The Right Tool at the Right Time

DORMER



Forming Taps

Metric Coarse Range

Features *& Benefits*

Material
Manufactured from premium grade High Speed Cobalt (HSS-E) for:
- Increased hardness and toughness
- Improved edge strength
- Longer tool life

Surface Treatment
Titanium Nitride (TiN) coating reduces friction, resulting in longer tool life; a bright finish option is also available.

Flute Geometry and Chamfer
The thread profile generates low torque. This not only ensures a smooth surface finish on the completed thread but also promotes longer tool life. Oil grooves on the E294 facilitate the flow of coolant to the machining area.
Available with:
- Chamfer form E for blind holes.
- Chamfer form C for blind and through holes.

Threading Depth
Threading to depths of up to 3.5 x Diameter

Thread Form
All taps are available in Metric thread form.

Tool Holding
These tap ranges have been designed for use with a high quality floating tool holder. Maximum performance of CNC machines can be fully exploited.

Standard
Available in DIN 2174 standard

Marking and Labeling
Forming Taps have different pre-hole drilling requirements to thread cutting taps. Please refer to the recommendation tables on page 3 of this brochure.

For additional customer convenience, the correct pre-hole drilling diameter is clearly marked on the shank of the tool and also on the label.



Customer *Benefits*

- High performance and productivity in a wide range of materials
- Chamfer type C can be used for both through and blind holes
- Chip-free threading operation produces a stronger thread than cutting taps with increased load bearing capabilities. Higher cutting speeds are, therefore, recommended.
- Greater accuracy of finished thread with lower surface roughness.
- Highly stable design means less risk of tap breakage and optimum process security.
- Oil groove option facilitates coolant flow to the machining area, further increasing tool life.

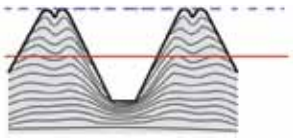
Threading with taps

Flow of material when forming a thread

The tapping hole size depends upon the material being drilled, the cutting conditions selected and the condition of the equipment being used. If material is pushed up at the thread entry by the tap and/or the life of the tap is too short, select a slighly larger drill diameter. If on the other hand the profile of the thread formed is insufficient, then select a slightly smaller drill diameter.



Section of thread obtained by forming tap on steel C45

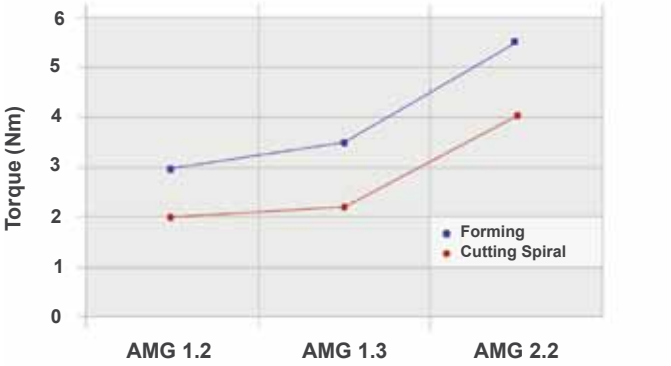


Drilled hole for a cutting tap

Drilled hole for a forming tap

Cold forming taps require more power on the spindle, compared to a cutting tap of the same size, since it generates higher torque.

M6 blind hole Vc 30 m/min



Torque comparison between forming and cutting taps in different material groups.

Drill diameters for cold forming taps - Recommendation table

Drill diameter can be calculated from:

$$D = D_{nom} - 0{,}0068 * P * 65$$

D = Drill diameter (mm)
D_{nom} = Tap nominal diameter (mm)
P = Tap pitch (mm)
65 in the formula stands for desired thread height in %

ISO Metric Coarse Thread		
Tap	**Max. Internal Diam. mm**	**Pre Hole Diameter mm**
3	2.599	2.78
3.5	3.010	3.23
4	3.422	3.69
5	4.334	4.65
6	5.153	5.56
8	6.912	7.45
10	8.676	9.34
12	10.441	11.23
14	12.210	13.12
16	14.210	15.12

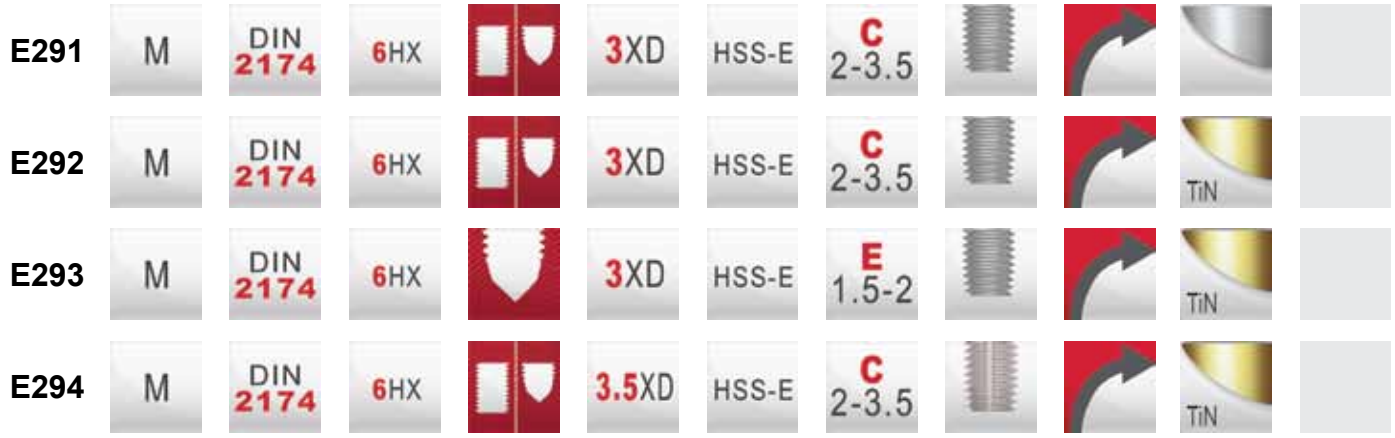
Application
Material Groups

- ■ Excellent for Application
- ● Good for Application

Example
30 = Peripheral speed in metres/minute +/- 10%



					E291	E292	E293	E294	E295	E296	
					M3 - M16	M3 - M16	M3 - M10	M3 - M16	M3 - M12	M3 - M10	
					NEW	NEW	NEW	NEW	NEW	NEW	
Application Material Group			Hardness HB	Tensile stength N/mm²							ISO
1. Steel	1.1	Magnetic soft steel	< 120	< 400	■30	■55	■55	■55	■55	■55	P
	1.2	Structural steel, case carburizing steel	< 200	< 700	■27	■50	■50	■50	■50	■50	P
	1.3	Plain Carbon steel	< 250	< 850	■23	■45	■45	■45	■45	■45	P
	1.4	Alloy steel	< 250	< 850	■20	■40	■40	■40	■40	■40	P
	1.5	Alloy steel, Hardened and tempered steel	> 250 < 350	> 850 < 1200		●20	●20	●20	●20	●20	P
	1.6	Alloy steel, Hardened and tempered steel	> 350	> 1200 < 1620							P
	1.7	Alloy steel, Heat treated	49-55 HRc	> 1620							H
	1.8	Alloy steel, Hardened & Wear resistant steel	55-63 HRc	> 1980							H
2. Stainless Steel	2.1	Free machining, Stainless Steel	< 250	< 850		■18	■18	■18	■18	■18	M
	2.2	Austenitic	< 250	< 850		■15	■15	■15	■15	■15	M
	2.3	Ferritic + Austenitic, Ferritic, Martensitic	< 300	< 1000		●10	●10	●10	●10	●10	M
	2.4	Precipitation Hardened	< 320 < 410	> 1100 < 4100							M
3. Cast Iron	3.1	Lamellar graphite	> 150	> 500							K
	3.2	Lamellar graphite	> 150 ≤ 300	> 500 < 1000							K
	3.3	Nodular graphite, Malleable Cast Iron	< 200	< 700							K
	3.4	Nodular graphite, Malleable Cast Iron	> 200 <300	> 700 < 1000							K
4. Titanium	4.1	Titanium, unalloyed	< 200	< 700		■35	■35	■35	■35	■35	S
	4.2	Titanium, alloyed	< 270	< 900							S
	4.3	Titanium, alloyed	> 270 <350	> 900 ≤ 1250							S
5. Nickel	5.1	Nickel, unalloyed	< 150	< 500		■20	■20	■20	■20	■20	S
	5.2	Nickel, alloyed	> 270	> 900		●8	●8	●8	●8	●8	S
	5.3	Nickel, alloyed	> 270 <350	> 900 < 1200							S
6. Copper	6.1	Copper	< 100	< 350		●25	●25	●25	●25	●25	N
	6.2	β-Brass, Bronze	< 200	< 700							N
	6.3	α-Brass	< 200	< 700		●40	●40	●40	●40	●40	N
	6.4	High Strength Bronze	< 470	< 1500							N
7. Aluminium Magnesium	7.1	Al, Mg, unalloyed	< 100	< 350	■26	■55	■55	■55	■55	■55	N
	7.2	Al alloyed, Si < 0.5%	<150	< 500	■38	■55	■55	■55	■55	■55	N
	7.3	Al alloyed, Si > 0.5% < 10%	<120	< 400	●22	■40	■40	■40	■40	■40	N
	7.4	Al alloyed, Si > 10% Whisker reinforced Al-alloys Mg-alloys	<120	< 400		●25	●25	●25	●25	●25	N
8. Synthetic materials	8.1	Thermoplastics	---	---							O
	8.2	Thermosetting plastics	---	---							O
	8.3	Reinforced plastic materials	---	---							O
9. Hard material	9.1	Cermets (metals-ceramics)	< 550	< 1700							H
10. Graphite	10.1	Graphite	---	< 100							O



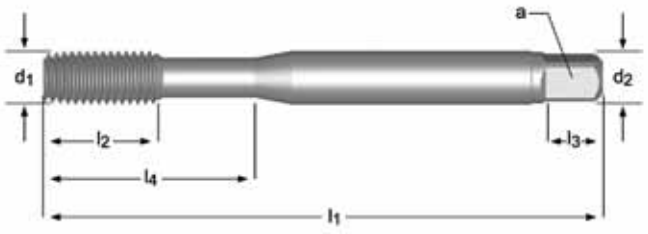
E291
E292
E293

- M Machine Forming Tap
- M Maschinen-Gewindeformer
- M Roltappen
- M Tarauds à refouler
- M Machos de laminación
- M Machos de Máq. De Laminação

E294

- M Machine Forming Tap - Oil grooves
- M Maschinen-Gewindeformer, Ölnuten
- M Roltappen met smeergroeven
- M Tarauds à refouler
- M Machos de laminación, con ranuras de lubrificación
- M Machos de Máq. De Laminação, Rasgos p/ Lubr.

E291	■	1.1 1.2 1.3 1.4 7.1 7.2
	●	7.3
E292; E293; E294	■	1.1 1.2 1.3 1.4 2.1 2.2 4.1 5.1 7.1 7.2 7.3
	●	1.5 2.3 5.2 6.1 6.3 7.4





M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E291	E292	E293	E294
3	0.50	56	9	3.5	2.7	6	4	2.8	18	E291M3	E292M3	E293M3	E294M3
3.5	0.60	56	11	4.0	3.0	6	4	3.2	20	E291M3.5	E292M3.5		
4	0.70	63	12	4.5	3.4	6	5	3.7	21	E291M4	E292M4	E293M4	E294M4
5	0.80	70	13	6.0	4.9	8	5	4.6	25	E291M5	E292M5	E293M5	E294M5
6	1.00	80	15	6.0	4.9	8	5	5.5	30	E291M6	E292M6	E293M6	E294M6
8	1.25	90	18	8.0	6.2	9	5	7.4	35	E291M8	E292M8	E293M8	E294M8
10	1.50	100	20	10.0	8.0	11	5	9.3	39	E291M10	E292M10	E293M10	E294M10
12	1.75	110	23	9.0	7.0	10	5	11.2		E291M12	E292M12		E294M12
14	2.00	110	25	11.0	9.0	12	6	13.0					E294M14
16	2.00	110	25	12.0	9.0	12	6	15.0		E291M16	E292M16		E294M16

E292

M Machine Forming Tap

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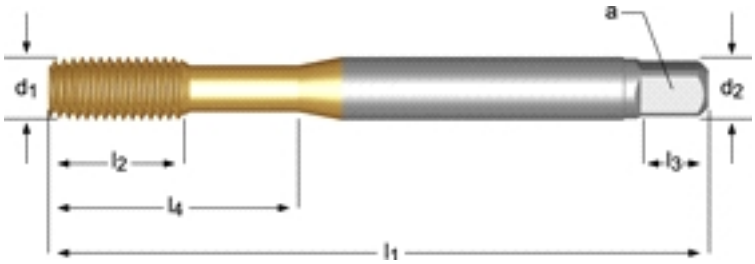



1.1 1.2 1.3 1.4 2.1 2.2 4.1 5.1 7.1 7.2 7.3
1.5 2.3 5.2 6.1 6.3 7.4

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	e-code	
1.6	0.35	40	8	2.5	2.1	5	3	1.4	-	E292M1.6	
2	0.40	45	6	2.8	2.1	5	3	1.8	-	E292M2	
2.5	0.45	50	8	2.8	2.1	5	3	2.3	-	E292M2.5	
3	0.50	56	9	3.5	2.7	6	4	2.8	18	E292M3	
3.5	0.60	56	11	4.0	3.0	6	4	3.2	20	E292M3.5	
4	0.70	63	12	4.5	3.4	6	5	3.7	21	E292M4	
5	0.80	70	13	6.0	4.9	8	5	4.6	25	E292M5	
6	1.00	80	15	6.0	4.9	8	5	5.5	30	E292M6	
8	1.25	90	18	8.0	6.2	9	5	7.4	35	E292M8	
10	1.50	100	20	10.0	8.0	11	5	9.3	39	E292M10	
12	1.75	110	23	9.0	7.0	10	5	11.2	-	E292M12	
16	2.00	110	25	12.0	9.0	12	8	15.0	-	E292M16	

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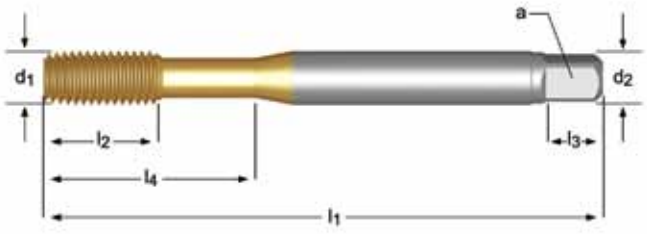
E295
E296

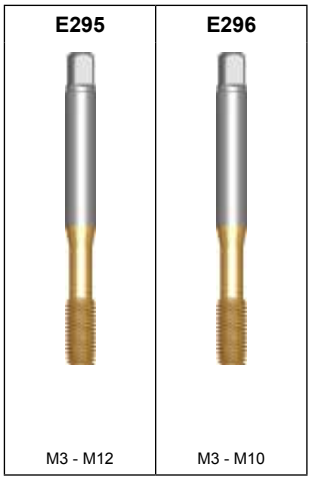
- M Machine Forming Tap
- M Maschinen-Gewindeformer
- M Roltappen
- M Tarauds à refouler
- M Machos de laminación
- M Machos de Máq. De Laminação

E295; E296

▪ 1.1 1.2 1.3 1.4 2.1 2.2 4.1 5.1 7.1 7.2 7.3

▪ 1.5 2.3 5.2 6.1 6.3 7.4





M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E295	E296
3	0.50	56	9	3.5	2.7	6	4	2.8	18	E295M3	E296M3
3.5	0.60	56	11	4.0	3.0	6	4	3.2	20	E295M3.5	
4	0.70	63	12	4.5	3.4	6	5	3.7	21	E295M4	E296M4
5	0.80	70	13	6.0	4.9	8	5	4.6	25	E295M5	E296M5
6	1.00	80	15	6.0	4.9	8	5	5.5	30	E295M6	E296M6
8	1.25	90	18	8.0	6.2	9	5	7.4	35	E295M8	E296M8
10	1.50	100	20	10.0	8.0	11	5	9.3	39	E295M10	E296M10
12	1.75	110	23	9.0	7.0	10	5	11.2		E295M12	

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