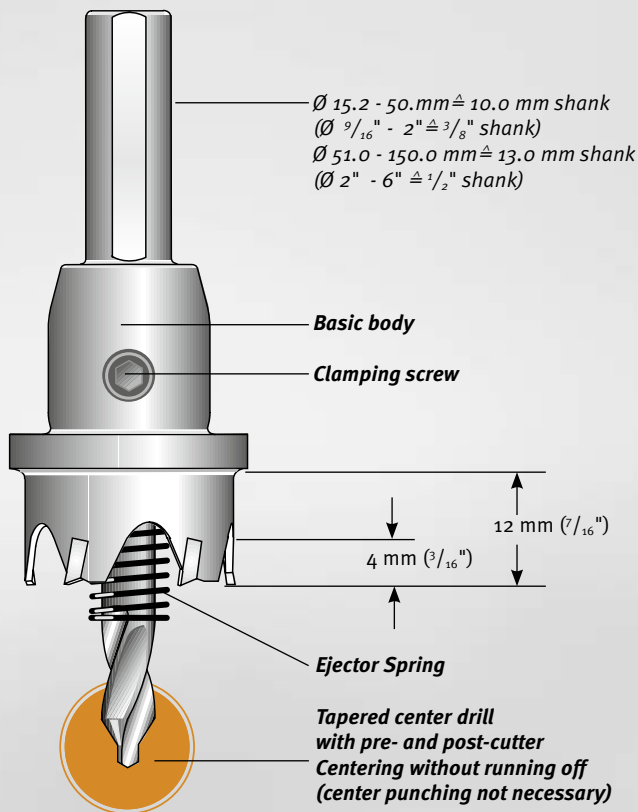


ALFRA TCT-HOLE SAWS – SHORT TYPE



EDELSTAHL
STAINLESS STEEL



The application area of TCT Hole Saws differs from HSS-Bi-Metal Hole Saws. With ALFRA TCT Hole Saws, suitable to economically process stainless steel up to 2 mm ($\frac{1}{16}''$), unalloyed steels up to 4 mm ($\frac{3}{16}''$), plastics, PVC, aluminium, zinc, gypsum plaster boards and lightweight building boards, as well as asbestos. Do not use automatic feed, when working with pillar drilling machines. For the use on portable- and pillar drilling machines. Do not use automatic feed, when working with pillar drilling machines.

Features:

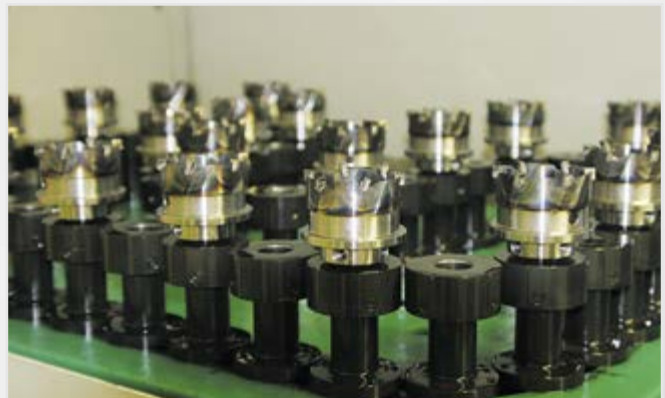
- High concentric running exactness through solid construction.
- CAD-optimized cutting angles with specially ground section ensures high cutting capacity and long tool life.
- Quick removal of drilled core through ejector spring for all hole saws up to 150 mm ($5-29/32''$) \varnothing .
- Carbide tipping enables repeated re-grinding.
- ALFRA hole saws are repairable. In the event of a tooth breaking, it can easily be replaced and resharpened.
- Exchangeable center pin.
- Use of MT tool holders from $\varnothing 31 \text{ mm}$ ($1-7/32''$).
- For use on hand drilling machines (recommended up to max. $\varnothing 40 \text{ mm}$; $1-9/16''$) or stationary machines.

Tips:

- At thicker materials: cut 2-3 mm ($\frac{1}{16}'' - 7/64''$) per cutting process, remove chips afterwards.
- When cutting metals, a high- grade cutting oil should be used. Exception: Do not use cutting oil when using cast iron, use paraffin instead of oil when cutting aluminium.
- **Keep in mind: Always wear safety goggles.**

Another special technical feature:

From $\varnothing 15.2 \text{ mm}$ ($\frac{3}{16}''$) to 30.0 mm ($1-1/8''$), the hole saw is made of one piece.
 From $\varnothing 31.0 \text{ mm}$ ($1-3/16''$) we use specially hardened tool holders to compensate for the torsional power in case of heavy operation, which avoids early shearing off of the tool holder shank.
 In terms of construction not comparable with any other make.



ALFRA TCT-HOLE SAWS – SHORT TYPE

Ø mm	Ø Inches	No. of teeth	Prod.-No.	Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 15.2		4	0600152	Ø 77.0		13	0600770
Ø 16.0	5/8"	4	0600160	Ø 78.0	3-1/16"	14	0600780
Ø 17.0		4	0600170	Ø 79.0	3-1/8"	14	0600790
Ø 18.0	11/16"	4	0600180	Ø 80.0		14	0600800
Ø 18.6		4	0600186	Ø 81.0	3-3/16"	14	0600810
Ø 19.0	3/4"	4	0600190	Ø 82.0		14	0600820
Ø 20.0		5	0600200	Ø 83.0	3-1/4"	14	0600830
Ø 20.4		5	0600204	Ø 84.0	3-5/16"	15	0600840
Ø 21.0	13/16"	5	0600210	Ø 85.0		15	0600850
Ø 22.0		5	0600220	Ø 86.0	3-3/8"	15	0600860
Ø 22.5		5	0600225	Ø 87.0	3-7/16"	15	0600870
Ø 23.0	7/8"	5	0600230	Ø 88.0		15	0600880
Ø 24.0	15/16"	5	0600240	Ø 89.0	3-1/2"	16	0600890
Ø 25.0		5	0600250	Ø 90.0	3-9/16"	16	0600900
Ø 26.0	1"	5	0600260	Ø 91.0		16	0600910
Ø 27.0	1-1/16"	5	0600270	Ø 92.0	3-5/8"	16	0600920
Ø 28.0		5	0600280	Ø 93.0		16	0600930
Ø 28.3		5	0600283	Ø 94.0	3-11/16"	16	0600940
Ø 29.0	1-1/8"	5	0600290	Ø 95.0	3-3/4"	17	0600950
Ø 30.0	1-3/16"	5	0600300	Ø 96.0		17	0600960
Ø 31.0		6	0600310	Ø 97.0	3-13/16"	17	0600970
Ø 32.0	1-1/4"	6	0600320	Ø 98.0	3-7/8"	17	0600980
Ø 33.0		6	0600330	Ø 99.0		17	0600990
Ø 34.0	1-5/16"	6	0600340	Ø 100.0	3-15/16"	17	0601000
Ø 35.0	1-3/8"	6	0600350	Ø 105.0	4"	18	0601050
Ø 36.0		6	0600360	Ø 110.0		18	0601100
Ø 37.0	1-7/16"	7	0600370	Ø 115.0	4-1/2"	20	0601150
Ø 38.0		7	0600380	Ø 120.0		20	0601200
Ø 39.0	1-1/2"	7	0600390	Ø 125.0		20	0601250
Ø 40.0	1-9/16"	7	0600400	Ø 130.0	5"	20	0601300
Ø 41.0		8	0600410	Ø 135.0		24	0601350
Ø 42.0	1-5/8"	8	0600420	Ø 140.0	5-1/2"	24	0601400
Ø 43.0	1-11/16"	8	0600430	Ø 145.0		24	0601450
Ø 44.0		8	0600440	Ø 150.0		24	0601500
Ø 45.0	1-3/4"	8	0600450				
Ø 46.0		8	0600460				
Ø 47.0	1-13/16"	9	0600470				
Ø 48.0	1-7/8"	9	0600480				
Ø 49.0		9	0600490				
Ø 50.0	1-15/16"	9	0600500				
Ø 51.0	2"	9	0600510				
Ø 52.0		10	0600520				
Ø 53.0	2-1/16"	10	0600530				
Ø 54.0	2-1/8"	10	0600540				
Ø 55.0		10	0600550				
Ø 56.0	2-3/16"	10	0600560				
Ø 57.0	2-1/4"	10	0600570				
Ø 58.0		10	0600580				
Ø 59.0	2-5/16"	10	0600590				
Ø 60.0	2-3/8"	10	0600600				
Ø 61.0		11	0600610				
Ø 62.0	2-7/16"	11	0600620				
Ø 63.0		11	0600630				
Ø 64.0	2-1/2"	11	0600640				
Ø 65.0		11	0600650				
Ø 66.0	2-9/16"	12	0600660				
Ø 67.0	2-5/8"	12	0600670				
Ø 68.0		12	0600680				
Ø 69.0	2-11/16"	12	0600690				
Ø 70.0	2-3/4"	12	0600700				
Ø 71.0		12	0600710				
Ø 72.0	2-13/16"	13	0600720				
Ø 73.0	2-7/8"	13	0600730				
Ø 74.0	2-15/16"	13	0600740				
Ø 75.0		13	0600750				
Ø 76.0	3"	13	0600760				



Prod.-No. 0600001

Set Metric

Set Metric	Prod.-No.
Set Metric	0600001

Contents:
1 each of Ø 16 / 20 / 25 / 32 / 40 mm
2 Allen Keys

HSS-Spare Drill with tapered center tip

from Ø 15.2 - 100.0	Ø 6x50 mm	0602650
from Ø 101.0 - 150.0	Ø 8x50 mm	0602850

MT Arbors

MT-2 (Ø 31.0 - 100.0 mm)	0734002
MT-3 (Ø 31.0 - 150.0 mm)	0734003

SDS Arbor

SDS arbor shank (for use with Ø 31.0 - 100.0 mm)	060sds6
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Spare Ejector

from Ø 15.2 - 150.0	Ø 6 mm	0602006
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Coolant ALFRA

ALFRA 2000 For mild steel DIN S233, 250 ml	21010
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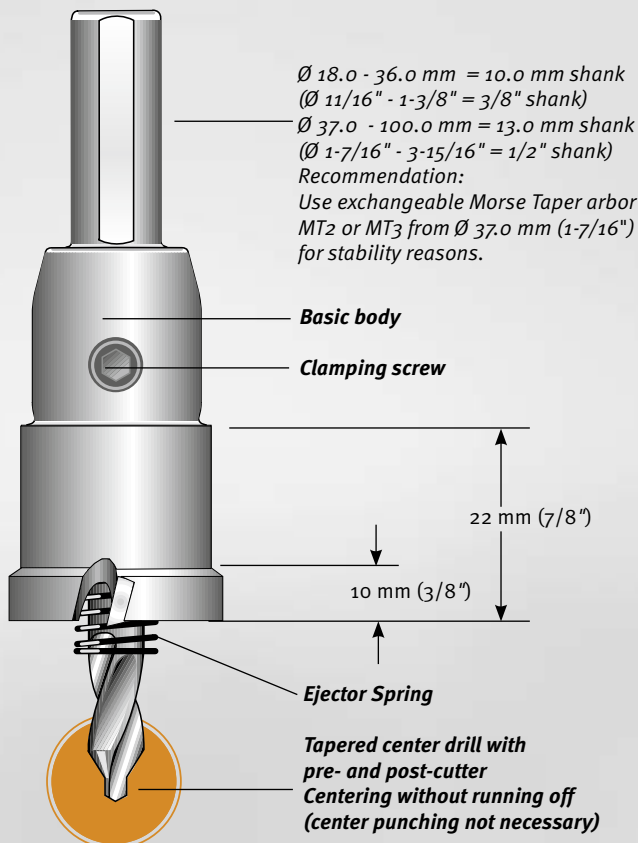
ALFRA 4000 For titanium and manganese-carbon steels 300 ml	21040
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Prod.-No. 21040

Prod.-No. 21010

ALFRA TCT-HOLE SAWS – MBS-LIGHT



EDELSTAHL
STAINLESS STEEL



This TCT Hole Saw is a multi-range Hole Saw for the universal use up to a material thickness of max. 10 mm (3/8'') (without ejector spring). Through its solid construction and an enhanced cutting geometry (Registered Utility Model No. 202 03 232 9), an improved cutting behaviour combined with a high cutting capacity and tool life, is achieved.

For the use on flat steel, as well as on pipes and vaulted materials. Cutting of overlapping holes is possible.

For use on stationary and hand drilling machines (recommended up to max. $\varnothing 40 \text{ mm}$; 1-9/16'').

- **Portable drilling Machines:** up to 4 mm (1/8'') material thickness
- **Stationary drilling Machines:** up to 10 mm (3/8'') material thickness (for material thickness over 6 mm (15/64''), it is necessary to settle and empty the chips several times).

In case of heavy operation, we recommend Morse Taper Tool Holders, which are suitable from $\varnothing 37 \text{ mm}$ (1-7/16'').

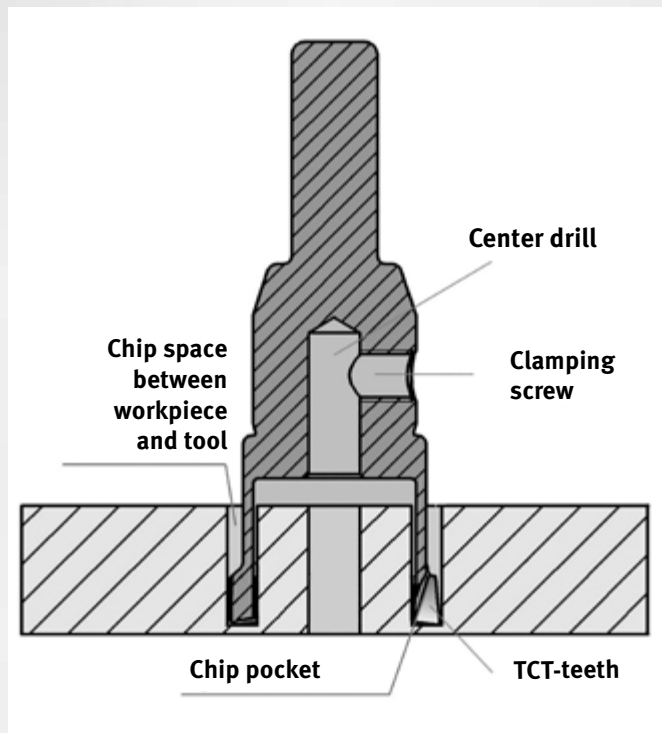
Advantage: All MBS-Light type TCT Hole Saws are equipped with an ejector spring. The cut material is self-ejecting.

Another special technical feature:

From $\varnothing 37 \text{ mm}$ (1-7/16''), specially hardened tool holders are used to compensate for the torsional power in case of heavy operation which avoids early shearing off of the tool holder shank.

In terms of construction not comparable with any other make.

MBS – for almost limitless use



ALFRA TCT-HOLE SAWS – MBS-LIGHT

Ø mm	Ø Inches	No. of teeth	Prod.-No.	Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 18.0	11/16"	4	0730018	Ø 79.0	3-1/8"	12	0730079
Ø 18.6		4	07300186	Ø 80.0		12	0730080
Ø 19.0	3/4"	4	0730019	Ø 81.0	3-3/16"	12	0730081
Ø 20.0		4	0730020	Ø 82.0		12	0730082
Ø 20.4		4	07300204	Ø 83.0	3-1/4"	12	0730083
Ø 21.0	13/16"	4	0730021	Ø 84.0	3-5/16"	12	0730084
Ø 22.0		4	0730022	Ø 85.0		12	0730085
Ø 22.5		4	07300225	Ø 86.0	3-3/8"	14	0730086
Ø 23.0	7/8"	4	0730023	Ø 87.0	3-7/16"	14	0730087
Ø 24.0	15/16"	4	0730024	Ø 88.0		14	0730088
Ø 25.0		4	0730025	Ø 89.0	3-1/2"	14	0730089
Ø 26.0	1"	6	0730026	Ø 90.0	3-9/16"	14	0730090
Ø 27.0	1-1/16"	6	0730027	Ø 91.0		14	0730091
Ø 28.0		6	0730028	Ø 92.0	3-5/8"	14	0730092
Ø 29.0	1-1/8"	6	0730029	Ø 93.0		14	0730093
Ø 30.0	1-3/16"	6	0730030	Ø 94.0	3-11/16"	14	0730094
Ø 31.0		6	0730031	Ø 95.0	3-3/4"	14	0730095
Ø 32.0	1-1/4"	6	0730032	Ø 96.0		14	0730096
Ø 33.0		6	0730033	Ø 97.0	3-13/16"	14	0730097
Ø 34.0	1-5/16"	6	0730034	Ø 98.0	3-7/8"	14	0730098
Ø 35.0	1-3/8"	6	0730035	Ø 99.0		14	0730099
Ø 36.0		6	0730036	Ø 100.0	3-15/16"	14	0730100

From Ø 37.0 mm (1-7/16") we recommend the use of MT arbors

Ø 37.0	1-7/16"	6	0730037
Ø 38.0		6	0730038
Ø 39.0	1-1/2"	6	0730039
Ø 40.0	1-9/16"	6	0730040
Ø 41.0		6	0730041
Ø 42.0	1-5/8"	6	0730042
Ø 43.0	1-11/16"	6	0730043
Ø 44.0		6	0730044
Ø 45.0	1-3/4"	6	0730045
Ø 46.0		6	0730046
Ø 47.0	1-13/16"	6	0730047
Ø 48.0	1-7/8"	6	0730048
Ø 49.0		6	0730049
Ø 50.0	1-15/16"	6	0730050
Ø 51.0	2"	6	0730051
Ø 52.0		6	0730052
Ø 53.0	2-1/16"	6	0730053
Ø 54.0	2-1/8"	6	0730054
Ø 55.0		6	0730055
Ø 56.0	2-3/16"	6	0730056
Ø 57.0	2-1/4"	6	0730057
Ø 58.0		6	0730058
Ø 59.0	2-5/16"	6	0730059
Ø 60.0	2-3/8"	8	0730060
Ø 61.0		8	0730061
Ø 62.0	2-7/16"	8	0730062
Ø 63.0		8	0730063
Ø 64.0	2-1/2"	8	0730064
Ø 65.0		8	0730065
Ø 66.0	2-9/16"	8	0730066
Ø 67.0	2-5/8"	8	0730067
Ø 68.0		8	0730068
Ø 69.0	2-11/16"	8	0730069
Ø 70.0	2-3/4"	8	0730070
Ø 71.0		10	0730071
Ø 72.0	2-13/16"	10	0730072
Ø 73.0	2-7/8"	10	0730073
Ø 74.0	2-15/16"	10	0730074
Ø 75.0		10	0730075
Ø 76.0	3"	10	0730076
Ø 77.0		12	0730077
Ø 78.0	3-1/16"	12	0730078



Drilling in checker sheet



Drilling in square profiles



Drilling in flat steel



Drilling in pipes

HSS-Spare Drill with tapered center tip



from Ø 18.0 - 60.0 Ø 6x50 mm 0602650

from Ø 61.0 - 100.0 Ø 8x50 mm 0602850
(old design)

MT Arbors



MT-2 (from Ø 37.0 mm) 0734002

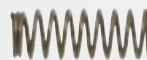
MT-3 (from Ø 37.0 mm) 0734003

Weldon adaptor



from Ø 37.0 mm 060WD
(incl. ejector pin Prod. No. 1950500)

Spare Ejector



For tapered center drill 0732006

from Ø 18.0 - 60.0 mm Ø 6 mm 0732006

from Ø 61.0 - 100.0 mm Ø 8 mm 0732008

MULTI-STEP DRILLS – HSS DM 05

Application area:

The ideal tool for sheet metal forming, for the electrical industry, HVAC or the common engineering or the switchboard industry.

Suitable for all materials such as nonferrous metals, stainless steel sheets, thermoplastic and thermosetting plastics, as well as for steel sheets up to a max. material thickness of 6 mm.

With the Multi-Step Drills, sheet metals can be centered, drilled and subsequently deburred in one work step.

- A break of the drill tip mostly occurs through high feed forces at the start of the drilling operation. Multi-step drills with fixed drill tips are worthless then. A broken center drill in an ALFRA multi-step drill can be easily replaced. This more than compensates for the higher price.
- Each stage is equipped with a radially adjusted relief grinding corresponding to its diameter.
- Each stage is provided with an axial relief grinding and a relief angle on its cutting edge.
- All step diameters are laser marked on the tool.

Benefits of multi-step drills with keyway and 3 cutting edges:

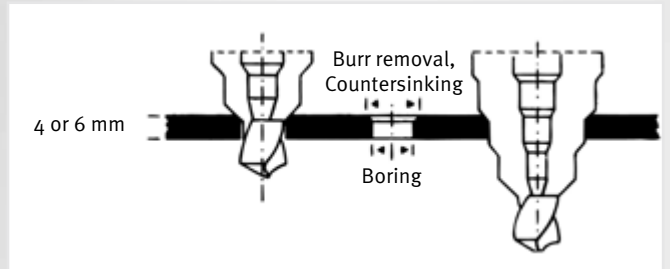
- The keyway allows the drill to make a chipping cut during drilling for better chip removal.
- The special keyway geometry, arranged around the drill, makes for a longer cutting edge compared to the usual straight groove and noticeably easier cutting.
- Spiral cut chip spaces guarantee an absolute running smoothness and a high cutting capacity.

Tip:

The tool life can be considerably prolonged by using of ALFRA Cutting Spray or ALFRA Coolant Stick.

Advantages of TiAlN hard coating:

- Suitable for use on very hard materials (VA).
- Offers optimal tool life with the same use at the highest cutting speeds.
- Very high microhardness HV 0.05 of 3200 – so that the blue-black hard coating is more than 20% harder than conventional gold-yellow TiN coating.
- Maximum working temperature: 800°C.



Descriptio

Multi-Step Drill – AMS

Shank Ø

10.0

Prod.-No.

o8o8o

For general machine construction, drills circular holes in metals up to 4 mm thick, through application with hand drills, indispensable on the work-site.

3 chip spaces, spiral grooved, replaceable center drill

Steps Ø 9 - 12 - 15 - 18 - 21 - 24 - 27 - 30 - 33 - 36 mm

(Step "40" is for deburring)



Prod.-No. o8o8o ■



Prod.-No. o8o84 ■

■ Exchangeable center drills

Multi-Step Drill – DKS 40

10.0

o8o84

3 chip spaces, spiral grooved, replaceable center drill, for metric borings acc. to EN,

Core - and clearance holes M 10 - M 40

Steps Ø 10.5 - 12.5 - 14.5 - 16.5 - 18.5 - 20.5 - 25.5 - 32.5 - 38.5 - 40.5

MULTI-STEP DRILLS – HSS DM 05

Standard execution with 2 chip spaces, spiral grooved.

- More precise hole diameter through cylindrical steps.
- Immediate deburring through the next step.
- Drilling of sheet metals as thin as 4 mm possible.
- Use coolant stick!
- The keyway allows the drill to make a chipping cut during drilling for better chip removal.
- Longer cutting edge compared to the usual straight groove and noticeably easier cutting.
- Laser-etched scale in the chip space to indicate the bore diameter achieved.

Descriptio	Bore range	Shank Ø	Length	Prod.-No.
AMS-30	6 - 30 mm x 2 mm	10.0	98 mm	08072

Multi-Step Drill – SVB	Shank Ø	Prod.-No.
Pre-drill specifically for punches & dies Steps Ø 8.5 - 11.5 - 12.5 - 16.5 - 21.0	10.0	08016



Prod.-No. 08072



Vorbohrer speziell für Blechlocher

Prod.-No. 08016

Standard values for the use of ALFRA Multi-step drills

This drill was developed to bore perfectly round and deburred holes in sheet metal from 4 - 6 mm thick. The transition forms a radius which serves to deburr or bevel the hole at the same time. While conical one-lip bits drill a slightly tapered hole, our ALFRA multi-step drill achieves a cylindrical hole. The tools have axial-radial relief grindings and can be lightly reground on the breast of the cutting tooth.

We recommend the use of pillar drilling machines, however, the small ALFRA Multi-step drills can be used on adjustable hand drilling machines. Sufficient cooling using **ALFRA coolant stick** or a bore emulsion is imperative.

R.P.M. Guiding Values					
Type		sheet steel S235	V2A sheets	non-ferrous metals	plastics soft
AM	drill	800	360	1000	1000
	counter-sink	500 - 180	50 - 70	800 - 400	1000 - 40