

DORMER  PRAMET

**NEW HSS
PRODUCTS**

2023.2

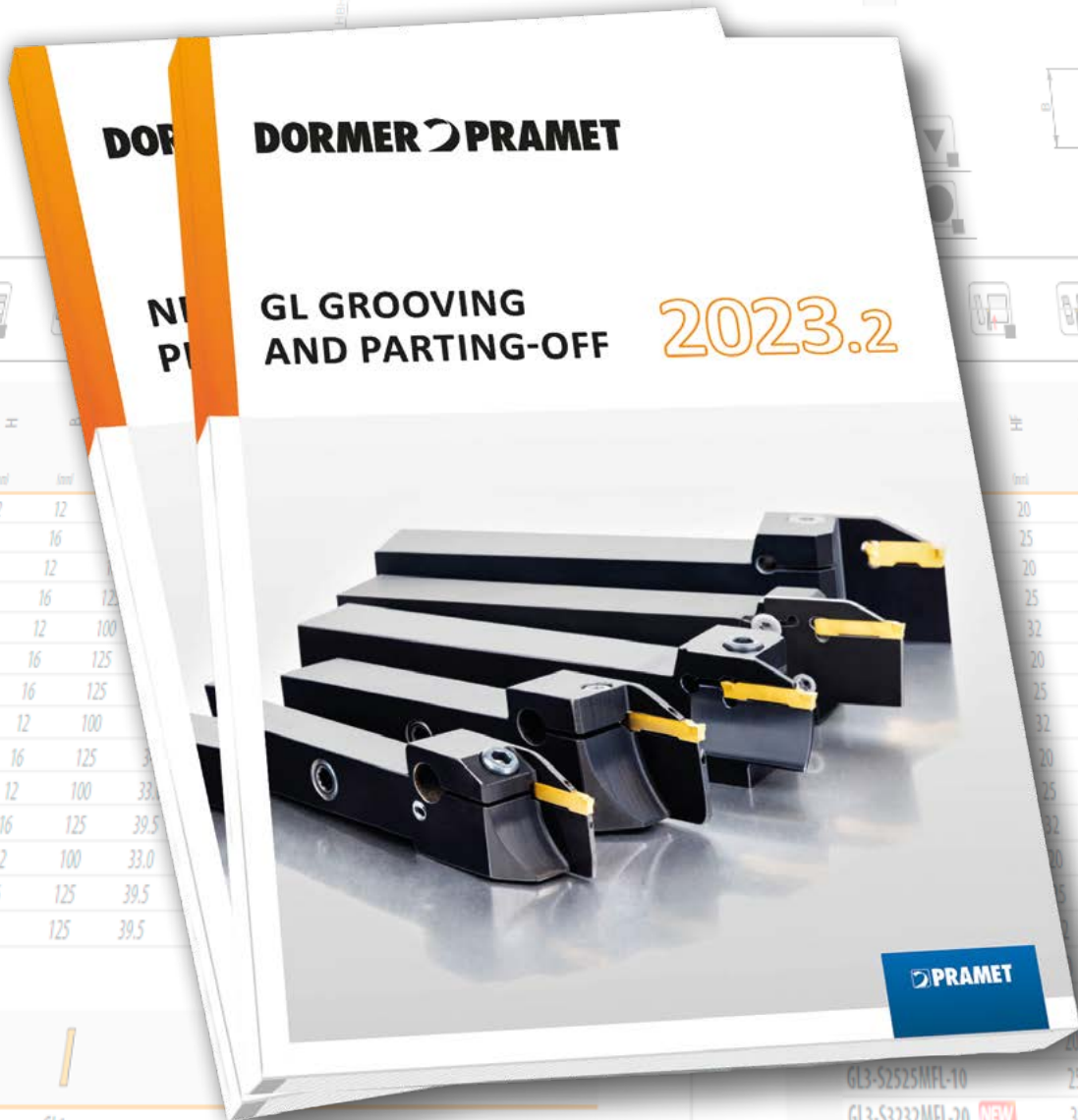


 **DORMER**



GL GROOVING AND PARTING-OFF

Explore our complete GL Brochure, newly Featuring Tools with High-Pressure Internal Cooling, Internal grooving tools, Axial Grooving Tools, Single sided inserts for deep parting-off and many more.



	HF	HDBH	H	
	(mm)	(mm)	(mm)	(mm)
12-40 NEW	12	-	12	12
16-45 NEW	16	-	16	16
12-40	12	3	12	12
16-45	16	3	16	16
12-40	12	3	12	100
16-45	16	3	16	125
12-40	12	4	12	100
16-45	16	-	16	125
12-40	12	3	12	100
16-45	16	3	16	125
12-40	12	3	12	100
16-45	16	3	16	125
12-40	12	3	12	100
16-45	16	3	16	125
12-40	12	4	12	100
16-45	16	4	16	125

	H	D	LF	UH
	(mm)	(mm)	(mm)	(mm)
20	20	20	125	36.0
25	25	25	150	36.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	150	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	150	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0
20	20	20	125	36.0
25	25	25	150	36.0
32	32	32	170	40.0

GL3-S2525MFL-10
 GL3-S3232MFL-20 NEW
 GL4-S2020KFL-12



A321

HSS DRILL WITH THREE-FLATS SHANK



E55.(M)

POWER TOOL TAPS



M90.

SPIRAL FLUTED SCREW EXTRACTORS



A321

HSS DRILL WITH THREE-FLATS SHANK

INTRODUCTION



Introducing new intermediate length HSS drill with three-flat shanks designed for hand-held power tools, but also well performing option for machine drilling. Three flats on the shank prevents the drill from slipping in the chuck, while a self-centering 135° split point and bronze oxide finish makes the drilling action smooth. Intermediate length variant falls in between ANSI jobber and stub length, providing balanced ratio of flexibility and toughness. Metric range covers most usual sizes starting from 3 mm up to 13 mm.

 **DORMER**



A321



- Versatile HSS drill
- Three-flats shank
- DC Range:
3 – 13 mm



FEATURES & BENEFITS

Three-flats design on shank prevents slipping in power tools keyless chuck.

RELIABLE AND SAFE
solution for any hand-held operation.

Precisely ground with 135° point and a sharp split point geometry.

EASY DRILLING, SELF-CENTERING
capability and reduced thrust force.

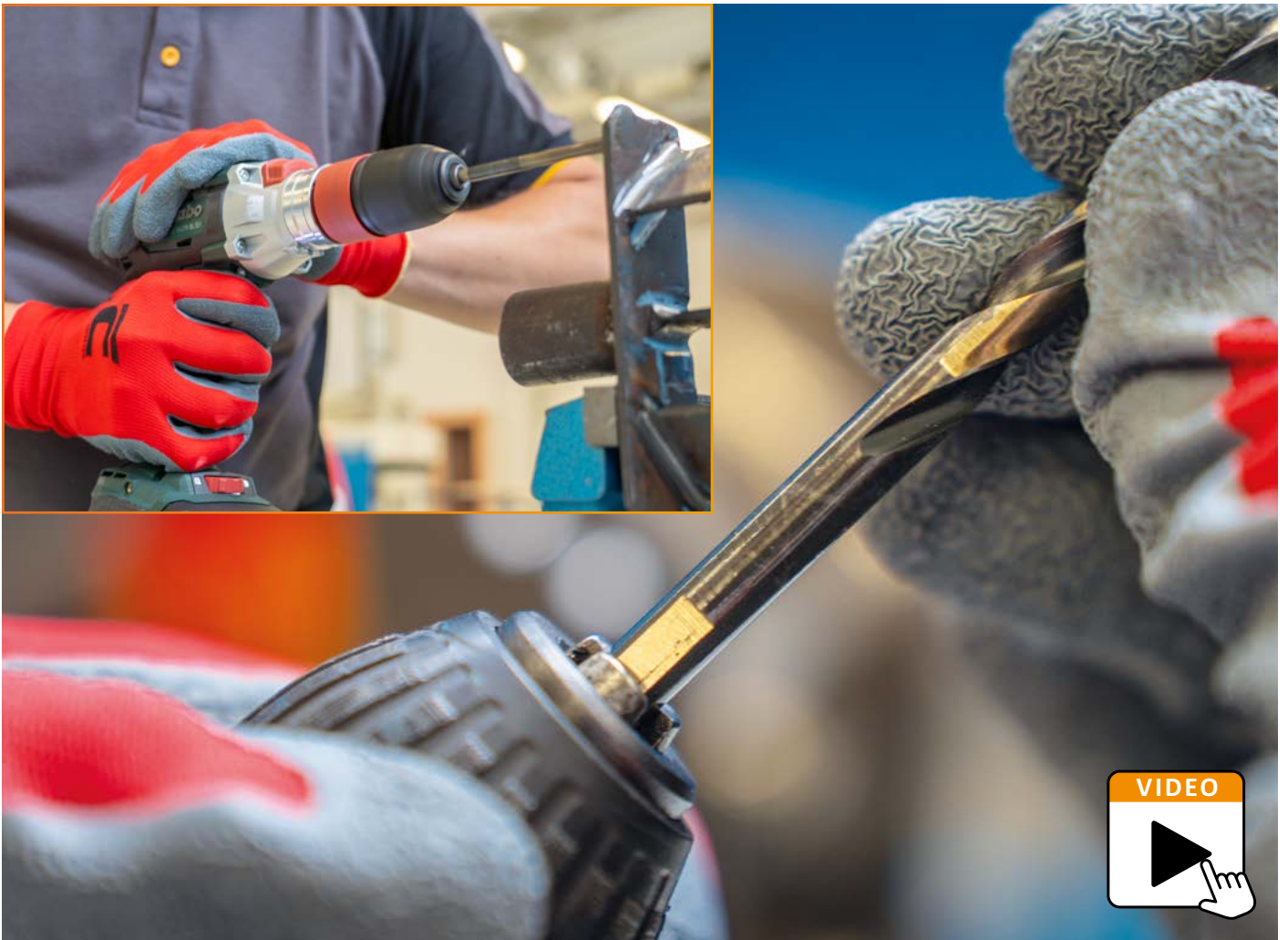
Steam and bronze tempered surface finish for better lubrication.

IMPROVED DURABILITY
throughout the whole life span.

Shorter intermediate length with strong web design.

SUPERIOR RIGIDITY
even in unfavorable conditions.

APPLICATION EXAMPLE





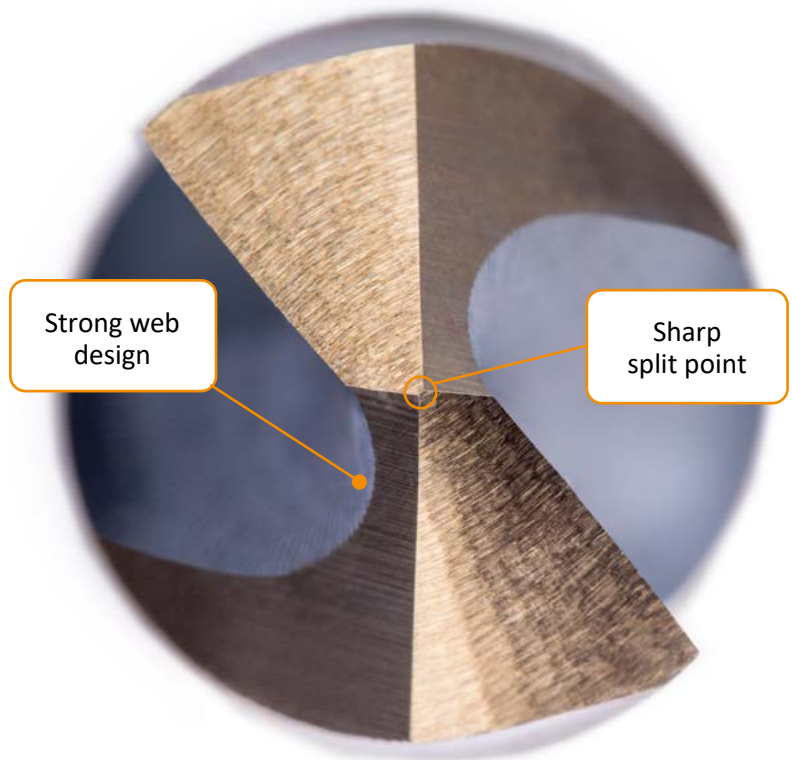
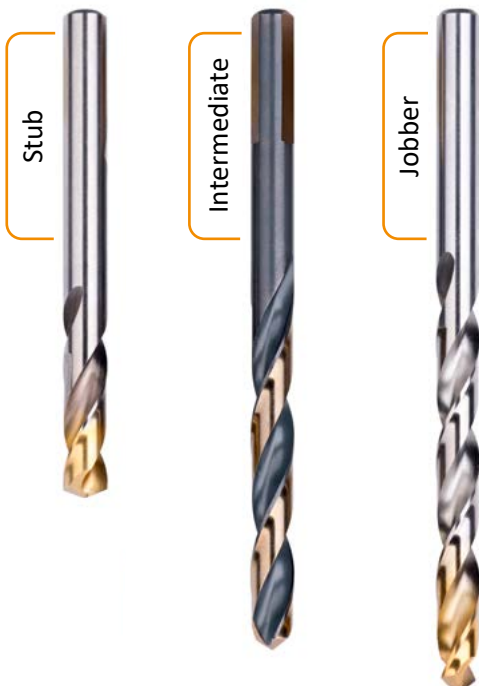
A321

HSS DRILL WITH THREE-FLATS SHANK

TECHNICAL DETAILS



LENGTHS OVERVIEW



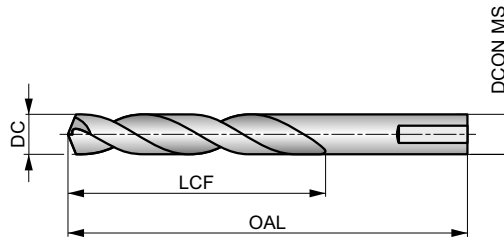


A321



HSS Intermediate Length Drill, Steam and Bronze Tempered Surface Finish

Heavy duty design drill with three-flute shanks for medium depth holes. Primarily suited for hand-held operations and pillar drill machines. Three flats on the shank allow for non-slip chucking. The self-centering 135° split point reduces thrust force and the steam and bronze tempered surface finish improves lubricity.



HSS	DORMER	3.5×D
135°	ST Bronze	
R	DC h8	

Workpiece material group suitability, starting values for cutting speed (m/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 12.

P1.1 ■ 33 H	P1.2 ■ 37 H	P1.3 ■ 38 H	P2.1 ■ 28 H	P2.2 ■ 25 F	P2.3 ■ 22 E	P3.1 ■ 19 F	P3.2 ■ 15 F	P3.3 ■ 13 E	P4.1 ■ 11 F	P4.2 ■ 10 E	P4.3 ■ 8 D	M1.1 ■ 21 E	M1.2 ■ 17 E
M2.1 ■ 18 E	M2.2 ■ 15 E	M3.1 ■ 9 G	M3.2 ■ 8 G	M3.3 ■ 7 G	M4.1 ■ 9 C	K1.1 ■ 30 H	K1.2 ■ 22 F	K1.3 ■ 17 F	K2.1 ■ 25 E	K2.2 ■ 20 E	K2.3 ■ 16 E	K3.1 ■ 22 E	K3.2 ■ 17 E
K3.3 ■ 13 E	K4.1 ■ 20 E	K4.2 ■ 15 E	K4.3 ■ 11 E	K4.4 ■ 10 E	K4.5 ■ 8 E	K5.1 ■ 23 E	K5.2 ■ 17 E	K5.3 ■ 13 E	N1.1 ■ 33 J	N1.2 ■ 25 J	N1.3 ■ 17 I	N2.1 ■ 42 H	N2.2 ■ 37 H
N2.3 ■ 27 H	N3.1 ■ 59 H	N3.2 ■ 35 I	N3.3 ■ 18 G	N4.1 ■ 30 J	N4.2 ■ 28 H	N4.3 ■ 14 F	S1.1 ■ 23 E	S1.2 ■ 12 D	S1.3 ■ 6 B	S2.1 ■ 8 E	S2.2 ■ 4 A	S3.1 ■ 6 E	S3.2 ■ 3 A
S4.1 ■ 5 E	S4.2 ■ 2 A												

Product	DC	DC	LCF	OAL	DCON MS
	(mm)	(inch)			
A3213.0	3.00	0.1180	37.0	64.0	3.00
A3213.3	3.30	0.1300	40.0	67.0	3.30
A3213.4	3.40	0.1340	40.0	67.0	3.40
A3213.5	3.50	0.1380	40.0	67.0	3.50
A3214.0	4.00	0.1580	47.0	74.0	4.00
A3214.1	4.10	0.1610	47.0	74.0	4.10
A3214.2	4.20	0.1650	47.0	74.0	4.20
A3214.3	4.30	0.1690	47.0	74.0	4.30
A3214.5	4.50	0.1770	49.0	77.0	4.50
A3214.9	4.90	0.1930	50.0	80.0	4.90
A3215.0	5.00	0.1970	50.0	80.0	5.00
A3215.1	5.10	0.2010	50.0	80.0	5.10
A3215.3	5.30	0.2090	52.0	84.0	5.30
A3215.5	5.50	0.2170	52.0	84.0	5.50
A3216.0	6.00	0.2360	52.0	90.0	6.00
A3216.3	6.30	0.2480	52.0	90.0	6.30
A3216.5	6.50	0.2560	55.0	93.0	6.50

Product	DC	DC	LCF	OAL	DCON MS
	(mm)	(inch)			
A3216.8	6.80	0.2680	59.0	97.0	6.80
A3217.0	7.00	0.2760	59.0	97.0	7.00
A3217.3	7.30	0.2870	62.0	100.0	7.30
A3217.5	7.50	0.2950	62.0	100.0	7.50
A3218.0	8.00	0.3150	67.0	105.0	8.00
A3218.5	8.50	0.3350	68.0	107.0	8.50
A3219.0	9.00	0.3540	70.0	108.0	9.00
A3219.5	9.50	0.3740	70.0	110.0	9.50
A32110.0	10.00	0.3940	74.0	113.0	10.00
A32110.3	10.30	0.4060	74.0	113.0	10.30
A32110.5	10.50	0.4130	75.0	115.0	10.50
A32111.0	11.00	0.4330	77.0	117.0	11.00
A32111.5	11.50	0.4530	79.0	120.0	11.50
A32112.0	12.00	0.4720	85.0	126.0	12.00
A32112.5	12.50	0.4920	88.0	130.0	12.50
A32113.0	13.00	0.5120	88.0	130.0	13.00



E55.(M)

POWER TOOL TAPS

INTRODUCTION



A new assortment of general purpose, economical taps with a specific focus for operations using handheld power tools has been introduced. The Dormer E556 and E557 metric range features strong design suitable for maintenance mechanics, field service engineers, crafts people, contract engineers and educational institutes.



E556(M)

- For through holes only
- For soft steels and carbon steels
- Range: M3 – M12



E557(M)

- For blind holes
- For soft steels and carbon steels
- Range: M3 – M12



THREADING TOOLS

FEATURES & BENEFITS

Simple, strong design
in high-quality HSS.



COST-EFFECTIVE
solution for general usage.

Bright surface finish easing swarf flow.



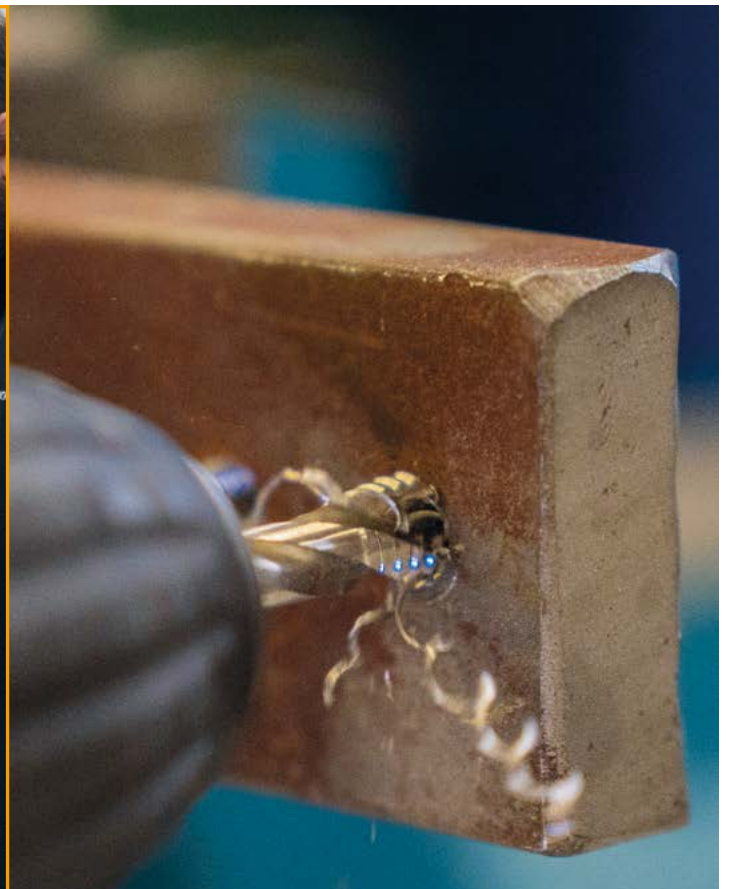
APPLICATION VERSATILITY
for handheld power tools operations.

Short and thick tap style increases
rigidity.



STABLE AND RELIABLE
performance up to 2xD holes depth.

APPLICATION EXAMPLES



VIDEO





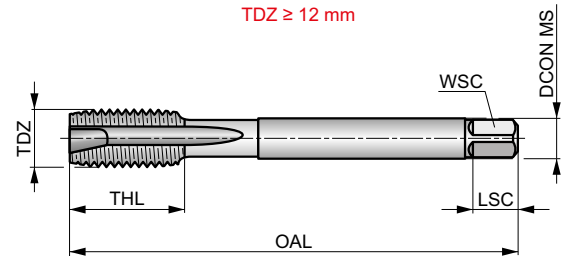
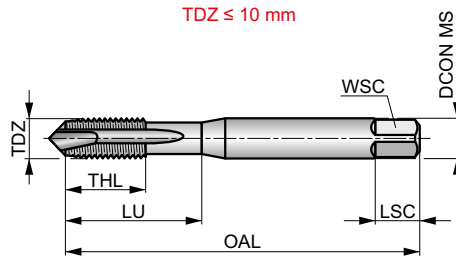
E556(M)



HSS Spiral Point Power Tool Tap, Metric, ISO Standard

Ideal for hand held tapping with the use of Power Tools. Suited for through holes only the spiral point propel the chips ahead of the cutting zone, thus reducing loading and clogging in the flutes. The bright finish improve the chip flow in soft and non-ferrous materials.

	ISO 529	6H
	2xD	HSS
B 3.5-5		
Bright		



Workpiece material group suitability and starting values for cutting speed (m/min).

P1.1 ■ 14	P1.2 ■ 15	P1.3 ■ 16	P2.1 ■ 11	P2.2 ■ 9	P3.1 ■ 8	P3.2 ■ 5
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Product	TDZ	TP	OAL	THL	DCON MS	WSC	LSC	NOF	PHD	LU
E556M3	3	0.50	48.0	11	3.15	2.50	5	3	2.50	18.00
E556M4	4	0.70	53.0	13	4.00	3.15	6	3	3.30	21.00
E556M5	5	0.80	58.0	16	5.00	4.00	7	3	4.20	25.00
E556M6	6	1.00	66.0	19	6.30	5.00	8	3	5.00	30.00
E556M8	8	1.25	72.0	22	8.00	6.30	9	3	6.80	35.00
E556M10	10	1.50	80.0	24	10.00	8.00	11	3	8.50	39.00
E556M12	12	1.75	89.0	29	9.00	7.10	10	3	10.30	-



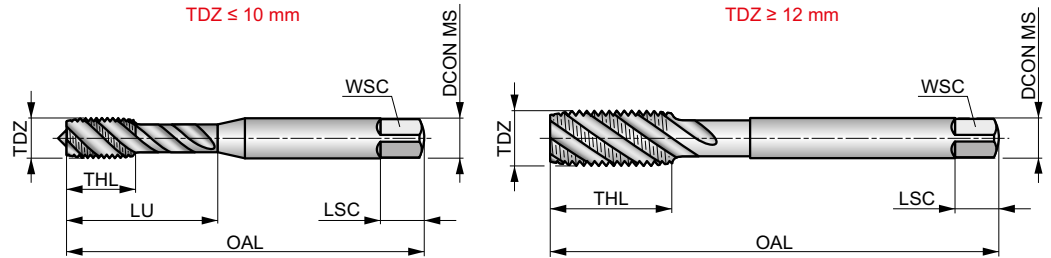
E557(M)



HSS Spiral Flute Power Tool Tap, Metric, ISO Standard

Ideal for hand held tapping with the use of Power Tools. Tapping typically produce long stringy chips which, when not evacuated properly, can cause serious problems especially when threading blind holes. The spiral flute design counters this problem as it draws chips from the hole being tapped.

	ISO 529	6H
	2xD	HSS
		λ 35°
	Bright	



Workpiece material group suitability and starting values for cutting speed (m/min).

P1.1	P1.2	P1.3	P2.1	P2.2	P3.1	P3.2
■ 14	■ 15	■ 16	■ 11	■ 9	■ 8	■ 5

Product	TDZ	TP	OAL	THL	DCON MS	WSC	LSC	NOF	PHD	LU
E557M3	3	0.50	48.0	6	3.15	2.50	5	3	2.50	18.00
E557M4	4	0.70	53.0	8	4.00	3.15	6	3	3.30	21.00
E557M5	5	0.80	58.0	10	5.00	4.00	7	3	4.20	25.00
E557M6	6	1.00	66.0	12	6.30	5.00	8	3	5.00	30.00
E557M8	8	1.25	72.0	15	8.00	6.30	9	3	6.80	35.00
E557M10	10	1.50	80.0	18	10.00	8.00	11	3	8.50	39.00
E557M12	12	1.75	89.0	21	9.00	7.10	10	3	10.30	-



M90.

SPIRAL FLUTED SCREW EXTRACTORS

INTRODUCTION



The Dormer assortment for MRO & General Engineering applications has been expanded with a range of screw extractors, a problem solver for removing broken or seized screws. There are nine individual products, each one for different bolt size starting from M5 up to M50, or 3/16" up to 2 1/8" respectively. All are manufactured from specific high-quality steel to withstand the flex and high torque loads experienced during operation. We also introduce two variants of extractor sets and five variants of bolt removal kits, which contains Burrs P100, P101, HSS-E stub drill A117, and an extractor M900 of proper size.



M900



- Spiral fluted screw extractor
- Application range: M5 – M50 (3/16" – 2 1/8")



M901

- Two Set of extractors
- Variant A: Five pieces set M5-M20 (3/16" – 3/4")
- Variant B: Six pieces set M5-M30 (3/16" – 1")



M902

- Bolt removal kits
- Available in 5 variants
- Each contains: Burrs P100, P101 HSS-E Stub Drill A117 Extractor M900

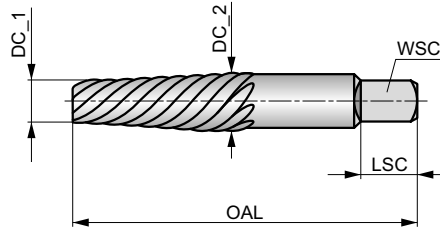


M900



Screw Extractor

Screw extractor is used counter-clockwise to remove broken right-handed bolts from threaded holes without damaging threads. It's necessary to drill guide hole of proper size before using the extractor.



Drill Size A: To be used on low or medium tensile strength screws. Drill Size B: To be used on high tensile strength screws.

Product							DC_1	DC_2	WSC	LSC	OAL
		(mm)	(mm)		(inch)	(inch)					
M9001	M5 – M6	2	2	3/16" – 1/4"	5/64	5/64	1.37	3.20	2.60	5.10	51.1
M9002	M6 – M8	2.8	3	1/4" – 5/16"	7/64	1/8	2.18	4.80	3.90	6.70	61.1
M9003	M8 – M12	4	4.2	5/16" – 7/16"	5/32	11/64	3.18	6.40	4.80	7.50	68.7
M9004	M12 – M14	5.5	6	7/16" – 9/16"	7/32	15/64	4.37	8.00	6.00	8.00	76.7
M9005	M14 – M20	7.2	8	9/16" – 3/4"	9/32	5/16	6.35	11.10	8.30	11.50	86.1
M9006	M20 – M30	10.5	11	3/4" – 1"	13/32	7/16	9.53	15.90	11.90	13.10	94.4
M9007	M30 – M42	13.5	14.5	1" – 1.3/8"	17/32	9/16	12.30	19.10	14.30	17.90	107.4
M9008	M42 – M45	20.5	21.5	1.3/8" – 1.3/4"	13/16	27/32	18.65	25.10	19.80	19.40	114.3
M9009	M45 – M50	27	28	1.3/4 – 2.1/8	1.1/16	1.3/32	24.61	32.30	24.60	22.60	121.3

M901



Screw Extractor Set

Set of Screw Extractor sizes M9001 – M9005 or M9001 – M9006.

A = Styles in Set, B = No. in Set, C = Diameters in Set.

Product	Nr.	A	B	C
M901A	A	M900	5	M9001 – M9005
M901B	B	M900	6	M9001 – M9006

M902



Bolt Removal Kit

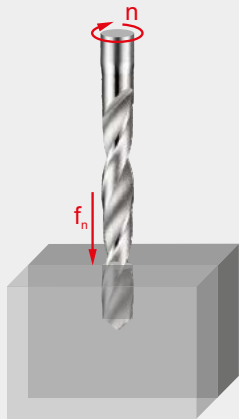
Tools for removing broken right-handed bolts come in a set of four. First, use the P100 burr to flatten the bolt. Second, use the P101 burr to create a starting cone. Third, use the HSS-E stub drill A117 to drill a hole for the extractor. Finally, use the screw extractor in a counter-clockwise motion to remove the broken bolt without damaging the threads.

A = Styles in Set, B = No. in Set, C = Diameters in Set.

Product	Nr.	A	B	C
M902M6-M8	M6 – M8	M900, P100, P101, A117	4	P1004.9, P1014.9, A1173.0, M9002
M902M8-M10	M8 – M10	M900, P100, P101, A117	4	P1006.4, P1016.4, A1174.0, M9003
M902M10-M12	M10 – M12	M900, P100, P101, A117	4	P1007.8, P1017.8, A1174.2, M9003
M902M12-M14	M12 – M14	M900, P100, P101, A117	4	P1009.3, P1019.3, A1176.0, M9004
M902M14-M16	M14 – M16	M900, P100, P101, A117	4	P1010.7, P10110.7, A1178.0, M9005



DRILLING FEED RATE CHART



Feed per revolution (f_n in mm/rev)
Depending on the working conditions
it might be necessary to adjust these
values $\pm 25\%$.

How to use this table to find the feed per revolution (f_n):

1. Find your Alpha Code on the product page (example: 46J, "J" is the Alpha Code).
2. Find the closest diameter for your cutting application in the top row of the table.
3. Find your Alpha Code in the left column of the table.
4. The intersection (cell) of the Diameter and Alpha Code is the feed per revolution (f_n).

		\varnothing DC (mm)																		
		0.15	0.50	1.00	2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	15.00	16.00	20.00	25.00	30.00	40.00	50.00	100.00
Feed rates	A	0.003	0.006	0.012	0.023	0.029	0.032	0.036	0.042	0.054	0.062	0.069	0.082	0.086	0.110	0.125	0.135	0.155	0.175	0.263
	B	0.004	0.007	0.014	0.028	0.037	0.041	0.046	0.053	0.067	0.080	0.090	0.103	0.108	0.135	0.153	0.165	0.188	0.208	0.312
	C	0.004	0.008	0.015	0.032	0.044	0.050	0.056	0.064	0.080	0.098	0.110	0.125	0.130	0.160	0.180	0.195	0.220	0.240	0.360
	D	0.004	0.008	0.016	0.038	0.053	0.060	0.068	0.078	0.098	0.119	0.130	0.149	0.155	0.188	0.210	0.228	0.253	0.275	0.413
	E	0.004	0.009	0.017	0.043	0.062	0.071	0.080	0.092	0.115	0.140	0.150	0.173	0.180	0.215	0.240	0.260	0.285	0.310	0.465
	F	0.005	0.009	0.018	0.050	0.073	0.084	0.095	0.109	0.138	0.165	0.178	0.202	0.210	0.248	0.275	0.295	0.320	0.343	0.515
	G	0.005	0.010	0.019	0.056	0.084	0.096	0.109	0.126	0.160	0.190	0.205	0.231	0.240	0.280	0.310	0.330	0.355	0.375	0.563
	H	0.005	0.010	0.020	0.066	0.102	0.116	0.130	0.150	0.190	0.228	0.243	0.271	0.280	0.320	0.355	0.375	0.398	0.418	0.627
	I	0.005	0.011	0.021	0.076	0.119	0.134	0.150	0.173	0.220	0.265	0.280	0.310	0.320	0.360	0.400	0.420	0.440	0.460	0.690
	J	0.006	0.012	0.024	0.084	0.135	0.152	0.170	0.197	0.250	0.298	0.315	0.349	0.360	0.405	0.445	0.465	0.485	0.503	0.755
	K	0.007	0.013	0.026	0.092	0.150	0.170	0.190	0.220	0.280	0.330	0.350	0.388	0.400	0.450	0.490	0.510	0.530	0.545	0.818
	L	0.007	0.014	0.028	0.101	0.165	0.186	0.208	0.240	0.305	0.360	0.385	0.419	0.430	0.485	0.525	0.545	0.568	0.588	0.882
	M	0.008	0.015	0.030	0.110	0.180	0.202	0.225	0.260	0.330	0.390	0.420	0.450	0.460	0.520	0.560	0.580	0.605	0.630	0.945
	N	0.008	0.016	0.032	0.119	0.195	0.218	0.242	0.280	0.355	0.420	0.455	0.481	0.490	0.555	0.595	0.615	0.642	0.672	1.008
	S	0.002	0.004	0.008	0.014	0.020	0.025	0.030	0.037	0.050	0.080	0.100	0.123	0.130	0.150	0.170	0.190	0.220	0.240	–
	T	0.004	0.008	0.015	0.028	0.040	0.050	0.060	0.070	0.090	0.110	0.130	0.160	0.170	0.190	0.210	0.230	0.260	0.275	–
	U	0.007	0.013	0.026	0.048	0.070	0.080	0.090	0.107	0.140	0.170	0.200	0.223	0.230	0.240	0.270	0.300	0.360	0.375	–
	V	0.010	0.019	0.038	0.069	0.100	0.115	0.130	0.153	0.200	0.250	0.280	0.310	0.320	0.340	0.400	0.440	0.510	0.530	–
	W	0.012	0.025	0.049	0.089	0.130	0.150	0.170	0.200	0.260	0.330	0.380	0.418	0.430	0.450	0.470	0.490	0.520	0.540	–
	X	0.014	0.028	0.056	0.103	0.150	0.180	0.210	0.250	0.330	0.420	0.480	0.533	0.550	0.580	–	–	–	–	–
Y	0.017	0.034	0.068	0.124	0.180	0.220	0.260	0.317	0.430	0.550	0.700	0.700	0.700	0.740	–	–	–	–	–	
Z	0.024	0.047	0.094	0.172	0.250	0.325	0.400	0.533	0.800	1.000	1.100	1.175	1.200	1.200	–	–	–	–	–	



WMG (WORK MATERIAL GROUP)

ISO group	WMG (Work Material Group)	Hardness (HB or HRC)	Ultimate Tensile Strength (MPa)			
P	P1	P1.1	Sulfurized	< 240 HB	≤ 830	
		P1.2	Free machining steel (carbon steels with increased machinability)	Sulfurized and phosphorized	< 180 HB	≤ 620
		P1.3		Sulfurized/phosphorized and leaded	< 180 HB	≤ 620
	P2	P2.1	Plain carbon steel (steels comprised of mainly iron and carbon)	Containing < 0.25 % C	< 180 HB	≤ 620
		P2.2		Containing < 0.55 % C	< 240 HB	≤ 830
		P2.3		Containing > 0.55 % C	< 300 HB	≤ 1030
	P3	P3.1	Alloy steel (carbon steels with an alloying content ≤ 10 %)	Annealed	< 180 HB	≤ 620
		P3.2		Hardened and tempered	180 – 260 HB	> 620 ≤ 900
		P3.3			260 – 360 HB	> 900 ≤ 1240
	P4	P4.1	Tool steel (special alloy steel for tools, dies and molds)	Annealed	< 26 HRC	≤ 900
P4.2		Hardened and tempered		26 – 39 HRC	> 900 ≤ 1240	
P4.3				39 – 45 HRC	> 1240 ≤ 1450	
M	M1	M1.1	Ferritic stainless steel (straight chromium non-hardenable alloys)	< 160 HB	≤ 520	
		M1.2		160 – 220 HB	> 520 ≤ 700	
	M2	M2.1	Martensitic stainless steel (straight chromium hardenable alloys)	Annealed	< 200 HB	≤ 670
		M2.2		Quenched and tempered	200 – 280 HB	> 670 ≤ 950
		M2.3		Precipitation-hardened	280 – 380 HB	> 950 ≤ 1300
	M3	M3.1	Austenitic stainless steel (chromium-nickel and chromium-nickel-manganese alloys)	< 200 HB	≤ 750	
		M3.2		200 – 260 HB	> 750 ≤ 870	
		M3.3		260 – 300 HB	> 870 ≤ 1040	
	M4	M4.1	Austenitic-ferritic (DUPLEX) or super-austenitic stainless steel	< 300 HB	≤ 990	
		M4.2	Precipitation hardening austenitic stainless steel	300 – 380 HB	≤ 1320	
K	K1	K1.1	Gray iron or Automotive Gray iron (GG) (iron-carbon castings with a lamellar graphite microstructure)	Ferritic or ferritic-pearlitic	< 180 HB	≤ 190
		K1.2		Ferritic-pearlitic or pearlitic	180 – 240 HB	> 190 ≤ 310
		K1.3		Pearlitic	240 – 280 HB	> 310 ≤ 390
	K2	K2.1	Malleable iron (GTS/GTW) (iron-carbon castings with a graphite-free microstructure)	Ferritic	< 160 HB	≤ 400
		K2.2		Ferritic or pearlitic	160 – 200 HB	> 400 ≤ 550
		K2.3		Pearlitic	200 – 240 HB	> 550 ≤ 660
	K3	K3.1	Ductile iron (GGG) (iron-carbon castings with a nodular graphite microstructure)	Ferritic	< 180 HB	≤ 560
		K3.2		Ferritic or pearlitic	180 – 220 HB	> 560 ≤ 680
		K3.3		Pearlitic	220 – 260 HB	> 680 ≤ 800
	K4	K4.1	Austenitic gray iron (ASTM A436) (iron-carbon alloy castings with an austenitic lamellar graphite microstructure)	< 180 HB	≤ 190	
		K4.2	Austenitic ductile iron (ASTM A439 or ASTM A571) (iron-carbon alloy castings with an austenitic nodular graphite microstructure)	< 240 HB	≤ 740	
		K4.3	Austempered ductile iron (ASTM A897) (iron-carbon alloy castings with an ausferrite microstructure)	< 280 HB	> 840 ≤ 980	
		K4.4		280 – 320 HB	> 980 ≤ 1130	
K4.5		320 – 360 HB		> 1130 ≤ 1280		
K5	K5.1	Compacted graphite iron CGI (ASTM A842) (iron-carbon castings with a vermicular graphite structure)	Ferritic	< 180 HB	≤ 400	
	K5.2		Ferritic-pearlitic	180 – 220 HB	> 400 ≤ 450	
	K5.3		Pearlitic	220 – 260 HB	> 450 ≤ 500	
N	N1	N1.1	Commercially pure wrought aluminium	< 60 HB	≤ 240	
		N1.2		Half hard tempered	60 – 100 HB	> 240 ≤ 400
		N1.3		Full hard tempered	100 – 150 HB	> 400 ≤ 590
	N2	N2.1	Cast aluminium alloys	< 75 HB	≤ 240	
		N2.2		75 – 90 HB	> 240 ≤ 270	
		N2.3		90 – 140 HB	> 270 ≤ 440	
	N3	N3.1	Free-cutting copper-alloys materials with excellent machining properties	–	–	
		N3.2	Short-chip copper-alloys with good to moderate machining properties	–	–	
		N3.3	Electrolytic copper and long-chip copper-alloys with moderate to poor machining properties	–	–	
	N4	N4.1	Thermoplastic polymers	–	–	
		N4.2	Thermosetting polymers	–	–	
		N4.3	Reinforced polymers or composites	–	–	
	N5	N5.1	Graphite	–	–	
S	S1	S1.1	Titanium or titanium alloys	< 200 HB	≤ 660	
		S1.2		200 – 280 HB	> 660 ≤ 950	
		S1.3		280 – 360 HB	> 950 ≤ 1200	
	S2	S2.1	Fe-based high-temperature alloys	< 200 HB	≤ 690	
		S2.2		200 – 280 HB	> 690 ≤ 970	
	S3	S3.1	Ni-based high-temperature alloys	< 280 HB	≤ 940	
		S3.2		280 – 360 HB	> 940 ≤ 1200	
	S4	S4.1	Co-based high-temperature alloys	< 240 HB	≤ 800	
S4.2		240 – 320 HB		> 800 ≤ 1070		
H	H1	H1.1	Chilled cast iron	< 440 HB	–	
		H1.2		< 55 HRC	–	
	H2	H2.1	Hardened cast iron	> 55 HRC	–	
		H2.2		< 51 HRC	–	
	H3	H3.1	Hardened steel < 55 HRC	51 – 55 HRC	–	
		H3.2		< 55 HRC	–	
H4	H4.1	Hardened steel > 55 HRC	55 – 59 HRC	–		
	H4.2		> 59 HRC	–		



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