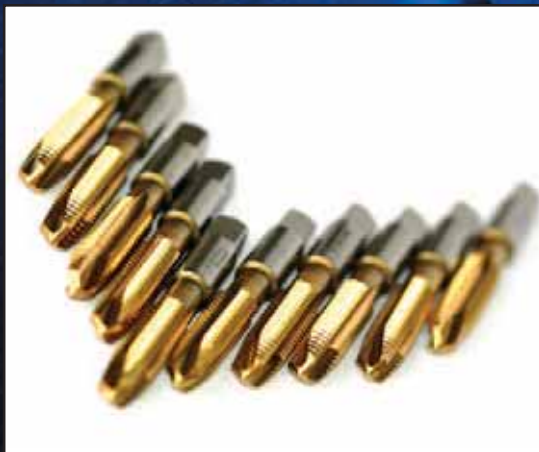


CHAMPION



TAPS



Combination Drill & Taps

List No. DT22
2 Flute / 118° Point / HSS

List No. DT22M
Metric Drills & Taps

Description: Combination drill and tap available in standard, metric and titanium coated.

Application: Create holes and tap in a single operation. No center drilling or punching required.



List No. DT22T
Titanium Nitride Coated



- Ideal for use in Multi-Spindle heads with reversing capability and in RotoBrute™ variable speed/reverse magnetic drills when used with tapping heads
- Tapered neck design reduces drill & tap breakage
- 118° Split point permits holes and threads to be cut at high speeds
- Produces a class 2B fit. No special holders or collets required

EDP No./ Diameter	Overall Length	Drill Length	Drill Diameter	Tap Length
DT22-4-40	1-7/8	1/4	.0910	3/8
DT22-4-48	1-7/8	1/4	.0945	3/8
DT22-5-40	1-15/16	9/32	.1040	13/32
DT22-5-44	1-15/16	9/32	.1060	13/32
DT22-6-32	2	5/16	.1115	7/16
DT22-6-40	2	5/16	.1170	7/16
DT22-8-32	2-1/8	3/8	.1375	1/2
DT22-8-36	2-1/8	3/8	.1405	1/2
DT22-10-24	2-3/8	13/32	.1545	5/8
DT22-10-32	2-3/8	13/32	.1635	5/8
DT22-12-24	2-3/8	15/32	.1805	21/32
DT22-12-28	2-3/8	15/32	.1860	21/32
DT22-1/4-20	2-1/2	17/32	.2080	25/32
DT22-1/4-28	2-1/2	17/32	.2220	25/32
DT22-5/16-18	2-27/32	11/16	.2660	15/16
DT22-5/16-24	2-27/32	11/16	.2770	15/16
DT22-3/8-16	3-3/8	13/16	.3225	1-1/16
DT22-3/8-24	3-3/8	13/16	.3395	1-1/16
DT22-7/16-14	3-3/4	1	.3770	1-1/4
DT22-7/16-20	3-3/4	1	.3955	1-1/4
DT22-1/2-13	4-1/16	1-1/8	.4350	1-3/8
DT22-1/2-20	4-1/16	1-1/8	.4580	1-3/8

EDP No./ Diameter	Overall Length	Drill Length	Drill Diameter	Tap Length
DT22M-3X.5	1-5/16	9/32	.1015	3/16
DT22M-3.5X0.6	2	5/16	.1178	3/16
DT22M-4X.7	2-1/8	3/8	.1340	1/4
DT22M-4.5X7.5	2-3/8	13/32	.1520	5/8
DT22M-5X.8	2-3/8	13/32	.1700	1/4
DT22M-6X1	2-1/2	17/32	.2030	5/16
DT22M-7X1	2-27/32	11/16	.2420	15/16
DT22M-8X1.25	2-27/32	11/16	.2730	15/16
DT22M-10X1.5	3.375	13/16	.3440	15/16
DT22M-12X1.75	4-1/16	1-1/8	.4140	1-1/16



Combination Drill & Taps

List No. DT22HEX - DT22HEXM

2 Flute / 135° Split Point / HSS / Black & Gold / Hex Shank



Description: Hex Shank, split point combination drill and tap available in standard and metric sizes

Application: Create holes and tap in a single operation. No center drilling or punching required, hex shank makes it ideally suited to cordless drills.

- Create the hole and thread in a single operation. No center drilling or punching required
- Its tapered neck design significantly reduces drill & tap breakage
- A 135° split point permits hole and thread to be cut at high speeds
- Available in standard, metric, and machine screw tap sizes
- Superior strength and durability provided by high molybdenum, high speed steel
- Functional black and gold surface treatment holds lubricant for smoother drilling
- 1/4" and 11/32" Hex shank can be used in QCD (Quick Change Driver)



EDP No./ Diameter	Drill Diameter	Drill Length (inches)	Overall Length (inches)	Thread Length (inches)
DT22HEX-6-32*	7/64	0.31	2.17	7/16
DT22HEX-8-32*	29	3/8	2.45	1/2
DT22HEX-10-24*	25	3/8	2.61	5/8
DT22HEX-10-32*	21	3/8	2.61	5/8
DT22HEX-12-24*	17	0.47	2.70	11/16
DT22HEX-1/4-20*	6	0.53	2.89	3/4
DT22HEX-1/4-28*	3	0.53	2.89	3/4
DT22HEX-5/16-18*	G	0.69	3.20	15/16
DT22HEX-5/16-24*	I	0.69	3.20	15/16
DT22HEX-3/8-16**	5/16	0.81	3.45	1-1/16
DT22HEX-3/8-24**	Q	0.81	3.45	1-1/16
DT22HEX-7/16-14**	U	1.00	3.83	1-1/4
DT22HEX-7/16-20**	25/64	1.00	3.83	1-1/4
DT22HEX-1/2-13**	27/64	1.13	4.07	1-3/8
DT22HEX-1/2-20**	29/64	1.13	4.07	1-3/8

EDP No./ Diameter	Drill Diameter	Drill Length (inches)	Overall Length (inches)	Thread Length (inches)
DT22HEX-M4X.7*	30	.31	2.40	1/2
DT22HEX-M5X.8*	19	.39	2.56	9/16
DT22HEX-M6X1*	9	.47	2.72	11/16
DT22HEX-M8X1.25*	17/64	.63	3.07	7/8
DT22HEX-M10X1.5**	Q	.79	3.31	15/16
DT22HEX-M12X1.75**	Y	.94	3.58	1-1/16

* 1/4" Hex Shank
 ** 11/32" Hex Shank

* 1/4" Hex Shank
 ** 11/32" Hex Shank

DT22HEX is ideal for the following industries:

- Electrical
- Maintenance
- Industrial
- Automotive

DT22HEX is ideal for the following materials:

- Aluminum
- Steel / Stainless Steel
- Bronze / Brass
- Cast Iron
- Zinc

Also available in 5, 6 or 10 piece plastic cased sets.



DT22HEX-SET10

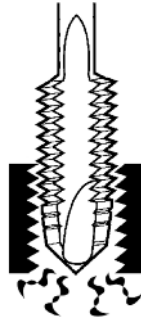


Spiral Point Taps

List No. XL22

Plug Style / Three Flute / Heavy Duty / Surface Treated

Description: Spiral point taps eject chips forward. Necked design for deeper, more trouble free tapping. Freer coolant flow to cutting edges. Heavier core for less breakage. Three flutes for 50% less tooth load. Promotes faster tapping and extended tool life.



Commonly referred to as "gun taps", spiral point taps quickly shears and ejects chips ahead of the tap. They are recommended for all through-hole applications.

EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
XL22-4-40	H2	3	9/16	2
XL22-6-32	H3	3	11/16	2
XL22-6-40	H2	3	11/16	2
XL22-8-32	H3	3	3/4	2-1/8
XL22-8-36	H2	3	3/4	2-1/8
XL22-10-24	H3	3	7/8	2-3/8
XL22-10-32	H3	3	7/8	2-3/8
XL22-12-24	H3	3	15/16	2-3/8
XL22-12-28	H3	3	15/16	2-3/8
XL22-1/4-20	H3	3	1	2-1/2
XL22-1/4-28	H3	3	1	2-1/2
XL22-5/16-18	H3	3	1-1/8	2-3/4
XL22-5/16-24	H3	3	1-1/8	2-3/4
XL22-3/8-16	H3	3	1-1/4	2-15/16
XL22-3/8-24	H3	3	1-1/4	2-15/16
XL22-7/16-14	H3	3	1-7/16	3-5/32
XL22-7/16-20	H3	3	1-7/16	3-5/32
XL22-1/2-13	H3	3	1-21/32	3-3/8
XL22-1/2-20	H3	3	1-21/32	3-3/8
XL22-5/8-11	H3	3	1-13/16	3-13/16
XL22-5/8-18	H3	3	1-13/16	3-13/16
XL22-3/4-10	H3	3	2	4-1/4
XL22-3/4-16	H3	3	2	4-1/4



Spiral Point Taps Titanium Nitride Coated

List No. XL22T

Plug Style / Three Flute / Heavy Duty

Description: Titanium Nitride surface treatment for longer tap life and less breakage. Three flute design reduces torque while the neck promotes coolant flow to the cutting edges. TiN coating gives increased surface hardness, increased durability and high lubricity.

Application: Permits tapping of high tensile martensitic stainless steels and titanium alloys at high speeds.



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
XL22T-4-40	H2	3	9/16	2
XL22T-6-32	H3	3	11/16	2
XL22T-6-40	H2	3	11/16	2
XL22T-8-32	H3	3	3/4	2-1/8
XL22T-8-36	H2	3	3/4	2-1/8
XL22T-10-24	H3	3	7/8	2-3/8
XL22T-10-32	H3	3	7/8	2-3/8
XL22T-12-24	H3	3	15/16	2-3/8
XL22T-12-28	H3	3	15/16	2-3/8
XL22T-1/4-20	H3	3	1	2-1/2
XL22T-1/4-28	H3	3	1-1/8	2-3/4
XL22T-5/16-18	H3	3	1-1/8	2-3/4

EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
XL22T-5/16-24	H3	3	1-1/8	2-3/4
XL22T-3/8-16	H3	3	1-1/4	2-15/16
XL22T-3/8-24	H3	3	3/4	2-15/16
XL22T-7/16-14	H3	3	1-7/16	3-5/32
XL22T-7/16-20	H3	3	1-7/16	3-5/32
XL22T-1/2-13	H3	3	1-21/32	3-3/8
XL22T-1/2-20	H3	3	1-21/32	3-3/8
XL22T-5/8-11	H3	3	1-13/16	3-13/16
XL22T-5/8-18	H3	3	3-13/16	3-13/16
XL22T-3/4-10	H3	3	2	4-1/4
XL22T-3/4-16	H3	3	2	4-1/4



Spiral Point Taps

List No.321

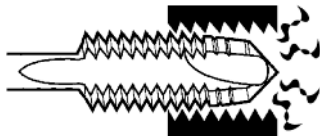
Plug Style / Standard "H" Limits / HSS



Description: Spiral point taps cut with a shearing action that shoots the chips ahead of the tap.

Application: For tapping of "through holes" or deep blind holes where a shoulder exists for chips to collect.

Spiral point quickly shears and ejects chips ahead of the tap.



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
321-0-80	H1	2	5/16	1-5/8
321-1-64	H1	2	3/8	1-11/16
321-1-72	H1	2	3/8	1-11/16
321-2-56	H2	2	7/16	1-3/4
321-2-64	H2	2	7/16	1-3/4
321-3-48	H2	2	1/2	1-13/16
321-3-56	H2	2	1/2	1-13/16
321-4-40	H2	2	9/16	1-7/8
321-4-48	H2	2	9/16	1-7/8
321-4-36	H2	2	9/16	1-7/8
321-5-40	H2	2	5/8	1-15/16
321-5-44	H2	2	5/8	1-15/16
321-6-32	H2	2	11/16	2
321-6-40	H2	2	11/16	2
321-8-32	H2	2	3/4	2-1/8

EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
321-8-36	H2	2	3/4	2-1/8
321-10-24	H3	2	7/8	2-3/8
321-10-32	H3	2	7/8	2-3/8
321-12-24	H3	2	15/16	2-3/8
321-12-28	H3	2	15/16	2-3/8
321-1/4-20	H3	2	1	2-1/2
321-1/4-28	H3	2	1	2-1/2
321-5/16-18	H3	2	1-1/8	2-23/32
321-5/16-24	H3	2	1-1/8	2-23/32
321-3/8-16	H3	3	1-1/4	2-15/16
321-3/8-24	H3	3	1-1/4	2-15/16
321-7/16-14	H3	3	1-7/16	3-5/32
321-7/16-20	H3	3	1-7/16	3-5/32
321-1/2-13	H3	3	1-21/32	3-3/8
321-1/2-20	H3	3	1-21/32	3-3/8
321-5/8-11	H3	3	1-13/16	3-13/16
321-5/8-18	H3	3	1-13/16	3-13/16
321-3/4-10	H3	3	2	4-1/4
321-3/4-16	H3	3	2	4-1/4



Metric Spiral Point Taps

List No.321M

Metric / Plug Style / Ground Thread / HSS



Description: Spiral point taps cut with a shearing action that shoots the chips ahead of the metric tap.

Application: For tapping of "through holes" or deep blind holes where a shoulder exists for chips to collect.

EDP No./ Size	D Limits	No. of Flutes	Length of Thread	Overall Length
321M-1.6x.35	3	2	5/16	1-5/8
321M-2x.4	3	2	7/16	1-3/4
321M-2.2x.45	3	2	7/16	1-3/4
321M-2.5x.45	3	2	1/2	1-13/16
321M-3x.5	3	2	5/8	1-15/16
321M-3.5x.6	4	2	11/16	2
321M-4x.7	4	2	3/4	2-1/8
321M-4.5x.75	4	2	7/8	2-3/8
321M-5x.8	4	2	7/8	2-3/8
321M-6x1	5	2	1	2-1/2
321M-7x1	5	2	1-1/8	2-23/32
321M-8x1	5	2	1-1/8	2-23/32

EDP No./ Size	D Limits	No. of Flutes	Length of Thread	Overall Length
321M-8x1.25	5	2	1-1/8	2-23/32
321M-10x1.25	5	3	1-1/4	2-15/16
321M-10x1.5	6	3	1-1/4	2-15/16
321M-12x1.25	5	3	1-21/32	3-3/8
321M-12x1.75	6	3	1-21/32	3-3/8
321M-14x1.5	6	3	1-21/32	3-19/32
321M-14x2	7	3	1-21/32	3-19/32
321M-16x1.5	6	3	1-13/16	3-13/16
321M-16x2	7	3	1-13/16	3-13/16
321M-18x2.5	7	3	1-13/16	4-1/32
321M-20x2.5	7	3	2	4-15/32



Spiral Point Taps TiN Coated

List No. 321T

Plug Style / Titanium Nitride Coated / HSS

Description: Cut with a shearing action that shoots the chips ahead of the tap. TiN coating gives increased surface hardness, greater durability & high lubricity.

Application: For tapping of "through holes" or deep blind holes where a shoulder exists for chips to collect.



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
321T-6-32	H3	2	11/16	2
321T-8-32	H3	2	3/4	2-1/8
321T-8-36	H2	2	3/4	2-1/8
321T-10-24	H3	2	7/8	2-3/8
321T-10-32	H3	2	7/8	2-3/8
321T-12-24	H3	2	15/16	2-3/8
321T-12-28	H3	2	15/16	2-3/8
321T-1/4-20	H3	2	1	2-1/2
321T-1/4-28	H3	2	1	2-1/2
321T-5/16-18	H3	2	1-1/8	2-23/32
321T-5/16-24	H3	2	1-1/8	2-23/32
321T-3/8-16	H3	3	1-1/4	2-15/16
321T-3/8-24	H3	3	1-1/4	2-15/16
321T-7/16-14	H3	3	1-7/16	3-5/32
321T-7/16-20	H3	3	1-7/16	3-5/32
321T-1/2-13	H3	3	1-21/32	3-3/8
321T-1/2-20	H3	3	1-21/32	3-3/8
321T-5/8-11	H3	3	1-13/16	3-13/16
321T-5/8-18	H3	3	1-13/16	3-13/16
321T-3/4-10	H3	3	2	4-1/4
321T-3/4-16	H3	3	2	4-1/4



High Speed Hand Taps

List No. 308

Standard "H" Limits / Ground Thread



Description: High quality high speed hand tap.

Application: Operated in tap wrenches or production tapping heads for general purpose tapping supplied in standard "H" limits that will provide an adequate "class of fit" for standard tapping applications.



EDP No./ Diameter	Hex	Drill Dia	Drill Length	Thread Length
308-0-80	H1	2	5/16	1-5/8
308-1-64	H1	2	3/8	1-11/16
308-1-72	H1	2	3/8	1-11/16
308-2-56	H2	3	7/16	1-3/4
308-2-64	H2	3	7/16	1-3/4
308-3-48	H2	3	1/2	1-13/16
308-3-56	H2	3	1/2	1-13/16
308-4-40	H2	3	9/16	1-7/8
308-4-48	H2	3	9/16	1-7/8
308-4-36	H2	3	9/16	1-7/8
308-5-40	H2	3	5/8	1-15/16
308-5-44	H2	3	5/8	1-15/16
308-6-32*	H3	3	11/16	2

CHAMPION

List No. 308 continued



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
308-6-40	H2	3	11/16	2
308-8-32*	H3	4	3/4	2-1/8
308-8-36	H2	4	3/4	2-1/8
308-10-24*	H3	4	7/8	2-3/8
308-10-32*	H3	4	7/8	2-3/8
308-12-24*	H3	4	15/16	2-3/8
308-12-28	H3	4	15/16	2-3/8
308-1/4-20*	H3	4	1	2-1/2
308-1/4-28	H3	4	1	2-1/2
308-5/16-18*	H3	4	1-1/8	2-23/32
308-5/16-24	H3	4	1-1/8	2-23/32
308-3/8-16*	H3	4	1-1/4	2-15/16
308-3/8-24	H3	4	1-1/4	2-15/16
308-7/16-14*	H3	4	1-7/16	3-5/32
308-7/16-20	H3	4	1-7/16	3-5/32
308-1/2-13*	H3	4	1-21/32	3-3/8
308-1/2-20	H3	4	1-21/32	3-3/8
308-9/16-12	H3	4	1-21/32	3-19/32
308-9/16-18	H3	4	1-21/32	3-19/32

EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
308-5/8-11	H3	4	1-13/16	3-13/16
308-5/8-18	H3	4	1-13/16	3-13/16
308-11/16-11	H3	4	1-13/16	4-1/32
308-11/16-16	H3	4	1-13/16	4-1/32
308-3/4-10	H3	4	2	4-1/4
308-3/4-16	H3	4	2	4-1/4
308-7/8-9	H4	4	2-7/32	4-11/16
308-7/8-14	H4	4	2-7/32	4-11/16
308-1-8	H4	4	2-1/2	5-1/8
308-1-12	H4	4	2-1/2	5-1/8
308-1-14	H4	4	2-1/2	5-1/8
308-1-1/8-7	H4	4	2-9/16	5-7/16
308-1-1/8-12	H4	4	2-9/16	5-7/16
308-1-1/4-7	H4	4	2-9/16	5-3/4
308-1-1/4-12	H4	6	2-9/16	5-3/4
308-1-3/8-6	H4	4	3	6-1/16
308-1-3/8-12	H4	6	3	6-1/16
308-1-1/2-6	H4	4	3	6-3/8
308-1-1/2-12	H4	6	3	6-3/8

CHAMPION

Left Hand High Speed Hand Taps

List No. 308LH

Left Hand / Standard "H" Limits / Ground Thread

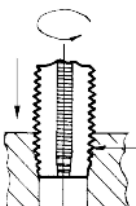


Description: High quality left hand high speed hand tap.

Application: Operated in tap wrenches or production tapping heads for general purpose tapping supplied in standard "H" limits that will provide an adequate "class of fit" for standard tapping applications.

EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
308LH-10-32	H3	4	7/8	2-3/8
308LH-1/4-20	H3	4	1	2-1/2
308LH-1/4-28	H3	4	1	2-1/2
308LH-5/16-18	H3	4	1-1/8	2-23/32
308LH-5/16-24	H3	4	1-1/8	2-23/32
308LH-3/8-16	H3	4	1-1/4	2-15/16
308LH-3/8-24	H3	4	1-1/4	2-15/16
308LH-7/16-14	H3	4	1-7/16	3-5/32
308LH-7/16-20	H3	4	1-7/16	3-5/32

EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
308LH-1/2-13	H3	4	1-21/32	3-3/8
308LH-1/2-20	H3	4	1-21/32	3-3/8
308LH-9/16-12	H3	4	1-21/32	3-19/32
308LH-9/16-18	H3	4	1-21/32	3-19/32
308LH-5/8-11	H3	4	1-13/16	3-13/16
308LH-5/8-18	H3	4	1-13/16	3-13/16
308LH-3/4-10	H3	4	2	4-1/4
308LH-3/4-16	H3	4	2	4-1/4
308LH-7/8-9	H4	4	2-7/32	4-11/16
308LH-7/8-14	H4	4	2-7/32	4-11/16
308LH-1-8	H4	4	2-1/2	5-1/8
308LH-1-12	H4	4	2-1/2	5-1/8
308LH-1-14	H4	4	2-1/2	5-1/8



Cuts threads with a left hand rotation used in applications where left hand studs or fasteners are required.

Please specify taper, plug, bottom or set when ordering.

CHAMPION



Metric High Speed Hand Taps

List No. 308M

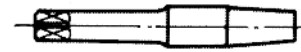
Metric / Ground Thread / HSS



Description: High quality metric high speed hand tap.

Application: Operated in tap wrenches or production tapping heads for general purpose tapping supplied in standard "H" limits that will provide an adequate "class of fit" for standard tapping applications.

EDP No./ Size	D Limits	No. of Flutes	Overall Length	Thread Length
308M-1.6x.35	3	2	1-5/8	5/16
308M-1.8x.35	3	2	1-11/16	3/8
308M-2x.4	3	3	1-3/4	7/16
308M-2.2x.45	3	3	1-3/4	7/16
308M-2.5x.45	3	3	1-13/16	1/2
308M-3x.5	3	3	1-15/16	5/8
308M-3.5x6	3	3	2	11/16
308M-4x.7	4	4	2-1/8	3/4
308M-4.5x.75	4	4	2-3/8	7/8
308M-5x.8	4	4	2-3/8	7/8
308M-6x1	5	4	2-1/2	1
308M-7x1	5	4	2-23/32	1-1/8
308M-8x1.0	5	4	2-23/32	1-1/8
308M-8x1.25	5	4	2-23/32	1-1/8
308M-10x1.25	5	4	2-15/16	1-1/4
308M-10x1.5	6	4	2-15/16	1-1/4
308M-12x1.25	5	4	3-3/8	1-21/32
308M-12x1.75	6	4	3-3/8	1-21/32
308M-14x1.5	6	4	3-19/32	1-21/32
308M-14x2	7	4	3-19/32	1-21/32
308M-16x1.5	6	4	3-13/16	1-13/16
308M-16x2	7	4	3-13/16	1-13/16
308M-18x1.5	6	4	4-1/32	1-13/16
308M-20x2.5	7	4	4-15/32	2
308M-22x2.5	7	4	4-11/16	2-7/32
308M-24x3	8	4	4-29/32	2-7/32
308M-27x3	8	4	5-1/8	2-1/2
308M-30x3.5	9	4	5-7/16	2-9/16
308M-33x3.5	9	4	5-3/4	2-9/16
308M-36x4	9	4	6-1/16	3
308M-39x4	9	6	6-11/16	3-3/16



Taper taps

Distribute the cutting load across 7–10 threads. Used for starting a threaded hole.



Plug taps

Most commonly used, distribute the load across 3–5 threads of chamfer.



Bottoming taps

Have only 1-1-1/2 threads of chamfer and are used to tap to the bottom of a blind hole.

Please specify:

T (taper), P (plug), B (bottom) or S (set) when ordering. If not specified then plug style will be supplied.



CHAMPION

Carbon Steel Hand Taps

List No. 302

List No. 302M

Metric Hand Taps

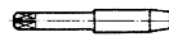
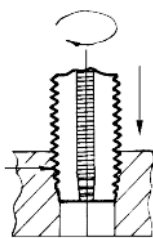
Plug Style

Description/Application: For hand tapping in maintenance and repair work and for re-threading applications where extreme thread accuracy and tolerance is not critical.



EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
302-4-40	3	9/16	1-7/8
302-4-48	3	9/16	1-7/8
302-5-40	3	5/8	1-15/16
302-5-44	3	5/8	1-15/16
302-6-32	3	11/16	2
302-6-40	3	11/16	2
302-8-32	4	3/4	2-1/8
302-8-36	4	3/4	2-1/8
302-10-24	4	7/8	2-3/8
302-10-32	4	7/8	2-3/8
302-12-24	4	15/16	2-3/8
302-12-28	4	15/16	2-3/8
302-1/4-20	4	1	2-1/2
302-1/4-28	4	1	2-1/2
302-5/16-18	4	1-1/8	2-23/32
302-5/16-24	4	1-1/8	2-23/32
302-3/8-16	4	1-1/4	2-15/16
302-3/8-24	4	1-1/4	2-15/16
302-7/16-14	4	1-7/16	3-5/32
302-7/16-20	4	1-7/16	3-5/32
302-1/2-13	4	1-21/32	3-3/8
302-1/2-20	4	1-21/32	3-3/8
302-9/16-12	4	1-21/32	3-19/32
302-9/16-18	4	1-21/32	3-19/32
302-5/8-11	4	1-13/16	3-13/16
302-5/8-18	4	1-13/16	3-13/16
302-3/4-10	4	2	4-1/4
302-3/4-16	4	2	4-1/4
302-7/8-9	4	2-7/32	4-11/16
302-7/8-14	4	2-7/32	4-11/16
302-1-8	4	2-1/2	5-1/8
302-1-12	4	2-1/2	5-1/8
302-1-14	4	2-1/2	5-1/8
302-1-1/8-7	4	2-9/16	5-7/16
302-1-1/8-12	4	2-9/16	5-7/16
302-1-1/4-7	4	2-9/16	5-3/4
302-1-1/4-12	6	2-9/16	5-3/4
302-1-3/8-6	4	3	6-1/16
302-1-3/8-12	6	3	6-1/16
302-1-1/2-6	4	3	6-3/8
302-1-1/2-12	6	3	6-3/8

Please specify T (taper), P (plug), B (bottom) or S (set) when ordering. If not specified then plug style will be supplied.



Taper taps

Distribute the cutting load across 7-10 threads. Used for starting a threaded hole.

Plug taps

Most commonly used, distribute the load across 3-5 threads of chamfer.

Bottoming taps

Have only 1 to 1-1/2 threads of chamfer and are used to tap to the bottom of a blind hole.

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
302M-3X.5-P	3	5/8	1-5/16
302M-3X.6-P	3	5/8	1-5/16
302M-4X.7-P	4	3/4	2-1/8
302M-4X.75-P	4	3/4	2-1/8
302M-5X.8-P	4	15/16	2-3/8
302M-5X.9-P	4	15/16	2-3/8
302M-6X1-P	4	1	2-1/2
302M-7X1-P	4	1 1/8	2-1/2
302M-8X1.25-P	4	1 1/8	2-23/32
302M-9X1-P	4	1 1/4	2-7/8
302M-9X1.25-P	4	1 1/4	2-7/8
302M-10X1.25-P	4	1 1/4	2-15/16
302M-10X1.5-P	4	1 1/4	2-15/16
302M-11X1.5-P	4	1 7/16	3-5/32
302M-12X1.5-P	4	1 21/32	3-3/8
302M-12X1.75-P	4	1 21/32	3-3/8
302M-14X1.25-P	4	1 21/32	3 21/32
302M-14X2-P	4	1 21/32	3 21/32
302M-16X1.5-P	4	1 13/16	3 13/16
302M-16X2-P	4	1 13/16	3 13/16
302M-18X1.5-P	4	1 13/16	4 1/32
302M-18X2.5-P	4	1 13/16	4 1/32

List 302M is only available in plug style.



Heavy Duty Spiral Flute Taps List No. XL46

Description: Spiral flute taps are designed to tap "blind holes", improved chip lifting for faster tapping and increased threading accuracy.

Application: Heavy duty design cuts easily through steel alloys.



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
XL46-6-32	3	2	11/16	2
XL46-8-32	3	3	3/4	2-1/8
XL46-10-24	3	3	7/8	2-3/8
XL46-10-32	3	3	7/8	2-3/8
XL46-12-24	3	3	15/16	2-3/8
XL46-1/4-20	3	3	1	2-1/2
XL46-1/4-28	3	3	1	2-1/2
XL46-5/16-18	3	3	1-1/8	2-23/32
XL46-5/16-24	3	3	1-1/8	2-23/32
XL46-3/8-16	3	3	1-1/4	2-15/16
XL46-3/8-24	3	3	1-1/4	2-15/16
XL46-7/16-14	3	3	1-7/16	3-5/32
XL46-7/16-20	3	3	1-7/16	3-5/32
XL46-1/2-13	3	3	1-21/32	3-3/8
XL46-1/2-20	3	3	1-21/32	3-3/8

Specify plug or bottoming when ordering.



Pulley Taps List No. 3006-3012 4 Flute / Ground Thread / Plug Style / HSS

Description: Originally designed to provide extra reach to tap the oil cups and set screw holes of pulley parts. The long shank permits tapping other long reach applications.

Available in 6", 8", 10" and 12" overall lengths.



EDP No./ Size 6" OAL	EDP No./ Size 8" OAL	EDP No./ Size 10" OAL	EDP No./ Size 12" OAL	H Limits	No. of Flutes	Length of Thread	Dia. of Shank
3006-1/4-20	3008-1/4-20	-	-	H3	4	1	.255
3006-5/16-18	3008-5/16-18	-	-	H3	4	1-1/8	.318
3006-3/8-16	3008-3/8-16	3010-3/8-16	-	H3	4	1-1/4	.381
3006-7/16-14	3008-7/16-14	-	-	H3	4	1-7/16	.444
3006-1/2-13	3008-1/2-13	3010-1/2-13	3012-1/2-13	H3	4	1-21/32	.507
3006-5/8-11	3008-5/8-11	3010-5/8-11	3012-5/8-11	H3	4	1-13/16	.633
-	-	3010-3/4-10	3012-3/4-10	H3	4	2	.759



Nut Taps

List No. 1308
Standard "H" Taps / 4 FLute / Plug Style / HSS

Description: These taps are characterized by long thread length, long chamfers and longer shanks. The shanks are smaller than the minor diameter of the thread for chip removal and clearance.

Application: For tapping deeper than the threaded portion, nut taps were originally designed for tapping nuts.



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
1308-1/4-20	H3	4	1-5/8	5
1308-5/16-18	H3	4	1-13/16	5-1/2
1308-3/8-16	H3	4	2	6
1308-1/2-13	H3	4	2-1/2	7



8 Thread High Speed Hand Taps

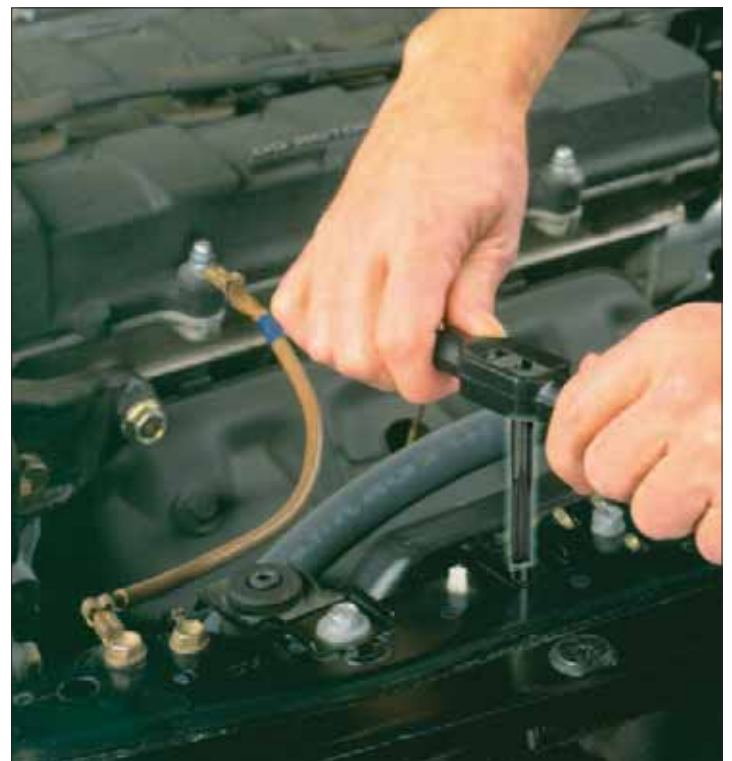
List No. 3088
8 Thread Special / Ground Thread

Description: High speed steel special "8 thread" series taps all feature 8 threads per inch.

Application: Engineered specifically for liquid transmission equipment found extensively in the oil fields.



EDP No./ Size	H Limits	No. of Flutes	Length of Thread	Overall Length
3088-1-1/8	H5	4	2-9/16	5-7/16
3088-1-1/4	H5	4	2-9/16	5-3/4
3088-1-3/8	H5	4	3	6-1/16
3088-1-1/2	H5	4	3	6-3/8
3088-1-5/8	H6	6	3-3/16	6-11/16
3088-1-3/4	H6	6	3-3/16	7
3088-1-7/8	H6	6	3-9/16	7-5/16
3088-2	H6	6	3-9/16	7-5/8
3088-2-1/8	H6	6	3-9/16	8
3088-2-1/4	H6	6	3-9/16	8-1/4
3088-2-3/8	H6	6	4	8-1/2
3088-2-1/2	H6	6	4	8-3/4
3088-2-5/8	H6	6	4	8-3/4
3088-2-3/4	H8	6	4	9-1/4
3088-2-7/8	H8	8	4	9-1/4
3088-3	H8	8	4-9/16	9-3/4
3088-3-1/4	H8	8	4-9/16	10
3088-3-1/2	H8	8	4-15/16	3-1/2
3088-3-3/4	H8	8	5-5/16	10-1/2
3088-4	H8	8	5-5/16	10-3/4



Specify taper, plug, bottoming or set when ordering.



Taper Pipe Taps

List No. 324

NPT / Regular Hook / 3/4" taper/ft. / Ground Thread / HSS



Description: Designed to produce threads where mated parts are not required to withstand high fluid or gas pressures & where the use of a sealing compound or tape is acceptable to produce a leakproof thread.

Application: For tapping of pipe and pipe fittings.

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324-1/16-27	4	11/16	2-1/8
324-1/8-27	4	3/4	2-1/8
324-1/4-18	4	1-1/16	2-7/16
324-3/8-18	4	1-1/16	2-9/16
324-1/2-14	4	1-3/8	3-1/8

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324-3/4-14	5	1-3/8	3-1/4
324-1-11-1/2	5	1-3/4	3-3/4
324-1-1/4-11-1/2	5	1-3/4	4
324-1-1/2-11-1/2	7	1-3/4	4-1/4
324-2-11-1/2	7	1-3/4	4-1/2



High Hook Taper Pipe Taps

List No. 324H

NPT / High Hook / 3/4" taper/ft. / Ground Thread / HSS



Description: Designed for ductile materials which normally produce long continuous chips, such as aluminum, free machining stainless, mild steels and plastics.

Application: For tapping of pipe and pipe fittings.

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324H-1/16-27	4	11/16	2-1/8
324H-1/8-27	4	3/4	2-1/8
324H-1/4-18	4	1-1/16	2-7/16
324H-3/8-18	4	1-1/16	2-9/16
324H-1/2-14	4	1-3/8	3-1/8

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324H-3/4-14	5	1-3/8	3-1/4
324H-1-11-1/2	5	1-3/4	3-3/4
324H-1-1/4-11-1/2	5	1-3/4	4
324H-1-1/2-11-1/2	7	1-3/4	4-1/4
324H-2-11-1/2	7	1-3/4	4-1/2



Low Hook Taper Pipe Taps

List No. 324L

NPT / Low Hook / 3/4" taper/ft. / Ground Thread / HSS



Description: Designed for the tapping of pipe and pipe fittings in castings and similar materials that produce granular chips.

Application: For tapping of pipe and pipe fittings.

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324L-1/16-27	4	11/16	2-1/8
324L-1/8-27	4	3/4	2-1/8
324L-1/4-18	4	1-1/16	2-7/16
324L-3/8-18	4	1-1/16	2-9/16
324L-1/2-14	4	1-3/8	3-1/8

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324L-3/4-14	5	1-3/8	3-1/4
324L-1-11-1/2	5	1-3/4	3-3/4
324L-1-1/4-11-1/2	5	1-3/4	4
324L-1-1/2-11-1/2	7	1-3/4	4-1/4
324L-2-11-1/2	7	1-3/4	4-1/2

CHAMPION

Interrupted Thread Taper Pipe Taps

List No. 324I

NPT / Ground Thread / HSS

Description: For threading a wide variety of materials, both ferrous and non ferrous, where chip disposal is a problem.

Application: For materials which are difficult to work in, such as stainless steel, titanium and bronzes.



The first few threads are full and the balance interrupted, to reduce drag while taper pipe threading. Easier for the lubricant to reach the cutting edges. Reduces the friction and tapping torque.

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324I-1/8-27	5	3/4	2-1/8
324I-1/4-18	5	1-1/16	2-7/16
324I-3/8-18	5	1-1/16	2-9/16
324I-1/2-14	5	1-3/8	3-1/8
324I-3/4-14	5	1-3/8	3-1/4

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
324I-1-11-1/2	5	1-3/4	3-3/4
324I-1-1/4-11-1/2	5	1-3/4	4
324I-1-1/2-11-1/2	7	1-3/4	4-1/4
324I-2-11-1/2	7	1-3/4	4-1/2

CHAMPION

Straight Pipe Taps

List No. 325

NPS / Ground Thread / HSS

Description: Identical with Taper style but have a straight thread.

Application: For tapping holes or couplings. For low pressure work to assemble with taper threaded pipe or fittings to secure a tight joint when a sealer is used.



EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
325-1/8-27	4	3/4	2-1/8
325-1/4-18	4	1-1/16	2-7/16
325-3/8-18	4	1-1/16	2-9/16

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
325-1/2-14	4	1-3/8	3-1/8
325-3/4-14	5	1-3/8	3-1/4
325-1-11-1/2	5	1-3/4	3-3/4

CHAMPION

Carbon Steel Taper Pipe Taps

List No. 304

NPT / 3/4" taper/ft. / Carbon Steel

Description: Nominal size is that of the pipe fitting to be tapped.

Application: Used for rethreading pipe fittings. In producing pipe fittings, extremely tight fits are required - the threaded portion is tapered to achieve this.



Diameter of tap increases from the entering end of the thread portion at the rate of 3/4" per foot; the angle formed by the sides of the thread is 60°.

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
304-1/8-27	4	3/4	2-1/8
304-1/4-18	4	1-1/16	2-7/16
304-3/8-18	4	1-1/16	2-9/16
304-1/2-14	4	1-3/8	3-1/8
304-3/4-14	5	1-3/8	3-1/4

EDP No./ Size	No. of Flutes	Length of Thread	Overall Length
304-1-11-1/2	5	1-3/4	3-3/4
304-1-1/4-11-1/2	5	1-3/4	4
304-1-1/2-11-1/2	6	1-3/4	4-1/4
304-2-11-1/2	6	1-3/4	4-1/2

CHAMPION



Tap & Die Sets in Hardwood Boxes



S32 Series Tap & Die Sets 1/4 - 1

Champion 32 piece tap & die sets contain the following: 1/8 NPT pipe tap; plug taps / round dies: 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 5/8-11, 3/4-10, 7/8-9, 1-8.

Accessories: 3305 1", 1-1/2 & 2 hex adaptors for round dies, 3291 1, 1-1/2 & 2 round die stocks, 3002-2 "T"-handle, 3001-7 bar handle tap wrench and screwdriver.

Weight: 13lbs.
Dimensions: 18"L x 7-1/2"D x 1-1/2"H

EDP No.	Description
S32JR	302 carbon Taps & 327 carbon dies
S32-LTD	308 HS Taps & 327 carbon dies
S32-ULTRA	308 HS Taps & 328 HS Dies

S32 Series Metric Tap & Die Sets 6 - 24mm

S32M-LTD 32 piece metric tap & die sets contain the following: 3/24-1/8 NPT pipe tap; plug taps/round dies: 6.0x1.0, 7.0x1.0, 8.0x1.25, 10.0x1.5, 12.0x1.75, 14x2.0, 16x2.0, 20x2.5, 22x2.5, 24x3.0.

Accessories: 3305 1, 1-1/2 & 2 hex adaptors for round dies, 3002-2 "T" handle tap wrench, 3291 1, 1-1/2 & 2 round die stocks, 3001-7 bar handle tap wrench and screwdriver.

Weight: 13lbs.
Dimensions: 18"L x 7-1/2"D x 1-1/2"H

EDP No.	Description
S32M-LTD	308M HS taps & 327M carbon Dies



S40 Series Tap & Die Sets #4 - 1/2

Champion 40 piece tap & die sets contain the following: 1/8 NPT pipe tap; plug taps / round dies: 4-40, 6-32, 8-32, 10-24, 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, and 1/2-20.

Accessories: 3305-1 hex adaptor for round dies, 3002-1 "T" handle, 3002-1 die stock and screwdriver.

Weight: 23lbs.
Dimensions: 25-1/2"L x 11-3/4"D x 2"H

EDP No.	Description
S40-JR	302 carbon taps & 327 carbon dies
S40-LTD	308 HS taps & 327 carbon dies
S40-ULTRA	308 HS taps & 328 HS dies

S40 Series Metric Tap & Die Sets 2.5 - 12mm

S40M-LTD 40 piece metric tap & die sets contain the following: 3/24-1/8 NPT pipe tap; plug taps/round dies: 2.50x.45, 3.0x.50, 3.5x.60, 4.0x.70, 5.0x.80, 5.5x.90, 6.0x.75, 6.0x1.0, 7.0x.75, 7.0x1.0, 8.0x1.0, 8.0x1.25, 10.0x1.25, 10.0x1.5, 12.0x1.25, 12.0x1.75.

Accessories: 3305-1 hex adaptor for round dies, 3002-1 "T" handle tap wrench, 3291-1 round die stock, 3001-15 bar handle tap wrench and screwdriver.

Weight: 23 lbs.
Dimensions: 25-1/2"L x 11-3/4"D x 2"H

EDP No./	Description
S40M-LTD	308M HS taps & 327M carbon dies



S51 Series Tap & Die Sets 1/4 - 1

Champion 51 piece tap & die sets contain the following: 1/8 NPT pipe tap; taps/dies: 1/4-20, 1/4-28, 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, 7/8-9, 7/8-14, 1-8, 1-14.

Accessories: 3305-1, 1-1/2 & 2 hex adaptor for round dies, 3002-2 "T" handle, 3291-1, 1-1/2 & 2 die stocks, 3001-7 bar handle tap wrench and screwdriver.

Weight: 34lbs.
Dimensions: 28-1/2"L x 14-1/2"D x 2-1/2"H

EDP No.	Description
S51-JR	302 carbon taps & 327 carbon dies
S51-LTD	308 HS taps & 327 carbon dies
S51-ULTRA	308 HS taps & 328 HS dies

Note: Plug style taps supplied as standard in all sets.



Tap & Die Sets / Kits



Contractor Tap & Die Sets



EDP No.	Description
CS40P	302 taps & CS30 dies
302 plug taps / CS30 hex dies: 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 tap and die.	
Accessories: die stock, 2 tap wrenches, screw pitch gauge and screwdriver in molded plastic case.	



EDP No.	Description
CS40MP	302M taps & CS30M dies
Carbon taps and hex dies in metric sizes: 3x.5, 3x.6, 4x.7, 4x.75, 5x.8, 5x.9, 6x1.0, 7x1.0, 8x1.25, 9x1.0, 9x1.25, 10x1.25, 10x1.5, 11x1.5, 12x1.5, 12x1.75; 1/8-28BSP pipe tap, 1/8-28BSP pipe die.	
Accessories: die stocks, tap wrenches, metric screw pitch gauge and screwdriver.	



EDP No.	Description
CS60P	302 taps & CS30 dies
302 plug tap / CS30 hex die: 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: X1#1 thru #5 screw extractors; 304-1/8-27 NPT, 304-1/4-18NPT pipe taps; CS30- 1/8-27NPT, CS30-1/4-18NPT pipe die.	
Accessories: 2001-6 (1/2-3/4) bar tap wrenches; 3292x1, 3292x1-7/16 die stocks; 2002-1 (#4-1/4) T-handle tap wrench; screw pitch gauge; screwdriver.	



EDP No.	Description
CS107P	302 taps & CS30 dies 302M taps & CS30M dies
Contains all the items listed in CS60P plus 1 each:	
302M plug tap / CS30M hex die: 3x.6, 4x.7, 4x.75, 5x.8, 5x.9, 6x1.0, 7x1.0, 8x1.25, 9x1.0, 9x1.25, 10x1.25, 10x1.5, 11x1.5, 12x1.5, 14x1.25, 14x2.0, 16x1.5, 16x2.0, 18x1.5, 18x2.5; 304-1/8-28BSP, 304-1/4-19BSP pipe taps; CS30-1/8-28BSP, CS30-1/4-19BSP pipe die.	
Accessories: metric screw pitch gauge.	

Tap Kits in Metal Boxes



Conveniently organizes the most popular high speed taps in a durable steel case which fits any toolbox. The Tap Kit isolates each tap, which prevents chipping.

EDP No.	Description
308-10C	10 Piece 308 1/4 -1/2
321-10C	10 Piece 321 1/4 -1/2
XL22-10C	10 Piece XL22 1/4 -1/2
XL22T-10C	10 Piece XL22T 1/4 -1/2
308-19C	19 Piece 308 #0 - #12
321-19C	19 Piece 321 #0 - #12
TK10-MT	10 Piece tap empty case
TK19-MT	19 Piece tap empty case

Hexagon Die Sets



EDP No.	Description
330-10NC	10 Piece 1/4 - 1 NC
330-10NF	10 Piece 1/4 - 1 NF
330-20	20 Piece 1/4 - 1 NC/NF
330-20M	4-27mm 330M dies

36 Piece Tap & Drill Indexes



TD36 Series

36 Piece Combination NC/NF Sets Contain - Taps: 6-32 & 40, 8-32 & 36, 10-24, & 32, 12-24 & 28, 1/4-20 & 28, 5/16-18 & 24, 3/8-16 & 24, 7/16-14 & 20, 1/2-13 & 20. Drills: #36, #29, #25, #16, #7, F, 5/16, U, 27/64, #33, #29, #21, #15, #15, #3, I, Q, 25/64, 29/64.

EDP No.	Description
TD36-XL	XL5 Drills / XL22 NC & NF Taps
TD36	705 Drills / 308 NC & NF Taps
TD36-MT	36 Piece Empty Case Only

18 Piece Tap & Drill Indexes



TD18 Series

18 Piece NC Sets Contain - Taps: 6-32, 8-32, 10-24, 10-32, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13. Drills: #36, #29, #25, #21, #7, F, 5/16, U, 27/64.

TD18NF Series

18 Piece NF Sets Contain - Taps: 6-40, 8-36, 10-32, 12-28, 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20. Drills: #33, #29, #21, #15, #3, I, Q, 25/64, 29/64.

EDP No.	Description
TD18-XL	XL5 Drills / XL22 NC Taps
TD18NF-XL	XL5 Drills / XL22 NF Taps
TD18	705 Drills / 308 NC Taps
TD18-XGO	XGO Drills / 308 NC Taps
TD18-NF	705 Drills / 308 NF Taps
TD18B-MT	18 Piece Empty Case Only
TD18NF-MT	18 Piece NF Empty Case Only



TD18M Series

18 Piece Metric Sets Contain - Taps: 2.5x.45, 3.0x.50, 3.5x.60, 4.0x.70, 5.0x.80, 6.0x1.0, 8.0x1.25, 10x1.50, 12.0x1.75 Drills: #46, #39, #32, #30, #19, #8, H, Q, 13/32.

EDP No.	Description
TD18M	705 Drills / 308M Metric Taps
TD18M-XL	XL5 Drills / 321M Metric Taps
TD18M-MT	18 Piece Metric Case Only

Combination Drill & Tap Sets



DT22 Series

Create hole and threads in a single pass. No center drilling or punching required.

EDP No.	Description
DT22-SET	6 Piece - 8-32, 10-24, 12-24, 1/4-20, 5/16-18, 3/8-16
DT22M-SET	5 Piece - 4x.7, 5x.8, 6x1, 8x1.25, 10x1.5



DT22HEX Series

Hex shank, 135° split point, black & gold surface treatment - can be used in QCD (Quick change driver)

EDP No.	Description
DT22HEX-SET-MET6	6 Piece - M4x.7, M5x.8, M6x1, M8x1.25, M10x1.5, M12x1.75
DT22HEX-SET-MS5	5 Piece - 6-32, 8-32, 10-24, 10-32, 12-24
DT22HEX-SET-NC5	5 Piece - 1/4"x20, 5/16"x20, 3/8"x16, 7/16"x14, 1/2"x13
DT22HEX-SET10	5 Piece - 6-32, 8-32, 10-24, 10-32, 12-24, 1/4"x20, 5/16"x20, 3/8"x16, 7/16"x14, 1/2"x13
DT22HEX-SET-NF5	5 Piece - 1/4"x28, 5/16"x24, 3/8"x24, 7/16"x20, 1/2"x20



Technical Tips / Taps

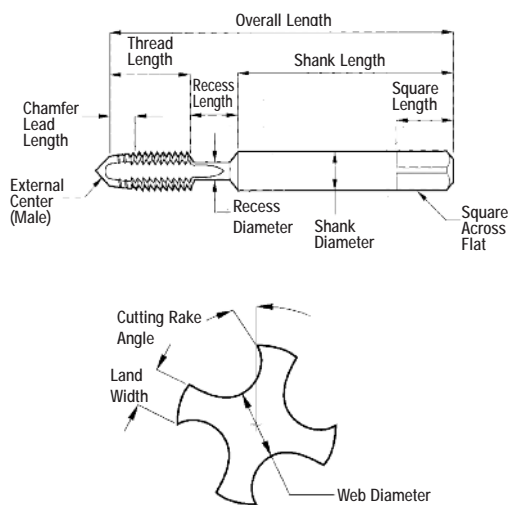
Spiral point taps

Spiral point taps have straight, shallow flutes and are often referred to as "gun" taps. The gun nose or spiral point is designed to drive the chips forward. The relatively shallow flutes ensure that the sectional strength is maximized. They also act to allow lubricant to reach the cutting edges. This type of tap is recommended for threading through holes and may be used in blind hole applications where there is sufficient space to accommodate the chips.

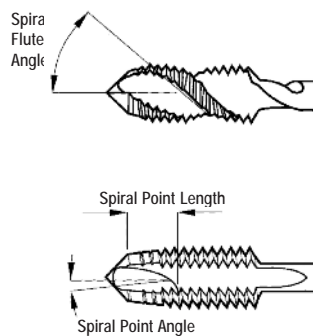
General hints on Tapping

1. Select the correct design of tap for the component material and type of hole, i.e. through or blind.
2. Ensure the component is securely clamped, lateral movement may cause tap breakage or poor quality threads.
3. Size matters. For optimal performance it is important to use the right size drill before tapping. Please call 800-645-3957 to order a free Champion decimal equivalency card (DC-1) card.
4. Select the correct cutting speed.
5. Use appropriate cutting fluid for correct application.
6. In CNC applications ensure that the pitch value chosen for the program is correct. When using a tapping attachment, 95% to 97% of the pitch is recommended to allow the tap to generate its own pitch.
7. Where possible hold the tap in a good quality torque limiting tapping attachment, which ensures free axial movement of the tap and presents it squarely to the hole. It also protects the tap from breakage if accidentally "bottomed" in a blind hole.
8. Ensure smooth entry of the tap into the hole, as an uneven feed may cause "bell mouching".

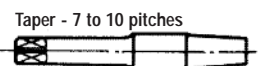
Tap Nomenclature



Spiral Tap Nomenclature

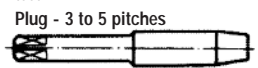


Tap Chamfers



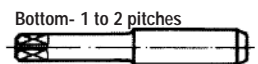
Taper - 7 to 10 pitches

The taper chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.



Plug - 3 to 5 pitches

The most common chamfer for use by hand or machine in through or blind holes. This chamfer is more efficient than a bottoming chamfer.



Bottom - 1 to 2 pitches

For threading close to the bottom of blind holes, the bottoming chamfer is the least efficient chamfer available.



Trouble Shooting / Taps

TROUBLE	PROBABLE CAUSES	REMEDY
Breakage	<p>Hole too small</p> <p>Tap Hitting Bottom</p> <p>Misalignment</p> <p>Tapping too deep</p> <p>Dull tap</p> <p>Cramped condition</p>	<p>Use correct drill size</p> <p>Consult Tap Drill Chart</p> <p>Correct adjustment</p> <p>Exercise more care</p> <p>Use positive reverse</p> <p>Drill hole deeper</p> <p>Make correction</p> <p>Use spiral point or serial taps</p> <p>Sharpen tap</p> <p>Check tap holder and alignment</p>
Chipping	<p>Inadequate lubrication</p> <p>Hitting bottom of hole or chips packed in bottom of hole</p> <p>Hard spots in work</p> <p>Loading</p>	<p>Consult lubrication chart if lubrication engineer</p> <p>Check reversing stop</p> <p>Drill hole deeper</p> <p>Check hole for work hardening</p> <p>Check lubrication / Use surface treated taps</p>
Torn or Rough Threads	<p>Incorrect hook, relief, or chamfer</p> <p>Inadequate lubrication</p> <p>Dull tap</p> <p>Loading</p>	<p>Grind correctly</p> <p>Increase flow - see that it is getting into the hole</p> <p>Resharpen tap</p> <p>Use surface treated taps / check lubrication</p>
Tapping Oversize or Bell-Mouth Holes	<p>Loose spindle or worn holders</p> <p>Misalignment</p> <p>Excessive thrust</p> <p>Loading</p>	<p>Repair machine, tap holders or work holders</p> <p>Correct condition</p> <p>Adjust pressure if air driven / use more care if manual</p> <p>Use surface treated taps</p>
Excessive Wear	<p>Inadequate lubrication</p> <p>Sand in cored holes</p> <p>Abrasive material</p>	<p>Check lubrication engineer</p> <p>Clean hole before tapping</p> <p>If Bakelite, etc : use oversize tap with surface treatment</p>



Tap Drill Sizes

Tap Size	Tap Drill Size	Prob % of Thread	Tap Size	Tap Drill Size	Prob % of Thread
0-80	56	74	3/8-24	Q	75
	3/64	71		8.5mm	70
1-64	54	81	7/16-14	U	75
	53	59	7/16-20	W	75
1-72	1.50mm	68		25/64"	68
	53	67	1/2-13	27/64"	75
2-56	51	74		11.0mm	64
	50	62	1/2-20	11.4mm	74
2-64	50	70		29/64"	67
	49	56	9/16-12	15/32	84
3-48	48	78		31/64"	69
	5/64"	70	9/16-18	1/2	82
3-56	46	69		33/64"	60
	45	56	5/8-11	17/32	76
4-40	44	74		35/64"	63
	43	65	5/8-18	9/16	82
4-48	2.35mm	72		37/64	60
	42	61	11/16-11	19/32	75
5-40	39	71	11/16-16	5/8"	75
	38	65	3/4-10	41/64"	81
5-44	38	72		21/32"	69
	37	63	3/4-16	11/16"	72
6-32	36	72		17.5mm	70
	7/64"	64	7/8-9	49/64"	73
6-40	33	69		25/32"	62
	32	60	7/8-14	51/64"	79
8-32	3.40mm	74		13/16"	62
	29	62	1-8	7/8"	74
8-36	29	70		57/64"	64
	9/64"	60	1-12	29/32"	82
10-24	3.70mm	76		59/64"	68
	25	69	1-14	59/64"	79
10-32	5/32"	75		15/16"	62
	21	68	1-1/8-7	63/64"	73
12-24	11/64"	75		1	65
	17	73	1-1/8-12	1-1/32"	82
12-28	16	77		1-3/64"	67
	15	70	1-1/4-7	1-3/32"	81
1/4-20	9	77		1-7/64"	73
	7	70		1-1/8"	64
1/4-28	13/64"	66	1-1/4-12	1-5/32"	81
	3	70		1-11/64	67
5/16-18	5.50mm	67	1-3/8-6	1-13/64	81
	F	72		1-19/64"	66
5/16-24	G	66	1-3/8-12	1-9/32"	81
	6.80mm	78		1-19/64	66
3/8-16	I	70	1-1/2-6	1-11/32"	69
	5/16"	74		1-23/64"	62
	O	69	1-1/2-12	1-13/32"	80
				1-27/64"	66

Metric Tap Drill Sizes

Tap Size	Tap Drill Size	Prob % of Thread	Tap Size	Tap Drill Size	Prob % of Thread
1.6x.35	1.25mm	69	9.0x1.25	7.75mm	73
1.8x.35	1.45mm	69	10x1.5	8.50mm	71
2.0x.4	1.60mm	69		Q	75
	52	66	10x1.25	8.70mm	73
2.2x.45	1.75mm	70		11/32"	71
	2.05mm	69	11x1.5	9.50mm	70
2.5x.45	46	67		3/8"	71
	3.0x2.5	2.50mm	12x1.75	10.20mm	74
3.5x6	40	70		Y	71
	3.5x6	2.90mm	12x1.25	10.80mm	67
4.0x.7	33	72		27/64"	72
	4.0x.7	3.30mm	14x2.0	12.00mm	72
4.5x.75	30	73		15/32"	76
	4.5x.75	3.70mm	14x1.5	12.50mm	71
5.0x.8	26	70	16x2.0	14.00mm	72
	5.0x.8	4.20mm		35/64"	76
5.5x.9	19	68	16x1.5	14.50mm	71
	5.5x.9	4.60mm	18x2.5	15.50mm	73
6.0x.75	14	67		39/64"	74
	6.0x.75	5.30mm	18x1.5	16.50mm	70
6.0x1.0	4	73	20x2.5	17.50mm	73
	6.0x1.0	5.00mm		11/16"	74
7.0x.75	9	71	22x2.5	19.50mm	73
	7.0x.75	6.30mm		49/64"	75
7.0x1.0	D	72	24x3.0	21.00mm	73
	7.0x1.0	6.00mm		53/64"	72
8.0x1.25	15/64"	73	27x3.0	24.00mm	73
	8.0x1.25	6.70mm		15/16"	78
8.0x1.0	17/64"	71	30x3.5	26.50mm	74
	8.0x1.0	7.00mm		1-3/64	73
	J	66	33x3.5	29.50mm	74
				1-11/64"	72

Pipe Tap Drill Sizes

Tap Size	NPT Tap Drill	NPS Tap Drill
1/16-27	D	1/4"
1/8-27	Q	11/32"
1/4-18	7/16"	7/16"
3/8-18	9/16"	37/64"
1/2-14	45/64"	23/32"
3/4-14	29/32"	59/64"
1-11-1/2	1-9/64"	1-5/32"
1-1/4-11-1/2	1-31/64"	1-1/2
1-1/2-11-1/2	1-47/64	1-3/4
2-11-1/2	2-13/64"	2-7/32
2-1/2-8	2-5/8"	2-21/32"



The Champion ipac system provides you with professional grade cutting tools in individual packs. The ipac range includes twist drills, taps, and screw extractors.

Combination Taps and Drills

Create new threads and clean up damaged threads. Achieve close tolerances for secure fastening. A range of sizes are available from machine screw #6-32 to 1/2-13. Taps are plug chamfered with 3-5 threads for easy starting. Champion high speed hand taps(Series #308) are professional grade threading tools. Made from industrial grade high speed steel and properly heat treated. The ipac solution matches each tap with the correct twist drill. No more time wasted hunting for the right size twist drill. With iPac the drill and tap are perfectly matched.

Combination packs available in 10 separate application packs from tap size

6-32 thru 1/2-13 with corresponding drill size.

EDP No.	Cutting Tool Merchandisers
06540	180 Piece XL5/308 & X1/XL5LH Merchandiser
06565	180 Piece XG0/308 & X1/XL5LH Merchandiser



iPac Combination Packs



iPac Merchandising



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