04 CUTTING

TAP AND DRILL CHART - CONVERSION TABLES

Metric and Imperial

UNC Unified National Coarse		
Size (inch)	**Thread per inch**	**Recommended drill size**
1	64	53
2	56	50
3	48	47
4	40	3/32
5	40	38
6	32	36
8	32	29
10	24	25
12	24	16
1/4	20	13/64
5/16	18	17/64
3/8	16	5/16
7/16	14	3/8
1/2	13	27/64
9/16	12	31/64
5/8	11	35/64
3/4	10	21/32
7/8	9	49/64
1	8	7/8
1-1/8	7	63/64
1-1/4	7	1-7/64
1-3/8	6	1-7/32
1-1/2	6	1-11/32
1-3/4	5	1-9/16
2	4 1/2	1-25/32

Metric Iso Coarse		
Size (mm)	**Thread pitch**	**Recommended drill size**
1.6	0.35	3/64
1.7	0.35	55
1.8	0	54
2	0.40	1/10
2.5	0.45	40
3	0.5	40
3.5	0.60	33
4	0.70	30
4.5	0.75	27
5	0.80	11/64
6	1.0	13/64
7	1.0	6.0
8	1.25	H
9	1.25	5/16
10	1.5	11/32
11	1.5	3/8
12	1.75	13/32
14	2.0	31/64
16	2.0	9/16
18	2.5	39/64
20	2.5	45/64
22	2.5	25/32
24	3.0	53/64
27	3.0	61/64
30	3.5	1-3/64
33	3.5	1-11/64
36	4.0	1-1/4
39	4.0	1-3/8

UNC Unified National Coarse		
Size (inch)	**Thread per inch**	**Recommended drill size**
0	80	3/64
1	72	53
2	64	50
3	56	45
4	48	42
5	44	37
6	40	33
8	36	9/64
10	32	21
12	26	14
1/4	28	7/32
5/16	24	17/64
3/8	24	Q
7/16	20	25/64
1/2	20	20/64
9/16	18	33/64
5/8	18	37/64
3/4	16	11/16
7/8	14	13/16
1	12	59/64
1	14*	15/16
1-1/8	12	1-3/64
1-1/4	12	1-11/64
1-3/8	12	1-19-64
1-1/2	12	1-27/64

Metric Iso Coarse		
Size (mm)	**Thread pitch**	**Recommended drill size**
4	0.35	3/64
5	0.35	55
6	0	54
7	0.40	1/10
8	0.45	40
10	0.5	40
10	0.60	33
12	0.70	30
12	0.75	27
12	0.80	11/64
14	1.0	13/64
16	1.0	6.0
18	1.25	H
18	1.25	5/16
20	1.5	11/32
20	1.5	3/8
22	1.75	13/32
22	2.0	31/64
24	2.0	9/16
24	2.5	39/64

CONVERSION TABLE

Inch to Millimetre Equivalents

To convert to millimetres, multiply inches by 25.4

INCHES		mm
Fract.	Decimals	
	.00004	.001
	.00039	.01
	.00079	.02
	.001	.025
	.00118	.03
	.00157	.04
	.00197	.05
	.002	.051
	.00236	.06
	.00276	.07
	.003	.0762
	.00315	.08
	.00354	.09
	.00394	.1
	.004	.1016
	.005	.1270
	.006	.1524
	.007	.1778
	.00787	.2
	.008	.2032
	.009	.2286
	.00984	.25
	.01	.254
	.01181	.3
1/64	.01563	.3969
	.01575	.4
	.01969	.5
	.02	.508
	.02362	.6
	.025	.635
	.02756	.7
	.0295	.75
	.03	.762
1/32	.03125	.7938
	.0315	.8
	.03543	.9
	.03937	1.0
	.04	1.016
3/64	.04687	1.191
	.04724	1.2
	.05	1.27
	.05512	1.4
	.05906	1.5
	.06	1.524
1/16	.06250	1.5875
	.06299	1.6
	.06693	1.7
	.07	1.778
	.07087	1.8
	.075	1.905
5/64	.07813	1.9844
	.07874	2
	.08	2.032
	.08661	2.2
	.09	2.286
	.09055	2.3
3/32	.09375	2.3812
	.09843	2.5
	.1	2.54
	.10236	2.6
7/64	.10937	2.7781
	.11811	3
1/8	.1250	3.175

INCHES		mm
Fract.	Decimals	
	.13780	3.5
9/64	.14063	3.5719
	.150	3.810
5/32	.15625	3.9688
	.15748	4
11/64	.17188	4.3656
	.1750	4.445
	.17717	4.5
3/16	.18750	4.7625
	.19685	5
	.20	5.08
13/64	.2013	5.1594
	.21654	5.5
7/32	.21875	5.5562
	.2250	5.715
15/64	.23438	5.9531
	.23622	6
1/4	.250	6.35
	.25591	6.5
17/64	.26563	6.7469
	.275	6.985
	.27559	7
9/32	.28125	71438
	.29528	7.5
19/64	.29688	7.5406
	.30	7.62
5/16	.3125	7.9375
	.31496	8
21/64	.32813	8.3344
	.33465	8.5
11/32	.34375	8.7312
	.350	8.89
	.35433	9
23/64	.35938	9.1281
	.37402	9.5
3/8	.375	9.525
25/64	.39063	9.9219
	.39370	10
	.400	10.16
13/32	.40625	10.3188
	.41359	10.5
27/64	.42188	10.7156
	.43307	11
7/16	.43750	11.1125
	.450	11.430
	.45276	11.5
29/64	.45313	11.5094
15/32	.46875	11.9062
	.47244	12
31/64	.48438	12.3031
	.49213	12.5
1/2	.50	12.7
	.51181	13
33/64	.51563	13.0969
17/32	.53125	13.4938
	.53150	13.5
35/64	.54688	13.8906
	.550	13.970
	.55118	14
9/16	.56250	14.2875
	.5708	14.5
	.57813	14.6844
	.59055	15

To convert to inches, divide millimetres by 25.4

INCHES		mm
Fract.	Decimals	
19/32	.59375	15.0812
	.600	15.24
39/64	.60938	15.4781
	.61024	15.5
5/8	.6250	15.875
	.62992	16
41/64	.64063	16.2719
	.64961	16.5
	.650	16.51
21/32	.65625	16.6688
	.66929	17
43/64	.67188	17.0656
11/16	.68750	17.4625
	.68898	17.5
	.700	17.78
45/64	.70313	17.8594
	.70866	18
23/32	.71875	18.2562
	.72835	18.5
47/64	.73438	18.6531
	.74803	19
3/4	.750	19.050
49/64	.76563	19.4469
	.76772	19.5
25/32	.78125	19.8438
	.78740	20
51/64	.79688	20.2406
	.800	20.320
	.80709	20.5
13/16	.81250	20.6375
	.82677	21
53/64	.82813	21.0344
27/32	.84375	21.4312
	.84646	21.5
	.850	21.590
55/64	.85938	21.8281
	.86614	22
7/8	.875	22.225
	.88583	22.5
57/64	.89063	22.6219
	.900	22.860
	.90551	23
29/32	.90625	23.0188
59/64	.92188	23.4156
	.92520	23.5
15/16	.93750	23.8125
	.94488	24
	.950	24.130
61/64	.95313	24.2094
	.96457	24.5
31/32	.96875	24.6062
	.98425	25
63/64	.98438	25.0031
1	1.00000	25.4
	1.06299	27
	1.10240	28
	1.18110	30
1-1/4	1.250	31.75
	1.29921	33
	1.3780	35
	1.41732	36
1-1/2	1.500	38.1
	1.53543	39

INCHES		mm
Fract.	Decimals	
	1.57480	40
	1.65354	42
1-3/4	1.750	44.45
	1.7170	45
	1.88976	48
	1.96850	50
2	2.000	50.8
	2.04724	52
	2.16540	55
	2.20472	56
	2.250	57.15
	2.36220	60
2-1/2	2.500	63.5
	2.51968	64
2-3/4	2.750	69.85
	2.83464	72
	2.95280	75
3	3.000	76.2
	3.14960	80
3-1/2	3.500	88.9
	3.54330	90
	3.9370	100
4	4.000	101.6
	4.33070	110
4-1/2	4.500	114.3
	4.72440	120
5	5.000	127
	5.51180	140
	5.90550	150
6	6.000	152.4
	6.29920	160
	7.08660	180
	7.8740	200
8	8.000	203.2
	8.66140	220
	9.44880	240
	9.84250	250
10	10.000	254
	10.23620	260
	11.02360	280
	11.8110	300
1 Foot	12.000	304.8
	12.59840	320
	13.38580	340
	13.77950	350
	14.17320	360
	14.96060	380
	15.7480	400
16	16.000	406.4
	17.71650	450
	19.6850	500
20	20.000	508
	23.6220	60
2 Feet	24.000	609.6
3 Feet	36.000	914.4
	39.370	1 meter
4 Feet	48.000	1,219
5 Feet	60.000	1.524
6 Feet	72.000	1,828
	78.740	2 meters
8 Feet	96.000	2,438
	118.100	3 meters
	196.850	5 meters

CONVERSIONS EQUIVALENTS

Fraction/Decimal/Metric/Equivalents		
Fraction	**Decimal**	**Metric**
1/64	0.0156	0.40
1/32	0.0312	0.79
3/64	0.0468	1.19
1/16	0.0625	1.59
5/64	0.0781	1.98
3/32	0.0937	2.38
7/64	0.1093	2.78
1/8	0.1250	3.18
9/64	0.1406	3.57
5/32	0.1562	3.97
11/64	0.1718	4.36
3/16	0.1875	4.76
13/64	0.2031	5.16
7/32	0.2187	5.55
15/64	0.2343	5.95
1/4	0.2500	6.35
9/32	0.2656	6.75
19/64	0.2812	7.14
5/16	0.2968	7.54
21/64	0.3125	7.94
11/32	0.3281	8.33
23/64	0.3437	8.73
3/8	0.3593	9.13
25/64	0.3750	9.53
13/32	0.3906	9.92
27/64	0.4062	10.32
7/16	0.4218	10.71
29/64	0.4375	11.11
15/32	0.4531	11.51
31/64	0.4687	11.90
1/2	0.4843	12.30
33/64	0.5156	13.10

Fraction/Decimal/Metric/Equivalents		
Fraction	**Decimal**	**Metric**
17/32	0.5312	13.49
35/64	0.5468	13.89
9/16	0.5625	14.29
37/64	0.5781	14.68
19/32	0.5937	15.08
39/64	0.6093	15.48
5/8	0.6250	15.88
41/64	0.6406	16.27
21/32	0.6562	16.67
43/64	0.6718	17.06
11/16	0.6875	17.46
45/64	0.7031	17.86
23/32	0.7187	18.25
47/64	0.7343	18.65
3/4	0.7500	19.05
49/64	0.7656	19.45
25/32	0.7812	19.84
51/64	0.7968	20.24
13/16	0.8125	20.64
53/64	0.8281	21.03
27/32	0.8437	21.43
55/64	0.8593	21.83
7/8	0.8750	22.23
57/64	0.8906	22.62
29/32	0.9062	23.02
5/64	0.9218	23.41
15/16	0.9375	23.81
61/64	0.9531	24.21
31/32	0.9687	24.60
63/64	0.9843	25.00
1	1.0000	25.40

INCH to METRIC
1 inch = 25.400 millimetres
1 foot = 0.3048 metres
1 mile = 1.609 kilometers

SQ INCH to METRIC
1 sq. inch = 6.4516 sq. centimetres
1 sq. foot = .0929 sq. metres

CU. INCH to METRIC
1 cu. inch = 16.387 cu. centimetres

IMPERIAL to METRIC
1 fluid ounce = 28.413 millilitres
1 gallon = 4.546 litres

IMPERIAL to METRIC
1 ounce = 28.35 grams
1 pound = .4536 kilograms

POUNDS/INCHES to METRIC
1 pound per square inch = .0703 kilogram per square centimetre
1 pound per square inch = .0703 atmosphere (metric)

FAHRENHEIT to CELSIUS
(°F minus 32°) x .556 = °Celsius

REVERSIBLE - LEFT HAND DRILL BITS

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.
1/16"	.0625	7/8	1-7/8	**624.11104***
5/64"	.0781	1	2	**624.11105**
3/32	.0938	1-1/4	2-1/4	**624.11106**
7/64"	.1094	1-1/2	2-5/8	**624.11107**
1/8"	.1250	1-5/8	2-3/4	**624.11108**
9/64"	.1406	1-3/4	2-7/8	**624.11109***
5/32"	.1562	2	3-1/8	**624.11110**
11/64"	.1719	2-1/8	3-1/4	**624.11111***
3/16"	.1875	2-5/16	3-1/2	**624.11112**
7/32"	.2188	2-1/2	3-3/4	**624.11114**
15/64"	.2344	2-5/8	3-7/8	**624.11115***
1/4"	.2500	2-3/4	4	**624.11116**
9/32"	.2812	2-15/16	4-1/4	**624.11118**
19/64"	.2969	3-1/16	4-3/8	**624.11119***
5/16"	.3125	3-3/16	4-1/2	**624.11120**
21/64"	.3281	3-5/16	4-5/8	**624.11121***
11/32"	.3438	3-7/16	4-3/4	**624.11122***
3/8"	.3750	3-5/8	5	**624.11124**
13/32"	.4062	3-7/8	5-1/4	**624.11126***
7/16"	.4375	4-1/16	5-1/2	**624.11128***
15/32"	.4688	4-5/16	5-3/4	**624.11130***
1/2"	.5000	4-1/2	6	**624.11132***

* **Available OnDemand**

Premium-grade industrial steel

P. Qty. 1

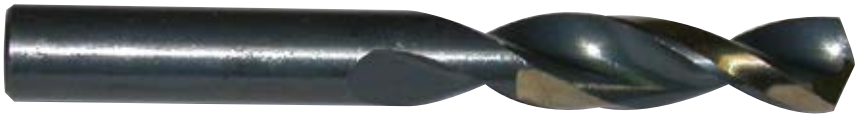
Designed for light to intermediate duty applications

Application:

- If you use a left-hand bit to drill the hole in a broken screw or bolt so you can extract it, the odds are good that the very act of drilling will remove the broken screw without ever needing to use an extractor. Your drill must be running in reverse when you use left-hand bits.
- Left handed drills allow a machining operation to continue when the spindle either cannot be reversed or where the design of the machine makes it more efficient to run left handed
- They may also be used as an aid in the removal of right-hand screws

Assortment
Left-hand Drill Bits - 29 pcs.
Art. No. 624.11100

THUNDERBIT® STUBBY DRILLS



Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.
1/8	.1250	7/8	1-7/8	**627.418**
3/16	.1875	1-1/8	2-3/16	**627.4316**
1/4	.2500	1-3/8	2-1/2	**627.414**
17/64	.2656	1-7/16	2-5/8	**627.41764***
9/32	.2812	1-1/2	2-11/16	**627.4932***
5/16	.3125	1-5/8	2-13/16	**627.4516**
3/8	.3750	1-13/16	3-1/8	**627.438**

* **Available by OnDemand**

135° Split-Point, High Speed Steel, Black & Bronze Oxide

- 135° split-point for quick penetration and reduced "walking"
- Premium-grade M-7 industrial steel for longer life and heat resistance
- Unique flute design for superior material removal
- Short length and heavy-duty construction provides additional strength
- Ideal for use in medium- and high-tensile strength alloy materials

P. Qty. 3

Application areas:
Cast Iron; Low and Medium Carbon Steel; High Alloy Steel; Stainless Steel and PH; Tough-, Medium- and High-Tensile Strength Alloys; Wood

NUMBERED DRILL BITS

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.
45	.0820	1-1/8	2-1/8	**627.045***
44	.0860	1-1/8	2-1/8	**627.044***
43	.0890	1-1/4	2-1/4	**627.043**
42	.0935	1-1/4	2-1/4	**627.042***
41	.0960	1-3/8	2-3/8	**627.041***
40	.0980	1-3/8	2-3/8	**627.040**
39	.0995	1-3/8	2-3/8	**627.039***
38	.1015	1-7/16	2-1/2	**627.038***
37	.1040	1-7/16	2-1/2	**627.037**
36	.1065	1-7/16	2-1/2	**627.036**
35	.1100	1-1/2	2-5/8	**627.035***
34	.1110	1-1/2	2-5/8	**627.034***
33	.1130	1-1/2	2-5/8	**627.033***
32	.1160	1-5/8	2-3/4	**627.032**
31	.1200	1-5/8	2-3/4	**627.031***
30	.1285	1-5/8	2-3/4	**627.030**
29	.1360	1-3/4	2-7/8	**627.029**
28	.1405	1-3/4	2-7/8	**627.028***
27	.1440	1-7/8	3	**627.027***
26	.1470	1-7/8	3	**627.026***
25	.1495	1-7/8	3	**627.025**
24	.1520	2	3-1/8	**627.024***
23	.1540	2	3-1/8	**627.023***
22	.1570	2	3-1/8	**627.022**
21	.1590	2-1/8	3-1/4	**627.021**
20	.1610	2-1/8	3-1/4	**627.020***

- Replacements for ThunderBit® Number Drill Index (1-60) **Art. No. 627.102**
- 135° split point, High Speed Steel, black & bronze oxide
- Premium grade steel
- Heavy-duty construction
- Unique flute design for superior material removal

P. Qty. 3

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.
19	.1660	2-1/8	3-1/4	**627.019***
18	.1695	2-1/8	3-1/4	**627.018**
17	.1730	2-3/16	3-3/8	**627.017***
16	.1770	2-3/16	3-3/8	**627.016***
15	.1800	2-3/16	3-3/8	**627.015***
14	.1820	2-3/16	3-3/8	**627.014**
13	.1850	2-5/16	3-1/2	**627.013***
12	.1890	2-5/16	3-1/2	**627.012**
11	.1910	2-5/16	3-1/2	**627.011**
10	.1935	2-7/16	3-5/8	**627.010**
9	.1960	2-7/16	3-5/8	**627.009***
8	.1990	2-7/16	3-5/8	**627.008***
7	.2010	2-7/16	3-5/8	**627.007**
6	.2040	2-1/2	3-3/4	**627.006***
5	.2055	2-1/2	3-3/4	**627.005***
4	.2090	2-1/2	3-3/4	**627.004**
3	.2130	2-1/2	3-3/4	**627.003**
2	.2210	2-5/8	3-7/8	**627.002**
1	.2280	2-5/8	3-7/8	**627.001**

* **Available OnDemand**

HIGH SPEED STEEL DRILL BITS

135° Split Point

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.
5/64"	0.0781"	1"	2"	**624.564**
3/32"	0.0938"	1-1/4"	2-1/4"	**624.332**
7/64"	0.1094"	1-1/2"	2-5/8"	**624.764**
1/8"	0.1250"	1-5/8"	2-3/4"	**624.18**
9/64"	0.1406"	1-3/4"	2-7/8"	**624.964**
5/32"	0.1562"	2"	3-1/8"	**624.532**
11/64"	0.1719"	2-1/8"	3-1/4"	**624.1164**
3/16"	0.1875"	2-5/16"	3-1/2"	**624.316**
13/64"	0.2031"	2-7/16"	3-5/8"	**624.1364**
7/32"	0.2188"	2-1/2"	3-3/4"	**624.732**
15/64"	0.2344"	2-5/8"	3-7/8"	**624.1564**
1/4"	0.2500"	2-3/4"	4"	**624.14**
17/64"	0.2656"	2-7/8"	4-1/8"	**624.1764**
9/32"	0.2812"	2-15/16"	4-1/4"	**624.932**
19/64"	0.2969"	3-1/16"	4-3/8"	**624.1964**
5/16"	0.3125"	3-3/16"	4-1/2"	**624.516**
21/64"	0.3281"	3-5/16"	4-5/8"	**624.2164**
11/32"	0.3438"	3-7/16"	4-3/4"	**624.1132**
23/64"	0.3594"	3-1/2"	4-7/8"	**624.2364**
3/8"	0.3750"	3-5/8"	5"	**624.38**
25/64"	0.3906"	3-3/4"	5-1/8"	**624.2564**
13/32"	0.4062"	3-7/8"	5-1/4"	**624.1332**
27/64"	0.4219"	3-15/16"	5-3/8"	**624.2764**
7/16"	0.4375"	4-1/16"	5-1/2"	**624.716**
29/64"	0.4531"	4-3/16"	5-5/8"	**624.2964**
15/32"	0.4688"	4-5/16"	5-3/4"	**624.1532**
31/64"	0.4844"	4-3/8"	5-7/8"	**624.3164**
1/2"	0.5000"	4-1/2"	6"	**624.12**
1/16"	0.06250"	7/8"	1-7/8"	**624.116**

HSS general purpose, straight shank, jobber drills are the most popular drill used by engineers, tradesmen and handymen.

- High speed Steel Material
- Black Oxide Coating
- Heavy-Duty Construction

P. Qty. 1

Works Best in This Material	Heavy-Duty Black Oxide
Aluminum/Aluminum Alloys; Bronze, Soft & Medium	
Iron, Cast	✔
Steel, Low & Medium Carbon	✔
Steel, High Alloy	✔
Steel, Stainless & PH	
Tough, Medium & High-Tensile Strength Alloys	✔
Wood & Plastic	

METRIC HSS DRILLS

Size	Imperial Equivalent	Overall Length	Chip Flute Length	Art. No.
M1	1/32	34mm	12mm	**625.10**
M1.5	3/64	40mm	18mm	**625.15**
M2	5/64	49mm	24mm	**625.20**
M2.5	3/32	57mm	30mm	**625.25**
M3	7/64	61mm	33mm	**625.30**
M3.1	1/8-	65mm	36mm	**625.31***
M3.2	1/8+	65mm	36mm	**625.32**
M3.5	9/64	70mm	39mm	**625.35**
M4	5/32	75mm	43mm	**625.40**
M4.2	11/64	75mm	43mm	**625.42**
M4.5	11/64+	80mm	47mm	**625.45**
M5	13/64	86mm	52mm	**625.50**
M5.5	7/32	93mm	57mm	**625.55**
M6	15/64	93mm	57mm	**625.60**
M6.3	1/4-	101mm	63mm	**625.63***
M6.5	1/4	101mm	63mm	**625.65**
M7	17/64	109mm	69mm	**625.70**
M7.5	19/64	109mm	69mm	**625.75**
M8	5/16	117mm	75mm	**625.80**
M8.5	21/64	117mm	75mm	**625.85**
M9	11/32	125mm	81mm	**625.90**
M9.5	3/8	125mm	81mm	**625.95**
M10	25/64	133mm	87mm	**625.100**
M11	27/64	142mm	94mm	**625.110**
M12	15/32	151mm	101mm	**625.120**
M13.0	1/2	151mm	101mm	**625.130**

* **Available OnDemand**

Cold-formed assembly drill for working in steel, tip angle 118°

Drilling Depth: 5x drill bit diameter
Note: The drill shank is turned from the 13.0 mm dia. to a 12.7 mm dia.

P. Qty: 1

Drill Bit Assortment - M1-10 - 19 pcs.
Art. No. 634.4

Drill Bit Assortment - M1-13 - 25 pcs.
Art. No. 634.6

HEAVY DUTY HSS BLACK & BRONZE OXIDE DRILL BITS

Straight Shank

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.	P. Qty	Bulk Art. No.	Bulk Qty
1/16"	0.0625	7/8"	1-7/8"	**627.116**	3	**627.116-12**	12
5/64"	0.0781	1"	2"	**627.564**		**627.564-12**	
3/32"	0.0938	1-1/4"	2-1/4"	**627.332**		**627.332-12**	
7/64"	0.1094	1-5/16"	2-3/8"	**627.764**		**627.764-12**	
1/8"	0.1250	1-7/16"	2-1/2"	**627.18**		**627.18-12**	
9/64"	0.1406	1-9/16"	2/5/8"	**627.964**		**627.964-12**	
5/32"	0.1562	1-11/16"	2-3/4"	**627.532**		**627.532-12**	
11/64"	0.1719	1-13/16"	2-7/8"	**627.1164**		-	-

Tri-Shank

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.	P. Qty	Bulk Art. No.	Bulk Qty
3/16"	0.1875"	1-7/8"	3"	**627.316**	3	**627.316-12**	12
13/64"	0.2031"	1-5/16"	3-1/8"	**627.1364**		**627.1364-12**	
7/32"	0.2188"	2"	3-1/4"	**627.732**		**627.732-12**	
15/64"	0.2344"	2-1/16"	3-3/8"	**627.1564**		**627.1564-12**	
1/4"	0.2500"	2"	3-1/2"	**627.14**		**627.14-12**	
17/64"	0.2656"	2-1/8"	3-5/8"	**627.1764**		**627.1764-12**	
9/32"	0.2812"	2-1/4"	3-3/4"	**627.932**		**627.932-12**	
19/64"	0.2969"	2-3/8"	3-7/8"	**627.1964**		**627.1964-6**	6
5/16"	0.3125"	2-1/2"	4"	**627.516**		-	-
21/64"	0.3281"	2-9/16"	4-1/16"	**627.2164**		**627.2164-6**	6
11/32"	0.3438"	2-5/8"	4-1/8"	**627.1132**		**627-1132-6**	
23/64"	0.3594"	2-11/16"	4-3/16"	**627.2364**		**627.2364-6**	
3/8"	0.3750"	2-11/16"	4-1/4"	**627.38**		**627.38-6**	
25/64"	0.3906"	2-3/4"	4-5/16"	**627.2564**		-	-
13/32"	0.4062"	2-13/16"	4-3/8"	**627.1332**		**627.1332-6**	6

3/8" Reduced Shank

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.	P. Qty	Bulk Art. No.	Bulk Qty
27/64"	0.4219"	2-7/8"	4-7/16"	**627.2764**	2	**627.2764-6**	6
7/16"	0.4375"	2-15/16"	4-1/2"	**627.716**		**627.716-6**	
29/64"	0.4531"	3"	4-5/8"	**627.2964**		**627.2964-6**	
15/32"	0.4688"	3-1/8"	4-3/4"	**627.1532**		**627.1532-6**	
31/64"	0.4844"	3-1/4"	4-7/8"	**627.3164**		**627.3164-6**	
1/2"	0.5000"	3-3/8"	5"	**627.12**		**627.12-6**	

Ideal for drilling truck frames and stainless steel, 135° split point eliminates "walking", unique flute design enhances chip ejection.

- 135° Split Point
- Premium Grade High Speed Steel Material
- Black and Bronze Oxide Coating/Finish
- Heavy-Duty Construction. Sizes 3/16" and larger have 3 flats on shank

Works Best in This Material	Heavy-Duty Black Oxide
Aluminum/Aluminum Alloys; Bronze, Soft and Medium	
Iron, Cast	✔
Steel, Low and Medium Carbon	✔
Steel, High Alloy	✔
Steel, Stainless and PH	
Tough, Medium and High-Tensile Strength Alloys	✔
Wood and Plastic	

HEAVY DUTY HSS BLACK & BRONZE OXIDE DRILL BITS

1/2" Reduced Shank

- 118° Split Point, 1/2" Shank
- Premium Grade High Speed Steel Material
- Black and Bronze Oxide Coating

P. Qty: 1

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.
33/64"	0.5156"	3"	6"	**627.3364**
17/32"	0.5312"	3"	6"	**627.1732**
9/16"	0.5625"	3"	6"	**627.916**
37/64"	0.5781"	3"	6"	**627.3764**
19/32"	0.5938"	3"	6"	**627.1932**
39/64"	0.6094"	3"	6"	**627.3964**
5/8"	0.6250"	3"	6"	**627.58**
21/32"	0.6562"	3"	6"	**627.2132**
11/16"	0.6875"	3"	6"	**627.1116**
45/64"	0.7031"	3"	6"	**627.4564***
23/32"	0.7188"	3"	6"	**627.2332**
3/4"	0.7500"	3"	6"	**627.34**
49/64"	0.7656"	3"	6"	**627.4964**
25/32"	0.7812"	3"	6"	**627.2532**
13/16"	0.8125"	3"	6"	**627.1**
27/32"	0.8438"	3"	6"	**627.2732***
7/8"	0.8750"	3"	6"	**627.78**
29/32"	0.9062"	3"	6"	**627.2932**
15/16"	0.9375"	3"	6"	**627.1516**
1"	1.0000"	3"	6"	**627.1**
1-1/16"	1.0625"	3"	6"	**627.11161**
1-1/8"	1.1250"	3"	6"	**627.118**
1-3/16"	1.1875"	3"	6"	**627.13161**
1-1/4"	1.2500"	3"	6"	**627.114**
1-15/16"	1.3125"	3"	6"	**627.15161**
1-1/2"	1.5000"	3"	6"	**627.112**

* **Available OnDemand**

Assortment
Thunderbit Drill Index - 8 pcs.
Contains one of: 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, 1"

Art. No. 627.90595

SOLID CARBIDE TIALN TWIST DRILL

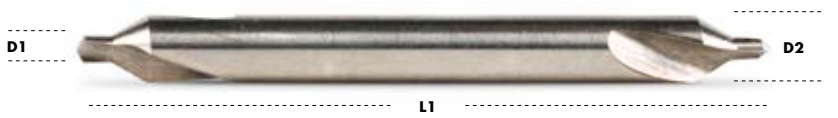
Particularly suitable for drilling in high-strength steels, chromium-nickel steels, chilled cast iron, grey cast iron, cast steel, manganese high carbon steel, bronze, aluminum with high silicon content and other difficult-to-machine materials.

Features:
- Solid carbide with TiALN coating
- Cylindrical shank
- 118 degree angle tip
- DIN 338

Applications:
- High-strength steels, chromium-nickel steels, chilled cast iron, grey cast iron, cast steel, manganese high carbon steel, bronze, aluminum with high silicon content and other difficult-to-machine materials

Diameter (mm)	Length (mm)	Chip Flute Length (mm)	Shaft Diameter (mm)	Art. No.	P. Qty.
2	49	24	2	**544.3000351**	1
4	75	43	4	**544.3000371**	
6	93	57	6	**544.3000391**	
8	117	75	8	**544.3000411**	
10	133	87	10	**544.3000431**	
12	151	101	12	**544.3000437**	

COMBI DRILLS / COUNTERSUNK BITS



- High speed steel
- Combined drill/countersunk
- Plain type
- 60° included countersunk angle

Application:
- Used for creating turning centers in bar stock so that the material can be turned or ground between centers in a lathe

P. Qty. 1

Drill Ø (D1)	Drill Length (L2)	Overall length (L1)	Diameter Ø (D2)	Art. No.
3/64	3/64	1-1/4	1/8	**649.1**
5/64	5/64	1-7/8	3/16	**649.2**
7/64	7/64	2	1/4	**649.3**
1/8	1/8	2-1/8	5/16	**649.4**
3/16	3/16	2-3/4	7/16	**649.5**
7/32	7/32	3	1/2	**649.6**
1/4	1/4	3-1/4	5/8	**649.7**

METRIC HSS DOUBLE-ENDED TWIST DRILL BIT

Metric HSS double-Ended Twist Drill Bit
- Right-hand cutting
- Special purpose grinding facilitates penetration of the drill into the material
- No centre punch required
- Drill does not drift from the drilling location
- Ideal for machining light gauge materials
- For drilling rivet holes

Diameter		Art. No.
(mm)	(inches)	
3.2	1/8 +	**636.32**
5	3/16	**636.50**
6.4	1/4	**636.64**

TWIST DRILL HSCO BRONZE

The affordable, robust drill bit for machining stainless steel and heat-resistant steels. Suitable for general, broad applications in steel up to 1000 N/mm² strength, as well as cast iron.

Features:
- Self-centering, extremely robust, quiet drilling and a high degree of break resistance
- Cylindrical shank
- 118 degree angle tip

Applications:
- Ideal for construction sites and assembly applications
- Stainless steel, steel, cast iron

Diameter (mm)	Length (mm)	Chip Flute Length (mm)	Drilling Depth (mm)	Art. No.	P. Qty.
3	61	33	15	**635.010300**	1
3.5	70	39	17.5	**635.010350**	
4	75	43	20	**635.010400**	
4.5	80	47	22.5	**635.010450**	
5	86	52	25	**635.010500**	
5.5	93	57	27.5	**635.010550**	
6	93	57	30	**635.010600**	
6.5	101	63	32.5	**635.010650**	
7	109	69	35	**635.010700**	
7.5	109	69	37.5	**635.010750**	
8	117	75	40	**635.010800**	
8.5	117	75	42.5	**635.010850**	
9	125	81	45	**635.010900**	
9.5	125	81	47.5	**635.010950**	
10	133	87	50	**635.011000**	
10.5	133	87	52.5	**635.011050**	
11	142	94	55	**635.011100**	
11.5	142	94	57.5	**635.011150**	
12	151	101	60	**635.011200**	
12.5	151	101	62.5	**635.011250**	

COBALT DRILL BITS

135° Split-Point, Cobalt, High Speed Steel, Bronze Oxide

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.	P. Qty.
1/16	.0625	7/8	1-7/8	**626.116**	**1**
5/64	.0781	1	2	**626.564**	**1**
3/32	.0938	1-1/4	2-1/4	**626.332**	**1**
7/64	.1094	1-1/2	2-5/8	**626.764**	**1**
1/8	.1250	1-5/8	2-3/4	**626.18**	**1**
9/64	.1406	1-3/4	2-7/8	**626.964**	**1**
5/32	.1562	2	3-1/8	**626.532**	**1**
11/64	.1719	2-1/8	3-1/4	**626.1164**	**1**
3/16	.1875	2-5/16	3-1/2	**626.316**	**1**
13/64	.2031	2-7/16	3-5/8	**626.1364**	**1**
7/32	.2188	2-1/2	3-3/4	**626.732**	**1**
15/64	.2344	2-5/8	3-7/8	**626.1564**	**1**
1/4	.2500	2-3/4	4	**626.14**	**1**
17/64	.2656	2-7/8	4-1/8	**626.1764**	**1**
9/32	.2812	2-15/16	4-1/4	**626.932**	**1**
5/16	.3125	3-3/16	4-1/2	**626.516**	**1**
21/64	.3281	3-5/16	4-5/8	**626.2164**	**1**
23/64	.3594	3-1/2	4-7/8	**626.2364**	**1**
3/8	.3750	3-5/8	5	**626.38**	**1**
27/64	.4219	3-15/16	5-3/8	**626.2764**	**1**
29/64	.4531	4-3/16	5-5/8	**626.2964**	**1**
31/64	.4844	4-3/8	5-7/8	**626.3164**	**1**

Size	Decimal Equivalent	Flute Length	Overall Length	Art. No.	P. Qty.
11/32	.3438	3-7/16	4-3/4	Special order only	**6**
13/32	.4062	3-7/8	5-1/4	Special order only	**6**
7/16	.4375	4-1/16	5-1/2	Special order only	**6**
15/32	.4688	4-5/16	5-3/4	Special order only	**6**
1/2	.5000	4-1/2	6	Special order only	**6**

Assortment
Cobalt Drill Index 1/16-1/4
13 pcs.
Art. No. 626.100

4 PLUS ROTARY HAMMER DRILL BIT

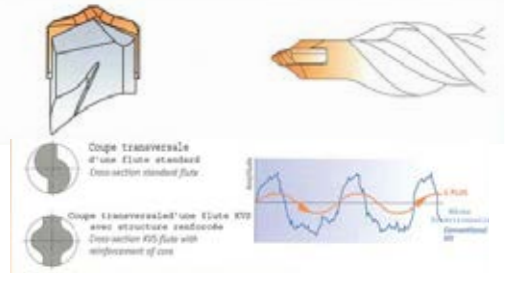
For use in concrete, masonry and natural stone

Compatible with SDS

- The new fast and durable carbide tip provides aggressive, easy centering and fast drilling from the very start. Steel reinforcement no longer presents a problem.
- The dynamic, chisel-shaped drill bit head penetrates rapidly into the material and simultaneously feeds the drilling dust into the multi-fluted spiral.
- The patented spacious, multi-fluted KVS-Spiral quickly removes drilling dust from the hole, saving both time and money.
- The unique reinforced flute geometry (KVS-flute) reduces vibration and transfers more impact energy from the hammer to the drilling head, thus remarkably increasing drilling speed and life expectancy. Drilling is less strenuous for the operator and for the rotary hammer.
- Modern thermal treatment and a special surface finish reduce the wear of the bit and improve its resistance against bending forces.

Dia. (in)	Working Length (in)	Total Length (in)	Art. No.
5/32	2	4 1/4	**648.5322**
5/32	4	6 1/4	**648.5324**
3/16	2	4 1/4	**648.3162***
3/16	6	6 1/4	**648.3164**
7/32	6	8 1/4	**648.7326**
1/4	2	4 1/4	**648.142***
1/4	4	6 1/4	**648.144**
1/4	6	8 1/4	**648.146***
1/4	12	14	**648.1412***
5/16	4	6 1/4	**648.5164**
3/8	4	6 1/4	**648.384**
1/2	8	10 1/4	**648.128**
5/8	6	8	**648.586**
5/8	10	12	**648.5810**

* **Available OnDemand**



4 PLUS DRILL SET

Art. No. 648.5

Compatible with SDS

Contains 1 each of:
3/6" x 4", 1/4" x 6", 5/16" x 6, 3/8" x 6", 1/2" x 6"

SDS PLUS QUADRO HAMMER DRILL BITS

Rotary hammer drill bit with four carbide cutting edges. Allows for rapid and precise drilling with a longer service life against concrete and rebar ANSI B212.15-1994.

Features:
- Solid carbide head up to ⌀ 5/16"
- 4 carbide cutting teeth
- Up to 150% higher lifetime in reinforcement than conventional hammer drill bits
- Excellent resistance to high temperatures
- Rapid drilling progress and longer lifetime due to new flute design.
- SDS Plus fitting

Applications:
- Drilled holes for mechanical anchors in reinforced and unreinforced concrete
- Drilled holes for subsequent reinforcement connection
- Drilling of breakthrough holes for tubes and cables

Suitable For:
- Concrete, reinforced concrete, natural stone, brick, masonry

Description	Head Type	Diameter (in)	Length (in)	Working Length (in)	Art. No.
SDS Plus Quadro Hammer Drill Bit	Solid Carbide Head	3/16	6 1/2	4	**648.316612**
		3/16	10 1/2	8	**648.316105**
		1/4	6 1/2	4	**648.014612**
		1/4	10 1/4	8	**648.014102**
		5/16	6 1/2	4	**648.516612**
		5/16	12 1/2	10	**648.516125**
	Single-piece Carbide Head	3/8	6 1/4	4	**648.038614**
		3/8	12 1/4	10	**648.038122**
		7/16	12 1/4	10	**648.716122**
		1/2	6 1/4	4	**648.012614**
		1/2	12 1/4	10	**648.012122**
	Three-piece Carbide Head	5/8	8 1/4	6	**648.058814**
		5/8	12 1/4	10	**648.058122**
		3/4	12	10	**648.034012**
		7/8	12	10	**648.078012**

MASONRY DRILL BITS

118° point, carbide-tip, masonry, regular helix, black oxide

- Wide flutes improve dust removal
- For best performance, use slow speed and apply enough feed pressure to keep the drill cutting
- For recommended use in brick, concrete and sandstone

Size	Shank Dia.	Overall Length	Art. No.	P. Qty.
1/8"	1/8"	3"	**647.18**	2
5/32"	5/32"	3-1/2"	**647.532**	
3/16"	3/16"	4"	**647.316**	
1/4"	1/4"	6"	**647.14.6**	
5/16"	1/4"	4"	**647.516.4**	
5/16"	1/4"	6"	**647.516.6***	
3/8"	1/4"	4"	**647.38.4**	
3/8"	1/4"	6"	**647.38.6**	
1/2"	1/4"	4"	**647.12.4***	
1/2"	3/8"	6"	**647.12.6**	

* **Available OnDemand**

ASSORTMENTS

Art. No. 964.6272

Heavy Duty Drill Set - 30 pcs
15 assorted sizes, size range 1/16" - 1/2"

Art. No. 964.6274

Heavy Duty Drill Set - 40 pcs
20 assorted sizes, size range 1/16" - 3/8"

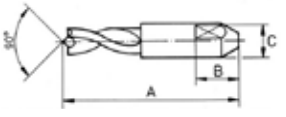
Note: When working on metals (except Cast Iron) use Würth Cutting Oil, **Art. No. 893.050004**. This will provide clean cutting and long service life.

SPOT WELD DRILL BITS

Ø mm	Total Length mm	Flute length mm	Max. Speed	Art. No.
6	66	27	up to 1,200 rpm	**710.740060**
8	79	36	up to 950 rpm	**710.740080**
10	88	44	up to 730 rpm	**710.01010**

HSCO Spot Weld Drill Bit
TiN - Titanium Nitride coated

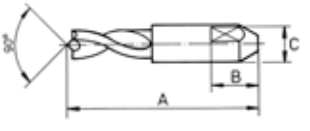
- Tool life extended two to three times
- High cutting speed



Drilling Ø mm	A mm	B mm	C mm	Max. RPM	Art. No.	P. Qty.
8	44.7	17	7.5	950	**710.808**	1

Suitable for C-clamp drills

- No need for centre punching
- High cutting speed



Drilling ⌀ mm	A mm	B mm	C mm	Art. No.	P. Qty.
6	44	16	7.5	**710.60**	1
8				**710.80**	
9				**710.90**	

HSCO Spot Weld Drill Bit

- Suitable for C-clamp drills
- No need for centre-punching

Note: Suitable for use with VARIO DRILL VD90 **703.090**

Ø mm	Total Length mm	Flute length mm	Max. Speed	Art. No.
6	66	27	up to 920 rpm	**710.6**
8	79	36	up to 700 rpm	**710.8**
10	86	41	up to 700 rpm	**710.10**

HSS Spot Weld Drill Bit

- Fixed centering point eliminates need for a centre punch

Drilling Ø mm	Stop Ø mm	Total length mm	Recommended RPM	Art. No.	P. Qty.
7.5	10	88	600 - 670	**710.0010**	1

HSCO Spot Weld Drill Bit with Step

For the quick and precise drilling out of spot welds in car bodywork repairs. The PLUS centering tip guarantees a long service life.

The step at the tip of the bit acts as a stop and indicates to the user the exact drilling depth.

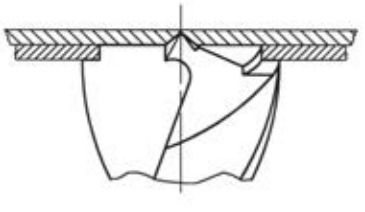
- This prevents unintentional drilling through into the second sheet of metal.

If the user notices that the step is touching the metal only on one side, then the drill is tilting.

- The tilt can then be easily corrected.

Improved PLUS centering tip for modern high-strength car body sheets.

- The centering tip has a long service life.



SPOT WELD DRILL BITS

Art. No. 698.1

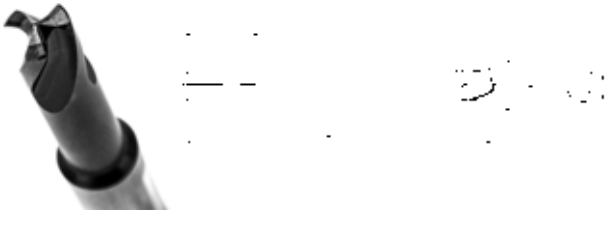
Two Piece Spring Spot Weld Bit

Features:
- Right-hand cutting
- Special ground edge facilitates entry of the twist drill into the material
- No centre punch required
- Drill does not drift from the drilling location
- Spring loaded/Anti-skate tip
- Specially suitable for working on thin-gauge material

Areas of application:
- Bodywork & sheet metal processing workshops
- Apparatus construction

Additional tools:
Replacement end **Art. No. 698.01**

3-EDGED SOLID CARBIDE SPOT WELD CUTTER



Art. No.	710.810800	710.811800
P. Qty.	1	1
Diameter - C	8 mm	8 mm
Length - A	45 mm	80 mm
Shank Length - B	35 mm	20 mm
Shank Diameter	7.5 mm	8 mm
Shank Type	Cylindrical with single flat	Triangular
Material	Carbide	Carbide

For precision milling/drilling out of spot welds on vehicle bodies with high-strength steel plates in vehicles of all types, A-pillars, B-pillars, door sills, etc.

Excellent centering of the drill bit on the spot weld.
- Broad yet stable geometry.

Very long service life.

Drill bit tip features innovative Magma coating.
- Innovative layered coating of TiN and TiAN increases durability and performance.

Applications:
- With its shorter length, **Art. No. 710.810800** is suitable for use with C-Clamp drills.
- With its triangular shaft, **Art. No. 710.811800** is only suitable for use in 3-jaw chucks drills.

Instructions:
- The solid carbide material is very brittle due to its extremely high hardness level and is susceptible to breakage if handled improperly.
- Insert drill bit precisely and at a right angle. First position the drill bit in the centre and then drill using consistent contact pressure.
- We recommend not exceeding a constant speed of 1800 rpm while drilling.

Note: The following must absolutely be avoided: interrupted cuts, abrupt bit contact, lateral impacts, and dropping the bit.

DRILL INDEXES & ASSORTMENTS

Art. No. 627.101

ThunderBit® Letter Drill - Index (A-Z)

Contents: 26 piece set, black & bronze oxide, high speed steel

Art. No. 627.102

ThunderBit® Number Drill - Index (1-60)

Contents: 60 piece set, bronze oxide, high speed steel.

Art. No. 627.100

ThunderBit® Drill Index

Contents: 29 drill bits, 1/16" to 1/2" by 64th, protective indexed metal case

NOTE: All dia. larger than 3/8" come with a reduced shank

Art. No. 634.4

Metric High Speed Steel Drill Bit Indexes - DIN 338

Contents: 19 twist drills from 1.0 x 10.0mm/0.5 mm intervals

Art. No. 627.1100

ThunderBit® Drill Index Mechanic's Size

Contents:
21 piece set, sizes 1/16" - 3/8"

Art. No. 634.6

Metric High Speed Steel Drill Bit Indexes - DIN 338

Contents: 25 twist drills from 1.0 x 13.0mm/0.5 mm intervals

Art. No. 627.90595

HSS Heavy Duty ThunderBit® Drill Index

Contents: Heavy duty 1/2" reduced-flatted shank Silver & demming drill det, black & bronze oxide.
8 pieces - One of Each: 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, 1", moulded plastic case

Art. No. 627.640627

ThunderTap® & ThunderBit® Bit Set

Contents: 9 taps and 9 matching drills: 6-32NC - #36, 8-32NC - #29, 10-24NC- #25,10-32NF - #21, 1/4-20NC - #7, 5/16-18NC- F, 3/8-16NC -5/16, 7/16-14NC - U, 1/2-13NC - 27/64

Art. No. 624.11100

Left-Hand Drill Assortment

Contents: 29 pieces

Art. No. 627.10

Empty Drill Index

Contents:
29 Compartments, 1/16" - 1/2"

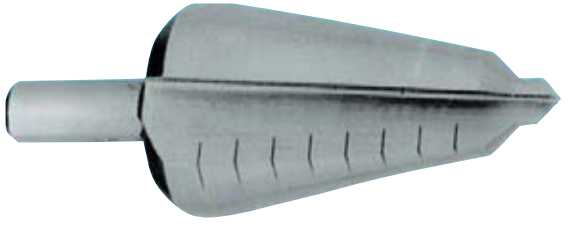
HSS-E STEP DRILL

- CBN (cubical boron nitride) deep ground Suitable for material thickness up to 4 mm
- Centering, drilling and deburring in one step
- Less pressure needed due to specially ground opening angle per cutting step
- Sharp cutting edges produce exact hole sizes
- Extended service life due to radial and axial relief grinding
- Increase life span by using Würth Cut+Cool Cutting and Drilling Oil **(Art. No. 893.050004)**

Recommended Cutting Speed (RPM)

Non-Ferrous Metals	Steel Unhardened St 14-St 37	High Grade Stainless	Duro-Plastics	Thermo-Plastics	Drill Diameter mm	Art. No.	P. Qty.
2400-800	1350-460	1200-460	1200-400	1200-550	4-12	**694.022412**	1
2400-320	1350-185	1200-160	1200-160	1600-220	4-30	**694.022430**	

HSS REAMER



- CBN (cubical boron nitride) deep ground
- Universally suitable; stepless drilling and widening of holes with a diameter range of 3-20 mm
- Suitable for drilling thin sheet metal
- No counter sinking or pre-drilling required
- Burr-free drilling without deforming the sheet metal
- Excellent heat conductivity for improved tool life due to radial and axial relief grinding
- Increase life span by using Würth Cut+Cool Cutting and Drilling Oil **(Art. No. 893.050004)**

Size	Drill Diameter mm	Total Length mm	Shank Dia. mm	Art. No.
1	3-14	53	6	**694.02414**
2	5-20	61	8	**694.02420**

SPIRAL FLUTE CAR REAMER

Hole Buster™ super premium 50-AG flatted tri-shank design.

Designed for reaming of structural steel plate commonly found in truck frames, rail cars, bridges and pressure vessels.

- Special HI-TUNGSTEN tool steel
- All tools are constructed with left-hand spiral and right-hand cut Left spiral eliminates the tendency of the reamer to hog into holes; this feature makes a stop collar unnecessary

Note: Use only to enlarge previously formed or drilled holes

Diam. (inches)	Point Diameter	Min. Starting	Overall Length	Shank Diameter	Art. No.	P. Qty.
3/8"	.250"	5/16"	4 5/8"	3/8"	**694.06390**	1
1/2"	.281"	3/8"	5 7/8"	1/2"	**694.06400**	
9/16"	.343"	7/16"	5 7/8"	1/2"	**694.06410**	
5/8"	.343"	7/16"	6 3/8"	1/2"	**694.06420**	
3/4"	.406"	1/2"	6 7/8"	1/2"	**694.06440**	
1"	.594"	7/8"	6 7/8"	1/2"	**694.06480**	

SPIRAL REAMER SET

Art. No. 694.05000 P. Qty. 1

- 1/2", 3-flatted shank prevents slippage in three-jaw chuck
- High speed steel, black & bronze oxide
- Ideal for maintenance and repair

Size	Decimal Equivalent	Flute Length	Overall Length
1/2"	.5000	3-15/16"	5-15/16"
5/8"	.6250	4-1/2"	6-9/16"
3/4"	.7500	4-15/16"	7"

SMART STEP TWIST DRILL BIT ASSORTMENT HSS

Art. No. 624.930001

High-performance drill with unique SMART STEP technology. For high-precision, circular through holes for handguided use in steel up to 1000 N/mm2, aluminium, plastic, non-ferrous metals, hardwood and softwood.

Features:

- Stepped drill bit tip geometry (from dia. 2.5 mm)
- Precise circular holes without centre-punching
- Extremely convenient drilling
- Saves pre-drilling, precise spot drilling without running off centre
- Angled drilling possible
- Simple core drilling or enlarging an existing drill hole
- Perfect for drilling out rivets
- Ideal for window construction
- Significantly quicker than conventional twist drills bits
- Tri-shank (dia. 4mm) for optimum power transmission

Details / Applications:

- Perfect for rivet holes; drilling sheet metal or thin-walled profile materials (e.g. aluminium/window profiles)
- Ideal for high-precision, comfortable and fast work in solid material (e.g. in steel up to a strength of 1000 N/mm2 aluminium and plastics)

Number of pieces in assortment / set	19 Pcs
Surface	Multiple refined
Standard / drilling depth	DIN 338/5xD

Related products use Cut + Cool - **893.050004**

CONTENTS FOR ART. NO. 624.930001		
Designation	**Art. No.**	**Qty.**
Twist drill HSS DIN 338 SMART STEP 1 mm	**624.930100**	
Twist drill HSS DIN 338 SMART STEP 1.5 mm	**624.930150**	
Twist drill HSS DIN 338 SMART STEP 2.0 mm	**624.930200**	
Twist drill HSS DIN 338 SMART STEP 2.5 mm	**624.930250**	
Twist drill HSS DIN 338 SMART STEP 3.0 mm	**624.930300**	
Twist drill HSS DIN 338 SMART STEP 3.5 mm	**624.930350**	
Twist drill HSS DIN 338 SMART STEP 4.0 mm	**624.930400**	
Twist drill HSS DIN 338 SMART STEP 4.5 mm	**624.930450**	
Twist drill HSS DIN 338 SMART STEP 5.0 mm	**624.930500**	
Twist drill HSS DIN 338 SMART STEP 5.5 mm	**624.930550**	1
Twist drill HSS DIN 338 SMART STEP 6.0 mm	**624.930600**	
Twist drill HSS DIN 338 SMART STEP 6.5 mm	**624.930650**	
Twist drill HSS DIN 338 SMART STEP 7.0 mm	**624.930700**	
Twist drill HSS DIN 338 SMART STEP 7.5 mm	**624.930750**	
Twist drill HSS DIN 338 SMART STEP 8.0 mm	**624.930800**	
Twist drill HSS DIN 338 SMART STEP 8.5 mm	**624.930850**	
Twist drill HSS DIN 338 SMART STEP 9.0 mm	**624.930900**	
Twist drill HSS DIN 338 SMART STEP 9.5 mm	**624.930950**	
Twist drill HSS DIN 338 SMART STEP 10.0 mm	**624.931000**	

HSS END MILLS

Single End, Multi Flute, Non-Center Cutting

- Shank type: parallel shank with flat
- 4 spiral flutes
- Cutting length: regular, sizes 1/8" - 3/4"

Application:
To provide improved performance. For profile milling and producing open slots or pockets where a plunge feed-in is not required.

Size	Shank Dia.	Flute Length	Overall Length	No. of flutes	Art. No.	P. Qty.
3/16	3/8	1/2	2 3/8	4	**654.316***	1
1/4		5/8	2 7/16		**654.14**	
5/16		3/4	2 1/2		**654.516**	
3/8		3/4	2 1/2		**654.38**	
7/16		1	2 11/16		**654.716**	
1/2	1/2	1 1/4	3 1/4		**654.12**	
3/4	1/2	1 5/8	3 5/8		**654.34***	

END MILL HSS-CO8

Suitable for a wide range of applications including both low-strength and difficult-to-machine materials.

Features:
- Quality high speed steel with 8% cobalt
- 90 degree angle tip
- DIN 844K, centre-cutting

Applications:
- Construction and tool steels
- Also suitable for non-ferrous metals, cobalt and nickel alloys, titanium and titanium alloys

Diameter (mm)	Length (mm)	Chip Flute Length (mm)	Shaft Diameter (mm)	Art. No.	P. Qty.
4	55	11	6	**544.3600605**	1
5	57	13	6	**544.3600607**	
6	57	13	6	**544.3600609**	
8	69	19	10	**544.3600613**	
10	72	22	10	**544.3600617**	
12	83	26	12	**544.3600619**	
14	83	26	12	**544.3600621**	
18	92	32	16	**544.3600624**	
20	104	38	20	**544.3600625**	

END MILL HSS-CO8 TIALN

Suitable for a wide range of applications including both low-strength and difficult-to-machine materials.

Features:
- TiAlN coating provides faster cutting, longer service life and overall greater performance
- Quality high speed steel with 8% cobalt and TiAlN coating
- 90 degree angle tip
- DIN 844K, centre-cutting
- Superior performance
- Long service life

Applications:
- Construction and tool steels
- Also suitable for non-ferrous metals, cobalt and nickel alloys, titanium and titanium alloys

Diameter (mm)	Length (mm)	Chip Flute Length (mm)	Shaft Diameter (mm)	Art. No.	P. Qty.
2	51	7	6	**544.3600641**	1
4	55	11	6	**544.3600645**	
5	57	13	6	**544.3600647**	
6	57	13	6	**544.3600649**	
8	69	19	10	**544.3600653**	
10	72	22	10	**544.3600657**	
12	83	26	12	**544.3600659**	
14	83	26	12	**544.3600661**	
18	92	32	16	**544.3600664**	
20	104	38	20	**544.3600665**	

HSS-CO8 BI-METAL HOLE SAWS

●●●○

●●●○

●●●●

Properties

Versatility:	●●●●
Service life:	●●●●
Drilling speed:	●●●●
Drill-hole quality/precision:	●●●○

Steel

Stainless Steel

High drilling speed and long service life, even when drilling solid stainless steel materials.

Extremely fast sawing with minimal expenditure of force
Newly developed tooth shape

High concentric and side-stroke precision
Sturdy base plate with more threads

Low vibration up to a cutting depth of 38mm
Combination Vario teeth made of M42 bi-metal (8% cobalt)

Instructions:
Pre-drill using light contact pressure. Continue drilling with minimal, even pressure; avoid oscillating while drilling. Follow speed guidelines and use coolant. Allow hole saw to "air" when using with wood and wood alternatives.

Materials to be processed
Steel, stainless steel, cast iron, copper, bronze, aluminum, wood and plastic

Size		Recommended Speed in RPM					Art. No.
mm	inches	Steel	Stainless Steel	Cast Iron	Brass	Aluminum	
19mm	3/4"	460	230	300	600	690	**632.19**
22mm	7/8"	390	195	260	520	585	**632.22**
25mm	1"	350	175	235	470	525	**632.25**
29mm	1-1/8"	300	150	200	400	450	**632.29**
32mm	1-1/4"	275	140	180	360	410	**632.32**
35mm	1-3/8"	250	125	165	330	375	**632.35**
38mm	1-1/2"	230	115	150	300	345	**632.38**
41mm	1-5/8"	210	105	140	280	315	**632.41**
44mm	1-3/4"	195	95	130	260	295	**632.44**
51mm	2"	170	85	115	230	255	**632.51**
54mm	2-1/8"	160	80	105	210	240	**632.54**
57mm	2-1/4"	150	75	100	200	225	**632.57**
64mm	2-1/2"	135	65	90	180	205	**632.64**
70mm	2-3/4"	125	60	80	160	185	**632.70**
76mm	3"	115	55	75	150	170	**632.76**
89mm	3-1/2"	95	45	65	130	145	**632.900089**
102mm	4"	85	40	55	110	130	**632.102**
111mm	4-3/8"	80	40	50	100	120	**632.900111**
114mm	4-1/2"	75	35	50	100	105	**632.900114**
121mm	4-3/4"	70	35	45	90	95	**632.900121**
127mm	5"	65	30	40	85	90	**632.900127**
140mm	5-1/2"	60	30	35	80	85	**632.900140**
152mm	6"	55	25	35	75	85	**632.900152**
200mm	7-7/8"	45	20	30	60	65	**632.900200**

Mounting Hub A2 (with pilot drill bit)

for dia.32-152 mm Shank dia. 11mm, hex	Art. No.	P. Qty.
	632.02	1

Pilot Drill AO14C (for mount A2)

dia. 6.35 mm (1/4"), short type	Art. No.	P. Qty.
	632.014	1

Mounting Hub A4 (with pilot drill bit)

dia. 14-30 mm, Shank dia. 6.35 mm	Art. No.	P. Qty.
	632.04	1

Pilot Drill AO14D (for mount A4)

dia. 6.35 mm (1/4"), long type	Art. No.	P. Qty.
	632.0141	1

Note: When working on metals (except Cast Iron) use Cut+Cool Cutting and Drilling Oil **Art. No. 893.050004.** This will provide clean cutting and long service life.

BI-METAL HOLE SAW ASSORTMENT – 16 PCS

Art. No. 5964.063291

Steel

Stainless Steel

Best suited for:

Extremely fast sawing with minimal expenditure of force
Newly developed tooth shape

High concentric and side-stroke precision
Sturdy base plate with more threads

Low vibration
Combination Vario teeth made of M42 bi-metal (8% cobalt)

Materials to be processed:
Steel, stainless steel, cast iron, copper, bronze, aluminum, wood and plastic.

Kit Contents

Size		Recommended Speed in RPM					Art. No.
Mm	In.	Soft Steel	Tool Steel & Stainless Steel	Cast Iron	Brass	Aluminum	
19	3/4	460	230	300	600	690	**632.19**
22	7/8	390	195	260	520	585	**632.22**
25	1	350	175	235	470	525	**632.25**
32	1-1/4	275	140	180	360	410	**632.32**
35	1-3/8	250	125	165	330	375	**632.35**
38	1-1/2	230	115	150	300	345	**632.38**
44	1-3/4	195	95	130	260	295	**632.44**
51	2	170	85	115	230	255	**632.51**
57	2-1/4	150	75	100	200	225	**632.57**
64	2-1/2	135	65	90	180	205	**632.64**
68	2-11/16	130	65	85	170	195	**0632 900 068***
76	3	115	55	75	150	170	**632.76**

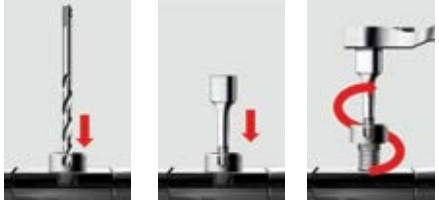
*Available through Special Orders

Art. No.	Description	Qty.
632.02	Mounting Hub A2	1
632.04	Mounting Hub A4	
0632 07*	Slinger Spring A7	
0632 05*	Extension for Hold Saw	

*Available through Special Orders

SCREW EXTRACTION SET 15PCS

Application:
Internal extractor:



External extractor:

Art. No. 714.131150

Problem solver for stripped or rusty Allen and Torx screw heads. Also for hexagonal bolts and nuts

- Precisely manufactured conical spiral profile
- All sockets also have a wrench flat for the external drive
- Supplied in metal box with high-quality foam insert with clamping effect
- Suitable for impact wrenches

Easy unscrewing of stripped bolt heads and nuts
Thanks to conical spiral profile

Saves lots of time
Thanks to quick loosening instead of heating or drilling out

Applications:
For repair and removal work in any motor vehicle/utility vehicle workshop, locksmith's shop, metal construction etc

Notes on use for internal extractor:
Select the appropriate extractor and screw it into the screw with 3/4" or 1/2" ratchet. Thanks to its aggressive conical spiral shape, the extractor grips securely into the material of the screw, allowing it to be securely unscrewed. Also ideal for unscrewing torn-off bolts and screws. Tap torn-off bolt or screw. Drill up to a half millimetre larger with dias. up to 6 mm. Drill up to one millimetre larger with dias. of 8–14 mm. Select the appropriate extractor, screw it into the drilled hole and then unscrew the screw or bolt.

Designation	Length	Wrench & Size	Art. No.	Qty
3/8" Long Internal Extractor, 6 mm	60mm		714.131206	1
3/8" Long Internal Extractor, 8 mm			714.131208	
3/8" Long Internal Extractor, 10 mm			714.131210	
1/2" Long Internal Extractor, 12 mm	78mm		714.131212	
1/2" Long Internal Extractor, 14 mm			714.131214	
3/8" Spiral Socket 10 mm	36mm	17	714.131310	
3/8" Spiral Socket 12 mm		19	714.131312	
3/8" Spiral Socket 13 mm			714.131313	
3/8" Spiral Socket 14 mm			714.131314	
1/2" Spiral Socket 16 mm		21	714.131316	
1/2" Spiral Socket 17 mm			714.131317	
1/2" Spiral Socket 18 mm		26	714.131318	
1/2" Spiral Socket 19 mm			714.131319	
3/8" Expulsion Mandrel	74mm		714.131360	
1/2" Expulsion Mandrel	80mm		714.131370	
Metal Box, size 1	220x110x35mm		955.7151	
Hard Foam with clamping effect	215x105x30mm		955.131300	

Note: Item Sold Separately by Special Order Only

DRILL-OUT® POWER EXTRACTOR KIT

Recommended Sizes	
Dia. (mm)	Dia. (inch)
6	1/4
8	5/16
10	3/8
12	1/2

Art. No. 698.401

- Can drill into grade 8 and stainless steel bolts
- Self-centering tip
- Fast, easy time saving operation
- Reusable
- Left hand drill bit and extractor all in one

Applications:
- Auto mechanics
- Machinery rebuilder/repairmen
- Maintenance engineers and technicians

BOLT/STUD EXTRACTOR SET

Art. No. 690.14

- Studs which have been sheared off level to the surface or are emerging from the surface have to be centre punched
- If the stud is broken below the surface, the bore has to be drilled down to the shear point according to the external diameter of the drill guide. Pre-drill the broken stud.
- Enlarge the hole for correct mandrel
- Hammer mandrel into hole
- Slide nut to bottom of mandrel and unscrew bolt gently without tilting

Contents:
- Drill Guides A-K
- Drills: 3.2/4.8/6.4/8.0/8.7
- Mandrels and removing nuts

For Bolt Dia.		Drill Guides			Pre-drill (mm)	Final draft without drill guide (mm)	Mandrel & removing g Nut A/F
mm	inches	Guide Ext. (mm)	For Drill (mm)	For Drill Letter			
M6	1/4	6	3.2	A	3.2	-	10
M7	9/32	8		B		4.8	11
M8	5/16	9		C			
				D			
M9	3/8	10	4.8	E	4.8	6.4	13
M10	7/16			F			
M12	1/2	11		G		8.0	14
M14	9/16	12		H			
M16	5/8	13	6.4	I	6.4	8.7	17
		14		K			

"EASY OUT" STUD EXTRACTOR SET

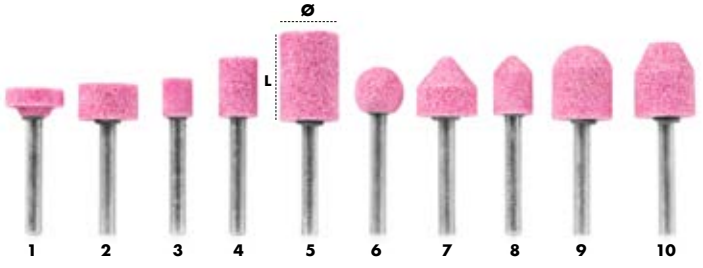
Art. No. 695.684353

- For removing broken-off studs or bolts
- Durable chrome vanadium forged steel construction
- Convenient plastic storage case

Applications:
- Determine size of the fastener that needs to be extracted
- Select stud extractor 1-5 and the recommended drill size
- Drill hole in the centre of the fastener, then turn extractor counter clock wise into the drilled hole
- Broken stud/bolt will back out without damaging the threaded hole

Size	For Screws		Length	Rec. Drill Size	
inch	mm	inch		mm	Gauge
1	M3-6	1/8 - 1/4	50	1.8	#50
2	M6-8	1/4 - 5/16	57	2.6	#38
3	M8-11	5/16 - 7/16	64	3.7	#27
4	M11-14	7/16 - 9/16	71	5.5	7/32
5	M14-18	9/16 - 3/4	78	7.0	J'

HONING STONE SET



Art. No. 680.10 – 10 pc. set

A set of 10 stones for precise bore sizing, deburring and surface finishing

Contents: one of each size below
Available quality: special fused alumina
Binding: ceramically bound
Color: pink
Shaft diameter: 6 mm
Specially suitable for grinding of steel

Ø x L	mm	Grit	Description acc. DIN 69170	Grinding Wheel Head	Picture No.	Art. No.	Individual Order Qty.	P. Qty.
20 x 30		30	ZY	Cylinder	5	**680.75**	**5**	**1**
13 x 20		30	ZY 1320	Cylinder	4	**680.72**		
20 x 12		30	ZY	Disc	2	**680.74**		
20 x 20		30	KE 2020	Conical	7	**680.21**		
13 x 20		30	SP 1320	Tapered	8	**680.41***	**10**	
10 x 13		46	ZY1013	Cylinder	3	**680.71***		
20 x 6		46	ZY 2006	Disc	1	**680.73***		
20 x 25		30	WK 2025	Cylindrical Cone	10	**680.51***		
20 x 25		30	WK 2025	Cylindrical Round	9	**680.61***		
16		30	KU 16	Round	6	**680.31***		

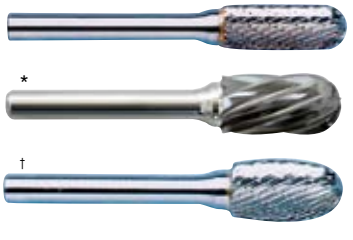
* **Available OnDemand**

CARBIDE BURRS

- Carbide material offers much longer tool life compared to common tool materials
- Suitable for work on hard/exotic materials
- Crossed pattern is universally suitable for working on stainless steels, high strength steel, black iron, welding seams, hard plastics, hardened steels

Cylindrical Type

Head Dia.	Shank Dia.	Flute Length	Overall Length	Art. No.	P. Qty.
1/4"	1/4"	5/8"	2"	**616.160616**	**1**
3/8"	1/4"	3/4"	2 1/2"	**616.161019**	
1/2"	1/4"	1"	2 3/4"	**616.112001**	
1/4"	1/8"	1/2"	2"	**616.114012***	



Cylindrical Round Type

Head Dia.	Shank Dia.	Flute Length	Overall Length	Art. No.	P. Qty.
1/4"	1/4"	3/4"	2"	**616.260616**	**1**
3/8"	1/4"	3/4"	2 1/2"	**616.261025**	
1/2"	1/4"	1"	3"	**616.212034***	
1/4"	1/8"	1/2"	1 3/4"	**616.214012***	
3/8"	1/4"	3/4"	6 3/4"	**616.238034**	
1/2"	1/4"	1"	2 3/4"	**616.461322†***	

* Aluma Cut † Tapered

Ball Type

Head Dia.	Shank Dia.	Flute Length	Overall Length	Art. No.	P. Qty.
1/4"	1/4"	1/4"	2"	**616.314014**	
3/8"	1/4"	5/16"	2 1/8"	**616.338038**	
1/2"	1/4"	7/16"	2 1/4"	**616.312012**	

* **Available OnDemand**

CARBIDE BURRS

Tapered Type / Tree Shaped Radius

Head Dia.	Shank Dia.	Flute Length	Overall Length	Art. No.	P. Qty.
1/2"	1/4"	1"	2 3/4"	**616.561332**	**1**
1/4"	1/4	3/4"	2"	**616.514034**	
3/8"	1/4"	3/4"	2 1/2"	**616.538078**	
1/4"	1/8"	1/2"	2"	**616.514012***	
1/2"	1/4"	1"	7"	**616.512001**	
3/8"	1/4"	3/4"	6 3/4"	**616.538034***	

Conical Type/ Tree Shaped Pointed

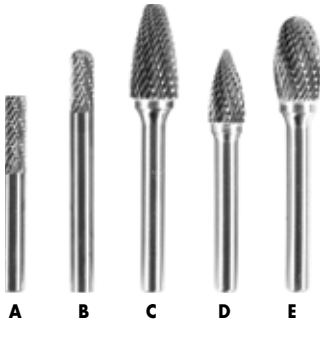
Head Dia.	Shank Dia.	Flute Length	Overall Length	Art. No.	P. Qty.
1/4"	1/4"	11/16"	2"	**616.660616**	**1**
3/8"	1/4	3/4"	2 1/2"	**616.661019**	
1/8"	1/8"	1/2"	1 1/2"	**616.618012***	
1/2"	1/4"	1"	3"	**616.612001**	

Oval Shaped Type

Head Dia.	Shank Dia.	Flute Length	Overall Length	Art. No.	P. Qty
1/4"	1/8"	3/8"	1 7/8"	**616.714716**	**1**

* **Available OnDemand**

CARBIDE BURR ASSORTMENTS



Art. No. 616.105

Carbide Burrs

Contains: 5 Pieces
A: Art. No. 616.160616
B: Art. No. 616.260616
C: Art. No. 616.561332
D: Art. No. 616.661019
E: Art. No. 616.461322

Art. No. 616.205

Mini Carbide Burrs

Contains: 9 pieces with a 1/8" shank and 1/4" head
1 x cylindrical type - 1/8", 1 x cylindrical type with teeth on end face - 1/8", 1 x inverted conical type - 1/8", 1 x ball nose cylinder - 1/8", 1 x ball type - 1/8", 1 x ball nose cylinder - 1/8", 1 x tapered type/tree shaped radius - 1/8", 1 x conical type/tree shaped pointed - 1/8", 1 x conical type/tree shaped pointed - 1/8"

Art. No. 616.305

Extended Carbide Burrs

Contains: 4 pieces with a 1/4" shank
1 x 3/8"dia., ball nose cylinder, double cut - 6 3/4",
1 x 3/8" dia., conical type/tree shaped pointed, double cut - 6 3/4"
1 x 1/2" dia., tapered type/tree shaped radius, double cut - 7"
1 x 1/2" dia., ball type, double cut - 6 1/2"

TAPPING MACHINE TAPS HSS-E

For pocket and through holes, for fabrication of metric ISO threads DIN 13 according to tolerance range 6H Outstanding features of Zebra tapping machine taps:

Highest quality:
- Cobalt alloyed basic materials
- Constant material receiving inspections
- Highest precision in production

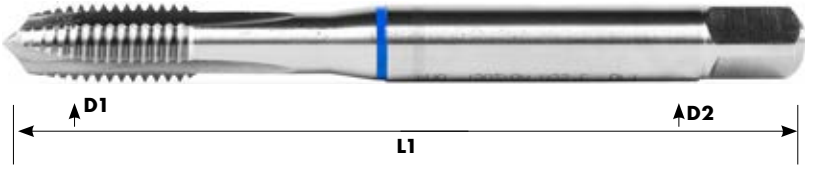
Special geometry:
- Low wear
- Better chip removal
- More accurate thread

Application areas:
Unalloyed steels and tempering steels up to approx. 1000 N/mm strength, machining steels, brass, long-chipping, steel castings, aluminum above 10% Si, zinc alloy, synthetics, copper, gunmetal.

++ Good suitability + Limited suitability

Material groups	Material Designations Examples	Cutting speed V = m/min	Speed at Ø					Blue Ring	
			3	5	8	12	18	653...	653.0
Unalloyed steels up to 800 N/mm2	C10, C35, CK10, CK35, 9S20, 9SMn28, 9SMnPb36, St33-, ST60-2	10-15	1062-1592	637-955	398-597	295-398	199-299	++	++
Unalloyed steels up to 1000 N/mm2 Tempering steels	C45, C60, CK45, CK60, 16MnCr5, 45S20, 60S20, 41Cr4, 36Mn5, 42CrMo4, C60W3/C135W2	4-10	425-1062	255-637	159-398	106-295	71-177	++	++
Alloyed tool steels, rust and acid resistant steels	14NiCr18, 54NiCrMoS6, X10Cr13, X100CrMoV51	4-8	425-849	255-509	159-318	106-212	71-142	+	+
Steel casting, annealed cast iron, nodular graphite iron	GS-38, GS-45, GS-70, GTW35, GTW60, GTS35, GTS70, GGG38, GGG45, GGG70	6-12	637-1274	382-764	239-478	159-318	106-212	++	++
Copper	F-Cu, SF-Cu	15-20	1592-2123	955-1274	597-796	398-531	299-354	+	+
Electrolytic copper	KE-Cu, E-Cu	8-15	849-1592	509-955	318-597	212-398	142-299		+
Brass, long- chipping	CuZn37 (Ms63), CuZn10, CuZn30	15-20	1592-2123	955-1274	597-796	398-531	299-354	++	+
Bronze, soft, gunmetal Tin bronze	G-CuSn10Zn, CuSn8 (SnBz8), G-CuSn5ZnPb(Rg5), (Rg10)	5-12	531-1274	318-764	199-478	133-318	88-212	++	+
Bronze, hard	CuAl8(AlBz8), CuAl10(AlBz10Ni), Eterna bronze, beryllium bronze	5-10	531-1062	318-637	199-398	133-265	88-177	+	
Al alloy < 10%	G-AlSi6Cu4, G-AlSi10Mg, Si G-AlSi5Cu1	18-20	1911-2123	1146-1274	717-796	478-531	318-354	+	
Al alloy < 10%	G-AlSi12, GD-AlSi12, Si AlSi12CuNi	14-16	1486-1699	892-1019	557-637	372-425	248-283	++	++
Zinc alloy	GD-ZnAl4, GD-ZnAl4Cu1, GK-ZnAl4Cu3, GK-ZnAl6Cu1	20-25	2123-2654	1274-1592	796-955	531-663	354-442	+	

TAPPING MACHINE TAPS HSS-E

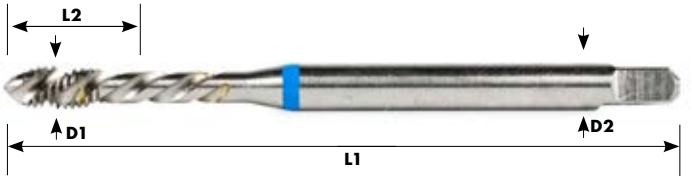


Ø = D1	Pitch	D2	L1	L2	Square size mm	Art No.	P. Qty.
M5	0.8	6.0	70	14	4.9	**653.5**	1
M6	1.0	6.0	80	16	4.9	**653.6**	
M8	1.25	8.0	90	18	6.2	**653.8**	
M10	1.5	10.0	100	20	8.0	**653.10**	

Through hole

Technical Data	
Surface	Bright
Groove	Straight grooved
Relief grinding	Flanks relief ground
Shaft	Up to M10 reinforced shaft, from M12 overrun shaft
Centering	Up to M5 solid tip, M6 - M10 turned tip, from M12 interior centering
Thread depth	M2.5 approx. 2.5 x d; M3-M10 approx. 3 x d1; from M12 approx. 3 x d1
Chamfer	4-5 turns, curling tap

TAPPING MACHINE TAPS HSS-E



Ø = D1	Pitch	D2	L1	L2	Square size mm	Art No.	P. Qty.
M4	0.7	4.5	63	8	3.4	**653.04**	1
M5	0.8	6.0	70	10	4.9	**653.05**	
M6	1.0	6.0	80	12	4.9	**653.06**	
M8	1.25	8.0	90	15	6.2	**653.08**	

Plug hole

Technical Data	
Surface	Bright
Groove	40° right grooved
Relief grinding	Flanks relief ground
Shaft	Up to M10 reinforced shaft, from M12 overrun shaft
Centering	Up to M5 solid tip, M6 - M10 turned tip, from M12 interior centering
Thread depth	approx. 3 x d1
Chamfer	short, 2-3 turns

EUROPEAN-STYLE METRIC HAND TAPS

These hand taps are designed for a gradual multi-step tapping process. This tapping process is easier and results in less crooked threads and a more precise finish.

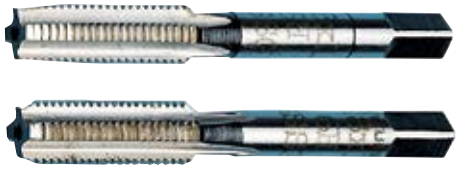
- **First:** This tap is for preliminary cutting of threads. It creates a partial cut, and must be followed by the Finishing tap to complete the thread cutting.
- **Finishing:** This tap is for final thread cutting and is a required step when using the First tap. It results in a fully finished thread.
- Specially designed for high speed, close tolerance tapping applications
- Can be used with a variety of ferrous and non-ferrous materials, in through or blind holes

Applications:
- Ideal for brass or cast iron fittings.
- Suitable for engine or brakes; specifically for making threads for bolts.

Assortment
Hand Tap Set - 21 pcs.
Art. No. 639.01
1 set of First, Second and Finishing metric coarse taps for each of M3, M4, M5, M6, M8, M10, M12.

DIN 352 HSS
Taps for metric ISO threads (metric "coarse") according to DIN 13

Thread Ø mm	Pitch	Length	Thread length	Shank Ø	Square Shank	First Art. No.	Finishing Art. No.	P. Qty.
M6	1mm	50mm	16mm	6mm	4.9mm	**640.1..6**	**640.3..6**	1
M8	1.25mm	56mm	22mm	6mm	4.9mm	**640.1..8**	**640.3..8**	
M10	1.5mm	70mm	24mm	7mm	5.5mm	**640.1..10**	**640.3..10**	
M12	1.75mm	75mm	29mm	9mm	7mm	**640.1..12**	**640.3..12**	
M14	2mm	80mm	30mm	11mm	9mm	**640.1..14**	**640.3..14**	
M16	2mm	80mm	32mm	12mm	9mm	**640.1..16**	**640.3..16**	



DIN 2181 HSS
For metric ISO fine threads according to DIN 13

Thread Ø mm	Pitch	Length	Thread length	Shank Ø	Square Shank	First Art. No.	Finishing Art. No.	P. Qty.
M8	1mm	56mm	22mm	6mm	4.9mm	**642.18.1**	**642.38.1**	1
M10	1mm	63mm	20mm	7mm	5.5mm	**642.110.1**	**642.310.1**	
M10	1.25mm	70mm	24mm	7mm	5.5mm	**642.110.125**	**642.310.125**	
M12	1mm	70mm	22mm	9mm	7mm	**642.112.1***	**642.312.1***	
M12	1.25mm	70mm	22mm	9mm	7mm	**642.112.125**	**642.312.125**	
M12	1.5mm	70mm	22mm	9mm	7mm	**642.112.15***	**642.312.15**	
M14	1.25mm	70mm	22mm	11mm	9mm	**642.114.125**	**642.314.125**	
M14	1.5mm	70mm	22mm	11mm	9mm	**642.114.15**	**642.314.15**	
M16	1.5mm	70mm	22mm	12mm	9mm	**642.116.15***	**642.316.15**	

* **Available OnDemand**

STANDARD HIGH SPEED STEEL HAND TAP

Straight Flute hand Taps

High Speed Steel Material
Bronze Oxide Coating/Finish
Chamfer: Taper = 7 -10 threads long
Plug = 3 - 5 threads long
Bottoming: 1-2 threads long
P. Qty. 1

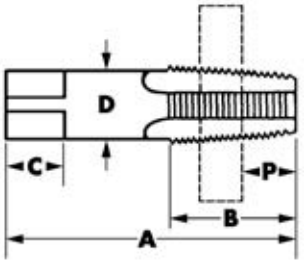
Coarse Thread (UNC)				
Type	**Size**	**No. of Flutes**	**Drill size**	**Art. No.**
Bottoming	1/4-20"	4	7	**640.711420**
	5/16-18"	4	F	**640.715618**
	3/8-16"	4	5/16	**640.713816**
	7/16-14"	4	U	**640.717614***
	1/2-13"	4	27/64	**640.711213**
Plug	6-32"	3	36	**640.81632**
	8-32"	4	29	**640.81832**
	10-24"	4	25	**640.811024**
	1/4-20"	4	7	**640.811420**
	5/16-18"	4	F	**640.815618**
	3/8-16"	4	5/16	**640.813816**
	7/16-14"	4	U	**640.817614**
	1/2-13"	4	27/64	**640.811213**
	5/8-11"	4	17/32	**640.815811**
	3/4-10"	4	21/32	**640.813410**
Taper	1/4-20"	4	7	**640.911420**
	5/16-18"	4	U	**640.915618**
	3/8-16"	4	5/16	**640.913816**
	7/16-14"	4	U	**640.917614**
	1/2-13"	4	29/64	**640.911213**

Fine Thread (UNF)				
Type	**Size**	**No. of Flutes**	**Drill size**	**Art. No.**
Bottoming	1/4-28"	4	3	**640.721428***
	5/16-24"	4	I	**640.725624***
	3/8-24"	4	Q	**640.723824***
	7/16-20"	4	25/64	**640.727620***
	1/2-20"	4	29/64	**640.72220***
Plug	10-32"	4	21	**640.811032**
	1/4-28"	4	3	**640.821428**
	5/16-24"	4	I	**640.825624***
	3/8-24"	4	Q	**640.823824***
	7/16-20"	4	25/64	**640.827620***
	5/8-18"	4	37/64	**640.825818**
	3/4-16"	4	11/16	**640.823416**
Taper	1/4-28"	4	3	**640.921428***
	5/16-24"	4	I	**640.925624**
	3/8-24"	4	Q	**640.923824***
	7/16-20"	4	25/64	**640.927620**
	1/2-20"	4	29/64	**640.92220**

* **Available OnDemand**

Tip: Straight Flute taps can be used for Through Holes or Blind Holes

NPT TAPER PIPE TAPS



NPT taper pipe taps made of high speed steel for tapping pipe fittings of couplings.

Features:
- High speed steel
- Bronze Oxide surface treatment for easier tapping, higher speeds and greater abrasion resistance
- Precision ground cutting surfaces for precise thread production

Technical data:
- Material: High Speed Steel
- Coating/Finish: Bronze Oxide

Thread Dia./ Pitch	Thread	# of Flutes	Overall Length (A)	Flute Length (B)	Square Length (C)	Shank Diam. (D)	Projection (P)	Art. No.	P. Qty.
1/8"-27	NPT	4	2-1/8"	3/4"	3/8"	0.4375"	0.312"	**640.71250**	1
1/4"-18	NPT	4	2-7/16"	1-1/16"	7/16"	0.5625"	0.459"	**640.71251**	1
3/8"-18	NPT	4	2-9/16"	1-1/16"	1/2"	0.7000"	0.454"	**640.71252**	1
1/2"-14	NPT	4	3-1/8"	1-3/8"	5/8"	0.6875"	0.579"	**640.71253**	1
3/4"-14	NPT	5	3-1/4"	1-3/8"	11/16"	0.9063"	0.565"	**640.71254**	1

HIGH SPEED STEEL TAP

Size	Thread	No. of Flutes	Drill size	Art. No.	P. Qty.
1/4-20"	NC	2	7	**641.14.20**	1
1/4-28"	NF	2	3	**641.14.28**	
5/16-18"	NC	2	F	**641.516.18**	
5/16-24"	NF	2	I	**641.516.24**	
3/8-16"	NC	3	5/16	**641.38.16**	
3/8-24"	NF	3	Q	**641.38.24**	
7/16-14"	NC	3	U	**641.716.14***	
7/16-20"	NF	3	25/64	**641.716.20**	
1/2-13"	NC	3	27/64	**641.12.13**	
1/2-20"	NF	3	29/64	**641.12.20**	
6-32"	NC	2	36	**641.6..32**	
8-32"	NC	2	29	**641.8..32**	
10-24"	NC	2	25	**641.10.24**	
10-32"	NF	2	21	**641.10.32**	

* **Available OnDemand**

Spiral Point Tap

- Bronze oxide surface treatment for easier tapping, higher speeds and greater abrasion resistance
- Precision ground cutting surfaces for precise thread production
- Prevents thread damage by forcing chips ahead of the cutting action, reducing chip loading in the flutes
- For use in through holes
- Chamfers: 3-5 threads long

MACHINE TAP HSCO TIALN (RED RING)

ZEBRA®

Thread Type x Nominal Diameter	Pitch (mm)	Thread Length (mm)	Length (mm)	Art. No.	P. Qty.
M14	2.0	24	110	**654.014**	1
M20	2.5	30	140	**654.20**	

This long service life screw tap is designed for machining tough materials with extremely high strengths from 1000 up to 1400 N/mm².

Features:

- High end TiALN
- Cylindrical shank with square drive
- DIN 371/376
- Specifically developed for thread cutting
- Extremely high heat resistance – up to 800°C
- Multi-layer design with additional lubricant coating ensures low friction, low adhesion and optimum chip removal

Applications:

- Excavator shovels, lorry attachments, armour plating, snow ploughs, agricultural machinery, etc.
- Alloyed tempering steels, nitriding steels, tool steels, high speed steels, special alloys, Hardox, spring steels, etc.

THUNDERTAP® & THUNDERBIT® SET

Art. No. 627.640627

18 pieces, contains 9 taps and 9 matching drills

- A high-performance drilling and tapping solution for iron, steel and stainless steel materials
- Industrial quality
- Bronze oxide surface treated taps for faster, easier thread production and greater abrasion resistance
- M-7 industrial grade steel drills for longer life and superior heat resistance
- Unique flute design for increased material removal
- 135° split-point for quick penetration and reduced "walking"

Set Contents: 6-32 NC - #36, 8-32NC - #29, 10-24NC - #25, 10-32NF - #21, 1/4-20NC - #7, 5/16-18NC - F, 3/8-16NC - 5/16, 7/16-14NC - U, 1/2-13NC - 27/64.

ASSORTMENTS

Premium Tap & Die Set
HSS M3-M12 - 44 pcs.
Art. No. 5964.065200

CONICAL COUNTERSINK SET

Countersink range in mm	Head Dia. in mm	Total length in mm	Shank dia in mm
2 - 5	10	45	6
5 - 10	14	48	8
10 - 15	21	65	10
15 - 20	28	85	12

Art. No. 694.02101

HSS-E, 90° with diagonal hole

Features:

- One each of the countersink ranges 2-5, 5-10, 10-15, 15-20mm
- CBN (cubical boron nitride), deep ground
- For deburring 90° countersinks
- Suitable for almost all materials
- The even-running cone-envelope relief grinding results in a light, paring cut
- Even, chatter-free, burr-free & high surface quality via chip removal in the shank direction via angled drilling
- Speed table included
- Increase in service life & cutting power when used with Eco Cutting & Drilling Oil **Art. No. 893.050012**

Contents:

- One each of the countersink ranges 2-5, 5-10, 10-15, 15-20mm

Standard speed values for Conical Countersinks with diagonal hole					
Material	**Non - ferrous metal**	**Steel sheets soft, e.g. St 4 - St 37**	**Plastics, Duroplast, Thermoplast**	**Cast iron up to 250 N/mm²**	**Aluminum alloys**
Cutting speed m/min.	20	15	15 - 20	10	25
dia. in mm	n = rpm	n = rpm	n = rpm	n = rpm	n = rpm
2 - 5	900 - 1200	600 - 900	900 - 1200	500 - 700	1200 - 1600
5 - 10	500 - 700	300 - 500	500 - 700	300 - 400	700 - 900
10 - 15	300 - 500	250 - 300	300 - 500	200 - 300	500 - 700
15 - 20	200 - 300	150 - 250	200 - 300	100 - 200	300 - 500

COUNTERSINK SET

Art. No. 694.01701

90°, with triple cutting edges

Features:

- One each of ø 6.3, 8.3, 10.4, 12.4, 16.5, 20.5 mm
- HSS, for standard, commercial steels
- DIN 335, type C (round shaft)
- CBN (cubical boron nitride) deep ground
- Deburring and countersinking in one go
- Special grinding of the tool allows for chatter-free handling,smooth surface structure, excellent burr removal and extended tool life
- Speed table enclosed
- Extend tool life and improve cutting performance by using Würth Drilling and Cutting Oil Eco **Art. No. 893.050012**

Contents:

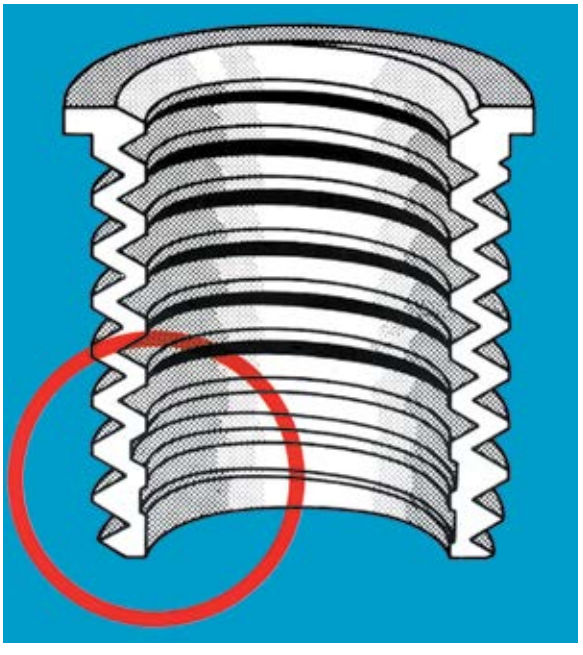
- One countersink bit each of ø 6.3, 8.3, 10.4, 12.4, 16.5, 20.5 mm

Standard speed values for countersinkers

Medium	For general construction steel 900 N/mm² St 32- St 70 cast iron, non-ferrous metals
Cutting speed m/min.	10 - 15
ø mm	n = r.p.m.
6.3	500 - 800
8.3	400 - 600
10.4	300 - 500
12.4	250 - 400
16.5	200 - 300
20.5	150 - 250

Countersink ø mm	for counter sunk screws	Total length mm	Shank ø mm
6.3	M 3	45	5
8.3	M 4	50	6
10.4	M 5	50	6
21.4	M 6	56	8
16.5	M 8	60	10
20.5	M 10	63	10

TIME-SERT®



For perfect thread reinforcement and renewal as used on series production and repair

Convincing Advantages

- TIME-SERT® is based on steel instead of wire inserts. It guarantees easy installation and allows for permanent full load use.
- TIME-SERT® is thin walled due to synchronized internal and external threads. Its thin cross-section allows for installation in areas of limited space and clearance material.
- TIME-SERT® is self locking due to forming of the component threads when inserted. The bushing will not pull torque out even when inserted or removed often.
- TIME-SERT® is media tight, i.e. by mating internal and external threads the thread is sealed against water, oil, other liquids and compressed gas.
- TIME-SERT® has a collar which allows for exact positioning in the material.

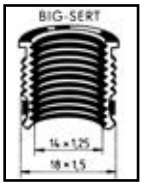
Application Areas

Engine: Spark plug thread/stud thread
Aggregates: Fastenings of Servo pump/alternator/air conditioning
Transmission: Transmission cover and mountings
Differentials: Studs, Axles: Fastenings, mountings, Chassis, Body

1) TIME-SERT® insert.
2) Thin wall with synchronized internal and external thread.
3) Insertion tool position prior to insertion action.
4) Base material with cut thread and milled seat.
5) Threads of the lower section are not fully formed.
6) The insertion tool will form these unfinished threads and presses the TIME-SERT® insert firmly into the base material without the fear of pull out or torque out.

Recommended by Leading Car Manufacturers

BIG-SERT®- SPARK PLUG THREAD REPAIR



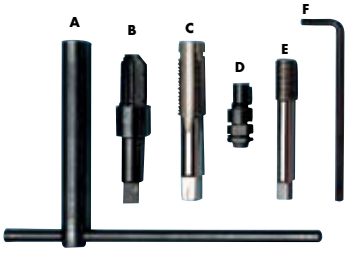
Size mm	Thread Pitch	Washer Seat Insert Length		Kit	Inserts
		Inches	mm	Art. No.	Art. No.
M14	1.25	.370	9.4	699.1700	699.1710
		.600	15		699.1712
		.660	16.8		699.1713

To be used if repair with TIME-SERT® is no longer possible. Threads which have been previously repaired or cut too big can be renewed with the BIG-SERT® insert.

The BIG-SERT® insert comprises a 4-fold torque lock out. The BIG-SERT® external thread is M18 x 1.5, the internal thread M 14 x 1.25. Maximum diameter for repair should be 16.3 mm or .640" respectively.

The lower portion of the threads comprise grooves for 4 metal pins. When inserting the insert these pins are pressed outwards into the base material. The locking effect of these pins guarantees 100 % safety against torque-out of the insert.

BIG-SERT® Spark Plug Repair Kit, M14 x 1.25
Art. No. 699.1700



Kit tools:
A: Wrench with T-Bar
B: Reamer
C: Tap
D: Locating Tap
E: Insertion Tool
F: Socket Head Wrench

Note: BIG-SERT® Spark Plug Repair Kit **Art. No. 699.1700** , does not include inserts and must be ordered separately.

TIME-SERT®- SPARK PLUG KITS & INSERTS

Washer Seat Insert

Taper Seat Insert

Contents:
1 Step Tool
1 Wrench
1 Seat Cutter
1 Insert Driver

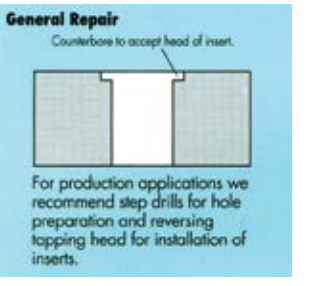
Note: Inserts must be ordered separately.

Size	Thread Pitch	Washer Seat Inserts			Taper Seat Insert			Kit
		Insert Length		Insert	Insert Length		Insert	
		mm	Inches	Art. No.	mm	Inches	Art. No.	Art. No.
10	1.0	9.0	.360	699.1180*	-	-	-	-
12	1.25	9.0		699.1182*	-	-	-	
		15.0	.600	699.1184*	-	-	-	
14		7.0	.270	699.1186*	-	-	-	699.1144
		8.0	.320	699.1188*	-	-		
		9.4	.370	699.1190	-	-	-	
		11.0	.430	699.1192	-	-	-	
		15.0	.600	699.1194	15.7	.620	699.1199	
		16.8		699.1196	-			

Spark Plug						
Insert		Drill		Counterbore		Tap
Insert (mm)	Thread Pitch	Drill	Diameter	Min Dia.	Min. Depth.	Major Dia.
10	1.0	Y	0.0404	0.461	0.067	0.445
12	1.25	31/64	0.484	0.484	0.073	0.540
14		9/16	0.562	0.562	0.073	0.619

* **Available OnDemand**

TIME-SERT®- UNIVERSAL KITS AND INSERTS - METRIC



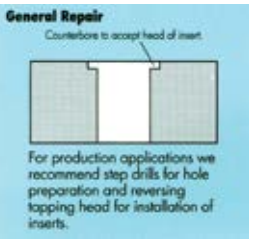
Replacement Parts					
Tool Size	**Thread Pitch**	**Drill**	**Counter Bore**	**Tap**	**Driver**
6	1.0		**699.5010***		**699.9010**
8	1.25	**699.3020***	**699.5020***	**699.7020**	**699.9020**
10	1.5	**699.3030***	**699.5030***	**699.7030**	**699.9030**
12	1.75	**-**	**699.5040***	-	-
14	1.5	**699.3050***	-	**699.7050**	-

Technical Data						
Metric						
Insert		**Drill**		**Counterbore**		**Tap**
Threads (mm)	**Thread Pitch**	**Drill**	**Diameter**	**Min. Dia.**	**Min. Depth**	**Major Dia.**
4	0.7	#19	0.166	0.226	0.075	0.194
5	1.0	#8	0.199	0.279		0.238
6		Drill	0.246	0.319		0.290
8		L	0.323	0.351	0.080	0r.330
	1.25	P		0.419		0.369
		P				0.381
10		13/32	0.406	0.440		0.422
	1.00			0.466	0.085	0.349
	1.25			0.500		0.463
	1.50	29/64	0.453			0.474
12	1.25			0.542		0.503
	1.50	31/64	0.484	0.552		0.516
	1.25			0.560		0.540
	1.50			0.595		0.552
	1.75	1/2	1/2	0.605	0.110	0.567
14	1.50	37/64	37/64	0.668		0.634
16	1.50	21/32	0.656	0.743	0.130	0.713
	2.0			0.787	0.115	0.741
18	1.50	23/32	0.718	0.837	0.125	0.794

Metric Inserts (Shaded areas indicate inserts supplied with the kit)					
Size (mm)	**Thread Pitch**	**Insert Length**		**Insert**	**Kit**
		Inches	**mm**	**Art. No.**	**Art. No.**
4	0.7	.240	6.0	**699.1098**	**699.1003**
5	0.8	.300	7.6	**699.1100**	**699.1002**
		.400	10.0	**699.1102**	
6	1.0	.370	9.4	**699.1104**	**699.1004**
		.470	12.0	**699.1106**	
7		.550	14.0	**699.1109***	-
8		.460	11.7	**699.1110**	**699.1006**
	1.25	.460	11.7	**699.1112**	**699.1008**
		.640	16.2	**699.1114**	
9		.510	13.0	**699.1115**	**699.1019**
		.710	18.0	**699.11151***	
10	1.0	.360	9.0	**699.1111**	**699.1009**
		.600	15.0	**699.1113**	
	1.25	.550	14.0	**699.1116**	**699.1010**
		.650	16.2	**699.1118**	
		.800	20.0	**699.1120**	
	1.5	.550	14.0	**699.1122**	**699.1012**
		.800	20.0	**699.1124**	
		.960	24.5	**699.1126**	
11		.630	16.0	**699.1127***	**699.1013**
		.870	22.0	**699.1128**	
		1.18	30.0	**699.11285**	
12	1.25	.600	15.0	**699.1129**	**699.1015**
	1.5	.360	9.0	**699.1130**	**699.1014**
		.650	16.2	**699.1131**	
		.950	24.0	**699.1132**	
	1.75	.640	16.2	**699.1134**	**699.1016**
		.950	24.0	**699.1136**	
14	1.5	.260	6.6	**699.1137**	**699.1018**
		.370	9.4	**699.1138**	
		.500	12.7	**699.1139**	
		.700	17.8	**699.11392**	
		1.100	28.0	**699.11393**	
16	1.5	.500	12.7	**699.11396**	**699.10185**
	2	.945	24	**699.1401**	**-**
18	1.5	.720	18.3	**-**	**699.10187**

* **Available OnDemand**

TIME-SERT®- UNIVERSAL KITS AND INSERTS - STANDARD



Technical Data: Imperial UNIC and UNF						
Insert		Drill		Counter Bore		Tap
Thread	Thread Pitch	Drill	Diameter	Min. Dia.	Min. Depth.	Major Dia.
#6	32	#26	0.147	0.218	0.070	0.182
#8	32	#17	0.173	0.241	0.065	0.208
#10	24	13/64	0.203	0.288	0.075	0.247
	32			0.274		0.234
1/4	20	17/64	0.265	0.352		0.319
	28	G	0.216	0.340		0.300
5/16	18	21/64	0.328	0.430	0.085	0.388
	24	P	0.323	0.410	0.080	0.368
3/8	16	X	0.323	0.495	0.085	0.460
	24	W	0.386	0.473	0.080	0.432
7/16	14	29/64	0.453	0.571	0.110	0.534
	20			0.547	0.085	0.506
1/2	13	33/64	0.515	0.648	0.110	0.604
	20			0.610	0.085	0.569
9/16	12	19/32	0.593	0.711	0.130	0.675
	18	37/64	0.578	0.668	0.110	0.638
5/8	11	21/32	0.656	0.787	0.135	0.748
	18	41/64	0.640	0.740	0.110	0.701
3/4	10	25/32	0.765	0.953	0.135	0.885

Replacement Parts					
Tool Size	Thread Pitch	Drill	Counter Bore	Tap	Driver
1/4	20	**699.2010***	**699.4010***	**699.6010***	-
5/16	18	**699.2020***	**699.4020**	**699.6020**	**699.8020**
3/8	16	**699.2030***	**699.4030**	**699.6030**	
7/16	14	-	**699.4040***	**699.6040***	**699.8040***
1/2	13	-	-	**699.6050***	**699.8050**

Standard Inserts (Shaded areas indicate inserts supplied with the kit)					
Size	Threads per Inch	Insert Length		Insert	Kit
		Inches	mm	Art. No.	Art. No.
#8	32	.250	6.3	-	-
#10	24	.370	9.4	**699.1605***	-
1/4	20	.380	9.4	**699.1607**	**699.1506**
		.500	12.7	**699.1608**	
	28	.380	9.4	**699.1609***	-
5/16	18	.450	11.4	**699.1611**	**699.1508**
		.620	15.7	**699.1612**	
	24	.520	11.4	**699.1613***	**699.1509**
		.620	15.7	**699.1614***	
3/8	16	.520	13.2	**699.1615**	**699.1510**
		.620	15.7	**699.1616**	
		.750	19.0	**699.1617**	
	24	.520	13.2	**699.1618**	**699.1511**
7/16	14	.600	15.2	**699.1620**	**699.1512**
		.870	22.0	**699.1621**	
	20	.600	15.2	**699.1622***	**699.1513**
1/2	13	.650	16.5	**699.1623**	**699.1514**
		1.000	25.4	**699.1624**	
	20	.650	16.5	**699.1626**	
5/8	11	.850	21.6	**699.1627**	**699.1516**
	18	.850	21.6	-	**699.1518**

* **Available OnDemand**

MASTER SETS

Art. No. 964.9617

Threads sizes: M5 / M6 / M8 / M10 / M12

- Metric coarse thread
- Inserts and tools for 5 sizes with 2 different lengths of inserts

Thread Ø x pitch x length, mm	
M5 x 0.8 x 7.6	M8 x 1.25 x 16.2
M5 x 0.8 x 10.0	M10 x 1.5 x 14.0
M6 x 1.0 x 9.4	M10 x 1.5 x 20.0
M6 x 1.0 x 12.0	M12 x 1.75 x 16.2
M8 x 1.25 x 11.7	M12 x 1.75 x 24.0

Art. No. 699.0100

Thread sizes: 1/4-20, 5/16-18, 3/8-16, 7/16-14,1/2-13

- Inch coarse thread
- Each kit includes 5 complete tool kits with 20 inserts per kit (10 long and 10 short) for a total of 100 inserts

OEM TIME-SERT® THREAD REPAIR KITS

Art. No. 699.5553

Ford Triton Spark Plug Kit

Insert size: M14 x 1.25 x 16.8 mm
Replacement inserts:
Art. No. 699.1800
Contains: 1 wrench, 1 reamer, 1 tap, 1 driver, 1 setting tool, 1 hex key 3/16, 1 hex key 1/8, 1 sealer, 5 Triton inserts.
- 1.9/3.8/4.6/5.4/6.8 litre 2 valve or 4 valve heads

Note: Not recommended for holes larger than .660" or 16.8 mm

Art. No. 699.2200

Toyota Head Bolt Repair Kit

Insert size: M11 x 1.50 x 30mm
Replacement inserts:
Art. No. 699.11285
- Universal head bolt repair for Toyota
- Coredrill - 7-1/2" OAL
- Tap - 6" OAL
- Driver - 6" OAL

SABRE SAW BLADES

*** High performance saw blade for extreme applications, high cutting rates and long service life
** Excellent saw blade for heavy duty use
* Good standard saw blade for conventional applications

Important note

Cooling using Würth Cutting Oil, **Art. No. 893.050004**, extends the service life of metal sabre saw blades. With stainless steel sabre saw blades, cool, reduce number of strokes and switch off pendulum.

1/2" Universal shaft to fit in sabre, Recipro and Tiger saws manufactured by Würth, Atlas Copco, Black & Decker, Bosch, DeWalt/Elu, Fein, Flex, Hitachi, Holz-Her, Makita, Metabo, Millers-Falls, Milwaukee, Rems, Ridgid, Rockwell, Roller and Skil

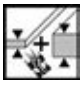
Recommended area of application for metal blades:

Teeth spacing (in mm)	
1.0	Metals, sheet metal, pipes and profiles <1.5mm
1.4	Metals, sheet metal, pipes and profiles < 3.0mm
1.8	Metals, sheet metal, pipes and profiles 3-8mm
1.8-2.6	Metals, sheet metal, pipes and profiles 3-10mm
2.9-3.2	Metals, pipes and profiles 4-12mm

Special blades for special areas of application

Heavy Duty for solid, thick workpieces of 3-10 mm. Ideal for more demanding applications, e.g. thick metal sheets and pipes.

Demolition for demolition and rescue work, material thickness 4-12 mm. Ideal for working with a pipe bracket. A right-angled cut is ensured by the extremely thick blade thickness of 1.6 mm.



Multi Blade with progressive tooth pitch for thin and thick materials for particularly fast cutting.

Colour Code System:
- Using the four very different colours you will always find the right sabre saw blade for your application

Star System:
- Three application-optimized quality stages
- Exactly the right strip saw blade for every application
- Optimized combination of material, tooth spacing and saw blade
- Outstanding cutting results

Wood | Metal | Constr./ Universal | Stainless Steel

SABRE SAW BLADE INFORMATION

Material	Quality	Art. No.	Pack Qty.		Tooth spacing in mm and inches	Overall length in mm and inches	Thickness in mm
Wood	***	615.815030	1=5		3.6-5.1	150 6″	1.25
		615.820340	1=5		2-4	200 8″	1.25
	**	608.03022	1=5		4.0 6 tpi	150 6″	1.25
		615.830040	1=5		3.6/5.1 5-7 tpi	305 12″	1.25
Metal	***	615.915029	1=5		2.5/3.2 8/10 tpi	150 6″	1.6
		615.920314	1=5		1.4 18 tpi	200 8″	1.25
		615.920326	1=5		1.8/2.6 10/14 tpi	200 8″	1.25
		615.922829	1=5		2.5/3.2 8/10 tpi	228 9″	1.6
	**	615.910010	1=5		1.0 24 tpi	100 4″	0.9
		615.915010	1=5		1.0 24 tpi	150 6″	0.9
		615.915014	1=5		1.4 18 tpi	150 6″	0.9
		615.915026	1=5		1.8/2.6 10/14 tpi	150 6″	0.9
		615.922814	1=5		1.4 18 tpi	228 9″	0.9
		615.922826	1=5		1.8/2.6 10/14 tpi	228 9″	0.9
		615.930526	1=5		1.8/2.6 10/14 tpi	305 12″	0.9

SABRE SAW BLADE INFORMATION

Material	Quality	Art. No.	Pack Qty.		Tooth spacing in mm and inches	Overall length in mm and inches	Thickness in mm
Construction	***	**615.720325**	1=5		2.54 10 tpi	200 8″	0.9
		615.720332	1=5		2.1-3.2 8-12 tpi	200 8″	1.25
		615.722842	1=5		4.3 6 tpi	150 9″	1.6
		615.730585	1=2		8.5 3 tpi	305 12″	1.5
Stainless Steel	***	**615.911614**	1=3		1.4 18 tpi	228 4.5″	1.25

Art. No.	Bosch	Berner	BTI	De Walt/ Elu	D + N	Hitachi (Eur.)	Lenox	Makita	Metabo	Milwaukee	Morse	Wilpu
608.03022	S 644 D	-	-	35406	-	750 053		05000	31473	1064	-	3020/150
615.720325	S 1022 HF	-	-	-	11 10 24	-	-	-	-	-	-	-
615.720332	S 1012 VF	-	-	-	-	-	-	-	-	-	-	-
615.722842	S 1110 DF	-	-	-	-	-	-	-	-	-	-	-
615.730585	S 1241 HM	-	R-HM 225/85	-	11 20 06	-	-	05050	31146	-	RTCT 1203	3041/300HM
615.815030	S 611 VF	R-HK 3-5/150 G KU	-	DW 4802	11 22 70	-	656 R	-	-	-	-	-
615.820340	S 2345 X	Protec Bi HK	Tornado R-H	-	11 20 55	-	-	-	-	-	-	-
615.910010	S 522 AF	R-HK 4.0/ 305 G	SR-H 300/42	DW 4804 35440	11 22 72	750 054	156 R	-	-	5037/3037	RB 125006	3021/300bi
615.911614	S 518 EHM	-	-	-	-	-	-	-	-	-	-	-
615.915010	S 922 AF	-	R-M 150/10	DW 4813	11 10 21	750 066	624 R	04905	31453	5186	RB 624	3015/150
615.915014	S 922 EF	-	R-M 150/14	DW 4811 35431	11 10 20	983 6027Z	618 R	04880	31454	5184	RB 618	3014/150
615.915026	S 922 VF	-	R-M 150/1824	DW 4806B 35423	11 10 22	-	610 R	-	31492	-	RB 1010	1014 C/150
615.915029	S 920 CF	R protec S 150	Mammut R-M	-	-	-	-	-	-	-	-	3001/150
615.920314	S 1025 EF	-	-	-	-	-	6518 R (6″)	-	-	-	-	-
615.920326	S 1025 VF	-	-	-	-	-	650 R (6″)	-	-	-	-	-
615.922814	S 1122 EF	-	R-M 200/14	-	11 10 26	750 063	818 R	-	31493	5188	RB 818	3014/250
615.922826	S 1122 VF	-	R-M 200/1824	-	11 10 35	-	-	-	31495	-	-	1014 C/ 225
615.922829	S 1020 CF	R protec S 230	Mammut R-M	-	-	-	-	-	-	-		3001/200
615.93052	S 1222 VF	-	-	-	-	-	110 R	-	-	-	-	-

SABRE SAW BLADE INFORMATION

● Particularly well suited
○ Suitable

		Art. No.	Hardwood, softwood	Green wood	Chip boards	Fiber boards with synthetic coating	Plywood	Glued wood	Wood with nails	Wood with metal	Window construction	Thin sheet metal	Thick sheet metal	Sheet metal profiles and pipes	Metal profiles and pipes	Stainless steel, sheet metal and profiles
Wood	***	615.815030	○		○		○			●	●					
		615.820340 [A]	●		●	●	●	●								
	**	608.03022	●		●	●	●									
		615.830040	●		●		●		●							
Metal	***	615.915029											●		●	
		615.920314										●	○	●	○	
		615.920326											●		●	
		615.922829											●		●	
	**	615.910010										●		●		
		615.915010 [B]										●		●		
		615.915014										●		●		
		615.915026								●			●		●	
		615.922814 [C]														
		615.922826 [D]								●			●		●	
		615.930526 [E]								●			●		●	
Construction	**	615.715242														
	***	615.720325							●				○			
		615.720332	●					●		●					○	
		615.722842	●		●					●						
		615.730585														●
Stainless	***	615.911614														●
		615.915126														

A = with sharpened teeth
B = longer version of 615.910010
C = longer version of 615.915014
D = longer version of 615.915026
E = longer version of 615.922826

SABRE SAW BLADE INFORMATION

Aluminum	Non-ferrous metal	Metal pipes	Steel pipes, cast iron pipes	Sandwich material	Pallets	Porous concrete	Drywall	Fibre cement	Bricks	PVC, general synthetics	Asbestos cement, fibreglass reinforced synthetics	Straight cut	Curved cut	Plunge cut	Flexible and break-proof for flush cuts	Perpendicular cuts	Pipe vise	Fine cuts	Rough cut	Fast cut
										○		X	X	X						X
										●		X		X				X		X
										●			X	X				X		X
												X								X
○	○											X				X	X			
●	●											X								
												X								
○	○											X				X	X			
○	○											X						X		
○	○											X						X		
●	●											X						X		
○	○											X								
●	●											X			X			X		
●	●											X			X					
												X			X					
●	●				●					●		X		X				X		X
○	○										○	X								
				○						●	●									
						●		○	○		○	X							X	
												X								
												X								

JIG SAW BLADE INFORMATION

Special blades

Multi Blade with progressive tooth pitch for thin and thick materials for particularly fast and clean cutting.

- Superb blade for use on the construction site, as the same blade can be used for all situations
- Saves time, as no need for lengthy blade-changing operations

*** High performance saw blade - high cutting performance and long service life
** High-quality jig saw blade for meeting tough requirements
* Good standard blade for conventional applications

No matter how good and easy-cutting a jig saw blade may be, it is constantly exposed to high mechanical and thermal loads that reduce its lifespan.

With stainless steel jig saw blades, first cool, then reduce number of strokes and finally switch off pendulum.

Color Code System:
- Thanks to the four easily distinguishable colours, you will always find the right jig saw blade for your application

Star System:
- Three application-optimized quality stages
- Exactly the right jig saw blade for every application
- The perfect combination of material, tooth pitch and saw blade
- Phenomenal cutting results

Wood	Metal	Constr./ Universal	Stainless Steel

Cooling extends the service life of your Würth jig saw blades

Material to be processed	Coolant
Mild steel, rust-free steel, non ferrous metals	Würth Cutting Oil **Art. No. 893.050004**
Aluminum, aluminum alloys	Turpentine, paraffin, or a mixture turpentine and paraffin.
Cement asbestos, moulded laminate moulding materials, Plexiglas, plastics, insulation materials, rubber	Water (note: avoid all contact with electrical parts)

Material	Attachment	Quality	Art. No.	Pack Qty.		Design	Pitch mm	Total length mm	Toothed length mm	Thickness mm
Wood	**Single cam shaft (T-shaft) suitable for:** Würth STP, AEG, Atlas copco, Bosch, Dewalt/Elu, Festoool, Hilti, Hitachi, Kress, Holzher, Makita, Metabo and Skil	***	**608.116234**	1=5		HCS progressive	2.0-3.0	117	90	1.35
		**	**608.11791***	1=5		HCS sharpened and set	4.0	132	104	1.7
			608.11891*	1=5			4.0	152	126	1.25
			608.11592	1=5		HCS sharpened and conically ground	2.5	100	75	1.35
			608.11690*	1=5			4.0	100	72	1.7
		*	**608.116111²**	1=5			2.5	100	75	1.35
			608.116102*	1=5		HCS corrugated	1.9-2.3	91	66	1.0
			608.116103¹*	1=5			2.0	82	57	1.0
			608.116099	1=5			3.0	100	75	1.25

JIG SAW BLADE INFORMATION

Material	Attachment	Quality	Art. No.	Pack Qty.		Design	Pitch mm	Total length mm	Toothed length mm	Thickness mm
Metal	**Single cam shaft (T-shaft) suitable for:** Würth STP, AEG, Atlas copco, Bosch, Dewalt/Elu, Festool, Hilti, Hitachi, Kress, Holz-her, Makita, Metabo and Skil	***	**608.116123**	1=5		HSS progressive	1.2-2.6	100	75	1.0
			615.05012	1=5		Bimetal corrugated	1.2	90	68	1.0
			615.05015	1=5			0.8	90	68	1.0
			615.05020	1=5			2.0	90	68	1.0
		**	**608.116104**	1=5			2.5	100	75	1.25
		*	**608.116007**	1=5		HSS corrugated	0.7	91	66	1.0
			608.11593	1=5			1.1-1.5	91	66	1.0
			608.116006*	1=5			1.9-2.3	91	66	1.0
Construction		***	**608.116345***	1=5		Bimetal progressive	2.4-5	132	105	1.25
			615.27540*	1=3		Bimetal ground	4.3	100	74	1.25
			615.20540*	1=3			4.3	117	106	1.25
		**	**615.09025**	1=5		Bimetal set	2.5	117	90	1.0
		*	**608.116008A***	1=5		HSS set	3.0	100	75	1.0
			608.116009[1]	1=5			3.0	100	75	1.0
Stainless Steel		***	**615.25010**	1=3		HM ground	1.0	82	57	1.0
			615.25014	1=3			1.4	82	57	1.0

* **Available OnDemand**

1 = specially for scroll saws; A = special blade for aluminum

JIG SAW BLADE INFORMATION

● Particularly well suited
○ Suitable

		Art. No.	Hardwood, soft-wood	Chipboard panels	Plastic-laminated chipboard panels	Plywood	Bonded wood	Wood with nails	Laminate	Thin metal sheets	Thick metal sheets	Stainless steel, metal sheets and metal profiles	Aluminum	Non-ferrous metals	Steel and cast iron pipes
Wood	***	608.116234	●	○	○	●	●								
	**	608.11690	●	○			●								
	**	608.116111	○			●	○								
	**	608.11791	●	●		●	●								
	**	608.11891	●			●	●								
	*	608.116099	●	○		●									
	*	608.116102	○	○		●	○								
	*	608.116103	●	○		●									
Metal	***	608.116123								●	●	○	●	●	
	***	615.05012								●			○	○	
	**	615.05015								●				●	
	**	615.05020									●		○	○	
	*	608.11593								●			○	○	
	*	608.116006									●		○	○	
	*	608.116007								●			○	●	
Construction	***	608.116345	○					●		●	●		○	○	
	***	608.11595													○
	***	615.20540[A]													
	***	615.27540													
	**	615.09025	●					●			○		○	●	
	*	608.116008									○		●	●	
	*	608.116009											○	●	
Stainless	***	615.25010										●			
	***	615.25014										●			

A= conical and finer version of 615.27540

JIG SAW BLADE INFORMATION

Sandwich material	Drywall	Fibre cement	PVC, general plastics	Plexiglas	Asbestos cement, fibreglass reinforced plastics	Corian	Brick, glass, ceramic	Insulating material (polystyrene)	Straight cut	Curved cut	Thick material	Thin material	Fine cut	Coarse cut	Right-angled cut	Fast cut	Bi-Metal
																
									X		X	X	X			X	
			○						X		X		X		X		
									X				X				
									X		X			X	X	X	
									X		X			X		X	
			●						X		X			X		X	
				●					X					X			
			○	○						X							
									X		X	X				X	
				○					X			X					X
				○					X			X					X
				○					X		X						X
				○													
									X		X						
									X			X					
			○						X		X	X				X	X
					●		●		X								
	●	●			●				X		X						
	●	●			●				X		X						
			○						X		X					X	X
			●		○				X		X					X	
			●		○					X	X						
									X			X					
									X			X					

BI-METAL HACKSAW BLADES

ZEBRA QUALITY

Material thickness	No. of teeth	Length (mm)	Width (mm)	Thickness (mm)	Art. No.	P. Qty.
over 2 mm	24	300	13	0.65	**603.30013**	**10**
up to 2 mm	32				**603.300133**	

Length (mm)	Width (mm)	Thickness (mm)	Art. No.	P. Qty.
300	13	0.65	**603.30113**	**10**

No saw blade offers higher cutting capacity and flexibility

- Bi-Metal, high-alloy high speed steel at the toothed edge, toughtool steel for the back
- Most up-to-date manufacturing techniques guarantee unsurpassed quality. Precision electron beams in a high vacuum are used to weld joints.

Standard Tooth Pattern

- High cutting capacity
- Longer service life
- Greater safety

Progressive Tooth Pattern

- High tooth pitch in the starting cut area makes it easy to begin cuts. The "fluttering" of thin materials is substantially reduced
- The low tooth pitch in the remainder of the cutting edge provides for high metal-cutting capacity.

HACKSAW FRAME

Note: Blades sold separately

Art. No. 714.6401

For 300 mm (12") Bi-Metal Hacksaw Blades (Prefix 603)

- Suitable for cutting in the automotive, metal and construction industries
- Suitable for flush cutting due to dual mounting angles
- Aluminum frame with ergonomic grip handle
- Square steel upper tube, incorporating blade storage
- Easy change of the blades, handy, strong and durable

AIR SAW BLADES

High Speed and Long Life cutting blades for Automotive Body Work and sheet metal applications

Features:

- Designed for high speed cutting and long service life
- High quality bi-metal strength
- High Speed Steel teeth provide a strong, long lasting cutting edge
- Bi-metal blades bend and resist breaking and extend blade life
- Specially designed blades for use in pneumatic machine cutting applications
- Enhances overall cutting performance
- Tooth profile reduces the frictional heat that is generated during the cutting process, thus enhancing the overall blade performance

FLAT MOUNTING

1

2

3

4

Item	Material	Min./Max. material thickness (mm)	Teeth per inch	Tooth spacing (mm)	Overall length (mm)	Working length (mm)	Art. No.	P. Qty.
1	For wood, aluminum, composites and plastic	4 - 10	14	1.8	90	77	**696.9141**	10
2	For tight radius cutting in wood, aluminum, composites and plastic		18	1.4	66	53	**696.9181**	
3	For double and triple sheet metals	0.5 - 4	24	1	90	77	**696.9241**	
4	For thin sheet metal and higher-strength steels	0.5 - 1	32	0.8			**696.9321**	

TIP MOUNTING

1

2

3

4

Item	Material	Min./Max. material thickness (mm)	Teeth per inch	Tooth spacing (mm)	Overall length (mm)	Working length (mm)	Art. No.	P. Qty.
1	For wood, aluminum, composites and plastic	4 - 10	14	1.8	96	76	**696.914**	10
2	For tight radius cutting in wood, aluminum, composites and plastic		18	1.4	72	53	**696.918**	
3	For double and triple sheet metals	0.5 - 4	24	1	96	77	**696.924**	
4	For thin sheet metal and higher-strength steels	0.5 - 1	32	0.8			**696.932**	

STARLOCK OSCILLATING BLADES

3 dimensional blade locking system with quick change capability

3D mount (Starlock)
- High power transmission with low wear
- 3x longer service life compared to conventional mount systems
- Much better material removal
- Precise results
- High cutting speeds
- Excellent compatibility with existing mount systems

STARLOCK CARBIDE SAW BLADE

Art. No. 696.121220 1 blade

Extreme cutting performance and long tool life
- High performance saw blade for extremely demanding applications, high cutting and long tool life.

The right immersion depth every time
- Depth scale for monitoring precise immersion depth

Technical Information	
Cutting depth	40mm
Cutting width	32mm
Material	Tungsten Carbide
Saw blade design	Single toothed
Adapter type	Starlock
Material to be processed	Steel, stainless steel, fiberglass, wood with metal

STARLOCK BI-METAL SAW BLADE

Art. No. 696.121410 1 blade

Precise, clean cut
- The slightly curved “clean cut” single toothed blade enables a clean immersion.

The right immersion depth every time
- Depth scale for monitoring precise immersion depth

Technical Information	
Cutting depth	50mm
Cutting width	32mm
Material	Bi-Metal
Saw blade design	Single toothed
Adapter type	Starlock
Material to be processed	Fibreglass, plaster board, glass reinforced plastics, thin sheet metal, wood with metal, softwood, hardwood, coated particle board, veneered particle board, particle board

STARLOCK BI-METAL WIDE SAW BLADE

Art. No. 696.121411 1 blade

Precise, clean cut
- The slightly curved "clean cut" single toothed blade enables a clean immersion.

The right immersion depth every time
- Depth scale for monitoring precise immersion depth

Technical Information	
Cutting depth	40mm
Cutting width	65mm
Material	Bi-Metal
Saw blade design	Single toothed
Adapter type	Starlock
Material to be processed	Fibreglass, plaster board, glass reinforced plastics, thin sheet metal, wood with metal, softwood, hardwood, coated particle board, veneered particle board, particle board

STARLOCK SPATULA

Art. No. 696.121340 1 blade

For replacing silicon joints and removing carpet adhesive and paint residue

Flexible design
- Flexibility allows the spatula to be pressed into a wide variety of positions.

Technical Information	
Cutting depth	38mm
Cutting width	52mm
Material	High-speed chrome steel
Adapter type	Starlock

STARLOCK BI-METAL SEGMENTED SAW BLADE

Art. No. 696.121412 1 blade

Ideal for immersion cuts, work in corners and setting door frames
- The segmented blade can be positioned flush against the floor. Door frames can therefore be cut to the exact length.

Extra long life
- The saw blade can be rotated to optimize wear on the blade.

Precision work in corners
- The blade shape is designed for precise cutting in corners.

Technical Information	
Diameter	85mm
Material	Bi-Metal
Saw blade design	Segmented
Adapter type	Starlock
Material to be processed	Aluminum, fiberglass, glass reinforced plastics, hardwood, softwood, particle board

STARLOCK DIAMOND SEGMENTED SAW BLADE

Art. No. 696.121330 1 blade

Ideal for removing joint mortar in damaged tiles and for separating tiles up to scratch hardness 6, fiberglass and reinforced plastics.

Extremely long service life
- Diamond coating guarantees a long service life
- The segmented blade can be rotated to optimize wear

Technical Information	
Diameter	85mm
Thickness	2mm
Material	Diamond
Saw blade design	Segmented
Adapter type	Starlock
Material to be processed	Fibreglass, tiling, glass reinforced plastics

STARLOCK CARBIDE GROUT BLADE

Art. No. 696.121320 1 blade

3-in-1 professional tile tool for removing wall and floor tiles and sanding tile grout.

Extremely long service life
- Cemented carbide guarantees a long service life
- The segmented blade can be rotated to optimize wear

Technical Information	
Diameter	70mm
Material	Tungsten Carbide
Adapter type	Starlock
Material to be processed	Tiling

STARLOCK BI-METAL DOUBLE TOOTH SAW BLADE

Art. No. 696.121110 1 blade

For clean, tear-free separating and immersion cuts

Precise, clean cut
- The slightly curved "clean cut" double toothed blade enables a clean immersion

The right immersion depth every time
- Depth scale for monitoring precise immersion depth

Technical Information	
Cutting depth	50mm
Cutting width	32mm
Material	Bi-Metal
Saw blade design	Double toothed
Adapter type	Starlock
Material to be processed	Softwood, hardwood, laminated panels, laminate, fiberglass, glass reinforced plastics

STARLOCK BI-METAL DOUBLE TOOTH WIDE SAW BLADE

Art. No. 696.121111 1 blade

For clean, tear-free separating and immersion cuts

Precise, clean cut
- The slightly curved "clean cut" double toothed blade enables a clean immersion

The right immersion depth every time
- Depth scale for monitoring precise immersion depth

Technical Information	
Cutting depth	40mm
Cutting width	65mm
Material	Bi-Metal
Saw blade design	Double toothed
Adapter type	Starlock
Material to be processed	Softwood, hardwood, laminated panels, laminate, fiberglass, glass reinforced plastics

STARLOCK TRIANGULAR DUST EXTRACTION BACKING PAD

Art. No. 696.121150 1 piece

Use with Multi-Surface Sandpaper Triangles for sanding wood, filler, plastics, paints and more.

Technical Information	
Dimensions	90 x 90 x 90mm
Adapter type	Starlock

Note: Use with Multi-Surface Sandpaper Triangles 581.220...

DIAMOND CUTTING DISC –ESSENTIAL

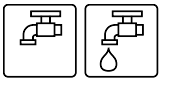
Construction site

Yellow label for construction sites. Can be used with hand-held saws, floor saws, stationary saw or bench saws.

Features & Advantages:
- Developed for use on construction sites
- Fan segments for better dissipation of heat and removal of dust compared to conventional segments

Applications:
- Concrete, reinforced concrete, concrete bricks, concrete pipes, interlocking paving stones, clinker bricks, clay bricks

Suitable for multiple cutting surfaces



For dry and wet cutting

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
12.0*	300	25.4**	10	3.0	20	Laser	6,400	**666.771301**	1
14.0*	350			3.2	24		5,400	**666.771351**	

*Max. circumferential speed 100 m/s **With driver hole

DIAMOND CUTTING DISC – CLEAN CUT

Construction site

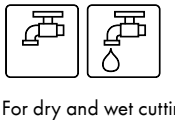
Features:

Versatility: ●●●○

Service life: ●●○○

Cutting speed: ●●○○

Cutting quality: ●●●○



For dry and wet cutting

Highly versatile, long-lasting and cost-effective construction site disc

Features & Advantages:
- Highly versatile, long-lasting and cost-effective construction site disc
- Closed cutting edge results in a cleaner cut

Applications:
- Old concrete, exposed aggregate concrete, concrete pipes, lightly reinforced concrete, interlocking paving stones, clay bricks, clinker brick, etc.

Dia. in In.	Dia. in mm	Hole in mm	Segment height in mm	Segment thickness in mm	Segment conn.	Max. RPM	Art. No.	Pack Qty.
5.0*	125	22.23	10	2.0	Sintered	12,250	**5527.165125**	1
7.0*	180	22.23	10	2.5	Sintered	8,500	**552.7165180**	
9.0*	230	22.23	10	2.5	Sintered	6,600	**668.765230**	

*Max. circumferential speed 80 m/s

DIAMOND CUTTING DISC – HARD STONE

Properties

Versatility: ●●●○

Service life: ●●●●

Cutting speed: ●●●○

Cutting quality: ●●○○

ZEBRA QUALITY

Granite

Hard material

This diamond cutting disc is specially designed for hard materials in building construction, civil engineering and related trades.

Applications:

- Granite
- Reinforced concrete
- Washed concrete
- Clinker brick
- Clay brick

For dry and wet cutting

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
7.0*	180	22.23	12	2.6	14	Laser	8,500	**552.6700180**	1
9.0*	230	22.23	12	2.6	16		6,600	**552.6700230**	

*Max. circumferential speed 80 m/s

X-Shape

The x-shape ridges of the segmented sides extend service life considerably. They reduce lateral contact surface of the segment in the material. This results in less friction, and thus, less heat generation and strain on the segments. At the same time, the X structure increases the active cutting service, thereby distributing the load more evenly. The increased active cutting surface also enables comparatively quick cutting for a wheel that is optimized for service life.

Cutting edge of conventional turbo wheels

Cutting edge of a wheel with X-Shape

Optimum bond for hard materials

The diamond bond is specially designed for hard materials and thus ensures optimum support of the diamonds from the first cut to the last.

Smooth cutting

PTFE-filled slots, the so-called "silent holes," reduce vibrations and unpleasant running noises

Secure direction indication

The ventilation holes are arranged as arrows which are still visible and unmistakable after heavy use.

DIAMOND CUTTING DISC - VERSATILITY

Construction site

The enormously versatile and extremely fast diamond cutting disc for all construction trades. Specially developed for trades with frequently changing materials.

Features:

Versatility: ●●●●
Service life: ●●○○
Cutting speed: ●●●●
Cutting quality: ●●○○

ZEBRA QUALITY

For dry and wet cutting

Flexible and fast
- Perfectly suited for those who do not have to do a great deal of cutting, but where flexibility and speed are important.

Cuts virtually all materials
- Diamonds applied directly to the main blade with a special vacuum process (BSL) form an aggressive abrasive surface that cuts even the toughest materials.

Considerably cooler cutting
- Openings located directly under the segment provide for optimum cooling

Applications:
- Old concrete, washed concrete, reinforced concrete, concrete piping, sandstone, natural stone, granite, cast iron, clinker bricks, steel, stainless steel, plastics, wood, guard rails

Angle Grinders

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
4.5*	115	22.23	6	2.5	8	BSL	13,300	**552.6860115**	1
5.0*	125	22.23	6	2.5	10		12,200	**552.6860125**	
9.0*	180	22.23	6	2.8	16		6,600	**552.6860230**	

*Max. circumferential speed 80 m/s

Hand-Held and Joint Cutters

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
12.0*	300	20.0	6	3.1	20	BSL	6,400	**552.6860300**	1
14.0*	350	20.0	6	3.1	24		5,400	**552.6860350**	
14.0*	350	25.4**	6	3.1	24		5,400	**552.6860355**	

*Max. circumferential speed 100 m/s **With driver hole

DIAMOND MILLING DISC

Construction site

Specialized cutting disc for removing old mortar from joints during renovation work and for milling slots for tile and floor layers, façade renovators, electrical installers, plumbers and similar trades.

Features:

Versatility: ●●●○

Service life: ●●●●

Cutting speed: ●●○○

Cutting quality: ●○○○

ZEBRA QUALITY

For dry and wet cutting

Efficient
- Extra wide segments remove a large amount of material in a single pass.

Extended service life
- Over 20% higher segments extend the life of the disc in comparison to conventional diamond milling discs

Optimized stability
- Welded carbide segments protect the main blade against undercut and thus effectively prevent premature breakage of the segments

Applications:
- Concrete, mortar, plaster and brick

Delivery Overview:

For angle grinders

Dia. in In.	Dia. in mm	Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
5.0*	125	22.23	9	8.0	10	Laser	12,200	**552.6960128**	1

*Max. circumferential speed 80 m/s

DIAMOND CUTTING DISC – 3D EXTREME

Construction site

Versatility: ●●●○

Service life: ●●●●

Cutting speed: ●●●●

Cutting quality: ●●●●

ZEBRA QUALITY

For dry and wet cutting

3D technology designed for hard materials that tend to cause other discs to burn.

Features:
- 3x more cutting edges when compared to similar cutting discs
- 3D technology to protect against undercut on particularly abrasive materials
- ZEBRA quality suitable for all construction trades

Advantages:
- Quick, precise and long lasting blade
- Extremely low amount of friction resulting in low heat generation
- Optimized cooling with an "arrow arrangement" providing additional cooling and low vibration
- Quick and accurate for clean cut edges resulting in improved productivity

Applications:
- Old concrete, exposed aggregate concrete, reinforced concrete, concrete tiles, concrete bricks, concrete pipes, granite, marble, cast iron pipes, clinker bricks, mortar and more

For Angle Grinders

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
9.0*	230	22.23	12	2.6	15	Laser	6,600	**552.6663230**	1

*Max. circumferential speed 80 m/s

DIAMOND CUTTING DISC – LONG LIFE & SPEED

Features:

Versatility: ●●●○

Service life: ●●●●

Cutting speed: ●●●●

Cutting quality: ●●●○

ZEBRA QUALITY

For dry and wet cutting

Construction site

This high tech diamond cutting disc has an extremely long service life, a high cutting speed and is suitable for all construction trades.

Patented Structure Diamond Technology

- For up to 70% higher cutting capacity and service life compared to the competition.
- The special even orientation of the diamonds ensures that there are always sufficient diamonds on the cutting surface, resulting in a clean, fast cut.

Less cutting resistance

- Narrower segments prevent unnecessary friction loss.
- Longer service life due to a (up to) 14 mm segment height compared to the industry standard of 10 mm. That's a 40% difference, which effectively means, 40% more cutting diamonds!

Optimized dust removal and cooling

- The fan segments feed in cooling air and transport the dust out of the cutting area. Special cooling openings with arrows serve both as additional cooling and a running direction indicator.

Smoother running conditions

- PTFE-filled slits absorb vibrations and unpleasant running noises.

Applications:

- Old concrete, washed concrete, reinforced concrete, concrete piping, interlocking stones, roofing tiles, granite, marble, cast iron pipes, clinker bricks, clay bricks

Angle Grinders/Wall Slitting Cutters

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
4.5*	115	22.23	12	2.2	9	Laser	13,300	**552.6660115**	1
5.0*	125	22.23	12	2.2	10		12,200	**552.6660125**	
7.0*	180	22.23	14	2.4	14		18,500	**552.6660180**	

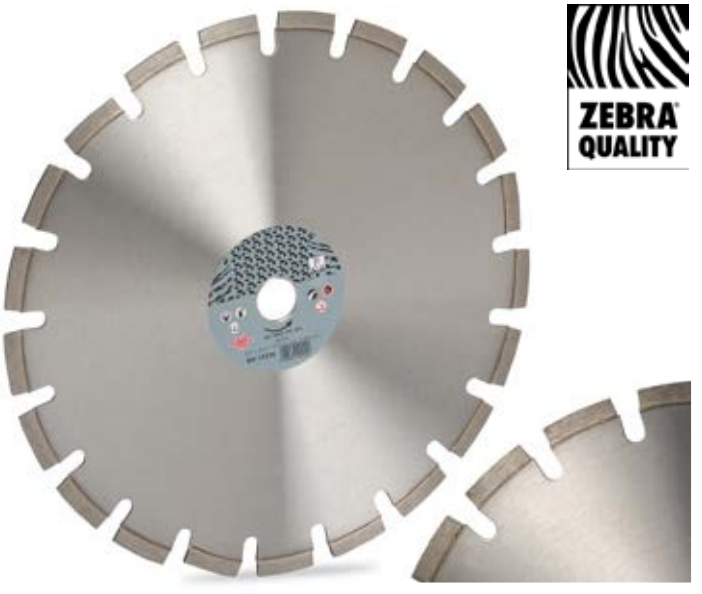
*Max. circumferential speed 80 m/s

Hand-Held and Joint Cutters

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
12.0*	300	20.0	14	2.8	19	Laser	6,400	**552.6660300**	1
12.0*	305	25.4**	14	2.8	19		6,400	**552.6660305**	
14.0*	350	20.0	14	3.2	23		5,400	**552.6660350**	
14.0*	355	25.4**	14	3.2	23		5,400	**552.6660355**	

*Max. circumferential speed 100 m/s **With driver hole

ASPHALT DIAMOND CUTTING DISC

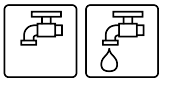


Construction site

Special protective segments prevent the core of the blade against undercut.

Applications:
- For hand-held and floor saws
- Dry and wet cutting
- Asphalt, sand-lime brick, mortar, plaster, screed, concrete

Suitable for multiple cutting surfaces



For dry and wet cutting

Asphalt

Sand-lime Brick, Soft

Mortar, plaster, screed

Concrete, Abrasive, Fresh Concrete

Dia. in In.	Dia. in mm	Arbour Hole in mm	Segment height in mm	Segment thickness in mm	No. of segments	Segment conn.	Max. RPM	Art. No.	P. Qty.
14	350*	20	10	3.2	21	Laser	5400	**668.751350**	1
		25.4*						**668.751351**	

*Max. circumferential speed 100 m/s **With driver hole

DIAMOND CUP WHEEL – SOFT STONE

Features & Advantages:
- High removal speed
- Long service life
- Ideal for abrasive materials
- Optimal dust removal

Applications:
- Various types of concrete, limestone and other abrasive materials

Dia. in In.	Dia. in mm	Arbour Hole (mm)	Segment height (mm)	Useable sanding surface	Max. RPM	Art. No.	P. Qty.
5.0*	125	22.23	5.5	2300mm²	12,250	**666.511125**	1

*Max. circumferential speed 80 m/s

DIAMOND CUP WHEEL – VERSATILITY

Features & Advantages:
- The wheel shape, number and order of segments make for a large active grinding surface area
- Long service life
- Optimal dust removal

Applications:
- Highly versatile use on concrete and stone

Dia. in In.	Dia. (mm)	Arbour Hole (mm)	Segment height (mm)	Useable sanding surface	Max. RPM	Art. No.	P. Qty.
5.0*	125	22.23	6	3700mm²	12,250	**666.521125**	1

*Max. circumferential speed 80 m/s

DIAMOND CUP WHEEL – HARD STONE

For faster and more efficient work, this versatile diamond cup wheel has an extremely high removal rate and good surface finish

Faster and more efficient:
- Special shaft segment with double function: removal and finishing
- Optimum dust removal

Applications:
- Sands most concrete and stone materials

Versatility (points system)	●●●○
Service life (points system)	●●●●
Removal speed (points system)	●●●●
Surface quality/finish (points system)	●●●○

Dia. in In.	Dia. in mm	Arbour Hole (mm)	Segment height (mm)	Useable sanding surface	Max. RPM	Art. No.	P. Qty.
5.0*	125	22.23	5.5	2300mm²	12,250	**666.501125**	1
7.0*	180	22.23	5.5	2760mm²	8,500	**666.501180**	

*Max. circumferential speed 80 m/s

HOOKED BLADES

Features:
- Two notch, two hole hook blake
- Made of Carbon Steel

Applications:
- Roofing shingles, felt paper, tyvek, foam board, insulation, carpeting and other building materials

Compatible with:
Würth Utility Holders 715.66013 and 715.66016

Width of Blade	Length of Blade	Thickness of Blade	Material	Art. No.	P. Qty.
18.7 mm	50 mm	0.65 mm	Carbon Steel	**715.6603**	5

EXACTA KNIFE

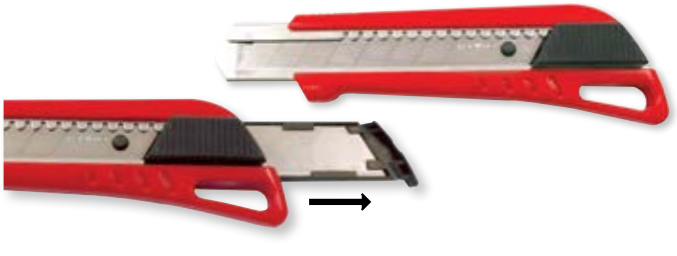
Recommended:
Replacement blade 18mm for Exacta knife.

Art. No. 715.6605
P. Qty. 10

Art. No. 715.66045

- Handle : impact-resistant plastic
- Catch: via wheel
- 1 break-off blade, 18mm included
- 8 point breakaway

CUTTING KNIFE



Note: Two (2) extra blades included in magazine.

Art. No. 715.6621 – 18 mm

Features
- Handle of impact-resistant plastic and metal blade guide. High stability and precise blade guidance.
- Automatic blade locking up to pressure load of 20 kg. Convenient one-hand operation.
- Blade magazine for 2 spare blades.
- Delivery scope incl. 3 x 18 mm break-off blades.

P. Qty: 1

REPLACEMENT BLADE

Art. No. 715.6605 – 18mm – P. Qty. 10

Features
- 3-corner grinding
- Ice-hardened
- Double durability
- Sharp and proper cut

CUTTING KNIFE, 9 MM WIDE

Recommended:
Replacement breakoff blade, 9 mm
Art. No. 715.6607
P. Qty: 10

Art. No. 715.6606 – 135 mm

- Handle of impact-resistant plastic with metal blade guide.
- High stability and precise blade guidance.
- Blade locks with locking bar.
- Convenient one-hand operation.
- Holding clip for breast pocket.
- Includes 1 x 9 mm break off blade.

SAFETY KNIFE

Art. No. 715.66013 170 mm

With bi-metal blade

Features:
- Automatic blade retraction via retracting spring.
- Blade changed in seconds without tools thanks to magnetic retainer.
- Ergonomic, non-slip two component handle.
- Integrated blade magazine for five blades.
- Includes one bi-metal trapezoidal blade.
- Flexible yet unbreakable blade under normal working conditions

Benefits:
- Minimizes risk of injury.
- Fits well and securely in your hand.
- Optimum storage of spare blades.

ZEBRA QUALITY

Recommended: Replacement trapezoid utility blade
Art. No. 695.106
P.Qty: 100

SELF-RETRACTING SAFETY KNIFE

Art. No. 715.66017 - P. Qty. 1

With fully automatic blade retraction after the cutting process.

Features:
- Even when the slide is activated, the blade retracts after leaving the cut material
- Non-slip and solid 3-component handle
- Tool-free blade change
- Length - 160 mm
- Material of the grip handle – Aluminium
- Pocket Safe
- Cut Safe

REPLACEMENT BLADE Art. No. 695.106

UNIVERSAL AUTO-LOAD KNIFE

Art. No. 715.66016 176 mm

With auto-load blade changing system

Features:
- Made out of durable aluminum, rubber and ABS plastic
- Dual locking mechanism of the blade
- Internal cartridge contains 10 spare blades
- Change the blade by simply retracting the slider and moving it back forward
- Weight 260g

Recommended:
Replacement trapezoid utility blade Art. No. 695.106
P. Qty: 100

2K UTILITY KNIFE

2K-Cutter 9 mm, 18 mm, 25 mm

Features:
- High quality 2-component handle and blade slide
- Extremely rugged stainless-steel blade guide
- Automatic blade locking up to a pressure load of 12 kg

Blade Width (mm)	Total Length (mm)	Art. No.	P. Qty
9	160	**715.66274**	1
18	165	**715.66275**	

BREAK-OFF BLADES

Blade Width (mm)	Blade Length (mm)	Blade Thickness (mm)	Material	Art. No.	P. Qty
9	80	0.4	Steel	**715.66073**	1
25	142	0.7		**715.66093**	

3K UTILITY KNIFE

Art. No. 715.66277

3K-Cutter 18 mm with Clamping Screw

Features:

- Includes 1 break-off blade
- Ergonomic and non-slip 3-component handle
- Tough stainless steel blade
- Blade clamping screw

Description	Length	Art. No.	P. Qty.
Utility Knife	170 mm	**715.66277**	1
Bare break-off blades	110 mm	**715.6605**	10 pk.
Black break-off blades	110 mm	**715.66053**	10 pk.

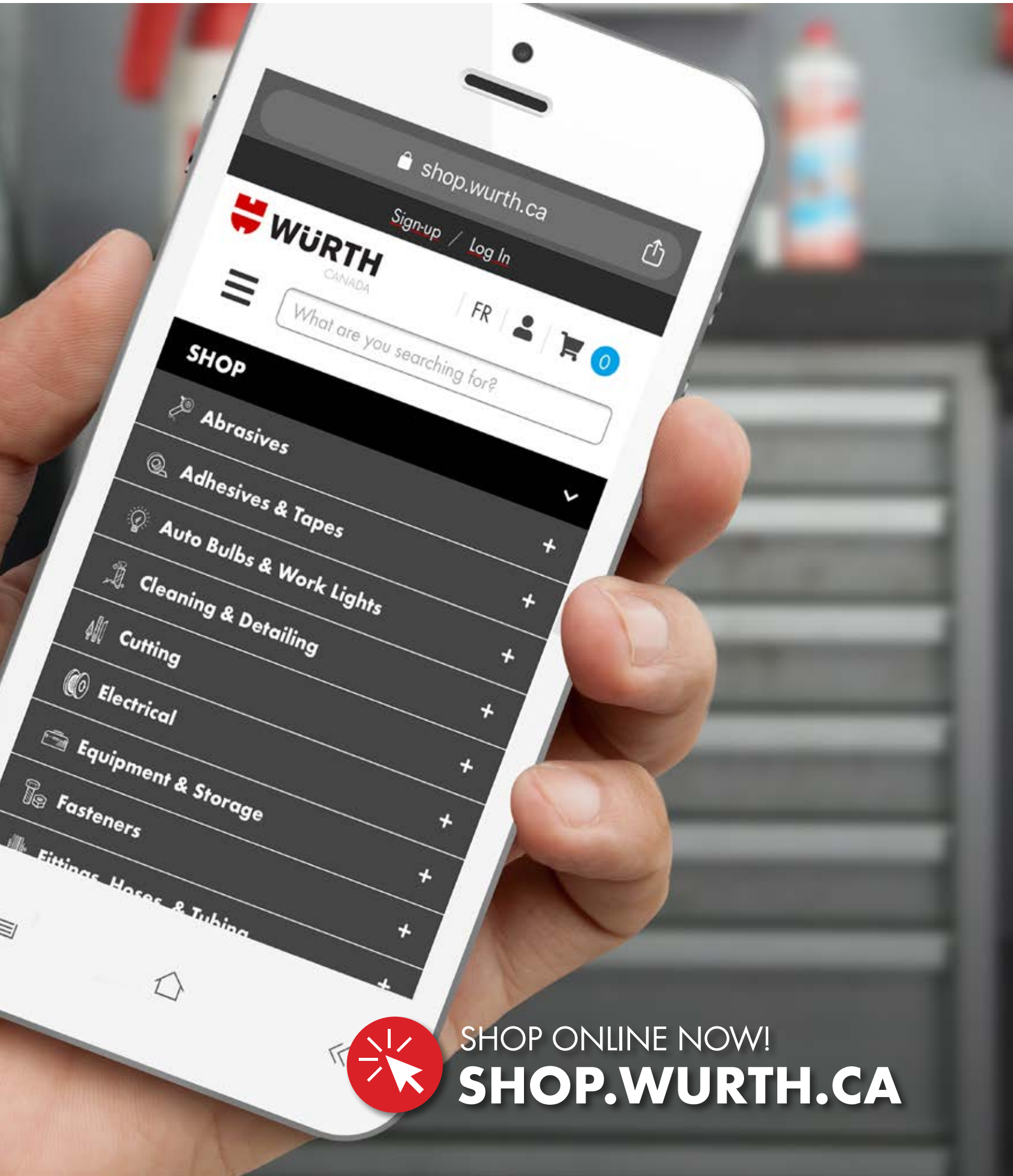
DUAL-BLADE POCKET KNIFE

Art. No. 715.66500

Features:

- Safe to use with stud lock, keeps blades safely in place
- High quality cutting ability with replaceable trapezoidal blades
- Universal cutting rust-free knife blade
- Comes in high-quality leather pouch with belt loop
- Includes 1 trapezoidal blade

WÜRTH



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