63	6	40	3.27
M 1.8	0.35	1.67	M 12	1.25	11.53	8	32	3.87
M 2	0.40	1.85	M 12	1.50	11.44	8	36	3.90
M 2.2	0.45	2.03	M 12	1.75	11.35	10	24	4.43
M 2.3	0.40	2.15	M 14	1.00	13.63	10	32	4.53
M 2.6	0.45	2.43	M 14	1.25	13.53	12	24	5.09
M 3	0.50	2.81	M 14	1.50	13.44	12	28	5.15
M 3.5	0.60	3.28	M 14	2.00	13.25	1/4	20	5.88
M 4	0.70	3.74	M 15	1.00	14.63	1/4	28	6.01
M 4.5	0.75	4.22	M 15	1.50	14.44	5/16	18	7.41
M 5	0.50	4.81	M 16	1.00	15.63	5/16	24	7.54
M 5	0.80	4.70	M 16	1.50	15.44	3/8	16	8.93
M 5.5	0.50	5.31	M 16	2.00	15.25	3/8	24	9.13
M 6	0.75	5.72	M 17	1.00	16.63	7/16	14	10.43
M 6	1.00	5.63	M 17	1.50	16.44	7/16	20	10.64
M 7	0.75	6.72	M 18	1.00	17.63	1/2	13	11.97
M 7	1.00	6.63	M 18	1.50	17.44	1/2	20	12.23
M 8	0.75	7.72	M 18	2.00	17.25	9/16	12	13.50
M 8	1.00	7.63	M 18	2.50	17.07	9/16	18	13.76
M 8	1.25	7.53	M 20	1.00	19.63	5/8	11	15.01
M 9	0.75	8.72	M 20	2.50	19.07	5/8	18	15.35
M 9	1.00	8.63				3/4	10	18.10
M 9	1.25	8.53				3/4	16	18.46
M 10	0.75	9.72				7/8	14	21.55
M 10	1.00	9.63				1	12	24.61

DRILL SIZE FOR THREAD FORMING @ 57.5% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.90	M 10	1.25	9.51	4	40	2.60
M 1.1	0.25	1.00	M 10	1.50	9.41	4	48	2.64
M 1.2	0.25	1.10	M 11	0.75	10.71	5	40	2.93
M 1.4	0.30	1.28	M 11	1.00	10.61	5	44	2.95
M 1.6	0.35	1.46	M 11	1.50	10.41	6	32	3.19
M 1.7	0.35	1.56	M 12	1.00	11.61	6	40	3.26
M 1.8	0.35	1.66	M 12	1.25	11.51	8	32	3.86
M 2	0.40	1.84	M 12	1.50	11.41	8	36	3.89
M 2.2	0.45	2.02	M 12	1.75	11.32	10	24	4.41
M 2.3	0.40	2.14	M 14	1.00	13.61	10	32	4.52
M 2.6	0.45	2.42	M 14	1.25	13.51	12	24	5.07
M 3	0.50	2.80	M 14	1.50	13.41	12	28	5.13
M 3.5	0.60	3.27	M 14	2.00	13.22	1/4	20	5.85
M 4	0.70	3.73	M 15	1.00	14.61	1/4	28	6.00
M 4.5	0.75	4.21	M 15	1.50	14.41	5/16	18	7.39
M 5	0.50	4.80	M 16	1.00	15.61	5/16	24	7.52
M 5	0.80	4.69	M 16	1.50	15.41	3/8	16	8.90
M 5.5	0.50	5.30	M 16	2.00	15.22	3/8	24	9.11
M 6	0.75	5.71	M 17	1.00	16.61	7/16	14	10.40
M 6	1.00	5.61	M 17	1.50	16.41	7/16	20	10.62
M 7	0.75	6.71	M 18	1.00	17.61	1/2	13	11.94
M 7	1.00	6.61	M 18	1.50	17.41	1/2	20	12.20
M 8	0.75	7.71	M 18	2.00	17.22	9/16	12	13.46
M 8	1.00	7.61	M 18	2.50	17.02	9/16	18	13.74
M 8	1.25	7.51	M 20	1.00	19.61	5/8	11	14.97
M 9	0.75	8.71	M 20	2.50	19.02	5/8	18	15.32
M 9	1.00	8.61				3/4	10	18.06
M 9	1.25	8.51				3/4	16	18.43
M 10	0.75	9.71				7/8	14	21.52
M 10	1.00	9.61				1	12	24.57

DRILL SIZE FOR THREAD FORMING @ 60% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.90	M 10	1.25	9.49	4	40	2.59
M 1.1	0.25	1.00	M 10	1.50	9.39	4	48	2.63
M 1.2	0.25	1.10	M 11	0.75	10.69	5	40	2.92
M 1.4	0.30	1.28	M 11	1.00	10.59	5	44	2.94
M 1.6	0.35	1.46	M 11	1.50	10.39	6	32	3.18
M 1.7	0.35	1.56	M 12	1.00	11.59	6	40	3.25
M 1.8	0.35	1.66	M 12	1.25	11.49	8	32	3.84
M 2	0.40	1.84	M 12	1.50	11.39	8	36	3.88
M 2.2	0.45	2.02	M 12	1.75	11.29	10	24	4.39
M 2.3	0.40	2.14	M 14	1.00	13.59	10	32	4.50
M 2.6	0.45	2.42	M 14	1.25	13.49	12	24	5.05
M 3	0.50	2.80	M 14	1.50	13.39	12	28	5.12
M 3.5	0.60	3.26	M 14	2.00	13.18	1/4	20	5.83
M 4	0.70	3.71	M 15	1.00	14.59	1/4	28	5.98
M 4.5	0.75	4.19	M 15	1.50	14.39	5/16	18	7.36
M 5	0.50	4.80	M 16	1.00	15.59	5/16	24	7.51
M 5	0.80	4.67	M 16	1.50	15.39	3/8	16	8.88
M 5.5	0.50	5.30	M 16	2.00	15.18	3/8	24	9.09
M 6	0.75	5.69	M 17	1.00	16.59	7/16	14	10.37
M 6	1.00	5.59	M 17	1.50	16.39	7/16	20	10.59
M 7	0.75	6.69	M 18	1.00	17.59	1/2	13	11.90
M 7	1.00	6.59	M 18	1.50	17.39	1/2	20	12.18
M 8	0.75	7.69	M 18	2.00	17.18	9/16	12	13.42
M 8	1.00	7.59	M 18	2.50	16.98	9/16	18	13.71
M 8	1.25	7.49	M 20	1.00	19.59	5/8	11	14.93
M 9	0.75	8.69	M 20	2.50	18.98	5/8	18	15.30
M 9	1.00	8.59				3/4	10	18.01
M 9	1.25	8.49				3/4	16	18.40
M 10	0.75	9.69				7/8	14	21.48
M 10	1.00	9.59				1	12	24.54

DRILL SIZE FOR THREAD FORMING @ 62.5% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.89	M 10	1.25	9.47	4	40	2.57
M 1.1	0.25	0.99	M 10	1.50	9.36	4	48	2.62
M 1.2	0.25	1.09	M 11	0.75	10.68	5	40	2.91
M 1.4	0.30	1.27	M 11	1.00	10.58	5	44	2.93
M 1.6	0.35	1.45	M 11	1.50	10.36	6	32	3.17
M 1.7	0.35	1.55	M 12	1.00	11.58	6	40	3.24
M 1.8	0.35	1.65	M 12	1.25	11.47	8	32	3.83
M 2	0.40	1.83	M 12	1.50	11.36	8	36	3.87
M 2.2	0.45	2.01	M 12	1.75	11.26	10	24	4.38
M 2.3	0.40	2.13	M 14	1.00	13.58	10	32	4.49
M 2.6	0.45	2.41	M 14	1.25	13.47	12	24	5.04
M 3	0.50	2.79	M 14	1.50	13.36	12	28	5.10
M 3.5	0.60	3.25	M 14	2.00	13.15	1/4	20	5.81
M 4	0.70	3.70	M 15	1.00	14.58	1/4	28	5.96
M 4.5	0.75	4.18	M 15	1.50	14.36	5/16	18	7.34
M 5	0.50	4.79	M 16	1.00	15.58	5/16	24	7.49
M 5	0.80	4.66	M 16	1.50	15.36	3/8	16	8.85
M 5.5	0.50	5.29	M 16	2.00	15.15	3/8	24	9.08
M 6	0.75	5.68	M 17	1.00	16.58	7/16	14	10.34
M 6	1.00	5.58	M 17	1.50	16.36	7/16	20	10.57
M 7	0.75	6.68	M 18	1.00	17.58	1/2	13	11.87
M 7	1.00	6.58	M 18	1.50	17.36	1/2	20	12.16
M 8	0.75	7.68	M 18	2.00	17.15	9/16	12	13.39
M 8	1.00	7.58	M 18	2.50	16.94	9/16	18	13.69
M 8	1.25	7.47	M 20	1.00	19.58	5/8	11	14.89
M 9	0.75	8.68	M 20	2.50	18.94	5/8	18	15.28
M 9	1.00	8.58				3/4	10	17.97
M 9	1.25	8.47				3/4	16	18.38
M 10	0.75	9.68				7/8	14	21.45
M 10	1.00	9.58				1	12	24.50

Drill Size for Thread Forming

DRILL SIZE FOR THREAD FORMING @ 65% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.89	M 10	1.25	9.45	4	40	2.56
M 1.1	0.25	0.99	M 10	1.50	9.34	4	48	2.61
M 1.2	0.25	1.09	M 11	0.75	10.67	5	40	2.89
M 1.4	0.30	1.27	M 11	1.00	10.56	5	44	2.92
M 1.6	0.35	1.45	M 11	1.50	10.34	6	32	3.15
M 1.7	0.35	1.55	M 12	1.00	11.56	6	40	3.22
M 1.8	0.35	1.65	M 12	1.25	11.45	8	32	3.81
M 2	0.40	1.82	M 12	1.50	11.34	8	36	3.85
M 2.2	0.45	2.00	M 12	1.75	11.23	10	24	4.36
M 2.3	0.40	2.12	M 14	1.00	13.56	10	32	4.48
M 2.6	0.45	2.40	M 14	1.25	13.45	12	24	5.02
M 3	0.50	2.78	M 14	1.50	13.34	12	28	5.09
M 3.5	0.60	3.23	M 14	2.00	13.12	1/4	20	5.79
M 4	0.70	3.69	M 15	1.00	14.56	1/4	28	5.95
M 4.5	0.75	4.17	M 15	1.50	14.34	5/16	18	7.31
M 5	0.50	4.78	M 16	1.00	15.56	5/16	24	7.47
M 5	0.80	4.65	M 16	1.50	15.34	3/8	16	8.82
M 5.5	0.50	5.28	M 16	2.00	15.12	3/8	24	9.06
M 6	0.75	5.67	M 17	1.00	16.56	7/16	14	10.31
M 6	1.00	5.56	M 17	1.50	16.34	7/16	20	10.55
M 7	0.75	6.67	M 18	1.00	17.56	1/2	13	11.84
M 7	1.00	6.56	M 18	1.50	17.34	1/2	20	12.14
M 8	0.75	7.67	M 18	2.00	17.12	9/16	12	13.35
M 8	1.00	7.56	M 18	2.50	16.90	9/16	18	13.66
M 8	1.25	7.45	M 20	1.00	19.56	5/8	11	14.85
M 9	0.75	8.67	M 20	2.50	18.90	5/8	18	15.25
M 9	1.00	8.56				3/4	10	17.93
M 9	1.25	8.45				3/4	16	18.35
M 10	0.75	9.67				7/8	14	21.42
M 10	1.00	9.56				1	12	24.46

DRILL SIZE FOR THREAD FORMING @ 67.5% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.89	M 10	1.25	9.43	4	40	2.55
M 1.1	0.25	0.99	M 10	1.50	9.31	4	48	2.60
M 1.2	0.25	1.09	M 11	0.75	10.66	5	40	2.88
M 1.4	0.30	1.26	M 11	1.00	10.54	5	44	2.91
M 1.6	0.35	1.44	M 11	1.50	10.31	6	32	3.14
M 1.7	0.35	1.54	M 12	1.00	11.54	6	40	3.21
M 1.8	0.35	1.64	M 12	1.25	11.43	8	32	3.80
M 2	0.40	1.82	M 12	1.50	11.31	8	36	3.84
M 2.2	0.45	1.99	M 12	1.75	11.20	10	24	4.34
M 2.3	0.40	2.12	M 14	1.00	13.54	10	32	4.46
M 2.6	0.45	2.39	M 14	1.25	13.43	12	24	5.00
M 3	0.50	2.77	M 14	1.50	13.31	12	28	5.07
M 3.5	0.60	3.22	M 14	2.00	13.08	1/4	20	5.77
M 4	0.70	3.68	M 15	1.00	14.54	1/4	28	5.93
M 4.5	0.75	4.16	M 15	1.50	14.31	5/16	18	7.29
M 5	0.50	4.77	M 16	1.00	15.54	5/16	24	7.45
M 5	0.80	4.63	M 16	1.50	15.31	3/8	16	8.80
M 5.5	0.50	5.27	M 16	2.00	15.08	3/8	24	9.04
M 6	0.75	5.66	M 17	1.00	16.54	7/16	14	10.28
M 6	1.00	5.54	M 17	1.50	16.31	7/16	20	10.53
M 7	0.75	6.66	M 18	1.00	17.54	1/2	13	11.80
M 7	1.00	6.54	M 18	1.50	17.31	1/2	20	12.12
M 8	0.75	7.66	M 18	2.00	17.08	9/16	12	13.32
M 8	1.00	7.54	M 18	2.50	16.85	9/16	18	13.64
M 8	1.25	7.43	M 20	1.00	19.54	5/8	11	14.82
M 9	0.75	8.66	M 20	2.50	18.85	5/8	18	15.23
M 9	1.00	8.54				3/4	10	17.88
M 9	1.25	8.43				3/4	16	18.32
M 10	0.75	9.66				7/8	14	21.39
M 10	1.00	9.54				1	12	24.43

DRILL SIZE FOR THREAD FORMING @ 70% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.88	M 10	1.25	9.41	4	40	2.54
M 1.1	0.25	0.98	M 10	1.50	9.29	4	48	2.59
M 1.2	0.25	1.08	M 11	0.75	10.64	5	40	2.87
M 1.4	0.30	1.26	M 11	1.00	10.52	5	44	2.90
M 1.6	0.35	1.43	M 11	1.50	10.29	6	32	3.13
M 1.7	0.35	1.53	M 12	1.00	11.52	6	40	3.20
M 1.8	0.35	1.63	M 12	1.25	11.41	8	32	3.79
M 2	0.40	1.81	M 12	1.50	11.29	8	36	3.83
M 2.2	0.45	1.99	M 12	1.75	11.17	10	24	4.32
M 2.3	0.40	2.11	M 14	1.00	13.52	10	32	4.45
M 2.6	0.45	2.39	M 14	1.25	13.41	12	24	4.98
M 3	0.50	2.76	M 14	1.50	13.29	12	28	5.05
M 3.5	0.60	3.21	M 14	2.00	13.05	1/4	20	5.75
M 4	0.70	3.67	M 15	1.00	14.52	1/4	28	5.92
M 4.5	0.75	4.14	M 15	1.50	14.29	5/16	18	7.27
M 5	0.50	4.76	M 16	1.00	15.52	5/16	24	7.43
M 5	0.80	4.62	M 16	1.50	15.29	3/8	16	8.77
M 5.5	0.50	5.26	M 16	2.00	15.05	3/8	24	9.02
M 6	0.75	5.64	M 17	1.00	16.52	7/16	14	10.25
M 6	1.00	5.52	M 17	1.50	16.29	7/16	20	10.51
M 7	0.75	6.64	M 18	1.00	17.52	1/2	13	11.77
M 7	1.00	6.52	M 18	1.50	17.29	1/2	20	12.10
M 8	0.75	7.64	M 18	2.00	17.05	9/16	12	13.28
M 8	1.00	7.52	M 18	2.50	16.81	9/16	18	13.62
M 8	1.25	7.41	M 20	1.00	19.52	5/8	11	14.78
M 9	0.75	8.64	M 20	2.50	18.81	5/8	18	15.20
M 9	1.00	8.52				3/4	10	17.84
M 9	1.25	8.41				3/4	16	18.29
M 10	0.75	9.64				7/8	14	21.36
M 10	1.00	9.52				1	12	24.39

DRILL SIZE FOR THREAD FORMING @ 72.5% THREAD

Metric Threads			Metric Threads			UNC / UNF Threads		
Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Dia.	Pitch (mm)	Drill size (mm)	Tap Size	TPI	Drill size (mm)
M 1	0.25	0.88	M 10	1.25	9.38	4	40	2.53
M 1.1	0.25	0.98	M 10	1.50	9.26	4	48	2.58
M 1.2	0.25	1.08	M 11	0.75	10.63	5	40	2.86
M 1.4	0.30	1.25	M 11	1.00	10.51	5	44	2.89
M 1.6	0.35	1.43	M 11	1.50	10.26	6	32	3.11
M 1.7	0.35	1.53	M 12	1.00	11.51	6	40	3.19
M 1.8	0.35	1.63	M 12	1.25	11.38	8	32	3.77
M 2	0.40	1.80	M 12	1.50	11.26	8	36	3.82
M 2.2	0.45	1.98	M 12	1.75	11.14	10	24	4.30
M 2.3	0.40	2.10	M 14	1.00	13.51	10	32	4.43
M 2.6	0.45	2.38	M 14	1.25	13.38	12	24	4.96
M 3	0.50	2.75	M 14	1.50	13.26	12	28	5.04
M 3.5	0.60	3.20	M 14	2.00	13.01	1/4	20	5.72
M 4	0.70	3.65	M 15	1.00	14.51	1/4	28	5.90
M 4.5	0.75	4.13	M 15	1.50	14.26	5/16	18	7.24
M 5	0.50	4.75	M 16	1.00	15.51	5/16	24	7.42
M 5	0.80	4.61	M 16	1.50	15.26	3/8	16	8.74
M 5.5	0.50	5.25	M 16	2.00	15.01	3/8	24	9.00
M 6	0.75	5.63	M 17	1.00	16.51	7/16	14	10.22
M 6	1.00	5.51	M 17	1.50	16.26	7/16	20	10.49
M 7	0.75	6.63	M 18	1.00	17.51	1/2	13	11.74
M 7	1.00	6.51	M 18	1.50	17.26	1/2	20	12.07
M 8	0.75	7.63	M 18	2.00	17.01	9/16	12	13.24
M 8	1.00	7.51	M 18	2.50	16.77	9/16	18	13.59
M 8	1.25	7.38	M 20	1.00	19.51	5/8	11	14.74
M 9	0.75	8.63	M 20	2.50	18.77	5/8	18	15.18
M 9	1.00	8.51				3/4	10	17.80
M 9	1.25	8.38				3/4	16	18.27
M 10	0.75	9.63				7/8	14	21.33
M 10	1.00	9.51				1	12	24.36

Tapping Formulas and Calculations

RPM for UNC/UNF Taps

$$\text{RPM} = (\text{revolution / minute}) = \frac{\text{cutting speed (SFM)} \times 3.82}{\text{tap diameter}}$$

Feed Rate for UNC/UNF Taps

$$\text{IPR} = (\text{inch / revolution}) = \frac{1 \text{ inch}}{\text{threads per inch (TPI)}}$$

$$\text{IPM} = (\text{inch / minute}) = \frac{\text{RPM}}{\text{threads per inch (TPI)}}$$

RPM for M/MF Taps

$$\text{RPM} = (\text{revolution / minute}) = \frac{\text{cutting speed (SFM)} \times 97.028}{\text{tap diameter (mm)}}$$

Feed Rate for M/MF Taps

$$\text{IPR} = (\text{inch / revolution}) = \text{pitch (mm)} \times 0.03937$$

$$\text{IPM} = (\text{inch / minute}) = \text{RPM} \times \text{pitch (mm)} \times 0.03937$$

To calculate Tap Drill Size

UNC/UNF and M/MF Cut Taps – General Requirements

$$\text{Tap Drill Size} = \text{Tap basic major diameter} - \text{pitch}$$

UNC/UNF Cut Taps – Special Percentage of Thread Requirements

$$\text{Drill Size} = \text{Basic major diameter} - \frac{0.01299 \times \text{desired percentage of thread}^*}{\text{threads per inch (TPI)}}$$

M/MF Cut Taps – Special Percentage of Thread Requirements

$$\text{Drill Size (mm)} = \text{Basic major diameter} - \frac{\text{desired percentage of thread}^* \times \text{pitch (mm)}}{76.98}$$

UNC/UNF and M/MF Form Taps – General Requirements

$$\text{Tap Drill Size} = \text{Basic major diameter} - \frac{\text{pitch}}{2}$$

UNC/UNF Form Taps – Special Percentage of Thread Requirements

$$\text{Drill Size} = \text{Basic major diameter} - \frac{0.0068 \times \text{desired percentage of thread}^*}{\text{threads per inch (TPI)}}$$

M/MF Form Taps – Special Percentage of Thread Requirements

$$\text{Drill Size (mm)} = \text{Basic major diameter} - \frac{\text{desired percentage of thread}^* \times \text{pitch (mm)}}{147.06}$$

* Actual percentage will vary from desired percentage due to runout of drilling operation.

Troubleshooting - Application problems with new taps

Problem	Possible causes	Solution
1 Thread produced is too large 	- incorrect tap, tap geometry not suitable for the application - tapping size hole too small - alignment error of tapping size hole or position - machine spindle axially restricted - cold welding at the flank of the tap - lead of tap unsatisfactory due to insufficient thread depth - cutting speed too high - lubrication or coolant supply insufficient - tolerance specification on tap does not correspond to specifications on drawing and/or thread gauge	- apply correct tap for the material to be machined - observe tapping size hole table in the technical section. Note different tapping size hole diameters for fluteless taps. - check for correct tool clamping - apply floating tap holder - check core drill - use mechanical feed - apply tension/compression tap chuck - apply new tap - apply coated tap - optimize lubrication - tap with forced feed - apply tap with modified lead - reduce cutting speed - improve lubrication - ensure sufficient and suitable coolant supply and check concentration - apply correct tap for required tolerances
2 Thread axially miscut 	- spiral-fluted taps, corresponding to our design, are applied with too much pressure for initial tapping - initial tapping pressure too low for taps with spiral point corresponding to our form "B"	- with spiral-fluted taps only light pressure required for initial tapping. The tap should immediately be applied within the tension/compression range - taps with spiral point or left hand spiral require higher axial pressure. Ensure tap operates within the tension/compression range
3 Thread produced is too small 	- tolerance specification on tap does not correspond to specifications on drawing and/or thread gauge - incorrect tap - tap does not cut accurately (thread plug gauge) - machine spindle is axially too rigid	- apply correct tap for required tolerance - apply correct tap for the material to be machined - avoid strong axial forces during the cutting process - apply tension/compression chuck

Troubleshooting - Application problems with new taps

Problem	Possible causes	Solution
4 Thread surface not according to requirements 	- cutting edge geometry not suitable for the application - cutting speed too high - insufficient coolant (concentration and supply) - chip congestion - tapping size hole too small - with tough, hard materials loading on tool too much or pitch too steep - built-up edge - cold welding	- apply "correct" tap for the material to be machined - reduce cutting speed - optimize lubrication - ensure suitable coolant and sufficient volume - apply suitable tap type - observe tapping size hole diameter specifications to DIN 336 or respective standards. Observe table for fluteless taps - apply hand tap sets - apply coated tap - improve coolant supply
5 Tool life insufficient	- surface hardening of tapping size hole - reasons listed under: "thread surface not according to requirements" - chip congestion	- check drill (cutting edge) for wear - heat or surface treatment following thread production - reasons listed under: thread surface "not according to requirements" - apply correct tap
6 Tool breakage during advance or return 	- tapping size hole too small - teeth of chamfer lead overloaded - tap hits bottom of tapping size hole - lack of or incorrect chamfer of tapping size hole - positional or angle error of tapping size hole - tool hardness not suitable for the application - cutting edge geometry not suitable for the application	- observe tapping size hole dia. acc. to DIN 336 or respective standards - longer chamfer lead (blind or through hole) - increase no. of teeth of chamfer lead by increasing no. of flutes - apply tap sets - check hole depth - apply tension/compression tap chuck - correct chamfer angle of tapping size hole - ensure correct tool clamping - apply floating tap holder - check core drill - apply suitable tap for the individual application

Troubleshooting - Errors and difficulties with reground taps

Problem	Possible causes	Solution
7 Thread produced is too large	- burrs - cutting edge geometry (chamfer lead, rake-, chamfer-, spiral point angle) not retained	- remove burrs - observe technical specifications when regrinding. - observe regrinding instruction
8 Thread produced is too small	- worn section has not been reground correctly - tap too small due to no. of regrinds	- regrind again or apply new tool. Observe max. regrinding limits. - max. regrinding limit reached. apply new tap
9 Thread produced not according to requirements	- burrs - cutting edge geometry (chamfer lead, rake-, chamfer-, spiral point angle) not retained - peak-to-valley height of the reground tap too large - cold welding at the flanks	- remove burrs - observe technical specifications when regrinding. - observe regrinding instruction - regrind again or apply new tool. Observe max. regrinding limits. - remove cold welding marks
10 Tool life insufficient	- cutting edge geometry (chamfer lead, rake-, chamfer-, spiral point angle) not retained - loss of tap hardness due to heat development during the regrinding process - loss of coating	- regrind again or apply new tool. Observe max. regrinding limits. - check quality of grinding wheel - check coolant supply - recoat - check coating of the material to be machined

Appendix of Guhring Tap Part Numbers

	Series	Thread Type	Substrate	Color ring	Style of tap	Standard	Coolant	Chamfer	Helix	Surface	Tolerance	Page
	318	Metric	Cobalt	white ring	blind or through hole	DIN 371	axial coolant fed	Form C		TAiN coated	6HX	Page 82
	319	Metric	Cobalt	white ring	blind or through hole	DIN 376	axial coolant fed	Form C		TAiN coated	6HX	Page 82
	323	Metric	PM cobalt		form tap	DIN 371	radial coolant fed	Form C		TiN coated	6HX	Page 110
	338	Metric fine	PM cobalt		form tap	DIN 374	radial coolant fed	Form C		TiN coated	6HX	Page 112
	342	Metric	PM cobalt		form tap	DIN 376	radial coolant fed	Form C		TiN coated	6HX	Page 111
	347	Metric fine	Cobalt	white ring	blind or through hole	DIN 374	axial coolant fed	Form C		TAiN coated	6HX	Page 83
	803	Metric	Cobalt	yellow ring	through hole	DIN 371		Form B		bright finish	ISO 2(6H)	Page 28
	804	Metric	Cobalt	red ring	through hole	DIN 371		Form B		bright finish	6H	Page 69
	810	Metric	Cobalt	yellow ring	blind hole	DIN 371		Form C	40° helix	bright finish	ISO 2(6H)	Page 34
	811	Metric	Cobalt	red ring	blind hole	DIN 371		Form C	40° helix	bright finish	ISO 2(6H)	Page 72
	815	Metric	Cobalt	yellow ring	through hole	DIN 376		Form B		bright finish	ISO 2(6H)	Page 29
	816	Metric	Cobalt	red ring	through hole	DIN 376		Form B		bright finish	ISO 2(6H)	Page 69
	822	Metric	Cobalt	yellow ring	blind hole	DIN 376		Form C	40° helix	bright finish	ISO 2(6H)	Page 34
	823	Metric	Cobalt	red ring	blind hole	DIN 376		Form C	40° helix	bright finish	ISO 2(6H)	Page 73
	827	Metric fine	Cobalt	yellow ring	through hole	DIN 374		Form B		bright finish	ISO 2(6H)	Page 30
	828	Metric fine	Cobalt	red ring	through hole	DIN 374		Form B		bright finish	ISO 2(6H)	Page 70
	830	Metric fine	Cobalt	yellow ring	blind or through hole	DIN 374		Form C		bright finish	ISO 2(6H)	Page 31
	833	Metric fine	Cobalt	yellow ring	blind hole	DIN 374		Form C	15° helix	bright finish	ISO 2(6H)	Page 35
	834	Metric fine	Cobalt	yellow ring	blind hole	DIN 374		Form C	40° helix	bright finish	ISO 2(6H)	Page 35
	835	Metric fine	Cobalt	red ring	blind hole	DIN 374		Form C	40° helix	bright finish	ISO 2(6H)	Page 75
	873	UNC	Cobalt	yellow ring	through hole	DIN 371		Form B		bright finish	2B	Page 26
	876	UNC	Cobalt	yellow ring	blind hole	DIN 371		Form C	40° helix	bright finish	2B	Page 32
	877	Metric	PM cobalt	blue ring	through hole	DIN 371		Form B		bright finish	ISO 2(6H)	Page 61
	878	UNC	Cobalt	yellow ring	through hole	DIN 376		Form B		bright finish	2B	Page 26
	879	Metric	PM cobalt	blue ring	through hole	DIN 376		Form B		bright finish	ISO 2(6H)	Page 60
	881	UNC	Cobalt	yellow ring	blind hole	DIN 376		Form C	40° helix	bright finish	2B	Page 32
	889	Metric	Cobalt	green ring	blind hole	DIN 371		Form C	40° helix	bright finish	ISO 2(6H)	Page 46
	890	Metric	Cobalt	green ring	blind hole	DIN 376		Form C	40° helix	bright finish	ISO 2(6H)	Page 46
	908	UNF	Cobalt	yellow ring	through hole	DIN 374		Form B		bright finish	2B	Page 27
	909	Metric	PM cobalt	blue ring	blind hole	DIN 371		Form C	40° helix	bright finish	ISO 2(6H)	Page 64
	910	Metric	PM cobalt	blue ring	blind hole	DIN 376		Form C	40° helix	bright finish	ISO 2(6H)	Page 64
	911	UNF	Cobalt	yellow ring	blind hole	DIN 374		Form C	40° helix	bright finish	2B	Page 33
	919	Metric	Cobalt		form tap	DIN 371		Form C		TiN coated	6HX	Page 110
	927	Metric fine	Cobalt		form tap	DIN 374		Form C		TiN coated	6HX	Page 112
Technical	935	Metric	PM cobalt	red ring	blind hole	DIN 376		Form C	15° helix	bright finish	ISO 2(6H)	Page 73
	936	Metric fine	PM cobalt	blue ring	blind hole	DIN 374		Form C	40° helix	bright finish	ISO 2(6H)	Page 64
	969	Metric	Carbide	black ring	blind or through hole	DIN 371	axial coolant fed	Form C		bright finish	ISO 2(6H)	Page 90
	969	Metric	Carbide	white ring	blind or through hole	DIN 371	axial coolant fed	Form C		bright finish	ISO 2(6H)	Page 83
	971	Metric	Carbide	black ring	blind hole	DIN 371	axial coolant fed	Form C	15° helix	bright finish	ISO 2(6H)	Page 90
	972	Metric fine	Carbide	black ring	blind or through hole	DIN 371	axial coolant fed	Form C		bright finish	ISO 2(6H)	Page 91
	972	Metric fine	Carbide	white ring	blind or through hole	DIN 371	axial coolant fed	Form C		bright finish	ISO 2(6H)	Page 83
	977	Metric fine	Carbide	black ring	blind hole	DIN 371	axial coolant fed	Form C	15° helix	bright finish	ISO 2(6H)	Page 91
	978	Metric fine	Carbide	black ring	blind hole	DIN 374	axial coolant fed	Form C	15° helix	bright finish	ISO 2(6H)	Page 91
	1188	Metric	PM cobalt	red ring	blind hole	DIN 371	axial coolant fed	Form C	15° helix	TiCN coated	6HX	Page 74
	1194	Metric	PM cobalt	red ring	blind hole	DIN 376	axial coolant fed	Form C	15° helix	TiCN coated	6HX	Page 74
	1200	Metric fine	PM cobalt	red ring	blind hole	DIN 376	axial coolant fed	Form C	15° helix	TiCN coated	6HX	Page 74
	1581	Metric fine	Carbide		form tap	DIN 374	radial coolant fed	Form C		*TiCN coated	6HX	Page 113
	1582	UNC	Cobalt		form tap	DIN 371		Form C		TiN coated	2BX	Page 107
	1583	UNC	Cobalt		form tap	DIN 376		Form C		TiN coated	2BX	Page 107
	1584	UNF	Cobalt		form tap	DIN 371		Form C		TiN coated	2BX	Page 108
	1585	UNF	Cobalt		form tap	DIN 376		Form C		TiN coated	2BX	Page 108
	1717	Metric	PM cobalt		form tap	DIN 371	radial coolant fed	Form C		AlCrN	6HX	Page 110
	1719	Metric	PM cobalt		form tap	DIN 376	radial coolant fed	Form C		AlCrN	6HX	Page 111
	1721	Metric fine	PM cobalt		form tap	DIN 371	radial coolant fed	Form C		AlCrN	6HX	Page 113
	1723	Metric fine	PM cobalt		form tap	DIN 374	radial coolant fed	Form C		AlCrN	6HX	Page 112
	1837	UNC	Cobalt	green ring	blind hole	DIN 371		Form C(K)	40° helix	TiN coated	2B	Page 42
	1838	UNF	Cobalt	green ring	blind hole	DIN 374		Form C(K)	40° helix	TiN coated	2B	Page 43
	1858	Metric	Carbide	black ring	blind or through hole	DIN 371	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 87
	1858	Metric	Carbide	white ring	blind or through hole	DIN 371	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 80
	1859	Metric	Carbide	black ring	blind or through hole	DIN 376	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 87
	1859	Metric	Carbide	white ring	blind or through hole	DIN 376	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 80
	1860	Metric fine	Carbide	black ring	blind or through hole	DIN 371	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 88
	1860	Metric fine	Carbide	white ring	blind or through hole	DIN 374	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 81
	1861	Metric fine	Carbide	black ring	blind or through hole	DIN 376	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 88
	1861	Metric fine	Carbide	white ring	blind or through hole	DIN 371	radial coolant fed	Form C		bright finish	ISO 2(6H)	Page 81
	1870	Metric	Cobalt	blue ring	through hole	DIN 371		Form B		bright finish	ISO 2(6H)	Page 61
	1872	Metric	Cobalt	blue ring	through hole	DIN 376		Form B		bright finish	ISO 2(6H)	Page 60
	1873	Metric fine	Cobalt	blue ring	through hole	DIN 374		Form B		bright finish	ISO 2(6H)	Page 61
	1883	Metric	Carbide	black ring	blind hole	DIN 376	axial coolant fed	Form C		bright finish	ISO 2(6H)	Page 90
	1883	Metric	Carbide	white ring	blind hole	DIN 376		Form C		bright finish	ISO 2(6H)	Page 83
	1890	Metric	Cobalt	white ring	through hole	DIN 371		Form C		oxide finish	6HX	Page 82

* All carbide form taps will be changing to TiCN coating as inventory levels are replenished

Appendix of Guhring Tap Part Numbers

Series	Thread Type	Substrate	Color ring	Style of tap	Standard	Coolant	Chamfer	Helix	Surface	Tolerance	Page
1894	Metric	Cobalt	red ring	blind hole	DIN 371	axial coolant fed	Form C	40° helix	bright finish	ISO 2(6H)	Page 72
1897	Metric	Cobalt	white ring	through hole	DIN 376		Form C		oxide finish	6HX	Page 82
1901	Metric	Cobalt	red ring	blind hole	DIN 376	axial coolant fed	Form C	40° helix	bright finish	ISO 2(6H)	Page 72
1904	Metric fine	Cobalt	white ring	blind or through hole	DIN 374	axial coolant fed	Form C		oxide finish	6HX	Page 83
1907	Metric fine	Cobalt	red ring	blind hole	DIN 374	axial coolant fed	Form C	40° helix	bright finish	ISO 2(6H)	Page 75
1914	Metric	Cobalt	red ring	through hole	DIN 371		Form B		TiCN coated	ISO 2(6H)	Page 69
1915	Metric	Cobalt	red ring	through hole	DIN 376		Form B		TiCN coated	ISO 2(6H)	Page 69
1916	Metric	Cobalt	red ring	blind hole	DIN 371		Form C	40° helix	TiCN coated	ISO 2(6H)	Page 72
1917	Metric	Cobalt	red ring	blind hole	DIN 376		Form C	40° helix	TiCN coated	ISO 2(6H)	Page 73
1927	Metric	Carbide		form tap	DIN 371	radial coolant fed	Form E		*TiCN coated	6HX	Page 110
1931	Metric	Carbide		form tap	DIN 376	radial coolant fed	Form C		*TiCN coated	6HX	Page 111
1972	Metric	Carbide		form tap	DIN 371	radial coolant fed	Form C		*TiCN coated	6HX	Page 110
1979	UNC	Cobalt	white ring	blind or through hole	DIN 371		Form C		oxide finish	2B	Page 78
1980	UNC	Cobalt	blue ring	through hole	DIN 371		Form B		bright finish	2B	Page 58
1981	UNC	Cobalt	blue ring	blind hole	DIN 371		Form C	40° helix	bright finish	2B	Page 62
1984	UNC	Cobalt	white ring	blind or through hole	DIN 376		Form C		oxide finish	2B	Page 78
1985	UNC	Cobalt	blue ring	through hole	DIN 376		Form B		bright finish	2B	Page 58
1986	UNC	Cobalt	blue ring	blind hole	DIN 376		Form C	40° helix	bright finish	2B	Page 62
1989	UNF	Cobalt	white ring	blind or through hole	DIN 374		Form C		oxide finish	2B	Page 79
1990	UNF	Cobalt	blue ring	through hole	DIN 374		Form B		bright finish	2B	Page 59
2424	Metric fine	Cobalt	green ring	blind hole	DIN 374		Form C	40° helix	bright finish	ISO 2(6H)	Page 47
2790	Metric	Cobalt	green ring	blind hole	DIN 371		Form E	40° helix	bright finish	ISO 2(6H)	Page 49
2791	Metric	Cobalt	green ring	blind hole	DIN 376		Form E	40° helix	bright finish	ISO 2(6H)	Page 49
2792	Metric fine	Cobalt	green ring	blind hole	DIN 374		Form E	40° helix	bright finish	ISO 2(6H)	Page 48
2867	UNF	Cobalt	blue ring	blind hole	DIN 374		Form C	40° helix	bright finish	2B	Page 63
2876	Metric	Cobalt	green ring	through hole	DIN 371		Form B		oxide finish	6H	Page 40
2879	Metric fine	Cobalt	green ring	through hole	DIN 374		Form B		oxide finish	ISO 2(6H)	Page 41
2881	UNC	Cobalt	green ring	through hole	DIN 371		Form B		oxide finish	2B	Page 38
2883	UNC	Cobalt	green ring	through hole	DIN 376		Form B		oxide finish	2B	Page 38
2885	UNF	Cobalt	green ring	through hole	DIN 374		Form B		oxide finish	2B	Page 39
2895	Metric	Cobalt	blue ring	blind hole	DIN 376		Form C	15° helix	TiN coated	ISO 2(6H)	Page 65
2896	Metric	Cobalt	blue ring	blind hole	DIN 371		Form C	15° helix	TiN coated	ISO 2(6H)	Page 65
2897	Metric fine	Cobalt	blue ring	blind hole	DIN 374		Form C	15° helix	TiN coated	ISO 2(6H)	Page 65
2900 2901	Metric	PM cobalt	Ti	through hole	DIN 371		Form B		TiCN coated	6HX	Page 95
2902 2903	Metric fine	PM cobalt	Ti	through hole	DIN 371		Form B		TiCN coated	6HX	Page 95
2904 2905	UNC	PM cobalt	Ti	through hole	DIN 371		Form B		TiCN coated	2BX	Page 94
2906 2907	UNF	PM cobalt	Ti	through hole	DIN 371		Form B		TiCN coated	2BX	Page 94
2908 2909	Metric	PM cobalt	Ti	blind hole	DIN 371		Form C	15° helix	TiCN coated	6HX	Page 97
2910	Metric fine	PM cobalt	Ti	blind hole	DIN 371		Form C	15° helix	TiCN coated	6HX	Page 97
2912	UNC	PM cobalt	Ti	blind hole	DIN 371		Form C	15° helix	TiCN coated	2BX	Page 96
2914	UNF	PM cobalt	Ti	blind hole	DIN 371		Form C	15° helix	TiCN coated	2BX	Page 96
2916	Metric	PM cobalt	Ni	through hole	DIN 371		Form B		TiAlN coated	6HX	Page 95
2917	Metric fine	PM cobalt	Ni	through hole	DIN 371		Form B		TiAlN coated	6HX	Page 95
2918	UNC	PM cobalt	Ni	through hole	DIN 371		Form B		TiAlN coated	2BX	Page 94
2919	UNF	PM cobalt	Ni	through hole	DIN 371		Form B		TiAlN coated	2BX	Page 94
2920	Metric	PM cobalt	Ni	blind hole	DIN 371		Form C	10° helix	TiAlN coated	6HX	Page 97
2921	Metric fine	PM cobalt	Ni	blind hole	DIN 371		Form C	10° helix	TiAlN coated	6HX	Page 97
2922	UNC	PM cobalt	Ni	blind hole	DIN 371		Form C	10° helix	TiAlN coated	2BX	Page 96
2923	UNF	PM cobalt	Ni	blind hole	DIN 371		Form C	10° helix	TiAlN coated	2BX	Page 96
2944	Metric	Carbide	red ring	blind hole	Guhring Std.		Form D	0° helix	TiCN coated	ISO 2(6H)	Page 73
3900	Metric	Cobalt	yellow ring	through hole	ANSI		Form B		bright finish	6H	Page 28
3901	UNC	Cobalt	yellow ring	through hole	ANSI		Form B		bright finish	2B	Page 26
3902	UNF	Cobalt	yellow ring	through hole	ANSI		Form B		bright finish	2B	Page 27
3903	Metric	Cobalt	yellow ring	blind hole	ANSI		Form C	40° helix	bright finish	6H	Page 34
3904	UNC	Cobalt	yellow ring	blind hole	ANSI		Form C	40° helix	bright finish	2B	Page 32
3905	UNF	Cobalt	yellow ring	blind hole	ANSI		Form C	40° helix	bright finish	2B	Page 33
3906	Metric	PM cobalt	blue ring	through hole	ANSI		Form B		TiN coated	6H	Page 60
3907	UNC	PM cobalt	blue ring	through hole	ANSI		Form B		TiN coated	2B	Page 58
3908	UNF	PM cobalt	blue ring	through hole	ANSI		Form B		TiN coated	2B	Page 59
3909	Metric	PM cobalt	blue ring	blind hole	ANSI		Form C	40° helix	TiN coated	6H	Page 64
3910	UNC	PM cobalt	blue ring	blind hole	ANSI		Form C	40° helix	TiN coated	2B	Page 62
3911	UNF	PM cobalt	blue ring	blind hole	ANSI		Form C	40° helix	TiN coated	2B	Page 63
3912	Metric	Cobalt	green ring	through hole	ANSI		Form B		bright finish	6H	Page 40
3913	UNC	Cobalt	green ring	through hole	ANSI		Form B		bright finish	2B	Page 38
3914	UNF	Cobalt	green ring	through hole	ANSI		Form B		bright finish	2B	Page 39
3915	Metric	Cobalt	green ring	through hole	ANSI		Form B		TiN coated	6H	Page 40
3916	UNC	Cobalt	green ring	through hole	ANSI		Form B		TiN coated	2B	Page 38
3917	UNF	Cobalt	green ring	through hole	ANSI		Form B		TiN coated	2B	Page 39
3918	Metric	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	bright finish	6H	Page 46
3919	UNC	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	bright finish	2B	Page 42

* All carbide form taps will be changing to TiCN coating as inventory levels are replenished

Appendix of Guhring Tap Part Numbers

Series	Thread Type	Substrate	Color ring	Style of tap	Standard	Coolant	Chamfer	Helix	Surface	Tolerance	Page
3920	UNF	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	bright finish	2B	Page 43
3921	Metric	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	TiN coated	6H	Page 46
3922	UNC	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	TiN coated	2B	Page 42
3923	UNF	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	TiN coated	2B	Page 43
3924	Metric	Cobalt	black ring	through hole	ANSI		Form B		bright finish	6H	Page 87
3925	UNC	Cobalt	black ring	through hole	ANSI		Form B		bright finish	2B	Page 86
3926	UNF	Cobalt	black ring	through hole	ANSI		Form B		bright finish	2B	Page 86
3927	Metric	Cobalt	black ring	through hole	ANSI		Form B		TiN coated	6H	Page 87
3928	UNC	Cobalt	black ring	through hole	ANSI		Form B		TiN coated	2B	Page 86
3929	UNF	Cobalt	black ring	through hole	ANSI		Form B		TiN coated	2B	Page 86
3930	Metric	Cobalt	black ring	blind hole	ANSI		Form C	45° helix	bright finish	6H	Page 90
3931	UNC	Cobalt	black ring	blind hole	ANSI		Form C	45° helix	bright finish	2B	Page 89
3932	UNF	Cobalt	black ring	blind hole	ANSI		Form C	45° helix	bright finish	2B	Page 89
3933	Metric	Cobalt	black ring	blind hole	ANSI		Form C	45° helix	TiN coated	6H	Page 90
3934	UNC	Cobalt	black ring	blind hole	ANSI		Form C	45° helix	TiN coated	2B	Page 89
3935	UNF	Cobalt	black ring	blind hole	ANSI		Form C	45° helix	TiN coated	2B	Page 89
3936	Metric	Cobalt	white ring	blind or through hole	ANSI		Form C		FIREX® coated	6HX	Page 80
3937	UNC	Cobalt	white ring	blind or through hole	ANSI		Form C		FIREX® coated	2B	Page 78
3938	UNF	Cobalt	white ring	blind or through hole	ANSI		Form C		FIREX® coated	2B	Page 79
3939	Metric	Cobalt		form tap	ANSI		Form C		TiN coated	6HX	Page 109
3940	UNC	Cobalt		form tap	ANSI		Form C		TiN coated	2BX	Page 106
3941	UNF	Cobalt		form tap	ANSI		Form C		TiN coated	2BX	Page 107
3942	Metric	Cobalt		form tap	ANSI		Form C		TiCN coated	6HX	Page 109
3943	UNC	Cobalt		form tap	ANSI		Form C		TiCN coated	2BX	Page 106
3944	UNF	Cobalt		form tap	ANSI		Form C		TiCN coated	2BX	Page 107
3945	Metric	Cobalt	green ring	through hole	ANSI		Form B		TiCN coated	6H	Page 40
3946	UNC	Cobalt	green ring	through hole	ANSI		Form B		TiCN coated	2B	Page 38
3947	UNF	Cobalt	green ring	through hole	ANSI		Form B		TiCN coated	2B	Page 39
3948	Metric	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	TiCN coated	6H	Page 46
3949	UNC	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	TiCN coated	2B	Page 42
3950	UNF	Cobalt	green ring	blind hole	ANSI		Form C	40° helix	TiCN coated	2B	Page 43
3954	UNC	Cobalt	green ring	blind hole	ANSI	axial coolant fed	Form C	40° helix	TiN coated	2B	Page 45
3955	UNF	Cobalt	green ring	blind hole	ANSI	axial coolant fed	Form C	40° helix	TiN coated	2B	Page 45
Technical	3959	UNC	Cobalt	form tap	ANSI		Form E		TiN coated	2BX	Page 106
	3960	Metric	Cobalt	yellow ring	through hole	ANSI	Form B		MolyGlide®	6H	Page 28
	3961	UNC	Cobalt	yellow ring	through hole	ANSI	Form B		MolyGlide®	2B	Page 26
	3962	UNF	Cobalt	yellow ring	through hole	ANSI	Form B		MolyGlide®	2B	Page 27
	3963	Metric	Cobalt	yellow ring	blind hole	ANSI	Form C	40° helix	MolyGlide®	6H	Page 34
	3964	UNC	Cobalt	yellow ring	blind hole	ANSI	Form C	40° helix	MolyGlide®	2B	Page 32
	3965	UNF	Cobalt	yellow ring	blind hole	ANSI	Form C	40° helix	MolyGlide®	2B	Page 33
	3966	Metric	Cobalt	black ring	through hole	ANSI	Form B		MolyGlide®	6H	Page 87
	3967	UNC	Cobalt	black ring	through hole	ANSI	Form B		MolyGlide®	2B	Page 86
	3968	UNF	Cobalt	black ring	through hole	ANSI	Form B		MolyGlide®	2B	Page 86
Technical	3969	Metric	Cobalt	black ring	blind hole	ANSI	Form C	45° helix	MolyGlide®	6H	Page 90
	3970	UNC	Cobalt	black ring	blind hole	ANSI	Form C	45° helix	MolyGlide®	2B	Page 89
	3971	UNF	Cobalt	black ring	blind hole	ANSI	Form C	45° helix	MolyGlide®	2B	Page 89
	3972	UNF	Cobalt	form tap	ANSI		Form E		TiN coated	2BX	Page 108
	3973	Metric fine	Cobalt	green ring	through hole	ANSI	Form B		TiN coated	6H	Page 41
	3974	Metric fine	Cobalt	green ring	blind hole	ANSI	Form C	40° helix	TiN coated	6H	Page 47
	3975	Metric fine	Cobalt	form tap	ANSI		Form C		TiN coated	6HX	Page 111
	3976	Metric	Cobalt	green ring	blind hole	ANSI	Form E	40° helix	TiN coated	6H	Page 48
	3977	UNC	Cobalt	green ring	blind hole	ANSI	Form E	40° helix	TiN coated	2B	Page 44
	3978	UNF	Cobalt	green ring	blind hole	ANSI	Form E	40° helix	TiN coated	2B	Page 44
	3979	Metric	Cobalt	form tap	ANSI		Form E		TiN coated	6HX	Page 109
	3980	UNC / oversized UNF	Cobalt	green ring	blind hole	ANSI	Form C	40° helix	TiN coated	H7	Page 52
	3981	oversized UNC / oversized UNF	Cobalt	green ring	blind hole	ANSI	Form C	40° helix	TiN coated	H7	Page 53
	3982	oversized UNC / oversized UNF	Cobalt	green ring	through hole	ANSI	Form B		TiN coated	H7	Page 50
	3983	oversized UNC / oversized UNF	Cobalt	green ring	through hole	ANSI	Form B		TiN coated	H7	Page 51
	3984	oversized UNC / oversized UNF	Cobalt	green ring	blind hole	ANSI	Form C	40° helix	TiN coated	H11	Page 52
	3985	oversized UNC / oversized UNF	Cobalt	green ring	blind hole	ANSI	Form C	40° helix	TiN coated	H11	Page 53
	3986	oversized UNC / oversized UNF	Cobalt	green ring	through hole	ANSI	Form B		TiN coated	H11	Page 50
	3987	oversized UNC / STI	Cobalt	green ring	through hole	ANSI	Form B		TiN coated	H11	Page 51
	3988	UNC / STI	Cobalt	green ring	blind hole	STI Tap	Form C	40° helix	TiN coated	3B	Page 55
	3989	UNF / STI	Cobalt	green ring	blind hole	STI Tap	Form C	40° helix	TiN coated	3B	Page 55
	3990	UNC / STI	Cobalt	green ring	through hole	STI Tap	Form B		TiN coated	3B	Page 54
	3991	UNF / STI	Cobalt	green ring	through hole	STI Tap	Form B		TiN coated	3B	Page 54
	3992	UNC	PM cobalt	red ring	through hole	DIN / ANSI	Form B		TiN coated	2B	Page 68

TECHNICAL QUESTIONNAIRE

For the Application of Taps

☐ INQUIRY ☐ ORDER ☐ SAMPLE

Reference No. _____

ENDUSER

Company Name _____

Street Address _____

City _____ State/Prov _____

Zip/Postal Code _____ Country _____

Contact Person _____

Title _____

Tel _____ Fax _____

email _____

GUHRING Territory Manager _____

Tel _____ Fax _____

DISTRIBUTOR

Company Name _____

Street Address _____

City _____ State/Prov _____

Zip/Postal Code _____ Country _____

Contact Person _____

Title _____

Tel _____ Fax _____

email _____

WORKPIECE

Material Name / Description _____

ANSI Material No. _____

Hardness _____ (If Aluminum, please list Silicon content)

German Material No. Internal use only _____

Thread Depth _____

Predrilled Hole Diameter _____

Hole Type ☐ Blind ☐ Through

TOOL

Blank Type ☐ DIN ☐ ANSI ☐ Special

Tool Type ☐ Tap ☐ Form Tap ☐ Lubricant Through

Tool Material ☐ HSS-E ☐ PM HSS-E ☐ Carbide

Coating ☐ Bright ☐ Oxided ☐ Nitrided ☐ TiN ☐ TiCN ☐ TiAlN ☐ FIREX® ☐ AlTiN ☐ MolyGlide™ ☐ Other

Size(s) _____

Chamfer Type (No. of threads included) _____

Notes _____

MACHINE

Machine Type / Name _____

Spindle Position ☐ Horizontal ☐ Vertical ☐ Oblique

TOOLHOLDER

Holder Type ☐ Tapping Chuck ☐ Collet (Rigid) ☐ Tapping Attachment ☐ Tension / Compression Tapping Chuck

LUBRICANT

Lubricant Type ☐ Water Soluble ☐ Cutting Oil ☐ Minimal Lubricant ☐ Dry

FEED

Feed Type ☐ Pneumatic ☐ Hydraulic ☐ Manual ☐ Mechanical

QUANTITIES

Quantities To Quote _____

Fax to: (262) 784-9096
Attn: Paul Motzel

STANDARD & SPECIAL PRODUCT RANGE

• HSS, HSCO & PM Standards •

GU 500 DZ Universal Drills
GT 500 DZ High Performance Drills
GT 100 Parabolic Flute Deep Hole Drills
Coolant-Through GT 100 IC Parabolic Flute Deep Hole Drills
GT 80 Parabolic Flute Deep Hole Drills
Coolant-Through GT 80 IC Parabolic Flute Deep Hole Drills
GT 50 Parabolic Flute Deep Hole Drills
General Purpose Drills
Heavy Duty Drills
Heavy Duty Split Point Drills
Low Helix Drills
High Helix Drills
Micro-Precision Drills
NC Spot Drills
Drill-Countersinks
High Performance HSS-E Taps
High Performance PM HSS-E Taps

• HSS & HSCO Specials •

Drills
Step Drills
Step Drill Reamers
Step Core Drills
Step Core Drill Reamers
Reamers
Step Reamers
Subland Drills
Subland Drill Reamers
Subland Core Drills
Taps

• Carbide Standards •

New! RT 100 U/F High Penetration Drills
New! RT 100 X High Penetration Drills
New! RT 100 R High Penetration Drills
RT 100 T Deep Hole Drills
Coolant-Through RT 100 U/F/C High Penetration Drills
Coolant-Through RT 150 GG Straight-Flute High Penetration Drills
Coolant-Through HT/RT 800 WP Interchangeable Insert Drills
GS 200 U/G Three-Flute High Precision Drills
GT 100 Parabolic Flute Deep Hole Drills
Exclusive Line® Small-Diameter Drills
EB 100 Small-Diameter Single-Flute Gun Drills
General Purpose Drills
NC Spot Drills
PRO-Line Universal End Mills
TECH-Line High Performance End Mills

• Carbide Specials •

Drills
RT High Performance Drills
G Drills
Gun Drills
Three- & Four-Flute Drills
Step Drills
Step Drill Reamers
Step Core Drills
Step Core Drill Reamers
Reamers
Step Reamers
Subland Drills
Subland Drill Reamers
Subland Core Drills
Taps
End Mills

• PCD Specials •

• Coating Services •

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Titanium Carbonitride (TiCN)
Titanium Aluminum Nitride (TiAlN)
FIREX® Special Multilayer Hard Coating
Super A (AlTiN)
MolyGlide® Lubricating Soft Coating
Nitride/Steam Oxide
New! ICE® Chromium-Based
New! nano-FIREX® micro thin film gradient structure

• Reconditioning Service •

• GM 300 Modular HSK Toolholding System •

Hydraulic/Shrink/Collet Chucks
Adapters
Collets

• GE 100 Modular Tooling System •

ISO 9001:2000 CERTIFIED

Guhring, Inc.

P.O. Box 643, Brookfield, WI 53008-0643

Shipping Address

1445 Commerce Avenue
Brookfield, WI 53045
Tel (262) 784-6730 (800) 776-6170
Fax (262) 784-9096

West Coast Distribution Center

17902 Georgetown Lane
Huntington Beach, CA 92647
Tel (714) 841-3582 (800) 877-7202
Fax (714) 841-3592

Guhring Corporation

20 Steckle Place, Unit #14
Kitchener, ON N2E 2C3
Tel (519) 748-9664 (800) 463-5555
Fax (519) 748-2954

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