

Taps & Dies Index

HSS Spiral Point Taps

Type 20-AG Fractional / Machine Screw . . .	55
Type 20-AGN Fractional / Machine Screw . .	55
Type 20 Fractional / Machine Screw	55
Type 21-AG Metric	55
Type 21-AGN Metric - TiN Coated	55
Type 21 Metric	55

HSS Straight Flute Taps

Type 23-AG Taper	58 - 60
Type 23-AGN Taper - TiN Coated	58 - 60
Type 23 Taper	58 - 60
Type 24-AG Plug	58 - 60
Type 24-AGN Plug - TiN Coated	58 - 60
Type 24 Plug	58 - 60
Type 25-AG Bottoming	58 - 60
Type 25-AGN Bottoming - TiN Coated	58 - 60
Type 25 Bottoming	58 - 60
Type 26-AG Sets	61
Type 26-AGN Sets TiN Coated	61
Type 26 Sets	61

HSS Straight Flute -Metric

Type 31-AG Taper	62
Type 31-AGN Taper - TiN Coated	62
Type 31 Taper - Metric	62
Type 32-AG Plug	62
Type 32-AGN Plug - TiN Coated	62
Type 32 Plug - Metric	62
Type 33-AG Bottoming	62
Type 33-AGN Bottoming - TiN Coated	62
Type 33 Bottoming - Metric	62
Type 35-AG Sets	63
Type 35-AGN Sets - TiN Coated	63
Type 35 Sets	63

HSS Straight Flute -Left-Hand Thread

Type 23L-AG Taper	64
Type 24L-AG Plug	64
Type 25L-AG Bottoming	64

HSS Spiral Flute Semi-Bottoming Taps

FRACTIONAL

Type 36-ACN, 36-UBN, 36 30° Spiral TiCN, TiN	65
Type 37-ACN, 37-UBN, 37 52° Spiral TiCN, TiN	65 - 66

METRIC

Type 38-ACN, 38-UBN, 38 30° Spiral TiCN, TiN	66
Type 39-ACN, 39-UBN, 39 52° Spiral TiCN, TiN	66

HSS Combination Drill & Tap

Type 40-AG	67
Type 40-QR	67

Drill & Tap Combo

Type 34-AG	67
----------------------	----

HSS Hex Dies

Type 27-AG	68
Type 27-AG Metric	68



Extension Spiral Point Plug Taps

Type 20-EXT	56
-----------------------	----

High Performance Spiral Tap

Type 29-AG	56
Type 29-AGN	56
Type 29-ACN	57
Type 29-ALN	57

M42 Cobalt Taps & TiN Coated

Type 24-RNC	58
Type 24-RNCN Cobalt	58

Taper Pipe Taps

Type 30-AG	63
Type 30-AGN - TiN Coated	63
Type 30-B Black Oxide	63
Type 30 Bright	63

Interrupted Taper Pipe Taps

Type I30-AG Interrupted	63
Type I30-AGN TiN Coated - Interrupted	63
Type I30-B Black Oxide - Interrupted	63
Type I30 Bright - Interrupted	63

HSS Extension Taper Pipe Taps

Type 30-EXT	63
-----------------------	----

HSS Tap & Drill Sets

SF-18TDC Straight Flute	67
SF-18TDF Spiral Flute	67
SP-10TD Straight Point	67
SP-12TD Spiral Point	67
SP-18TD Spiral Point	67
SP-18TDM Spiral Point	67
B-18TD HSS Drill & Tap Set	67

HSS Tap Sets

SP-19T Spiral Point	68
SP-10T Spiral Point	68
SF-10T Straight Flute	68

Drill, Tap & Countersink Set

TDC-12	68
------------------	----

HSS Tap & Die Assortments

Magnum Super Premium	
14pc, 15pc Metric	69
24pc, 25pc Metric	69
40pc	70
58pc	70

Hi-Carbon Steel Taps

Type 720 Plug - Fractional	71
Type 721 Plug - Machine Screw	71
Type 740 Taper - Fractional	71
Type 741 Plug - Machine Screw	71
Type 760 Bottoming - Fractional	72
Type 761 Bottoming - Machine Screw	72
Type 722 3pc. Set - Fractional	72
Type 723 3pc. Set - Machine Screw	72
Type 780 Plug Taps Metric	75

Hi-Carbon Steel Pipe Taps

Type 410 Fractional	75
-------------------------------	----

Hi-Carbon Steel Dies

Type 400 - Round	74
Type 405 - Hex	73
Type 415 - Adjustable	74
Type 790 - Hex Metric	73

Hi-Carbon Tap & Die Sets

Type 724	
14pc, 16pc	76
24pc, 37pc	77
40pc	78

Tap & Reamer

Wrenches / Die Stocks

Type 725	79
Type 726	79
Type 727	79
Type 727R Ratcheting T-Handle	79
Type 728	80
Type 728R Round Die Stock	80
Type 729	80
Type 730 Screw Pitch Gauges	80

Technical Reference . . 81 - 85



HSS SPIRAL POINT PLUG TAPS

Gun Tap - Machine Screw / Fractional & METRIC - Ground Thread - Magnum Super Premium

Types 20-AG Gold Oxide, Type 20-AGN TiN Coated & Type 20 Bright

METRIC Types 21-AG Gold Oxide, Type 21-AGN TiN Coated & Type 21 Bright

- Spiral point taps are designed for machine tapping through holes in a wide variety of materials. The point of the tap continuously ejects the chips ahead of the tap, eliminating chip disposal problems and thread damage.



Type 20-AG

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.



Type 20-AGN Titanium Nitride

Titanium Nitride - increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.



Type 20 Bright Finish

Bright Finish

Red Bold = most common used Taps

20-AG Part #	20-AGN Part #	20 Part #	Size	# of Flutes	H Limit	Qty. per/pack
67502	10502	60101	0-80	2	H1	3
60100	10512	67501	0-80	2	H2	3
67512	10522	60111	1-64	2	H1	3
60110	10532	67511	1-64	2	H2	3
67522	10542	67521	1-72	2	H1	3
60120	10552	60121	1-72	2	H2	3
60130	10562	60131	2-56	2	H2	3
60140	10572	60141	2-64	2	H2	3
60150	10582	60151	3-48	2	H2	3
67532	10592	67531	3-56	2	H1	3
60160	10602	60161	3-56	2	H2	3
67542	10612	67541	4-40	2	H1	3
60170	10622	60171	4-40	2	H2	3
67552	10632	67551	4-48	2	H1	3
60180	10642	60181	4-48	2	H2	3
60190	10652	60191	4-36	2	H2	3
67562	10662	67561	5-40	2	H1	3
60200	10672	60201	5-40	2	H2	3
60210	10682	60211	5-44	2	H2	3
67572	10692	67571	6-32	2	H1	3
67582	10702	67581	6-32	2	H2	3
60220	10712	60221	6-32	2	H3	3
60230	10722	60231	6-40	2	H2	3
67592	10732	67591	8-32	2	H1	3
67602	10742	67601	8-32	2	H2	3
60240	10752	60241	8-32	2	H3	3
60250	10762	60251	8-36	2	H2	3
67612	10772	67611	10-24	2	H1	3
67622	10782	67621	10-24	2	H2	3
60260	10792	60261	10-24	2	H3	3
67632	10802	67631	10-32	2	H1	3
67642	10812	67641	10-32	2	H2	3
60270	10822	60271	10-32	2	H3	3
60280	10832	60281	12-24	2	H3	3
60290	10842	60291	12-28	2	H3	3
67652	10852	67651	1/4-20	2	H1	3
67662	10862	67661	1/4-20	2	H2	3
60320	10872	60321	1/4-20	2	H3	3
67672	10882	67671	1/4-20	2	H5	3
67682	10892	67681	1/4-20	3	H3	3
67692	10902	67691	1/4-20	3	H5	3
67702	10912	67701	1/4-28	2	H1	3
67712	10922	67711	1/4-28	2	H2	3
60330	10932	60331	1/4-28	2	H3	3

20-AG Part #	20-AGN Part #	20 Part #	Size	# of Flutes	H Limit	Qty. per/pack
67722	10942	67721	1/4-28	2	H4	3
67732	10952	67731	1/4-28	3	H2	3
67742	10962	67741	1/4-28	3	H4	3
67752	10972	67751	5/16-18	2	H1	3
67762	10982	67761	5/16-18	2	H2	3
60340	10992	60341	5/16-18	2	H3	3
67772	11002	67771	5/16-18	2	H5	3
67782	11012	67781	5/16-18	3	H3	3
67792	11022	67791	5/16-18	3	H5	3
67802	11032	67801	5/16-24	2	H1	3
67812	11042	67811	5/16-24	2	H2	3
60350	11052	60351	5/16-24	2	H3	3
67822	11062	67821	5/16-24	2	H4	3
67832	11072	67831	5/16-24	3	H2	3
67842	11082	67841	5/16-24	3	H4	3
67852	11092	67851	3/8-16	3	H1	3
67862	11102	67861	3/8-16	3	H2	3
60360	11112	60361	3/8-16	3	H3	3
67872	11122	67871	3/8-16	3	H5	3
67882	11132	67881	3/8-24	3	H1	3
67892	11142	67891	3/8-24	3	H2	3
60370	11152	60371	3/8-24	3	H3	3
67902	11162	67901	3/8-24	3	H4	3
67912	11172	67911	7/16-14	3	H2	3
60380	11182	60381	7/16-14	3	H3	3
67922	11192	67921	7/16-14	3	H5	3
60390	11202	60391	7/16-20	3	H3	3
67932	11212	67931	7/16-20	3	H5	3
67942	11222	67941	1/2-13	3	H2	3
60400	11232	60401	1/2-13	3	H3	3
67952	11242	67951	1/2-13	3	H5	3
67962	11252	67961	1/2-20	3	H1	3
67972	11262	67971	1/2-20	3	H2	3
60410	11272	60411	1/2-20	3	H3	3
67982	11282	67981	1/2-20	3	H5	3
67992	-----	60461	9/16-12	3	H3	1
68002	-----	60471	9/16-18	3	H3	1
60420	11292	60421	5/8-11	3	H3	1
68012	11302	67991	5/8-11	3	H5	1
60430	11312	60431	5/8-18	3	H3	1
60440	11322	60441	3/4-10	3	H3	1
68022	11332	68001	3/4-10	3	H5	1
60450	11342	60451	3/4-16	3	H3	1

TYPE 21-AG, TYPE 21-AGN TIN COATED & TYPE 21

METRIC - PLUG

21-AG Part #	21-AGN Part #	21 Part #	Size	# of Flutes	PD Limit	Qty. per/pck
68602	10509	68601	1.6 - 0.35	2	D3	3
68612	10519	68611	1.8 - 0.35	2	D3	3
68622	10529	68621	2.0 - 0.40	2	D3	3
68632	10539	68631	2.20 - 0.45	2	D3	3
60500	10549	68641	2.5 - 0.45	2	D3	3
60510	10559	60102	3.0 - 0.50	2	D3	3
60520	10569	60103	3.5 - 0.60	2	D4	3
60530	10579	60104	4.0 - 0.70	2	D4	3
68642	10589	68651	4.50 - 0.75	2	D4	3
60550	10599	60114	5.0 - 0.80	2	D4	3
60560	10609	60124	6.0 - 1.00	2	D5	3
68652	10619	68661	7.0 - 1.00	2	D5	3

21-AG Part #	21-AGN Part #	21 Part #	Size	# of Flutes	PD Limit	Qty. per/pck
68662	10629	68671	8.0 - 1.00	2	D5	3
60580	10639	60234	8.0 - 1.25	2	D5	3
68672	10649	68681	10.0 - 1.25	3	D5	3
60600	10659	60152	10.0 - 1.50	3	D6	3
68682	10669	68691	12.0 - 1.25	3	D5	3
60620	10679	60162	12.0 - 1.75	3	D6	3
68692	10689	68701	14.0 - 1.50	3	D6	1
60630	10699	60164	14.0 - 2.00	3	D7	1
68702	10709	68711	16.0 - 1.50	3	D6	1
60640	10719	60173	16.0 - 2.00	3	D7	1
60650	10729	60174	18.0 - 2.50	3	D7	1
68712	10739	68721	20.0 - 2.50	3	D7	1

Taps & Dies



SPIRAL POINT PLUG TAPS - EXTENSION SMALL SHANK

Type 20-EXT

- 6-inch spiral point plug extension tap used to thread deep and hard to reach holes.
- Square shank compatible with tap wrenches and tap holders.
- High Speed Steel.



TYPE 20-EXT

Part #	Size	# of Flutes	H Limits	Qty. per /pack
66642	6-32	2	H3	1
66662	8-32	2	H3	1
66682	10-24	2	H3	1
66692	10-32	2	H3	1
66722	1/4-20	2	H3	1
66732	1/4-28	2	H3	1

Part #	Size	# of Flutes	H Limits	Qty. per /pack
66742	5/16-18	3	H3	1
66752	5/16-24	2	H3	1
66762	3/8-16	2	H3	1
66772	3/8-24	3	H3	1
66782	7/16-14	3	H3	1
66792	7/16-20	3	H3	1

Part #	Size	# of Flutes	H Limits	Qty. per /pack
66802	1/2-13	3	H3	1
66812	1/2-20	3	H3	1
66822	5/8-11	3	H3	1
66832	5/8-18	3	H3	1
66842	3/4-10	3	H3	1
66852	3/4-16	3	H3	1

HIGH PERFORMANCE REDUCED NECK - SPIRAL POINT TAPS

Machine Screw / Fractional & METRIC - Magnum Super Premium

Type 29-AG - Gold Oxide

Type 29-AGN - Titanium Nitride

- Special tool geometry creates less torque, better removal of chips and runs cooler.
- Designed for difficult materials including: **stainless steel**, **alloy steels** and **high carbon steel**.



Type 29-AG Gold Oxide

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.



Type 29-AGN Titanium Nitride

Titanium Nitride - increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.

GOLD OXIDE

TYPE 29-AG

Part #	Size	# of Flutes	H Limits	Qty. per /pack
44264	2-56	2	H2	3
44284	3-48	2	H2	3
44300	4-40	2	H2	3
44294	4-48	2	H2	3
44304	5-40	2	H2	3
44309	5-44	2	H2	3
44310	6-32	3	H3	3
44320	6-40	3	H2	3
44334	8-32	2	H3	3
44330	8-32A	3	H3	3
44344	8-36	2	H2	3
44340	8-36A	3	H2	3
44354	10-24	2	H3	3
44350	10-24A	3	H3	3
44364	10-32	2	H3	3

Part #	Size	# of Flutes	H Limits	Qty. per /pack
44360	10-32A	3	H3	3
44374	12-24	2	H3	3
44370	12-24A	3	H3	3
44384	12-28	2	H3	3
44380	12-28A	3	H3	3
20013	1/4-20	2	H3	3
20010	1/4-20A	3	H3	3
20023	1/4-28	2	H3	3
20020	1/4-28A	3	H2	3
20033	5/16-18	2	H3	3
20030	5/16-18A	3	H3	3
20043	5/16-24	2	H3	3
20040	5/16-24A	3	H2	3
20050	3/8-16	3	H3	3
20060	3/8-24	3	H3	3

Part #	Size	# of Flutes	H Limits	Qty. per /pack
20100	7/16-14	3	H3	3
20110	7/16-20	3	H3	3
20120	1/2-13	3	H3	3
20130	1/2-20	3	H3	3
20163	9/16-12	3	H3	1
20173	9/16-18	3	H3	1
20183	5/8-11	3	H3	1
20193	5/8-18	3	H3	1
20203	3/4-10	3	H3	1
20213	3/4-16	3	H3	1
20223	7/8-9	3	H3	1
20233	7/8-14	3	H3	1
20243	1-8	3	H3	1
20253	1-14	3	H3	1

METRIC

Part #	Size	# of Flutes	PD Limits	Qty. per /pack
24494	3-.50	2	D3	3
24514	4-.70	3	D4	3
24534	5-.80	3	D4	3
24544	6-1.00	3	D5	3
24574	8-1.25	3	D5	3
24594	10-1.50	3	D6	3
24614	12-1.75	3	D6	3
24634	14-2.00	3	D7	1
24654	16-2.00	3	D7	1

TITANIUM NITRIDE

TYPE 29-AGN

Part #	Size	# of Flutes	H Limits	Qty. per /pack
09501	2-56	2	H2	3
09511	3-48	2	H2	3
09521	4-40	2	H2	3
09531	4-48	2	H2	3
09541	5-40	2	H2	3
09551	5-44	2	H2	3
09561	6-32	3	H3	3
09571	6-40	3	H2	3
09581	8-32	2	H3	3
09591	8-32A	3	H3	3
09601	8-36	2	H2	3
09611	8-36A	3	H2	3
09621	10-24	2	H3	3
09631	10-24A	3	H3	3
09641	10-32	2	H3	3
09651	10-32A	3	H3	3
09661	12-24	2	H3	3
09671	12-24A	3	H3	3
09681	12-28	2	H3	3

Part #	Size	# of Flutes	H Limits	Qty. per /pack
09691	12-28A	3	H3	3
09701	1/4-20	2	H3	3
09711	1/4-20A	3	H3	3
09721	1/4-28	2	H3	3
09731	1/4-28A	3	H2	3
09741	5/16-18	2	H3	3
09751	5/16-18A	3	H3	3
09761	5/16-24	2	H3	3
09771	5/16-24A	3	H2	3
09781	3/8-16	3	H3	3
09791	3/8-24	3	H3	3
09801	7/16-14	3	H3	3
09811	7/16-20	3	H3	3
09821	1/2-13	3	H3	3
09831	1/2-20	3	H3	3
09841	9/16-12	3	H3	1
09851	9/16-18	3	H3	1
09861	5/8-11	3	H3	1
09871	5/8-18	3	H3	1

Part #	Size	# of Flutes	H Limits	Qty. per /pack
09881	3/4-10	3	H3	1
09891	3/4-16	3	H3	1
09901	7/8-9	3	H3	1
09911	7/8-14	3	H3	1
09921	1-8	3	H3	1
09931	1-14	3	H3	1

METRIC

Part #	Size	# of Flutes	PD Limits	Qty. per /pack
09941	3-.50	2	D3	3
09951	4-.70	3	D4	3
09961	5-.80	3	D4	3
09971	6-1.00	3	D5	3
09981	8-1.25	3	D5	3
09991	10-1.50	3	D6	3
10001	12-1.75	3	D6	3
10011	14-2.00	3	D7	1
10021	16-2.00	3	D7	1

HIGH PERFORMANCE REDUCED NECK - SPIRAL POINT TAPS

Machine Screw / Fractional & **METRIC** - Magnum Super Premium

Type 29-ACN - Titanium Carbon Nitride

Type 29-ALN - Titanium Aluminum Nitride

- **Titanium Carbon Nitride** - TiCN coating that is harder than TiN coating resulting in longer tool life and enhanced performance.
- Designed for use in multiple applications.

Titanium Aluminum Nitride - TiAlN coating provides extreme toughness, recommended for high temperature operations and difficult to machine materials.

- Designed for hardened steels and cast iron up to 45 Rockwell C.



TiCN Coating

Titanium Carbon Nitride (TiCN) Hi productivity when threading stainless steel, nickel and aluminum for use in multiple applications



TiAlN Coating

Titanium Aluminum Nitride (TiAlN) ideal for threading hard materials designed for hardened steels and cast iron up to 45 Rockwell C.

METRIC

TiCN / TiAlN

Tap & Dies - HSS High Performance Reduced Neck - Spiral Point Taps

TITANIUM CARBON NITRIDE

TYPE 29-ACN

Part #	Size	# of Flutes	H Limits	Qty. per /pack
31001	2-56	2	H2	3
31011	3-48	2	H2	3
31021	4-40	2	H2	3
31031	4-48	2	H2	3
31041	5-40	2	H2	3
31051	5-44	2	H2	3
31061	6-32	3	H3	3
31071	6-40	3	H2	3
31081	8-32	2	H3	3
31091	8-32A	3	H3	3
31101	8-36	2	H2	3
31111	8-36A	3	H2	3
31121	10-24	2	H3	3
31131	10-24A	3	H3	3
31141	10-32	2	H3	3
31151	10-32A	3	H3	3
31161	12-24	2	H3	3
31171	12-24A	3	H3	3
31181	12-28	2	H3	3

Part #	Size	# of Flutes	H Limits	Qty. per /pack
31191	12-28A	3	H3	3
31201	1/4-20	2	H3	3
31211	1/4-20A	3	H3	3
31221	1/4-28	2	H3	3
31231	1/4-28A	3	H2	3
31241	5/16-18	2	H3	3
31251	5/16-18A	3	H3	3
31261	5/16-24	2	H3	3
31271	5/16-24A	3	H2	3
31281	3/8-16	3	H3	3
31291	3/8-24	3	H3	3
31301	7/16-14	3	H3	3
31311	7/16-20	3	H3	3
31321	1/2-13	3	H3	3
31331	1/2-20	3	H3	3
31341	9/16-12	3	H3	1
31351	9/16-18	3	H3	1
31361	5/8-11	3	H3	1

Part #	Size	# of Flutes	H Limits	Qty. per /pack
31371	5/8-18	3	H3	1
31381	3/4-10	3	H3	1
31391	3/4-16	3	H3	1
31401	7/8-9	3	H3	1
31411	7/8-14	3	H3	1
31421	1-8	3	H3	1
31431	1-14	3	H3	1

METRIC

Part#	Size	# of Flutes	PD Limits	Qty. per /pack
31441	3-.50	2	D3	3
31451	4-.70	3	D4	3
31461	5-.80	3	D4	3
31471	6-1.00	3	D5	3
31481	8-1.25	3	D5	3
31491	10-1.50	3	D6	3
31501	12-1.75	3	D6	3
31511	14-2.00	3	D7	1
31521	16-2.00	3	D7	1

TITANIUM ALUMINUM NITRIDE

TYPE 29-ALN

Part #	Size	# of Flutes	H Limits	Qty. per /pack
56301	2-56	2	H2	3
56311	3-48	2	H2	3
56321	4-40	2	H2	3
56331	4-48	2	H2	3
56341	5-40	2	H2	3
56351	5-44	2	H2	3
56361	6-32	3	H3	3
56371	6-40	3	H2	3
56381	8-32	2	H3	3
56391	8-32A	3	H3	3
56401	8-36	2	H2	3
56411	8-36A	3	H2	3
56421	10-24	2	H3	3
56431	10-24A	3	H3	3
56441	10-32	2	H3	3
56451	10-32A	3	H3	3
56461	12-24	2	H3	3
56471	12-24A	3	H3	3

Part #	Size	# of Flutes	H Limits	Qty. per /pack
56481	12-28	2	H3	3
56491	12-28A	3	H3	3
56501	1/4-20	2	H3	3
56511	1/4-20A	3	H3	3
56521	1/4-28	2	H3	3
56531	1/4-28A	3	H2	3
56541	5/16-18	2	H3	3
56551	5/16-18A	3	H3	3
56561	5/16-24	2	H3	3
56571	5/16-24A	3	H2	3
56581	3/8-16	3	H3	3
56591	3/8-24	3	H3	3
56601	7/16-14	3	H3	3
56611	7/16-20	3	H3	3
56621	1/2-13	3	H3	3
56631	1/2-20	3	H3	3
56641	9/16-12	3	H3	1
56651	9/16-18	3	H3	1
56661	5/8-11	3	H3	1

Part #	Size	# of Flutes	H Limits	Qty. per /pack
56671	5/8-18	3	H3	1
56681	3/4-10	3	H3	1
56691	3/4-16	3	H3	1
56701	7/8-9	3	H3	1
56711	7/8-14	3	H3	1
56721	1-8	3	H3	1
56731	1-14	3	H3	1

METRIC

Part#	Size	# of Flutes	PD Limits	Qty. per /pack
56741	3-.50	2	D3	3
56751	4-.70	3	D4	3
56761	5-.80	3	D4	3
56771	6-1.00	3	D5	3
56781	8-1.25	3	D5	3
56791	10-1.50	3	D6	3
56801	12-1.75	3	D6	3
56811	14-2.00	3	D7	1
56821	16-2.00	3	D7	1

Taps & Dies

M42 COBALT TAPS & TITANIUM NITRIDE

Type 24- RNC Bright Finish Type 24-RNCN Titanium Nitride Fractional - Taps for Hardened Steel and Iron

- M-42 plug taps for tapping through holes in mold steel and hardened steel with Rockwell C hardness between C30 – C45.
- Titanium coated M-42 plug taps last twice as long as uncoated taps, titanium coatings lubricity produces smooth threads. **For use in** cast iron, brass, bronze, armor plate with a Rockwell C hardness between C30 – C45 and hard plastics.



Bright Part #	Titanium Nitride Part #	Bright Part #	Thread Size	Thread Length	Overall Length	Shank Diameter	Drill Bit Size	# of Flutes	Pitch Limit Dia.	Qty Per Pack
10032	13782		2-56	7/16"	1-13/16"	0.1405	#51	2	H2	3
10052	13802		4-40	5/16"	1-7/8"	0.1405	#43	3	H2	3
10072	13822		5-40	5/16"	1-15/16"	0.1405	#38	3	H2	3
10092	13842		6-32	3/8"	2"	0.1405	#36	3	H3	3
10112	13862		8-32	3/8"	2-1/8"	0.1675	#29	3	H3	3
10132	13882		10-24	1/2"	2-3/8"	0.1935	#25	3	H3	3
10142	13892		10-32	1/2"	2-3/8"	0.1935	#21	3	H3	3
10152	13902		12-24	1/2"	2-1/2"	0.2195	#16	2	H3	3
10172	13922		1/4-20	5/8"	2-1/2"	0.2545	#7	3	H3	3
10182	13932		1/4-28	5/8"	2-1/2"	0.2545	#3	3	H3	3
10192	13942		5/16-18	11/16"	2-23/32"	0.3175	F	4	H3	3
10202	13952		5/16-24	11/16"	2-23/32"	0.3175	I	4	H3	3
10212	13962		3/8-16	3/4"	2-15/16"	0.3805	5/16"	4	H3	3
10222	13972		3/8-24	3/4"	2-15/16"	0.3805	Q	4	H3	3
10232	13982		7/16-14	7/8"	3-5/32"	0.3225	U	4	H3	3
10242	13992		7/16-20	7/8"	3-5/32"	0.3225	25/64"	4	H3	3
10272	14002		1/2-13	15/16"	3-3/8"	0.3665	27/64"	4	H3	3
10282	14012		1/2-20	15/16"	3-3/8"	0.3665	29/64"	4	H3	3
10292	14042		5/8-11	1-3/32"	3-13/16"	0.4795	17/32"	4	H3	1
10302	14052		5/8-18	1-3/32"	3-13/16"	0.4795	37/64"	4	H3	1
10312	14062		3/4-10	1-7/32"	4-1/4"	0.5895	21/32"	4	H3	1
10322	14072		3/4-16	1-7/32"	4-1/4"	0.5895	11/16"	4	H3	1
10352	14102		1"-8	2-1/2"	5-1/8"	0.7995	7/8"	3	H4	1

HSS STRAIGHT FLUTE HAND TAPS

Machine Screw / Fractional - Ground Thread Types 23-AG, Type 24-AG & Type 25-AG Gold Oxide

Types 23-AGN, Type 24-AGN & Type 25-AGN Titanium Nitride Types 23, Type 24 & Type 25 Bright Finish

- The most common style of tap
- Versatile taps for use in general machine tapping or CNC tapping applications
- Can be used by hand or for tapping under power
- Use for through hole or blind hole tapping.



Type 23-AG - Taper

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.



Type 24-AGN - Plug

Titanium Nitride - increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.



Type 25 - Bottoming
Bright Finish

23-AG Taper Part#	24-AG Plug Part #	25-AG Bottoming Part #	23-AGN Taper Part #	24-AGN Plug Part #	25-AGN Bottoming Part #	23 Taper Part #	24 Plug Part #	25 Bottoming Part #	Size	# of Flutes	H Limit	QTY per/pack
72701	72702	72703	45981	45982	45983	71661	71662	71663	0-80	2	H1	3
72711	72712	72713	45991	45992	45993	71671	71672	71673	0-80	2	H2	3
72721	72722	72723	44101	44102	44103	71681	71682	71683	1-64	2	H1	3
72731	72732	72733	44111	44112	44113	71691	71692	71693	1-64	2	H2	3
72741	72742	72743	44121	44122	44123	71701	71702	71703	1-72	2	H1	3
72751	72752	72753	44131	44132	44133	71711	71712	71713	1-72	2	H2	3
72761	72762	72763	44141	44142	44143	71721	71722	71723	2-56	3	H1	3
60660	60661	60662	46001	46002	46003	71231	71232	71233	2-56	3	H2	3
72771	72772	72773	44151	44152	44153	71731	71732	71733	2-64	3	H2	3
72781	72782	72783	44161	44162	44163	71741	71742	71743	3-48	3	H1	3
60680	60681	60682	46011	46012	46013	71251	71252	71253	3-48	3	H2	3
60710	60711	60712	45931	45932	45933	71751	71752	71753	3-56	3	H2	3
60700	60701	60702	46021	46022	46023	61001	61002	61003	4-40	3	H2	3
60720	60721	60722	45951	45952	45953	61011	61012	61013	4-48	3	H2	3
72791	72792	72793	44191	44192	44193	71761	71762	71763	5-40	3	H1	3
60730	60731	60732	46031	46032	46033	61021	61022	61023	5-40	3	H2	3
60740	60741	60742	45971	45972	45973	61031	61032	61033	5-44	3	H2	3
72801	72802	72803	44211	44212	44213	71771	71772	71773	6-32	3	H1	3
72811	72812	72813	44221	44222	44223	71781	71782	71783	6-32	3	H2	3
60750	60751	60752	46041	46042	46043	61041	61042	61043	6-32	3	H3	3
72821	72822	72823	44231	44232	44233	71791	71792	71793	6-40	3	H1	3
60760	60761	60762	46051	46052	46053	61051	61052	61053	6-40	3	H2	3
72831	72832	72833	44241	44242	44243	71801	71802	71803	8-32	4	H1	3
72841	72842	72843	44251	44252	44253	71811	71812	71813	8-32	4	H2	3
60770	60771	60772	46061	46062	46063	61061	61062	61063	8-32	4	H3	3
60780	60781	60782	46071	46072	46073	61071	61072	61073	8-36	4	H2	3
72851	72852	72853	44261	44262	44263	71821	71822	71823	10-24	4	H1	3

Red Bold = most common used Taps

HSS STRAIGHT FLUTE HAND TAPS

Machine Screw / Fractional - Ground Thread - Magnum Super Premium

Types 23-AG, Type 24-AG & Type 25-AG Gold Oxide

Types 23-AGN, Type 24-AGN & Type 25-AGN Titanium Nitride

Types 23, Type 24 & Type 25 Bright Finish

- The most common style of tap
- Can be used by hand or for tapping under power
- Versatile taps for use in general machine tapping or CNC tapping applications
- Use for through hole or blind hole tapping



Type 23-AG - Taper

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.



Type 24-AGN - Plug

Titanium Nitride - increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.

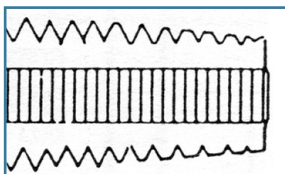


Type 25 - Bottoming

Bright Finish

Red Bold = most common used Taps

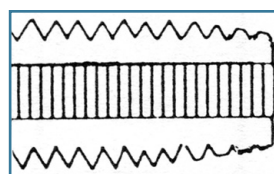
23-AG Taper Part#	24-AG Plug Part #	25-AG Bottoming Part #	23-AGN Taper Part #	24-AGN Plug Part #	25-AGN Bottoming Part #	23 Taper Part #	24 Plug Part #	25 Bottoming Part #	Size	# of Flutes	H Limit	QTY per/pack
72861	72862	72863	44271	44272	44273	71831	71832	71833	10-24	4	H2	3
60790	60791	60792	46081	46082	46083	61081	61082	61083	10-24	4	H3	3
72871	72872	72873	44281	44282	44283	71841	71842	71843	10-32	4	H1	3
72881	72882	72883	44291	44292	44293	71851	71852	71853	10-32	4	H2	3
60800	60801	60802	46091	46092	46093	61091	61092	61093	10-32	4	H3	3
60810	60811	60812	46101	46102	46103	61101	61102	61103	12-24	4	H3	3
60820	60821	60822	46111	46112	46113	61111	61112	61113	12-28	4	H3	3
72891	72892	72893	44301	44302	44303	71861	71862	71863	1/4-20	4	H1	3
72901	72902	72903	44311	44312	44313	71871	71872	71873	1/4-20	4	H2	3
60830	60831	60832	46121	46122	46123	61121	61122	61123	1/4-20	4	H3	3
72911	72912	72913	44321	44322	44323	71881	71882	71883	1/4-20	4	H5	3
72921	72922	72923	44331	44332	44333	71891	71892	71893	1/4-28	4	H1	3
72931	72932	72933	44341	44342	44343	71901	71902	71903	1/4-28	4	H2	3
60840	60841	60842	46131	46132	46133	61131	61132	61133	1/4-28	4	H3	3
72941	72942	72943	44351	44352	44353	71911	71912	71913	1/4-28	4	H4	3
72951	72952	72953	44361	44362	44363	71921	71922	71923	5/16-18	4	H2	3
60850	60851	60852	46141	46142	46143	61141	61142	61143	5/16-18	4	H3	3
72961	72962	72963	44371	44372	44373	71931	71932	71933	5/16-18	4	H5	3
72971	72972	72973	44381	44382	44383	71941	71942	71943	5/16-24	4	H2	3
60860	60861	60862	46151	46152	46153	61151	61152	61153	5/16-24	4	H3	3
72981	72982	72983	44391	44392	44393	71951	71952	71953	5/16-24	4	H4	3
72991	72992	72993	44401	44402	44403	71961	71962	71963	3/8-16	4	H1	3
73001	73002	73003	44411	44412	44413	71971	71972	71973	3/8-16	4	H2	3
60870	60871	60872	46161	46162	46163	61161	61162	61163	3/8-16	4	H3	3
73011	73012	73013	44421	44422	44423	71981	71982	71983	3/8-16	4	H5	3
73021	73022	73023	44431	44432	44433	71991	71992	71993	3/8-24	4	H1	3
73031	73032	73033	44441	44442	44443	72001	72002	72003	3/8-24	4	H2	3
60880	60881	60882	46171	46172	46173	61171	61172	61173	3/8-24	4	H3	3
73041	73042	73043	44451	44452	44453	72011	72012	72013	3/8-24	4	H4	3
60890	60891	60892	46181	46182	46183	61181	61182	61183	7/16-14	4	H3	3
73051	73052	73053	44461	44462	44463	72021	72022	72023	7/16-14	4	H5	3
60900	60901	60902	46191	46192	46193	61191	61192	61193	7/16-20	4	H3	3
73061	73062	73063	44471	44472	44473	72031	72032	72033	7/16-20	4	H5	3
73071	73072	73073	44481	44482	44483	72041	72042	72043	1/2-13	4	H1	3
60910	60911	60912	46201	46202	46203	61201	61202	61203	1/2-13	4	H3	3
73081	73082	73083	44491	44492	44493	72051	72052	72053	1/2-13	4	H5	3
73091	73092	73093	44501	44502	44503	72061	72062	72063	1/2-20	4	H1	3
60920	60921	60922	46211	46212	46213	61211	61212	61213	1/2-20	4	H3	3
73101	73102	73103	44511	44512	44513	72071	72072	72073	1/2-20	4	H5	3
60950	60951	60952	46221	46222	46223	55011	55012	55013	9/16-12	4	H3	1



TAPER

Type 23-AG, 23-AGN, 23
Type 31-AG, 31-AGN, 31

Eight to ten threads chamfered for easy thread starting in tough materials.



PLUG

Type 24-AG, 24-AGN, 24
Type 32-AG, 32-AGN, 32

Three to five threads chamfered. For general use when tapping into the bottom of the hole is not critical. (This is the most widely used style.)

Taps & Dies

HSS STRAIGHT FLUTE HAND TAPS

Machine Screw / Fractional - Ground Thread - Magnum Super Premium

Types 23-AG, Type 24-AG & Type 25-AG - Gold Oxide

Types 23-AGN, Type 24-AGN & Type 25-AGN - Titanium Nitride

Types 23, Type 24 & Type 25 - Bright Finish

- The most common style of tap
- Can be used by hand or for tapping under power
- Versatile taps for use in general machine tapping or CNC tapping applications
- Use for through hole or blind hole tapping



Type 23-AG - Taper

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.



Type 24-AGN - Plug

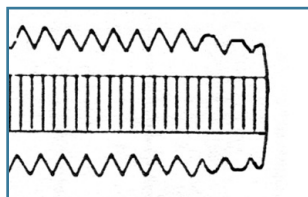
Titanium Nitride- increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.



**Type 25 - Bottoming
Bright Finish**

Red Bold = most common used Taps

23-AG Taper Part #	24-AG Plug Part #	25-AG Bottoming Part #	23-AGN Taper Part #	24-AGN Plug Part #	25-AGN Bottoming Part #	23 Taper Part #	24 Plug Part #	25 Bottoming Part #	Size	# of Flutes	H Limit	QTY per/pack
73111	73112	73113	44521	44522	44523	72081	72082	72083	9/16-12	4	H5	1
73121	73122	73123	44531	44532	44533	72091	72092	72093	9/16-18	4	H2	1
60960	60961	60962	46231	46232	46233	55021	55022	55023	9/16-18	4	H3	1
73131	73132	73133	44541	44542	44543	72101	72102	72103	9/16-18	4	H5	1
73141	73142	73143	44551	44552	44553	72111	72112	72113	5/8-11	4	H2	1
60970	60971	60972	46241	46242	46243	55031	55032	55033	5/8-11	4	H3	1
73151	73152	73153	44561	44562	44563	72121	72122	72123	5/8-11	4	H5	1
73161	73162	73163	44571	44572	44573	72131	72132	72133	5/8-18	4	H2	1
60980	60981	60982	46251	46252	46253	55041	55042	55043	5/8-18	4	H3	1
73171	73172	73173	44581	44582	44583	72141	72142	72143	5/8-18	4	H5	1
73181	73182	73183	44591	44592	44593	72151	72152	72153	11/16-11	4	H3	1
73191	73192	73193	44601	44602	44603	72161	72162	72163	11/16-16	4	H3	1
60990	60991	60992	46261	46262	46263	55051	55052	55053	3/4-10	4	H3	1
73201	73202	73203	44611	44612	44613	72171	72172	72173	3/4-10	4	H5	1
73211	73212	73213	44621	44622	44623	72181	72182	72183	3/4-16	4	H1	1
73221	73222	73223	44631	44632	44633	72191	72192	72193	3/4-16	4	H2	1
61400	61401	61402	46271	46272	46273	55061	55062	55063	3/4-16	4	H3	1
73231	73232	73233	44641	44642	44643	72201	72202	72203	3/4-16	4	H5	1
61410	61411	61412	46281	46282	46283	55071	55072	55073	7/8-9	4	H4	1
73241	73242	73243	44651	44652	44653	72211	72212	72213	7/8-9	4	H6	1
73251	73252	73253	44661	44662	44663	72221	72222	72223	7/8-14	4	H2	1
61420	61421	61422	46291	46292	46293	55081	55082	55083	7/8-14	4	H4	1
73261	73262	73263	44671	44672	44673	72231	72232	72233	7/8-14	4	H6	1
61430	61431	61432	46301	46302	46303	55091	55092	55093	1"-8	4	H4	1
73271	73272	73273	44681	44682	44683	72241	72242	72243	1"-8	4	H6	1
61440	61441	61442	46311	46312	46313	55101	55102	55103	1"-12	4	H4	1
27570	27571	27572	46321	46322	46323	55111	55112	55113	1"-14	4	H4	1
61450	61451	61452	46331	46332	46333	55121	55122	55123	1" 1/8-7	4	H4	1
61460	61461	61462	46341	46342	46343	55131	55132	55133	1" 1/8-12	4	H4	1
61470	61471	61472	46351	46352	46353	55141	55142	55143	1" 1/4-7	4	H4	1
61480	61481	61482	46361	46362	46363	55151	55152	55153	1" 1/4-12	6	H4	1
61490	61491	61492	46371	46372	46373	55161	55162	55163	1" 3/8-6	4	H4	1
61500	61501	61502	46381	46382	46383	55171	55172	55173	1" 3/8-12	6	H4	1
61510	61511	61512	46391	46392	46393	55181	55182	55183	1" 1/2-6	4	H4	1
61520	61521	61522	46401	46402	46403	55191	55192	55193	1" 1/2-12	6	H4	1



BOTTOMING

**Type 25-AG, 25-AGN, 25
Type 33-AG, 33-AGN, 33**

One to Two threads chamfered. To use after threads have been started for tapping to the bottom of a hole.

STRAIGHT FLUTES HAND TAPS SETS

Straight Flute Hand Taps Machine Screw / Fractional - Taper, Plug, Bottoming Ground Thread - High Speed Steel

- Includes one each Taper, Plug and Bottoming
 - The most common style of tap
 - Can be used by hand or for tapping under power
- Versatile taps for use in general machine tapping or CNC tapping applications
 - Use for through hole or blind hole tapping



Type 26-AG - Gold Oxide

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.

Type 26-AGN - Titanium Nitride

TiN coating increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.

Type 26 - Bright Finish

26-AG Gold Oxide Part #	26-AGN Titanium Nitride Part #	Type 26 Bright Part #	Size	# of Flutes	H Limit	Qty. per/pack each
60663	46004	71724	2-56	3	H2	1
60683	46014	71744	3-48	3	H2	1
60703	46024	61004	4-40	3	H2	1
60723	45954	61014	4-48	3	H2	1
60733	46034	61024	5-40	3	H2	1
60743	45974	61034	5-44	3	H2	1
60753	46044	61044	6-32	3	H3	1
60763	46054	61054	6-40	3	H2	1
60773	46064	61064	8-32	4	H3	1
60783	46074	61074	8-36	4	H2	1
60793	46084	61084	10-24	4	H3	1
60803	46094	61094	10-32	4	H3	1
60813	46104	61104	12-24	4	H3	1
60823	46114	61114	12-28	4	H3	1
60833	46124	61124	1/4-20	4	H3	1
60843	46134	61134	1/4-28	4	H3	1
60853	46144	61144	5/16-18	4	H3	1
60863	46154	61154	5/16-24	4	H3	1
60873	46164	61164	3/8-16	4	H3	1
60883	46174	61174	3/8-24	4	H3	1
60893	46184	61184	7/16-14	4	H3	1
60903	46194	61194	7/16-20	4	H3	1
60913	46204	61204	1/2-13	4	H3	1
60923	46214	61214	1/2-20	4	H3	1
60953	46224	55014	9/16-12	4	H3	1
60963	46234	55024	9/16-18	4	H3	1
60973	46244	55034	5/8-11	4	H3	1
60983	46254	55044	5/8-18	4	H3	1
60993	46264	55054	3/4-10	4	H3	1
61403	46274	55064	3/4-16	4	H3	1
61413	46284	55074	7/8-9	4	H4	1
61423	46294	55084	7/8-14	4	H4	1
61433	46304	55094	1"-8	4	H4	1
61443	46314	55104	1"-12	4	H4	1
27573	46324	55114	1"-14	4	H4	1
61453	46334	55124	1 1/8-7	4	H4	1
61463	46344	55134	1 1/8-12	4	H4	1
61473	46354	55144	1 1/4-7	4	H4	1
61483	46364	55154	1 1/4-12	6	H4	1
61493	46374	55164	1 3/8-6	4	H4	1
61503	46384	55174	1 3/8-12	6	H4	1
61513	46394	55184	1 1/2-6	4	H4	1
61523	46404	55194	1 1/2-12	6	H4	1

METRIC - STRAIGHT FLUTE HAND TAPS

Straight Flute Hand Taps - Gold Oxide Ground Thread - High Speed Steel

Type 31-AG, 31-AGN, 31-Taper, Type 32-AG, 32-AGN, 32-Plug Type 33-AG, 33-AGN, 33-Bottoming

- The most common style of tap
- Can be used by hand or for tapping under power
- Versatile taps for use in general machine tapping or CNC tapping applications
- Use for through hole or blind hole tapping



Type 31-AG - Taper

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.



Type 32-AGN - Plug

Titanium Nitride - increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life..



Type 33 - Bottoming

Bright Finish

31-AG Taper Part #	32-AG Plug Part #	33-AG Bottoming Part #	31-AGN Taper Part #	32-AGN Plug Part #	33-AGN Bottoming Part #	31 Taper Part #	32 Plug Part #	33 Bottoming Part #	Size	# of Flutes	PD Limit	QTY. per/pack
60329	61569	61561	37661	37662	37663	54691	54692	54693	1.6-0.35	2	D3	3
60339	61579	61571	37691	37692	37693	54701	54702	54703	1.8-0.35	2	D3	3
60349	61589	61581	37711	37712	37713	54711	54712	54713	2.0-0.40	3	D3	3
60359	61599	61591	37701	37702	37703	54721	54722	54723	2.2-0.45	3	D3	3
60379	61629	61681	37731	37732	37733	54731	54732	54733	2.5-0.45	3	D3	3
60389	61631	61682	37741	37742	37743	54741	54742	54743	3.0-0.50	3	D3	3
60519	61632	61683	37751	37752	37753	54751	54752	54753	3.5-0.60	3	D4	3
60529	61633	61684	37761	37762	37763	54761	54762	54763	4.0-0.70	4	D4	3
60369	61634	61689	37771	37772	37773	54771	54772	54773	4.5-0.75	4	D4	3
60539	61639	61691	37781	37782	37783	54781	54782	54783	5.0-0.80	4	D4	3
60549	61641	61692	37791	37792	37793	54791	54792	54793	6.0-1.00	4	D5	3
60559	61642	61693	37801	37802	37803	54801	54802	54803	7.0-1.00	4	D5	3
60569	61643	61694	37811	37812	37813	54811	54812	54813	8.0-1.00	4	D5	3
60579	61644	61699	37821	37822	37823	54821	54822	54823	8.0-1.25	4	D5	3
60589	61649	61701	37831	37832	37833	54831	54832	54833	10.0-1.25	4	D5	3
60611	61651	61702	37841	37842	37843	54841	54842	54843	10.0-1.50	4	D6	3
61601	61652	61703	37851	37852	37853	54851	54852	54853	12.0-1.25	4	D5	3
61901	61911	61921	38451	38452	38453	55201	55202	55203	12.0-1.50	4	D6	3
61602	61653	61704	37861	37862	37863	54861	54862	54863	12.0-1.75	4	D6	3
61603	61654	61709	37871	37872	37873	54871	54872	54873	14.0-1.50	4	D6	1
61604	61659	61711	37881	37882	37883	54881	54882	54883	14.0-2.00	4	D7	1
61609	61661	61712	37891	37892	37893	54891	54892	54893	16.0-1.50	4	D6	1
61611	61662	61713	37901	37902	37903	54901	54902	54903	16.0-2.00	4	D7	1
61281	61282	61283	38491	38492	38493	54911	54912	54913	18.0-1.50	4	D6	1
61612	61663	61714	37911	37912	37913	54921	54922	54923	18.0-2.50	4	D7	1
66361	66362	66363	38501	38502	38503	55251	55252	55253	20.0-1.50	4	D6	1
61613	61664	61719	37921	37922	37923	54931	54932	54933	20.0-2.50	4	D7	1
66371	66372	66373	38521	38522	38523	55261	55262	55263	22.0-1.50	4	D6	1
66381	66382	66383	38531	38532	38533	55271	55272	55273	22.0-2.50	4	D7	1
66391	66392	66393	38541	38542	38543	55281	55282	55283	24.0-2.00	4	D7	1
61614	61669	61721	37931	37932	37933	54941	54942	54943	24.0-3.00	4	D8	1
66401	66402	66403	-----	-----	-----	55291	55292	55293	27.0-2.00	4	D7	1
61619	61671	61722	-----	-----	-----	54951	54952	54953	27.0-3.00	4	D8	1
66411	66412	66413	-----	-----	-----	55301	55302	55303	30.0-2.00	4	D7	1
61621	61672	61723	-----	-----	-----	54961	54962	54963	30.0-3.50	4	D9	1
66421	66422	66423	-----	-----	-----	55311	55312	55313	33.0-2.00	6	D7	1
61622	61673	61724	-----	-----	-----	54971	54972	54973	33.0-3.50	4	D9	1
66431	66432	66433	-----	-----	-----	55321	55322	55323	36.0-3.00	4	D8	1
61623	61674	61729	-----	-----	-----	54981	54982	54983	36.0-4.00	4	D9	1
66441	66442	66443	-----	-----	-----	55331	55332	55333	39.0-3.00	6	D8	1
61624	61679	61731	-----	-----	-----	54991	54992	54993	39.0-4.00	6	D9	1

PRODUCT TIPS

Tap Wrenches:

They come in two sizes, large & small. Make sure tap is securely locked in place by turning the hex head as tightly as possible with your fingers. Do not use a wrench to tighten.



Taper Tap

This section cuts full-size thread



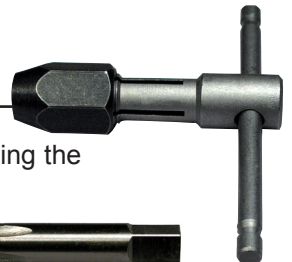
Plug Tap

This section cuts full-size thread



Bottoming Tap

This section cuts full-size thread



SETS STRAIGHT FLUTE TAP & TAPER PIPE TAPS

Type 35-AG, 35-AGN & Type 35 Sets Straight Flute Hand Taps - Taper, Plug, Bottoming Ground Thread - High Speed Steel

- The most common style of tap
- Can be used by hand or for tapping under power
- Versatile taps for use in general machine tapping or CNC tapping applications
- Use for through hole or blind hole tapping

Type 35-AG - Gold Oxide

Gold Oxide - low temperature stress relief that enhances lubricity, reduces friction and increases tap toughness.

Type 35-AGN - Titanium Nitride

TiN coating increases wear resistance by producing a higher surface hardness and exceptional lubricity resulting in longer tool life.

Type 35 - Bright Finish

(Includes one each Taper, Plug and Bottoming tap)

35-AG Gold Oxide Part #	35-AGN TiN Coated Part #	Type 35 Bright Part #	Size	# of Flutes	PD Limit	Qty per/pck
61741	37744	54744	3.0-0.50	3	D3	1
61742	37764	54764	4.0-0.70	4	D4	1
61743	37784	54784	5.0-0.80	4	D4	1
61744	37794	54794	6.0-1.00	4	D5	1
61749	37804	54804	7.0-1.00	4	D5	1
61751	37814	54814	8.0-1.00	4	D5	1
61752	37824	54824	8.0-1.25	4	D5	1
61753	37834	54834	10.0-1.25	4	D5	1
61754	37844	54844	10.0-1.50	4	D6	1
61759	37854	54854	12.0-1.25	4	D5	1
61761	37864	54864	12.0-1.75	4	D6	1
61762	37874	54874	14.0-1.50	4	D6	1
61763	37884	54884	14.0-2.00	4	D6	1
61764	37894	54894	16.0-1.50	4	D6	1
61769	37904	54904	16.0-2.00	4	D7	1
61772	37914	54924	18.0-2.50	4	D7	1
61774	37924	54934	20.0-2.50	4	D7	1

TAPER PIPE TAPS

Regular - Type 30-AG, 30-AGN, 30-B & 30

Interrupted - Type I30-AG, I30-AGN, I30-B & I30

- **Regular** Thread NPT Taper Pipe taps are used for tapping pipe fittings and couplings in a wide variety of materials.
 - **Interrupted** Thread Taper Pipe taps reduce friction, increase chip capacity, and enhance coolant flow. Recommended for a wide variety of materials including soft ductile materials that produce long stringy chips.
- (*Black Oxide Taper Pipe Tap used on Cast Iron)



Type 30-UB



Type I-30-UB Interrupted

NPT Regular				NPT INTERRUPTED				Size NPT	# of Flutes	OAL	Shank Diameter	Tap Drill Size	Qty. per/pack
30-AG Gold Oxide Part #	30-AGN TiN Coated Part #	Type 30-B Black Part #	Type 30 Bright Part #	I30-AG Gold Oxide Part #	I30-AGN TiN Coated Part #	*I30-B Black Oxide Part #	I30 Bright Part #						
60570	59343	59342	59341	-----	-----	-----	-----	1/16-27	4	2-1/8"	.3125	D	3
61240	59353	59352	59351	-----	-----	-----	-----	1/8-27(5/16 Shk)	4	2-1/8"	.3125	11/32	3
61250	59363	59362	59361	81410	95722	95771	95770	1/8-27	4	2-1/8"	.4375	11/32	3
61260	59373	59372	59371	81420	95782	95781	95780	1/4-18	4	2-7/16"	.5625	7/16	3
61270	59383	59382	59381	81430	95792	95791	95790	3/8-18	4	2-9/16"	.7000	37/64	1
61280	59393	59392	59391	81440	95802	95801	95800	1/2-14	4	3-1/8"	.6875	23/32	1
61290	59403	59402	59401	81450	95812	95811	95810	3/4-14	5	3-1/4"	.9063	59/64	1
61300	59413	59412	59411	81460	95822	95821	95820	1" - 11 1/2	5	3-3/4"	1.1250	1-5/32	1
61310	59423	59422	59421	81470	95832	95831	95830	1 1/4" - 11 1/2	5	4"	1.3125	1-1/2	1
61320	59433	59432	59431	81480	95842	95841	95840	1 1/2" - 11 1/2	7	4-1/4"	1.5000	1-47/64	1
61330	59443	59442	59441	81490	95852	95851	95850	2" - 11 1/2	7	4-1/2"	1.8750	2-7/32	1

HIGH SPEED STEEL - EXTENSION TAPER PIPE TAPS - NPT

Type 30-EXT

- 6" OAL Extension NPT Pipe Tap
- High Speed Steel



Part #	Size	# of Flutes	OAL	QTY. per/pack
77622	1/8-27	4	6	1
77632	1/4-18	4	6	1
77642	3/8-18	4	6	1
77652	1/2-14	4	6	1



STRAIGHT FLUTE TAPS - LEFT HAND THREAD

Type 23L-AG -Taper , Type 24L-AG -Plug , Type 25L-AG -Bottoming
Magnum Super Premium

- Special Hi-Tungsten and Hi-Molybdenum tool steels, gold surface treated for maximum lubricity.
- Taper, plug and bottoming styles provide great versatility in tough materials, both blind and through holes.
- For general use in production tapping or left hand tapping operations.



TYPE 23L-AG TAPER STYLE LEFT HAND THREAD

Part No.	Size	Number of Flutes	GH Limit	Qty. per/pack
60223	6-32	3	3	3
60243	8-32	4	3	3
60263	10-24	4	3	3
60273	10-32	4	3	3
60323	1/4-20	4	3	3
60333	1/4-28	4	3	3
60343	5/16-18	4	3	3
60353	5/16-24	4	3	3
60363	3/8-16	4	3	3
60373	3/8-24	4	3	3
60383	7/16-14	4	3	3
60393	7/16-20	4	3	3
60403	1/2-13	4	3	3
60413	1/2-20	4	3	3
60423	9/16-12	4	3	1
60433	9/16-18	4	3	1
60443	5/8-11	4	3	1
60453	5/8-18	4	3	1
60463	11/16-11	4	3	1
60473	11/16-16	4	3	1
60483	3/4-10	4	3	1
60493	3/4-16	4	3	1
60503	7/8-9	4	4	1
60513	7/8-14	4	4	1
60523	1-8	4	4	1
60533	1-12	4	4	1
60543	1-14	4	4	1
60553	1-1/8-7	4	4	1
60563	1-1/8-12	4	4	1
60573	1-1/4-7	4	4	1
60583	1-1/4-12	6	4	1
60593	1-3/8-6	4	4	1
60603	1-3/8-12	6	4	1
60613	1-1/2-6	6	4	1
60609	1-1/2-12	4	4	1

TYPE 24L-AG PLUG STYLE LEFT HAND THREAD

Part No.	Size	Number of Flutes	GH Limit	Qty. per/pack
60222	6-32	3	3	3
60242	8-32	4	3	3
60262	10-24	4	3	3
60272	10-32	4	3	3
60322	1/4-20	4	3	3
60332	1/4-28	4	3	3
60342	5/16-18	4	3	3
60352	5/16-24	4	3	3
60362	3/8-16	4	3	3
60372	3/8-24	4	3	3
60382	7/16-14	4	3	3
60392	7/16-20	4	3	3
60402	1/2-13	4	3	3
60412	1/2-20	4	3	3
60422	9/16-12	4	3	1
60432	9/16-18	4	3	1
60442	5/8-11	4	3	1
60452	5/8-18	4	3	1
60462	11/16-11	4	3	1
60472	11/16-16	4	3	1
60482	3/4-10	4	3	1
60492	3/4-16	4	3	1
60502	7/8-9	4	4	1
60512	7/8-14	4	4	1
60522	1-8	4	4	1
60532	1-12	4	4	1
60542	1-14	4	4	1
60552	1-1/8-7	4	4	1
60562	1-1/8-12	4	4	1
60572	1-1/4-7	4	4	1
60582	1-1/4-12	6	4	1
60592	1-3/8-6	4	4	1
60602	1-3/8-12	6	4	1
60612	1-1/2-6	4	4	1
60619	1-1/2-12	6	4	1



TYPE 25L-AG BOTTOMING LEFT HAND THREAD

Part No.	Size	Number of Flutes	GH Limit	Qty. per/pack	Part No.	Size	Number of Flutes	GH Limit	Qty. per/pack	Part No.	Size	Number of Flutes	GH Limit	Qty. per/pack
60224	6-32	3	3	3	60404	1/2-13	4	3	3	60524	1-8	4	4	1
60244	8-32	4	3	3	60414	1/2-20	4	3	3	60534	1-12	4	4	1
60264	10-24	4	3	3	60424	9/16-12	4	3	1	60544	1-14	4	4	1
60274	10-32	4	3	3	60434	9/16-18	4	3	1	60554	1-1/8-7	4	4	1
60324	1/4-20	4	3	3	60444	5/8-11	4	3	1	60564	1-1/8-12	4	4	1
60334	1/4-28	4	3	3	60454	5/8-18	4	3	1	60574	1-1/4-7	4	4	1
60344	5/16-18	4	3	3	60464	11/16-11	4	3	1	60584	1-1/4-12	6	4	1
60354	5/16-24	4	3	3	60474	11/16-16	4	3	1	60594	1-3/8-6	4	4	1
60364	3/8-16	4	3	3	60484	3/4-10	4	3	1	60604	1-3/8-12	6	4	1
60374	3/8-24	4	3	3	60494	3/4-16	4	3	1	60614	1-1/2-6	6	4	1
60384	7/16-14	4	3	3	60504	7/8-9	4	4	1	60599	1-1/2-12	4	4	1
60394	7/16-20	4	3	3	60514	7/8-14	4	4	1					

FRACTIONAL SPIRAL FLUTE SEMI-BOTTOMING TAPS

Right Hand Hi-Helix Flutes - Ground Thread - High Speed Steel

- Semi-bottoming style can be used for plug or bottoming applications.
- Helical flutes provides a shear cutting facilitating evacuation of chips from the hole.

30° Helix Angle - Used where chip disposal is a problem.

- Spiral flute design effectively draws chips out of the hole.

- Recommended when tapping blind or through holes in a variety of materials.

52° Helix Angle - Can be used for plug or bottoming applications.

- Allows for threading close to bottom or blind holes.

- Recommended for tapping deep holes in copper, brass, aluminum and other soft ductile materials



Type 37-AGN - 52°
Titanium Nitride



Type 37- 52°
Bright Finish

Type 36-ACN 30°, 37-ACN 52° - Titanium Carbon Nitride

Titanium Carbon Nitride - coating raises cutting surface hardness greatly increasing resistance to wear.

Type 36-AGN 30°, 37-AGN 52° - Titanium Nitride

Titanium Nitride - coating adds lubricity and hardness, enhancing chip flow, finish hole quality and drill life.

Type 36 30°, Type 37 52° - Bright Finish

Bright Finish - Recommended in aluminum, zinc, copper, wood, refrigeration die casting, auto hardware and epoxy based plastics.

FRACTIONAL SPIRAL FLUTE SEMI-BOTTOMING TAPS - 30° SPIRAL

Type 36-ACN Titanium Carbon Nitride Part#	Type 36-AGN Titanium Nitride Part#	Type 36 Bright Part#	Spiral	Size	# of Flutes	H Limit	Qty. per/pack each
49804	49803	49802	30°	3-48	2	H2	1
49814	49813	49812	30°	3-56	2	H2	1
49824	49823	49822	30°	4-40	2	H2	1
49834	49833	49832	30°	4-48	2	H2	1
49844	49843	49842	30°	5-40	2	H2	1
49854	49853	49852	30°	5-44	2	H2	1
49864	49863	49862	30°	6-32	2	H3	1
49874	49873	49872	30°	6-40	2	H2	1
49884	49883	49882	30°	8-32	3	H3	1
49894	49893	49892	30°	8-36	3	H2	1
49904	49903	49902	30°	10-24	3	H3	1
49914	49913	49912	30°	10-32	3	H3	1
49924	49923	49922	30°	12-24	3	H3	1
49934	49933	49932	30°	12-28	3	H3	1
49944	49943	49942	30°	1/4-20	3	H3	1
49954	49953	49952	30°	1/4-28	3	H3	1
49964	49963	49962	30°	5/16-18	3	H3	1
49974	49973	49972	30°	5/16-24	3	H3	1
49984	49983	49982	30°	3/8-16	3	H3	1
49994	49993	49992	30°	3/8-24	3	H3	1
50004	50003	50002	30°	7/16-14	3	H3	1
50014	50013	50012	30°	7/16-20	3	H3	1
50024	50023	50022	30°	1/2-13	3	H3	1
50034	50033	50032	30°	1/2-20	3	H3	1
50044	50043	50042	30°	9/16-12	4	H3	1
50054	50053	50052	30°	9/16-18	4	H3	1
50064	50063	50062	30°	5/8-11	4	H3	1
50074	50073	50072	30°	5/8-18	4	H3	1
50084	50083	50082	30°	3/4-10	4	H3	1
50094	50093	50092	30°	3/4-16	4	H3	1

FRACTIONAL SPIRAL FLUTE SEMI-BOTTOMING TAPS - 52° SPIRAL

Type 37-ACN Titanium Carbon Nitride Part#	Type 37-AGN Titanium Nitride Part#	Type 37 Bright Part#	Spiral	Size	# of Flutes	H Limit	Qty. per/pack each
52854	52853	52852	52°	3-48	2	H2	1
52864	52863	52862	52°	3-56	2	H2	1
52874	52873	52872	52°	4-40	2	H2	1
52884	52883	52882	52°	4-48	2	H2	1
52894	52893	52892	52°	5-40	2	H2	1
52904	52903	52902	52°	5-44	2	H2	1
52914	52913	52912	52°	6-32	2	H3	1
52924	52923	52922	52°	6-40	2	H2	1
52934	52933	52932	52°	8-32	3	H3	1

Continued on next page

HSS Taps

FRACTIONAL / METRIC SPIRAL FLUTE SEMI-BOTTOMING TAPS

Right Hand Hi-Helix Flutes Ground Thread - High Speed Steel

- Semi-bottoming style can be used for plug or bottoming applications.
- Helical flutes provides a shear cutting facilitating evacuation of chips from the hole.

30° Helix Angle - *Used where chip disposal is a problem.*

• *Spiral flute design effectively draws chips out of the hole.*

• **Recommended** when tapping blind or through holes in a variety of materials.

52° Helix Angle - *Can be used for plug or bottoming applications.*

• *Allows for threading close to bottom or blind holes.*

• **Recommended** for tapping deep holes in copper, brass, aluminum and other soft ductile materials.



Type 37-AGN - 52°
Titanium Nitride



Type 37- 52°
Bright Finish

Type 37-ACN 52°, Metric Type 38-ACN 30°, Metric 39-ACN 52° - Titanium Carbon Nitride

Titanium Carbon Nitride - coating raises cutting surface hardness greatly increasing resistance to wear.

Type 37-AGN 52°, Metric 38-AGN 30°, Metric 39-AGN 52° - Titanium Nitride

Titanium Nitride - coating adds lubricity and hardness, enhancing chip flow, finish hole quality and drill life.

Type 37 52°, Metric Type 38 30°, Metric Type 39 52° - Bright Finish

Bright Finish - Recommended in aluminum, zinc, copper, wood, refrigeration die casting, auto hardware and epoxy based plastics.

FRACTIONAL - SPIRAL FLUTE SEMI-BOTTOMING TAPS - 52° SPIRAL

Type 37-ACN Titanium Carbon Nitride Part #	Type 37-AGN Titanium Nitride Part #	Type 37 Bright Part #	Spiral	Size	# of Flutes	H Limit	Qty. per/pack each
52944	52943	52942	52°	8-36	3	H2	1
52954	52953	52952	52°	10-24	3	H3	1
52964	52963	52962	52°	10-32	3	H3	1
52974	52973	52972	52°	12-24	3	H3	1
52984	52983	52982	52°	12-28	3	H3	1
52994	52993	52992	52°	1/4-20	3	H3	1
53004	53003	53002	52°	1/4-28	3	H3	1
53014	53013	53012	52°	5/16-18	3	H3	1
53024	53023	53022	52°	5/16-24	3	H3	1
53034	53033	53032	52°	3/8-16	3	H3	1
53044	53043	53042	52°	3/8-24	3	H3	1
53054	53053	53052	52°	7/16-14	3	H3	1
53064	53063	53062	52°	7/16-20	3	H3	1
53074	53073	53072	52°	1/2-13	3	H3	1
53084	53083	53082	52°	1/2-20	3	H3	1
53094	53093	53092	52°	9/16-12	4	H3	1
53104	53103	53102	52°	9/16-18	4	H3	1
53114	53113	53112	52°	5/8-11	4	H3	1
53124	53123	53122	52°	5/8-18	4	H3	1
53134	53133	53132	52°	3/4-10	4	H3	1
53144	53143	53142	52°	3/4-16	4	H3	1

METRIC

SPIRAL FLUTE SEMI-BOTTOMING TAPS - 30° SPIRAL

Type 38-ACN Titanium Carbon Nitride Part #	Type 38-AGN Titanium Nitride Part #	Type 38 Bright Part #	Spiral	Size	# of Flutes	D Limit	Qty. per/pack each
69014	69013	69012	30°	3.00 x .50	2	D3	1
69024	69023	69022	30°	3.50 x .60	2	D4	1
69034	69033	69032	30°	4.00 x .70	3	D4	1
69044	69043	69042	30°	4.50 x .75	3	D4	1
69054	69053	69052	30°	5.00 x .80	3	D4	1
69064	69063	69062	30°	6.00 x 1.00	3	D5	1
69074	69073	69072	30°	8.00 x 1.25	3	D5	1
69084	69083	69082	30°	10.00 x 1.50	3	D6	1
69094	69093	69092	30°	12.00 x 1.75	3	D6	1

METRIC

SPIRAL FLUTE SEMI-BOTTOMING TAPS - 52° SPIRAL

Type 39-ACN Titanium Carbon Nitride Part #	Type 39-AGN Titanium Nitride Part #	Type 39 Bright Part #	Spiral	Size	# of Flutes	D Limit	Qty. per/pack each
69314	69313	69312	52°	3.00 x .50	2	D3	1
69324	69323	69322	52°	3.50 x .60	2	D4	1
69334	69333	69332	52°	4.00 x .70	3	D4	1
69344	69343	69342	52°	4.50 x .75	3	D4	1
69354	69353	69352	52°	5.00 x .80	3	D4	1
69364	69363	69362	52°	6.00 x 1.00	3	D5	1
69374	69373	69372	52°	8.00 x 1.25	3	D5	1
69384	69383	69382	52°	10.00 x 1.50	3	D6	1
69394	69393	69392	52°	12.00 x 1.75	3	D6	1

METRIC

Tap - Fractional / Metric Spiral Flute Semi-Bottoming Taps

DRILL & TAP COMBO & SETS

Magnum Super Premium

Includes corresponding drill with tap in a durable metal case.

SP-18TD



TAP & DRILL SETS

SP-18TD (SPIRAL POINT, NC)

Part#	57580	Description of Sizes
190-AG Drill Sizes	#36, 29, 25, 21, 7, F, 5/16, U & 27/64	
20-AG Tap Sizes	6-32, 8-32, 10-24, 10-32, 1/4-20 & 5/16-18, 3/8-16, 7/16-14 & 1/2-13	

SP-18TDM (SPIRAL POINT, METRIC)

Part#	57990	Description of Sizes
170-AG Drill Sizes (mm)	2.05, 2.50, 2.90, 3.30, 4.20, 5.00, 6.70, 8.50 & 10.20	
21-AG Tap Sizes (mm)	2.5-.45, 3.0-.50, 3.5-.60, 4.0-.70, 5.0-.80, 6.0-1.00, 8.0-1.25, 10.0-1.50 & 12.0-1.75	

SP-18TDF (SPIRAL POINT, NF)

Part#	58010	Description of Sizes
190-AG Drill Sizes	#33, 29, 25, 21, 3, 1, Q, 25/64 & 29/64	
20-AG Tap Sizes	6-40, 8-36, 10-24, 10-32, 1/4-28, 5/16-24, 3/8-24, 7/16-20 & 1/2-20	

SP-12TD (SPIRAL POINT, NC)

Part#	58501	Description of Sizes
190-AG Drill Sizes	#36, 29, 25, 21, 7, F	
20-AG Tap Sizes	6-32, 8-32, 10-24, 10-32, 1/4-20 & 5/16-18	

SF-18TDC (STRAIGHT FLUTE, NC)

Part#	60930	Description of Sizes
190-AG Drill Sizes	#36, 29, 25, 21, 7, F, 5/16, U & 27/64	
24-AG Tap Sizes	6-32, 8-32, 10-24, 10-32, 1/4-20, 5/16-18, 3/8-16, 7/16-14 & 1/2-13	

SF-18TDF (STRAIGHT FLUTE, NF)

Part#	60940	Description of Sizes
190-AG Drill Sizes	#33, 29, 25, 21, 3, 1, Q, 25/64 & 29/64	
24-AG Tap Sizes	6-40, 8-36, 10-24, 10-32, 1/4-28, 5/16-24, 3/8-24, 7/16-20 & 1/2-20	

SF-10TD (STRAIGHT FLUTE, NC)

Part#	58500	Description of Sizes
190-AG Drill Size	31/64	
130-AG Drill Sizes	17/32, 21/32, 49/64 & 7/8	
24-AG Tap Sizes	9/16-12, 5/8-11, 3/4-10, 7/8-9 & 1-8	

B-18TD BRIGHT FINISH 118° POINT - DRILL & TAP COMBO SET

Part#	60541	Description of Sizes
Type 100 Drill Sizes	#36, 29, 25, 21, 7, F, 5/16, U & 27/64	
Type 20 Tap Sizes	6-32, 8-32, 10-24, 10-32, 1/4-20 & 5/16-18, 3/8-16, 7/16-14 & 1/2-13	

DRILL & TAP COMBO

Type 34-AG

- Includes the correct drill with corresponding size tap on a hanging card.
- Both tools are gold surface treated for maximum lubricity, and precision ground for the ultimate in accuracy and performance.
- Hi-Molybdenum super premium twist drill combined with the corresponding Hi-Tungsten Magnum spiral point tap.

Part No.	Thread Size	Drill Size	Part No.	Thread Size	Drill Size
51807	6-32	36	51897	1/4-28	3
51817	6-40	33	51907	5/16-18	F
51827	8-32	29	51917	5/16-24	I
51837	8-36	29	51927	3/8-16	5/16
51847	10-24	25	51937	3/8-24	Q
51857	10-32	21	51947	7/16-14	U
51867	12-24	16	51957	7/16-20	25/64
51877	12-28	14	51967	1/2-13	27/64
51887	1/4-20	7	51977	1/2-20	29/64

COMBINATION DRILL & TAP

Type 40-AG

- Hi-Molybdenum tool steel ensures longer tool life.
- Combination drill and taps are ideally suited for on-site tapping in construction, maintenance and repair, assembly, production environments.
- The self-centering split point provides excellent drilling precision and accuracy.



Pitch Diameter and Thread tolerances are designed to produce a Class 2B fit.

Part #	Size	Max Material Thickness	Thread Length
73770	4-40	0.368	0.564
73780	4-48	0.369	0.564
73790	5-40	0.403	0.624
73800	5-44	0.404	0.624
73810	6-32	0.468	0.376
73820	6-40	0.470	0.376
73830	8-32	0.539	0.376
73840	8-36	0.540	0.376
73850	10-24	0.606	0.496
73860	10-32	0.608	0.496
73870	12-24	0.677	0.496
73880	12-28	0.678	0.496
73890	1/4-20	0.746	0.626
73900	1/4-28	0.750	0.626
73910	5/16-18	0.889	0.683
73920	5/16-24	0.893	0.683
73930	3/8-16	1.031	0.746
73940	3/8-24	1.036	0.746
73950	7/16-14	1.172	0.882
73960	7/16-20	1.178	0.880
73970	1/2-13	1.378	0.940
73980	1/2-20	1.384	0.940
75540	9/16-12	1.395	0.940
75550	9/16-18	1.403	0.940
75560	5/8-11	1.412	0.940
75570	5/8-18	1.421	0.940

Pitch Diameter and Thread tolerances are designed to produce a Class 6H fit.

Part #	MM Size	Max Material Thickness	Thread Length
85921	3.0 x 0.5	0.403	0.624
85931	4.0 x 0.7	0.538	0.376
85941	5.0 x 0.8	0.610	0.496
85951	6.0 x 1.00	0.746	0.626
85961	7.0 x 1.00	0.882	0.686
85971	8.0 x 1.25	0.892	0.686
85991	10.0 x 1.50	1.037	0.746
86001	12.0 x 1.75	1.373	0.942

Part#	SETS	Description of Sizes
21330	40-AG - DT-6	6pc. set 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20
73991	40-AG - DT-7F	7pc. set 8-36, 10-32, 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20
73990	40-AG - DT-7C	7pc. set 8-32, 10-24, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13

1/4" QUICK RELEASE DRILL & TAP COMBO

Type 40-QR

- Hi-Molybdenum tool steel ensures longer tool life.
- Combination drill and taps are ideally suited for on-site tapping in construction, maintenance and repair, assembly, production environments.

Pitch Diameter and Thread tolerances are designed to produce a Class 2B fit.

Part#	Size	Max Material Thickness	Thread Length
73814	6-32	0.170	0.283
73834	8-32	0.200	0.283
73854	10-24	0.200	0.363
73864	10-32	0.200	0.363
73874	12-24	0.200	0.369
73894	1/4-20	0.230	0.326
73904	1/4-28	0.230	0.326
73914	5/16-18	0.480	0.614
73934	3/8-16	0.480	0.585

Pitch Diameter and Thread tolerances are designed to produce a Class 6H fit.

Part #	MM Size	Max Material Thickness	Thread Length
85924	3.0 x 0.50	0.170	0.334
85934	4.0 x 0.70	0.170	0.269
85944	5.0 x 0.80	0.200	0.404
85954	6.0 x 1.00	0.230	0.376
85974	8.0 x 1.25	0.480	0.638
85994	10.0 x 1.50	0.480	0.595

Part#	SET	Description of Sizes
21324	40-QR DT-5	5pc. set 6-32, 8-32, 10-24, 10-32, 1/4-20

HSS Taps & Dies

HSS TAP SETS, HEX DIES - METRIC & CARDED HANGING DISPLAY

Carded Hanging Display

38 Piece MRO Pro-Pack Drilling & Tapping Combo Carded Super Premium Black & Gold Twist Drill combined with the Corresponding Hi-Tungsten Spiral Point Gold Tap.

Part No. 52001

One Each of	Two Each of	Three Each of	Four Each of
6-32	8-32	5/16-18	1/4-20
6-40	8-36	3/8-16	
12-24	10-24	7/16-14	
12-28	10-32	1/2-13	
	1/4-28		
	5/16-24		
	3/8-24		
	7/16-20		
	1/2-20		

HSS TAP SETS

Magnum Super Premium

- Straight flute or spiral point taps in rugged black steel index.



SPIRAL & STRAIGHT FLUTE TAP SETS

SP-19T - Type 20-AG - Spiral Point

Part No. **Sizes**

61600 0-80, 1-64, 1-72, 2-56, 2-64, 3-48, 3-56, 4-40 4-48, 5-40, 5-44, 6-32, 6-40, 8-32, 8-36, 10-24, 10-32, 12-24 & 12-28

SP-10T - Type 20-AG - Spiral Point

Part No. **Sizes**

61610 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13 & 1/2-20

SF-10T - Type 24-AG - Straight Flute

Part No. **Sizes**

61620 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13 & 1/2-20

HIGH-SPEED STEEL HEX DIES

Type 27-AG

Magnum Super Premium Dies

- Special Hi-Molybdenum tool steel, polished gold finish with black surface treated threads for long life and rich appearance.
- These dies are used for threading rods, bolts, studs and other pieces requiring external threads.
- The outside hex configuration allows both wrench and die stock use in threading.



Part No.	Size	Across Flats	Qty. per/pack
61000	4-40	1"	3
61010	6-32	1"	3
61020	8-32	1"	3
61030	10-24	1"	3
61040	10-32	1"	3
61050	12-24	1"	3
61060	1/4-20	1"	3
61070	1/4-28	1"	3
61080	5/16-18	1"	3
61090	5/16-24	1"	3
61100	3/8-16	1"	3
61110	3/8-24	1"	3
61120	7/16-14	1"	3
61130	7/16-20	1"	3
61140	1/2-13	1"	3
61150	1/2-20	1"	3
61160	9/16-12	1-7/16"	1
61170	9/16-18	1-7/16"	1
61180	5/8-11	1-7/16"	1
61190	5/8-18	1-7/16"	1
61200	3/4-10	1-7/16"	1
61210	3/4-16	1-7/16"	1
61220	1/8-27	1"	1
61230	1/4-18	1-7/16"	1

METRIC

Part No.	Size	Across Flats	Qty. per/pack
60511	3.0 x 0.50	1"	3
60521	3.5 x 0.60	1"	3
60531	4.0 x 0.70	1"	3
60551	5.0 x 0.80	1"	3
60561	6.0 x 1.00	1"	3
60581	8.0 x 1.25	1"	3
60601	10.0 x 1.50	1"	3
60621	12.0 x 1.75	1-7/16"	1
60622	14.0 x 1.50	1-7/16"	1

25PC / 23PC / 15PC / 14PC HSS TAP & DIE ASSORTMENTS

25pc. Magnum Super Premium Set Spiral point Plug Taps & Hex Dies

Set contains: Type 20-AG and 27-AG

- HSS spiral point taps & HSS hex dies sizes: 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13 & 1/2-20
- HSS pipe tap and hex die size: 1/8-27 NPT.
- T-Handle tap wrench: 3/16" - 1/2"
- Die stock & Screw pitch gauge
- SP-25TDI

Supplied in sturdy plastic case

PART NO. 35173



Part # 35173

24pc. Magnum Super Premium Set - Metric Spiral point Taps & Hex Dies

Set contains: Type 21-AG and 27-AG

- HSS spiral point taps & HSS hex dies sizes: 3.0-.50, 3.5-.60, 4.0-.70, 5.0-.80, 6.0-1.00, 8.0-1.25, 10.0-1.50 & 12.0-1.75
- HSS pipe tap and hex die size: 1/8-27 NPT
- T-Handle tap wrenches: 0 - 1/4" & 3/16" - 1/2"
- Straight handle tap wrench: #4 - 1/2"
- Die stock & Screw metric pitch gauge
- SP-23TDI

Supplied in sturdy plastic case

PART NO. 35170

15pc. Magnum Super Premium Set Spiral point Plug Taps & Hex Dies

Set contains: Type 20-AG and 27-AG

- HSS spiral point taps & HSS hex dies sizes: 6-32, 8-32, 10-24, 10-32, 12-24 & 1/4-20
- T-Handle tap wrench: 0 - 1/4"
- Economy die stock & Screw pitch gauge
- SP-15TDI

Supplied in sturdy plastic case

PART NO. 35174

14pc. Magnum Super Premium Set - Metric Spiral point Taps & Hex Dies

Set contains: Type 21-AG and 27-AG

- HSS spiral point taps sizes: 2.5-.45, 3.0-.50, 3.5-.60, 4.0-.70, 5.0-.80 & 6.0-1.00.
- HSS hex dies sizes: 3.0-.50, 3.5-.60, 4.0-.70, 5.0-.80 & 6.0-1.00.
- T-Handle tap wrench: 0 - 1/4"
- SP-14TDI

Economy die stock & Screw metric pitch gauge.

Supplied in sturdy plastic case.

PART NO. 35172

58 PC & 40 PC HSS TAPS & DIE ASSORTMENTS

- Special Hi -Tungsten and Hi -Molybdenum tool steels, gold oxide for maximum lubricity.
- Recommended for use in production tapping and drilling in work hardening grades of stainless steel and other hard metal applications.
- Precision ground tap threads for the ultimate in accuracy and performance.



Part # 61680

58pc. Magnum Super Premium Set Straight Flute Plug Taps & Hex Dies

Set contains: Type 24-AG and 27-AG

- HSS straight flute taps & HSS hex dies sizes: 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 9/16-12, 9/16-18, 5/8-11, 5/8-18, 3/4-10, 3/4-16, 1/8-27NPT & 1/4-18NPT
- Straight handle tap wrenches: #4-1/2" & 1/4" - 3/4"
 - Die stocks: MED R/H & 1" R/H
 - T-handle tap wrench: 0 - 1/4"
 - Screw pitch gauge
- Screw driver & Spiral flute extractors sizes: Ex 1 thru Ex 5
 - SF-58TDI

Supplied in sturdy plastic case

PART NO. 61680

40pc. Magnum Super Premium Set Straight Flute Plug Taps & Hex Dies

Set contains: Type 24-AG and 27-AG

- HSS straight flute taps & HSS hex dies sizes: 4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13 & 1/2-20.
- HSS pipe tap and hex die size: 1/8-27 NPT
- T-Handle tap wrenches: 0 - 1/4" & 3/16" - 1/2"
 - Straight handle tap wrench: #4 - 1/2"
- Die stock, Screw pitch gauge & Screw driver
 - SF-40TDI

Supplied in sturdy plastic case

PART NO. 35171



Part # 35171

40pc. Magnum Super Premium Set Spiral point Plug Taps & Hex Dies

Set contains: Type 20-AG and 27-AG

- HSS spiral point taps & HSS hex dies sizes: 4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13 & 1/2-20
- HSS pipe tap and hex die size: 1/8-27 NPT
- T-Handle tap wrenches: 0 - 1/4" & 3/16" - 1/2"
 - Straight handle tap wrench: #4 - 1/2"
- Die stock, Screw pitch gauge & Screw driver
 - SP-40TDI

Supplied in sturdy plastic case

PART NO. 35181

Hi-Carbon Steel Taps

HI-CARBON STEEL TAPS - U.S. SIZES (PLUG & TAPER)

Type 720 Plug Fractional , Type 721 Plug Machine Screw

Type 740 Taper Fractional , Type 741 Taper Machine Screw

- Made of super tough carbon steel, these taps are ideal for hand tapping and re-threading applications.



Plug - Type 721



Taper-Type 741

TYPE 720 -PLUG FRACTIONAL

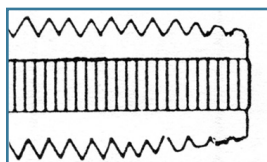
Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
55010	3/16x24	26	4	3
55020	3/16x32	22	4	3
55030	1/4x20	7	4	3
55040	1/4x28	3	4	3
55050	5/16x18	17/64	4	3
55060	5/16x24	17/64	4	3
55070	3/8x16	5/16	4	3
55080	3/8x24	21/64	4	3
55090	7/16x14	3/8	4	3
55100	7/16x20	25/64	4	3
55110	1/2x13	27/64	4	3
55120	1/2x20	29/64	4	3
55130	9/16x12	31/64	4	1
55140	9/16x18	33/64	4	1
55150	5/8x11	17/32	4	1
55200	5/8x18	37/64	4	1
55210	11/16x11	19/32	4	1
55220	11/16x16	5/8	4	1
55230	3/4x10	21/32	4	1
55240	3/4x16	11/16	4	1
55250	7/8x9	49/64	4	1
55260	7/8x14	13/16	4	1
55270	1x8	7/8	4	1
55280	1x12	29/32	4	1
55290	1x14	15/16	4	1

TYPE 721 -PLUG MACHINE SCREW

Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
54860	0x80	3/64	3	3
54870	1x64	53	3	3
54880	1x72	53	3	3
54890	2x56	50	3	3
54900	2x64	50	3	3
54910	3x48	47	3	3
54920	3x56	46	3	3
55750	4x36	43	3	3
55760	4x40	44	3	3
55770	5x40	38	3	3
55780	6x32	36	3	3
55790	6x40	34	3	3
55800	6x48	32	3	3
55810	8x32	29	3	3
55820	8x36	29	3	3
55830	8x40	28	3	3
55840	10x24	25	3	3
55850	10x32	21	3	3
55860	12x24	16	3	3
55870	12x28	16	3	3
55880	14x20	10	3	3

PLUG - Type 720 & 721

Three to five threads chamfered. For general use when tapping into the bottom of the hole is not critical.
(This is the most widely used style.)



TYPE 740 -TAPER FRACTIONAL

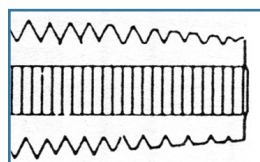
Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
55250	3/16x24	26	4	3
55260	3/16x32	22	4	3
55270	1/4x20	7	4	3
55280	1/4x28	3	4	3
55290	5/16x18	17/64	4	3
55300	5/16x24	17/64	4	3
55310	3/8x16	5/16	4	3
55320	3/8x24	21/64	4	3
55330	7/16x14	3/8	4	3
55340	7/16x20	25/64	4	3
55350	1/2x13	27/64	4	3
55360	1/2x20	29/64	4	3
55370	9/16x12	31/64	4	1
55380	9/16x18	33/64	4	1
55390	5/8x11	17/32	4	1
55400	5/8x18	37/64	4	1
55410	11/16x11	19/32	4	1
55420	11/16x16	5/8	4	1
55430	3/4x10	21/32	4	1
55440	3/4x16	11/16	4	1
55450	7/8x9	49/64	4	1
55460	7/8x14	13/16	4	1
55470	1x8	7/8	4	1
55480	1x12	29/32	4	1
55490	1x14	15/16	4	1

TYPE 741 -TAPER MACHINE SCREW

Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
54790	0x80	3/64	3	3
54800	1x64	53	3	3
54810	1x72	53	3	3
54820	2x56	50	3	3
54830	2x64	50	3	3
54840	3x48	47	3	3
54850	3x56	46	3	3
55900	4x36	43	3	3
55910	4x40	44	3	3
55920	5x40	38	3	3
55930	6x32	36	3	3
55940	6x40	34	3	3
55950	6x48	32	3	3
55960	8x32	29	3	3
55970	8x36	29	3	3
55980	8x40	28	3	3
55990	10x24	25	3	3
56000	10x32	21	3	3
56010	12x24	16	3	3
56020	12x28	16	3	3
56030	14x20	10	3	3

TAPER - Type 740 & 741

Seven to ten threads chamfered for easy use thread starting in tough materials.



Hi-Carbon Steel Taps

HI-CARBON STEEL TAPS - U.S. SIZES (BOTTOMING & 3 Piece SETS)

Type 760 -Bottoming -Fractional, Type 761 -Bottoming -Machine Screw
Type 722 -3 pcs. Sets -Fractional, Type 723 -3 pcs. Sets -Machine Screw



Bottoming - Type 761

TYPE 760 BOTTOMING FRACTIONAL

Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
55500	3/16x24	26	4	3
55510	3/16x32	22	4	3
55520	1/4x20	7	4	3
55530	1/4x28	3	4	3
55540	5/16x18	17/64	4	3
55550	5/16x24	17/64	4	3
55560	3/8x16	5/16	4	3
55570	3/8x24	21/64	4	3
55580	7/16x14	3/8	4	3
55590	7/16x20	25/64	4	3
55600	1/2x13	27/64	4	3
55610	1/2x20	29/64	4	3
55620	9/16x12	31/64	4	1
55630	9/16x18	33/64	4	1
55640	5/8x11	17/32	4	1
56040	5/8x18	37/64	4	1
56050	11/16x11	19/32	4	1
56060	11/16x16	5/8	4	1
55650	3/4x10	21/32	4	1
56070	3/4x16	11/16	4	1
55660	7/8x9	49/64	4	1
55670	7/8x14	13/16	4	1
55680	1x8	7/8	4	1
55690	1x12	29/32	4	1
55700	1x14	15/16	4	1

These items are also available carded. See Price List Catalog for details.

3 PC. SETS TYPE 722 FRACTIONAL

Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
56300	3/16x24	26	4	1
56310	3/16x32	22	4	1
56320	1/4x20	7	4	1
56330	1/4x28	3	4	1
56340	5/16x18	17/64	4	1
56350	5/16x24	17/64	4	1
56360	3/8x16	5/16	4	1
56370	3/8x24	21/64	4	1
56380	7/16x14	3/8	4	1
56390	7/16x20	25/64	4	1
56400	1/2x13	27/64	4	1
56410	1/2x20	29/64	4	1
56420	9/16x12	31/64	4	1
56430	9/16x18	33/64	4	1
56440	5/8x11	17/32	4	1
56590	5/8x18	37/64	4	1
56740	11/16x11	19/32	4	1
56750	11/16x16	5/8	4	1
56450	3/4x10	21/32	4	1
56760	3/4x16	11/16	4	1
56460	7/8x9	49/64	4	1
56470	7/8x14	13/16	4	1
56480	1x8	7/8	4	1
56490	1x12	29/32	4	1
56500	1x14	15/16	4	1

Includes one of each same size Taper, Plug and Bottoming taps.

TYPE 761 BOTTOMING - MACHINE SCREW

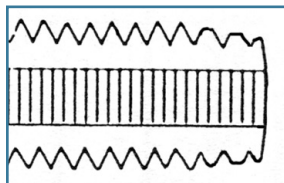
Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
54930	0x80	3/64	3	3
54940	1x64	53	3	3
54950	1x72	53	3	3
54960	2x56	50	3	3
54970	2x64	50	3	3
54980	3x48	47	3	3
54990	3x56	46	3	3
56100	4x36	43	3	3
56110	4x40	44	3	3
56120	5x40	38	3	3
56130	6x32	36	3	3
56140	6x40	34	3	3
56150	6x48	32	3	3
56160	8x32	29	4	3
56170	8x36	29	4	3
56180	8x40	28	4	3
56190	10x24	25	4	3
56200	10x32	21	4	3
56210	12x24	16	4	3
56220	12x28	16	4	3
56230	14x20	10	4	3

These items are also available carded. See Price List Catalog for details.

3 PC. SETS TYPE 723 MACHINE SCREW

Part No.	Size	Tap Drill Size	No. of Flutes	Qty. per/pack
56600	4x36	43	3	1
56610	4x40	44	3	1
56620	5x40	38	3	1
56630	6x32	36	3	1
56640	6x40	34	3	1
56650	6x48	32	3	1
56660	8x32	29	4	1
56670	8x36	29	4	1
56680	8x40	28	4	1
56690	10x24	25	4	1
56700	10x32	21	4	1
56710	12x24	16	4	1
56720	12x28	16	4	1
56730	14x20	10	4	1

Includes one of each same size Taper, Plug and Bottoming taps.



BOTTOMING Type 760 & 761

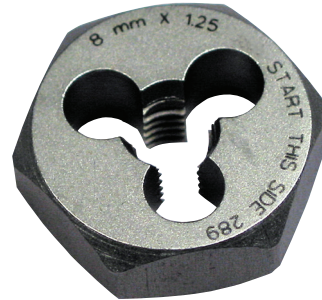
One to Two threads chamfered.
To use after threads have been started for tapping to the bottom of a hole.

Hi-Carbon Steel Dies

HI- CARBON STEEL DIES - HEX DIES

Type 405 -Machine Screw & Fractional sizes , Type 790 -Metric

- These dies are made of high quality carbon tool steel and meet the highest industry standards.
- A complete selection of solid round, adjustable round, and solid hex dies for right hand threads is available.
- Select sizes of dies may be imported.



TYPE 405 MACHINE SCREW & FRACTIONAL SIZES

Part No.	Size	Across Flats	Qty. per/pack
86000	4x40	1"	3
86010	4x36	1"	3
86020	5x40	1"	3
86030	6x32	1"	3
86040	8x32	1"	3
86050	10x24	1"	3
86060	10x32	1"	3
86070	12x24	1"	3
86080	14x20	1"	3
86100	3/16x24	1"	3
86110	3/16x32	1"	3
86120	1/4x20	1"	3
86130	1/4x28	1"	3
86140	5/16x18	1"	3
86150	5/16x24	1"	3
86160	3/8x16	1"	3
86170	3/8x24	1"	3
86180	7/16x14	1"	3
86190	7/16x20	1"	3
86200	1/2x13	1"	3
86210	1/2x20	1"	3
86220	9/16x12	1-7/16"	1
86230	9/16x18	1-7/16"	1
86240	5/8x11	1-7/16"	1
86250	5/8x18	1-7/16"	1
86260	11/16x11	1-7/16"	1
86270	11/16x16	1-7/16"	1
86280	3/4x10	1-7/16"	1
86290	3/4x16	1-7/16"	1
86300	7/8x9	1-5/8"	1
86310	7/8x14	1-5/8"	1
86320	1x8	1-13/16"	1
86330	1x12	1-13/16"	1
86340	1x14	1-13/16"	1
86350	1/8x27	1"	1
86360	1/4x18	1"	1
86380	3/8x18	1-7/16"	1
86390	1/2x14	1-5/8"	1
86420	3/4x14	2"	1
86430	1-11x1/2"	2-3/8"	1

TYPE 790 METRIC SIZES

Part No.	Size	Across Flats	Qty. per/pack
84000	3x.50	1"	3
84010	3x.60	1"	3
84020	4x.70	1"	3
84030	4x.75	1"	3
84040	5x.80	1"	3
84050	5x.90	1"	3
84060	6x1.00	1"	3
84070	7x1.00	1"	3
84270	8x1.00	1"	3
84080	8x1.25	1"	3
84090	9x1.00	1"	3
84100	9x1.25	1"	3
84110	10x1.00	1"	3
84120	10x1.25	1"	3
84130	10x1.50	1"	3
84140	11x1.50	1"	3
84280	12x1.25	1"	3
84150	12x1.50	1"	3
84160	12x1.75	1"	3
84170	14x1.25	1-7/16"	1
84290	14x1.50	1-7/16"	1
84180	14x2.00	1-7/16"	1
84190	16x1.50	1-7/16"	1
84200	16x2.00	1-7/16"	1
84210	18x1.50	1-7/16"	1
84300	18x2.00	1-7/16"	1
84220	18x2.50	1-7/16"	1

These items are also available carded.
See Price List Catalog for details.

HEXAGONAL DIES: TIPS

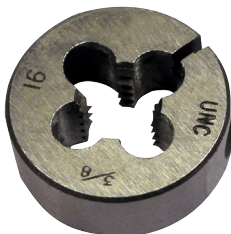
Carbon steel dies are primarily used for restoring damaged threads. Hex shape allows them to be driven in cramped quarters with a wrench.

Hi-Carbon Steel Dies

HI-CARBON STEEL DIES - ADJUSTABLE & ROUND

Type 415 -Adjustable , Type 400 -Round

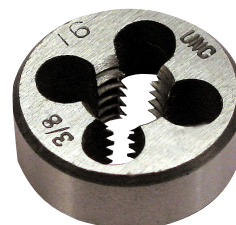
- These dies are made of high quality carbon tool steel and meet the highest industry standards.
- We offer a complete selection of solid round and adjustable round for right hand threads.
- Select sizes of dies may be imported.



TYPE 415 -ADJUSTABLE MACHINE SCREW & FRACTIONAL

Part No.	Size	O.D.	Qty. per/pack
85000	0x80	1"	3
85010	1x64	1"	3
85020	1x72	1"	3
85030	2x56	1"	3
85040	2x64	1"	3
85050	3x48	1"	3
85060	3x56	1"	3
85070	4x40	1"	3
85080	4x36	1"	3
85090	5x40	1"	3
85100	6x32	1"	3
85110	8x32	1"	3
85120	10x24	1"	3
85130	10x32	1"	3
85140	12x24	1"	3
85150	14x20	1"	3
85170	3/16x24	1"	3
85180	3/16x32	1"	3
85190	1/4x20	1"	3
85200	1/4x28	1"	3
85210	5/16x18	1"	3
85220	5/16x24	1"	3
85230	3/8x16	1"	3
85240	3/8x24	1"	3
85250	7/16x14	1"	3
85260	7/16x20	1"	3
85270	1/2x13	1"	3
85280	1/2x20	1"	3
85290	9/16x12	1-1/2"	1
85300	9/16x18	1-1/2"	1
85310	5/8x11	1-1/2"	1
85320	5/8x18	1-1/2"	1
85330	11/16x11	2"	1
85340	11/16x16	1-1/2"	1
85350	3/4x10	2"	1
85360	3/4x16	2"	1
85370	7/8x9	2"	1
85380	7/8x14	2"	1
85390	1x8	2"	1
85400	1x12	2"	1
85410	1x14	2"	1
85420	1/8x27	1"	3
85430	1/4x18	1-1/2"	1
85440	3/8x18	1-1/2"	1
85450	1/2x14	1-1/2"	1

These items are also available carded. See Price List Catalog for details.



TYPE 400 -ROUND MACHINE SCREW & FRACTIONAL

Part No.	Size	O.D.	Qty. per/pack
53600	4x36	1"	3
53610	4x40	1"	3
53620	5x40	1"	3
53630	6x32	1"	3
53640	8x32	1"	3
53650	10x24	1"	3
53660	10x32	1"	3
53670	12x24	1"	3
53680	14x20	1"	3
53690	3/16x24	1"	3
53700	3/16x32	1"	3
53710	1/4x20	1"	3
53720	1/4x28	1"	3
53730	5/16x18	1"	3
53820	5/16x24	1"	3
53740	3/8x16	1"	3
53750	3/8x24	1"	3
53760	7/16x14	1"	3
53830	7/16x20	1"	3
53770	1/2x13	1"	3
53780	1/2x20	1"	3
53790	1/2x24	1"	3
53800	1/8x27 (PIPE)	1"	3
53810	1/4x18 (PIPE)	1"	3

These items are also available carded. See Price List Catalog for details.

ADJUSTABLE & ROUND DIES: TIPS

Adjustable Dies:

These dies have a recessed adjusting screw so threads can be cut slightly under-size or oversize.

Round Dies:

Inexpensive round dies are 1" wide. They will thread rods up to 1/2" diameter.

Hi-Carbon Steel Taps

HI-CARBON TAPS - METRIC PLUG & TAPERED PIPE TAPS

Type 780 -Metric Plug

- All popular sizes offered for foreign car, motorcycle, and machinery threading needs.



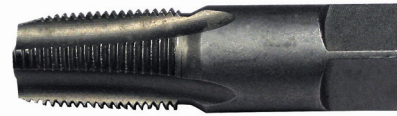
TYPE 780 -METRIC PLUG

Part No.	Size	Tap Drill Size	Number of Flutes	Qty. per/pack
83010	3x.50	40	3	3
83020	3x.60	3/32	3	3
83030	4x.70	1/8	4	3
83040	4x.75	1/8	4	3
83050	5x.80	11/64	4	3
83060	5x.90	20	4	3
83070	6x1.00	13/64	4	3
83080	7x1.00	15/64	4	3
84230	8x1.00	F	4	3
83090	8x1.25	17/64	4	3
83100	9x1.00	5/16	4	3
83110	9x1.25	5/16	4	3
56800	10x1.00	23/64	4	3
83130	10x1.25	S	4	3
83140	10x1.50	11/32	4	3
83150	11x1.50	3/8	4	3
84240	12x1.25	27/64	4	3
83160	12x1.50	13/32	4	3
83170	12x1.75	27/64	4	3
56810	14x1.25	33/64	4	1
84250	14x1.50	1/2	4	1
83190	14x2.00	15/32	4	1
83200	16x1.50	37/64	4	1
83210	16x2.00	35/64	4	1
56820	18x1.50	21/32	4	1
84260	18x2.00	5/8	4	1
83230	18x2.50	39/64	4	1

These items are also available carded. See Price List Catalog for details.

Type 410 Pipe Taps

- Made of tough carbon steel to industry standards.



TYPE 410 PIPE TAPS FRACTIONAL

Part No.	Diameter	Tap Drill Size	Shank	Number of Flutes	Qty. per/pack
56910	1/8 x 27	11/32	5/16"	4	3
56920	1/4 x 18	7/16	7/16"	4	3
56930	3/8 x 18	37/64	1/2"	4	1
56940	1/2 x 14	23/32	1/2"	4	1
56950	3/4 x 14	59/64	5/8"	5	1
56960	1 x 11-1/2	1-5/32	13/16"	5	1
56970	1-1/4 x 11-1/2	1-1/2	1"	5	1
56980	1-1/2 x 11-1/2	1-47/64	1-1/4"	7	1
56990	2 x 11-1/2	2-7/32	1-3/8"	7	1



Product Tips

NEED A TAPPING LUBE ?

High Performance Ultra SP™ will do the job!

Found on page 100

METRIC

Hi-Carbon - Metric Plug & Pipe Taps

Hi-Carbon Taps & Dies



14PC / 16PC HI-CARBON TAP & DIE SETS

Type 724

Professional Quality

- Made of high carbon tool steel
- Sharp, clean cutting edges, hardened, and tempered to cut smooth threads
- Sets are available in round and hexagon styles
- Sets are packed in plastic cases
- Select sizes of dies may be imported

14pc. Hi-Carbon Steel Fractional NC - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes:
1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 3/16 to 1/2
- Stock #HNC14pc

Supplied in sturdy plastic case.

PART NO. 50090

16pc. Hi-Carbon Steel Metric - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes:
4mm x 0.70, 5mm x 0.80, 6mm x 1.00, 8mm x 1.25,
10mm x 1.25, 10mm x 1.50, 12mm x 1.50
- T-Handle Tap Wrench: 3/16 to 1/2
- Stock #HMM16pc

PART NO. 50140

14pc. Hi-Carbon Steel Fractional NF - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes:
1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 3/16 to 1/2
- Stock #HNF14pc

Supplied in sturdy plastic case.

PART NO. 50080

16pc. Hi-Carbon Steel Fractional NC - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes:
4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20
- T-Handle Tap Wrench: 0 to 1/4
- Stock #HEX16pc

PART NO. 50100

14pc. Hi-Carbon Steel Fractional NC - with Round Die Set

Set contains:

- Hi-Carbon steel plug taps and round dies sizes:
1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 3/16 to 1/2
- Stock #RNC14pc

Supplied in sturdy plastic case.

PART NO. 50030

16 Piece Hi-Carbon Steel Fractional NC - with Round Die Set

Set contains:

- Hi-Carbon steel plug taps and round dies sizes:
4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20
- T-Handle Tap Wrench: 0 to 1/4
- Stock #RND19pc

PART NO. 50040

14 Piece Hi-Carbon Steel Fractional NF - with Round Die Set

Set contains:

- Hi-Carbon steel plug taps and round dies sizes:
1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 3/16 to 1/2

Supplied in sturdy plastic case.

PART NO. 50020

Hi-Carbon Taps & Dies

24PC / 37PC HI-CARBON TAP & DIE SETS

Type 724

Professional Quality

- Made of high carbon tool steel.
- Plug taps are furnished in all sets.
- Dies are available in round and hexagon styles.
- Sets are packed in plastic.
- Select sizes of dies may be imported



24pc. Hi-Carbon Steel Fractional Tap NC, NF - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes: 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 3/16 to 1/2
- Economy die stock
- Stock #HEX24pc

Supplied in sturdy plastic case.

PART NO. 50110

24pc. Hi-Carbon Steel Fractional Tap NC, NF - with Round Die Set

Set contains:

- Hi-Carbon steel plug taps and round dies sizes: 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 3/16 to 1/2
- Economy die stock
- Stock #RND24pc

Supplied in sturdy plastic case.

PART NO. 50050

37pc. Hi-Carbon Steel Machine Screw & Fractional Tap NC, NF - with Round Die Set

Set contains:

- Hi-Carbon steel plug taps and round dies sizes: 4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 0 to 1/4 & 3/16 to 1/2
- Economy die stock
- Stock #RND37pc

Supplied in sturdy plastic case.

PART NO. 50060

37pc. Hi-Carbon Steel Master Metric - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes: 3mm x 0.50, 3mm x 0.60, 4mm x 0.70, 4mm x 0.75, 5mm x 0.80, 5mm x 0.90, 6mm x 1.00, 7mm x 1.00, 8mm x 1.25, 9mm x 1.00, 9mm x 1.25, 10mm x 1.25, 10mm x 1.50, 11mm x 1.50, 12mm x 1.50, 12mm x 1.75, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 0 to 1/4 & 3/16 to 1/2
- Stock #HMM37pc

Supplied in sturdy plastic case.

PART NO. 50150

37pc. Hi-Carbon Steel Machine Screw & Fractional Tap NC, NF - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes: 4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 0 to 1/4 & 3/16 to 1/2
- Stock #HEX37pc

Supplied in sturdy plastic case.

PART NO. 50120

40pc HI-CARBON MACHINE SCREW / FRACTIONAL

Type 724

Professional Quality

- Taps and Dies made of high carbon steel.
- Plug taps are furnished in all sets in sizes to fill most requirements.
- Dies are available in round and hex styles.
- Sets are packed in durable plastic cases.
- Select sizes of dies may be imported.



40pc. Hi-Carbon Steel Machine Screw Fractional Tap NC, NF - with Round Die Set

Set contains:

- Hi-Carbon steel plug taps and round dies sizes: 4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 0 to 1/4 & 3/16 to 1/2
- Tap & Reamer Wrench: #4 to 1/2
- Adjustable Die Stock, Screw Driver, Screw Pitch Gauge
- Stock #RND40pc

Supplied in sturdy plastic case.

PART NO. 50070

40pc. Hi-Carbon Steel Machine Screw/Fractional NC, NF - with Hex Die Set

Set contains:

- Hi-Carbon steel plug taps and hex dies sizes: 4-40, 6-32, 8-32, 10-24, 10-32, 12-24, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20, 1/8-27 NPT Pipe
- T-Handle Tap Wrench: 0 to 1/4 & 1/4 to 1/2
- Tap & Reamer Wrench: 0 to 1/2
- Adjustable Die Stock, Screw Driver, Screw Pitch Gauge
- Stock #HEX40pc

Supplied in sturdy plastic case.

PART NO. 50130

Tap & Reamer Wrenches

TAP & REAMER WRENCHES

- Accessories for every threading job, economy, and professional type.
 - Rugged construction.
- Tap wrench jaws heat treated and hardened for long life.
 - Offered in display packages as indicated.

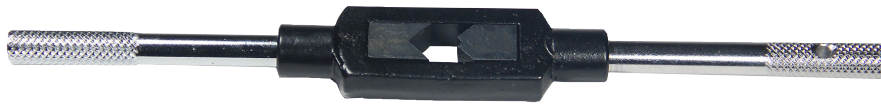


Type 725

Tap & Reamer Wrench - Professional Quality

- Hardened steel jaws. Adjusts easily by turning handles

Part No.	For Tap Sizes	Package Type	Qty. per/pack
50350	1/4" - 3/4"	Bulk	1
50360	1/2" - 1-1/8"	Bulk	1
50347	1/4" - 1/2"	Carded	1



Type 726

Tap & Reamer Wrench Economy -

- For taps up to 1/2"
- Chrome finished, Knurled handles with black center.

Part No.	For Tap Sizes	Package Type	Qty. per/pack
50337	Up to 1/2"	Carded	1



Type 727R

Ratcheting T-Handle Tap Wrenches

- Three position gear box for quick efficient ratcheting action
- Designed for use with taps, reamers, screw extractors and other tools with a square shank.
- Chrome plated for long life and rust resistance

Part No.	For Tap Sizes	Package Type	Qty. per/pack
50190	0 - 1/4" (3mm - 6mm)	Bulk	1
50200	1/4 - 1/2" (6mm - 12mm)	Bulk	1



Type 727

T-Handle Tap Wrenches

- Sliding T-handle with spring tension to hold taps in place, self equalizing jaws.
 - No. 50320 has removable handle and 3/8" female square drive for extensions, ratchet, and power drive.

Part No.	For Tap Sizes	Package Type	Qty. per/pack
50307	0" - 1/4"	Carded	1
50310	3/16" - 1/2"	Bulk	1
50320	3/16" - 1/2"	Bulk	1

Die Stocks & Gauges

DIE STOCKS AND SCREW PITCH GAUGES

- Accessories for every threading job, economy and professional type.
- Rugged construction. Offered in display packages as indicated.



Type 728R
- Round Die Stock

- Designed to hold either 1"- Round

TYPE 728R DIE STOCK

Part No.	Across Flats	Package Type	Qty. per/pack
53897	1/4" - 1/2"	Carded	1

Type 728
Die Stock
- Hex/RND Die Stock

- Designed to hold either 1"- Round or Hex Dies



TYPE 728 DIE STOCK

Part No.	Across Flats	Package Type	Qty. per/pack
50380	1" Round or Hex	Carded	1



Type 729
Die Stock

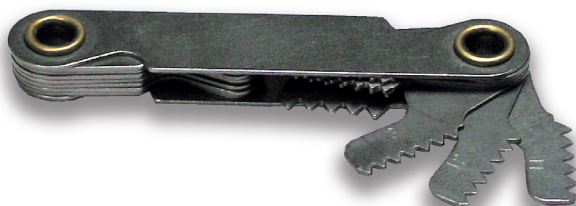
- Professional Quality

- Numbers 50387 and 50390 have 3-jaw self centering adjustable guides to assure straight threads and easy starting.

- Number 50400 is a sturdy cast hex die stock with chromed steel handles.

TYPE 729 DIE STOCK

Part No.	Across Flats	Package Type	Qty. per/pack
50390	1-1/2" Round, 1-7/16 Hex	Bulk	1
50400	1-7/8" Hex	Bulk	1
50387	1" Round or Hex	Carded	1



Type 730
- Screw Pitch Gauges

- Made with flat thread forms on top of each blade.
- Gives screw pitches on V-threads, U.S. and Metric gauge available.

TYPE 730 SCREW PITCH GAUGES

Part No.	For Tap Sizes	Package Type	Qty. per/pack
50417	US 12 - 40 U.S.	Carded	1
50427	METRIC 0.5 - 1.75 mm, #27 and #28	Carded	1

Technical Reference

STANDARD CUTTING TAPS

Machine Screw Sizes

Tap	Tap Drill	Decimal Equiv. of Tap Drill	Theoretical % of Thread	Probable Oversize (Mean)	Probable Hole Size	Percentage of Thread
0-80	.56 3/64	.0465 .0469	83 81	.0015 .0015	.0480 .0484	74 71
1-64	.54	.0550	89	.0015	.0565	81
1-72	.53	.0595	75	.0015	.0610	67
2-56	.51 .50	.0670 .0700	82 69	.0017 .0017	.0687 .0717	74 62
2-64	.50	.0700	79	.0017	.0717	70
3-48	.48 3/16 .47 46	.0780 .0781 .0785 .0810	85 77 76 67	.0019 .0019 .0019 .0019	.0779 .0800 .0804 .0829	78 70 69 60
3-56	.46 45	.0810 .0820	78 73	.0019 .0019	.0829 .0839	69 65
4-40	.44 43	.0860 .0890	80 71	.0020 .0020	.0880 .0910	74 65
4-48	.42 3/16	.0935 .0938	68 68	.0020 .0020	.0955 .0958	61 60
5-40	.40 39 38	.0980 .0995 .1015	83 79 72	.0023 .0023 .0023	.1003 .1018 .1038	76 71 65
5-44	.38 37	.1015 .1040	79 71	.0023 .0023	.1038 .1063	72 63
6-32	.37 36 35 34	.1040 .1065 .1094 .1100 .1110	84 78 70 69 67	.0023 .0026 .0026 .0026 .0026	.1063 .1091 .1120 .1126 .1136	78 71 64 63 60
6-40	.34 33 32	.1110 .1130 .1160	83 77 68	.0026 .0026 .0026	.1136 .1156 .1186	75 69 60
8-32	.29	.1360	69	.0029	.1389	62
8-36	.29	.1360	78	.0029	.1389	70
10-24	.27 26 25 24 23	.1440 .1470 .1495 .1520 .1540	85 79 75 70 67	.0032 .0032 .0032 .0032 .0032	.1472 .1502 .1527 .1552 .1572	79 74 69 64 61
10-32	1/16 22 21 20	.1563 .1570 .1590 .1610	83 81 76 71	.0032 .0032 .0032 .0032	.1595 .1602 .1622 .1642	75 73 68 64
12-24	1/8 17 16 15	.1719 .1730 .1770 .1800	82 79 72 67	.0035 .0035 .0035 .0035	.1754 .1765 .1805 .1835	75 73 66 60
12-28	16 15 14	.1770 .1800 .1820	84 78 73	.0035 .0035 .0035	.1805 .1835 .1855	77 70 66

These tables show both the theoretical percentage of thread represented by the drill size and the percentage that would normally be obtained in drilling.

Fractional Sizes

Tap	Tap Drill	Decimal Equiv. of Tap Drill	Theoretical % of Thread	Probable Oversize (Mean)	Probable Hole Size	Percentage of Thread
1/4-20	9 8 7 3/16 6 5 4	.1960 .1990 .2010 .2031 .2040 .2055 .2090	83 79 75 72 71 69 63	.0038 .0038 .0038 .0038 .0038 .0038 .0038	.1998 .2028 .2048 .2069 .2078 .2093 .2128	77 73 70 66 65 63 57
1/4-28	3	.2130	80	.0038	.2168	72
5/16-18	F G	.2570 .2610	77 71	.0038 .0041	.2608 .2651	72 66
5/16-24	H I	.2660 .2720	86 75	.0041 .0041	.2701 .2761	78 67
3/8-18	1/8 O	.3125 .3160	77 73	.0044 .0044	.3169 .3204	72 68
3/8-24	7/16 Q	.3281 .3320	87 79	.0044 .0044	.3325 .3364	79 71
7/16-14	T 2 1/16 U 3/8 V	.3580 .3594 .3680 .3750 .3770	86 84 75 67 65	.0046 .0046 .0048 .0046 .0046	.3626 .3640 .3726 .3796 .3816	81 79 70 62 60
7/16-20	W 2 3/16	.3860 .3906	79 72	.0046 .0046	.3906 .3952	72 65
1/2-13	2 1/8	.4219	78	.0047	.4266	73
1/2-20	2 3/8	.4531	72	.0047	.4578	65
1/2-12	1 1/2 2 1/2	.4688 .4844	87 72	.0048 .0048	.4736 .4892	82 68
1/2-18	3/4	.5000	87	.0048	.5048	80
1/2-11	1 1/4 2 5/8	.5313 .5469	79 66	.0049 .0049	.5362 .5518	75 62
1/2-18	3/4	.5625	87	.0049	.5674	80
1/2-10	1 1/4 2 1/8	.6406 .6563	84 72	.0050 .0050	.6456 .6613	80 68
1/2-16	1 1/8	.6875	77	.0050	.6925	71
1/2-9	1 1/2 2 1/2	.7656 .7812	76 65	.0052 .0052	.7708 .7864	72 61
1/2-14	1 1/8 1 3/8	.7969 .8125	84 67	.0052 .0052	.8021 .8177	79 62
1"-8	3/4 1 1 1/8	.8594 .8750 .8906	87 77 67	.0059 .0059 .0059	.8653 .8809 .8965	83 73 64
1"-12	1 1/4 1 3/4	.9063 .9219	87 72	.0060 .0060	.9122 .9279	81 67
1"-14	1 1/4 1 1/2	.9219 .9375	84 67	.0060 .0060	.9279 .9435	78 61
1 1/8-7	1 1/8 1 3/4 1"	.9698 .9844 1.0000	84 76 67	.0062 .0067 .0070	.9750 .9911 1.0070	81 72 64
1 1/8-12	1 1/2 1 3/4	1.0313 1.0469	87 72	.0071 .0072	1.0384 1.0541	80 66
1 1/8-7	1 1/2 1 3/4 1 1/2	1.0938 1.1094 1.1250	84 76 67			
1 1/8-12	1 1/2 1 3/4	1.1563 1.1719	87 72			
1 1/8-6	1 1/2 1 3/4 1 1/2 1 3/4	1.1875 1.2031 1.2188 1.2344	87 79 72 65			
1 1/8-12	1 1/2 1 3/4	1.2813 1.2969	87 72			
1 1/8-8	1 1/2 1 3/4 1 1/2 1 3/4	1.3125 1.3281 1.3438 1.3594	87 79 72 65			
1 1/8-12	1 1/2 1 3/4	1.4063 1.4219	87 72			

Reaming Recommended

Metric Cutting Taps

Metric Tap Size	Basic Major Dia. (Ins.)	Tap Drill Size	Decimal Equiv. of Tap Drill (Ins.)	Theoretical Percent of Thread	Prob-able Mean Over-Size (Ins.)	Prob-able Hole Size (Ins.)	Prob-able Percent of Thread
M1.6 x 0.35	.0630	1.25 mm	.0492	77	.0015	.0507	69
M1.8 x 0.35	.0709	1.45 mm	.0571	77	.0015	.0586	69
M2 x 0.4	.0787	1/16"	.0625	79	.0015	.0640	72
		1.60 mm	.0630	77	.0017	.0647	69
		#52	.0635	74	.0017	.0652	66
M2.2 x 0.45	.0866	1.75 mm	.0689	77	.0017	.0706	70
M2.5 x 0.45	.0984	2.05 mm	.0807	77	.0019	.0826	69
		#46	.0810	76	.0019	.0829	67
		#45	.0820	71	.0019	.0839	63
M3 x 0.5	.1181	#40	.0980	79	.0023	.1003	70
		2.5 mm	.0984	77	.0023	.1007	68
		#39	.0995	73	.0023	.1018	64
M3.5 x 0.6	.1378	#33	.1130	81	.0026	.1156	72
		2.9 mm	.1142	77	.0026	.1168	68
		#32	.1160	71	.0026	.1186	63
M4 x 0.7	.1575	*3.25 mm	.1280	82	.0029	.1309	74
		#30	.1285	81	.0029	.1314	73
		3.3 mm	.1299	77	.0029	.1328	69
M4.5 x 0.75	.1772	3.7 mm	.1457	82	.0032	.1489	74
		#26	.1470	79	.0032	.1502	70
		*3.75 mm	.1476	77	.0032	.1508	69
		#25	.1495	72	.0032	.1527	64
M5 x 0.8	.1968	4.2 mm	.1654	77	.0032	.1686	69
		#19	.1660	75	.0032	.1692	68
M6 x 1	.2362	#10	.1935	84	.0038	.1973	76
		#9	.1960	79	.0038	.1998	71
		5 mm	.1968	77	.0038	.2006	70
		#8	.1990	73	.0038	.2028	65
M7 x 1	.2756	"A"	.2340	81	.0038	.2378	74
		1 5/16"	.2344	81	.0038	.2382	73
		6 mm	.2362	77	.0038	.2400	70
		"B"	.2380	74	.0038	.2418	66
M8 x 1.25	.3150	6.7 mm	.2638	80	.0041	.2679	74
		1 1/16"	.2656	77	.0041	.2697	71
		*6.75 mm	.2657	77	.0041	.2698	71
		"H"	.2660	77	.0041	.2701	70
		6.8 mm	.2677	74	.0041	.2718	68
M8 x 1	.3150	7 mm	.2756	77	.0041	.2797	69
		"J"	.2770	74	.0041	.2811	66
M10 x 1.5	.3937	8.4 mm	.3307	82	.0044	.3351	76
		"Q"	.3320	80	.0044	.3364	75
M10 x 1.25	.3937	8.5 mm	.3346	77	.0044	.3390	71
		8.7 mm	.3425	80	.0046	.3471	73
		1 1/32"	.3438	78	.0046	.3483	71
M12 x 1.75	.4724	*8.75 mm	.3445	77	.0046	.3491	70
		10.2 mm	.4016	79	.0047	.4063	74
		"Y"	.4040	76	.0047	.4087	71
		1 3/32"	.4062	74	.0047	.4109	69

Note: Sizes with an asterisk (*) are not standard drills.

Metric Tap Size	Basic Major Dia. (Ins.)	Tap Drill Size	Decimal Equiv. of Tap Drill (Ins.)	Theoretical Percent of Thread	Prob-able Mean Over-Size (Ins.)	Prob-able Hole Size (Ins.)	Prob-able Percent of Thread
M12 x 1.25	.4724	2 7/64"	.4219	79	.0047	.4266	72
		10.8 mm	.4252	74	.0047	.4299	66
M14 x 2	.5512	1 1/32"	.4688	81	.0048	.4736	76
		12 mm	.4724	77	.0048	.4772	72
M14 x 1.5	.5512	12.5 mm	.4921	77	.0048	.4969	71
M16 x 2	.6299	3 5/64"	.5469	81	.0049	.5518	76
		14 mm	.5512	77	.0049	.5561	72
M16 x 1.5	.6299	14.5 mm	.5709	77	.0049	.5758	71
M18 x 2.5	.7087	3 9/64"	.6094	78	.0050	.6144	74
		15.5 mm	.6102	77	.0050	.6152	73
M18 x 1.5	.7087	4 1/64"	.6406	89	.0050	.6456	82
		16.5 mm	.6496	77	.0050	.6546	70
		2 1/32"	.6562	68	.0050	.6612	62
M20 x 2.5	.7874	1 1/16"	.6875	78	.0050	.6925	74
		17.5 mm	.6890	77	.0052	.6942	73
M20 x 1.5	.7874	18.5 mm	.7283	77	.0052	.7335	70
M22 x 2.5	.8661	4 9/64"	.7656	79	.0052	.7708	75
		19.5 mm	.7677	77	.0052	.7729	73
M22 x 1.5	.8661	20.5 mm	.8071	77	.0052	.8123	70
M24 x 3	.9449	21 mm	.8268	77	.0059	.8327	73
		5 3/64"	.8281	76	.0059	.8340	72
M24 x 2	.9449	22 mm	.8661	77	.0059	.8720	71
M27 x 3	1.0630	1 5/16"	.9375	82	.0060	.9435	78
		24 mm	.9449	77	.0062	.9511	73
M27 x 2	1.0630	25 mm	.9843	77	.0070	.9913	70
		5 3/64"	.9844	77	.0070	.9914	70
M30 x 3.5	1.1811	26.5 mm	1.0433	77			
		1 3/64"	1.0469	75			
M30 x 2	1.1811	28 mm	1.1024	77			
		1 1/64"	1.1094	70			
M33 x 3.5	1.2992	1 1/32"	1.1562	80			
		29.5 mm	1.1614	77			
M33 x 2	1.2992	1 1/64"	1.1719	71			
		31 mm	1.2188	79			
M36 x 4	1.4173	1 1/4"	1.2500	82			
		32 mm	1.2598	77			
M36 x 3	1.4173	1 9/64"	1.2969	78			
		33 mm	1.2992	77			
M39 x 4	1.5354	1 3/8"	1.3750	78			
		35 mm	1.3780	77			
M39 x 3	1.5354	36 mm	1.4173	77			
		1 7/64"	1.4219	74			

REAMING
RECOMMENDED

METRIC THREAD FORMULAE

$$\text{Basic major dia. (mm)} - \frac{\% \text{ thread} \times \text{mm pitch}}{76.980} = \text{Drilled hole size (mm)}$$

$$\frac{76.980}{\text{mm pitch}} \times [\text{Basic major} - \text{Drilled hole size}] = \% \text{ of thread}$$

T a p s

Problems encountered in tapping are often the fault of the tapping machine, tap holding devices and conditions of the hole to be tapped. The tapping machine should be checked for spindle, fixture and work alignment; for slipping belts, wear and power. The tap holding device should be checked as to correct type, for wear and alignment with the hole. The drilled hole should be checked for diameter and trueness in round and axis to assure correct percentage of thread engagement. Blind holes must have sufficient chip room at the bottom.

General Suggestions

1. If holes are undersize or oversize check against the setup instructions. Check the tap for correct pitch diameter limit for desired class of thread, and the drill for correct size.
2. If the tap is producing rough thread it generally means that the tap is pushing or tearing the metal instead of cutting it. The tap may be dull, have galled threads or may be running at too slow a speed. If none of these, increase the hook angle of the cutting face.
3. If the tap is loading (metal clinging to the tap) or galling, check the lubrication. Here, too, the tap may be dull, or it may be producing too high a percentage of thread. Shift to a surface-treated tap.
4. If tap breakage is encountered the tap may be cutting too high a percentage of thread, be insufficiently lubricated or have too little clearance for chips at the bottom of the blind hole. If none of these conditions exist, increase the speed, except in hard or tough materials, lower the speed.

Trouble	Cause
Tap Breakage	1. Wrong type of tap. 2. Dull tap. 3. Tap incorrectly ground. 4. Tap drill too small. 5. Drilled hole too shallow. 6. Misalignment of tap and hole. 7. Wrong machine. 8. Incorrect fixture or holding device. 9. Work hardened material. 10. Lack of lubricant, or use of wrong type.
Tap Failure on Reversal	1. Tap cutting too tightly. Cutting face angle should be increased. 2. Tap galling. Face angle on back of land should be increased. 3. Chips wedged between flutes. (See the following)
Chips Clogging Flutes	1. Wrong type of tap. 2. Insufficient chamfer. 3. Incorrect cutting face angle. 4. Rough Flutes. 5. Flutes improperly reground. 6. Lack of lubrication, or use of wrong type.
Stripped or Chipped Tap Threads	1. Misalignment. 2. Careless handling. 3. Dull Tap 4. Tap too hard. 5. Wrong application of surface treated taps. 6. Improper sharpening of tap.
Torn Threads in Tapped Part	1. Incorrect cutting face angle (usually too small). 2. Tap drill too small. 3. Chips clogging flutes. 4. Broken threads on taps. 5. Improper resharpening of tap. 6. Lack of lubricant, or use of wrong type.
Tap Sticking or Binding	1. Tap drill too small. 2. Tap lands too wide. 3. Incorrect cutting face angle. 4. Lack of lubricant, or use of wrong type. 5. Surface treatment (lubricant) required.
Excessive Tap Wear	1. Material is abrasive, or inclusions present. Surface treated tap required. 2. Misalignment.
Cutting Face Breakdown	1. Incorrect cutting face angle. 2. Surface treatment required.
Overheating of Tap	1. Excessive land width. 2. Lack of lubricant, or use of wrong type. 3. Dull tap. 4. Excessive flank contact, pitch diameter relief required. 5. Excessive tapping speeds.
Poor Finish on Thread in Tapped Part	1. Pitch diameter relief required. 2. Incorrect cutting face angle, usually too small. 3. Tap drill too small. 4. Insufficient number of chamfered threads. 5. Dull tap. 6. Lack of lubricant, or use of wrong type.
Excessive Frictional Drag and Power Requirement	1. Pitch diameter relief required. 2. Point size on tap too small. 3. Dull tap. 4. Incorrect cutting face angle. 5. Incorrect tapping speed. 6. Lack of lubricant, or use of wrong type. 7. Incorrect or inadequate equipment. 8. Misalignment.

Tap Limits, Product Limits

CLASS OF THREAD

We sometimes receive requests for a Class 3B (or other class) tap. Many times the customer will ask for a tap to produce a "Class 3B Fit". Ordering taps by these specifications is incorrect and often impractical. The following information is presented to clarify the difference between the terms Class of Thread, Tap Limits and Product Limits to make ordering taps easier and aid the customer in obtaining the tap best suited for their requirements.

Class of Thread

Class of Thread refers simply to the tolerances that control the closeness of fit between two threaded mating parts. This term should be used only in reference to a threaded assembly, as, for example, a screw and nut.

Product Limits

Product Limits refer to the limits and tolerances of the internal or female thread. The degree of tolerance is expressed by the terms Class 2, 2B, 3 and 3B. Product limits refer to the various limits and tolerances applying to nuts or internal threads and are identified by the terms Class 2, 2B, 3 or 3B.

Tap Limits

Tap Limits refer to the various sizes of taps manufactured to permit selection of a tap which will produce an internal thread within the desired product limit. Tap limits are designated as L-1, H-1, H-2, H-3, etc.

In the chart on this page we have illustrated the difference between tap and product limit, using a 1/4-20 tapped hole as the example.

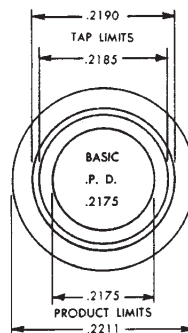
Although ground thread taps are produced to precision tolerances under closely controlled manufacturing processes and are guaranteed for accuracy of individual elements, there is always the possibility of the presence of unknown factors which can be detrimental to good tap performance. The tap manufacturer, therefore, is not able to guarantee the size of the tapped hole.

To summarize, the following points should be remembered :

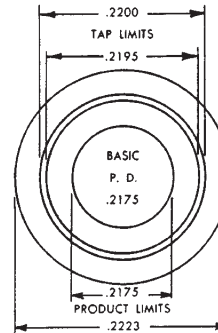
1. A tap cannot produce a Class of Thread. It can produce a tapped hole within specific product limits.
2. Since it is used only in tapping a hole, or producing an internal thread, a tap has no control over the fitting properties of the mating external thread.
3. To produce what is commonly referred to as a "Class of Thread," both the external and internal threads must be within their respective product limits. Only when both members of a threaded assembly fall within the desired class limits can the proper fit be assured.
4. The acceptability of any class of threaded hole is determined only by an accurate "Go" or "Hi" thread plug gage of the corresponding class. Similarly, the acceptability of a male part with an external thread is also determined by a corresponding "Go" or "Lo" thread ring gage.
5. When ordering taps, specify either the tap limit or the class of thread that identifies the limit of the tapped hole.
6. In special applications, supply as much information as possible. The more information our engineers have to work with, the better they can recommend a tap to do the job properly with least expense.
7. Remember, it is not always the most expensive tap which will do the job best. Our files contain many examples of special jobs which were solved with inexpensive standard taps.

1/4 - 20 Tapped Hole

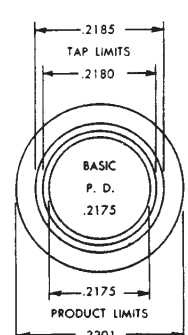
Class 2 Limit GH-3 Tap



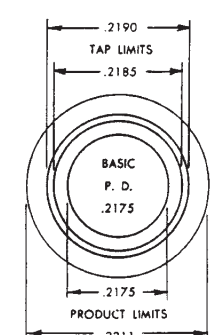
Class 2B Limit GH-5 Tap



Class 3 Limit GH-2 Tap



Class 3B Limit GH-3 Tap



Thread Constants for Various Percentages

TAPS

EXAMPLE: To find the hole size for obtaining 75% of thread in a ¼-20 tapped hole, follow first column to 20 threads, then across to 75% of thread. This figure (.0485) when subtracted from the .250 diameter leaves .2015, which is the required diameter of the hole for a ¼-20 thread.

Relation of Tap Pitch Diameter to Basic Pitch Diameter

Relation of Tap Pitch Diameter To Basic Pitch Diameter

American tap manufacturers use a series of tap pitch diameter limits. These limits feature a .0005" tolerance in tap sizes #0 through 1", and a .001" or greater tolerance in tap sizes above 1" through 1½" diameter, inclusive. The chart shows the relationship between tap pitch diameter limits and basic (nominal) pitch diameter.

FORMULA FOR OBTAINING TAP DRILL SIZES

(Select nearest commercial stock drill)

$$\left(\text{Outside Diam. of Thread} \right) - \left(\frac{.01299 \times \text{Amount of percentage of full thread}}{\text{Number of threads per inch}} \right) = \text{Drilled Hole Size}$$

$$\left(\text{No. of Threads per inch} \right) \times \left(\frac{\text{Outside Diam. of thread} - \text{Selected Drill Diam.}}{.01299} \right) = \text{Percent- age of Full Thread}$$

Figures in table show amount to subtract from O.D. of screw to obtain specific percentages of thread.

Threads per Inch	Double Depth	60% Thread	65% Thread	70% Thread	75% Thread	80% Thread	85% Thread
6	.21651	.1300	.1408	.1517	.1625	.1733	.1842
7	.18558	.1114	.1207	.1300	.1393	.1486	.1579
8	.16238	.0975	.1056	.1138	.1219	.1300	.1381
9	.14434	.0866	.0939	.1011	.1083	.1156	.1228
10	.12990	.0779	.0844	.0909	.0974	.1039	.1105
11	.11809	.0708	.0767	.0826	.0885	.0944	.1005
12	.10825	.0649	.0702	.0755	.0808	.0861	.0921
13	.09992	.0599	.0649	.0699	.0749	.0799	.0850
14	.09278	.0556	.0602	.0648	.0694	.0740	.0789
16	.08119	.0486	.0526	.0566	.0606	.0646	.0691
18	.07217	.0431	.0466	.0501	.0536	.0571	.0614
20	.06495	.0389	.0421	.0453	.0485	.0517	.0553
24	.05412	.0326	.0354	.0382	.0410	.0438	.0460
27	.04811	.0288	.0312	.0336	.0360	.0384	.0409
28	.04639	.0276	.0298	.0324	.0347	.0370	.0395
30	.04330	.0260	.0282	.0304	.0326	.0348	.0368
32	.04059	.0243	.0263	.0283	.0303	.0323	.0345
36	.03608	.0216	.0234	.0252	.0270	.0288	.0307
40	.03247	.0194	.0210	.0226	.0242	.0258	.0276
44	.02952	.0177	.0192	.0207	.0222	.0237	.0251
48	.02706	.0161	.0174	.0187	.0200	.0213	.0230
56	.02319	.0138	.0149	.0160	.0171	.0182	.0197
64	.02029	.0121	.0131	.0141	.0151	.0161	.0173
72	.01804	.0107	.0115	.0123	.0131	.0139	.0153
80	.01623	.0097	.0105	.0113	.0121	.0129	.0138

EXAMPLE: ¼ — 20NC

