

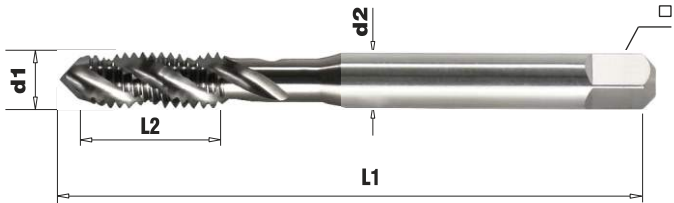
Gewindebohrer Taps



SCHNEIDEN GEWINDEBOHRER
CUT TAPS



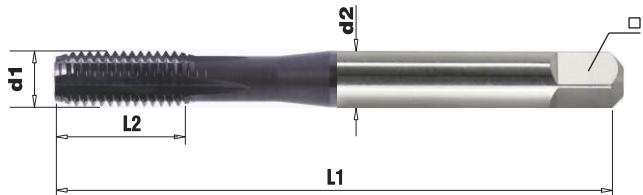
SPIRAL FLUTED TAPS FOR
GENERAL APPLICATION



HSS-E Form C TiCN CRH M 6H

Größe Size (d1)	Ident No.		d2 mm		L1 mm		L2 mm	■ Square size mm	
	DIN	ISO	DIN	ISO	DIN	ISO		DIN	ISO
M4 X 0.7	TA8A8043	TA8B82667	4.5	4.0	63	53	8	3.4	3.15
M5 X 0.8	TA8A8044	TA8B82668	6.0	5.0	70	58	10	4.9	4.0
M6 X 1.0	TA8A8045	TA8B82669	6.0	6.3	80	66	11	4.9	5.0
M8 X 1.25	TA8A8046	TA8B82670	8.0	8.0	90	72	13	6.2	6.3
M10 X 1.5	TA8A8047	TA8B82671	10.0	10.0	100	80	15	8.0	8.0
M12 X 1.75	TA8A8048	TA8B82672	9.0	9.0	110	89	18	7.0	7.1
M14 X 2.0	TA8A8325	TA8B82673	11.0	11.2	110	95	20	9.0	9.0
M16 X 2.0	TA8A8326	TA8B81386	12.0	12.5	110	102	20	9.0	10.0
M20 X 2.5	TA8A8327	TA8B8809	16.0	14.0	140	112	25	12.0	11.2

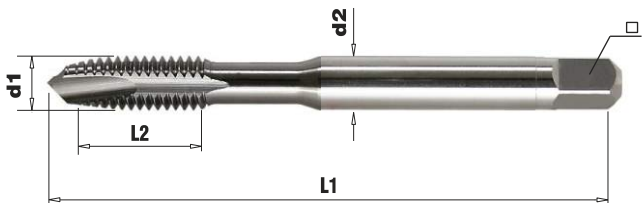
STRAIGHT FLUTED TAPS FOR CAST
IRON AND ALUMINIUM



HSS-E Form C TiAlN CRH M 6HX

Größe Size (d1)	Ident No.		d2 mm		L1 mm		L2 mm		■ Square size mm	
	DIN	ISO	DIN	ISO	DIN	ISO	DIN	ISO	DIN	ISO
M4 X 0.7	TA6A7321	TA6B72663	4.5	4.0	63	53	13	13	3.4	3.15
M5 X 0.8	TA6A7174	TA6B72664	6.0	5.0	70	58	15	15	4.9	4.0
M6 X 1.0	TA6A7072	TA6B71376	6.0	6.3	80	66	16	16	4.9	5.0
M8 X 1.25	TA6A7004	TA6B71340	8.0	8.0	90	72	18	22	6.2	6.3
M10 X 1.5	TA6A7073	TA6B71339	10.0	10.0	100	80	20	24	8.0	8.0
M12 X 1.75	TA6A7083	TA6B71360	9.0	9.0	110	89	24	29	7.0	7.1
M14 X 2.0	TA6A7322	TA6B7970	11.0	11.2	110	95	28	28	9.0	9.0
M16 X 2.0	TA6A7323	TA6B7994	12.0	12.5	110	102	30	30	9.0	10.0
M20 X 2.5	TA6A7324	TA6B71043	16.0	14.0	140	112	30	30	12.0	11.2

SPIRAL POINT TAPS FOR
THROUGH HOLES



HSS-E Form B TiCN CRH M 6H

Größe Size (d1)	Ident No.		d2 mm		L1 mm		L2 mm		■ Square size mm	
	DIN	ISO	DIN	ISO	DIN	ISO	DIN	ISO	DIN	ISO
M4 X 0.7	TA7A8312	TA7B8035	4.5	4.0	63	53	13	13	3.4	3.15
M5 X 0.8	TA7A8313	TA7B8036	6.0	5.0	70	58	15	15	4.9	4.0
M6 X 1.0	TA7A8314	TA7B8037	6.0	6.3	80	66	16	16	4.9	5.0
M8 X 1.25	TA7A8315	TA7B8038	8.0	8.0	90	72	18	22	6.2	6.3
M10 X 1.5	TA7A8316	TA7B8039	10.0	10.0	100	80	20	24	8.0	8.0
M12 X 1.75	TA7A8317	TA7B8040	9.0	9.0	110	89	24	29	7.0	7.1
M14 X 2.0	TA7A8318	TA7B82665	11.0	11.2	110	95	28	28	9.0	9.0
M16 X 2.0	TA7A8319	TA7B82666	12.0	12.5	110	102	30	30	9.0	10.0
M20 X 2.5	TA7A8320	TA7B8357	16.0	14.0	140	112	30	30	12.0	11.2

SPECIALS ON REQUEST

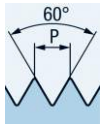
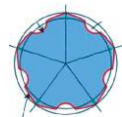
- UNF / UNC taps with Straight, Spiral & Spiral point flutes
- JIS standards also available for the above listed items
- Uncoated taps - TiN / TiCN / TiAlN
- Thread tolerance - 4H / 5H, 6H, 6HX, 7H/8H, 7G, 8G, 1B, 2B, 3B
- Left hand taps
- Internal coolant taps
- ACME taps, Taper taps like NPT, BSPT, Multistart taps, Interrupted taps, Spiral lock taps and Hollow taps can be supplied upon request



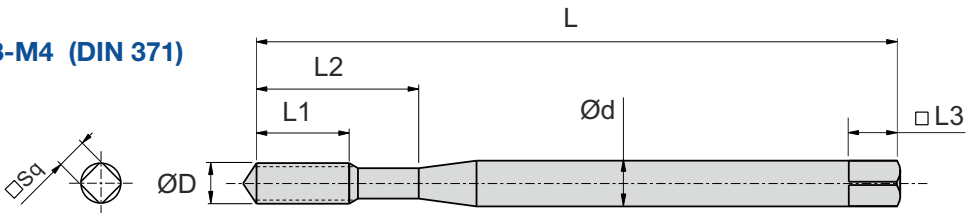
FORMEN GEWINDEBOHRER
FORM TAPS

HSSE - M35
6HX

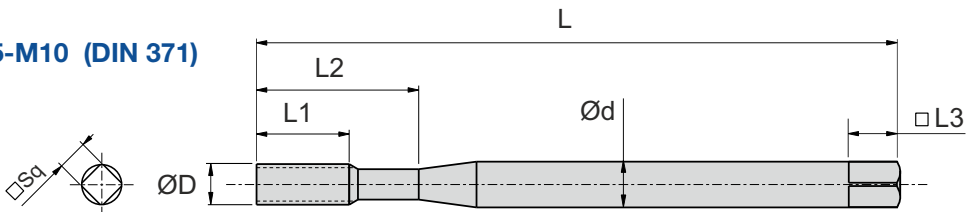
With Oil Groove



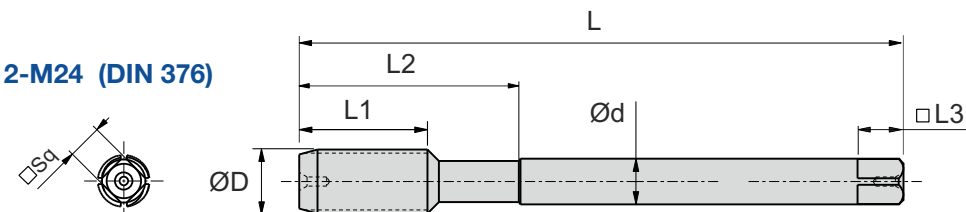
M3-M4 (DIN 371)



M5-M10 (DIN 371)



M12-M24 (DIN 376)



ØD x P	Blank Details				Thread Length L1	Neck Length L2	 Drill Size (mm)		ØD x P	M35 6HX											
	OAL (L)	Shank Ød	■ Sq	■ Length L3			Min. Ø	Max. Ø		FORM C			FORM E			FORM C			FORM E		
										Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
M3 x 0.5	63	4.5	3.4	6	11	21	2.76	2.80	M3 x 0.5	..10001	..10101	..10201	..10301	..10401	..10501	..10601	..10701	..10801	..10901	..11001	..11101
M4 x 0.7	63	4.5	3.4	6	13	21	3.66	3.70	M4 x 0.7	..10002	..10102	..10202	..10302	..10402	..10502	..10602	..10702	..10802	..10902	..11002	..11102
M5 x 0.8	70	6.0	4.9	8	15	25	4.61	4.65	M5 x 0.8	..10003	..10103	..10203	..10303	..10403	..10503	..10603	..10703	..10803	..10903	..11003	..11103
M6 x 1.0	80	6.0	4.9	8	16	30	5.50	5.56	M6 x 1.0	..10004	..10104	..10204	..10304	..10404	..10504	..10604	..10704	..10804	..10904	..11004	..11104
M8 x 1.0	90	8.0	6.2	9	18	35	7.50	7.56	M8 x 1.0	..10005	..10105	..10205	..10305	..10405	..10505	..10605	..10705	..10805	..10905	..11005	..11105
M8 x 1.25	90	8.0	6.2	9	18	35	7.37	7.44	M8 x 1.25	..10006	..10106	..10206	..10306	..10406	..10506	..10606	..10706	..10806	..10906	..11006	..11106
M10 x 1.0	100	10.0	8.0	11	20	39	9.50	9.56	M10 x 1.0	..10007	..10107	..10207	..10307	..10407	..10507	..10607	..10707	..10807	..10907	..11007	..11107
M10 x 1.25	100	10.0	8.0	11	20	39	9.37	9.44	M10 x 1.25	..10008	..10108	..10208	..10308	..10408	..10508	..10608	..10708	..10808	..10908	..11008	..11108
M10 x 1.5	100	10.0	8.0	11	20	39	9.24	9.32	M10 x 1.5	..10009	..10109	..10209	..10309	..10409	..10509	..10609	..10709	..10809	..10909	..11009	..11109
M12 x 1.0	100	9.0	7.0	10	24	45	11.50	11.56	M12 x 1.0	..10010	..10110	..10210	..10310	..10410	..10510	..10610	..10710	..10810	..10910	..11010	..11110
M12 x 1.25	100	9.0	7.0	10	24	45	11.38	11.44	M12 x 1.25	..10011	..10111	..10211	..10311	..10411	..10511	..10611	..10711	..10811	..10911	..11011	..11111
M12 x 1.5	100	9.0	7.0	10	24	45	11.24	11.32	M12 x 1.5	..10012	..10112	..10212	..10312	..10412	..10512	..10612	..10712	..10812	..10912	..11012	..11112
M12 x 1.75	110	9.0	7.0	10	24	45	11.11	11.20	M12 x 1.75	..10013	..10113	..10213	..10313	..10413	..10513	..10613	..10713	..10813	..10913	..11013	..11113
M14 x 1.0	100	11.0	9.0	12	28	46	13.50	13.60	M14 x 1.0	..10014	..10114	..10214	..10314	..10414	..10514	..10614	..10714	..10814	..10914	..11014	..11114
M14 x 1.25	100	11.0	9.0	12	28	46	13.38	13.44	M14 x 1.25	..10015	..10115	..10215	..10315	..10415	..10515	..10615	..10715	..10815	..10915	..11015	..11115
M14 x 1.5	100	11.0	9.0	12	28	46	13.24	14.97	M14 x 1.5	..10016	..10116	..10216	..10316	..10416	..10516	..10616	..10716	..10816	..10916	..11016	..11116
M14 x 2.0	110	11.0	9.0	12	28	46	12.97	13.08	M14 x 2.0	..10017	..10117	..10217	..10317	..10417	..10517	..10617	..10717	..10817	..10917	..11017	..11117
M16 x 1.0	100	12.0	9.0	13	30	43	15.50	15.60	M16 x 1.0	..10018	..10118	..10218	..10318	..10418	..10518	..10618	..10718	..10818	..10918	..11018	..11118
M16 x 1.5	110	12.0	9.0	13	30	43	15.24	15.32	M16 x 1.5	..10019	..10119	..10219	..10319	..10419	..10519	..10619	..10719	..10819	..10919	..11019	..11119
M16 x 2.0	110	12.0	9.0	13	30	43	14.97	15.08	M16 x 2.0	..10020	..10120	..10220	..10320	..10420	..10520	..10620	..10720	..10820	..10920	..11020	..11120
M18 x 1.0	125	14.0	11.0	14	25	48	17.50	17.60	M18 x 1.0	..10021	..10121	..10221	..10321	..10421	..10521	..10621	..10721	..10821	..10921	..11021	..11121
M18 x 1.5	125	14.0	11.0	14	25	48	17.25	17.33	M18 x 1.5	..10022	..10122	..10222	..10322	..10422	..10522	..10622	..10722	..10822	..10922	..11022	..11122
M18 x 2.0	125	14.0	11.0	14	25	48	17.00	17.11	M18 x 2.0	..10023	..10123	..10223	..10323	..10423	..10523	..10623	..10723	..10823	..10923	..11023	..11123
M18 x 2.5	125	14.0	11.0	14	25	48	16.75	16.85	M18 x 2.5	..10024	..10124	..10224	..10324	..10424	..10524	..10624	..10724	..10824	..10924	..11024	..11124
M20 x 1.5	125	16.0	12.0	15	30	60	19.25	19.33	M20 x 1.5	..10025	..10125	..10225	..10325	..10425	..10525	..10625	..10725	..10825	..10925	..11025	..11125
M20 x 2.0	140	16.0	12.0	15	30	60	19.00	19.11	M20 x 2.0	..10026	..10126	..10226	..10326	..10426	..10526	..10626	..10726	..10826	..10926	..11026	..11126
M20 x 2.5	140	16.0	12.0	15	30	60	18.75	18.85	M20 x 2.5	..10027	..10127	..10227	..10327	..10427	..10527	..10627	..10727	..10827	..10927	..11027	..11127
M22 x 1.0	125	18.0	14.5	18	30	60	21.50	21.60	M22 x 1.0	..10028	..10128	..10228	..10328	..10428	..10528	..10628	..10728	..10828	..10928	..11028	..11128
M22 x 1.5	125	18.0	14.5	18	30	60	21.25	21.33	M22 x 1.5	..10029	..10129	..10229	..10329	..10429	..10529	..10629	..10729	..10829	..10929	..11029	..11129
M22 x 2.5	140	18.0	14.5	18	30	60	20.75	20.85	M22 x 2.5	..10030	..10130	..10230	..10330	..10430	..10530	..10630	..10730	..10830	..10930	..11030	..11130
M24 x 1.5	160	18.0	14.5	18	35	60	23.25	23.33	M24 x 1.5	..10031	..10131	..10231	..10331	..10431	..10531	..10631	..10731	..10831	..10931	..11031	..11131
M24 x 2.0	160	18.0	14.5	18	35	60	23.00	23.10	M24 x 2.0	..10032	..10132	..10232	..10332	..10432	..10532	..10632	..10732	..10832	..10932	..11032	..11132
M24 x 3.0	160	18.0	14.5	18	35	60	22.50	22.60	M24 x 3.0	..10033	..10133	..10233	..10333	..10433	..10533	..10633	..10733	..10833	..10933	..11033	..11133

* For example, for dia. 'M3x0.5' with 'TiN'+ 'Form C'+ 'Non IKA' combination- order it as 'BTA3A910001' and the same with 'TiCN' coating, Order it as "BTA3A810601' as given

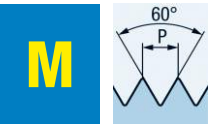
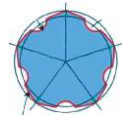
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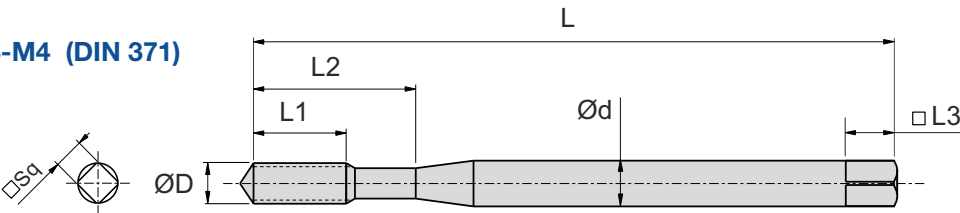
FORMEN GEWINDEBOHRER
FORM TAPS

HSSE - M35
6GX

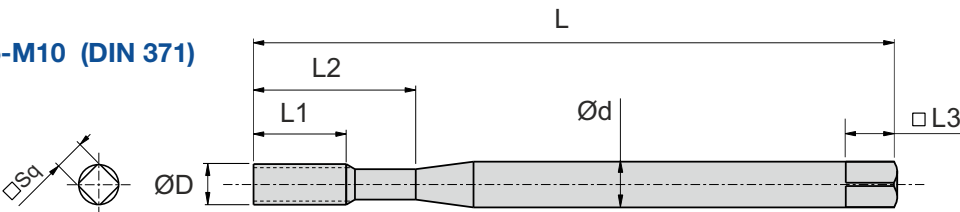
With Oil Groove



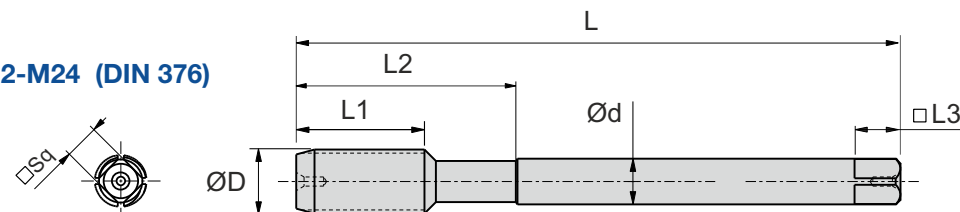
M3-M4 (DIN 371)



M5-M10 (DIN 371)



M12-M24 (DIN 376)



ØD x P	Blank Details				Thread Length L1	Neck Length L2	 Drill Size (mm)		ØD x P	M35 6GX											
	OAL (L)	Shank Ød	■ Sq	■ Length L3			Min. Ø	Max. Ø		FORM C			FORM E			FORM C			FORM E		
										Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
M3 x 0.5	63	4.5	3.4	6	11	21	2.76	2.80	M3 x 0.5	..11201	..11301	..11401	..11501	..11601	..11701	..11801	..11901	..12001	..12101	..12201	..12301
M4 x 0.7	63	4.5	3.4	6	13	21	3.66	3.70	M4 x 0.7	..11202	..11302	..11402	..11502	..11602	..11702	..11802	..11902	..12002	..12102	..12202	..12302
M5 x 0.8	70	6.0	4.9	8	15	25	4.61	4.65	M5 x 0.8	..11203	..11303	..11403	..11503	..11603	..11703	..11803	..11903	..12003	..12103	..12203	..12303
M6 x 1.0	80	6.0	4.9	8	16	30	5.50	5.56	M6 x 1.0	..11204	..11304	..11404	..11504	..11604	..11704	..11804	..11904	..12004	..12104	..12204	..12304
M8 x 1.0	90	8.0	6.2	9	18	35	7.50	7.56	M8 x 1.0	..11205	..11305	..11405	..11505	..11605	..11705	..11805	..11905	..12005	..12105	..12205	..12305
M8 x 1.25	90	8.0	6.2	9	18	35	7.37	7.44	M8 x 1.25	..11206	..11306	..11406	..11506	..11606	..11706	..11806	..11906	..12006	..12106	..12206	..12306
M10 x 1.0	100	10.0	8.0	11	20	39	9.50	9.56	M10 x 1.0	..11207	..11307	..11407	..11507	..11607	..11707	..11807	..11907	..12007	..12107	..12207	..12307
M10 x 1.25	100	10.0	8.0	11	20	39	9.37	9.44	M10 x 1.25	..11208	..11308	..11408	..11508	..11608	..11708	..11808	..11908	..12008	..12108	..12208	..12308
M10 x 1.5	100	10.0	8.0	11	20	39	9.24	9.32	M10 x 1.5	..11209	..11309	..11409	..11509	..11609	..11709	..11809	..11909	..12009	..12109	..12209	..12309
M12 x 1.0	100	9.0	7.0	10	24	45	11.50	11.56	M12 x 1.0	..11210	..11310	..11410	..11510	..11610	..11710	..11810	..11910	..12010	..12110	..12210	..12310
M12 x 1.25	100	9.0	7.0	10	24	45	11.38	11.44	M12 x 1.25	..11211	..11323	..11411	..11511	..11611	..11711	..11811	..11911	..12011	..12111	..12211	..12311
M12 x 1.5	100	9.0	7.0	10	24	45	11.24	11.32	M12 x 1.5	..11212	..11312	..11424	..11512	..11612	..11712	..11812	..11912	..12012	..12112	..12212	..12312
M12 x 1.75	110	9.0	7.0	10	24	45	11.11	11.20	M12 x 1.75	..11213	..11313	..11413	..11525	..11613	..11713	..11813	..11913	..12013	..12113	..12213	..12313
M14 x 1.0	100	11.0	9.0	12	28	46	13.50	13.60	M14 x 1.0	..11214	..11314	..11414	..11514	..11626	..11714	..11814	..11914	..12014	..12114	..12214	..12314
M14 x 1.25	100	11.0	9.0	12	28	46	13.38	13.44	M14 x 1.25	..11215	..11315	..11415	..11515	..11615	..11727	..11815	..11915	..12015	..12115	..12215	..12315
M14 x 1.5	100	11.0	9.0	12	28	46	13.24	14.97	M14 x 1.5	..11216	..11316	..11416	..11516	..11616	..11716	..11828	..11916	..12016	..12116	..12216	..12316
M14 x 2.0	110	11.0	9.0	12	28	46	12.97	13.08	M14 x 2.0	..11217	..11317	..11417	..11517	..11617	..11717	..11817	..11929	..12017	..12117	..12217	..12317
M16 x 1.0	100	12.0	9.0	13	30	43	15.50	15.60	M16 x 1.0	..11218	..11318	..11418	..11518	..11618	..11718	..11818	..11918	..12030	..12118	..12218	..12318
M16 x 1.5	110	12.0	9.0	13	30	43	15.24	15.32	M16 x 1.5	..11219	..11319	..11419	..11519	..11619	..11719	..11819	..11919	..12019	..12131	..12219	..12319
M16 x 2.0	110	12.0	9.0	13	30	43	14.97	15.08	M16 x 2.0	..11220	..11320	..11420	..11520	..11620	..11720	..11820	..11920	..12020	..12120	..12232	..12320
M18 x 1.0	125	14.0	11.0	14	25	48	17.50	17.60	M18 x 1.0	..11221	..11321	..11421	..11521	..11621	..11721	..11821	..11921	..12021	..12121	..12221	..12333
M18 x 1.5	125	14.0	11.0	14	25	48	17.25	17.33	M18 x 1.5	..11222	..11322	..11422	..11522	..11622	..11722	..11822	..11922	..12022	..12122	..12222	..12322
M18 x 2.0	125	14.0	11.0	14	25	48	17.00	17.11	M18 x 2.0	..11223	..11323	..11423	..11523	..11623	..11723	..11823	..11923	..12023	..12123	..12223	..12323
M18 x 2.5	125	14.0	11.0	14	25	48	16.75	16.85	M18 x 2.5	..11224	..11324	..11424	..11524	..11624	..11724	..11824	..11924	..12024	..12124	..12224	..12324
M20 x 1.5	125	16.0	12.0	15	30	60	19.25	19.33	M20 x 1.5	..11225	..11325	..11425	..11525	..11625	..11725	..11825	..11925	..12025	..12125	..12225	..12325
M20 x 2.0	140	16.0	12.0	15	30	60	19.00	19.11	M20 x 2.0	..11226	..11326	..11426	..11526	..11626	..11726	..11826	..11926	..12026	..12126	..12226	..12326
M20 x 2.5	140	16.0	12.0	15	30	60	18.75	18.85	M20 x 2.5	..11227	..11327	..11427	..11527	..11627	..11727	..11827	..11927	..12027	..12127	..12227	..12327
M22 x 1.0	125	18.0	14.5	18	30	60	21.50	21.60	M22 x 1.0	..11228	..11328	..11428	..11528	..11628	..11728	..11828	..11928	..12028	..12128	..12228	..12328
M22 x 1.5	125	18.0	14.5	18	30	60	21.25	21.33	M22 x 1.5	..11229	..11329	..11429	..11529	..11629	..11729	..11829	..11929	..12029	..12129	..12229	..12329
M22 x 2.5	140	18.0	14.5	18	30	60	20.75	20.85	M22 x 2.5	..11230	..11330	..11430	..11530	..11630	..11730	..11830	..11930	..12030	..12130	..12230	..12330
M24 x 1.5	160	18.0	14.5	18	35	60	23.25	23.33	M24 x 1.5	..11231	..11331	..11431	..11531	..11631	..11731	..11831	..11931	..12031	..12131	..12231	..12331
M24 x 2.0	160	18.0	14.5	18	35	60	23.00	23.10	M24 x 2.0	..11232	..11332	..11432	..11532	..11632	..11732	..11832	..11932	..12032	..12132	..12232	..12332
M24 x 3.0	160	18.0	14.5	18	35	60	22.50	22.60	M24 x 3.0	..11233	..11333	..11433	..11533	..11633	..11733	..11833	..11933	..12033	..12133	..12233	..12333

* For example, for dia. 'M3x0.5' with 'TiN'+ 'Form C'+ 'Non IKA' combination- order it as 'BTA3A911201' and the same with 'TiCN' coating, Order it as "BTA3A811801' as given



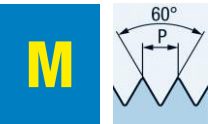
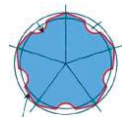
Tolerance	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX
Coating	TiN	TiN	TiN	TiN	TiN	TiN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN
Cutting Material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coolant	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR
	C / 2-3	C / 2-3	C / 2-3	E / 1.5	E / 1.5	E / 1.5	C / 2-3	C / 2-3	C / 2-3	E / 1.5	E / 1.5	E / 1.5
Hole Type												

in the above table.

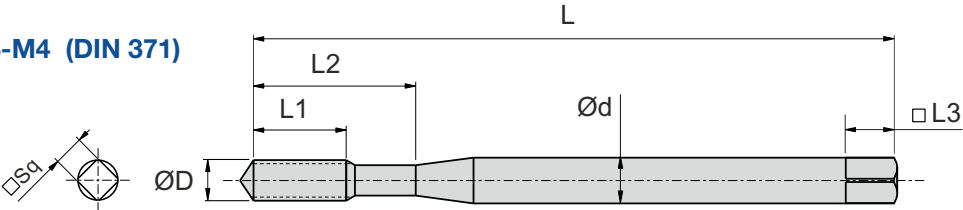
FORMEN GEWINDEBOHRER
FORM TAPS

HSSE - PM
6HX

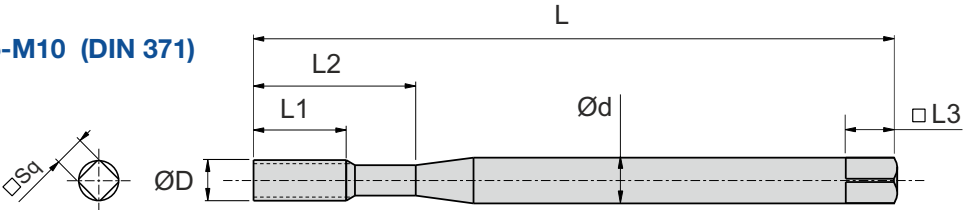
With Oil Groove



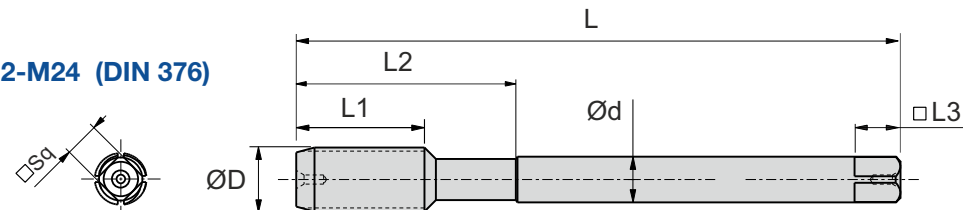
M3-M4 (DIN 371)



M5-M10 (DIN 371)



M12-M24 (DIN 376)



ØD x P	Blank Details				Thread Length L1	Neck Length L2	 Drill Size (mm)		ØD x P	PM 6HX											
	OAL (L)	Shank Ød	■ Sq	■ Length L3			Min. Ø	Max. Ø		FORM C			FORM E			FORM C			FORM E		
										Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
M3 x 0.5	63	4.5	3.4	6	11	21	2.76	2.80	M3 x 0.5	TiN (BTB3A9..)						TiCN (BTB3A8..)					
M4 x 0.7	63	4.5	3.4	6	13	21	3.66	3.70	M4 x 0.7	..19601	..19701	..19801	..19901	..20001	..20101	..20201	..20301	..20401	..20501	..20601	..20701
M5 x 0.8	70	6.0	4.9	8	15	25	4.61	4.65	M5 x 0.8	..19602	..19702	..19802	..19902	..20002	..20102	..20202	..20302	..20402	..20502	..20602	..20702
M6 x 1.0	80	6.0	4.9	8	16	30	5.50	5.56	M6 x 1.0	..19603	..19703	..19803	..19903	..20003	..20103	..20203	..20303	..20403	..20503	..20603	..20703
M8 x 1.0	90	8.0	6.2	9	18	35	7.50	7.56	M8 x 1.0	..19604	..19704	..19804	..19904	..20004	..20104	..20204	..20304	..20404	..20504	..20604	..20704
M8 x 1.25	90	8.0	6.2	9	18	35	7.37	7.44	M8 x 1.25	..19605	..19705	..19805	..19905	..20005	..20105	..20205	..20305	..20405	..20505	..20605	..20705
M10 x 1.0	100	10.0	8.0	11	20	39	9.50	9.56	M10 x 1.0	..19606	..19706	..19806	..19906	..20006	..20106	..20206	..20306	..20406	..20506	..20606	..20706
M10 x 1.25	100	10.0	8.0	11	20	39	9.37	9.44	M10 x 1.25	..19607	..19707	..19807	..19907	..20007	..20107	..20207	..20307	..20407	..20507	..20607	..20707
M10 x 1.5	100	10.0	8.0	11	20	39	9.24	9.32	M10 x 1.5	..19608	..19708	..19808	..19908	..20008	..20108	..20208	..20308	..20408	..20508	..20608	..20708
M12 x 1.0	100	9.0	7.0	10	24	45	11.50	11.56	M12 x 1.0	..19609	..19709	..19809	..19909	..20009	..20109	..20209	..20309	..20409	..20509	..20609	..20709
M12 x 1.25	100	9.0	7.0	10	24	45	11.38	11.44	M12 x 1.25	..19610	..19710	..19810	..19910	..20010	..20110	..20210	..20310	..20410	..20510	..20610	..20710
M12 x 1.5	100	9.0	7.0	10	24	45	11.24	11.32	M12 x 1.5	..19611	..19711	..19811	..19911	..20011	..20111	..20211	..20311	..20411	..20511	..20611	..20711
M12 x 1.75	110	9.0	7.0	10	24	45	11.11	11.20	M12 x 1.75	..19612	..19712	..19812	..19912	..20012	..20112	..20212	..20312	..20412	..20512	..20612	..20712
M14 x 1.0	100	11.0	9.0	12	28	46	13.50	13.60	M14 x 1.0	..19613	..19713	..19813	..19913	..20013	..20113	..20213	..20313	..20413	..20513	..20613	..20713
M14 x 1.25	100	11.0	9.0	12	28	46	13.38	13.44	M14 x 1.25	..19614	..19714	..19814	..19914	..20014	..20114	..20214	..20314	..20414	..20514	..20614	..20714
M14 x 1.5	100	11.0	9.0	12	28	46	13.24	14.97	M14 x 1.5	..19615	..19715	..19815	..19915	..20015	..20115	..20215	..20315	..20415	..20515	..20615	..20715
M14 x 2.0	110	11.0	9.0	12	28	46	12.97	13.08	M14 x 2.0	..19616	..19716	..19816	..19916	..20016	..20116	..20216	..20316	..20416	..20516	..20616	..20716
M16 x 1.0	100	12.0	9.0	13	30	43	15.50	15.60	M16 x 1.0	..19617	..19717	..19817	..19917	..20017	..20117	..20217	..20317	..20417	..20517	..20617	..20717
M16 x 1.5	110	12.0	9.0	13	30	43	15.24	15.32	M16 x 1.5	..19618	..19718	..19818	..19918	..20018	..20118	..20218	..20318	..20418	..20518	..20618	..20718
M16 x 2.0	110	12.0	9.0	13	30	43	14.97	15.08	M16 x 2.0	..19619	..19719	..19819	..19919	..20019	..20119	..20219	..20319	..20419	..20519	..20619	..20719
M18 x 1.0	125	14.0	11.0	14	25	48	17.50	17.60	M18 x 1.0	..19620	..19720	..19820	..19920	..20020	..20120	..20220	..20320	..20420	..20520	..20620	..20720
M18 x 1.5	125	14.0	11.0	14	25	48	17.25	17.33	M18 x 1.5	..19621	..19721	..19821	..19921	..20021	..20121	..20221	..20321	..20421	..20521	..20621	..20721
M18 x 2.0	125	14.0	11.0	14	25	48	17.00	17.11	M18 x 2.0	..19622	..19722	..19822	..19922	..20022	..20122	..20222	..20322	..20422	..20522	..20622	..20722
M18 x 2.5	125	14.0	11.0	14	25	48	16.75	16.85	M18 x 2.5	..19623	..19723	..19823	..19923	..20023	..20123	..20223	..20323	..20423	..20523	..20623	..20723
M20 x 1.5	125	16.0	12.0	15	30	60	19.25	19.33	M20 x 1.5	..19624	..19724	..19824	..19924	..20024	..20124	..20224	..20324	..20424	..20524	..20624	..20724
M20 x 2.0	140	16.0	12.0	15	30	60	19.00	19.11	M20 x 2.0	..19625	..19725	..19825	..19925	..20025	..20125	..20225	..20325	..20425	..20525	..20625	..20725
M20 x 2.5	140	16.0	12.0	15	30	60	18.75	18.85	M20 x 2.5	..19626	..19726	..19826	..19926	..20026	..20126	..20226	..20326	..20426	..20526	..20626	..20726
M22 x 1.0	125	18.0	14.5	18	30	60	21.50	21.60	M22 x 1.0	..19627	..19727	..19827	..19927	..20027	..20127	..20227	..20327	..20427	..20527	..20627	..20727
M22 x 1.5	125	18.0	14.5	18	30	60	21.25	21.33	M22 x 1.5	..19628	..19728	..19828	..19928	..20028	..20128	..20228	..20328	..20428	..20528	..20628	..20728
M22 x 2.5	140	18.0	14.5	18	30	60	20.75	20.85	M22 x 2.5	..19629	..19729	..19829	..19929	..20029	..20129	..20229	..20329	..20429	..20529	..20629	..20729
M24 x 1.5	160	18.0	14.5	18	35	60	23.25	23.33	M24 x 1.5	..19630	..19730	..19830	..19930	..20030	..20130	..20230	..20330	..20430	..20530	..20630	..20730
M24 x 2.0	160	18.0	14.5	18	35	60	23.00	23.10	M24 x 2.0	..19631	..19731	..19831	..19931	..20031	..20131	..20231	..20331	..20431	..20531	..20631	..20731
M24 x 3.0	160	18.0	14.5	18	35	60	22.50	22.60	M24 x 3.0	..19632	..19732	..19832	..19932	..20032	..20132	..20232	..20332	..20432	..20532	..20632	..20732
										..19633	..19733	..19833	..19933	..20033	..20133	..20233	..20333	..20433	..20533	..20633	..20733

* For example, for dia. 'M3x0.5' with 'TiN'+ 'Form C'+ 'Non IKA' combination- order it as 'BTB3A919601' and the same with 'TiCN' coating order it as "BTB3A820201' as given

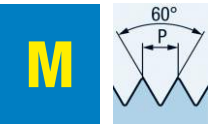
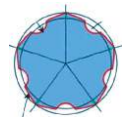
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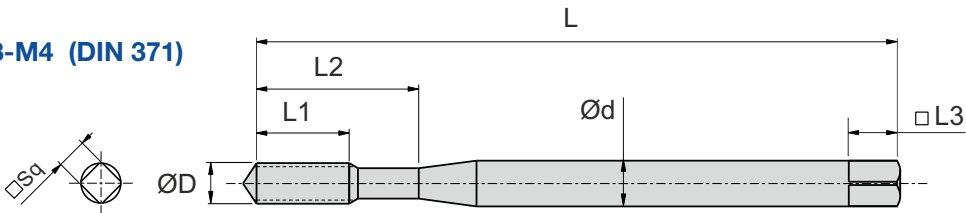
FORMEN GEWINDEBOHRER
FORM TAPS

HSSE - PM
6GX

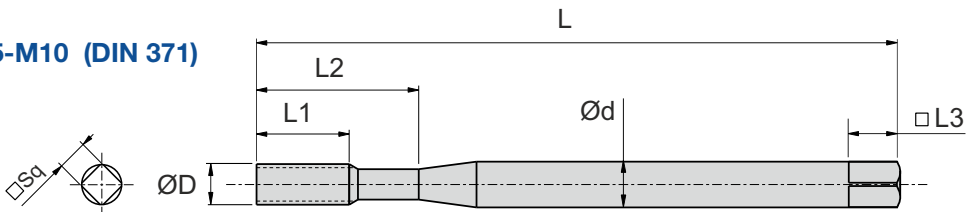
With Oil Groove



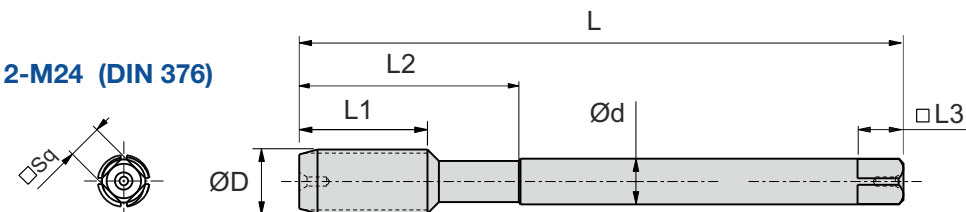
M3-M4 (DIN 371)



M5-M10 (DIN 371)



M12-M24 (DIN 376)



ØD x P	Blank Details				Thread Length L1	Neck Length L2	 Drill Size (mm)		ØD x P	PM 6GX											
	OAL (L)	Shank Ød	■ Sq	■ Length L3			Min. Ø	Max. Ø		FORM C			FORM E			FORM C			FORM E		
										Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
M3 x 0.5	63	4.5	3.4	6	11	21	2.76	2.80	M3 x 0.5	..20801	..20901	..21001	..21101	..21201	..21301	..21401	..21501	..21601	..21701	..21801	..21901
M4 x 0.7	63	4.5	3.4	6	13	21	3.66	3.70	M4 x 0.7	..20802	..20902	..21002	..21102	..21202	..21302	..21402	..21502	..21602	..21702	..21802	..21902
M5 x 0.8	70	6.0	4.9	8	15	25	4.61	4.65	M5 x 0.8	..20803	..20903	..21003	..21103	..21203	..21303	..21403	..21503	..21603	..21703	..21803	..21903
M6 x 1.0	80	6.0	4.9	8	16	30	5.50	5.56	M6 x 1.0	..20804	..20904	..21004	..21104	..21204	..21304	..21404	..21504	..21604	..21704	..21804	..21904
M8 x 1.0	90	8.0	6.2	9	18	35	7.50	7.56	M8 x 1.0	..20805	..20905	..21005	..21105	..21205	..21305	..21405	..21505	..21605	..21705	..21805	..21905
M8 x 1.25	90	8.0	6.2	9	18	35	7.37	7.44	M8 x 1.25	..20806	..20906	..21006	..21106	..21206	..21306	..21406	..21506	..21606	..21706	..21806	..21906
M10 x 1.0	100	10.0	8.0	11	20	39	9.50	9.56	M10 x 1.0	..20807	..20907	..21007	..21107	..21207	..21307	..21407	..21507	..21607	..21707	..21807	..21907
M10 x 1.25	100	10.0	8.0	11	20	39	9.37	9.44	M10 x 1.25	..20808	..20908	..21008	..21108	..21208	..21308	..21408	..21508	..21608	..21708	..21808	..21908
M10 x 1.5	100	10.0	8.0	11	20	39	9.24	9.32	M10 x 1.5	..20809	..20909	..21009	..21109	..21209	..21309	..21409	..21509	..21609	..21709	..21809	..21909
M12 x 1.0	100	9.0	7.0	10	24	45	11.50	11.56	M12 x 1.0	..20810	..20910	..21010	..21110	..21210	..21310	..21410	..21510	..21610	..21710	..21810	..21910
M12 x 1.25	100	9.0	7.0	10	24	45	11.38	11.44	M12 x 1.25	..20811	..20923	..21011	..21111	..21211	..21311	..21411	..21511	..21611	..21711	..21811	..21911
M12 x 1.5	100	9.0	7.0	10	24	45	11.24	11.32	M12 x 1.5	..20812	..20912	..21024	..21112	..21212	..21312	..21412	..21512	..21612	..21712	..21812	..21912
M12 x 1.75	110	9.0	7.0	10	24	45	11.11	11.20	M12 x 1.75	..20813	..20913	..21013	..21125	..21213	..21313	..21413	..21513	..21613	..21713	..21813	..21913
M14 x 1.0	100	11.0	9.0	12	28	46	13.50	13.60	M14 x 1.0	..20814	..20914	..21014	..21114	..21226	..21314	..21414	..21514	..21614	..21714	..21814	..21914
M14 x 1.25	100	11.0	9.0	12	28	46	13.38	13.44	M14 x 1.25	..20815	..20915	..21015	..21115	..21215	..21327	..21415	..21515	..21615	..21715	..21815	..21915
M14 x 1.5	100	11.0	9.0	12	28	46	13.24	14.97	M14 x 1.5	..20816	..20916	..21016	..21116	..21216	..21316	..21428	..21516	..21616	..21716	..21816	..21916
M14 x 2.0	110	11.0	9.0	12	28	46	12.97	13.08	M14 x 2.0	..20817	..20917	..21017	..21117	..21217	..21317	..21417	..21529	..21617	..21717	..21817	..21917
M16 x 1.0	100	12.0	9.0	13	30	43	15.50	15.60	M16 x 1.0	..20818	..20918	..21018	..21118	..21218	..21318	..21418	..21518	..21630	..21718	..21818	..21918
M16 x 1.5	110	12.0	9.0	13	30	43	15.24	15.32	M16 x 1.5	..20819	..20919	..21019	..21119	..21219	..21319	..21419	..21519	..21619	..21731	..21819	..21919
M16 x 2.0	110	12.0	9.0	13	30	43	14.97	15.08	M16 x 2.0	..20820	..20920	..21020	..21120	..21220	..21320	..21420	..21520	..21620	..21720	..21832	..21920
M18 x 1.0	125	14.0	11.0	14	25	48	17.50	17.60	M18 x 1.0	..20821	..20921	..21021	..21121	..21221	..21321	..21421	..21521	..21621	..21721	..21821	..21933
M18 x 1.5	125	14.0	11.0	14	25	48	17.25	17.33	M18 x 1.5	..20822	..20922	..21022	..21122	..21222	..21322	..21422	..21522	..21622	..21722	..21822	..21922
M18 x 2.0	125	14.0	11.0	14	25	48	17.00	17.11	M18 x 2.0	..20823	..20923	..21023	..21123	..21223	..21323	..21423	..21523	..21623	..21723	..21823	..21923
M18 x 2.5	125	14.0	11.0	14	25	48	16.75	16.85	M18 x 2.5	..20824	..20924	..21024	..21124	..21224	..21324	..21424	..21524	..21624	..21724	..21824	..21924
M20 x 1.5	125	16.0	12.0	15	30	60	19.25	19.33	M20 x 1.5	..20825	..20925	..21025	..21125	..21225	..21325	..21425	..21525	..21625	..21725	..21825	..21925
M20 x 2.0	140	16.0	12.0	15	30	60	19.00	19.11	M20 x 2.0	..20826	..20926	..21026	..21126	..21226	..21326	..21426	..21526	..21626	..21726	..21826	..21926
M20 x 2.5	140	16.0	12.0	15	30	60	18.75	18.85	M20 x 2.5	..20827	..20927	..21027	..21127	..21227	..21327	..21427	..21527	..21627	..21727	..21827	..21927
M22 x 1.0	125	18.0	14.5	18	30	60	21.50	21.60	M22 x 1.0	..20828	..20928	..21028	..21128	..21228	..21328	..21428	..21528	..21628	..21728	..21828	..21928
M22 x 1.5	125	18.0	14.5	18	30	60	21.25	21.33	M22 x 1.5	..20829	..20929	..21029	..21129	..21229	..21329	..21429	..21529	..21629	..21729	..21829	..21929
M22 x 2.5	140	18.0	14.5	18	30	60	20.75	20.85	M22 x 2.5	..20830	..20930	..21030	..21130	..21230	..21330	..21430	..21530	..21630	..21730	..21830	..21930
M24 x 1.5	160	18.0	14.5	18	35	60	23.25	23.33	M24 x 1.5	..20831	..20931	..21031	..21131	..21231	..21331	..21431	..21531	..21631	..21731	..21831	..21931
M24 x 2.0	160	18.0	14.5	18	35	60	23.00	23.10	M24 x 2.0	..20832	..20932	..21032	..21132	..21232	..21332	..21432	..21532	..21632	..21732	..21832	..21932
M24 x 3.0	160	18.0	14.5	18	35	60	22.50	22.60	M24 x 3.0	..20833	..20933	..21033	..21133	..21233	..21333	..21433	..21533	..21633	..21733	..21833	..21933

* For example, for dia. 'M3x0.5' with 'TiN'+ 'Form C'+ 'Non IKA' combination- order it as 'BTB3A920801' and the same with 'TiCN' coating order it as "BTB3A821401' as given



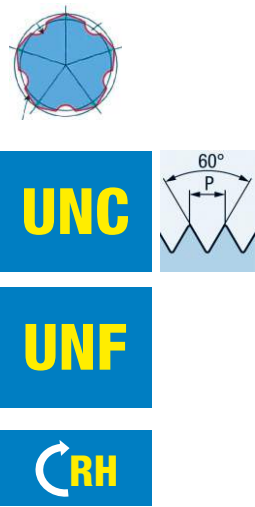
Tolerance	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX	6GX
Coating	TiN	TiN	TiN	TiN	TiN	TiN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN
Cutting Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM
Coolant	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR
Hole Type	C / 2-3	C / 2-3	C / 2-3	E / 1.5	E / 1.5	E / 1.5	C / 2-3	C / 2-3	C / 2-3	E / 1.5	E / 1.5	E / 1.5

in the above table.

FORMEN GEWINDEBOHRER
FORM TAPS

HSSE - UNC / UNF
2BX

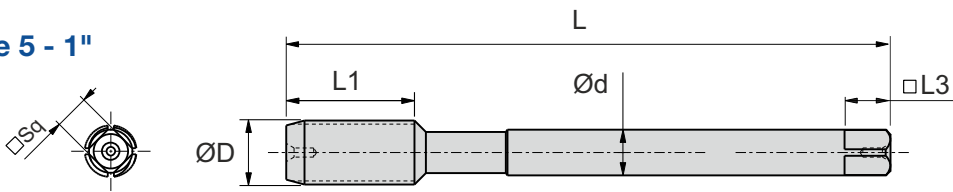
With Oil Groove



Size 4



Size 5 - 1"



UNC UNF	Size	TPI	Blank Details				Thread Length L1	Neck Length L2	 Drill Size (mm)		Size	M35 2BX						PM 2BX					
			OAL (L)	Shank Ød	■ Sq	■ Length L3			Min. Ø	Max. Ø		FORM C			FORM E			FORM C			FORM E		
												Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
UNC	4	40	63	4.5	3.4	6	11	18	2.55	2.58	4	..12401	..12501	..12601	..12701	..12801	..12901	..13001	..13101	..13201	..13301	..13401	..13501
UNC	5	40	63	4.5	3.4	6	11	18	2.90	2.93	5	..12402	..12502	..12602	..12702	..12802	..12902	..13002	..13102	..13202	..13302	..13402	..13502
UNC	6	32	63	4.5	3.4	6	12	20	3.15	3.19	6	..12403	..12503	..12603	..12703	..12803	..12903	..13003	..13103	..13203	..13303	..13403	..13503
UNC	8	32	63	4.5	3.4	6	13	21	3.80	3.84	8	..12404	..12504	..12604	..12704	..12804	..12904	..13004	..13104	..13204	..13304	..13404	..13504
UNC	10	24	70	6.0	4.9	8	15	25	4.35	4.40	10	..12405	..12505	..12605	..12705	..12805	..12905	..13005	..13105	..13205	..13305	..13405	..13505
UNC	12	24	80	6.0	4.9	8	16	30	5.00	5.40	12	..12406	..12506	..12606	..12706	..12806	..12906	..13006	..13106	..13206	..13306	..13406	..13506
UNC	1/4	20	80	6.0	4.9	8	16	30	5.75	5.81	1/4	..12407	..12507	..12607	..12707	..12807	..12907	..13007	..13107	..13207	..13307	..13407	..13507
UNC	5/16	18	90	8.0	6.2	9	18	35	7.30	8.00	5/16	..12408	..12508	..12608	..12708	..12808	..12908	..13008	..13108	..13208	..13308	..13408	..13508
UNC	3/8	16	100	10.0	8.0	11	20	39	8.80	9.60	3/8	..12409	..12509	..12609	..12709	..12809	..12909	..13009	..13109	..13209	..13309	..13409	..13509
UNC	7/16	14	100	9.0	7.0	10	24		10.25	10.35	7/16	..12410	..12510	..12610	..12710	..12810	..12910	..13010	..13110	..13210	..13310	..13410	..13510
UNC	1/2	13	110	9.0	7.0	10	24		11.80	11.90	1/2	..12411	..12511	..12611	..12711	..12811	..12911	..13011	..13111	..13211	..13311	..13411	..13511
UNC	9/16	12	110	11.0	9.0	12	28		13.30	13.42	9/16	..12412	..12512	..12612	..12712	..12812	..12912	..13012	..13112	..13212	..13312	..13412	..13512
UNC	5/8	11	110	12.0	9.0	13	30		14.80	14.95	5/8	..12413	..12513	..12613	..12713	..12813	..12913	..13013	..13113	..13213	..13313	..13413	..13513
UNC	3/4	10	140	16.0	12.0	15	30		17.85	17.98	3/4	..12414	..12514	..12614	..12714	..12814	..12914	..13014	..13114	..13214	..13314	..13414	..13514
UNC	7/8	9	140	18.0	14.5	18	30		20.90	21.05	7/8	..12415	..12515	..12615	..12715	..12815	..12915	..13015	..13115	..13215	..13315	..13415	..13515
UNC	1"	8	160	18.0	14.5	18	35		23.90	24.06	1"	..12416	..12516	..12616	..12716	..12816	..12916	..13016	..13116	..13216	..13316	..13416	..13516
UNF	4	48	63	4.5	3.4	6	13	18	2.62	2.66	4	..13601	..13701	..13801	..13901	..14001	..14101	..14201	..14301	..14401	..14501	..14601	..14701
UNF	5	44	63	4.5	3.4	6	13	18	2.92	2.98	5	..13602	..13702	..13802	..13902	..14002	..14102	..14202	..14302	..14402	..14502	..14602	..14702
UNF	6	40	63	4.5	3.4	6	13	20	3.22	3.28	6	..13603	..13703	..13803	..13903	..14003	..14103	..14203	..14303	..14403	..14503	..14603	..14703
UNF	8	36	63	4.5	3.4	6	13	21	3.85	2.92	8	..13604	..13704	..13804	..13904	..14004	..14104	..14204	..14304	..14404	..14504	..14604	..14704
UNF	10	32	70	6.0	4.9	8	15	25	4.45	4.52	10	..13605	..13705	..13805	..13905	..14005	..14105	..14205	..14305	..14405	..14505	..14605	..14705
UNF	12	28	80	6.0	4.9	8	16	30	5.10	5.17	12	..13606	..13706	..13806	..13906	..14006	..14106	..14206	..14306	..14406	..14506	..14606	..14706
UNF	1/4	28	80	6.0	4.9	8	16	30	5.95	6.02	1/4	..13607	..13707	..13807	..13907	..14007	..14107	..14207	..14307	..14407	..14507	..14607	..14707
UNF	5/16	24	90	8.0	6.2	9	18	35	7.45	7.55	5/16	..13608	..13708	..13808	..13908	..14008	..14108	..14208	..14308	..14408	..14508	..14608	..14708
UNF	3/8	24	100	10.0	8.0	11	20	39	9.05	9.15	3/8	..13609	..13709	..13809	..13909	..14009	..14109	..14209	..14309	..14409	..14509	..14609	..14709
UNF	7/16	20	100	9.0	7.0	10	24		10.55	10.66	7/16	..13610	..13710	..13810	..13910	..14010	..14110	..14210	..14310	..14410	..14510	..14610	..14710
UNF	1/2	20	100	9.0	7.0	10	24		12.11	12.22	1/2	..13611	..13711	..13811	..13911	..14011	..14111	..14211	..14311	..14411	..14511	..14611	..14711
UNF	9/16	18	110	11.0	9.0	12	28		13.65	13.78	9/16	..13612	..13712	..13812	..13912	..14012	..14112	..14212	..14312	..14412	..14512	..14612	..14712
UNF	5/8	18	110	12.0	9.0	12	30		15.25	15.38	5/8	..13613	..13713	..13813	..13913	..14013	..14113	..14213	..14313	..14413	..14513	..14613	..14713
UNF	3/4	16	125	16.0	12.0	15	30		18.35	18.40	3/4	..13614	..13714	..13814	..13914	..14014	..14114	..14214	..14314	..14414	..14514	..14614	..14714
UNF	7/8	14	125	18.0	14.5	18	30		21.40	21.56	7/8	..13615	..13715	..13815	..13915	..14015	..14115	..14215	..14315	..14415	..14515	..14615	..14715
UNF	1"	12	140	18.0	14.5	18	35		24.50	24.50	1"	..13616	..13716	..13816	..13916	..14016	..14116	..14216	..14316	..14416	..14516	..14616	..14716

* For example, for size '4' with 'TiN'+ 'Form C'+ 'Non IKA' combination- order it as 'BTA3A912401' and the same with 'TiCN' coating order it as "BTA3A812701' as given in the



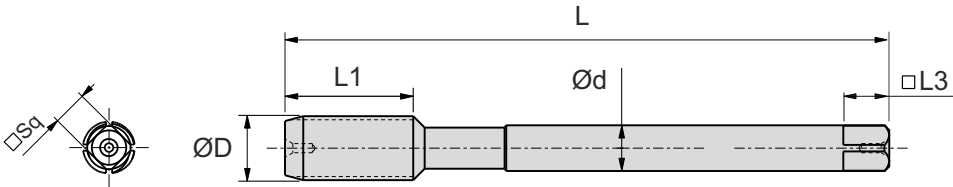
Tolerance	2BX	2BX	2BX	2BX	2BX	2BX	2BX	2BX	2BX	2BX	2BX	2BX
Coating	TiN	TiN	TiN	TiCN	TiCN	TiCN	TiN	TiN	TiN	TiCN	TiCN	TiCN
Cutting Material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coolant	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR
	C / 2-3	C / 2-3	C / 2-3	E / 2-3	E / 2-3	E / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 2-3	E / 2-3	E / 2-3
Hole Type												

above table.

FORMEN GEWINDEBOHRER
FORM TAPS

HSSE - BSP
G

With Oil Groove



BSP	Size	TPI	Blank Details				Thread Length L1	Neck Length L2	Drill Size (mm)	
			OAL (L)	Shank Ød	Sq	Length L3			Min. Ø	Max. Ø
BSP	1/16	28	90	8	6.2	9	18	35	7.25	7.30
BSP	1/8	28	100	10	8.0	11	20	39	9.25	9.30
BSP	1/4	19	100	11	9.0	12	20		12.55	13.00
BSP	3/8	19	125	14	11.0	14	25		16.05	16.11
BSP	1/2	14	125	16	12.0	15	25		20.10	20.16
BSP	5/8	14	140	18	14.5	18	30		22.05	22.13
BSP	3/4	14	160	20	16.0	20	35		25.60	25.68
BSP	7/8	14	180	22	18.0	22	40		29.35	29.45
BSP	1"	11	180	25	20.0	23	30		32.15	32.25

BSP	Size	TPI	Blank Details				Thread Length L1	Neck Length L2	Drill Size (mm)	
			OAL (L)	Shank Ød	Sq	Length L3			Min. Ø	Max. Ø
BSP	1/16	28	90	8	6.2	9	18	35	7.25	7.30
BSP	1/8	28	100	10	8.0	11	20	39	9.25	9.30
BSP	1/4	19	100	11	9.0	12	20		12.55	13.00
BSP	3/8	19	125	14	11.0	14	25		16.05	16.11
BSP	1/2	14	125	16	12.0	15	25		20.10	20.16
BSP	5/8	14	140	18	14.5	18	30		22.05	22.13
BSP	3/4	14	160	20	16.0	20	35		25.60	25.68
BSP	7/8	14	180	22	18.0	22	40		29.35	29.45
BSP	1"	11	180	25	20.0	23	30		32.15	32.25

* For example, for size '1/16' with 'TiN'+ 'Form C'+ 'Non IKA' combination- order it as 'BTA3A917201' and the same with 'TiCN' coating order it as "BTA3A817801' as given in

Tolerance	G	G	G	G	G	G	G	G	G	G	G
Coating	TiN	TiN	TiN	TiN	TiN	TiN	TiCN	TiCN	TiCN	TiCN	TiCN
Cutting Material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coolant	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA	IKR	Non-IKA	IKA
	C / 2-3	C / 2-3	C / 2-3	E / 1.5	E / 1.5	E / 1.5	C / 2-3	C / 2-3	C / 2-3	E / 1.5	E / 1.5
Hole Type											

Size	M35 G											
	FORM C			FORM E			FORM C			FORM E		
	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
	TiN (BTA3A9..)			TiN (BTA3A9..)			TiCN (BTA3A8..)			TiCN (BTA3A8..)		
	..17201	..17301	..17401	..17501	..17601	..17701	..17801	..17901	..18001	..18101	..18201	..18301
1/16	..17201	..17301	..17401	..17501	..17601	..17701	..17801	..17901	..18001	..18101	..18201	..18301
1/8	..17202	..17302	..17402	..17502	..17602	..17702	..17802	..17902	..18002	..18102	..18202	..18302
1/4	..17203	..17303	..17403	..17503	..17603	..17703	..17803	..17903	..18003	..18103	..18203	..18303
3/8	..17204	..17304	..17404	..17504	..17604	..17704	..17804	..17904	..18004	..18104	..18204	..18304
1/2	..17205	..17305	..17405	..17505	..17605	..17705	..17805	..17905	..18005	..18105	..18205	..18305
5/8	..17206	..17306	..17406	..17506	..17606	..17706	..17806	..17906	..18006	..18106	..18206	..18306
3/4	..17207	..17307	..17407	..17507	..17607	..17707	..17807	..17907	..18007	..18107	..18207	..18307
7/8	..17208	..17308	..17408	..17508	..17608	..17708	..17808	..17908	..18008	..18108	..18208	..18308
1"	..17209	..17309	..17409	..17509	..17609	..17709	..17809	..17909	..18009	..18109	..18209	..18309

Size	PM G											
	FORM C			FORM E			FORM C			FORM E		
	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR	Non	IKA	IKR
	TiN (BTB3A9..)			TiN (BTB3A9..)			TiCN (BTB3A8..)			TiCN (BTB3A8..)		
	..18401	..18501	..18601	..18701	..18801	..18901	..19001	..19101	..19201	..19301	..19401	..19501
1/16	..18401	..18501	..18601	..18701	..18801	..18901	..19001	..19101	..19201	..19301	..19401	..19501
1/8	..18402	..18502	..18602	..18702	..18802	..18902	..19002	..19102	..19202	..19302	..19402	..19502
1/4	..18403	..18503	..18603	..18703	..18803	..18903	..19003	..19103	..19203	..19303	..19403	..19503
3/8	..18404	..18504	..18604	..18704	..18804	..18904	..19004	..19104	..19204	..19304	..19404	..19504
1/2	..18405	..18505	..18605	..18705	..18805	..18905	..19005	..19105	..19205	..19305	..19405	..19505
5/8	..18406	..18506	..18606	..18706	..18806	..18906	..19006	..19106	..19206	..19306	..19406	..19506
3/4	..18407	..18507	..18607	..18707	..18807	..18907	..19007	..19107	..19207	..19307	..19407	..19507
7/8	..18408	..18508	..18608	..18708	..18808	..18908	..19008	..19108	..19208	..19308	..19408	..19508
1"	..18409	..18509	..18609	..18709	..18809	..18909	..19009	..19109	..19209	..19309	..19409	..19509

the above table.

FLUTELESS TAPS & THREAD FORMING



Fluteless taps are used for the forming of internal threads without chip production. 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.

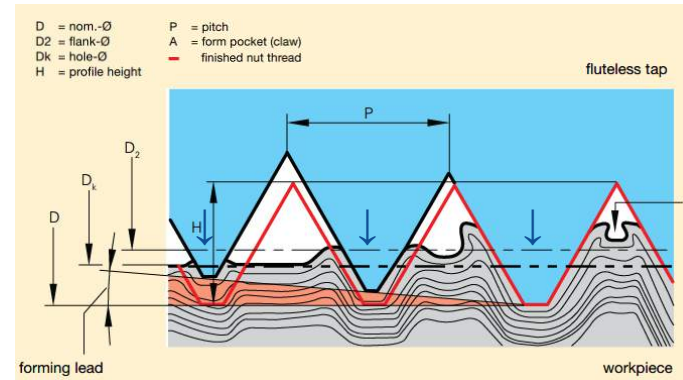
According to DIN 8583, thread forming is described as “pressing the thread into the workpiece with a tool possessing a spiral working area”. The spiral threaded, polygonal portion of the fluteless tap is “screwed” into the pre-drilled workpiece with an appropriate constant feed rate equal to the thread pitch. The thread profile is pressed gradually via the forming lead into the material of the workpiece. 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 drill 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.

Thread formation:

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



Forming Tap Drill Size

Thread forming taps require a larger pre-tap hole size than cutting taps because they do not produce a chip during tapping. The pre-tap hole size tolerance for smaller fine-pitch taps must be controlled more closely to prevent after-tap minor diameter problems.

Finding the correct drill size for a Thredfloer Tap may be a “Cut and Try” process. Not all drills are alike and therefore the pre-tap holes produced by different drills may be vastly different. What matters is the actual pre-tap hole size, how consistently this hole size is maintained, and finally, the after-tap thread percentage or minor diameter. To get good results, you must know the actual hole size and not just the drill size! Thin wall parts may expand during tapping and produce oversize after-tap minor diameters. Diecast parts may contain porosity which may cause oversize holes due to shrinkage.

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.

Thread Inspection Procedures

Pitch Diameter: Primary requirement of the tap is qualifying the “GO” and “NO-GO” thread gauges, which check the pitch diameter to work correctly. As a thumb rule, forming taps should be two to three “H” or “D” numbers larger than cutting taps in order to gauge correctly. Threads that are tight or loose after tapping can be rectified by increasing or decreasing the tap pitch diameter (“H” or “D” number).

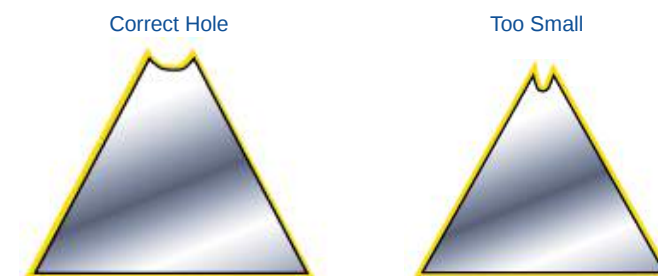
Minor Diameter: The most common problem is thread percentage. Unless otherwise specified, acceptance criteria are the minimum and maximum minor diameters for various thread sizes and classes of fit, also vary. These measurements are checked with cylindrical plug gages. It is important that these criteria be inspected during the initial “Testing” stage of drilling and tapping.

Procedure for using a Forming Tap

1. Drill a part and measure the pre-tap hole size.
2. Tap the part. Check pitch diameter with go and no-go gauges. Check the thread percentage or minor diameter against the customer requirement.
3. Establish a maximum condition for the pre-tap hole size and monitor this frequently during the production tap run.

Visual Thread Inspection

All formed threads have a cup or “U” in the crest due to the nature of the thread forming process. A properly sized hole should result in a thread percentage of 65-75%. Tapping with too small of a pre-tap hole size results in excessive tapping torque, tap wear, and possible tap breakage. Always check your hole size after drilling. Do not expect the drill will cut the size hole marked on the drill. Use a drill that will satisfy both thread gauge as well as minor dia./PIN gauge.



Pre-tap hole size is correct. Thread percentage is 65-75%, and the after-tap minor diameter is in specification.

Resulting in a high thread percentage (90-100%) and an after-tap minor diameter which is too small.



Suitable for some applications. Thread percentage is 55%. After-tap minor diameter is too large for 2B and 3B tolerances.

Resulting in a low thread percentage (40%) and an after-tap minor diameter which is too big

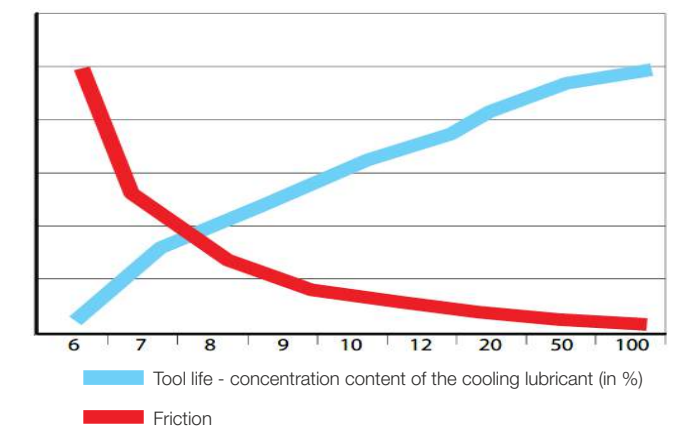
Lubrication is of significant importance. The lubrication prevents material from building up on the thread flanks and ensures that the necessary torque for the forming process is not too high. Therefore, under no circumstances should there ever be a breakdown in lubrication! Preference should be given 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”.

Cooling lubricants with fluteless taps

The better the lubrication with the maximum concentration, the longer the tool life. There are two different types of lubricant:

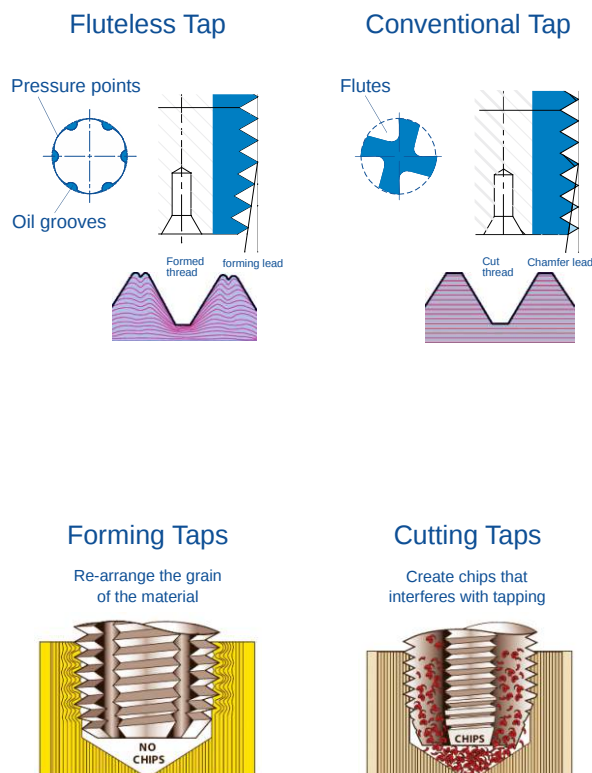
Oil based lubricants: These are mineral oils with the best lubricating characteristics. They reduce friction and achieve optimal life.

Soluble lubricants: Soluble, or emulsion, lubricants are concentrates mixed with water. Where a 6% emulsion is typically fine for most cutting processes, a higher level of lubricity is needed for thread forming. A content of 12% is ideal for forming threads. It should be noted that 50% of the success of thread forming is based on proper lubrication.



Advantages of thread forming:

- No cutting errors
- No chip formation
- Application in wide range of materials
- One tool for the production of threads in through and blind holes
- 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.

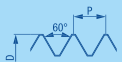


TAPPING DRILL SIZES

High
Performer
& Super
Saver

bilz

Form Taps



M ISO Metric Coarse Thread DIN 13

Nom. Size	D	P	t ₁
D mm	P mm	t ₁ mm	
M 1	0.25	0.9	
1.1	0.25	1	
1.2	0.25	1.1	
1.4	0.5	1.28	
1.6	0.35	1.47	
1.7	0.35	1.57	
1.8	0.35	1.67	
2	0.4	1.85	
2.2	0.45	2.03	
2.3	0.4	2.15	
2.5	0.45	2.33	
2.6	0.45	2.43	
3	0.5	2.8	
3.5	0.6	3.25	
4	0.7	3.7	
4.5	0.75	4.2	
5	0.8	4.65	
5.5	0.9	5.1	
6	1	5.6	
7	1	6.6	
8	1.25	7.45	
9	1.25	8.45	
10	1.5	9.35	
12	1.75	11.25	
14	2	13.1	
16	2	15.1	
18	2.5	16.85	
20	2.5	18.85	
22	2.5	20.85	
24	3	22.65	
27	3	25.65	
30	3.5	28.4	
33	3.5	31.4	
36	4	34.15	
39	4	37.15	
42	4.5	39.9	
45	4.5	42.9	
48	5	45.65	

MF ISO Metric Fine Thread DIN 13

Nom. Size	D	P	t ₁
D mm	P mm	t ₁ mm	
M 2.5	0.35	2.37	
2.6	0.35	2.47	
3	0.35	2.88	
3.5	0.35	3.38	
4	0.5	3.8	
5	0.5	4.8	
6	0.5	5.8	
7	0.75	6.7	
8	0.75	7.7	
9	0.75	8.7	
10	1	9.6	
11	1	10.6	
12	1.25	11.45	
14	1.5	13.35	
16	1.75	15.25	
18	2	17.15	
20	2	19.1	
22	2.5	21.05	
24	2.5	23.05	
27	3	25.05	
30	3.5	28.05	
33	3.5	31.05	
36	4	34.05	
39	4	37.05	
42	4.5	39.95	
45	4.5	42.95	
48	5	45.95	

UNC

Unified Coarse Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/4	20	4.75	
1/2	13	11.8	
3/4	10	16.3	
1	8	23.9	

UNF

Unified Fine Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

G

Whitworth Pipe Thread DIN EN ISO 228

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	28	6.35	
1/4	19	11.8	
3/8	14	17.8	
1/2	14	17.8	
3/4	14	17.8	
1	11	27.9	

ISO Metric

M ISO Metric Coarse Thread DIN 13

Nom. Size	D	P	t ₁
D mm	P mm	t ₁ mm	
M 1	0.25	0.9	
1.1	0.25	1	
1.2	0.25	1.1	
1.4	0.5	1.28	
1.6	0.35	1.47	
1.7	0.35	1.57	
1.8	0.35	1.67	
2	0.4	1.85	
2.2	0.45	2.03	
2.3	0.4	2.15	
2.5	0.45	2.33	
2.6	0.45	2.43	
3	0.5	2.8	
3.5	0.6	3.25	
4	0.7	3.7	
4.5	0.75	4.2	
5	0.8	4.65	
5.5	0.9	5.1	
6	1	5.6	
7	1	6.6	
8	1.25	7.45	
9	1.25	8.45	
10	1.5	9.35	
12	1.75	11.25	
14	2	13.1	
16	2	15.1	
18	2.5	16.85	
20	2.5	18.85	
22	2.5	20.85	
24	3	22.65	
27	3	25.65	
30	3.5	28.4	
33	3.5	31.4	
36	4	34.15	
39	4	37.15	
42	4.5	39.9	
45	4.5	42.9	
48	5	45.65	

UNC

Unified Coarse Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/4	20	4.75	
1/2	13	11.8	
3/4	10	16.3	
1	8	23.9	

UNF

Unified Fine Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

G

Whitworth Pipe Thread DIN EN ISO 228

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	28	6.35	
1/4	19	11.8	
3/8	14	17.8	
1/2	14	17.8	
3/4	14	17.8	
1	11	27.9	

ISO Metric

M ISO Metric Coarse Thread DIN 13

Nom. Size	D	P	t ₁
D mm	P mm	t ₁ mm	
M 1	0.25	0.9	
1.1	0.25	1	
1.2	0.25	1.1	
1.4	0.5	1.28	
1.6	0.35	1.47	
1.7	0.35	1.57	
1.8	0.35	1.67	
2	0.4	1.85	
2.2	0.45	2.03	
2.3	0.4	2.15	
2.5	0.45	2.33	
2.6	0.45	2.43	
3	0.5	2.8	
3.5	0.6	3.25	
4	0.7	3.7	
4.5	0.75	4.2	
5	0.8	4.65	
5.5	0.9	5.1	
6	1	5.6	
7	1	6.6	
8	1.25	7.45	
9	1.25	8.45	
10	1.5	9.35	
12	1.75	11.25	
14	2	13.1	
16	2	15.1	
18	2.5	16.85	
20	2.5	18.85	
22	2.5	20.85	
24	3	22.65	
27	3	25.65	
30	3.5	28.4	
33	3.5	31.4	
36	4	34.15	
39	4	37.15	
42	4.5	39.9	
45	4.5	42.9	
48	5	45.65	

UNC

Unified Coarse Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/4	20	4.75	
1/2	13	11.8	
3/4	10	16.3	
1	8	23.9	

UNF

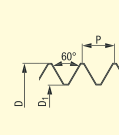
Unified Fine Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

G

Whitworth Pipe Thread DIN EN ISO 228

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	28	6.35	
1/4	19	11.8	
3/8	14	17.8	
1/2	14	17.8	
3/4	14	17.8	
1	11	27.9	



UNC Unified Coarse Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/4	20	4.75	
1/2	13	11.8	
3/4	10	16.3	
1	8	23.9	

UNF

Unified Fine Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

G

Whitworth Pipe Thread DIN EN ISO 228

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	28	6.35	
1/4	19	11.8	
3/8	14	17.8	
1/2	14	17.8	
3/4	14	17.8	
1	11	27.9	

Unified

UNC Unified Coarse Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/4	20	4.75	
1/2	13	11.8	
3/4	10	16.3	
1	8	23.9	

UNF

Unified Fine Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

G

Whitworth Pipe Thread DIN EN ISO 228

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	28	6.35	
1/4	19	11.8	
3/8	14	17.8	
1/2	14	17.8	
3/4	14	17.8	
1	11	27.9	

Unified

UNF Unified Fine Thread ASME B1.1

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

UNJC

Unified coarse thread ASME B1.15

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/4	20	4.75	
1/2	13	11.8	
3/4	10	16.3	
1	8	23.9	

UNJF

Unified fine thread ASME B1.15

Nom. Size	D	P	t ₁
D inch	P (tpi)	t ₁ mm	
1/8	32	3.18	
1/16	64	1.59	
3/32	32	3.18	
1/4	20	4.75	

Cylindrical Pipe



G Whitworth pipe thread DIN EN ISO 228

Whitworth pipe thread D			
Nom. Size		D	P
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Self Reversing
Tapping
Attachment

Quick Change
Tapping Chuck



Synchro Tapping Chuck

Tapping
Chucks &
Adaptors
for larger
threads



Shrink-Fit Machine &
Chucks



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