ALFRA®

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PUNCHING DRILLING LIFTING CUTTING DEBURRING

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A/2016 EN

MADE IN GERMANY

THE STORY BEHIND THE TITLE IMAGE

We started producing our own hole punches for control cabinet and switch gear construction in Germany more than 40 years ago.
By this stage we had already gathered a lot of experience in the sales of such tools.
Thanks to our closeness to our customers, we have been able to continuously integrate their requirements and suggested improvements into further developments.

This resulted in the production of additional, new products:
hydraulic manual punches for energy-saving actuation of hole punches, cutting devices for mounting rails, machines and tools for busbar production, stationery punching machines for efficient control cabinet and housing production, and much more.

The starting shot for top quality "Made in Germany" products was actually fired many years ago. Now, many customers worldwide are profiting from the company's history.
An ALFRA Type TriCut™ hole punch has three cutters which means that the possibility of canting during punch breakthrough can be completely ruled out. The materials and finish have been carefully selected to provide users with the quality and durability that they have come to expect.

Our joint screws are completely new! The bearing is packed into an aluminium cage in an elaborate production process. The unit is completely protected against dust, dirt and external mechanical influences. The benefits are a minimum of force application and long-wearing tools for optimum cost/usage affect.

The articles named above have been continuously developed over many decades. You will be able to find them in our new catalogue - in a completely up-to-date improved version.
The articles are produced at our production facilities in Hockenheim and Stahnsdorf near Berlin. This is a practical expression of company philosophy, it protects jobs and protects you from defective goods. We don't want to supply you with anything less.

We use this process to set quality standards by which you as a welcome and much appreciated customer can judge us at any time.

ALFRA offers you decades of accumulated know-how in the technology of hole punches, screw holes, hole crackers etc. Our range of equipment for "hole making" is extremely varied and unique.

MonoCut™, TwinCut™, TriCut™ and TriCut+™ in addition to FormCut™ and FormCut+™, associated with more than 100 years of company history, speak for themselves.

Over the last 4 years we have reduced our CO_2 emissions by almost 400 tonnes!
We have produced 600 megawatt-hours of power for our own use!

Only if you manufacture in-house, can you control and shape the entire manufacturing process.

We have consistenly implemented a resource-saving approach to our environment into daily practice in recent years and developed a heightened awareness of "what comes from where" and how to effectively make use of these valuable resources.
With the use of alternative energy, i.e. photovoltaics, we have achieved almost climate-neutral production process in recent years.

And lest we forget: we are, of course, certified according to ISO Standards since 1997!

This means that you can feel good about our tools – not just because they are so technically advanced and are so durable.

But also because the entire production cycle has been carefully designed to ensure that our tools won't leave any traces which could pollute the environment or leave problems for the generations that will follow us.

MADE IN GERMANY

GREEN ENERGY

TÜVRheinland® CERT ISO 9001

TOOLS AND MACHINES FOR CONTROL ENGINEERING

CONTENTS

ALFRA HOLE PUNCHES® APPLICATION OVERVIEW

	 ALFRA HOLE PUNCHES® MonoCut™	 ALFRA HOLE PUNCHES® TriCut™	 ALFRA HOLE PUNCHES® TriCut+™	 ALFRA HOLE PUNCHES® TwinCut™
Suitable for				
Sheet steel S235 F ≈ 370 N/mm²	✔	✔	✔	✔
Stainless steel F ≈ 600 N/mm²	-	-	✔	✔
Material thickness ♠when using				
Ø 6 mm draw bolt	-	1.5 mm	-	-
Ø 9.5 mm draw bolt	2 mm	2 mm	-	2 mm
Ø 11.1 mm draw bolt	-	-	2 mm	2.5 mm
Ø 19 mm draw bolt	3 mm	3 mm	2.5 mm	3 mm
Diameter				
	12.7 mm/M12/PG7 - 152 mm	12.5 mm/M12/PG7 - 63.5 mm/M63	15.2 mm/PG9 - 63.5 mm/M63	12.7 mm/M12/PG7 - 63.5 mm/M63
custom-made products	✔	✔	✔	✔
Ø for predrilling				
Ø 6 mm draw bolt	-	6.2 mm	-	-
Ø 9.5 mm draw bolt	11 mm	10 mm	-	10 mm
Ø 11.1 mm draw bolt	-	-	11.5 mm	11.5 mm
Ø 19 mm draw bolt	20.5 mm	19.5 mm	19.5 mm	19.5 mm
Ø 28.3 mm draw bolt	30.5 mm	-	-	-
Machining possibilities using				
wrench or ratchet	✔ up to Ø 89 mm	✔	✔	✔
Hydraulic drive	✔	✔	✔	✔

1. **High-tensile bolts for the toughest operating conditions**
2. **Protrusion of ball bearing outside protective ring ensures perfect force transmission to wrench or punching tool**
3. **Ball bearings encapsulated in aluminium rings**
   Extremely long-life and perfectly protected against soiling
4. **UNF fine thread**

Hole punch MonoCut™
for sheet steel (S235)

1. **With UNF fine thread**
2. **With 4 crosshair markings for simple, central alignment**

"The max. material thickness for which a hole punch can be used always depends on the screw and draw bolts used."

Usable up to a material thickness of:
- 3.0 mm sheet steel with 3/4" (19.0 mm) screw or draw bolt
- 2.0 mm sheet steel with 3/8" (9.5 mm) screw or draw bolt

Hole punch MonoCut™ – sets

All sets are supplied in heavy-duty practical plastic cases.

Ø mm	12.7	15.2	16.2	18.6	19.0	20.4	22.5	25.4	28.3	30.5	31.7	32.5	34.6	37.0	38.0	40.5	43.2	47.0	49.6	50.5	54.0	60.0	61.5	63.5
Ø metric	M12	-	M 16	-	-	M 20	-	M 25	-	-	-	M 32	-	-	-	M 40	-	-	-	M 50	-	-	-	M 63
Ø PG	7	9	-	11	-	13	16	-	21	-	-	-	-	29	-	-	-	36	-	-	42	48	-	-
Ø Inch	1/2"	-	-	-	3/4"	-	7/8"	1"	-	1-7/32"	1-1/4"	-	-	-	1-1/2"	-	1-11/16"	-	1-15/16"	-	2-1/8"	-	2-3/8"	2-1/2"
	0.5	0,598	0,638	0,732	0,748	0,803	0,886	1.0	1,114	1,201	1,248	1,280	1,362	1,457	1,496	1,594	1,701	1,850	1,953	1,988	2,126	2,362	2,421	2.5
Ø Conduit	-	-	-	-	-	-	1/2"	-	3/4"	-	-	-	1"	-	-	-	1 1/4"	-	1 1/2"	-	-	-	2"	-
Prod.-No.																								
01290			●			●		●				●				●								
01291			●			●		●				●				●				●				●
01298	●	●		●		●	●		●	●				●				●			●	●		
01459							●		●				●				●		●				●	
01463	●				●			●			●				●					●				
01451		●		●		●	●		●															

+ 2 joint screws Ø 9.5 x 50.0 mm, 1 pre-drill HSS Ø 11.0 mm, 1 tube lubricating paste

Ø in mm	Max. Material thickness in mm (S235)	Size Metric	Size PG	Size Inch		Size Conduit & Pipe Size	 Punches and dies draw bolt with ball bearing	 Punches and dies draw bolt	 matching draw bolt	 matching draw bolt	 matching draw bolt with ball bearing
							Prod.-No.				
12.7	2.0	M 12	7	1/2"	0,500	-	01002	01001	02003	01335	01339
14.3	2.0	-	-	9/16"	0,563	-	01014	01013			
15.2	2.0	-	9	-	0,598	-	01006	01005			
16.0	2.0	-	-	-	0,630	-	01016	01015			
16.2	2.0	M 16	-	-	0,638	-	01010	01009			
17.5	2.0	-	-	11/16"	0,689	-	01018	01017			
18.6	2.0	-	11		0,732	-	01022	01021			
19.0	2.0	-	-	3/4"	0,748	-	01026	01025			
20.0	2.0	-	-	-	0,787	-	01030	01029			
20.4	2.0	M 20	13	-	0,803	-	01034	01033			
20.6	2.0	-	-	13/16"	0,811	-	01038	01037			
22.0	2.0	-	-	-	0,866	-	01042	01041			
22.5	2.0	-	16	7/8"	0,886	1/2"	01046	01045			
23.8	2.0			15/16"	0,937	-	01050	01049			
25.0	2.0	-	-	-	0,984	-	01054	01053		01336	
25.4	2.0	M 25	-	1"	1,000	-	01058	01057			
27.0	2.0			1-1/16"	1,063	-	01078	01077			
28.3	2.0	-	21	-	1,114	3/4"	01070	01069			
28.3	3.0	-	21	-	1,114	3/4"	01074	01073	02002	01337	01340
28.6	2.0	-	-	1-1/8"	1,126	-	01080	01079	02003	01336	01339
30.1	2.0	-	-		1,185	-	01086	01085			
30.5	2.0	-	-	1-7/32"	1,201	-	01094	01093			
31.7	2.0	-	-	1-1/4"	1,248	-	01102	01101			
32.5	2.0	M 32	-	-	1,280	-	01106	01105			
33.4	2.0	-	-	1-5/16"	1,315	-	01110	01109			
34.6	3.0	-	-	1-11/32"	1,362	1"	01118	01117	02002	01337	01340
35.0	2.0	-	-	1-3/8"	1,378	-	01122	01121	02003	01336	01339
35.0	3.0	-	-	1-3/8	1,378	-	01126	01125	02002	01337	01340
37.0	3.0	-	29	-	1,457	-	01130	01129			
38.0	3.0	-	-	1-1/2"	1,496	-	01134	01133			
40.5	3.0	M 40	-	-	1,594	-	01150	01149			
41.3	3.0	-	-	1-5/8"	1,626	-	01154	01153			
42.8	3.0	-	-	-	1,685	-	01158	01157			
43.2	3.0	-	-	1-11/16"	1,701	1 1/4"	01162	01161			
44.5	3.0	-	-	1-3/4"	1,752	-	01164	01163			
47.0	3.0	-	36	-	1,850	-	01166	01165		01338	01341
47.6	3.0	-	-	1-7/8"	1,874	-	01182	01181			
49.6	3.0	-	-	1-15/16"	1,953	1 1/2"	01170	01169			
50.5	3.0	M 50	-	-	1,988	-	01178	01177			
54.0	3.0	-	42	2-1/8"	2,126	-	01190	01189			
57.2	3.0	-	-	2-1/4"	2,252	-	01194	01193			
60.0	3.0	-	48	-	2,362	-	01202	01201			
61.5	3.0	-	-	2-3/8"	2,421	2"	01206	01205			
63.5	3.0	M 63	-	2-1/2"	2,500	-	01210	01209			
66.7	3.0	-	-	2-5/8"	2,626	-	01214	01213			
Above ø 68.0 mm we recommend the use of hydraulic equipment.											
68.0	3.0	-	-	-	2,677	-	01242	01241	02002	01338	01341
70.0	3.0	-	-	2-3/4"	2,756	-	01222	01221			
70.6	3.0	-	-	-	2,780	-	01220	01219			
74.0	3.0	-	-	2-7/8"	2,913	2 1/2"	01234	01233			
75.5	3.0	M 75	-	2-7/8"	2,972	-	01226	01225			
76.2	3.0	-	-	3"	3,000	-	01230	01229			
80.0	3.0	-	-	3-1/8"	3,150	-	01238	01237			
82.0	3.0	-	-	-	3,228	-	01246	01245			
Above 89.0 mm, the use of hydraulic equipment is generally required.							 Punch	 Die	Required accessories: draw bolt	special draw bolt	counternut
89.0	3.0	-	-	3-1/2"	3,504	3"	01251	01252	01398	01398L	01419
92.0	3.0	-	-	3-5/8"	3,622	-	01253	01254			
100.5	3.0	-	-	-	3,957	-	01257	01258			
115.5	3.0	-	-	4-1/2"	4,547	4"	01265	01266			
120.0	3.0	-	-	-	4,724	-	01267	01268			

Split hole punch TriCut™
for sheet steel (S235)

1. **With 3-fold split**
2. **With UNF fine thread**
3. **With 4 crosshair markings for simple, central alignment**

"The max. material thickness for which a hole punch can be used always depends on the screw and draw bolts used."

Usable up to a material thickness of:
- 3.0 mm sheet steel with 3/4" (19.0 mm) screw or draw bolt
- 2.0 mm sheet steel with 3/8" (9.5 mm) screw or draw bolt
- 1.5 mm steel sheet with M6 (6.0 mm) screw or draw bolt

Split hole punch TriCut™ - sets

All sets are supplied in heavy-duty practical plastic cases.

Ø mm	12.5	15.2	16.2	18.6	19.0	20.4	22.5	25.4	28.3	30.5	31.7	32.5	34.6	37.0	38.0	40.5	43.2	47.0	49.6	50.5	54.0	60.0	61.5	63.5
Ø metric	M12	-	M 16	-	-	M 20	-	M 25	-	-	-	M 32	-	-	-	M 40	-	-	-	M 50	-	-	-	M 63
Ø PG	7	9	-	11	-	13	16	-	21	-	-	-	-	29	-	-	-	36	-	-	42	48	-	-
Ø Inch	1/2"	-	-	-	3/4"	-	7/8"	1"	-	1-7/32"	1-1/4"	-	-	-	1-1/2"	-	1-11/16"	-	1-15/16"	-	2-1/8"	-	2-3/8"	2-1/2"
	0.5	0,598	0,638	0,732	0,748	0,803	0,886	1.0	1,114	1,201	1,248	1,280	1,362	1,457	1,496	1,594	1,701	1,850	1,953	1,988	2,126	2,362	2,421	2.5
Ø Conduit	-	-	-	-	-	-	1/2"	-	3/4"	-	-	-	1"	-	-	-	1 1/4"	-	1 1/2"	-	-	-	2"	-
Prod.-No.																								
01762			●			●		●				●				●								
01757			●			●		●				●				●				●				●
01760							●		●				●				●		●				●	
01761	●				●			●			●				●					●				
01754	●		●			●		●				●				●								
	+ 1 ball bearing screw Ø 6.0 x 40.0 mm, 1 ball bearing screw Ø 9.5 x 50.0 mm, 1 ball bearing screw Ø 19.0 x 55.0 mm, 1 pre-drill HSS Ø 10.0 mm, 1 can lubricating paste																							
01755			●			●		●				●				●				●				●
	+ 2 ball bearing screws Ø 9.5 x 50.0 mm, 1 ball bearing screw Ø 19.0 x 55.0 mm, 1 ball bearing screw Ø 19.0 x 75.0 mm, 1 pre-drill HSS Ø 10.0 mm, 1 can lubricating paste																							
01750		●		●		●	●		●	●														
	+2 ball bearing screws Ø 9.5 x 50.0 mm, 1 pre-drill HSS Ø 10.0 mm, 1 tube lubricating paste																							
01751		●		●		●	●		●	●				●				●			●	●		
	+ 2 ball bearing screws Ø 9.5 x 50.0 mm, 1 ball bearing screw Ø 19.0 x 55.0 mm, 1 ball bearing screw Ø 19.0 x 75.0 mm, 1 pre-drill HSS Ø 10.0 mm, 1 can lubricating paste																							

Ø in mm	Max. Material thickness in mm (S235)	Size Metric	Size PG	Size Inch		Size Conduit & Pipe Size	 Punches and dies, draw bolt with ball bearing	 Punches and dies	 matching draw bolt	 matching draw bolt with ball bearing
							Prod.-No.			
12.5	1.5	M 12	7	1/2"	0,500	-	01674	01770	02022	01334
15.2	2.0	-	9	-	0,598	-	01680	01771		
16.2	2.0	M 16	-	-	0,638	-	01683	01772		
18.6	2.0	-	11	-	0,732	-	01686	01773		
20.4	2.0	M 20	13	-	0,803	-	01689	01774	02003	01339
22.5	2.0	-	16	7/8"	0,886	1/2"	01692	01775		
25.4	2.0	M 25	-	1"	1,000	-	01695	01776		
28.3	2.0	-	21	-	1,114	3/4"	01698	01777		
28.3	3.0	-	21	-	1,114	3/4"	01701	01778	02002	01340
30.5	2.0	-	-	1-7/32"	1,201	-	01703	01779	02003	01339
32.5	3.0	M 32	-	-	1,280	-	01708	01780		
34.6	3.0	-	-	1-11/32"	1,362	1"	01711	01788		01340
37.0	3.0	-	29	-	1,457	-	01713	01781		
40.5	3.0	M 40	-	-	1,594	-	01715	01782		
43.2	3.0	-	-	1-11/16"	1,701	1 1/4"	01718	01789		
47.0	3.0	-	36	-	1,850	-	01720	01783		
49.6	3.0	-	-	1-15/16"	1,953	1 1/2"	01723	01790	02002	
50.5	3.0	M 50	-	-	1,988	-	01736	01784		01341
54.0	3.0	-	42	2-1/8"	2,126	-	01727	01785		
60.0	3.0	-	48	-	2,362	-	01729	01786		
61.5	3.0	-	-	2-3/8"	2,421	2"	01732	01791		
63.5	3.0	M 63	-	2-1/2"	2,500	-	01739	01787		

Split hole punch TriCut+™
for sheet steel (S235) and stainless steel

1. **With 3-fold split**
2. **With UNF fine thread**
3. **With 4 crosshair markings for simple, central alignment**

"The max. material thickness for which a hole punch can be used always depends on the screw and draw bolts used."

Usable up to a material thickness of:
- 2.5 mm steel sheet with 3/4" (19.0 mm) screw or draw bolt
- 2.0 mm steel sheet with 7/16" (11.1 mm) screw or draw bolt

Split hole punch TriCut+™ - sets

All sets are supplied in heavy-duty practical plastic cases.

Ø mm	15.2	16.2	18.6	19.0	20.4	22.5	25.4	28.3	30.5	31.7	32.5	34.6	37.0	38.0	40.5	43.2	47.0	49.6	50.5	54.0	60.0	61.5	63.5
Ø metric	-	M 16	-	-	M 20	-	M 25	-	-	-	M 32	-	-	-	M 40	-	-	-	M 50	-	-	-	M 63
Ø PG	9	-	11	-	13	16	-	21	-	-	-	-	29	-	-	-	36	-	-	42	48	-	-
Ø Inch	-	-	-	3/4"	-	7/8"	1"	-	1-7/32"	1-1/4"	-	-	-	1-1/2"	-	1-11/16"	-	1-15/16"	-	2-1/8"	-	2-3/8"	2-1/2"
	0,598	0,638	0,732	0,748	0,803	0,886	1.0	1,114	1,201	1,248	1,280	1,362	1,457	1,496	1,594	1,701	1,850	1,953	1,988	2,126	2,362	2,421	2.5
Ø Conduit	-	-	-	-	-	1/2"	-	3/4"	-	-	-	1"	-	-	-	1 1/4"	-	1 1/2"	-	-	-	2"	-
Prod.-No.																							
01652		●			●		●				●				●								
01653		●			●		●				●				●				●				●
01645						●		●				●				●		●				●	
01646				●			●			●				●					●				

Ø in mm	Max. Material thickness in mm (VA)	Size Metric	Size PG	Size Inch		Size Conduit & Pipe Size	 Punches and dies, draw bolt with ball bearing	 Punches and dies	 matching draw bolt	 matching draw bolt with ball bearing
							Prod.-No.			
15.2	2.0	-	9	-	0,598	-	01465	01600	02007	01342
16.2	2.0	M 16	-	-	0,638	-	01466	01656		
18.6	2.0	-	11	-	0,732	-	01467	01603		
20.4	2.0	M 20	13	-	0,803	-	01468	01606		
22.5	2.0	-	16	7/8"	0,886	1/2"	01469	01609		
25.4	2.5	M 25	-	1"	1,000	-	01470	01659		
28.3	2.5	-	21	-	1,114	3/4"	01471	01612	02002	01340
30.5	2.5	-	-	1-7/32"	1,201	-	01472	01615		
32.5	2.5	M 32	-	-	1,280	-	01473	01662		
34.6	2.5	-	-	1-11/32"	1,362	1"	01474	01618		
37.0	2.5	-	29	-	1,457	-	01475	01621		
40.5	2.5	M 40	-	-	1,594	-	01476	01665		01341
43.2	2.5	-	-	1-11/16"	1,701	1 1/4"	01477	01624		
47.0	2.5	-	36	-	1,850	-	01478	01627		
49.6	2.5	-	-	1-15/16"	1,953	1 1/2"	01479	01630		
50.5	2.5	M 50	-	-	1,988	-	01480	01668		
54.0	2.5	-	42	2-1/8"	2,126	-	01481	01633		
60.0	2.5	-	48	-	2,362	-	01482	01636		
61.5	2.5	-	-	2-3/8"	2,421	2"	01483	01640		
63.5	2.5	M 63	-	2-1/2"	2,500	-	01484	01671		

Split hole punch TwinCut™
for sheet steel (S235) and stainless steel

1. **With 2-fold split**
2. **With UNF fine thread**
3. **With 4 crosshair markings for simple, central alignment**

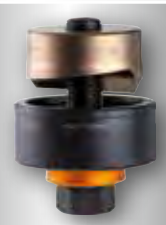
"The max. material thickness for which a hole punch can be used always depends on the screw and draw bolts used."

Usable up to a material thickness of:
- 3.0 mm steel sheet with 3/4" (19.0 mm) screw or draw bolt
- 2.5 mm steel sheet with 7/16" (11.1 mm) screw or draw bolt
- 2.0 mm steel sheet with 3/8" (9.5 mm) screw or draw bolt

Split hole punch TwinCut™ - sets

All sets are supplied in heavy-duty practical plastic cases.

Ø mm	12.7	15.2	16.2	18.6	19.0	20.4	22.5	25.4	28.3	30.5	31.7	32.5	34.6	37.0	38.0	40.5	43.2	47.0	49.6	50.5	54.0	60.0	61.5	63.5
Ø metric	M12	-	M 16	-	-	M 20	-	M 25	-	-	-	M 32	-	-	-	M 40	-	-	-	M 50	-	-	-	M 63
Ø PG	7	9	-	11	-	13	16	-	21	-	-	-	-	29	-	-	-	36	-	-	42	48	-	-
Ø Inch	1/2"	-	-	-	3/4"	-	7/8"	1"	-	1-7/32"	1-1/4"	-	-	-	1-1/2"	-	1-11/16"	-	1-15/16"	-	2-1/8"	-	2-3/8"	2-1/2"
	0.5	0,598	0,638	0,732	0,748	0,803	0,886	1.0	1,114	1,201	1,248	1,280	1,362	1,457	1,496	1,594	1,701	1,850	1,953	1,988	2,126	2,362	2,421	2.5
Ø Conduit	-	-	-	-	-	-	1/2"	-	3/4"	-	-	-	1"	-	-	-	1 1/4"	-	1 1/2"	-	-	-	2"	-
Prod.-No.																								
01566							●		●				●				●		●				●	
01567	●				●			●			●				●					●				

Ø in mm	Max. Material thickness in mm (VA)	Size Metric	Size PG	Size Inch		Size Conduit & Pipe Size	 Punches and dies, draw bolt with ball bearing	 Punches and dies	 matching draw bolt	 matching draw bolt with ball bearing
							Prod.-No.			
12.7	2.0	M 12	7	1/2"	0,500		01576	01510	02003	01339
15.2	2.0	-	9	-	0,598	-	01577	01513		
16.2	2.0	M 16	-	-	0,638	-	01578	01516		
18.6	2.5	-	11	-	0,732	-	01579	01519		
20.4	2.5	M 20	13	-	0,803	-	01580	01522	02007	01342
22.5	2.5	-	16	7/8"	0,886	1/2"	01581	01525		
25.4	2.5	M 25	-	1"	1,000	-	01582	01528		
28.3	3.0	-	21	-	1,114	3/4"	01583	01531	02002	01340
30.5	3.0	-	-	1-7/32"	1,201	-	01584	01534		
32.5	3.0	M 32	-	-	1,280	-	01585	01537		
34.6	3.0	-	-	1-11/32"	1,362	1"	01586	01561		
37.0	3.0	-	29	-	1,457	-	01587	01540		
40.5	3.0	M 40	-	-	1,594	-	01588	01543		01341
43.2	3.0	-	-	1-11/16"	1,701	1 1/4"	01589	01562		
47.0	3.0	-	36	-	1,850	-	01590	01546		
49.6	3.0	-	-	1-15/16"	1,953	1 1/2"	01591	01563		
50.5	3.0	M 50	-	-	1,988	-	01592	01549		
54.0	3.0	-	42	2-1/8"	2,126	-	01593	01552		
60.0	3.0	-	48	-	2,362	-	01594	01555		
61.5	3.0	-	-	2-3/8"	2,421	2"	01595	01564		
63.5	3.0	M 63	-	2-1/2"	2,500	-	01596	01558		

Hole punch FormCut™

for sheet steel (S235)

1. **with sideways punch part ejection**
2. **With UNF fine thread**
3. **With 4 crosshair markings for simple, central alignment**

"The max. material thickness at which a square or rectangular hole punch (or even special tool) can be used always depends on the draw bolt and the cross-section of the tool (length x width or special shape)."

Hole punch FormCut™ - square - for sheet steel (S235)

Size in mm	Max. Material thickness in mm (S235)	For use in		pre-drilling in mm	incl. 1 – 4	1 draw bolt	2 counternut	3 Ball bearing pressure nut	4 Adapter for hydraulic
					Prod.-No.				
12.7 x 12.7	1.75	●	●	10	01300	01348	01355	01352	01353
15.8 x 15.8	1.75	●	●	10	01301				
19.0 x 19.0	2.0	●	●	14	01302	01347	01351		
22.2 x 22.2	2.0	●	●	14	01303				
24.0 x 24.0	2.0	●	●	14	01331				
25.4 x 25.4	2.0	●	●	17	01304	01360	01354	01359	01361
45.5 x 45.5	3.0		●	20	01313	01345	01350		
46.0 x 46.0	3.0		●	20	01305				
50.8 x 50.8	3.0		●	24	01306	01344			
68.0 x 68.0	3.0		●	24	01308		01349		
92.0 x 92.0	3.0		●	30	01309	01343			
125.0 x 125.0	3.0		●	30	01431		01356		
138.0 x 138.0	3.0		●	30	01311				

Hole punch FormCut™ - rectangular - for sheet steel (S235)

Size in mm	Max. Material thickness in mm (S235)	Number of poles	For use in		pre-drilling in mm	incl. 1 – 4	1 draw bolt	2 counternut or bridge	3 Ball bearing pressure nut	4 Adapter for hydraulic
						Prod.-No.				
17.0 x 19.0	2.0		●	●	14	01317	01347	01351	01352	01353
21.8 x 25.8	2.0		●	●	17	01318	01360		01359	01361
22.0 x 30.0	2.0		●	●	17	01319				
22.0 x 42.0	2.0		●	●	17	01320				
25.0 x 50.0	2.0		●	●	17	01332		01418		
45.0 x 92.0	2.0			●	24	01314	01344	01349		
46.0 x 92.0	2.0			●	24	01329				
68.0 x 138.0	3.0			●	30	01330		01358		

Hole punch FormCut™ - rectangular - for heavy plug connectors (S235) - for sheet steel (S235)

36.0 x 52.0	2.0	6-pole		●	24	01325	01344	01350		
36.0 x 65.0	2.0	10-pole		●	24	01326				
36.0 x 86.0	2.0	16-pole		●	24	01327				
36.0 x 91.0	2.0			●	24	01323		01349		
36.0 x 112.0	2.0	24-pole		●	24	01328		01357		
46.0 x 86.0	2.0			●	24	01322		01349		
46.0 x 112.0	2.0			●	30	01324	01343			

Hole punch FormCut+™

for sheet steel (S235) and stainless steel

1. **with sideways punch part ejection**
2. **With UNF fine thread**
3. **With 4 crosshair markings for simple, central alignment**

"The max. material thickness at which a square or rectangular hole punch (or even special tool) can be used always depends on the draw bolt and the cross-section of the tool (length x width or special shape)."

Hole punch FormCut+™ - square - for stainless steel (VA)

Size in mm	Max. Material thickness in mm (VA)	For use in		pre-drilling in mm	incl. 1 – 4	1 draw bolt	2 counternut	3 Ball bearing pressure nut	4 Adapter for hydraulic
					Prod.-No.				
12.7 x 12.7	1.25	●	●	10	013001	01348	01355	01352	01353
15.8 x 15.8	1.25	●	●	10	013011				
19.0 x 19.0	1.5	●	●	14	013021	01347	01351		
22.2 x 22.2	1.5	●	●	14	013031				
24.0 x 24.0	1.5	●	●	14	013311				
25.4 x 25.4	1.5	●	●	17	013041	01360	01354	01359	01361
45.5 x 45.5	2.0		●	20	013131	01345	01350		
46.0 x 46.0	2.0		●	20	013051				
50.8 x 50.8	2.0		●	24	013061	01344			
68.0 x 68.0	2.0		●	24	013081		01349		
92.0 x 92.0	2.0		●	30	013091	01343			
125.0 x 125.0	2.0		●	30	014311		01356		
138.0 x 138.0	2.0		●	30	013111		01356		

Hole punch FormCut+™ - rectangular - for stainless steel (VA)

Size in mm	Max. Material thickness in mm (VA)	Number of poles	For use in		pre-drilling in mm	incl. 1 – 4	1 draw bolt	2 counternut or bridge	3 Ball bearing pressure nut	4 Adapter for hydraulic
						Prod.-No.				
17.0 x 19.0	1.5		●	●	14	013171	01347	01351	01352	01353
21.8 x 25.8	1.5		●	●	17	013181	01360		01359	01361
22.0 x 30.0	1.5		●	●	17	013191				
22.0 x 42.0	1.5		●	●	17	013201				
25.0 x 50.0	1.5		●	●	17	013321		01418		
45.0 x 92.0	2.0			●	24	013141	01344	01349		
46.0 x 92.0	2.0			●	24	013241				
68.0 x 138.0	2.0			●	30	013301	01343	01358		

Hole punch FormCut+™ - rectangular - for heavy plug connectors - for stainless steel (VA)

36.0 x 52.0	2.0	6-pole		●	24	013251	01344	01350		
36.0 x 65.0	2.0	10-pole		●	24	013261				
36.0 x 86.0	2.0	16-pole		●	24	013271				
36.0 x 91.0	2.0			●	24	013231		01349		
36.0 x 112.0	2.0	24-pole		●	24	013281		01357		
46.0 x 86.0	2.0			●	24	013221		01349		
46.0 x 112.0	2.0			●	30	013241	01343			

ALFRA HOLE PUNCHES® – SANITARY

- For punching out holes in washbasins

Size mm	Designation	Bolt size mm	Prod.-No.
Ø 28.3	Hole punch complete	M 10 x 1	01293
Ø 31.7	Hole punch complete	M 10 x 1	01294
Ø 35.0	Hole punch complete	M 10 x 1	01295
Ø 37.0	Hole punch complete	M 10 x 1	01292
	Draw bolt	M 10 x 1	01299

Prod.-No. 01450

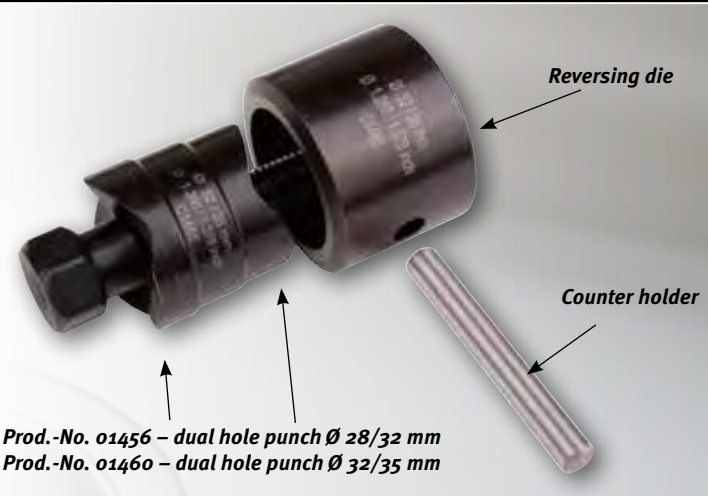
Hole punch set - sanitary	Prod.-No.
	01450

In plastic case
Contents: 3 hole punches 28.3 + 31.7 + 35.0 mm
3 draw bolts M 10.0 x 1
1 ring open-ended wrench 17

ALFRA DUAL HOLE PUNCHES – SANITARY

- For punching out holes in washbasins
- Spanner actuation size 19 mm

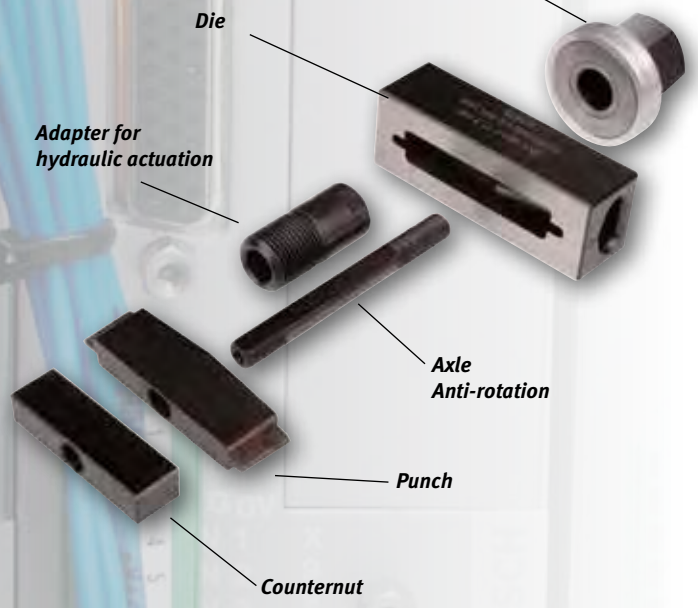
Size mm	Designation	Bolt size mm	Prod.-No.
28 and 32	hole punches cpl.	10 x 55 special	01456
32 and 35	hole punches cpl.	10 x 55 special	01460
	Draw bolt	10 x 55 special	01457

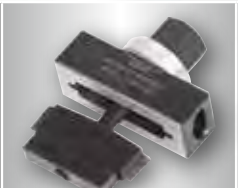


Prod.-No. 01456 – dual hole punch Ø 28/32 mm
Prod.-No. 01460 – dual hole punch Ø 32/35 mm

- For "Sub-Min-D" multiple plug connectors - for sheet steel (S235) and stainless steel
- For punching out the cutout for 9-50-pole plug connectors. Anti-rotation axles for punches and dies are used as draw bolts.
- All hole punches are fitted with side ejection for the waste piece. No jamming in the die.
- The hole punches are supplied in heavy duty, practical plastic cases.

Prod.-No. 01369



Size in mm	Max. Material thickness in mm (S235)/VA	Number of poles	For use in		pre-drilling in mm	 incl. 1 – 4	1  draw bolt	2  counternut or bridge	3  Ball bearing pressure nut	4  Adapter for hydraulic

Hole punch Sub-Mini-D - rectangular

						Prod.-No.				
19.8 x 11.3	2.0 x 1.5	9-pole	●	●	10	01366	01438	01442	01352	01353
28.2 x 11.3	2.0 x 1.5	15-pole	●	●	10	01367		01443		
41.9 x 11.3	1.75 x 1.25	25-pole	●	●	10	01368		01447		
58.4 x 11.3	1.75 x 1.25	37-pole	●	●	10	01369		01444		
55.7 x 13.9	1.65 x 1.0	50-pole	●	●	10	01370		01445		

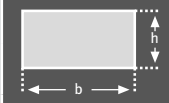
- All hole punches are fitted with side ejection for the waste piece. No jamming in the die.
- The hole punches are supplied in heavy duty, practical plastic cases.

Hole punches special forms

Size in mm	Max. Material thickness in mm (S235)/VA	For use in		pre-drilling in mm	incl. 1 – 4	1 draw bolt	2 counternut or bridge	3 Ball bearing pressure nut	4 Adapter for hydraulic
					Prod.-No.				
Ø 22.5 with 3 mm lug	2.0 x 1.5	●	●	14	01420	01333	01351	01352	01353
Ø 22.5 2-sided flattened to 18.5 mm	2.0 x 1.5	●	●	14	01421	01347			
Ø 22.5 4-sided flattened to 20.1 mm	2.0 x 1.5	●	●	14	01422				
33.3 x 17.0 x 10.0 for profile cylinder	2.0 x 1.5	●	●	14	01423				
Ø 16.3 4-sided flattened to 14.1 mm	1.75 x 1.0	●	●	11	01427	01348	01355		

- We can make any form of circular, square, rectangular hole punch to your drawings at short notice.
- Please state whether your enquiry is for manual or hydraulic actuation in addition to the sheet thickness and material number.
- Ask for our technical support.

Hole punch custom-made products

 Circular	Ø diameter d				Material thickness		Material type
	mm				mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐
 Circular with lugs	Ø diameter d		Number of lugs	Lug width	Material thickness		Material type
	mm			mm	mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐
 Square	Edge length a				Material thickness		Material type
	mm				mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐
 Rectangle	Width b		Height h		Material thickness		Material type
	mm		mm		mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐
 Circular flattened on one side	Ø diameter d		Flattened to		Material thickness		Material type
	mm		mm		mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐
 Circular flattened on two sides	Ø diameter d		Flattened to		Material thickness		Material type
	mm		mm		mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐
 Square with 4 flattened corners	Edge length a		Corners flattened to		Material thickness		Material type
	mm		mm		mm		Sheet steel (S235) ☐
							Stainless steel (VA) ☐

ALFRA HYDRAULIC
MANUAL PUNCHES

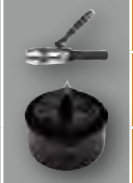
- **Up to 750 bar pressure**
- **Up to 138 x 138 mm square**
- **Up to 152 mm round**
- **Only 1.45 kg**

Compact™ manual punch straight

for use in construction of switch gear and control cabinets - suitable for all hole punch types
Loading only takes place in the tension direction and makes work considerably easier

1. **Precisely-matched overpressure valve**
2. **Reinforced handle - soft touch**
3. **Body hard-anodised, stable grip, elegant**
4. **Weighs only 1.45 kg**
5. **High-compression cylinder bore surface**
6. **Lasered production code on rear**
7. **High punching force of 75 kN**

COMPACT™ MANUAL PUNCH STRAIGHT SETS

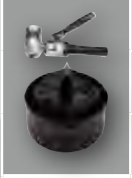
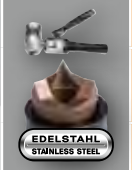
Ø mm	15,2	16,2	18,6	20,4	22,5	25,4	28,3	32,5	37	40,5	47	50,5	54	60	63,5
Ø metric	-	M 16	-	M 20	-	M 25	-	M 32	-	M 40	-	M 50	-	-	M 63
Ø PG	9	-	11	13	16	-	21	-	29	-	36	-	42	48	-
Ø Inch					7/8"	1"							2-1/8"		2-1/2"
	0.598	0.638	0.732	0.803	0.886	1.000	1.114	1.280	1.457	1.594	1.850	1.988	2.126	2.362	2.500
Item no															
Set MonoCut™ - for sheet steel (S235): 1 Compact™ manual punch straight / MonoCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 HSS pre-drill Ø 11 mm / 1 spacer sleeve set (3-part)															
 **02006**	●		●	●	●		●		●		●		●		
Set TriCut™ - for sheet steel (S235): 1 Compact™ manual punch straight / TriCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 HSS pre-drill Ø 10 mm / 1 spacer sleeve set (3-part)															
 **01752**	●		●	●	●		●		●		●		●	●	
01765		●		●		●		●		●					
01758		●		●		●		●		●		●			●
Set TriCut+™ - for sheet steel (S235) and stainless steel sheeting: 1 Compact™ manual punch straight / TriCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 11.1 mm / 1 HSS pre-drill Ø 11.5 mm / 1 spacer sleeve set (3-part)															
 **01650**	●		●	●	●		●		●		●		●		
01642		●		●		●		●		●					
01654		●		●		●		●		●		●			●
Set TwinCut™ - for sheet steel (S235) and stainless steel sheeting: 1 Compact™ manual punch straight / TwinCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 draw bolt Ø 19 x 11.1 mm 1 HSS pre-drill Ø 11.5 mm / 1 spacer sleeve set (3-part)															
 **01570**		●		●		●		●		●					
Compact™ manual punch straight: 1 Compact™ manual punch straight / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 HSS pre-drill Ø 11 mm / 1 spacer sleeve set (3-part))															
 **02001**	without punches and dies														

CompactCombi™ manual punch 90°

for use in construction of switch gear and control cabinets - suitable for all hole punch types
Loading only takes place in the tension direction and makes work considerably easier

1. **Precisely-matched overpressure valve**
2. **Reinforced handle - soft touch**
3. **Body hard-anodised, stable grip, elegant**
4. **Weighs only 1.75 kg**
5. **High-compression cylinder bore surface**
6. **Lasered production code on rear**
7. **High punching force of 75 kN**

CompactCombi™ manual punch 90° sets

Ø mm	15,2	16,2	18,6	20,4	22,5	25,4	28,3	32,5	37	40,5	47	50,5	54	60	63,5
Ø metric	-	M 16	-	M 20	-	M 25	-	M 32	-	M 40	-	M 50	-	-	M 63
Ø PG	9	-	11	13	16	-	21	-	29	-	36	-	42	48	-
Ø Inch					7/8"	1"							2-1/8"		2-1/2"
	0.598	0.638	0.732	0.803	0.886	1.000	1.114	1.280	1.457	1.594	1.850	1.988	2.126	2.362	2.500
Item no															
Set MonoCut™ - for sheet steel (S235): 1 CompactComb™ manual punch 90° / MonoCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 HSS pre-drill Ø 11 mm / 1 spacer sleeve set (3-part)															
 **02052**	●		●	●	●		●		●		●		●	●	
Set TriCut™ - for sheet steel (S235): 1 CompactComb™ manual punch 90° / TriCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 HSS pre-drill Ø 10 mm / 1 spacer sleeve set (3-part)															
 **01753**	●		●	●	●		●		●		●		●	●	
01766		●		●		●		●		●					
01759		●		●		●		●		●		●			●
Set TriCut+™ - for sheet steel (S235) and stainless steel sheeting: 1 CompactComb™ manual punch 90° / TriCut+™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 11.1 mm / 1 HSS pre-drill Ø 11.5 mm / 1 spacer sleeve set (3-part)															
 **01651**	●		●	●	●		●		●		●		●		
01643		●		●		●		●		●					
01655		●		●		●		●		●		●			●
Set TwinCut™ - for sheet steel (S235) and stainless steel sheeting: 1 CompactCombi™ manual punch 90° / TwinCut™ punches and dies / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 draw bolt Ø 19 x 11.1 mm 1 HSS pre-drill Ø 11.5 mm / 1 spacer sleeve set (3-part)															
 **01575**		●		●		●		●		●					
CompactCombi™ manual punch 90°: 1 CompactCombi™ manual punch 90° / 1 draw bolt Ø 19 mm / 1 draw bolt Ø 19 x 9.5 mm / 1 HSS pre-drill Ø 11 mm / 1 spacer sleeve set (3-part)															
 **02050**	without punches and dies														

Akku-Compact Flex™

for use in construction of switch gear and control cabinets - suitable for all hole punch types
Loading only takes place in the tension direction and makes work considerably easier

1. **Handle inset soft touch**
2. **High-pressure hose - flexible, elastic**
3. **USB interface for readable pressure values, service intervals etc.…**
4. **Pressure sensor - automatic detection of punch breakthrough. Once the material has been punched through, the punch can not damage the die.**

AKKU-COMPACT FLEX™

Practical manual hydraulics with 18 V LiON battery for punching circular, square and rectangular cutouts in control cabinet and switch gear construction.
Extremely easy to handle and light thanks to high-tensile aluminium head.

- Light and easy to handle, only 2.5 kg including battery

Prod.-No. 02082

Technical data:

Punching

Circular holes:	**up to 82 mm Ø** 3.0 mm sheet steel (S235) 2.0 mm stainless steel (F = 600 N/mm²) **89 - 152 mm Ø** only with special traction bolt* and spacer* 2.0 mm sheet steel (S235) 1.5 mm stainless steel (F = 600 N/mm²)
Shaped holes:	**68 x 68 mm** 3.0 mm sheet steel (S235), 2.0 mm stainless steel (F = 600 N/mm²) **92 x 92 mm** only with special traction bolt* and spacer* 2.0 mm sheet steel (S235) 1.5 mm stainless steel (F = 600 N/mm²)

Drive

Max. punching force:	75 kN
Max. hydraulic pressure:	680 bar

Battery	18 V Li-Ion / 1.5 Ah
Charging time:	30 mins. after full discharge
Use:	- 10° - + 40° C

Battery charger
Charges all batteries 18 - 28 V, compatible for NiCD, NiMH and Li-Ion batteries.
Automatic temperature monitoring. Battery cell overcharging is prevented by switchover from rapid charging to trickle charging.
The charging state is shown by the LED display.
The PCB is completely enclosed.

Prod.-No. 02072

Prod.-No. 02071

Punching capacity with 1.5 Ah battery

195 x Ø 22.5 mm	MonoCut™	to 2.5 mm S235
165 x Ø 22.5 mm	TriCut™	to 2.5 mm S235
105 x Ø 63.5 mm	MonoCut™	to 2.5 mm S235
65 x Ø 63.5 mm	TriCut™	to 2.5 mm S235
170 x Ø 22.5 mm	TwinCut™	to 1.5 mm V2A
95 x Ø 63.5 mm	TwinCut™	to 1.5 mm V2A

Weight
2.5 kg including battery

Scope of delivery:	**Prod.-No.**
ALFRA Akku-Compact Flex™ manual hydraulics	02082
with 1 battery 18 V, charger 18 - 28 V	
Draw bolts – 9.5 x 19 mm – Prod.-No. 02003	
Draw bolts – 19 x 120 mm – Prod.-No. 02002	
Spacer sleeve set 3-part – Prod.-No. 02004	
Pre-drill 11 mm Ø – Prod.-No. 08023	
in heavy duty, practical plastic case	

Spare parts:	**Prod.-No.**
Replacement battery	02082-01
Battery charger 220 V - 240 V	02082-03
* Special draw bolt for square holes 92 x 92 mm	01395
* Special draw bolt for round holes 89 x 152 mm	01398L
* Special spacer sleeve	01396

Compact Flex™ manual hydraulics

for use in construction of switch gear and control cabinets - suitable for all hole punch types
Loading only takes place in the tension direction and makes work considerably easier

1. **Precisely-matched overpressure valve**
2. **Reinforced handle - soft touch**
3. **Body hard-anodised, stable grip, elegant**
4. **Weighs only 2 kg**
5. **High-compression cylinder bore surface**
6. **Lasered production code on rear**
7. **High punching force of 75 kN**
8. **High-pressure hose flexible - elastic**

Punching capacity

Circular holes	up to Ø 152 mm
Square holes	up to 68 x 68 mm

Punching force:	75 kN
Operating pressure max.: 680 bar	
Hydraulic hose length:	600 mm
Weight:	2.0 kg

Scope of delivery:

1 Compact Flex™ manual hydraulic punch
1 draw bolt Ø 19.0
1 draw bolt Ø 19.0 x 9.5 mm
1 HSS pre-drill Ø 11.0 mm
1 spacer sleeve set 3-part

	Prod.-No.
Compact Flex™ manual hydraulics in heavy duty, practical plastic case	02065

ALFRA BATTERY COMPACT HYDRAULIC PUNCH

Practical manual hydraulics with 18 V NiMH battery for punching circular, square and rectangular cutouts in control cabinet and switch gear construction.
Extremely easy to handle and light thanks to high-tensile aluminium head.

- Light and easy to handle, only 3.7 kg with battery package
- With overpressure valve.
- High-performance drive motor with ergonomically-designed "soft touch" handle
- Battery packages can be pushed in from both sides, therefore weight compensation.

Technical data:

Punching

Circular holes:	**up to 82 mm Ø** 3.0 mm sheet steel (S235) 2.0 mm stainless steel (F = 600 N/mm²) **89 - 152 mm Ø** only with special traction bolt* and spacer* 2.0 mm sheet steel (S235) 1.5 mm stainless steel (F = 600 N/mm²)
Shaped holes:	**68 x 68 mm** 3.0 mm sheet steel (S235), 2.0 mm stainless steel (F = 600 N/mm²) **92 x 92 mm** only with special traction bolt* and spacer* 2.0 mm sheet steel (S235) 1.5 mm stainless steel (F = 600 N/mm²)

Drive

Punching force:	75 kN with overpressure valve

Battery

	18 V, 3.0 Ah NiMH
Charging time:	45 mins. after full discharge
Charging cycles:	~ 500 under normal conditions
Use:	0° - + 40° C, capacity loss below 0° C

Battery charger
Charges all batteries 18 - 28 V, compatible for NiCD, NiMH and Li-Ion batteries.
Automatic temperature monitoring. Battery cell overcharging is prevented by switchover from rapid charging to trickle charging.
The charging state is shown by the LED display.
The PCB is completely enclosed.

Punching time/Punching capacity

Ø 22.5 mm	2 mm sheet steel (S235)	5 sec.	190 holes/battery
Ø 63.5 mm	2 mm sheet steel (S235)	7 sec.	100 holes/battery
68 x 68 mm	2 mm sheet steel (S235)	7 sec.	70 holes/battery

Weight
3.7 kg with battery
2.7 kg without battery
Weight cpl. 7.8 kg without punching tools

Prod.-No. 02070

Scope of delivery:	**Prod.-No.**
ALFRA Akku-Compact manual hydraulics	02070
with 2 batteries 18 V, charger 18 - 28 V	
Draw bolts – 9.5 x 19 mm – Prod.-No. 02003	
Draw bolts – 19 x 120 mm – Prod.-No. 02002	
Spacer sleeve set 3-part – Prod.-No. 02004	
Pre-drill 11 mm Ø – Prod.-No. 08023	
in heavy duty, practical plastic case	

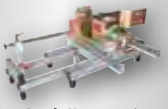
Spare parts:	**Prod.-No.**
Replacement battery	02071
Battery charger 220 V - 240 V	02072
* Special draw bolt for square holes 92 x 92 mm	01395
* Special draw bolt for round holes 89 x 152 mm	01398L
* Special spacer sleeve	01396

Prod.-No. 02072

Prod.-No. 02071

Recommended combination ■ ■

Possible combination ■

	 AHP-M	 AHP-S	 DSP-120	 LHP 700	 FOOT PUMP	 ALH 600
Prod.-No.	03855	03854	02027	02140	02121	03190
 Prod.-No. 02012 / 02013	■*	■ ■	■	■	■ ■	■
 Prod.-No. 03200SET	■ ■	■				■
 Prod.-No. 03250	■ ■*	■	■	■	■	■
 Prod.-No. 03256	■ ■*	■	■	■	■	■
 Prod.-No. 03258	■ ■*	■	■	■	■	■
 Prod.-No. 03260	■ ■*	■	■	■	■	■
 Prod.-No. 03300	■ ■*	■	■	■	■	■
 Prod.-No. 03360/03380	■ ■*	■	■		■ ■	■ ■
 AP 250		■				■ ■
 AP 400		■				■ ■

* in combination with optional footswitch/hand switch

ALFRA ELECTRO-HYDRAULIC PUMP AHP S

Technical data:

Max. pressure:	700 bar
Max. flow rate:	0.58 l/min
Oil type:	HLP 32
Filling volume:	3.2 l
Working volume:	2.2 l
Weight:	27 kg
Voltage / frequency:	230 V / 50 Hz
Power:	0.75 kW
Current consumption:	3.26 A
Motor speed:	2800 rpm

	Prod.-No.
Electro-hydraulic pump AHP S incl. hand switch	03854

ALFRA ELECTRO-HYDRAULIC PUMP AHP M

Technical data:

Max. pressure:	700 bar
Max. flow rate:	1.1 l/min
Oil type:	HLP 32
Filling volume:	3.2 l
Working volume:	2.2 l
Weight:	29 kg
Operating voltage:	230 V / 50 Hz
Power:	1.3 kW
Current consumption:	5.65 A
Motor speed:	2800 rpm

	Prod.-No.
Electro-hydraulic pump AHP M	03855
optional hand switch for AHP S and AHP M	03859

Prod.-No. 03859 optional

ALFRA FOOT PUMP

- Max. operating pressure 700 bar
- Fitted pressure limiting valve.
- For all circular, square, rectangular and special shape hole punches.
- The foot pump leaves both hands free for precise positioning and punching on the control cabinet. The foot pump carrying frame is splayed. This guarantees steady working with no risk of tipping.

Tank volume:	270 cm^3
Usable oil volume:	210 cm^3
Delivery volume:	1.7 cm^3 per piston stroke

Contents: 1 hydraulic cylinder with quick coupling
1 hydraulic hose 2.8 m
1 draw bolt Ø 19.0 and 19.0 x 9.5 mm
1 spacer sleeve set 5-part
1 pre-drill Ø 11.0 mm

	Prod.-No.
Set foot pump with hydraulic cylinder and accessories	02120
Foot pump only, with 2.8 m hydraulic hose	02121

Prod.-No. 02120

ALFRA ELECTRO-HYDRAULIC PUMP DSP-120

Compact electro-hydraulic pump, two-stage operation withholding function for single-action hydraulic cylinder.

Technical data

Operating voltage:	230 V/50 Hz
Motor power:	0.4 kW
max. operating pressure:	700 bar
Flow rate 0 - 20 bar:	2.0 l/min
Flow rate 20 - 700 bar:	0.2 l/min
Tank volume:	1.2 l
Usable oil volume:	0.8 l
Weight approx.:	7.5 kg

	Prod.-No.
Electro-hydraulic pump with accessories	02025

Contents: 1 hydraulic cylinder SKP-1
1 hydraulic hose 1.8 m
1 draw bolt Ø 19.0 and 19.0 x 9.5 mm
1 spacer sleeve set multi-part
1 pre-drill Ø 11.0 mm
1 hand switch

Electro-hydraulic pump only, 220 V, with 1.8 m hydraulic hose, quick coupling and hand switch	02027
Foot switch 2-pedal	02029
Hand switch	02030

Prod.-No. 02025

ALFRA AIR-HYDRAULIC PUMP – LHP 700

Air-hydraulic pump for the operation of single-action hydraulic cylinders for whole punches, cable cutters, presses or similar applications.

- Heavy-duty tank
- Tank venting filter
- Reduced noise levels
- Oil level indicator on tank
- Precise start-up under load possible
- Precise activation - the drain valve activated by the foot pedal allows precise lowering of the load.
- Hydraulic hose 2.0 m with quick coupling

Technical data

max. operating pressure: (at a feed line pressure of 7 bar)	700 bar
Feed pressure/working range:	2.8 - 10 bar
Air connection:	1/4“ thread
Flow rate depressurised:	1.0 l/min
Flow rate p max. (with 7 bar air):	0.1 l/min
Tank volume:	2.4 l
Usable oil volume:	2.1 l
Weight:	6.3 kg

	Prod.-No.
Air-hydraulic pump	02140

Prod.-No. 02140

Accessory parts – draw bolts, ball bearing screws

	Size in inch	Size in mm	Prod.-No.
Draw bolt	-	6.0	02024
Adapter	-	19.0 / 6.0	02023
Draw bolt cpl.	-	19.0 / 6.0	02022
Draw bolt	3/8"	9.5	02009
Adapter	3/4" / 3/8"	19.0 / 9.5	01353
Draw bolt compl.	3/4" / 3/8"	19.0 / 9.5	02003
Draw bolt	3/4" / 3/8"	19.0 / 9.5*	02010
Draw bolt	7/16"	11.1	01424
Adapter	3/4" / 7/16"	19.0 / 11.1	01425
Draw bolt compl.	3/4" / 7/16"	19.0 / 11.1	02007
Draw bolt	3/4" / 7/16"	19.0 / 11.1*	02011
Draw bolt	3/4"	19.0	02002

* draw bolts made of high-alloy tool steel for higher loading

Prod.-No. 02003 – complete

Prod.-No. 02007 – complete

Prod.-No. 02002

Prod.-No. 02010

Prod.-No. 02011

	ø x l in inch	ø x l in mm	Prod.-No.
Draw bolt with ball bearing	-	6.0 x 46 mm	01334
Draw bolt with ball bearing	3/8" x 2-15/16"	9.5 x 75 mm	01339
Draw bolt with ball bearing	3/4" x 2-4/16"	19.0 x 55 mm	01340
Draw bolt with ball bearing	7/16" x 2-15/16"	11.1 x 75 mm	01424
Draw bolt with ball bearing	3/4" x 2-15/16"	19.0 x 75 mm	01341
Draw bolt with ball bearing	3/4" x 4-3/4"	19.0 x 120 mm	01342

1. **High-tensile bolts for the toughest operating conditions**
2. **Protrusion of ball bearing outside protective ring ensures perfect force transmission to wrench or punching tool**
3. **Ballbearings encapsulated in aluminium rings Extremely long-life and perfectly protected against soiling**
4. **UNF fine thread**

Accessory parts - for hydraulic pumps

		Prod.-No.
Hydraulic hose for foot pump	2.80 m	02122
Hydraulic hose for LHP 700	2.00 m	02112
Hydraulic hose for DSP 120	2.50 m	02026
Hydraulic hose for AHP S	2.00 m	02116

Prod.-No. 02112

Hydraulic cylinders and accessories

	Prod.-No.
Hydraulic cylinder SKP-1 with quick coupling (up to 11 t)	02012
Weight 2.5 kg	
Hydraulic cylinder SKP-1 Mini with quick coupling (up to 7 t)	02013
Weight 0.86 kg	
Spacer sleeve set 3-part	02004
Spacer sleeve set 5-part	02014
Pre-drill Ø 10.0 mm	08036
Pre-drill Ø 11.0 mm	08023
Pre-drill Ø 11.5 mm	08035
Pre-drill SVB with 5 drill Ø 8.5/11.5/12.5/16.5/21.0 mm	08016

Prod.-No. 02013

Prod.-No. 02014

Prod.-No. 08023

Prod.-No. 08016

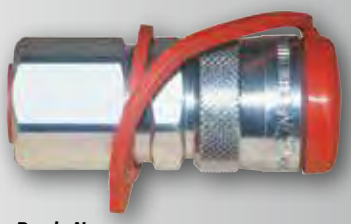
Prod.-No. 02012

Quick-connect couplings – for ALFRA hydraulic equipment

- Non-drip coupling and decoupling
- Easy-to-use operability
- Dust protection cap

	Prod.-No.
Connection coupling with internal thread R 1/4" (for fitting to hose end)	01452
Connection coupling with internal thread R 3/8" (for fitting to hose end)	014523/8NPT
Connection nipple with internal thread R 1/4" (for fitting to cylinder)	01453
Adapter R 1/4" external thread	01454

Prod.-No. 01453



Prod.-No. 01452

Hydraulic oil – for ALFRA hydraulic pumps

	Prod.-No.
1 litre hydraulic oil HLP 46	01455

Caution:
Ensure everything is completely clean when refilling hydraulic equipment!

Prod.-No. 01455

ALFRA – special metal lubricating paste

Application areas:

- Prevents seizing up, wear, cold-welding, solidifying and fretting corrosion on threads of screws, nuts, bolts, tube threads and fittings.
- ALFRA special metal lubricating paste is also particularly suitable for the lubrication of cutting points on punching tools and high-loading bearings and sliding surfaces.
- Release-active and silicone-free.
- Contents: 120 g

	Prod.-No.
ALFRA special metal lubricating paste	33005

Completely recommended for the use of hole punches using wrenches.

Prod.-No. 33005

ALFRA – NOTCHING PLIERS

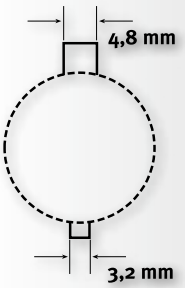
- Punches notched grooves in sheet steel up to 2.0 mm thick simply and quickly (S235).
- Saves time-consuming filing of grooves for non-twist securing of pushbuttons, switches and instruments.
- Notched grooves possible in sizes of 3.2 mm and 4.8 mm.
- Replaceable notched groove punch.
- Easy punching due to large lever arm.
- Plastic-coated handle.
- Weight 1.3 kg.

Prod.-No. 03015

The notched groove punch is introduced to the pre-punched opening, aligned to the crosshair markings and then the notched groove tongs are actuated.
Your clean groove is finished!

	Prod.-No.
ALFRA notching pliers	03015

Spare part	**Prod.-No.**
Notch punch with rivet pin	030151



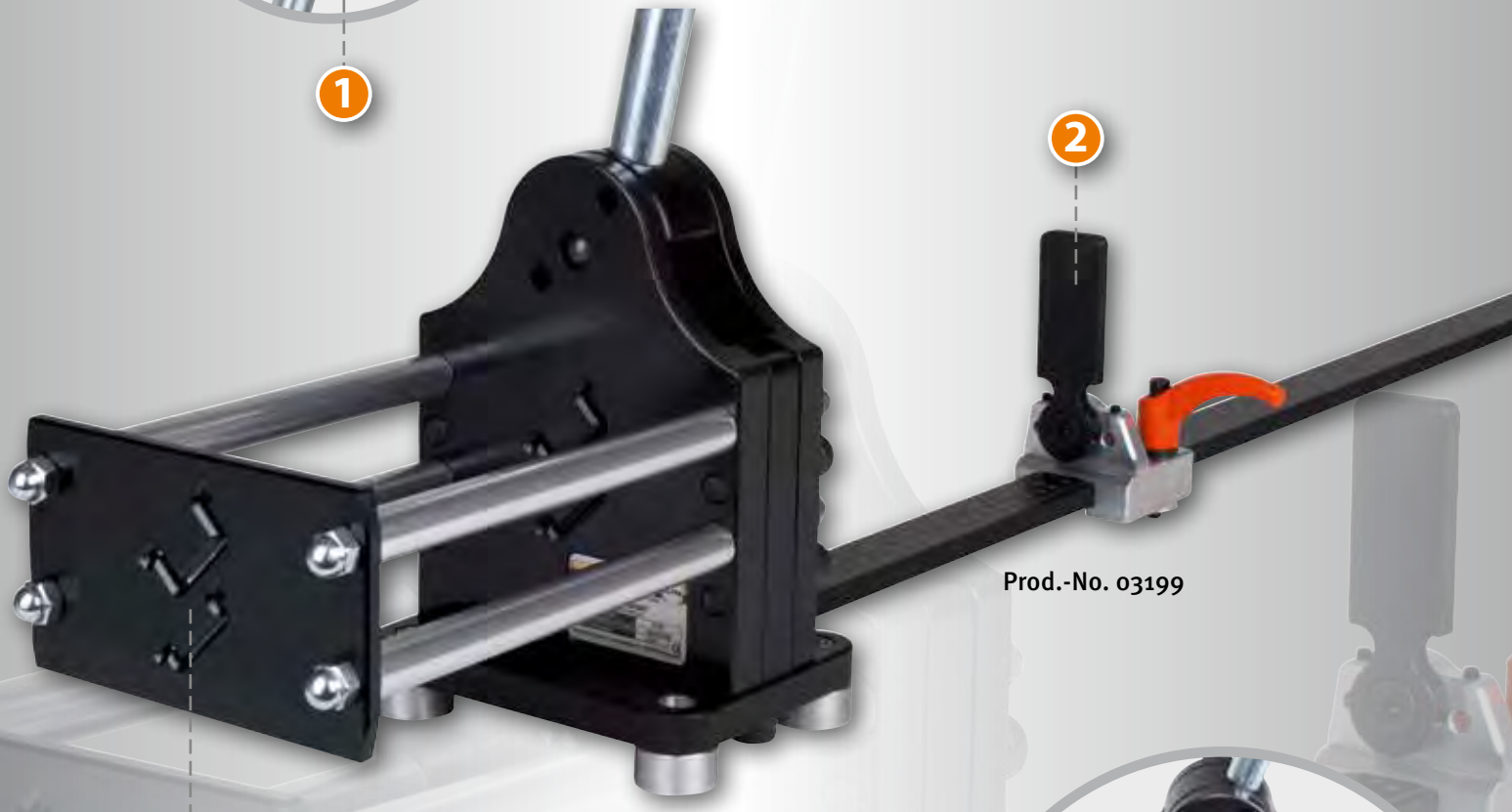
ALFRA CUTTING DEVICES

FOR MOUNTING RAILS

- Handle: reinforced - soft touch
- Limit stop with mm/inch laser-engraved
- Burr-free, precise 90° cuts
- Lowest-possible cutting play

ALFRA PROFILE RAIL CUTTING DEVICE® – PSG DUO®

1. **Handle: reinforced - soft touch**
2. **Limit stop with mm/inch laser-engraved**
3. **2 separate profiles for burr-free precise 90° cuts - s profile guiding**
4. **Profile throughput is optimised for lowest-possible cutting play**

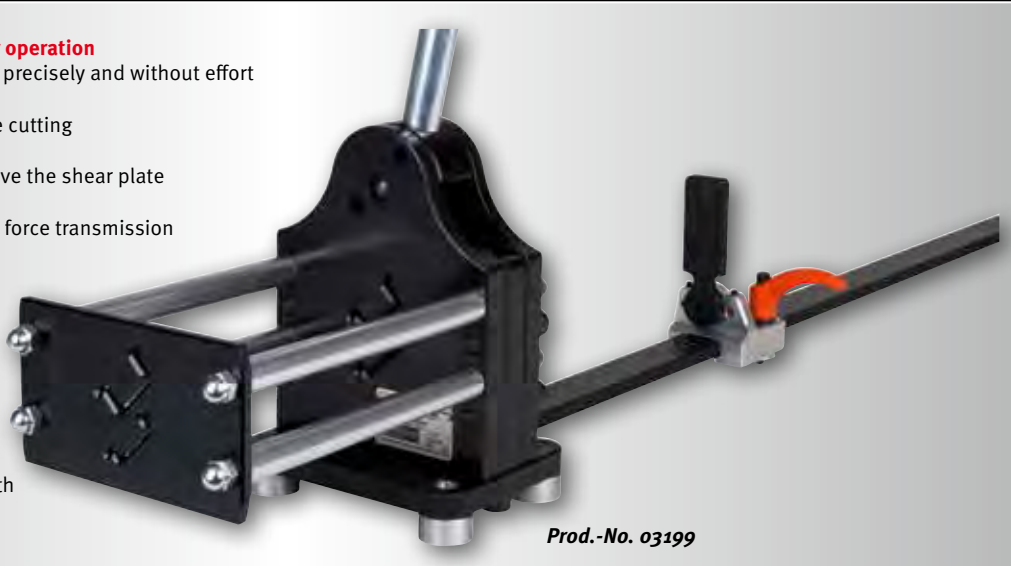


Prod.-No. 03199

ALFRA PROFILE RAIL CUTTING DEVICE® – PSG DUO®

For common mounting rails with hand lever operation
Cuts both profile rails TS 35/7.5 + 35/15 mm precisely and without effort

- With guide support for 90°-angle precise cutting
- With reinforced cam located directly above the shear plate
- Lower force application due to improved force transmission
- Maintenance-free
- Cutting to length without waste
- Shear plate re-grindable
- Anodised, laser-engraved longitudinal limit stop 1000 mm with guidance fixture for precise angled cutting to length with millimetre and inch scaling.
- Easy to install on the workbench
- Scale divisions metric and inches

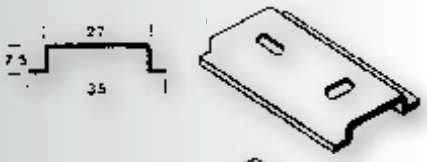


Prod.-No. 03199

	Prod.-No.
ALFRA profile rail cutting device® – PSG Duo®	03199

Profile rails

Mounting rail 35 mm/7.5
as per EN 60 715

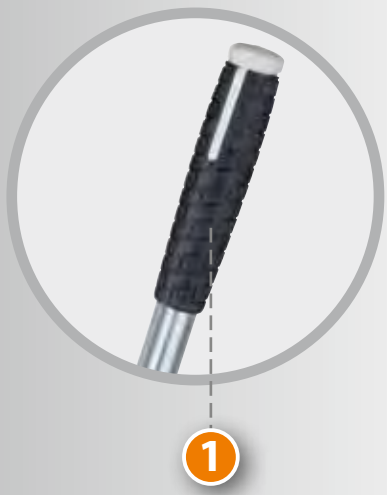


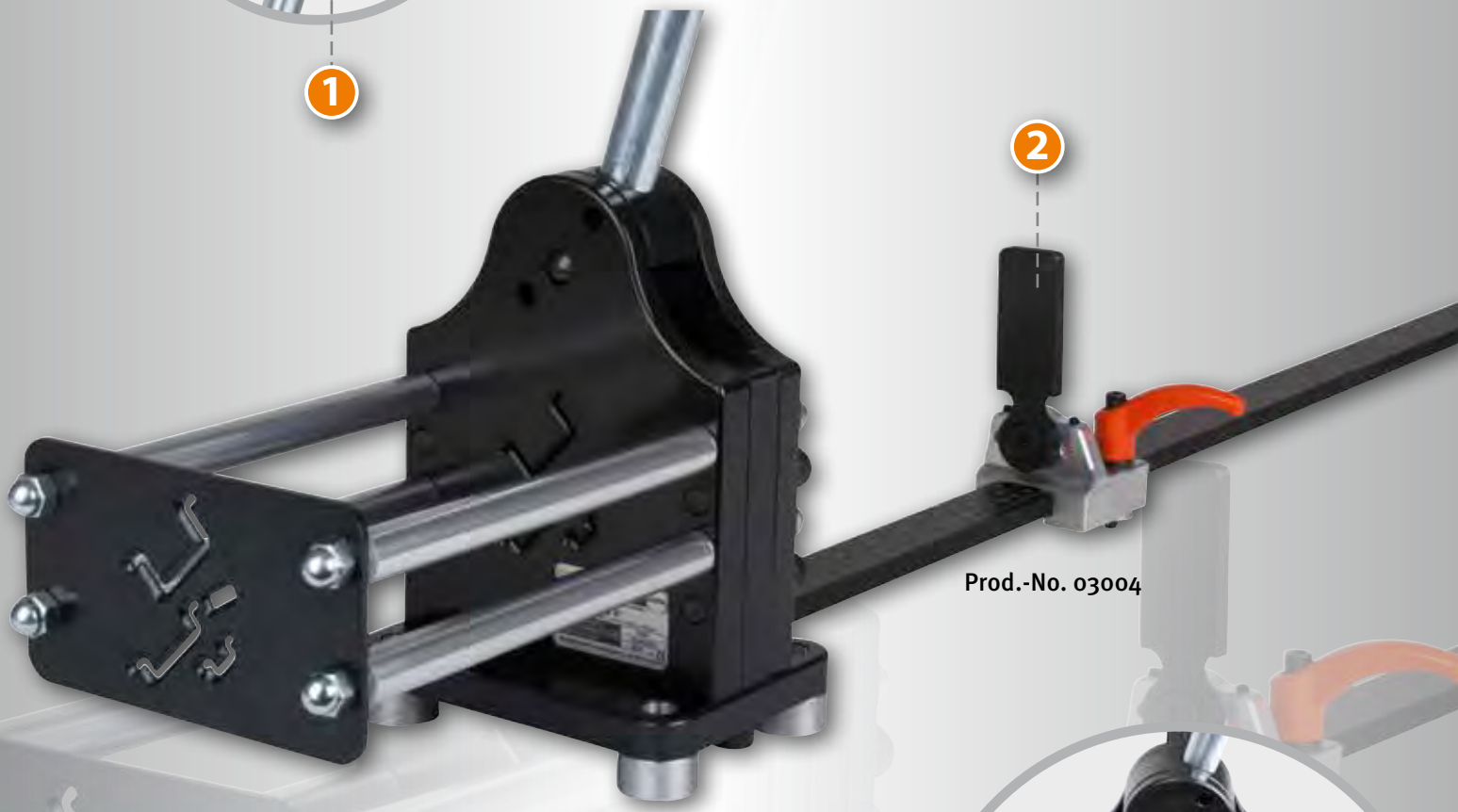
Mounting rail 35 mm/15
as per EN 60 715

Custom-made products for special profiles such as cable ducting on request!

ALFRA PROFILE RAIL CUTTING DEVICE® – PSG 4®

1. **Handle: reinforced - soft touch**
2. **Limit stop with mm/inch laser-engraved**
3. **Profile throughput is optimised for lowest-possible cutting play**





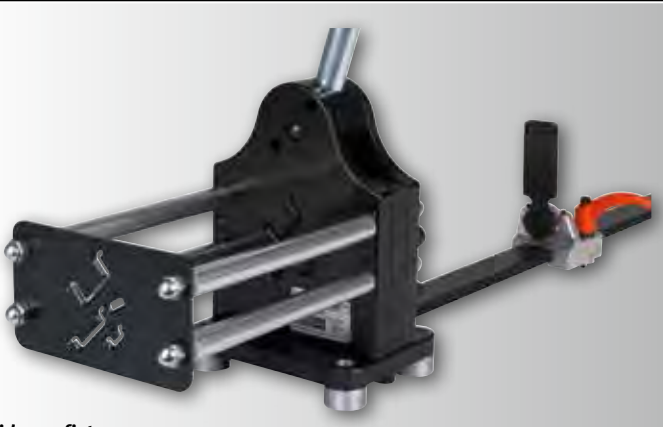
Prod.-No. 03004

ALFRA PROFILE RAIL CUTTING DEVICE® – PSG 4®

For hand-operated mounting rails
Cuts profile and ground rails precisely and without effort.
Standard version for TS 35/7.5 - 35/15 - 15/5.5 - Cu 10.0 x 3.0 mm

- With reinforced cam located directly above the shear plate
- Lower force application due to improved force transmission
- Burr-free cutting to length without waste
- Maintenance-free
- Anodised, laser-engraved length limit stop 1000 mm with guiding device for precise angled cutting to length, with millimetre and inch scaling.
- Shear plate re-grindable
- Guidance fixture for 90° angle-precise cutting
- Easy to install on the workbench
- Custom-made products are also possible (please send us a sample rail of about 1000 mm length).

	Prod.-No.
ALFRA profile rail cutting device® – PSG 4®	03004

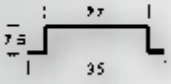


Guidance fixture for 90° angle-precise cutting

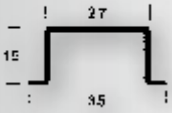
Prod.-No. 03004

Standard version

Mounting rail 35 mm/7.5 as per EN 60 715

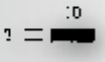


Mounting rail 35 mm/15 as per EN 60 715



Mounting rail 15 mm/5.5 as per EN 60 715

Copper ground rails 10 mm x 3 mm



ALFRA PROFILE RAIL CUTTING DEVICE® – PSG 5+®

1. **Handle: reinforced - soft touch**
2. **Limit stop with mm/inch laser-engraved compatible with PSG series**
3. **Profile throughput is optimised for lowest-possible cutting play**

Prod.-No. 03001

ALFRA PROFILE RAIL CUTTING DEVICE® – PSG 5+®

For mounting rails, for hand lever operation for **cutting to length and hole punching longitudinally and transversely** on the depicted mounting rails.

- With reinforced cam located directly above the shear plate
- Lower force application due to improved force transmission
- Burr-free cutting to length without waste
- Maintenance-free
- Anodised, laser-engraved length limit stop 1000 mm with guiding device for precise angled cutting to length, with millimetre and inch scaling.
- Shear plate can be re-ground, punch replaceable
- Custom-made products are also possible (please send us a sample rail of about 1000 mm length).

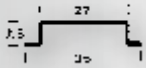
Scope of delivery standard version	**Prod.-No.**
with transverse and longitudinal hole punch 12 x 6.4 mm, 1000 mm length limit stop and guidance fixture incl. C-profile 3415	03001
with transverse and longitudinal hole punch 12 x 6.4 mm, 1000 mm length limit stop and guidance fixture incl. G-profile as per EN 60715	03001G
as 03001, however with round hole punch Ø 5.5 or 6.0 mm	03002
as 03001, however with hydraulic cylinder	03003

Prod.-No. 03001

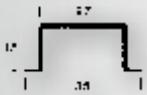
Tool for fixing holes (longitudinal and transverse) integrated. Guidance fixture for 90° angle-precise cutting

Standard version

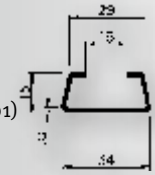
Mounting rail 35 mm/7.5
as per EN 60715

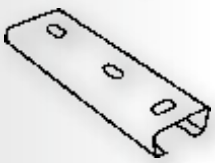


Mounting rail 35 mm/15
as per EN 60715

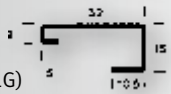


C-profile 3415
(included in Prod.-No. 03001)





G-profile
as per EN 60715
(included in Prod.-No. 03001G)



Mounting rail 15 mm/5.5
as per EN 60715

Copper ground rails
10 mm x 3 mm

Spare parts for universal cutting and punching device

	Prod.-No.
Spare punch + die 12 x 6.4 mm f. longitudinal hole	03005
Spare punch + die 12 x 6.4 mm f. transverse hole	03006
Spare punch + die 5.5 mm f. round hole	03007
Spare punch + 6.0 mm f. round hole	03008
Special versions for mounting rails or flat rails, also in stainless steel or aluminium or plastic on request	03011

Prod.-No. 03003
We recommend our pump type AHP S (Prod.-No. 03854) as a drive

ALFRA CABLE DUCTING CUTTING DEVICE – VKS 125

1. **Enlarged opening height**
   (also suitable for ducting with special webs)
2. **Full-surface supporting table**
   (no sagging ducts)
3. **Length stop**
   laser-engraved in metric/inch
4. **Ergonomic hand lever**
   for optimum force transmission
5. **Foldable, sprung cutter protector**

ALFRA cable ducting cutting device – VKS 125

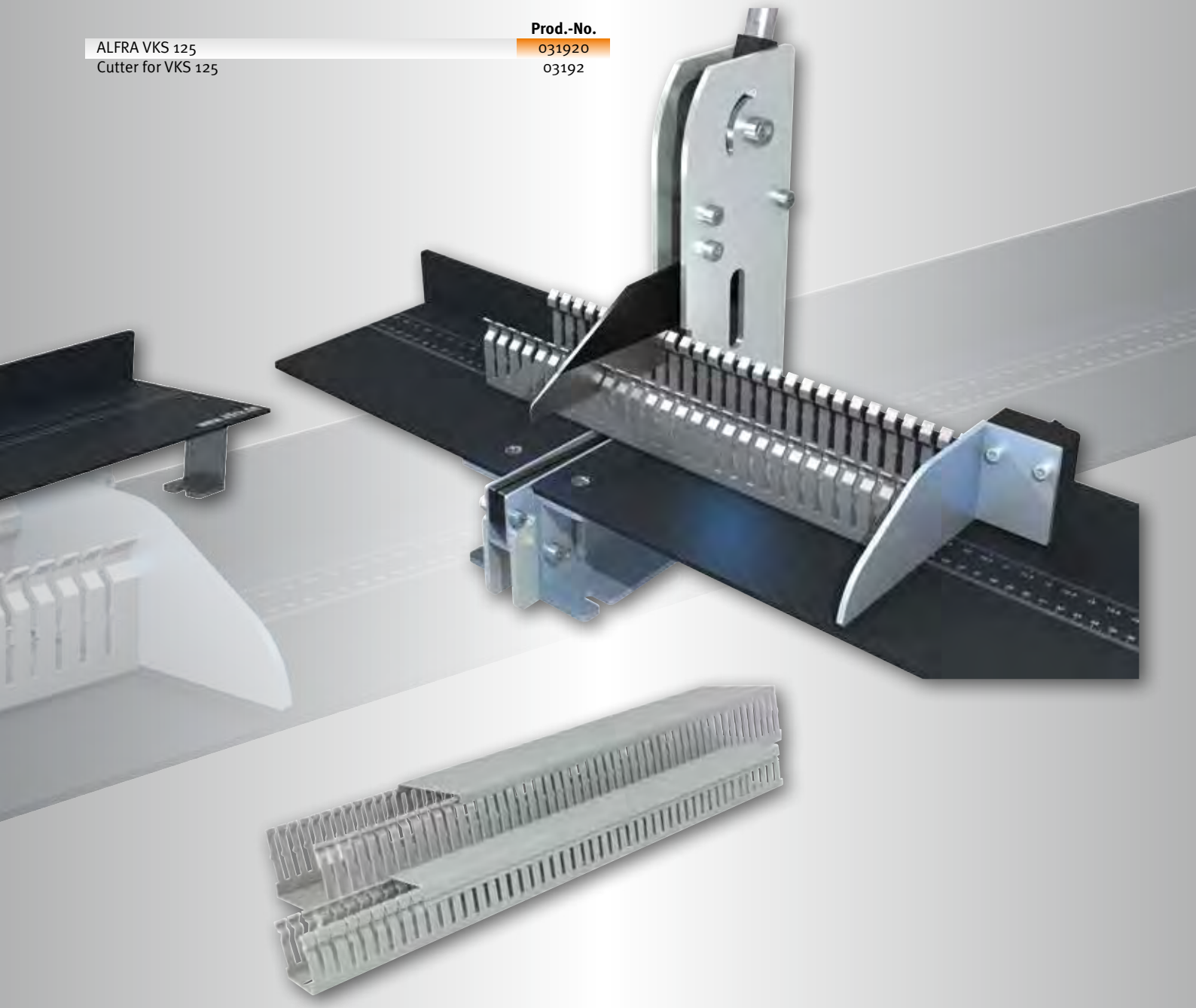
Cuts cable ducting and covers up to 125 mm wide in seconds precisely and without effort. Fixing tabs for easy fitting to the Workbench are attached to the device and to the longitudinal limit stop.

The VKS 125 is fitted with a sprung cutter protector which covers the cutter when it is not being used.

- Burr-free cutting to length without waste
- 90° angle-precise cutting
- Maintenance-free
- Easy to install on the workbench

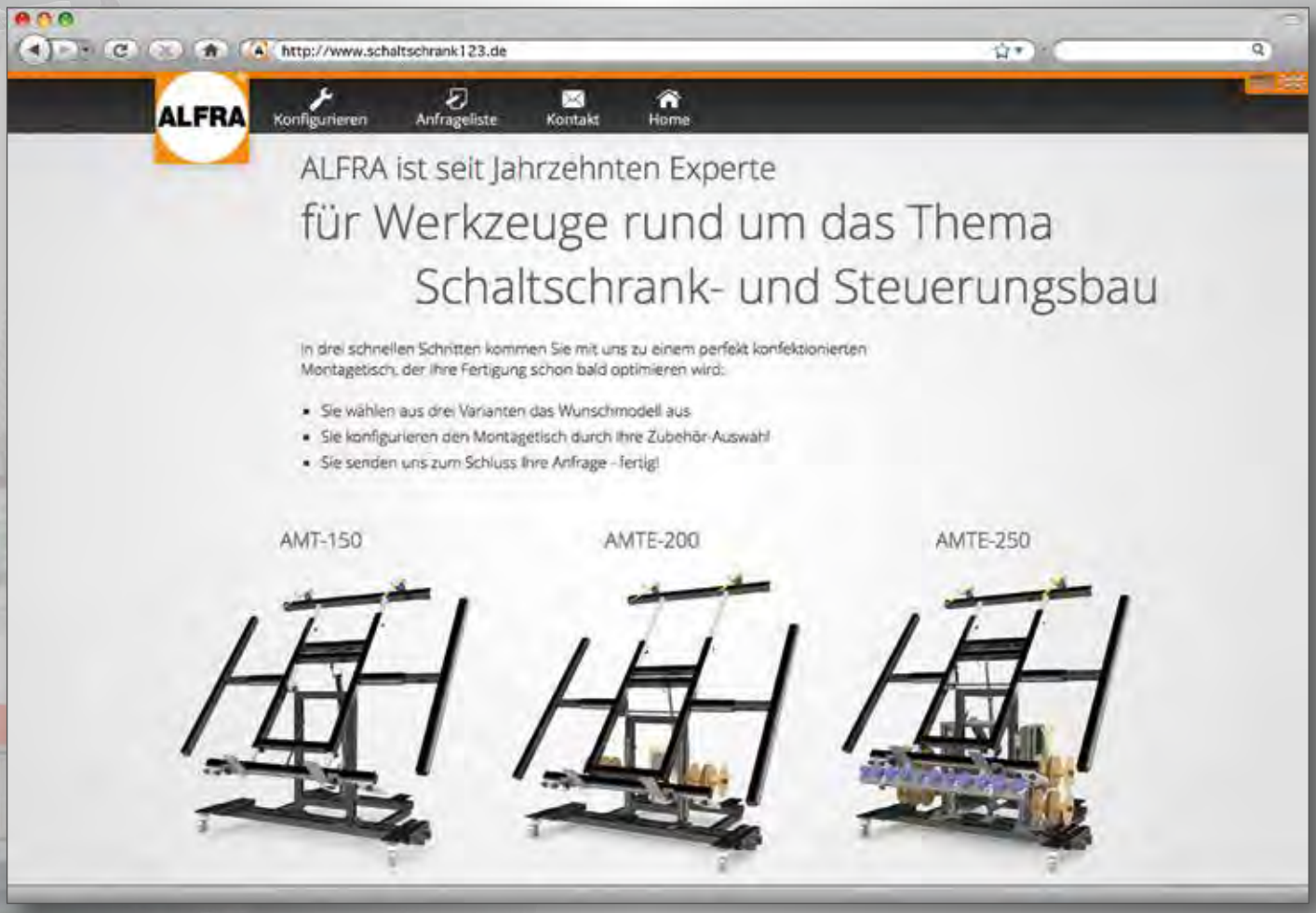
"... no more plastic swarf and no more deburring!"

	Prod.-No.
ALFRA VKS 125	031920
Cutter for VKS 125	03192



ALFRA ASSEMBLY TABLE

Simply put together your desired assembly table with its accessories on our website and then request a quotation by clicking: www.schaltschrank123.de

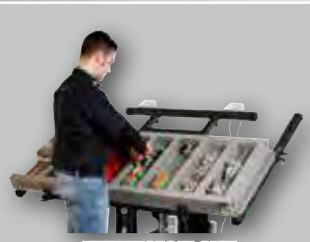


ALFRA ASSEMBLY TABLE AMT 150

AMT 150

Prod.-No.	03100
Simple, variable fixing of mounting panels using quick-action clamp.	✔
Intelligent release system enables unrestricted processing of the entire mounting panel	✔
Infinitely variable adjustment from vertical to horizontal	using handcrank or battery drill
Infinitely variable height adjustment	via angle of inclination
Electric motor	-
Battery-operated	-
Adjustable angle of inclination	0 - 80°
Working height	fixed: 100 cm
4 guide rollers with total fixing	✔
Max. size mounting panels W x H	1,100 x 1,900 mm
Max. useful load	200 kg
Space requirement	1,400 x 1,200 mm
Weight	83 kg
Scope of delivery	Assembly table AMT 150 2 x clamping unit with bolt 2 x clamping unit with quick lock Screw adapter for operating with battery drill

OPTIONS FOR ALL AMTs



EXTENSION SET
Table width extension for horizontal support of mounting panels
Prod.-No. 03100-001

CLAMPING UNIT WITH QUICK LOCK
Prod.-No. 03100-003

CLAMPING UNIT WITH BOLT
Prod.-No. 03100-002

OPTION FOR AMT 150

SCREW ADAPTER AMT 150
for operation with battery drill
Prod.-No. 03100-004

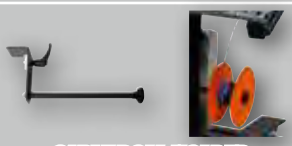
	AMTE 200	AMTE 250
		
	031002	031001
	✔	✔
	✔	✔
	using battery-operated electric motors	using battery-operated electric motors
	by angle of inclination using battery-operated electric motors	using battery-operated electric motors
	✔	✔
	✔	✔
	0 - 80°	0 - 80°
	fixed: 90 cm	variable: 80 - 110 cm
	✔	✔
	1,100 x 1,900 mm	1,100 x 1,900 mm
	200 kg	300 kg
	1,400 x 1,200 mm	1,400 x 1,200 mm
	93 kg	140 kg
	Electric assembly table AMTE 200 2 x clamping unit with bolt 2 x clamping unit with quick lock external charging station for the battery	Electric assembly table AMTE 250 2 x clamping unit with bolt 2 x clamping unit with quick lock external charging station for the battery

OPTIONS FOR ALL AMTs

CONTROL CABINET SET
Prod.-No. 03100-005

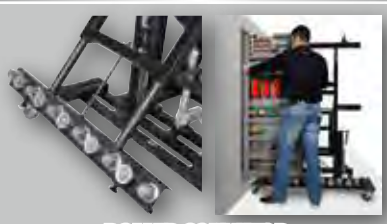
OPTIONS FOR AMTE 200 / 250

CABLE GUIDANCE
Prod.-No. 031001-003



CABLE ROLL HOLDER
Prod.-No. 031001-002

OPTION FOR AMTE 250



ROLLER CONVEYOR
for sideways insertion of the mounting panel into the control cabinet
Prod.-No. 031001-004

OPTIONS FOR AMTE 200 / 250

SPARE BATTERY
Prod.-No. 031001-001

CHARGING PLUG
for 110 V 60 Hz
Prod.-No. 031001-0011

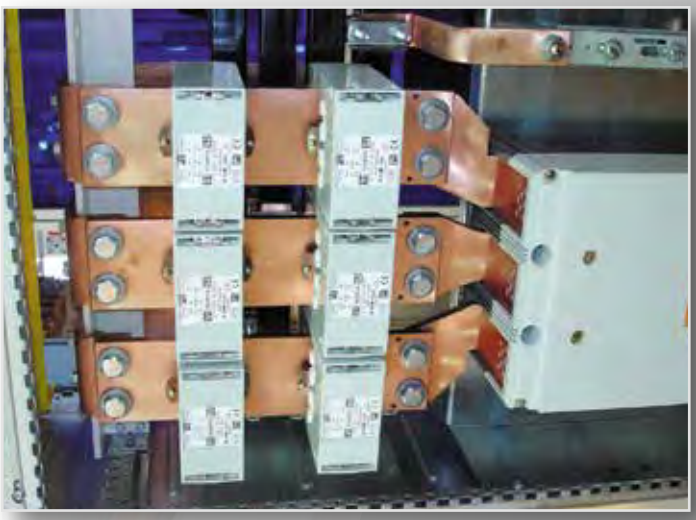
MACHINING

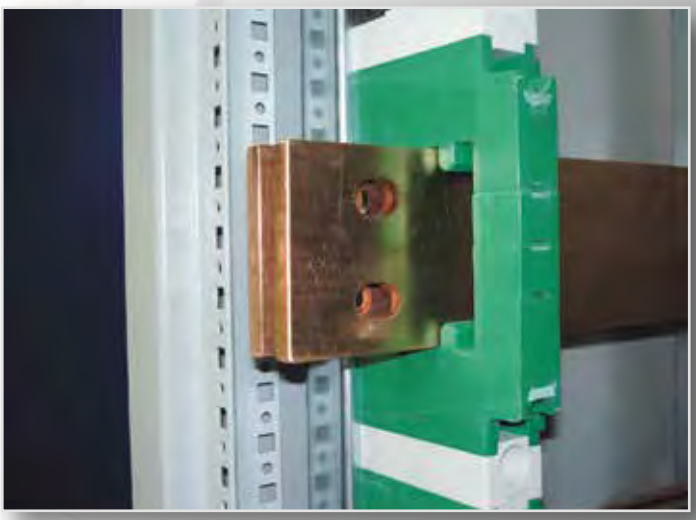
Prod.-No. 03855

Prod.-No. 03200

Prod.-No. 03201

Prod.-No. 03202





ALFRA BUSBAR BENDING AND HOLE PUNCHING DEVICE

Busbars at 120 x 12 mm (160 x 10 mm on request) can easily be bent using a universal working cylinder, and holes of Ø 6.6 up to 21.5 mm including longitudinal holes can be punched through the simple insertion of hole punches

Bending busbars

Turn switch to "bend".
To bend busbars, the bending die is inserted in the hydraulic piston and the electric angle measurer is placed in the round guidance crew on the counter block. The contact cable is connected to the electric motor.
The required angle is fixed on the angle scale using an adjusting screw. Since copper springs back, we recommend making a setting 1° - 3° above the required angle depending on the material thickness.
You should check the first bending angle. This bending angle can be reproduced as often as required since the bending process is automatically interrupted on achieving the angle by the electrical contact switch.

Perforating busbars

Switch setting to "perforate".
The punch with the neoprene scraper and the matching die are placed in the locating hole.
The punch is fixed sideways using a grub screw. Depending on the busbar width and the required hole arrangement, the processing block can be infinitely variably raised or lowered hydraulically using the handwheel. A counter attached to the handwheel shows the height of the hole centre in millimetres.
We recommend centre-punching the busbar and then aligning the punch centring point above the centre punch to guarantee a precise hole location.

The neoprene scraper and a fitted electronic sensor ensure automatic punch retraction.

Technical data:

Bending

Bending Cu max:	120 x 12 mm
Bending up to:	more than 90°
smallest leg length:	50 mm
smallest U-bend:	100 mm
smallest Z-bend:	72 mm (depending on material thickness)

The values stated are based on copper rails 120 x 10 mm

Punching

Punching Cu:	6.6 - 21.5 mm also longitudinal hole up to max. L = 21 mm
Material thickness Cu max:	12 mm
Material width up to:	110 mm central
External dimensions L x W x H:	700 x 410 x 410 mm
Weight:	60 kg

Special version for processing of busbars
up to 160 x 10 mm available on request.

	Prod.-No.
ALFRA busbar bending and hole punching device with electrical angle measurer R10, bending die R10 and length limit stop	03200SET
Electrical angle measurer R10	03201
Bending die R10	03202
Length limit stop	03203
Bending die with movable jaws (120 x 10 mm Cu)	03228
Digital angle measurer	03229
Stage bending tool with 2 pairs of pressure plates for 5 and 10 mm stages (max. range: 100 x 5 mm / 60 x 10 mm Cu)	03246

Prod.-No. 03200SET

Electro-hydraulic pump AHP M

Technical data:

Max. pressure:	700 bar
Max. flow rate:	1.1 l/min
Oil type:	HLP 32
Filling volume:	3.2 l
Working volume:	2.2 l
Weight:	29 kg
Operating voltage	230 V / 50 Hz
Power:	1.3 kW
Current consumption:	5.65 A
Motor speed:	2800 rpm

	Prod.-No.
Electro-hydraulic pump AHP M	03855
optional hand switch for AHP S and AHP M	03859

Freely-programmable digital angle measurer
Can be used for devices Prod.-No. 03200 and 03980

R10

Prod.-No. 03229

Prod.-No. 03201

Prod.-No. 03228

Prod.-No. 03202

Electro-hydraulic pump AHP S

Technical data:

Max. pressure:	700 bar
Max. flow rate:	0.58 l/min
Oil type:	HLP 32
Filling volume:	3.2 l
Working volume:	2.2 l
Weight:	27 kg
Voltage / frequency:	230 V / 50 Hz
Power:	0.75 kW
Current consumption:	3.26 A
Motor speed:	2800 rpm

	Prod.-No.
Electro-hydraulic pump AHP S incl. hand switch	03854

Prod.-No. 03855

Prod.-No. 03854

ALFRA BUSBAR BENDING AND HOLE PUNCHING DEVICE

	Prod.-No.
ALFRA busbar set 1:	03911

- Prod.-No. 03200SET
  ALFRA busbar bending and hole punching device with electrical angle measurer R10, bending die R10 and length limit stop
- Prod.-No. 03855
  electro-hydraulic pump **AHP M**

Prod.-No. 03911

	Prod.-No.
ALFRA busbar set 2:	03921

- Prod.-No. 03200SET
  ALFRA busbar bending and hole punching device with electrical angle measurer R10, bending die R10 and length limit stop
- Prod.-No. 03854
  electro-hydraulic pump **AHP S**

Prod.-No. 03921

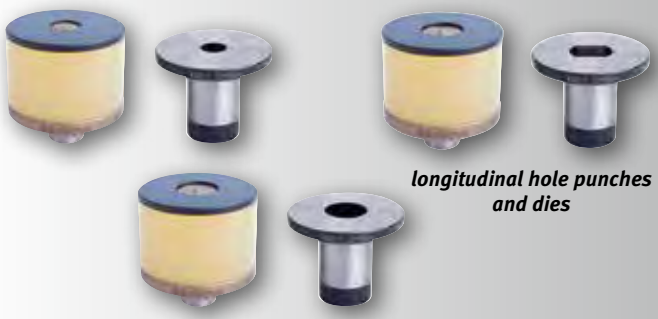
Accessories

Available punches and dies

Punch Ø in mm	Metric Screw connection	Max. Material thickness in mm	Prod.-No.
6.6	6.0	5.0	03204
9.0	8.0	6.0	03205
9.5	8.0	6.0	03206
11.0	10.0	12.0	03207
11.5	10.0	12.0	03208
13.5	12.0	12.0	03209
14.0	12.0	12.0	03210
17.5	16.0	12.0	03211
18.0	16.0	12.0	03212
21.0	20.0	12.0	03213
21.5	20.0	12.0	03214

Die ØMax. in mm	Material thickness in mm	Prod.-No.
6.6	5.0	03230
9.0	6.0	03231
9.5	6.0	03232
11.0	12.0	03233
11.5	12.0	03234
13.5	12.0	03235
14.0	12.0	03236
17.5	12.0	03237
18.0	12.0	03238
21.0	12.0	03239
21.5	12.0	03240

Punches and dies for longitudinal holes up to max. L x W = 21 x 18 mm	Prod.-No.
	03241



longitudinal hole punches and dies

Round punches and dies

ALFRA Busbar cutting device – S 125

For clean, burr-free cutting of copper busbars 125 x 12 mm.

- Ideal supplementary device for busbar bending and hole punching device.
- Cutting time with electro-hydraulic pump depending on rail width 5 - 15 sec.
- Hold-down device and guidance fixture for central, precise cutting.
- Top cutter replaceable and resharpenable.
- Weight: 16 kg

	Prod.-No.
ALFRA busbar cutting device – S 125	03250
Replacement top cutter	03251

With use of electro-hydraulic pump AHP M in direct connection with the cutting device, we recommend the use of a footswitch with START – STOP – OFF function.

Footswitch with START – STOP – OFF (direct connection to basic device 03200)	03865
Footswitch with START – STOP – OFF (direct connection to hydraulic pump 03855)	03863
As a drive we recommend electro-hydraulic pump AHP M	03855

Prod.-No. 03250

ALFRA – Workshop trolley

For the bus bar bending and hole punching device 03200SET and the busbar cutting device 03250

Ideal for transportation - also in vans with standard fittings

Specially-developed workshop trolley for storing both processing devices and saving space. The electro-hydraulic pump can be connected to a fitted 2-way valve in the trolley. The processing devices are connected to each other with hydraulic hoses.
2 support rollers fitted to the side of the table make bending and cutting of long rails easier.
The trolley has an additional drawer with tool compartments for storing all punches and dies. The trolley runs on 4 casters, 2 of which have a locking device.

The fittings include a single and double power socket in addition to a self-rolling 230 V connecting cable at 3 m length.

Table size:	1,050 x 700 mm
Dimensions:	L=1150, W=700, H=900 mm
Weight:	100 kg without devices

	Prod.-No.
Workshop trolley, with 2-way valve, coupling, Drawer with tool compartments	03950

Prod.-No. 03950 illustration shows fitted workshop trolley

ALFRA 4-STATION PROCESSING TROLLEY

for bending busbars at 120 x 12 mm,
- for perforating busbars Ø 6.6 - 21.5 mm,
- for cutting busbars 125 x 12 mm,
- two additional hydraulic outputs for various applications

- The processing stations for busbar cutting and hole punching and for cutting are recessed in the table. This enables quick, clean working.
- You can use a hand wheel to infinitely variably raise and lower the universal working cylinder by hydraulic power according to the hole pattern to be punched.
- The processing devices are connected to a hydraulic central unit fitted to the inside of the trolley.
- A support extension, which can be pulled out of the side, is provided as a support for longer rails.
- Press heads (e.g. press head 10 - 300 mm² Prod.-No. 03360) and hydraulic cylinder Prod.-No. 02012 can be connected to 2 hydraulic hoses fitted to the side for hole-punching.
- **1** footswitch including connecting cable is included in delivery. Up to 3 **additional** foot switches can be connected to the various stations.
- 4 tool drawers with compartments for punches and dies are fitted to the trolley.
  It runs on 4 casters, 2 of which have a locking device.

Prod.-No. 03980 supplied without additional devices

Technical data:

Motor voltage:	230 V / 50 Hz
Motor power:	2.2 kW
max. operating pressure:	700 bar
Flow rate:	max. 1.7 l/min.
Tank volume:	3.2 l
Usable oil volume:	2.2 l
Weight approx.:	240 kg
Table size:	1,150 x 700 mm
Dimensions L x W x H:	1,250 x 760 x 1,210 mm

	Prod.-No.
ALFRA 4-Station processing trolley	03980

Required extra accessories
Punches and dies Ø 6.6 - 21.5 mm
Punch: Prod.-No. 03204 - 03214
Die: Prod.-No. 03230 - 03240

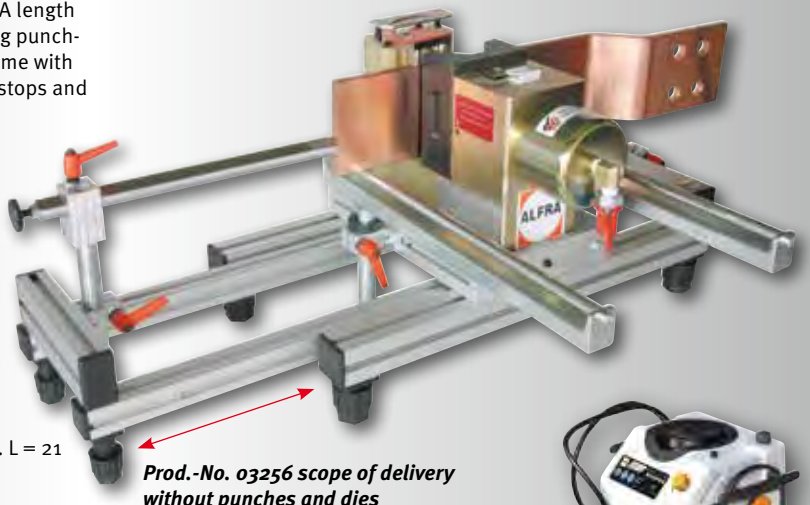
Hydraulic press head 10 - 300 mm²	03360
Hydraulic cylinder	02012
Footswitch with connecting cable, 3-pole	03861

4 tool draws with compartments for punches and dies are fitted to the trolley.

ALFRA BUSBAR BENDING AND HOLE PUNCHING DEVICE – LPV

Bending busbars up to 120 x 12 mm
Perforating busbars Ø 6.6 up to 21.5 mm

The device consists of a base frame made of torsion-free aluminium profile with a mounting for the base bodies for bending and perforating. A length limit stop makes adjustment of the hole arrangement easier during punching. To make working with longer copper rails easier, the insert frame with support frame can be extended to up to around 700 mm. All limit stops and support frames are quick and easy to fix using clamping levers.



Prod.-No. 03256 scope of delivery without punches and dies

We recommend our electro-hydraulic pump AHP S Prod.-No. 03854 as a drive

Technical data:

Bending:

Bending Cu max:	120 x 12 mm
Bending up to:	more than 90°
smallest leg length:	50 mm
smallest U-bend:	100 mm
smallest Z-bend:	72 mm

The values stated are based on copper rails 120 x 10 mm

Punching:

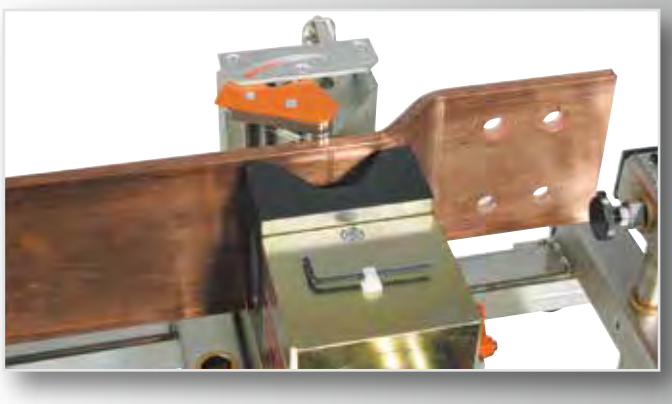
Punching Cu:	Ø 6.6 - 21.5 mm also longitudinal hole up to max. L = 21 mm
Material thickness Cu max:	12 mm
Material width up to:	110 mm central
Dimensions L x W x H:	615 x 370 x 315 mm
Weight:	44 kg

	Prod.-No.
ALFRA busbar bending and hole punching device – LPV	03256

Accessories

Available punches and dies

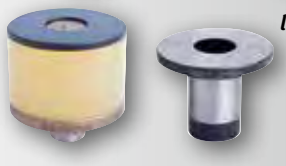
Punch Ø in mm	Metric Screw connection	Max. Material thickness in mm	Prod.-No.
6.6	6.0	5.0	03204
9.0	8.0	6.0	03205
9.5	8.0	6.0	03206
11.0	10.0	12.0	03207
11.5	10.0	12.0	03208
13.5	12.0	12.0	03209
14.0	12.0	12.0	03210
17.5	16.0	12.0	03211
18.0	16.0	12.0	03212
21.0	20.0	12.0	03213
21.5	20.0	12.0	03214



Die ØMax. in mm	Material thickness in mm	Prod.-No.
6.6	5.0	03230
9.0	6.0	03231
9.5	6.0	03232
11.0	12.0	03233
11.5	12.0	03234
13.5	12.0	03235
14.0	12.0	03236
17.5	12.0	03237
18.0	12.0	03238
21.0	12.0	03239
21.5	12.0	03240

Punches and dies for longitudinal holes up to max. L x W = 21 x 18 mm	Prod.-No.
	03241

longitudinal hole punches and dies



Round punches and dies

ALFRA BUSBAR BENDING AND HOLE PUNCHING DEVICE – LPV 160

- The device consists of a base frame made of special aluminium and a hydraulic cylinder up to 600 bar.
- Using bending dies R=11 mm and R=5 mm and height adjustment, all busbars of up to max. 160 mm width can be bent to various angles.
- The angle measurement is engraved on the top section.
- Changing over to bending and hole-punching is easy and simple.

Bending busbars up to 160 x 12 mm
Perforating busbars Ø 6.6 - 21.5 mm

Technical data:

Bending

Bending Cu max.:	160 x 12 mm
Bending angle up to:	92°
smallest leg length:	50 mm internal dimension
smallest U-bend:	160 mm internal dimension
smallest Z-bend:	55 mm (material-dependent) internal dimension

Punching/perforating

Punching Cu max.:	Ø 6.6 - 21.5 mm also longitudinal hole up to max. L = 21 mm
Material thickness Cu max.:	12 mm
Material width up to:	160 mm central
Dimensions L x W x H:	390 x 150 x 330 mm
Weight:	20 kg

Recommended drive type

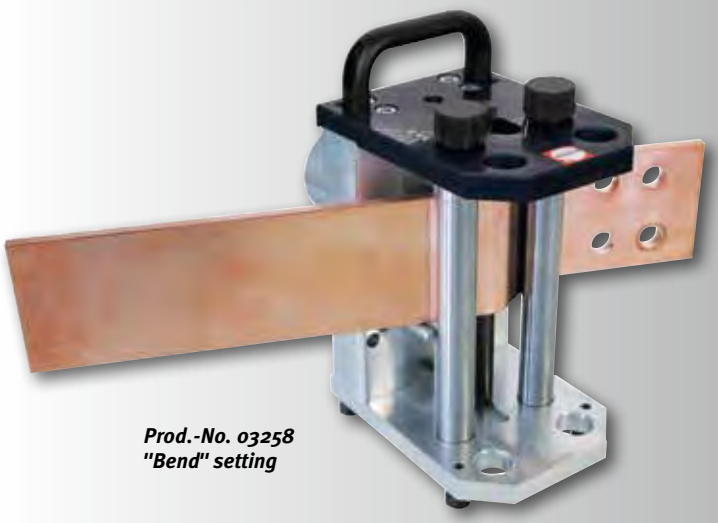
Electro-hydraulic pump AHP S	Prod.-No. 03854
Air-hydraulic pump LHP 700	Prod.-No. 02140
Foot pump	Prod.-No. 02121

	Prod.-No.
ALFRA BS 160 with bending die and bending punch R=11 mm for busbars 9-12 mm	03258

Accessories

Bending punch R=5 mm for busbars 3-8 mm	03259

Prod.-No. 03258
"Perforate" setting



Prod.-No. 03258
"Bend" setting

Available punches and dies

Punch Ø in mm	Metric Screw connection	Max. Material thickness in mm	Prod.-No.
6.6	6.0	5.0	03204
9.0	8.0	6.0	03205
9.5	8.0	6.0	03206
11.0	10.0	12.0	03207
11.5	10.0	12.0	03208
13.5	12.0	12.0	03209
14.0	12.0	12.0	03210
17.5	16.0	12.0	03211
18.0	16.0	12.0	03212
21.0	20.0	12.0	03213
21.5	20.0	12.0	03214

Die ØMax. in mm	Material thickness in mm	Prod.-No.
6.6	5.0	03230
9.0	6.0	03231
9.5	6.0	03232
11.0	12.0	03233
11.5	12.0	03234
13.5	12.0	03235
14.0	12.0	03236
17.5	12.0	03237
18.0	12.0	03238
21.0	12.0	03239
21.5	12.0	03240

Punches and dies for longitudinal holes up to max. L x W = 21 x 18 mm	Prod.-No.
	03241

Prod.-No. 03258
Complete (without punches and dies)

ALFRA – Flexible busbar processing device

for punching (without insulation) and cutting of flexible supple bars
Thickness up to 10 mm (without insulation)
Width up to 100 mm (without insulation)

Application areas:
- Cutting and perforation of ribbed copper rails
- Cutting thickness: max. 10 mm
- Hole range: Through holes for bolts M6 – M14
- Dimensions L x W x D: 400 x 250 x 150 mm (without limit stop)
- Weight: 32 kg

Basic device
- Used for mounting of: cutting block and perforating tools
- The pressure unit, consisting of hydraulic piston and cylinder including punch mounting in the top section, is permanently integrated in the basic unit.
- The concentric locating hole for the die and cutting block insert are located in the bottom section. In addition, foldable limit stops are fitted to the front and side for hole punching in the device.

Prod.-No. 03300

	Prod.-No.
ALFRA ribbed busbar processing device	03300
Cutting block	03301

Accessories

Punch with neoprene and pressure plates:

Ø 6.0 mm	03304
Ø 9.0 mm	03305
Ø 11.0 mm	03306
Ø 14.0 mm	03307

Die:

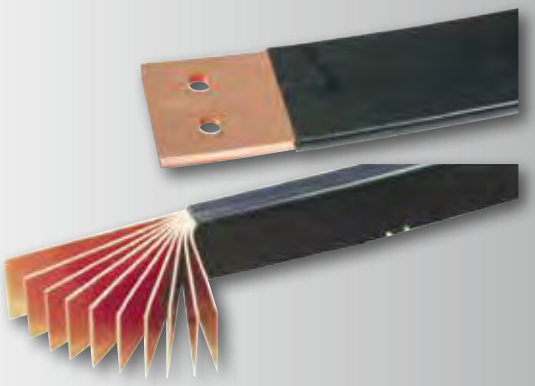
Ø 6.0 mm	03309
Ø 9.0 mm	03310
Ø 11.0 mm	03311
Ø 14.0 mm	03312

Other diameters on request.

Prod.-No. 03301 cutting block with length limit stop.

Prod.-No. 02121

Prod.-No. 03854



We recommend our electro-hydraulic pump AHP S as a drive Prod.-No. 03854 or our foot pump Prod.-No. 02121.

ALFRA HYDRAULIC PUNCH – AP-65

- Specially developed for assembly work. Compact, strong construction. Easily portable - flexible in use.
- For punching steel and copper
- Application areas: Punching busbars, general punching tasks in steel and bridge construction, scaffolding etc.

Technical data:

Piston stroke:	18 mm
Punching force:	270 kN
Overhang:	**65 mm**
Working pressure max.:	700 bar
Punching range:	Punch Ø 5.5 - 10 mm Material thickness max. 8 mm, (S235) Punch Ø 10 - 21 mm Material thickness max. 10 mm, (S235)
Weight:	16 kg
Dimensions:	220 x 110 x 335 mm

	Prod.-No.
Hydraulic punch AP-65	03260

Prod.-No. 03260

Tools for copper, aluminium and steel

Ø mm	max. material thickness	Prod.-No. Punch	Prod.-No. Die
5.5	5 mm	03265	03275
6.6	6 mm	03266	03276
8.0	6 mm	03285	03290
9.0	8 mm	03267	03277
11.0	10 mm	03268	03278
14.0	10 mm	03269	03279
18.0	10 mm	03270	03280
21.0	10 mm	03271	03281

other diameters on request where edge holes are possible

Prod.-No. 03854

We recommend our electro-hydraulic pump as a drive AHP S Prod.-No. 03854.

Punches and dies for AP-65

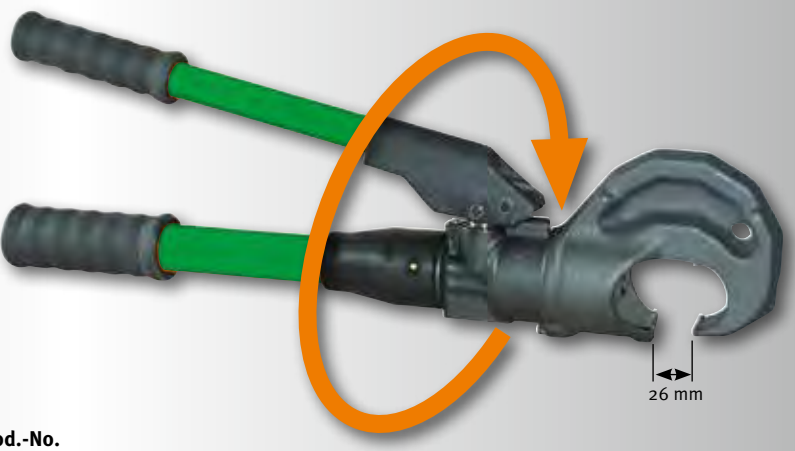
C-shape for simple handling

- C-shape, press head rotatable through 320°, hydraulics integrated in handle. Automatic switchover from rapid feed to press feed.
- Fitted pressure limiting valve.
- Replaceable hexagonal press inserts, semicircular.
- Supplied in plastic case.

Technical data:

Pressing force:	130 kN
Pressing power:	700 bar
Weight:	5.4 kg
Opening width:	26 mm
Length:	545 mm

	Prod.-No.
Hydraulic crimping unit	03361



Prod.-No. 03361 head can be rotated through 320°

Hexagonal press inserts

Semicircular pressing shape for cable shoes and connectors

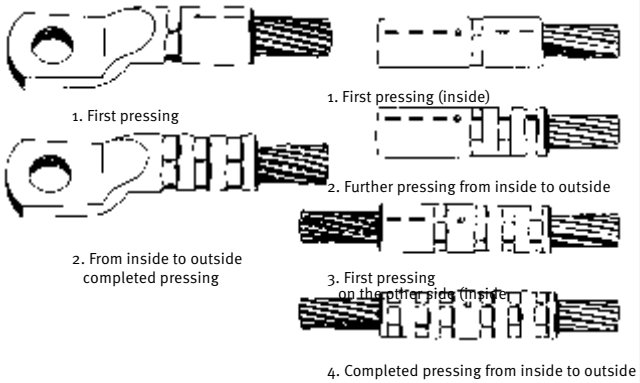
suitable for pressing units 03360/03380/03361

Tool Ref.no.	Press width mm	Copper Cross-section in mm²	Aluminium Cross-section in mm²	Prod.-No.
8	14	16	–	03365
10	14	25	–	03366
12	12	35	25	03367
14	12	50	35	03368
16	12	70	50	03369
18	12	95	70	03370
20	12	120	–	03371
22	14	150	95 + 120	03372
25	14	185	150	03373
28	14	240	185	03374
30	5	–	–	03375
32	5	300	240	03376
34	5	–	300	03377

Hexagonal press inserts

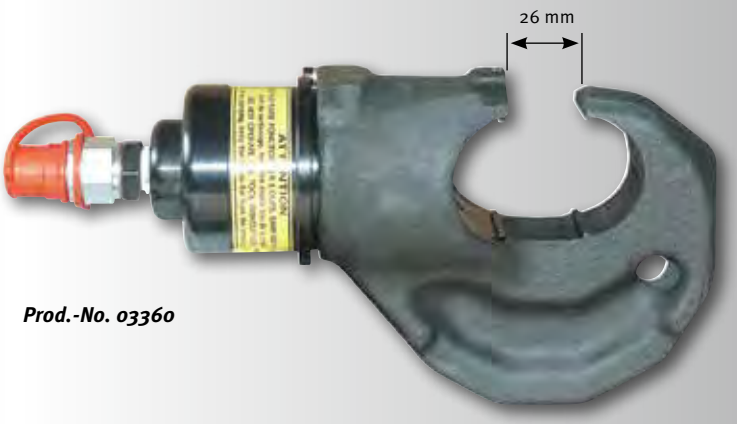
Notes on hexagonal pressings

(Manufacturer information is definitive)



C-shape for simple handling

- pressing cable shoes and connectors made of copper and aluminium of between 10 – 300 mm².
- Hexagonal press inserts semicircular.
- Supplied in sheet steel transport boxes.
- Electro-hydraulic pump Prod.-No. 03854 or foot pump 02121 can be used to operate both press heads.



Prod.-No. 03360

Technical data:

Pressing force:	130 kN
Pressing power:	700 bar
Weight:	3.9 kg
Opening width:	26 mm
Length:	245 mm

	Prod.-No.
Hydraulic press head	03360

Prod.-No. 03380

Technical data:

Pressing force:	130 kN
Pressing power:	700 bar
Weight:	4.6 kg
Opening width:	38 mm
Length:	275 mm

	Prod.-No.
Hydraulic press head	03380

Hexagonal press inserts

Semicircular pressing shape for cable shoes and connectors

suitable for pressing units 03360/03380/03361

Tool Ref.no.	Press width mm	Copper Cross-section in mm²	Aluminium Cross-section in mm²	Prod.-No.
8	14	16	–	03365
10	14	25	–	03366
12	12	35	25	03367
14	12	50	35	03368
16	12	70	50	03369
18	12	95	70	03370
20	12	120	–	03371
22	14	150	95 + 120	03372
25	14	185	150	03373
28	14	240	185	03374
30	5	–	–	03375
32	5	300	240	03376
34	5	–	300	03377

Hexagonal press inserts

ALFRA HYDRAULIC CABLE CUTTER – AKS 85

Ideal for cutting cables up to Ø 85 mm

Advantages
- Guided cutter blade.
- Independent, can be used in any location.
- Clean cuts at minimal deformation.

Application areas:
Power supply companies, power distribution construction, telecommunications, municipal utilities and their providers, crane construction, mining, shipbuilding, maintenance or repair etc.

Prod.-No. 04002

Technical data:

Cutting force:	55 kN
Cutting pressure:	700 bar
Weight:	6.3 kg
Length:	450 mm

Cutting performance:

telephone cable:	up to Ø 85 mm
electric cable with armouring:	up to Ø 85 mm
insulated aluminium cable: (earthing cable)	3 x 240 mm²
insulated aluminium cable: (single-core)	630 mm²
aluminium wire:	up to Ø 46 mm
copper wire:	up to Ø 28 mm

	Prod.-No.
hydraulic cable cutter AKS 85 supplied in sailcloth bag	04002

ALFRA HYDRAULIC MANUAL CABLE CUTTER - HKS 85

With built-in manual hydraulics for cutting cables up to Ø 85 mm

The most ergonomic working position can be selected thanks to the integrated hydraulics in the rotating handle.
The cable cutter can be used on scaffolds, on high tension pylons or in manholes etc. independently of hydraulic pumps.

Application areas:
Power supply companies, power distribution construction, telecommunications, municipal utilities and their providers, crane construction, mining, shipbuilding, maintenance or repair etc.

Prod.-No. 04015 head can be rotated through 320°

Technical data:

Cutting force:	55 kN
Cutting pressure:	700 bar
Weight:	6.6 kg
Length:	740 mm

The cutting performance is equivalent to Type AKS 85.

	Prod.-No.
Hydraulic manual cable cutter HKS 85 supplied in sailcloth bag	04015

ALFRA PRESS


AP 600-2
AP 600-2
ALFRA
AP 800

	 ALFRA PRESS AP 250	 ALFRA PRESS AP 400	
	Page 74	Page 78	
	Control cabinet housing, Control cabinet doors, Mounting panels	Control cabinet housing, Control cabinet doors, Mounting panels	
Prod.-No.	03170	03195	
Overhang with limit stop in mm	250	400	
Overall height in mm	820	1,700	
Total weight in kg approx.	50 (without base)	220	
Space requirement in mm	1,000 x 1,000	1,200 x 800	
Tool dimension in mm:			
Circular Ø	3.2 – 40.5	3.2 – 40.5	
Square up to	28.0 x 28.0	28.0 x 28.0	
Max. diagonals of	40.0	40.0	
Max. material thickness in mm:			
Sheet steel S235 / stainless steel	2.5 / 2.0	2.5 / 2.0	
Aluminium / plastic	4.0	4.0	
Hydraulic system:			
Mode of action	single-action	single-action	
Punching force F	46 kN at 600 bar	46 kN at 600 bar	
Punching stroke in mm	50	50	
Operating voltage in V	-	-	
Workpiece fold in mm	22	22	

	ALFRA PRESS AP 500	ALFRA PRESS AP 600-2	ALFRA PRESS AP 800
			
	Page 82	Page 86	Page 90
	Control cabinet doors, Mounting panels, various control cabinet housings	Control cabinet doors, Mounting panels	Control cabinet doors, Mounting panels
	03093	03090	03400
	500	600	800
	1,500	1,600	1,700
	200	360	850
	1,500 x 1,500 mm	2,000 x 3,000	2,360 x 4,440
	3.2 – 63.5	3.2 – 70.0	3.2 – 120.0
	46.0 x 46.0	68.0 x 68.0	110.0 x 110.0
	60.0	90.0	140.0
	3.0 / 2.0	3.0 / 2.0	3.0 / 2.0
	4.0	4.0	4.0
	double-action	double-action	double-action
	48 kN at 130 bar	60 kN at 165 bar	135 kN at 190 bar
	66	66	72
	220	400	400
	30	30	40

APress 250

Overhang 250 mm

ALFRA PRESS AP 250

For rapid punching-out of circular, square, rectangular or special forms without pre-drilling in control cabinet doors, terminal boxes, cable ducts, housings, cable management panels etc. right up to margins. Simple tool change carried out in seconds.

Description:

- **Flexible in use - on mobile base (optional) or stationary, fitted on the workbench.**
- **Rapid tool change helps in problem areas with a wide range of break-through types.**
- **A range of die mountings is available, even for punching very close to margins.**
- **Rows of punch-outs are no problem thanks to attachable folding stops.**
- **Tip: Use a laser pointer as an option - no scribing, no centre punching, a simple crosshair with the pin is sufficient.**
- **Operation using a manual pump is sufficient as a "starter solution" - this makes "punching without pre-drilling" possible at low cost.**

Technical data:

Overhang with limit stop:	**250 mm**
Overhang without limit stop:	**265 mm**
Punching stroke:	**50 mm**
Punching force F:	**46 kN at 600 bar**
Hydraulic connection:	**R 1/4"**
Weight without base:	**50 kg**
Weight with base:	**120 kg**
Space requirement with base approx.:	**1,000 mm x 1,000 mm**

Punching capacity:

Circular:	**Ø 3.2 - 40.5 mm**
Square:	**28.0 x 28.0 mm**
Rectangle:	**22.0 x 30.0 mm**
Special forms up to a max. diagonal of:	**40.0 mm**

Material thicknesses (max):

Sheet steel (S235):	**2.5 mm**
Stainless steel (F = 600 N/mm²):	**2.0 mm**
Aluminium (F = 22 N/mm²):	**4.0 mm**
Punchable plastics:	**4.0 mm**

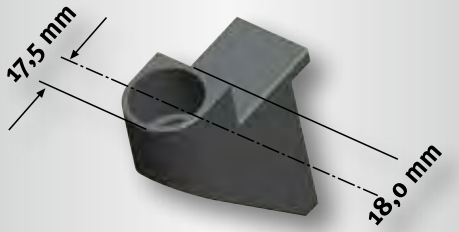
	Prod.-No.
ALFRA PRESS AP 250 (without options)	03170

Note:

- **All circular tools for ALFRA PRESS punches AP 250 - AP 800 are made of special tool steel and have a special cutting geometry developed by ALFRA.**

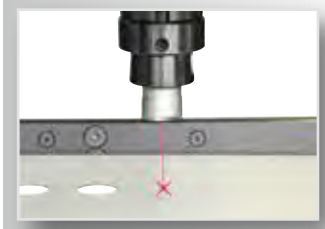
Special tools can be manufactured in our own toolmaking works at short notice!

Technical features when punching close to margins with die holder Type I



Smallest-possible axial dimension (border spacing) when using die holder Type I

Prod.-No. 03174



LASER POINT

Laser pointer for optical display of tool centre

Tool drawer, pivoting

Length and depth limit stop with foldable add-on stops

Pivoting support arms, height adjustable, each with 2 rubber supports (option)

Prod.-No. 03190

We recommend our electro-hydraulic pump ALH-600 Prod.-No. 03190 as a drive unit.

APress 250

Overhang 250 mm

Stationary hole punch - AP 250

Type		Designation	Prod.-No.
Machine		Punching yoke ALFRA PRESS 250 with hydraulic cylinder and quick coupling, cylinder piston with non-twist device for insertion of all punch sockets	03170
Pump		Electro-hydraulic pump ALH 600	03190
Special fitting		Laser pointer with power unit for electro-hydraulic pump ALH 600	03181
		Laser pointer, cpl. with power unit and connector plug for separate mains cable 230V/50Hz	03182
		Combined length and depth limit stops with 2 adjustable limit stops per axis. The limit stops in the X direction are foldable and are suitable as an add-on limit stop for rows of punch-outs.	03177
		Pivoting support arms (pairs) height adjustable, each with 2 rubber supports	03179
		Limit switch for stroke limitation (only in combination with hydraulic pump ALH-600)	03183
		Mobile base	03189
Punch socket		with scraper and centring pin Ø 3.2 - 30.5 mm with mounting shaft for AP 250 - 400	03171
		with scraper and centring pin for round punch Ø 32.5 - 40.5 mm with 19 mm Female thread for AP 250 - 400	03172
Die holder	Type I	Dies Ø 3.2 - 22.5 mm for punching right up to margins for AP 250 - 400	03174
	Type II	Dies Ø 3.2 - 30.5 mm and moulding tool up to 21 x 21 mm (30.5 mm max. diagonals) for AP 250 - 400	03175
	Type IV	Dies Ø 30.6 - 40.5 mm and moulding tool up to 28 x 28 mm (40.0 mm max. diagonals) AP 250 - 400	03176

Square and rectangular hole punches - AP 250
(with mounting shaft and centring point, including die)

Type	Designation	Prod.-No.	AP 250	AP 400	AP 500	AP 600	AP 800
Square holes	21.0 x 21.0 mm for AP 250 - 400	03087	●	●			
	25.4 x 25.4 mm for AP 250 - 400	03088	●	●			
Rectangular holes	22.0 x 30.0 mm for AP 250 - 400	03089	●	●			
Special holes	Ø 22.5 mm with 4 lugs for AP 250 - 400	03086	●	●			
Spare neoprene scraper	for punch socket (03171) Ø 3.2 - 30.5 mm	03185	●	●			
	for punch socket (03172) Ø 30.6 - 40.5 mm	03186	●	●			

Circular punches and dies - AP 250

Type	Mounting holder	Ø in mm	Size Metric	Size PG	Prod.-No.	AP 250	AP 400	AP 500	AP 600-2	AP 800
Punch Ø 3.2 - 30.5 mm		3.2			03131	●	●	●	●	●
		4.5			03132	●	●			
		5.4			03133	●	●	●	●	●
		6.5			03134	●	●	●	●	
		8.5	M8		03135	●	●	●	●	●
		10.5	M10		03136	●	●	●	●	●
		12.7	M12	PG7	03137	●	●	●	●	●
		15.2		PG9	03138	●	●	●	●	●
		16.2	M16		03139	●	●	●	●	●
		18.6		PG11	03140	●	●	●	●	●
		20.4	M20	PG13	03141	●	●	●	●	●
		22.5		PG16	03142	●	●	●	●	●
		25.4	M25		03143	●	●	●	●	●
		28.3		PG21	03144	●	●	●	●	●
		30.5			03145	●	●	●	●	●
Punch Ø 32.5 - 40.5 mm		32.5	M32		03146	●	●	●	●	●
		37.0		PG29	03158	●	●	●	●	●
		40.5	M40		03147	●	●	●	●	●
Die Ø 3.2 - 22.5 mm	TYPE I	3.2			03500	●	●			
		4.5			03501	●	●			
		5.4			03502	●	●			
		6.5			03503	●	●			
		8.5	M8		03504	●	●			
		10.5	M10		03505	●	●			
		12.7	M12	PG7	03506	●	●			
		15.2		PG9	03507	●	●			
		16.2	M16		03508	●	●			
		18.6		PG11	03509	●	●			
		20.4	M20	PG13	03510	●	●			
		22.5		PG16	03511	●	●			
Die Ø 3.2 - 30.5 mm	TYPE II	3.2			03063	●	●	●	●	●
		4.5			03066	●	●	●	●	●
		5.4			03068	●	●	●	●	●
		6.5			03074	●	●	●	●	●
		8.5	M8		03076	●	●	●	●	●
		10.5	M10		03079	●	●	●	●	●
		12.7	M12	PG7	03022	●	●	●	●	●
		15.2		PG9	03023	●	●	●	●	●
		16.2	M16		03084	●	●	●	●	●
		18.6		PG11	03024	●	●	●	●	●
		20.4	M20	PG13	03025	●	●	●	●	●
		22.5		PG16	03026	●	●	●	●	●
		25.4	M25		03085	●	●	●	●	●
		28.3		PG21	03110	●	●	●	●	●
		30.5			03111	●	●	●	●	●
Die Ø 30.6 - 40.5mm	TYPE IV	32.5	M32		03165	●	●			
		37.0		PG29	03166	●	●			
		40.5	M40		03167	●	●			

APress 400

Overhang 400 mm

ALFRA PRESS AP 400

For rapid punching-out in circular, square, rectangular or special forms without pre-drilling in control cabinet doors, terminal boxes, cable ducts, housings, cable management panels etc. right up to margins. Simple tool change carried out in seconds.

Description:

- **Flexible in use - on mobile base.**
- **Rapid tool change helps in problem areas with a wide range of break-through types.**
- **A range of die mountings is available, even for punching very close to margins.**
- **Rows of punch-outs are no problem thanks to attachable folding stops.**
- **Tip: Use a laser pointer as an option - no scribing, no centre punching, a simple crosshair with the pin is sufficient.**
- **Operation using a manual pump is sufficient as a "starter solution" - this makes "punching without pre-drilling" possible at low cost.**

Technical data:

Overhang with limit stop:	**400 mm**
Overhang without limit stop:	**430 mm**
Punching stroke:	**50 mm**
Punching force F:	**46 kN at 600 bar**
Hydraulic connection:	**R 1/4“**
Weight:	**220 kg**
Space requirement with base approx.:	**1,200 x 800 mm**

Punching capacity:

Circular from:	**Ø 3.2 - 40.5 mm**
Square up to:	**28.0 x 28.0 mm**
Rectangular up to:	**22.0 x 30.0 mm**
Special forms up to a max. diagonal of:	**40.0 mm**

Material thicknesses (max):

Sheet steel (S235):	**2.5 mm**
Stainless steel (F = 600 N/mm²):	**2.0 mm**
Aluminium (F = 22 N/mm²):	**4.0 mm**
Punchable plastics:	**4.0 mm**

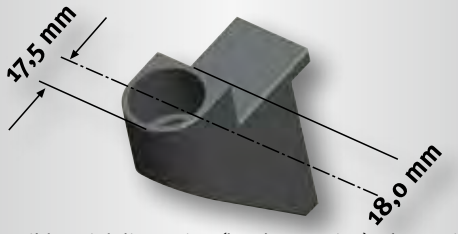
	Prod.-No.
ALFRA PRESS AP 400 (without options)	03195

Note:

- **All circular tools for ALFRA PRESS punches AP 250 - AP 800 are made of special tool steel and have a special cutting geometry developed by ALFRA.**

Special tools can be manufactured in our own toolmaking works at short notice!

Technical features when punching close to margins with die holder Type I



Smallest-possible axial dimension (border spacing) when using die holder Type I ***Prod.-No. 03174***

Laser pointer for optical display of tool centre

Die holder Type II

Tool drawer, pivoting

Length and depth limit stop with foldable add-on stops (Option)

Pivoting support arms, height adjustable, each with 3 rubber supports (option)

Prod.-No. 03190

We recommend our electro-hydraulic pump ALH-600 Prod.-No. 03190 as a drive unit.

APress 400

Overhang 400 mm

Stationary hole punch - AP 400

Type		Designation	Prod.-No.
Machine Pump		Punching yoke ALFRA PRESS 400 E with hydraulic cylinder and quick coupling, cylinder piston with non-twist device for insertion of all punch sockets	03195
		Electro-hydraulic pump ALH 600	03190
Special fitting		Laser pointer with power unit for electro-hydraulic pump ALH 600	03181
		Laser pointer, with power unit and connector plug for separate mains cable 230V/50Hz	03182
		Combined length and depth limit stops with 2 adjustable limit stops per axis. The limit stops in the X direction are foldable and are suitable as an add-on limit stop for rows of punch-outs.	03196
		Pivoting support arms (pairs) height adjustable, each with 2 rubber supports	03197
Punch socket		with scraper and centring pin Ø 3.2 - 30.5 mm with mounting shaft for AP 250 - 400	03171
		with scraper and centring pin for round punch Ø 32.5 - 40.5 mm with 19 mm Female thread for AP 250 - 400	03172
Die holder	Type I	Dies Ø 3.2 - 22.5 mm for punching right up to margins for AP 250 - 400	03174
	Type II	Dies Ø 3.2 - 30.5 mm and moulding tool up to 21 x 21 mm (30.5 mm max. diagonals) for AP 250 - 400	03175
	Type IV	Dies Ø 30.6 - 40.5 mm and moulding tool up to 28 x 28 mm (40.0 mm max. diagonals) AP 250 - 400	03176

Square and rectangular hole punches - AP 400
(with mounting shaft and centring point, including die)

Type	Designation	Prod.-No.	AP 250	AP 400	AP 500	AP 600	AP 800
Square holes	21.0 x 21.0 mm for AP 250 - 400	03087	●	●			
	25.4 x 25.4 mm for AP 250 - 400	03088	●	●			
Rectangular holes	22.0 x 30.0 mm for AP 250 - 400	03089	●	●			
Special holes	Ø 22.5 mm with 4 lugs for AP 250 - 400	03086	●	●			
Spare neoprene scraper	for punch socket (03171) Ø 3.2 - 30.5 mm	03185	●	●			
	for punch socket (03172) Ø 30.6 - 40.5 mm	03186	●	●			

Circular punches and dies - AP 400

Type	Mounting holder	Ø in mm	Size Metric	Size PG	Prod.-No.	AP 250	AP 400	AP 500	AP 600-2	AP 800
Punch Ø 3.2 - 30.5 mm		3.2			03131	●	●	●	●	●
		4.5			03132	●	●			
		5.4			03133	●	●	●	●	●
		6.5			03134	●	●	●	●	
		8.5	M8		03135	●	●	●	●	●
		10.5	M10		03136	●	●	●	●	●
		12.7	M12	PG7	03137	●	●	●	●	●
		15.2		PG9	03138	●	●	●	●	●
		16.2	M16		03139	●	●	●	●	●
		18.6		PG11	03140	●	●	●	●	●
		20.4	M20	PG13	03141	●	●	●	●	●
		22.5		PG16	03142	●	●	●	●	●
		25.4	M25		03143	●	●	●	●	●
		28.3		PG21	03144	●	●	●	●	●
		30.5			03145	●	●	●	●	●
Punch Ø 32.5 - 40.5 mm		32.5	M32		03146	●	●	●	●	●
		37.0		PG29	03158	●	●	●	●	●
		40.5	M40		03147	●	●	●	●	●
Die Ø 3.2 - 22.5 mm	TYPE I	3.2			03500	●	●			
		4.5			03501	●	●			
		5.4			03502	●	●			
		6.5			03503	●	●			
		8.5	M8		03504	●	●			
		10.5	M10		03505	●	●			
		12.7	M12	PG7	03506	●	●			
		15.2		PG9	03507	●	●			
		16.2	M16		03508	●	●			
		18.6		PG11	03509	●	●			
		20.4	M20	PG13	03510	●	●			
		22.5		PG16	03511	●	●			
Die Ø 3.2 - 30.5 mm	TYPE II	3.2			03063	●	●	●	●	●
		4.5			03066	●	●	●	●	●
		5.4			03068	●	●	●	●	●
		6.5			03074	●	●	●	●	●
		8.5	M8		03076	●	●	●	●	●
		10.5	M10		03079	●	●	●	●	●
		12.7	M12	PG7	03022	●	●	●	●	●
		15.2		PG9	03023	●	●	●	●	●
		16.2	M16		03084	●	●	●	●	●
		18.6		PG11	03024	●	●	●	●	●
		20.4	M20	PG13	03025	●	●	●	●	●
		22.5		PG16	03026	●	●	●	●	●
		25.4	M25		03085	●	●	●	●	●
		28.3		PG21	03110	●	●	●	●	●
		30.5			03111	●	●	●	●	●
Die Ø 30.6 - 40.5mm	TYPE IV	32.5	M32		03165	●	●			
		37.0		PG29	03166	●	●			
		40.5	M40		03167	●	●			

APress 500

Overhang 500 mm

ALFRA PRESS AP 500

The stationary hole punch has been developed for control cabinet and switch gear makers and is suitable for quick punching-out of circular, square, rectangular or special forms in sheet metal and control cabinet doors up to 2000 mm x 1000 mm and 30 mm margin fold height. Punching possible right up to margins. Simple, rapid tool change carried out in seconds.
Control cabinets/housings up to 300 mm in depth can also be processed.

Description:
- **Stable press body with adjustable stand feet.**
- **Dual-action hydraulic cylinder, flanged force-locking and form-locking to machine body.**
- **Anti-twist piston rod Ø 55 mm made of tempered stainless steel with tool holder.**
- **Die bed, fixed force-locking to press body.**
- **Rapid tool change helps in problem areas with a wide range of breakthrough types.**
- **Hold-down device with safety function, fixed with electrical safety lock for accident prevention.**
- **Height-adjustable length and depth limit stops - available in 2 versions.**
- **Tape measure display for length and depth limit stops.**
- **Dual-circuit hydraulic unit with electric pump, oil container and solenoid valves (very low noise).**
- **Safety footswitch with double pedal for infinitely variable operation of punching and return stroke.**

Technical data:

Overhang with limit stop:	**500 mm**
Overhang without limit stop:	**540 mm**
Punching stroke:	**66 mm**
Punching force F:	**48 kN at 130 bar**
Motor power:	**0.37 kW**
Operating voltage:	**220 V**
Weight approx.:	**200 kg**
Overall height:	**1,500 mm**
Working height:	**1,000 mm**
Width of punch body:	**130 mm**
Depth of punch body:	**950 mm**
Length of limit stock rails:	**1,500 mm**
Space requirement approx.:	**1,500 x 1,500 mm**

Punching capacity:

Circular from:	**Ø 3.2 - 63.5 mm**
Square up to:	**46.0 x 46.0 mm**
Special forms up to a max. diagonal of:	**60.0 mm**

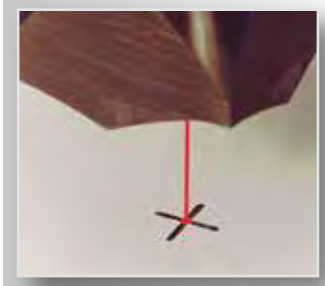
Material thicknesses (max):

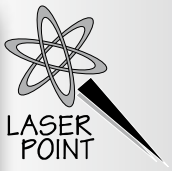
Sheet steel (S235):	**3.0 mm**
Stainless steel (F = 600 N/mm²):	**2.0 mm**
Aluminium (F = 22 N/mm²):	**4.0 mm**
Punchable plastics:	**4.0 mm**

	Prod.-No.
ALFRA PRESS AP 500 (without options)	03093

Note:
- **All circular tools for ALFRA PRESS punches AP 250 - AP 800 are made of special tool steel and have a special cutting geometry developed by ALFRA.**

Special tools can be manufactured in our own toolmaking works at short notice!





Laser pointer for optical display of tool centre

Electrical safety lock for accident prevention.

Limit stop system in Y direction Mobile, 2 guide shafts in press body.

Die holder

Tape measures display for Y-axis

Dual-circuit hydraulic unit

APress 500

Overhang 500 mm

Stationary hole punch - AP 500

Type		Designation	Prod.-No.
Machine		Stationary hole punch ALFRA PRESS 500 LPV with hydraulic cylinder, dual-action Hydraulic unit, adjustable stand feet, safety footswitch	03093
Special fitting		Laser pointer for optical display of tool centre	03021
		Length and depth limit stops movable in Y direction	03094
		Length and depth limit stops movable in X and Y direction	03095
		Pivoting double joint arm for supporting workpiece (individual)	03078
Punch socket		with scraper and centring pin for round punch with mounting shaft AP 500 - 600 Ø 3.2 - 30.5 mm	03036
		AP 500 - 600 Ø 32.5 - 40.5 mm	03035
Die holder	Type A	Circular die Type A Ø 3.2 - 25.4 mm	03040
	Type B	Circular die Type A Ø 28.3 - 40.5 mm	03041
	Type C	Circular die Type A Ø 40.6 - 63.5 mm	03077

Square and rectangular hole punches - AP 500
(with mounting shaft and centring point, including die)

Type	Designation	Prod.-No.	AP 250	AP 400	AP 500	AP 600	AP 800
Square holes	12.7 x 12.7 mm for AP 500 - 600	03042			●	●	
	19.0 x 19.0 mm for AP 500 - 600	03044			●	●	
	22.2 x 22.2 mm for AP 500 - 600	03045			●	●	
	25.4 x 25.4 mm for AP 500 - 600	03046			●	●	
	46.0 x 46.0 mm for AP 500 - 600	03047			●	●	
	68.0 x 68.0 mm for AP 600	03050				●	
Rectangular holes	22.0 x 30.0 mm for AP 500 - 600	03048			●	●	
	22.0 x 42.0 mm for AP 500 - 600	03049			●	●	
Special holes	Ø 22.5 mm 1 lug 3.2 mm for AP 500 - 600	03051			●	●	
	Ø 22.5 mm with 2 lugs 3.2 mm for AP 500 - 600	03052			●	●	
	Ø 22.5 mm, flattened on 4 sides to 20.1 mm for AP 500 - 600	03055			●	●	

Circular punches and dies - AP 500

Type	Mounting holder	Ø in mm	Size Metric	Size PG	Prod.-No.	AP 250	AP 400	AP 500	AP 600-2	AP 800
Punch Ø 3.2 - 30.5 mm		3.2			03131	●	●	●	●	●
		4.5			03132	●	●	●	●	●
		5.4			03133	●	●	●	●	●
		6.5			03134	●	●	●	●	●
		8.5	M8		03135	●	●	●	●	●
		10.5	M10		03136	●	●	●	●	●
		12.7	M12	PG7	03137	●	●	●	●	●
		15.2		PG9	03138	●	●	●	●	●
		16.2	M16		03139	●	●	●	●	●
		18.6		PG11	03140	●	●	●	●	●
		20.4	M20	PG13	03141	●	●	●	●	●
		22.5		PG16	03142	●	●	●	●	●
		25.4	M25		03143	●	●	●	●	●
		28.3		PG21	03144	●	●	●	●	●
		30.5			03145	●	●	●	●	●
Punch Ø 32.5 - 40.5 mm		32.5	M32		03146	●	●	●	●	●
		37.0		PG29	03158	●	●	●	●	●
		40.5	M40		03147	●	●	●	●	●
		47.0		PG36	03159			●	●	●
		50.5	M50		03148			●	●	●
		54.0		PG42	03160			●	●	●
		60.0		PG48	03161			●	●	●
		63.5	M63		03149			●	●	●
Die Ø 3.2 - 25.4 mm	TYPE A	3.2			03063	●	●	●	●	●
		4.5			03066	●	●	●	●	●
		5.4			03068	●	●	●	●	●
		6.5			03074	●	●	●	●	●
		8.5	M8		03076	●	●	●	●	●
		10.5	M10		03079	●	●	●	●	●
		12.7	M12	PG7	03022	●	●	●	●	●
		15.2		PG9	03023	●	●	●	●	●
		16.2	M16		03084	●	●	●	●	●
		18.6		PG11	03024	●	●	●	●	●
		20.4	M20	PG13	03025	●	●	●	●	●
		22.5		PG16	03026	●	●	●	●	●
		25.4	M25		03085	●	●	●	●	●
Die Ø 28.3 - 40.5 mm	TYPE B	28.3		PG21	03027			●	●	●
		30.5			03028			●	●	●
		32.5	M32		03163			●	●	●
		37.0		PG29	03029			●	●	●
		40.5	M40		03164			●	●	●
Die Ø 47.0 - 63.5 mm	TYPE C	47.0		PG36	03030			●	●	●
		50.5	M50		03168			●	●	●
		54.0			03031			●	●	●
		60.0		PG48	03032			●	●	●
		63.5	M63		03169			●	●	●

APress 600-2

Overhang 600 mm

ALFRA PRESS AP 600-2

The stationary hole punch has been developed for control cabinet and switch gear makers and is suitable for quick punching-out of circular, square, rectangular or special forms in sheet metal and control cabinet doors up to 2200 mm x 1000 mm and 30 mm margin fold height. Punching possible right up to margins. Simple, rapid tool change **carried out in seconds -**
even on fitted door. **Limit stop system can be moved in X and Y directions.**

Description:

- **Stable press body in heavy-duty, torsionally-stiff welded construction.**
- **Dual-action hydraulic cylinder, flanged force-locking and form-locking to machine body.**
- **Anti-twist piston rod Ø 55 mm made of tempered stainless steel with tool holder.**
- **Die bed, fixed force-locking to press body.**
- **Rapid tool change helps in problem areas with a wide range of breakthrough types.**
- **Hold-down device with safety function, fixed with electrical safety lock for accident prevention.**
- **Length and depth limit stops movable in X and Y directions, bearings in hardened double ball bearing slides for smooth mobility.**
- **Tape measure display for length and depth adjustment.**
- **Digital measuring indicator optionally available for X and Y axes.**
- **Dual-circuit hydraulic unit with electric pump, oil container and solenoid valves (very low noise).**
- **Safety footswitch with double pedal for infinitely variable operation of punching and return stroke.**

Technical data:

Overhang with limit stop:	**600 mm**
Punching stroke:	**66 mm**
Punching force F:	**60 kN at 165 bar**
Motor power:	**0.75 KW**
Operating voltage:	**400 V**
Weight approx.:	**360 kg**
Overall height:	**1,600 mm**
Working height:	**1,000 mm**
Width of punch body:	**310 mm**
Depth of punch body:	**1,150 mm**
Length of limit stock rails:	**1,500 mm**
Space requirement approx.:	**2,000 x 3,000 mm**

Punching capacity:

Circular from:	**Ø 3.2 - 70.0 mm**
Square up to:	**68.0 x 68.0 mm**
Special forms up to a max. diagonal of:	**90.0 mm**

Material thicknesses (max):

Sheet steel (S235):	**3.0 mm**
Stainless steel (F = 600 N/mm²):	**2.0 mm**
Aluminium (F = 22 N/mm²):	**4.0 mm**
Punchable plastics up to:	**4.0 mm**

	Prod.-No.
ALFRA PRESS AP 600-2 (without options)	03090

Note:

- **All circular tools for ALFRA PRESS punches AP 250 - AP 800 are made of special tool steel and have a special cutting geometry developed by ALFRA.**

Special tools can be manufactured in our own toolmaking works at short notice!

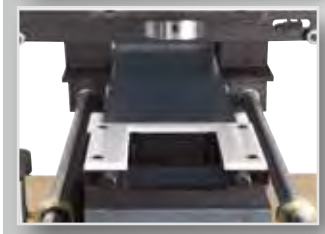
Laser pointer for optical display of tool centre

Stable piston rod (Ø 55 mm) with tool anti-twist device

Tool drawer with compartments

Dual-circuit hydraulic unit in cabinet base

Reciprocal quick-clamping system for edge folds either top or bottom



Die bed holder. Tool changes can also be carried out when control cabinet door is fitted.

Length and depth limit stops guided in double ball bearing slides on both sides.
2 adjustable limit stops right and left on the Y-axis.

APress 600-2

Overhang 600 mm

Stationary hole punch - AP 600-2

Type		Designation	Prod.-No.
Machine		Stationary hole punch ALFRA PRESS 600-2 with hydraulic cylinder, cabinet base, length and depth limit stops movable in X and Y directions, cylinder pistons with anti-twist device for use with all punch sockets, dual-action hydraulic unit, safety footswitch.	03090
Special fitting		Laser pointer for optical display of tool centre	03021
		Digital measuring indicator Y-axis	03091
		Digital measuring indicator X-axis	03092
		Pivoting double joint arm for supporting workpiece (individual)	03078
Punch socket		with scraper and centring pin for round punch with mounting shaft for AP 500 - 600 Ø 3.2 - 30.5 mm	03036
		with scraper and centring pin for round punch with 19 mm female thread for AP 500 - 600 Ø 32.5 - 40.5 mm	03035
Die holder	Type A	Circular die Type A Ø 3.2 - 25.4 mm	03040
	Type B	Circular die Type A Ø 28.3 - 40.5 mm	03041
	Type C	Circular die Type A Ø 40.5 - 63.5 mm	03077

Square and rectangular hole punches - AP 600-2

(with mounting shaft and centring point, including die)

Type	Designation	Prod.-No.	AP 250	AP 400	AP 500	AP 600	AP 800
Square holes	12.7 x 12.7 mm for AP 500 - 600	03042			●	●	
	19.0 x 19.0 mm for AP 500 - 600	03044			●	●	
	22.2 x 22.2 mm for AP 500 - 600	03045			●	●	
	25.4 x 25.4 mm for AP 500 - 600	03046			●	●	
	46.0 x 46.0 mm for AP 500 - 600	03047			●	●	
	68.0 x 68.0 mm for AP 600	03050				●	
Rectangular holes	22.0 x 30.0 mm for AP 500 - 600	03048			●	●	
	22.0 x 42.0 mm for AP 500 - 600	03049			●	●	
Special holes	Ø 22.5 mm 1 lug 3.2 mm for AP 500 - 600	03051			●	●	
	Ø 22.5 mm with 2 lugs 3.2 mm for AP 500 - 600	03052			●	●	
	Ø 22.5 mm, flattened on 4 sides to 20.1 mm for AP 500 - 600	03055			●	●	

Circular punches and dies - AP 600-2

Type	Mounting holder	Ø in mm	Size Metric	Size PG	Prod.-No.	AP 250	AP 400	AP 500	AP 600-2	AP 800
Punch Ø 3.2 - 30.5 mm		3.2			03131	●	●	●	●	●
		4.5			03132	●	●	●	●	●
		5.4			03133	●	●	●	●	●
		6.5			03134	●	●	●	●	●
		8.5	M8		03135	●	●	●	●	●
		10.5	M10		03136	●	●	●	●	●
		12.7	M12	PG7	03137	●	●	●	●	●
		15.2		PG9	03138	●	●	●	●	●
		16.2	M16		03139	●	●	●	●	●
		18.6		PG11	03140	●	●	●	●	●
		20.4	M20	PG13	03141	●	●	●	●	●
		22.5		PG16	03142	●	●	●	●	●
		25.4	M25		03143	●	●	●	●	●
		28.3		PG21	03144	●	●	●	●	●
		30.5			03145	●	●	●	●	●
Punch Ø 32.5-40.5 mm		32.5	M32		03146	●	●	●	●	●
		37.0		PG29	03158	●	●	●	●	●
		40.5	M40		03147	●	●	●	●	●
		47.0		PG36	03159			●	●	●
		50.5	M50		03148			●	●	●
		54.0		PG42	03160			●	●	●
		60.0		PG48	03161			●	●	●
		63.5	M63		03149			●	●	●
Die Ø 3.2 - 25.4 mm	TYPE A	3.2			03063	●	●	●	●	●
		4.5			03066	●	●	●	●	●
		5.4			03068	●	●	●	●	●
		6.5			03074	●	●	●	●	●
		8.5	M8		03076	●	●	●	●	●
		10.5	M10		03079	●	●	●	●	●
		12.7	M12	PG7	03022	●	●	●	●	●
		15.2		PG9	03023	●	●	●	●	●
		16.2	M16		03084	●	●	●	●	●
		18.6		PG11	03024	●	●	●	●	●
		20.4	M20	PG13	03025	●	●	●	●	●
		22.5		PG16	03026	●	●	●	●	●
		25.4	M25		03085	●	●	●	●	●
Die Ø 28.3 - 40.5 mm	TYPE B	28.3		PG21	03027			●	●	●
		30.5			03028			●	●	●
		32.5	M32		03163			●	●	●
		37.0		PG29	03029			●	●	●
		40.5	M40		03164			●	●	●
Die Ø 47.0 - 63.5 mm	TYPE C	47.0		PG36	03030			●	●	●
		50.5	M50		03168			●	●	●
		54.0			03031			●	●	●
		60.0		PG48	03032			●	●	●
		63.5	M63		03169			●	●	●

APress 800

Overhang 800 mm

ALFRA PRESS AP 800

The stationary hole punch has been developed for control cabinet and switch gear makers and is suitable for quick punching-out of circular, square, rectangular or special forms in sheet metal and control cabinet doors up to 2200 mm x 1000 mm and 40 mm margin fold height. Punching possible right up to margins. Simple, rapid tool change **carried out in seconds -**
even on fitted door. **Limit stop system can be moved in X and Y directions.**

Description:

- **Stable press body in heavy-duty, torsionally-stiff welded construction, fitted on stands with rubber-bonded metal feet.**
- **Pivoting control panel with digital display, emergency stop button, electrical operating buttons and two-hand operation.**
- **Dual-action hydraulic cylinder, flanged force-locking and form-locking to machine body.**
- **Anti-twist piston rod Ø 63 mm made of tempered stainless steel with tool holder.**
- **Die bed, fixed force-locking to press body.**
- **Time relay for piston return saves working time.**
- **Hold-down device/scraper combination with figure protection.**
- **X – Y limit stop system, easily movable in heavy-duty, precise profile roller guides.**
- **Form and force-fitting workpiece mounting and clamping device.**
- **Pivoting workpiece mounting left of press body for easy raising of workpiece.**
- **Locking of limit stop system using electrically-operated hydraulic brakes.**
- **Digital path measurement and display of X and Y travel with a display accuracy of 0.1 mm and a measuring accuracy of 1%.**
- **Rapid tool change helps in problem areas with a wide range of breakthrough types.**
- **Dual-circuit hydraulic unit with electric pump, oil container and solenoid valves (very low noise).**

Technical data:

Overhang with limit stop:	**800 mm**
Punching stroke:	**72 mm**
Punching force F:	**135 kN at 190 bar**
Motor power:	**1.5 kW**
Operating voltage:	**400 V**
Weight approx.:	**850 kg**
Overall height:	**1,700 mm**
Working height:	**1,000 mm**
Width of punch body:	**280 mm**
Depth of punch body:	**1,700 mm**
Space requirement approx.:	**2,360 x 4,440 mm**

Punching capacity:

Circular from:	**Ø 3.2 - 120.0 mm**
Square up to:	**110.0 x 110.0 mm**
Special forms up to a max. diagonal of:	**140.0 mm**

Material thicknesses (max):

Sheet steel (S235):	**3.0 mm**
Stainless steel (F = 600 N/mm²):	**2.0 mm**
Aluminium (F = 22 N/mm²):	**4.0 mm**
Punchable plastics up to:	**4.0 mm**

	Prod.-No.
ALFRA PRESS AP 800 (without options)	03400

Special tools can be manufactured in our own toolmaking works at short notice!

Pivoting control panel with two-hand operation

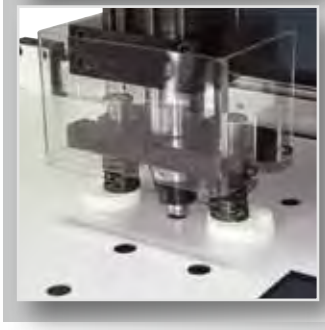
Form and force-locking workpiece mounting with quick-action clamping system

Tool holder, anti-twist in piston rod, hold-down device / scraper combination

Die holder, tool change also possible with fitted control cabinet door

Path measurement of X and Y travel

Dual-circuit hydraulic unit



Hold-down device/scraper combination

APress 800

Overhang 800 mm

Stationary hole punch - AP 800

Type		Designation	Prod.-No.
Machine		Stationary hole punch ALFRA PRESS 800 LPV in heavy duty welded construction, dual-action hydraulic cylinder, limit stop system can be moved in X and Y directions, hold-down device/scraper combination with safety function, cylinder pistons with anti-twist device for use with all punch sockets, dual-circuit hydraulic unit, movable control panel, time relay for piston return, pivoting workpiece mounting, die holder, rubber-bonded metal feet.	03400
Special fitting		Laser pointer for optical display of tool centre	03021
Punch socket		with centring pin for round punch with mounting shaft	03413
		with scraper and centring pin for round punch with 19 mm female thread	03411
Die holder	Type A	Ø 3.2 - 25.4 mm	03405
	Type B	Ø 28.3 - 40.5 mm	03406
	Type C	Ø 40.6 - 63.5 mm	03407
		Ø 64.0 - 80.0 mm	03408
		Ø 80.1 - 100.0 mm	03409

Square and rectangular hole punches - AP 800
(with mounting shaft and centring point, including die)

Type	Designation	Prod.-No.	AP 250	AP 400	AP 500	AP 600	AP 800
Square holes	46.0 x 46.0 mm	03425					●
	68.0 x 68.0 mm	03491					●
	92.0 x 92.0 mm	03435					●
Rectangular holes	22.0 x 30.0 mm	03417					●
	24.0 x 36.0 mm	03419					●
	22.0 x 42.0 mm	03421					●
	35.0 x 65.0 mm	03428					●
	46.0 x 92.0 mm	03433					●
Special holes	Ø 22.5 mm with 2 lugs 3.2 mm	03452					●
	Ø 30.5 mm with 2 lugs 3.2 mm	03454					●
	Double louvre tool 100.0 x 8.0 mm up to 2.0 mm material thickness	03456					●

Circular punches and dies - AP 800

Type	Mounting holder	Ø in mm	Size Metric	Size PG	Prod.-No.	AP 250	AP 400	AP 500	AP 600-2	AP 800
Punch Ø 3.2 - 30.5 mm		3.2			03131	●	●	●	●	●
		4.5			03132	●	●	●	●	●
		5.4			03133	●	●	●	●	●
		6.5			03134	●	●	●	●	●
		8.5	M8		03135	●	●	●	●	●
		10.5	M10		03136	●	●	●	●	●
		12.7	M12	PG7	03137	●	●	●	●	●
		15.2		PG9	03138	●	●	●	●	●
		16.2	M16		03139	●	●	●	●	●
		18.6		PG11	03140	●	●	●	●	●
		20.4	M20	PG13	03141	●	●	●	●	●
		22.5		PG16	03142	●	●	●	●	●
		25.4	M25		03143	●	●	●	●	●
		28.3		PG21	03144	●	●	●	●	●
		30.5			03145	●	●	●	●	●
Punch Ø 32.5 - 40.5 mm		32.5	M32		03146	●	●	●	●	●
		37.0		PG29	03158	●	●	●	●	●
		40.5	M40		03147	●	●	●	●	●
		47.0		PG36	03159			●	●	●
		50.5	M50		03148			●	●	●
		54.0		PG42	03160			●	●	●
		60.0		PG48	03161			●	●	●
		63.5	M63		03149			●	●	●
Die Ø 3.2 - 25.4 mm	TYPE A	3.2			03063	●	●	●	●	●
		4.5			03066	●	●	●	●	●
		5.4			03068	●	●	●	●	●
		6.5			03074	●	●	●	●	●
		8.5	M8		03076	●	●	●	●	●
		10.5	M10		03079	●	●	●	●	●
		12.7	M12	PG7	03022	●	●	●	●	●
		15.2		PG9	03023	●	●	●	●	●
		16.2	M16		03084	●	●	●	●	●
		18.6		PG11	03024	●	●	●	●	●
		20.4	M20	PG13	03025	●	●	●	●	●
		22.5		PG16	03026	●	●	●	●	●
		25.4	M25		03085	●	●	●	●	●
Die Ø 28.3 - 40.5 mm	TYPE B	28.3		PG21	03027			●	●	●
		30.5			03028			●	●	●
		32.5	M32		03163			●	●	●
		37.0		PG29	03029			●	●	●
		40.5	M40		03164			●	●	●
Die Ø 47.0 - 63.5 mm	TYPE C	47.0		PG36	03030			●	●	●
		50.5	M50		03168			●	●	●
		54.0			03031			●	●	●
		60.0		PG48	03032			●	●	●
		63.5	M63		03169			●	●	●

All technical specifications, descriptions and illustrations in this catalogue are non-binding. We reserve the right to make changes due to the ongoing development of our products.

We accept no liability for any printing errors.

Publication of this catalogue makes all previous catalogues invalid.

As of April 2016

This catalogue was created with the greatest possible care. All technical data and information was verified before printing.
For reasons of continuous improvement and development of the ALFRA production program, we reserve the right to modify or even remove products in this catalogue from our delivery program. For this reason technical data and products which are contained in this catalogue may vary without prior notification.

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04/2016

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ALFRA®

www.alfra.de

PUNCHING DRILLING LIFTING CUTTING DEBURRING

B/2016 EN

MADE IN GERMANY

THE STORY ON THE TITLE PAGE

More than 30 years ago, we began selling metal core drill machines in Germany.
We were the first to offer this technology in Europe!

A short time later, we began to produce these devices ourselves.

This was more than a welcome aid for metal fabricators. The "drilling" of steel was, so to speak, newly discovered. Since 2014, ALFRA has set further milestones: The new models are equipped with a permanent magnet (patented technology) which allows completely new applications.

From a material thickness of 2 mm, work is not a problem. Conventional machines with an electromagnet need at least 6-8 mm to hold securely.
Of course, all kinds of other details are in our machines that enable the expert to achieve an ideal working results.

Customers worldwide benefit from our know-how today. You have accompanied us with your ideas and suggestions for more than three decades and know why you use machines and tools of ALFRA, made in Germany.

Further innovative products at the highest quality standards come from our production facilities in Hockenheim and Berlin/Stahnsdorf. We are working for you constantly to improve our tools and machines. This is a high standard. But we know that you are worth it.

We hope you enjoy using our products and that your work progresses perfectly.
Your Alfred Raith GmbH - ALFRA

In the last 4 years, we have reduced CO^2 emissions by almost 400 tons!
We have produced 600 mega watt hours of electricity for our own needs!

Only companies which products themselves can pay attention to and influence the entire manufacturing process.

We live a resource-saving handling with our environment and in the last few years, we have developed an increased awareness of "what comes from where" and it can then be use by you.
The use of alternative energy, of photovoltaics, has led to a virtually carbon-neutral production in recent years.

Before we forget: We are certified according to ISO standard, of course, since 1997.

You can use our tools with a very good conscience.
Not only because they are so technically sophisticated and have an life time.
No, because they are well thought out through the entire production chain – and leave no traces which could burden the environment and generations after us.

MADE IN GERMANY

GREEN ENERGY

TÜVRheinland®
CERT
ISO 9001

New standards are being set in magnetic technology!

Our permanent magnets are activated according to a patented principle, completely independent from the power supply - 100% safe and permanently stable!

ALFRA is worldwide licensee of this patented system that allows you to drill, lift, position and transport 2 mm material thickness...

TML

US Patent no. 8350663B1

CORE DRILLING

LIFTING

POSITIONING

SPECIAL / PROBLEM SOLUTIONS

MADE IN GERMANY

Drilling - Punching - Cutting - Deburring

Metal Core Drilling Machines

Pages 8 - 26

Magnetic Drill Stands

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Special solutions

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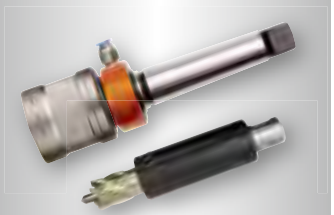

Accessories - Arbors

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Accessories - Counterboring / Coolant

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Accessories - Tapping Attachements / Drill Bits

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Accessories - Chip Remover Pipe Clamp / Vacuum Plate

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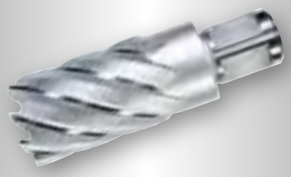

Core Drills HSS-Basic

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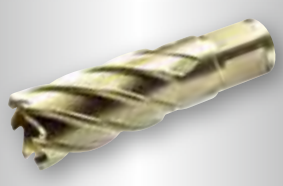

Core Drills HSS-Co Eco

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Core Drills HSS-Co RQX

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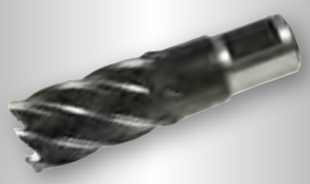

Core Drills ASP-30 for railroad tracks

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Core Drills HSS-Co Eco suitable for FEIN + Hitachi

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Core Drills HSS-Co Eco suitable for Nitto Kohki

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HSS twist drill with Weldon shank

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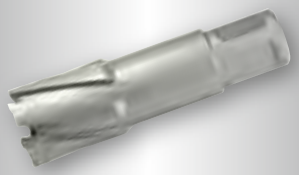

Core Drills - TCT Weldon

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Core Drills - TCT AL Cutters - Rail TCT

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Core Drills -TCT suitable for Fein + Hitachi

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Hydraulic Punching / Pumps

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Dry Cutter RotaDry®

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Edge deburring Units

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Milling Cutters

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Edge Deburring Unit KFK 5, Bevel Milling Machine SKF 63-15

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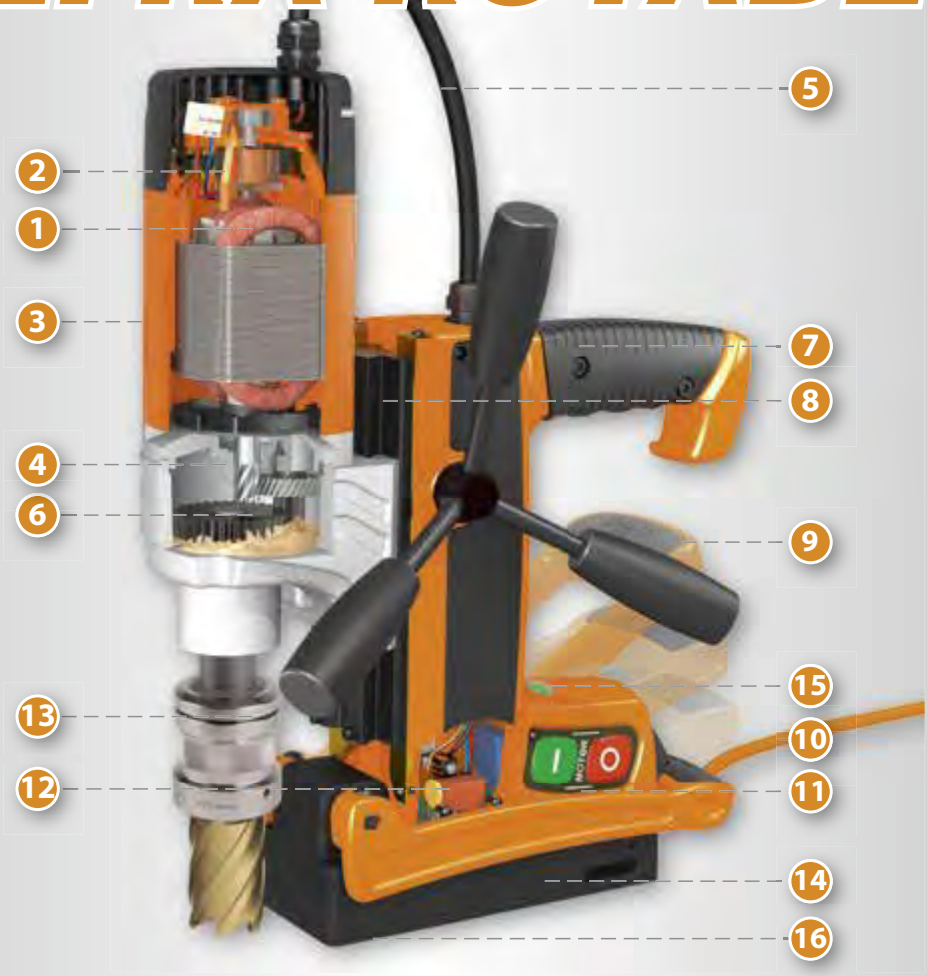
ALFRA ROTABEST® – CORE DRILLING MACHINE OVERVIEW

	 RB 35 SP	 RB 50 SP	 SP-V	 V 32
Prod.-No.	230 V: 18801 / 110 V: 18801.110	230 V: 18851 / 110 V: 18851.110	18343	230 V: 18710 / 110 V: 18710.110
Core drill dimensions	Ø 12.0 - 35.0 mm	Ø 12.0 - 50.0 mm	-	Ø 12.0 - 32.0 mm
Cutting depth	50.0 mm	50.0 mm	-	30.0 mm
Twist drill	Ø 1.0 - 13.0 mm	Ø 1.0 - 20.0 mm	Ø depending on the respective drilling machine used	-
Counterboring	Ø 10.0 - 40.0 mm	Ø 10.0 - 40.0 mm	-	Ø 10.0 - 32.0 mm
Tapping	-	-	-	-
Arbor	Quick-release chuck	Quick-release chuck MK2	Eurobund Ø 43 mm	19 mm Weldon shank
Stroke	105 mm	100 mm	105 mm	45 mm
Height adjustment	80 mm	47 mm	80 mm	
Gearbox – on-load speed	450 rpm	1. Step 250 rpm 2. Step 450 rpm	-	450 rpm
Power consumption	1,100 W	1,200 W	-	900 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz	230 V 50/60 Hz 110 V 50/60 Hz	-	230 V 50/60 Hz 110 V 50/60 Hz
Tool Force (10 mm) / Magnetic holding force	2,800 N/8,000 N	2,300 N/8,000 N	2,800 N/8,000 N	2,100 N/16,000 N
Min. Material Thickness	From 2 mm	From 2 mm	From 2 mm	6 mm
Magnet foot	72 x 190 mm	72 x 190 mm	72 x 190 mm	95 x 200 mm
Weight	9.9 kg	11.5 kg	6.8 kg	12.5 kg
Motor				
Smooth start	✔	✔	-	**Compact, lying**
Hybrid relays	✔	✔	-	
Full-wave control electronics	-	-	-	
Right/left run	-	-	-	
Overload protection	✔	✔	-	
Motor emergency stop	✔	✔	-	
Gearboxes				
Oil bath gearbox	✔	✔	-	**Compact mitre gear**
Mechanical slipping clutch	-	-	-	
Slide				
Stepless adjustment	✔	✔	-	**2-sided column guide**
Self-adjusting guide	✔	✔	-	
Operation				
Soft-touch grips	✔	✔	-	**Space-saving - through ratchet**
Membrane keyboard	✔	✔	-	
Holder for Allen key	✔	✔	-	
Cord length 5 m	✔	✔	-	
Magnet				
Sensor/LED	✔	✔	-	-
Metal rings	-	-	-	✔
TiN coating	✔	✔	✔	
Performance and Weight optimisation	✔	✔	✔	✔
MADE IN GERMANY	✔	✔	✔	✔

	RB 35 B	PICCOLO 35/50 X	RB 50 X	RB 80 X	130
					
	230 V: 18400 110 V: 18400.110	230 V: 18701 110 V: 18701.110	230 V: 18751 110 V: 18751.110	230 V: 18781 110 V: 18781.110	230 V: 18645 110 V: 18645.110
	Ø 12.0 - 35.0 mm	Ø 12.0 - 35.0 mm	Ø 12.0 - 50.0 mm	Ø 12.0 - 80.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)	Ø 12.0 - 130.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)
	50.0 mm	50.0 mm	50.0 mm	50.0 mm / 110.0 mm	50.0 mm / 110.0 mm
	Ø 1.0 - 13.0 mm DIN 1897 short	Ø 1.0 - 13.0 mm	Ø 1.0 to 16.0 mm with quick-release chuck MK 2 Up to Ø 20.0 mm With MK 2 DIN 345 direct	Ø 1.0 - 16.0 mm with drill chuck Up to Ø 32.0 mm with MK 3 DIN 345	Up to Ø 45.0 mm with MK 4 DIN 345 direct
	Ø 10.0 - 40.0 mm	Ø 10.0 - 40.0 mm	Ø 10.0 - 40.0 mm	Ø 10.0 - 55.0 mm	Ø 10.0 - 80.0 mm
			with tapping attachment M3 - M20	with tapping attachment: Up to M30	with tapping attachment: Up to M42
	19 mm Weldon shank	Quick-release chuck	MK2	MK3	MK 4
	120 mm	129 mm	190 mm	190 mm	230 mm
		86 mm	100 mm	100 mm	100 mm
	450 rpm	450 rpm	1. Step 250 rpm 2. Step 450 rpm	1. Step 110 rpm 2. Step 175 rpm 3. Step 245 rpm 4. Step 385 rpm	1. Step 30 - 80 rpm. 2. Step 50 - 120 rpm. 3. Step 130 - 350 rpm. 4. Step 210 - 550 rpm.
	1,100 W	1,100 W	1,200 W	1,800 W	2,500 W
	230 V 50/60 Hz 110 V 50/60 Hz	230 V 50/60 Hz 110 V 50/60 Hz	230 V 50/60 Hz 110 V 50/60 Hz	230 V 50/60 Hz 110 V 50/60 Hz	230 V 50/60 Hz 110 V 50/60 Hz
	2,100 N/9,000 N	2,100 N/9,000 N	3,500 N/11,000 N	4,000 N/13,000 N	5,000 N/32,000 N
	6 mm	6 mm	6 mm	10 mm	10 mm
	70 x 185 mm	70 x 185 mm	92 x 220 mm	92 x 220 mm	90 x 400 mm
	10.6 kg	11.5 kg	15.0 kg	19.5 kg	34.5 kg
	-	✔	✔	✔	-
	-	-	✔	✔	-
	-	-	-	-	-
	-	-	-	-	-
	-	✔	-	-	-
	-	✔	✔	✔	-
	-	-	✔	✔	✔
	-	-		✔	✔
	-	✔	✔	✔	-
	✔	✔	✔	✔	-
	✔	✔	✔	✔	✔
	-	✔	✔	✔	✔
	-	✔	✔	✔	-
	✔	✔	✔	✔	-
	-	✔	✔	✔	-
	✔	✔	✔	✔	✔
	-	-	-	-	-
	✔	✔	✔	✔	-
	✔	✔	✔	✔	✔

	 40 RL-E		 60 RL-E		 100 RL-E	
Prod.-No.	230 V: 18611	110 V: 18611.110	230 V: 18626	110 V: 18626.110	230 V: 18634	110 V: 18634.110
Core drill dimensions	Ø 12.0 - 50.0 mm		Ø 12.0 - 80.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)		Ø 12.0 - 100.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)	
Cutting depth	50.0 mm		50.0 mm / 110.0 mm		50.0 mm / 110.0 mm	
Twist drill	Ø 1.0 to 16.0 mm with quick-release chuck MK 2 Up to Ø 20.0 mm with MK 2 DIN 345 direct		Ø 1.0 - 16.0 mm with drill chuck Up to Ø 32.0 mm with MK 3 DIN 345		Ø 1.0 - 16.0 mm with drill chuck Up to Ø 32.0 mm with MK 3 DIN 345	
Counterboring	Ø 10.0 - 40.0 mm		Ø 10.0 - 55.0 mm		Ø 10.0 - 55.0 mm	
Tapping	with tapping chucks: M3 - M14 with tapping attachment M3 - M20		with tapping chucks: Up to M30 with tapping attachment: Up to M30		with tapping chucks: Up to M30 with tapping attachment: Up to M30	
Arbor	MK 2		MK 3		MK 3	
Stroke	170 mm		190 mm		245 mm	
Height adjustment	100 mm		60 mm		116 mm	
Gearbox – on-load speed	right / left 1. Step 100 - 250 rpm 2. Step 180 - 450 rpm		right / left 1. Step 50 - 110 rpm 2. Step 75 - 175 rpm 3. Step 105 - 245 rpm 4. Step 165 - 385 rpm		right / left 1. Step 50 - 110 rpm 2. Step 75 - 175 rpm 3. Step 105 - 245 rpm 4. Step 165 - 385 rpm	
Power consumption	1,200 W		1,800 W		2,500 W (230 V) 2,400 W (110 V)	
Voltage	230 V 50/60 Hz 110 V 50/60 Hz		230 V 50/60 Hz 110 V 50/60 Hz		230 V 50/60 Hz 110 V 50/60 Hz	
Tool Force (10 mm) / Magnetic holding force	3,800 N /16,000 N		4,200 N/20,000 N		4,000 N/20,000 N	
Min. Material Thickness	10 mm		10 mm		10 mm	
Magnet foot	80 x 230 mm		80 x 230 mm, 30° adjustable right and left, 10 mm front and back		80 x 230 mm, 30° adjustable right and left, 10 mm front and back	
Weight	16.0 kg		22.0 kg		28.0 kg	
Motor						
Smooth start	-		✔		✔	
Hybrid relayss	-		-		-	
Full-wave control electronics	✔		✔		✔	
Right/left run	✔		✔		✔	
Overload protection	✔		✔		✔	
Motor emergency stop	-		-		-	
Gearboxes						
Oil bath gearbox	✔		✔		✔	
Mechanical slipping clutch	-		✔		✔	
Slide						
Stepless adjustment	✔		✔		✔	
Self-adjusting guide	-		-		-	
Operation						
Soft-touch grips	✔		✔		✔	
Membrane keyboard	✔		✔		✔	
Holder for Allen key	-		-		-	
Cable length 5 m	-		-		-	
Magnet						
Sensor/LED	-		-		-	
Metal rings	✔		✔		✔	
Performance and Weight optimisation	-		-		-	
MADE IN GERMANY	✔		✔		✔	

ALFRA ROTABEST®



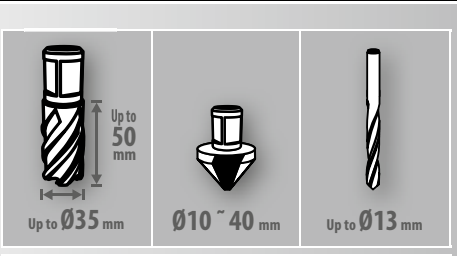
POWER GLOSSARY

Motor		
1	**Temperature sensor**	The LED signal informs about a motor overheating due to overload. After cooling down, the motor can be activated again.
2	**Carbon brush wear control**	The motor LED flashes as soon as the carbon brushes are worn through the mechanical abrasion. The motor continues to run.
3	**Drive unit**	Height adjustable Allows a larger, multiple stroke range
4	**Smooth start**	Protects the motor and extends its life time.
5	**PUR Control line**	Remains flexible even at low temperatures and is optimally protected against external influences.
Gearboxes		
6	**Special gearbox**	The wear of the gearbox wheels is reduced significantly even under extreme conditions.
Operation		
7	**Soft-touch grips**	Abrasion resistant for perfect grip. Including integrated Allen key tray
8	**Double dovetail slide**	Self-adjusting through innovative clamping system

Operation		
9	**Magnetic activation lever**	Ergonomic and easy to use. With perforated grip zone for perfect grip.
10	**5 metre PUR connection cable**	Remains flexible even at low temperatures and is optimally protected against external influences.
11	**Membrane keyboard**	The keypad has been ergonomically designed and further offset in the housing so that it is less sensitive to moisture and mechanical influences.
12	**Circuit board with Hybrid relays**	Extra long life. Voltage spikes are intercepted.
13	**Quick-release chuck**	Weight-optimised to reduce the imbalance to a minimum. Is compatible for all core drills with standard Weldon arbor.
Permanent magnet		
14	**Permanent magnet**	100% reliability (also in case of power failure) - already can be used from 2 mm thickness (this is unparalleled!)
15	**LED for magnetic/ adhesive power indicator**	This shows various function statuses - "continuous green" for OK - "red flashing" with holding force which is just sufficient - "continuous red" with low holding force - (motor turns off automatically)
16	**TiN coated magnetic undersurface**	Scratch-resistant and resistant to external influences.

MADE IN GERMANY


“Our company has used core drilling machines by ALFRA for over 30 years.
Tools and equipment are top!
The new machine with a permanent magnet is awesome!
Finally, I can also drill thin-walled profiles, from as little as 2 mm material thickness!
...and all that made in Germany!”
ALFRA



RB 35 SP

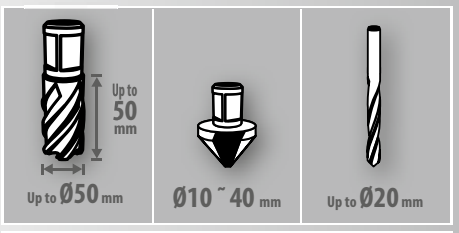
Core drill dimensions	Ø 12.0 - 35.0 mm
Cutting depth	50.0 mm
Twist drill	Ø 1.0 - 13.0 mm
Counterboring	Ø 10.0 - 40.0 mm
Arbors	Quick-release chuck
Stroke	105 mm
Height adjustment	80 mm
Gearbox - on-load speed	450 rpm
Power consumption	1,100 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool Force (10 mm) / Magnetic adhesion force	2,800 N/8,000 N
Tool force (6 mm S235)	2,300 N
Magnet foot	72 x 190 mm
Weight	9.9 kg
Motor	
Smooth start	✔
Hybrid relays	✔
Overload protection	✔
Motor emergency stop	✔
Gearboxes	
Oil bath gearbox	✔
Slide	
Infinitely adjustable	✔
Self-adjusting guide	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Holder for Allen key	✔
Cable length 5 m	✔
Magnet	
Sensor/LED	✔
Metal rings	✔
Performance and Weight optimisation	✔
Made in Germany	✔

Scope of delivery

- Metal core drilling machine RB 35 SP with quick-release chuck
- Carrying case
- Seat belt
- Coolant device
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® RB 35 SP	230 Volt	18801
ALFRA Rotabest® RB 35 SP	110 Volt	18801.110

ALFRA Rotabest®-50 SP



RB 50 SP

Core drill dimensions	Ø 12.0 - 50.0 mm
Cutting depth	50.0 mm
Twist drill	Ø 1.0 - 20.0 mm
Counterboring	Ø 10.0 - 40.0 mm
Arbors	Quick-release chuck MK2
Stroke	100 mm
Height adjustment	47 mm
Gearbox - on-load speed	1. Step 250 rpm 2. Step 450 rpm
Power consumption	1,200 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool Force (10 mm) / Magnetic adhesion force	2,800 N/8,000 N
Tool force (6 mm S235)	2,000 N
Magnet foot	72 x 190 mm
Weight	11.5 kg

Motor	
Smooth start	✔
Hybrid relays	✔
Overload protection	✔
Motor emergency stop	✔
Gearboxes	
Oil bath gearbox	✔
Slide	
Infinitely adjustable	✔
Self-adjusting guide	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Holder for Allen key	✔
Cable length 5 m	✔
Magnet	
Sensor/LED	✔
TiN coating	✔
Performance and Weight optimisation	✔

Made in Germany ✔

Scope of delivery

- Metal core drilling machine RB 50 SP
- Tool holder MK 2 with quick-release chuck, including internal cooling
- Carrying case
- Seat belt
- Coolant device
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® RB 50 SP	230 Volt	18851
ALFRA Rotabest® RB 50 SP	110 Volt	18851.110


“Light, slender and strong, even on thin sheet metal.
...finally a drill stand with a permanent magnet to my
taste - and 100% reliable!”
Already from 2 mm
material thickness
35 SP-V

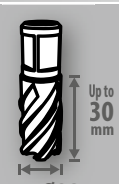
Through variable mountings, different drilling machines can be used. As a standard, the drill stand is equipped with a Ø 43mm Euro flange.. Even cordless drill machines can be used as a cordless combination with the permanent magnetic stand for a virtually unlimited range of applications - from 2 mm thickness!

SP-V	
Twist drill	Ø depending on the used drill
Stroke	105 mm
Height adjustment	80 mm
Tool Force (10 mm) / Magnetic adhesion force	2,800 N/8,000 N
Tool force (6 mm S235)	2,300 N
Magnet foot	72 x 190 mm
Weight	6.8 kg
Magnet	
TiN coating	✔
Performance and weight optimisation	✔
Made in Germany	✔

Can be used with a permanent magnet from 2 mm material thickness

	Prod.-No.
ALFRA universal magnetic drill stands SP-V	18343

ALFRA Rotabest® – V 32



Up to Ø32 mm

Ø10 ~ 32 mm

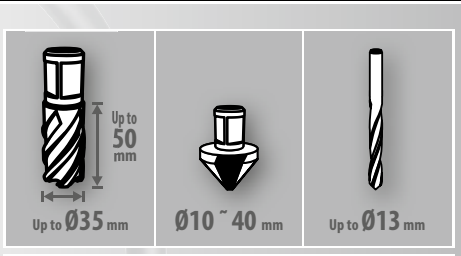
V 32	
Core drill dimensions	Ø 12.0 - 32.0 mm
Cutting depth	30.0 mm
Counterboring	Ø 10.0 - 32.0 mm
Arbors	19 mm Weldon shank
1-speed gearbox	450 rpm
Stroke	45 mm
Power consumption	900 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	2,100 N /16,000 N
Magnet foot	95 x 200 mm
Weight	12.5 kg
Motor	
Compact, lying	
Gearboxes	
Compact mitre gear	
Slide	
2-sided column guide	
Operation	
Space-saving - through ratchet	
Magnet	
Metal rings	✔
Performance and weight optimisation	✔
Made in Germany	✔

Scope of delivery

- Metal core drilling machine V 32
- Coolant pressure bottle
- Carrying case
- Allen key for Weldon arbor
- Seat belt
- Ejector pin 6.35 x 74 mm (specially for Rotabest® V32)
- Operating instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® 130	230 Volt	18710
ALFRA Rotabest® 130	110 Volt	18710.110

ALFRA Rotabest® – RB 35 B



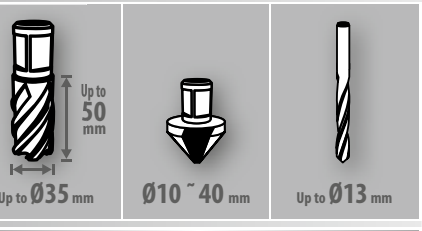
RB 35 B	
Core drill dimensions	Ø 12.0 - 35.0 mm
Cutting depth	50.0 mm
Twist drill	Ø 1.0 – 13.0 mm DIN 1897 short
Counterboring	Ø 10.0 - 40.0 mm
Arbors	19 mm Weldon shank
Stroke	120 mm
Gearbox - on-load speed	450 rpm
Power consumption	1,100 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm) / magnetic adhesion strength	2,100 N/9,000 N
Magnet foot	70 x 185 mm
Weight	10.6 kg
Gearboxes	
Oil-box gearbox	✔
Slide	
Self-adjusting guide	✔
Operation	
Soft-touch grips	✔
Ergonomic Switch keyboard	✔
Cable length 5 m	✔
Magnet	
Metal rings	✔
Performance and Weight optimisation	✔
Made in Germany	✔

Scope of delivery

- Metal core drill RB 35 B
- Carrying case
- Seat belt
- Coolant device
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® RB 35 B	230 Volt	18400
ALFRA Rotabest® RB 35 B	110 Volt	18400.110

ALFRA Rotabest® – Piccolo 35/50 X



PICCOLO 35/50 X

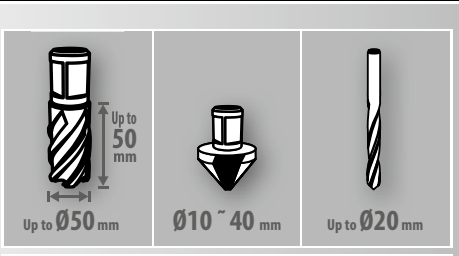
Core drill dimensions	Ø 12.0 - 35.0 mm
Cutting depth	50.0 mm
Twist drill	Ø 1.0 - 13.0 mm
Counterboring	Ø 10.0 - 40.0 mm
Arbors	Quick-release chuck
Stroke	129 mm
Height adjustment	86 mm
Gearbox - on-load speed	450 rpm
Power consumption	1,100 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm) / magnetic adhesion strength	2,100 N/9,000 N
Magnet foot	70 x 185 mm
Weight	11.5 kg
Motor	
Smooth start	✔
Hybrid relays	✔
Overload protection	✔
Motor emergency stop	✔
Gearboxes	
Oil-box gearbox	✔
Slides	
Infinitely adjustable	✔
Self-adjusting guide	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Holder for Allen key	✔
Cable length 5 m	✔
Magnet	
Sensor/LED	✔
Metal rings	✔
Performance and Weight optimisation	✔
Made in Germany	✔

Scope of delivery

- Metal core drilling machine Piccolo 35/50 X
- Carrying case
- Seat belt
- Coolant device
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® Piccolo 35/50 X	230 Volt	18701
ALFRA Rotabest® Piccolo 35/50 X	110 Volt	18701.110

ALFRA Rotabest® – RB 50 X



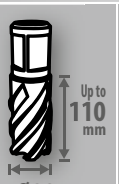
RB 50 X	
Core drill dimensions	Ø 12.0 - 50.0 mm
Cutting depth	50.0 mm
Twist drill	Ø 1.0 to 16.0 mm with quick-release chuck MK 2 Up to Ø 20.0 mm With MK 2 DIN 345 direct
Counterboring	Ø 10.0 - 40.0 mm
Tapping	with tapping attachment M3 - M20
Arbors	MK2
Stroke	190 mm
Height adjustment	100 mm
2-speed gearbox Load speed	1. Step 250 rpm 2. Step 450 rpm
Power consumption	1,200 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	3,500 N/11,000N
Magnet foot	92 x 220 mm
Weight	15.0 kg
Motor	
Smooth start	✔
Hybrid relays	✔
Motor emergency stop	✔
Gearboxes	
Oil bath gearbox	✔
Slides	
Infinitely adjustable	✔
Self-adjusting guide	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Holder for Allen key	✔
Cable length 5 m	✔
Magnet	
Sensor/LED	✔
Metal rings	✔
Performance and Weight optimisation	✔
Made in Germany	✔

Scope of delivery

- Metal core drill RB 50 x
- incl. coolant system and tool holder with internal cooling (Prod.-No. 18003)
- Carrying case
- Drill spray
- Seat belt
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® RB 50 X	230 Volt	18751
ALFRA Rotabest® RB 50 X	110 Volt	18751.110

ALFRA Rotabest® – RB 80 X



Up to Ø80 mm


Ø10 ~ 55 mm


Up to Ø32 mm

RB 80 X

Core drill dimensions	Ø 12.0 - 80.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)
Cutting depth	50.0 mm / 110.0 mm
Twist drill	Ø 1.0 - 16.0 mm with drill chuck Up to Ø 32.0 mm with MK 3 DIN 345
Counterboring	Ø 10 - 55.0 mm
Tapping	with tapping attachment: Up to M30
Arbors	MK3
Stroke	190 mm
Height adjustment	100 mm
4-speed gearbox Load speed	1. Step 110 rpm 2. Step 175 rpm 3. Step 245 rpm 4. Step 385 rpm
Power consumption	1,800 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	4,000 N/13,000 N
Magnet foot	92 x 220 mm
Weight	19.5 kg

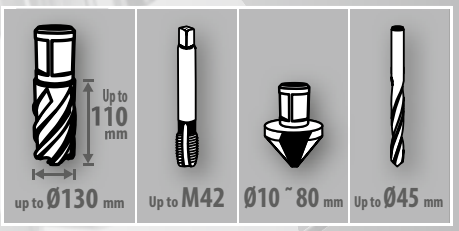
Motor	
Smooth start	✔
Hybrid relays	✔
Motor emergency stop	✔
Gearboxes	
Oil bath gearbox	✔
Mech. Slip clutch	✔
Slides	
Infinitely adjustable	✔
Self-adjusting guide	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Holder for Allen key	✔
Cable length 5 m	✔
Magnet	
Sensor/LED	✔
Metal rings	✔
Performance and Weight optimisation	✔
Made in Germany	✔

Scope of delivery

- Metal core drill RB 80 x
- incl. coolant system and tool holder with internal cooling (Prod.-No. 18025)
- Carrying case
- Drill spray
- Seat belt
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® RB 80 X	230 Volt	18781
ALFRA Rotabest® RB 80 X	110 Volt	18781.110

ALFRA Rotabest®-130



130	
Core drill dimensions	Ø 12.0 - 130.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)
Cutting depth	50.0 mm / 110.0 mm
Twist drill	Up to Ø 45.0 mm with MK 4 DIN 345 direct
Counterboring	Ø 10.0 - 80.0 mm
Tapping	with tapping attachment Up to M42
Arbors	MK 4
Stroke	230 mm
Height adjustment	100 mm
4-speed gearbox	1. Step 30 - 80 rpm. 2. Step 50 - 120 rpm. 3. Step 130 - 350 rpm. 4. Step 210 - 550 rpm.
Power consumption	2,500 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	5,000 N/32,000 N
Magnet foot	90 x 400 mm
Weight	34.5 kg

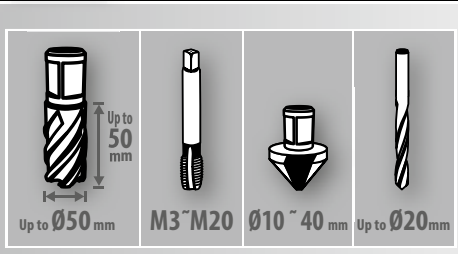
Gearboxes	
Oil bath gearbox	✔
Mech. Slip clutch	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Magnet	
Metal rings	✔
Made in Germany	✔

Scope of delivery

- Metal core drill 130
- Transportation packing
- Coolant device
- Drill spray
- Chip hook
- Seat belt
- Operating instructions

		Prod.-No.
ALFRA Rotabest® 130	230 Volt	18645
ALFRA Rotabest® 130	110 Volt	18645.110

ALFRA Rotabest® – 40 RL-E



40 RL-E

Core drill dimensions	Ø 12.0 - 50.0 mm
Cutting depth	50.0 mm
Twist drill	Ø 1.0 to 16.0 mm with quick-release chuck MK 2 Up to Ø 20.0 mm With MK 2 DIN 345 direct
Counterboring	Ø 10.0 - 40.0 mm
Tapping	with tapping chucks: M3 - M14 with tapping attachment M3 - M20
Arbors	MK 2
Stroke	170 mm
Height adjustment	100 mm
2-speed gearbox	right / left 1. Step 100 - 250 rpm 2. Step 180 - 450 rpm
Power consumption	1,200 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	3,800 N/16,000 N
Magnet foot	80 x 230 mm
Weight	16.0 kg

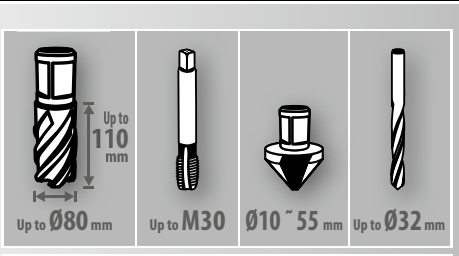
Motor	
Smooth start	✔
Full-wave control electronics	✔
Right/left run	✔
Overload protection	✔
Gearboxes	
Oil bath gearbox	✔
Slides	
Infinitely adjustable	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Magnet	
Metal rings	✔
Made in Germany	✔

Scope of delivery

- Metal core drill RL 40 E
- Carrying case
- Coolant device
- Drill spray
- Quick-release chuck 1 to 16 mm, MK 2
- Chip hook
- Seat belt
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® 40 RL-E	230 Volt	18611
ALFRA Rotabest® 40 RL-E	110 Volt	18611.110

ALFRA Rotabest®– 60 RL-E



60 RL-E

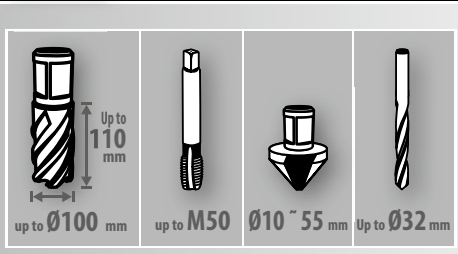
Core drill dimensions	Ø 12.0 - 80.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)
Cutting depth	50.0 mm / 110.0 mm
Twist drill	Ø 1.0 - 16.0 mm with drill chuck Up to Ø 32.0 mm with MK 3 DIN 345
Counterboring	Ø 10 - 55.0 mm
Tapping	with tapping chucks: Up to M30 with tapping attachment: Up to M30
Arbors	MK 3
Stroke	190 mm
Height adjustment	60 mm
4-speed gearbox	right / left 1. Step 50 - 110 rpm 2. Step 75 - 175 rpm 3. Step 105 - 245 rpm 4. Step 165 - 385 rpm
Power consumption	1,800 W
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	4,200 N/20,000 N
Magnet foot	80 x 230 mm, 30° adjustable right and left, 10 mm front and back
Weight	22.0 kg
Motor	
Smooth start	✔
Full-wave control electronics	✔
Right/left run	✔
Overload protection	✔
Gearboxes	
Oil bath gearbox	✔
Mech. Slip clutch	✔
Slides	
Infinitely adjustable	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Magnet	
Metal rings	✔
Made in Germany	✔

Scope of delivery

- Metal core drill 60 RL-E
- Carrying case
- Coolant device
- Drill spray
- Quick-release chuck 1 to 16 mm, MK 3
- Chip hook
- Seat belt
- Operating Instructions
- **incl. 1 core drill free**

		Prod.-No.
ALFRA Rotabest® 60 RL-E	230 Volt	18626
ALFRA Rotabest® 60 RL-E	110 Volt	18626.110

ALFRA Rotabest® – 100 RL-E



100 RL-E

Core drill dimensions	Ø 12.0 - 100.0 mm/ Ø 20.0 - 50.0 mm (extra long 110 mm)
Cutting depth	50.0 mm / 110.0 mm
Twist drill	Ø 1.0 - 16.0 mm with drill chuck Up to Ø 32.0 mm with MK 3 DIN 345
Counterboring	Ø 10.0 - 55.0 mm
Tapping	with tapping chucks: Up to M30 with tapping attachment: Up to M30
Arbors	MK 3
Stroke	245 mm
Height adjustment	116 mm
4-speed gearbox	right / left 1. Step 50 - 110 rpm 2. Step 75 - 175 rpm 3. Step 105 - 245 rpm 4. Step 165 - 385 rpm
Power consumption	2,500 W (230 V) 2,400 W (110 V)
Voltage	230 V 50/60 Hz 110 V 50/60 Hz
Tool force (10 mm)/ magnetic adhesion strength	4,000 N/20,000 N
Magnet foot	80 x 230 mm, 30° adjustable right and left, 10 mm front and back
Weight	28.0 kg

Motor	
Smooth start	✔
Full-wave control electronics	✔
Right/left run	✔
Overload protection	✔
Gearboxes	
Oil bath gearbox	✔
Mech. Slip clutch	✔
Slides	
Infinitely adjustable	✔
Operation	
Soft-touch grips	✔
Membrane keyboard	✔
Magnet	
Metal rings	✔
Made in Germany	✔

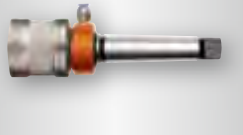
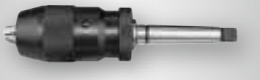
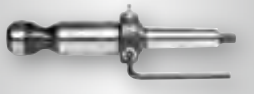
Scope of delivery

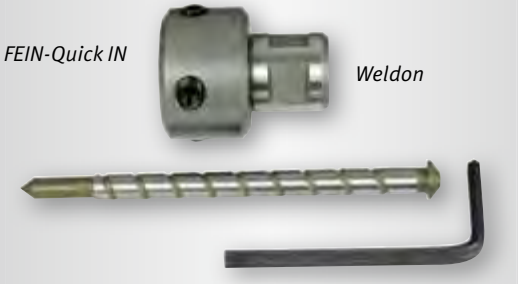
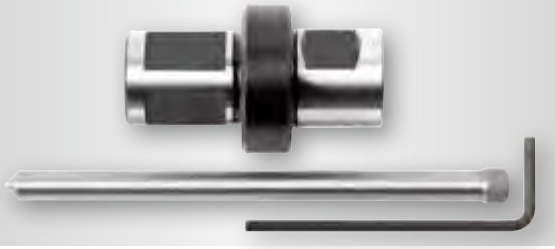
- Metal core drill 100 RL-E
- Carrying case
- Coolant device
- Chip hook
- Seat belt
- Drill spray
- Quick-release chuck
- **incl. 1 core drill free**

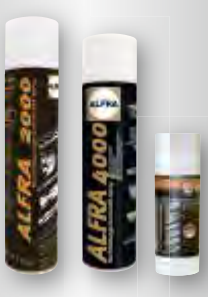
		Prod.-No.
ALFRA Rotabest® 100 RL-E	230 Volt	18634
ALFRA Rotabest® 100 RL-E	110 Volt	18634.110

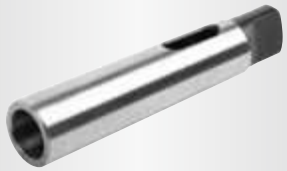
“Our new magnetic technology enables a variety of applications.”

Example: Deep hole drilling

Description	Prod.-No.	RB 35 B Piccolo 35/50 X	RB 50 X 40 RL-E	RB 80 X 60 RL-E	100 RL-E	Figure
Quick-release tool holder **Rota-Quick®** • Morse taper 2 • with automatic internal cooling • suitable for all machines with drill spindle MK 2 • Application range to 40 mm core drill Ø	18650	-	✔	✔ With reducing sleeve MK 3/2	✔ With reducing sleeve MK 3/2	
Quick-release tool holder **Rota-Quick®** • Morse taper 3 • with automatic internal cooling • suitable for all machines with drill spindle MK 3 • Application range to 40 mm core drill Ø	18651	-	-	✔	✔	
Quick-release chuck with Weldon arbor for twist drills • Ø 1 -13 mm	18107	✔	-	-	-	
Quick-release chuck with Morse taper 2 for twist drills • Ø 1 - 16 mm	18008	-	✔	✔ With reducing sleeve MK 3/2	✔ With reducing sleeve MK 3/2	
Quick-release chuck with Morse taper 3 for twist drills • Ø 1 - 16 mm	18009	-	-	✔	✔	
Tool holder **AMK-2** - Morse taper 2 for core drills • with Weldon shank • Ø 12 - 60 mm • with automatic internal cooling • suitable for all machines with drill spindle MK 2	18003	-	✔	✔ With reducing sleeve MK 3/2	✔ With reducing sleeve MK 3/2	
Tool holder **AMK-2** without internal cooling	18001	-	✔	✔ With reducing sleeve MK 3/2	✔ With reducing sleeve MK 3/2	
Adapter sleeve **MK 3/2**	18023	-	-	✔	✔	
Tool holder **AMK-3** without internal cooling	18002	-	-	✔	✔	
Tool holder **AMK-3** - Morse taper 3 for core drills • with Weldon shank • Ø 12 - 60 mm • with automatic internal cooling • suitable for all machines with drill spindle MK 3	18025	-	-	✔	✔	
Tool holder **AMK-3** - extended version • with Weldon shank • Ø 12-50 mm, cutting depth 110 mm • with automatic internal cooling • suitable for all machines with drill spindle MK 3	18025L	-	-	✔	✔	
Tool holder **AL3** - Morse taper 3 • for core drills heavy duty version • Ø 51-100 mm with keyway with automatic internal cooling	20230	-	-	✔	✔	

Description	Prod.-No.	Figure
Adapter with female thread M18 x 6 p 1.5 Adapter for use on Rotabest® HSS-Co Eco and HSS-Co RQX core drills of Ø 12.0 mm to 32.0 mm and Rotabest® carbide core drills of Ø 14.0-32.0 mm on: FEIN core drilling machines of the type KBM 542	20201	
Adapter with external thread (including ejector pin) Adapter for use of FEIN core drills with internal thread M18 x 6 p 1.5 on metal core drill machines with Weldon shank.	20202	
Ejector pin suitable for Prod.-No. 20202 - single	20203	
Adapters Adapter for use of all core drills with a Weldon shank on FEIN Quick IN quick-release system. This adapter is eliminated when you use our HSS-Eco core drill of series Prod.-No. 1909... and 2009...	20204	
Ejector pin for HSS core drills cutting depth 30 mm, also suitable for adapter Prod.-No. 20204 among others	1950500	
Ejector pin for HSS core drills cutting depth 50 mm, also suitable for adapter Prod.-No. 20204 among others	1975500	
Extension adapter With Weldon shank and ejector pin. For use on core drills 25 - 30 – 35 – 50 mm cutting depth in cases when the surface of the material to be drilled is deeper than the stand space of the machine. The first ejector pin triggers the second ejector pin; the coolant flows through the borehole to the core drill. Total length adapters: 80 mm Diameter: 30 mm Ejector pin: 6.35 x 77 mm Prod.-No. 1926500	20206	
Adapter complete with ejector pin + Allen key Adapter for use on core drills with FINE-Quick IN shaft on metal core drill machines with Weldon arbor.	20210	
Replacement ejector pin (only for adapters) 6.35 x 125 mm	1936501	
Adapter for carbide hole saws, e.g. type MBS on metal core drill machines with Weldon arbor (incl. ejector pin Prod.-No. 1950500)	060WD	

Description	Prod.-No.	RB 35 SP RB 35 B Piccolo 35/50 X	RB 50 SP RB 50 X 40 RL-E	RB 80 X 60 RL-E	100 RL-E	Figure
HSS taper and deburring countersinks with Weldon shank • Ø 25 mm	18533	✔	✔ With Tool holder MK 2/3	✔ With Tool holder MK 2/3	✔ With Tool holder MK 2/3	
HSS taper and deburring countersinks with Weldon shank • Ø 30 mm	18536	✔	✔ With Tool holder MK 2/3	✔ With Tool holder MK 2/3	✔ With Tool holder MK 2/3	
HSS taper and deburring countersinks with Weldon shank • Ø 40 mm	18534	✔	✔ With Tool holder MK 2/3	✔ With Tool holder MK 2/3	✔ With Tool holder MK 2/3	
HSS taper and deburring countersinks with Weldon shank • Ø 55 mm	18537	-	-	✔	✔	
Coolant system for 40 RL-E, 60 RL-E, 100 RL-E, 130	18104	✔	✔	✔	✔	
Coolant system for RB 35 B	189311241	✔	-	-	-	
Coolant system for Piccolo 35/50 X, RB 35 SP, RB 50 SP, RB 50 X and 80 X, suitable for tool holder with internal cooling AMK-2 (Prod.-No. 18003) and AMK-3 (Prod.-No. 18025)	189412029	-	✔	✔	-	
Coolant pressure bottle 0.5 l suitable for Rotabest® V32	18103	✔	✔	✔	✔	
ALFRA 2000 Cutting and drilling spray 405 ml can	21010	✔	✔	✔	✔	
ALFRA 4000 High performance cutting oil spray 300 ml can	21040	✔	✔	✔	✔	
High performance wax stick. Ideal for core drill boreholes on the wall or ceiling (overhead drilling), as paste adheres to the cutting edge.	09012	✔	✔	✔	✔	

Description	Shaft	Prod.-No.	RB 50 X	RB 80 X	
Tapping attachment M3 - M12 Scope of delivery: with Rota-Quick® and MK 2, interchangeable, Plastic case, manual	MK2 + RotaQuick®	18652	✔	✔ With adapter sleeve MK 3/2	
Tapping attachment M10 - M20 Scope of delivery: with Rota-Quick® and MK 2, interchangeable, Plastic case, manual	MK2 + RotaQuick®	18653	✔	✔ With adapter sleeve MK 3/2	
Adapter sleeve for tapping attachment - from MK3 to MK2 **Tapping chuck with quick-change inserts for Rotabest® RL-E, models with right/left run.**		18023			
Tapping set size. 1 in a wooden box, which includes: Tapping quick-release chuck size 1 **MK 2** each 1 piece quick-change insert size. 1 M3 – M4 – M5 – M6 – M8 – M10 – M12 – M14		18660			
Tapping set size. 2 in a wooden box, which includes: Tapping quick-release chuck size 2 **MK 3** each 1 piece quick-change insert size 2 M6 – M8 – M10 – M12 – M14 – M16 – M18 – M20		18680			
Tapping quick-release chuck **size 1** MK 2, single, suitable for 40 RL-E and 60 RL-E		18661			
Tapping quick-release chuck **size 2** MK 3, single,		18681			

Prod.-No. 18681 - Installation instructions

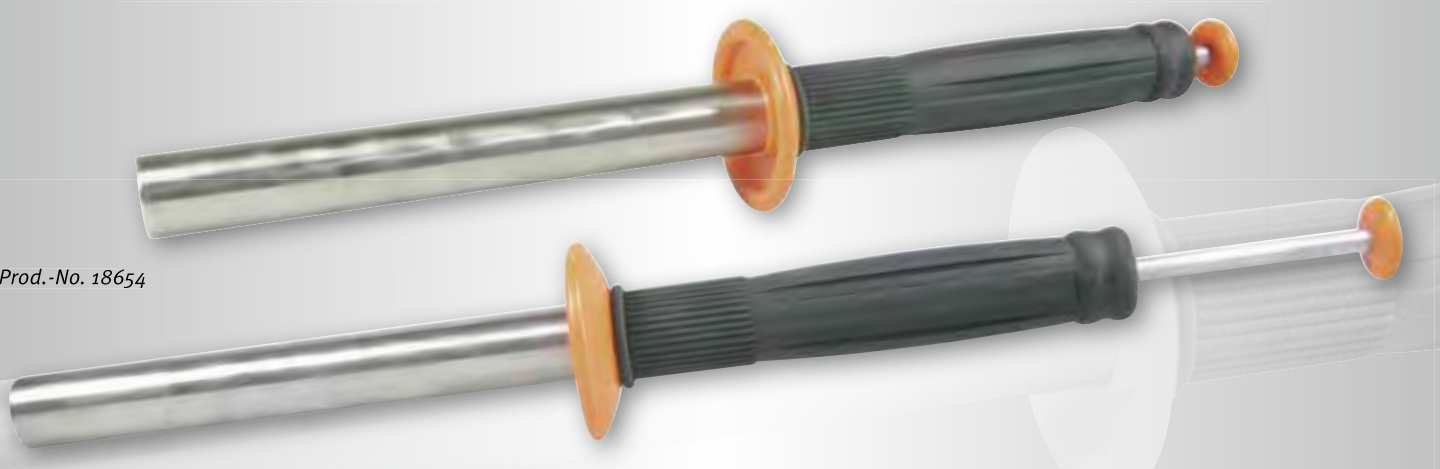
Quick change inserts with clutch

		Shank-Ø	Square	Tap drill	Prod.-No.
Size 1	M3	3.5	2.7	DIN 371	18662
Size 1	M4	4.5	3.4	DIN 371	18663
Size 1	M5	6.0	4.9	DIN 371	18664
Size 1	M6	6.0	4.9	DIN 371	18678
Size 1	M8	8.0	6.2	DIN 371	18665
Size 1	M10	10.0	8.0	DIN 371	18666
Size 1	M12	9.0	7.0	DIN 376	18667
Size 1	M14	11.0	9.0	DIN 376	18668
Size 2	M6	6.0	4.9	DIN 371	18682
Size 2	M8	8.0	6.2	DIN 371	18683
Size 2	M10	10.0	8.0	DIN 371	18684
Size 2	M12	9.0	7.0	DIN 376	18685
Size 2	M14	11.0	9.0	DIN 376	18686
Size 2	M16	12.0	9.0	DIN 376	18687
Size 2	M18	14.0	11.0	DIN 376	18688
Size 2	M20	16.0	12.0	DIN 376	18689
Size 2	M22	18.0	14.5	DIN 376	18690

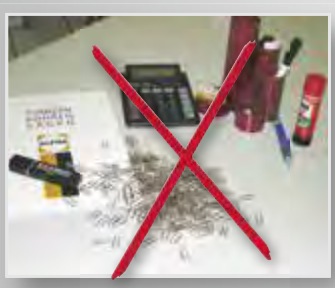
ALFRA - MAGNETIC CHIP REMOVER

In a stainless steel round rod, you can move a magnet back and forth. The strong magnet attracts the metal chips - pull knob, chips fall out. For more cleanliness in the workplace.

	Prod.-No.
ALFRA magnetic chip remover, length 400 mm	18654



Prod.-No. 18654



1. Adjustable telescopic handle
2. Up to 9 kg load capacity

- For practical cleaning of floors in various work areas
- Load capacity up to 9 kg
- Easy removal of picked up metal parts by simple release mechanism on a rod
- Sweeping width 400 mm
- 750-1050 mm adjustable telescopic handle

	Prod.-No.
ALFRA chip brush	18655

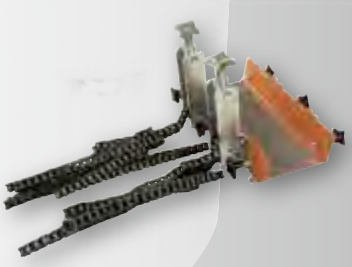
Accessories - Mechanical pipe fastening unit

Description	Prod.-No.
Fastening unit with a tensioning chain Ø 80-300 mm Seating for Magnet foot 100 x 235 mm, weight 7.5 kg	18019
Fastening unit with two tensioning chains Ø 80-900 mm Seating for Magnet foot 100 x 280 mm, weight 12 kg	18020
Fastening unit with tension strap Ø 80-900 mm Seating for Magnet foot 100 x 235 mm, weight 6.5 kg	18021

"When it comes around again" on the assembly - or in the workshop!
Our mechanical pipe fastening unit with chain tension or tension strap enables the use of core drilling machines on pipes from Ø 80 mm.
The adjustment takes place through flexible clamps.
For pipes of various Ø.

Clamping range with double tension belt up to 2000 mm pipe Ø on request: Prod.-No. 18022

Prod.-No. 18019



Prod.-No. 18020

Prod.-No. 18021

Rotabest®– Vacuum system Vacubest

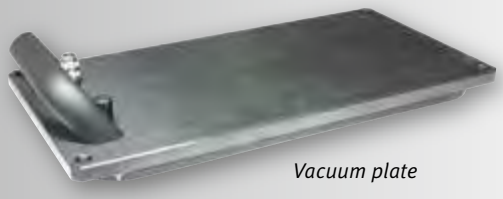
Description	Prod.-No.
Vacuum system Vacubest	18150

Use on **non-magnetic** surfaces such as copper, aluminium, brass, stainless steel, plastics and textured subsurface (e.g. corrugated and chequer plate)

Suction capacity:	1.5 m³/h – 25l/min
Max. vacuum mbar (abs.):	200
Overpressure mbar:	300
Dimensions suction plate:	400 x 200 mm

Scope of delivery:
Pump (230 V, 50 Hz), vacuum plate, 3, mtr. suction pipe

TIP:
Name your application problem - we will be happy to advise you.

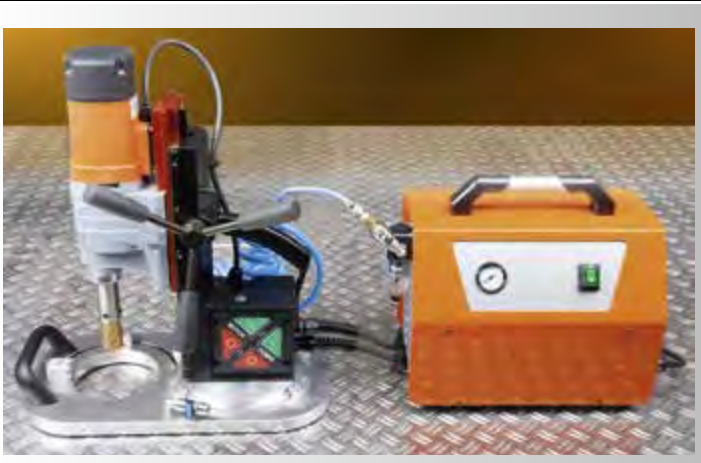


Vacuum plate

Pump

Product features Rotabest® RB 50 X Vacubest:
- Automatic shut-off of motor in case of vacuum loss
- Adjustable laser cross
- Machine is mounted on the vacuum plate rotatable by 270°
- Vacuum pump can be controlled by the core drilling machine

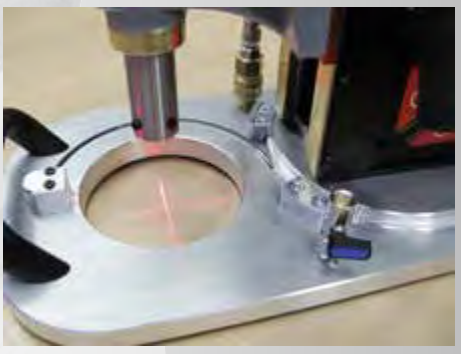
Use on non-magnetic surfaces such as aluminium, copper, brass, stainless steel, plastics, wood and textured surface (e.g. corrugated and chequer plate)



Technical specifications:

Core Drilling in metal:	Ø 12.0 - 50.0 mm
Drilling in wood:	Ø 12.0 - 100.0 mm
Drilling depth:	50 mm
Power consumption:	1200 W
2 speed gearbox:	250/450 rpm
Arbor:	available as 19 mm Weldon or MK2
Coolant feed:	automatically integrated from the top through the spindle
Voltage:	230 volt or 110 volt (50-60 Hz)
Vacuum adhesion force:	9000 N
Tool force (at - 0.9 bar):	2300 N
Printing:	- 0.9 bar / - 90kPa

Description	Prod.-No.
ALFRA – Rotabest® RB 50 X Vacubest with MK 2 mounting	18740
ALFRA – Rotabest® RB 50 X Vacubest with Weldon arbor	18740.WD
ALFRA – Rotabest® RB 50 X Vacubest with MK 2 arbor, 110v	18740.110.UL



Metal core drills have a name

ALFRA ROTABEST®

Manufacturing expertise for 40 years

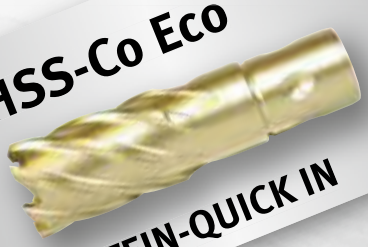
HSS-BASIC

HSS-Co Eco

for FEIN + Hitachi

HSS-Co Eco

HSS-Co Eco

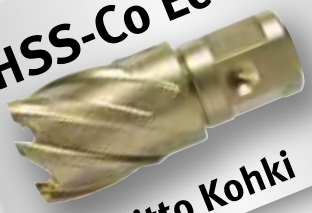


for FEIN-QUICK IN

HSS-Co RQX

coated

HSS-Co Eco



for Nitto Kohki

ASP-30 RAIL

for railway tracks

Twist drill

with Weldon shank

ALFRA ROTABEST® – HSS BASIC CORE DRILLS

- with Weldon shank 19.0 mm, 2 driving surfaces
- Internal bore 6.35 mm
- Steel quality: Special super high speed steel
- Polished section: with pre- and post-cutter

Suitable on:
ALFRA Rotabest® (Weldon), BDS, Bux, Ruko, Magnetor, Euroboor, Universal, Nitto, Jancy, Hougen, Magtron, Promac, Rotabroach and all other magnetic drills with Weldon shank.

Ø in mm Cutting depth	Prod.-No. 30 mm	Prod.-No. 50 mm
12.0	1907012025	1907012050
13.0	1907013025	1907013050
13.5	1907013525	1907013550
14.0	1907014025	1907014050
15.0	1907015025	1907015050
15.5	1907015525	1907015550
16.0	1907016025	1907016050
17.0	1907017025	1907017050
17.5	1907017525	1907017550
18.0	1907018025	1907018050
19.0	1907019025	1907019050
19.5	1907019525	1907019550
20.0	1907020025	1907020050
21.0	1907021025	1907021050
22.0	1907022025	1907022050
23.0	1907023025	1907023050
24.0	1907024025	1907024050
25.0	1907025025	1907025050
26.0	1907026025	1907026050
26.5	1907026525	1907026550
27.0	1907027025	1907027050
28.0	1907028025	1907028050
29.0	1907029025	1907029050
30.0	1907030025	1907030050
31.0	1907031025	1907031050
32.0	1907032025	1907032050
33.0	1907033025	1907033050
34.0	1907034025	1907034050
35.0	1907035025	1907035050
36.0	1907036025	1907036050
37.0	1907037025	1907037050
38.0	1907038025	1907038050
39.0	1907039025	1907039050
40.0	1907040025	1907040050
41.0	1907041025	1907041050
42.0	1907042025	1907042050
43.0	1907043025	1907043050
44.0	1907044025	1907044050
45.0	1907045025	1907045050
46.0	1907046025	1907046050
47.0	1907047025	1907047050
48.0	1907048025	1907048050
49.0	1907049025	1907049050
50.0	1907050025	1907050050
51.0	–	1907051050
52.0	1907052025	1907052050
53.0	–	1907053050
54.0	–	1907054050
55.0	1907055025	1907055050
56.0	–	1907056050
57.0	–	1907057050
58.0	–	1907058050
59.0	–	1907059050
60.0	1907060025	1907060050
Ejector pin	1926500	1950500
Dimension	6.35 x 77	6.35 x 102

Inch dimensions available upon request

Weldon

Heavy duty serration with pre- (1) and post-cutter (2)

HSS BASIC Core Drill Sets

- A range of the most commonly used core drills clearly arranged in a sturdy plastic case.
- Absolute protection of the teeth tips in the rough usage operation at installation and in the workshop.
- On request, we can assemble individual sets in 12.0 to 30.0 mm diameters.

Inch dimensions available upon request

Ø mm	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0
Prod.-No.	**Cutting depth 30 mm**							
1907125	**3 pc. HSS BASIC core drill set:** incl. 1 ejector pin Prod.-No. 1926500							
		●		●		●		
1907003025	**6 pc. HSS BASIC core drill set:** incl. 1 ejector pin Prod.-No. 1926500							
	●	●	●	●	●	●		
1907001025	**10 pc. HSS BASIC core drill set:** incl. 2 ejector pin Prod.-No. 1926500							
	●●	●●	●	●●	●	●●		
	Cutting depth 50 mm							
1907003050	**6 pc. HSS BASIC core drill set:** incl. 1 ejector pin Prod.-No. 1950500							
		●	●	●	●	●		●
1907001050	**10 pc. HSS BASIC core drill set:** incl. 2 ejector pin Prod.-No. 1950500							
		●●	●	●●	●	●●	●	●

ALFRA Rotabest® – HSS-Co Eco Core Drills

- with Weldon shank 19.0 mm, 2 driving surfaces
- Internal bore: 6.35 mm, cutting depth ø 110 mm: 8 mm
- Steel quality: Special super high speed steel cobalt
- Polished section: with pre- and post-cutter

Suitable on:
ALFRA Rotabest® (Weldon), BDS, Bux, Ruko, Magnetor, Euroboor, Universal, Nitto, Jancy, Hougen, Magtron, Promac, Rotabroach and all other magnetic drills with Weldon shank.

Ø in mm Cutting depth	Prod.-No. 30 mm	Prod.-No. 50 mm	Prod.-No.* 110 mm
12.0	1901012025	1901012050	–
13.0	1901013025	1901013050	–
13.5	1901013525	1901013550	–
14.0	1901014025	1901014050	–
15.0	1901015025	1901015050	–
15.5	1901015525	1901015550	–
16.0	1901016025	1901016050	–
17.0	1901017025	1901017050	–
17.5	1901017525	1901017550	–
18.0	1901018025	1901018050	–
19.0	1901019025	1901019050	–
19.5	1901019525	1901019550	
20.0	1901020025	1901020050	1901020110
21.0	1901021025	1901021050	–
22.0	1901022025	1901022050	1901022110
23.0	1901023025	1901023050	–
24.0	1901024025	1901024050	1901024110
25.0	1901025025	1901025050	1901025110
26.0	1901026025	1901026050	1901026110
26.5	1901026525	1901026550	–
27.0	1901027025	1901027050	–
28.0	1901028025	1901028050	1901028110
29.0	1901029025	1901029050	–
30.0	1901030025	1901030050	1901030110
31.0	1901031025	1901031050	–
32.0	1901032025	1901032050	1901032110
33.0	1901033025	1901033050	–
34.0	1901034025	1901034050	–
35.0	1901035025	1901035050	1901035110
36.0	1901036025	1901036050	–
37.0	1901037025	1901037050	–
38.0	1901038025	1901038050	–
39.0	1901039025	1901039050	–
40.0	1901040025	1901040050	1901040110
41.0	1901041025	1901041050	–
42.0	1901042025	1901042050	–
43.0	1901043025	1901043050	–
44.0	1901044025	1901044050	–
45.0	1901045025	1901045050	1901045110
46.0	1901046025	1901046050	–
47.0	1901047025	1901047050	–
48.0	1901048025	1901048050	–
49.0	1901049025	1901049050	–
50.0	1901050025	1901050050	1901050110
51.0	–	1901051050	–
52.0	1901052025	1901052050	–
53.0	–	1901053050	–
54.0	–	1901054050	–
55.0	1901055025	1901055050	–
56.0	–	1901056050	–
57.0	–	1901057050	–
58.0	–	1901058050	–
59.0	–	1901059050	–
60.0	1901060025	1901060050	–
Ejector pin	1926500	1950500	2001502
Dimensions	6.35 x 77	6.35 x 102	8 x 160

Inch dimensions available upon request

Weldon

Heavy duty serration with pre- (1) and post-cutter (2)

*** Caution:**
HSS-Co Eco core drill cutting depth 110 mm can only be used with tool holder AMK 2 L (Prod.-No. 18003 L) or AMK 3 L (Prod.-No. 18025 L).

HSS-Co Eco Core Drill Sets

- A range of the most commonly used core drills clearly arranged in a sturdy plastic case.
- Absolute protection of the teeth tips in the rough usage operation at installation and in the workshop.
- On request, we can assemble individual sets in 12.0 to 30.0 mm diameters.

Inch dimensions available upon request

Ø mm	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0
Prod.-No.	**Cutting depth 30 mm**							
1901125	**3 pc. HSS-Co Eco core drill set:** incl. 1 ejector pin Prod.-No. 1926500							
		●		●		●		
1901003025	**6 pc. HSS-Co Eco core drill set:** incl. 1 ejector pin Prod.-No. 1926500							
	●	●	●	●	●	●		
1901001025	**10 pc. HSS-Co Eco core drill set:** incl. 2 ejector pin Prod.-No. 1926500							
	●●	●●	●	●●	●	●●		
	Cutting depth 50 mm							
1901003050	**6 pc. HSS-Co Eco core drill set:** incl. 1 ejector pin Prod.-No. 1950500							
		●	●	●	●	●		●
1901001050	**10 pc. HSS-Co Eco core drill set:** incl. 2 ejector pin Prod.-No. 1950500							
		●●	●	●●	●	●●	●	●

ALFRA ROTABEST® – HSS-Co CORE DRILLS RQX COATED

- with Weldon shank 19.0 mm, 2 driving surfaces
- Internal bore 6.35 mm
- Steel quality: Special super high speed steel cobalt, **coated**
- Polished section: with pre- and post-cutter

Suitable on:
ALFRA Rotabest® (Weldon), BDS, Bux, Ruko, Magnetor, Euroboor, Universal, Nitto, Jancy, Hougen, Magtron, Promac, Rotabroach and all other magnetic drills with Weldon shank.

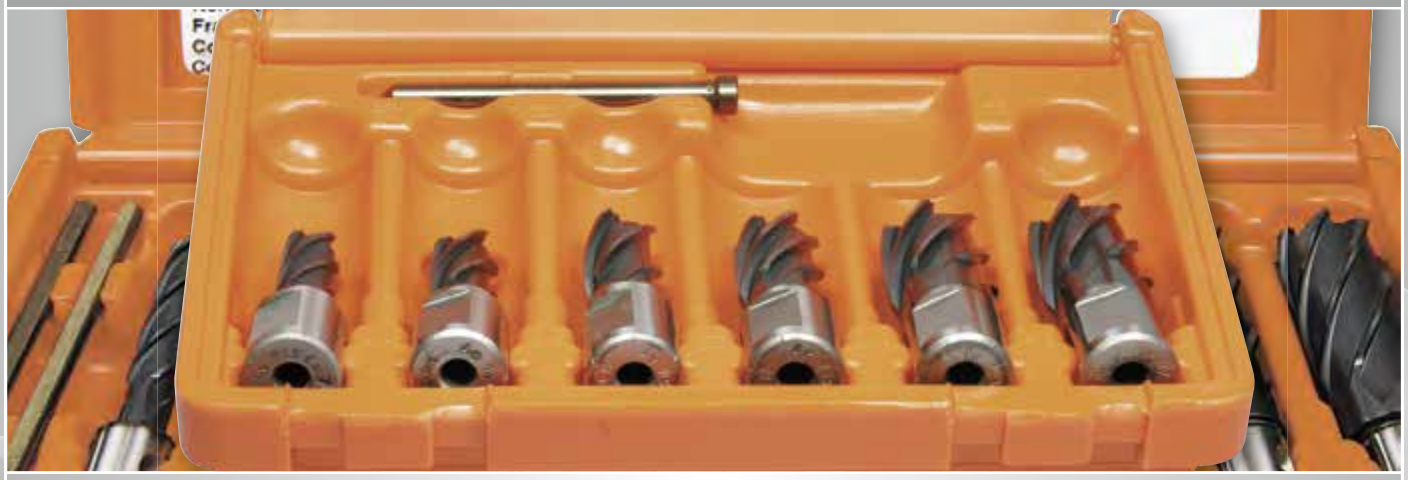
Weldon

Heavy duty serration with pre- (1) and post-cutter (2)

Ø in mm	cutting depth 30 mm	Prod.-No.
12.0		1902012025
13.0		1902013025
14.0		1902014025
15.0		1902015025
16.0		1902016025
17.0		1902017025
18.0		1902018025
19.0		1902019025
20.0		1902020025
21.0		1902021025
22.0		1902022025
23.0		1902023025
24.0		1902024025
25.0		1902025025
26.0		1902026025
27.0		1902027025
28.0		1902028025
29.0		1902029025
30.0		1902030025
31.0		1902031025
32.0		1902032025
33.0		1902033025
34.0		1902034025
35.0		1902035025
36.0		1902036025
37.0		1902037025
38.0		1902038025
39.0		1902039025
40.0		1902040025
41.0		1902041025
42.0		1902042025
43.0		1902043025
44.0		1902044025
45.0		1902045025
46.0		1902046025
47.0		1902047025
48.0		1902048025
49.0		1902049025
50.0		1902050025
51.0		–
52.0		–
53.0		–
54.0		–
55.0		–
56.0		–
57.0		–
58.0		–
59.0		–
60.0		–
Ejector pin 6.35 x 77 mm		1926500

Ø in mm	cutting depth 50 mm	Prod.-No.
12.0		1902012050
13.0		1902013050
14.0		1902014050
15.0		1902015050
16.0		1902016050
17.0		1902017050
18.0		1902018050
19.0		1902019050
20.0		1902020050
21.0		1902021050
22.0		1902022050
23.0		1902023050
24.0		1902024050
25.0		1902025050
26.0		1902026050
27.0		1902027050
28.0		1902028050
29.0		1902029050
30.0		1902030050
31.0		1902031050
32.0		1902032050
33.0		1902033050
34.0		1902034050
35.0		1902035050
36.0		1902036050
37.0		1902037050
38.0		1902038050
39.0		1902039050
40.0		1902040050
41.0		1902041050
42.0		1902042050
43.0		1902043050
44.0		1902044050
45.0		1902045050
46.0		1902046050
47.0		1902047050
48.0		1902048050
49.0		1902049050
50.0		1902050050
51.0		1902051050
52.0		1902052050
53.0		1902053050
54.0		1902054050
55.0		1902055050
56.0		1902056050
57.0		1902057050
58.0		1902058050
59.0		1902059050
60.0		1902060050
Ejector pin 6.35 x 102 mm		1950500

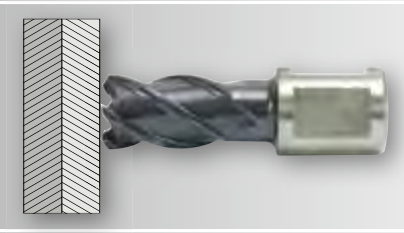
HSS-Co RQX Core Drill Sets



- A range of the most commonly used core drills clearly arranged in a sturdy plastic case.
- Absolute protection of the teeth tips in the rough usage operation at installation and in the workshop.
- On request, we can assemble individual sets in 12.0 to 30.0 mm diameters.

Inch dimensions available upon request

Ø mm	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0
Prod.-No.	**Cutting depth 30 mm**							
1902003025	**Set of 6 HSS-Co core drill RQX:** incl. 1 ejector pin Prod.-No. 1926500							
	●	●	●	●		●		●
1902001025	**Set of 10 HSS-Co core drill RQX:** incl. 2 ejector pin Prod.-No. 1926500							
	●●	●●	●	●●		●●		●
	Cutting depth 50 mm							
1902003050	**Set of 6 HSS-Co core drill RQX:** incl. 1 ejector pin Prod.-No. 1950500							
		●	●	●	●	●		●
1902001050	**Set of 10 HSS-Co core drill RQX:** incl. 2 ejector pin Prod.-No. 1950500							
		●●	●	●●	●	●●	●	●



HSS-Co core drills with special geometry for the machining of superimposed metal plates (multi-layer drill) upon request! (Standard core drills are unsuitable for this.)

ALFRA ROTABEST® – ASP-30 RAIL CORE DRILLS FOR RAILWAY TRACKS

- with Weldon shank 19.0 mm
- Internal bore 6.35 mm
- Steel quality: Cobalt containing high speed steel p/m-based with highest purity and improved durability compared to the powder steel of the old generation.
- Well-suited for wear-intensive appplications such as railway tracks.
- These tools can also be used on all magnetic drills, used especially with Weldon shanks.

Suitable on:
all portable magnetic drills with 19 mm Weldon shank especially for rail drilling units from the following manufacturers:

- Cembre
- Erico
- KKT
- Dubuis
- Universal
- Magtron
- Rotabroach

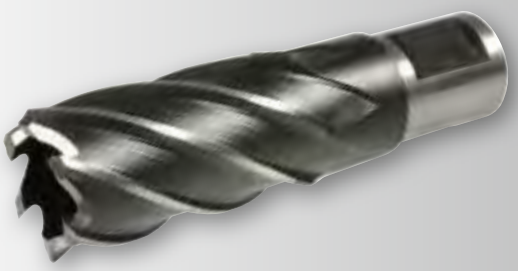
Inch dimensions available upon request

Ø in mm cutting depth 30 mm	Prod.-No.
14.0	1905014025
16.0	1905016025
17.0	1905017025
18.0	1905018025
19.0	1905019025
20.0	1905020025
22.0	1905022025
23.0	1905023025
24.0	1905024025
25.0	1905025025
26.0	1905026025
27.0	1905027025
27.5	1905027525
28.0	1905028025
30.0	1905030025
31.0	1905031025
32.0	1905032025
33.0	1905033025
34.0	1905034025
36.0	1905036025
ejector 6.35 x 77 mm	1926500

Ø in mm cutting depth 50 mm	Prod.-No.
14.0	1905014050
16.0	1905016050
17.0	1905017050
18.0	1905018050
19.0	1905019050
20.0	1905020050
22.0	1905022050
23.0	1905023050
24.0	1905024050
25.0	1905025050
26.0	1905026050
27.0	1905027050
27.5	1905027550
28.0	1905028050
30.0	1905030050
31.0	1905031050
32.0	1905032050
33.0	1905033050
34.0	1905034050
36.0	1905036050
Ejector pin 6.35 x 102 mm	1950500

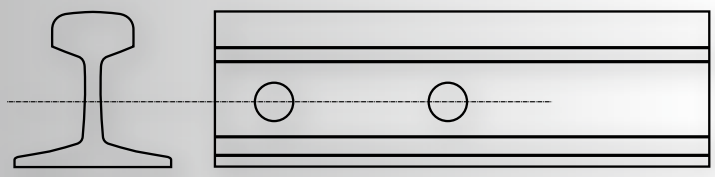
Tip:

Proven excellent for the drilling of Hardox and similar high-strength steels. Tell us about your drill problem, we will be happy to advise you.



Another tip:

ASP 70 for "impossible" drilling operations upon request.



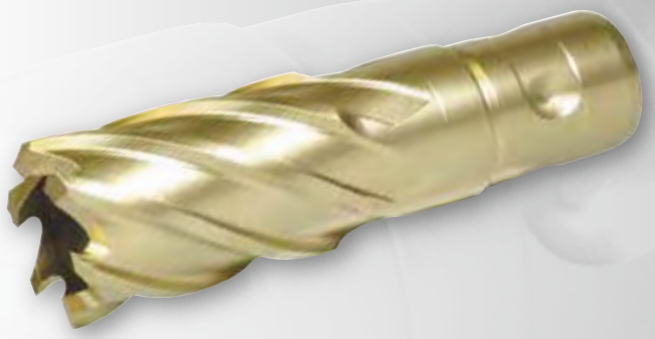
ALFRA – HSS-Co Eco Core Drills on FEIN-Quick IN

- **Suitable on FEIN magnetic drilling machines with Quick-IN arbor.**
- Are you are using FEIN magnetic drilling machines and don't want to do without your ALFRA-Rotabest® core drill? Take a look at our selection of HSS and carbide-tipped core drills suitable for the various types of FEIN machines.
- Special shank, 18.0 mm with 4 bearing recesses
- Steel quality: Special super high speed steel cobalt
- Internal hole 6.4 mm.
- Suitable for: FEIN core drilling machines with quick-change system

Prod.-No. 1936500

Ø in mm	cutting depth 35 mm	Prod.-No.
12.0		1909012035
13.0		1909013035
14.0		1909014035
15.0		1909015035
16.0		1909016035
17.0		1909017035
18.0		1909018035
19.0		1909019035
20.0		1909020035
21.0		1909021035
22.0		1909022035
23.0		1909023035
24.0		1909024035
25.0		1909025035
26.0		1909026035
27.0		1909027035
28.0		1909028035
29.0		1909029035
30.0		1909030035
31.0		1909031035
32.0		1909032035
Ejector pin 6.35 x 106 mm		1936500

Inch dimensions available upon request



High performance toothing with pre- and post-cutting

ALFRA – HSS-Co Eco Core Drills suitable for FEIN + Hitachi

- **Threaded arbor internal thread M18 x 6P 1.5.**
- **Also suitable for Hitachi machines.**

Ø in mm	cutting depth 50 mm	Prod.-No.
12.0		1908012050
13.0		1908013050
14.0		1908014050
15.0		1908015050
16.0		1908016050
17.0		1908017050
18.0		1908018050
19.0		1908019050
20.0		1908020050
21.0		1908021050
22.0		1908022050
23.0		1908023050
24.0		1908024050
25.0		1908025050
26.0		1908026050
27.0		1908027050
28.0		1908028050
29.0		1908029050
30.0		1908030050

Inch dimensions available upon request

ALFRA – HSS-Co Eco Core Drills on Nitto Kohki

- New Combi universal shank specially for Nitto one touch machines
- Also suitable for all magnetic drilling machines with Weldon shank
- Internal bore up to Ø 17.0 mm: Ø 6.35 mm; from 18.0 mm: Ø 8.0 mm
- Steel quality: Special super high speed steel cobalt
- Polished surface: with pre- and post-cutter (1 + 2)

Suitable on:
ALFRA, ALFRA-RQ models with quick-change system, BDS (incl. keyless system), Bux, Ruko, Magnetor, Euroboor, Jancy, Hougen, Magtron, ProMag, Rotabroach, Jepson, Metallkraft, etc.

Ø in mm cutting depth 30 mm	Prod.-No.
12.0	1903012025
13.0	1903013025
14.0	1903014025
15.0	1903015025
16.0	1903016025
17.0	1903017025
18.0	1903018025
19.0	1903019025
20.0	1903020025
21.0	1903021025
22.0	1903022025
23.0	1903023025
24.0	1903024025
25.0	1903025025
26.0	1903026025
27.0	1903027025
28.0	1903028025
29.0	1903029025
30.0	1903030025
31.0	1903031025
32.0	1903032025
33.0	1903033025
34.0	1903034025
35.0	1903035025
36.0	1903036025
37.0	1903037025
38.0	1903038025
39.0	1903039025
40.0	1903040025
41.0	1903041025
42.0	1903042025
43.0	1903043025
44.0	1903044025
45.0	1903045025
46.0	1903046025
47.0	1903047025
48.0	1903048025
49.0	1903049025
50.0	1903050025
52.0	1903052025
55.0	1903055025
60.0	1903060025
To Ø 17.0 mm	
Ejector pin 6.35 x 77 mm	1926500
From Ø 18.0 mm:	
Ejector pin 8 x 87 mm	2001500

Ø in mm cutting depth 50 mm	Prod.-No.
12.0	1903012050
13.0	1903013050
13.5	–
14.0	1903014050
15.0	1903015050
15.5	–
16.0	1903016050
17.0	1903017050
17.5	–
18.0	1903018050
19.0	1903019050
20.0	1903020050
21.0	1903021050
22.0	1903022050
23.0	1903023050
24.0	1903024050
25.0	1903025050
26.0	1903026050
27.0	1903027050
28.0	1903028050
29.0	1903029050
30.0	1903030050
31.0	1903031050
32.0	1903032050
33.0	1903033050
34.0	1903034050
35.0	1903035050
36.0	1903036050
37.0	1903037050
38.0	1903038050
39.0	1903039050
40.0	1903040050
41.0	1903041050
42.0	1903042050
43.0	1903043050
44.0	1903044050
45.0	1903045050
46.0	1903046050
47.0	1903047050
48.0	1903048050
49.0	1903049050
50.0	1903050050
51.0	1903051050
52.0	1903052050
53.0	1903053050
54.0	1903054050
55.0	1903055050
56.0	1903056050
57.0	1903057050
58.0	1903058050
59.0	1903059050
60.0	1903060050
To Ø 17.0 mm	
Ejector pin 6.35 x 102 mm	1950500
From Ø 18.0 mm:	
Ejector pin 8 x 102 mm	2001501

Heavy duty serration with pre- (1) and post-cutter (2)

- **Suitable magnetic drilling machines with Weldon arbor.**
- Ideal for drilling of smaller diameters up to Ø 12 mm.

HSS twist drill

Ø in mm HSS twist drills with Weldon arbor		**Prod.-No.**
6.0		0802606
6,0	Replacement drill without Weldon arbor	0802706
8.0		0802608
8,0	Replacement drill without Weldon arbor	0802708
9.0		0802609
9,0	Replacement drill without Weldon arbor	0802709
10.0		0802610
10,0	Replacement drill without Weldon arbor	0802710
11.0		0802611
11,0	Replacement drill without Weldon arbor	0802711
12.0		0802612
12,0	Replacement drill without Weldon arbor	0802712

Prod.-No. 0802606

Prod.-No. 0802706

Prod.-No. 0802608

Prod.-No. 0802708

Prod.-No. 0802609

Prod.-No. 0802709

Prod.-No. 0802610

Prod.-No. 0802710

Prod.-No. 0802611

Prod.-No. 0802711

Prod.-No. 0802612

Prod.-No. 0802712

HSS twist drill set

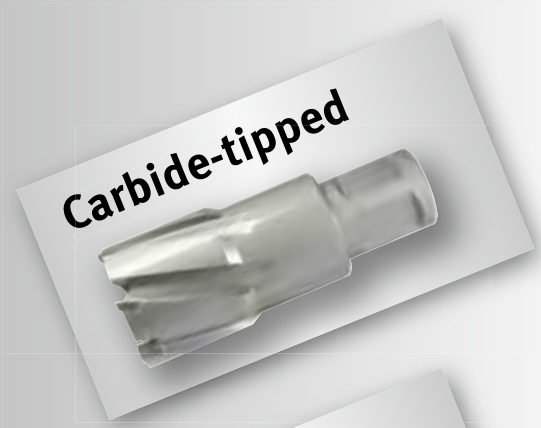
6 pc. HSS twist drill set with Weldon arbor	**Prod.-No.**
	08026

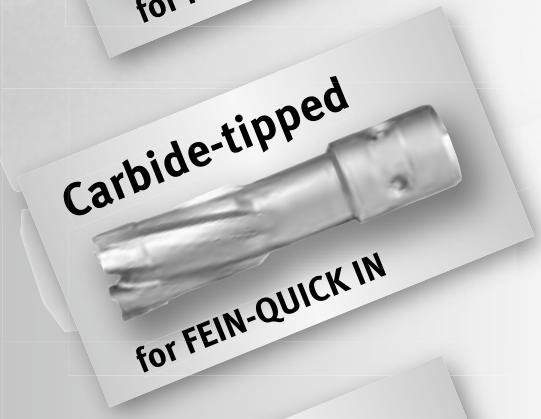
Included 1 x **Ø 6.0 – 8.0 - 9.0 - 10.0 - 11.0 - 12.0 mm**
in plastic case

Prod.-No. 08026

Metal core drills have a name

ALFRA ROTABEST®

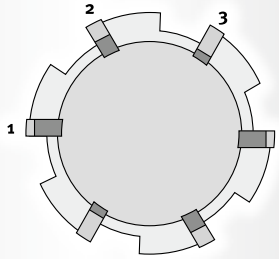




Applicable on magnetic and column drills. For structural steels, hard-to-machine materials such as chrome-nickel stainless steels and non-ferrous metals such as aluminium and CuZn alloy and many more.

Advantages of the ALFRA ROTABEST® Tungsten carbide-tipped core drills

- High concentricity due to solid design
- CAD-optimised cutting geometry for steady flow of chips
- Uniquely shaped chip grooves to prevent chip jamming
- Instant centring
- No running off centre
- Small torque
- Low energy consumption
- Rapid drill core removal by ejector pin
- Extended tool life



ALFRA "Chip-Breaker System"
Extremely precise drilling in 3 simple steps.
1 Pre-cutter
2 Middle cutter
3 Post-cutter

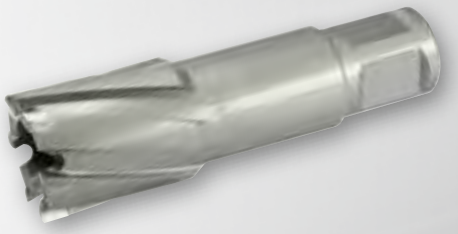
ALFRA ROTABEST® – TCT CORE DRILLS

- with Weldon shank 19.0 mm
- Internal bore: Ø 14 - 17 mm = 6.35 mm
  Ø 18 - 50 mm = 8.0 mm
- Polished section: Pre- Middle - Post cutter
- For the highest standards in cutting and lifespan.

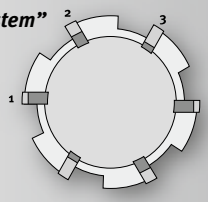
Suitable on:
all magnetic drilling machines with Weldon shank. ALFRA-Rotabest® (Weldon), ALFRA-Rota-Quick® Quick-change system, for BDS, Bux, Ruko, Magnetor, Euroboor, Universal, Jancy, Hougen, Magtron, Promac, Rotabroach, among others.

Ø in mm	cutting depth 35 mm	Prod.-No.
14.0		2003014035
15.0		2003015035
16.0		2003016035
17.0		2003017035
18.0		2003018035
19.0		2003019035
20.0		2003020035
21.0		2003021035
22.0		2003022035
23.0		2003023035
24.0		2003024035
25.0		2003025035
26.0		2003026035
27.0		2003027035
28.0		2003028035
29.0		2003029035
30.0		2003030035
31.0		2003031035
32.0		2003032035
33.0		2003033035
34.0		2003034035
35.0		2003035035
36.0		-
37.0		-
38.0		-
39.0		-
40.0		-
41.0		-
42.0		-
43.0		-
44.0		-
45.0		-
46.0		-
47.0		-
48.0		-
49.0		-
50.0		-
Ejector pin for Ø 14 - 17 mm, 6.35 x 87 mm		1935500
Ejector pin for Ø 18 - 50 mm, 8 x 87 mm		2001500

Ø in mm	cutting depth 50 mm	Prod.-No.
14.0		2003014050
15.0		2003015050
16.0		2003016050
17.0		2003017050
18.0		2003018050
19.0		2003019050
20.0		2003020050
21.0		2003021050
22.0		2003022050
23.0		2003023050
24.0		2003024050
25.0		2003025050
26.0		2003026050
27.0		2003027050
28.0		2003028050
29.0		2003029050
30.0		2003030050
31.0		2003031050
32.0		2003032050
33.0		2003033050
34.0		2003034050
35.0		2003035050
36.0		2003036050
37.0		2003037050
38.0		2003038050
39.0		2003039050
40.0		2003040050
41.0		2003041050
42.0		2003042050
43.0		2003043050
44.0		2003044050
45.0		2003045050
46.0		2003046050
47.0		2003047050
48.0		2003048050
49.0		2003049050
50.0		2003050050
Ejector pin for Ø 14 - 17 mm, 6.35 x 102 mm		1950500
Ejector pin for Ø 18 - 50 mm, 8 x 102 mm		2001501



ALFRA "Chip-Breaker System"
1 Pre-cutter
2 Middle cutter
3 Post-cutter



On request with Nitto Kohki shank

- Heavy industrial version **with keyway and feather key**
- Long-term tests series have shown that this specialised design with keyway and feather key has proven outstanding compared to a standard 32 mm Weldon shank. Optimal containment of high torsion forces.
- Polished section: Pre- Middle - Post cutter
- Required: Tool holder with internal cooling

AL 3	MK 3	Prod.-No. 20230
AL 4	MK 4	Prod.-No. 20240
AL 5	MK 5	Prod.-No. 20250

- Upon request, cutting depth of 100 mm with ejector pin 8 x 160 mm Prod.-No. 2001502

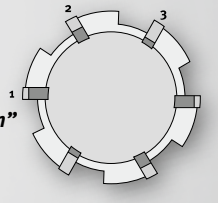
Inch dimensions available upon request

Ø in mm	cutting depth 50 mm	Prod.-No.
51.0 ■		2002051050
52.0 ■		2002052050
53.0 ■		2002053050
54.0 ■		2002054050
55.0		2002055050
56.0 ■		2002056050
57.0 ■		2002057050
58.0 ■		2002058050
59.0 ■		2002059050
60.0		2002060050
61.0 ■		2002061050
62.0 ■		2002062050
63.0 ■		2002063050
64.0 ■		2002064050
65.0		2002065050
66.0 ■		2002066050
67.0 ■		2002067050
68.0 ■		2002068050
69.0 ■		2002069050
70.0		2002070050
71.0 ■		2002071050
72.0 ■		2002072050
73.0 ■		2002073050
74.0 ■		2002074050
75.0		2002075050
76.0 ■		2002076050
77.0 ■		2002077050
78.0 ■		2002078050
79.0 ■		2002079050
80.0		2002080050
81.0 ■		2002081050
82.0 ■		2002082050
83.0 ■		2002083050
84.0 ■		2002084050
85.0		2002085050
86.0 ■		2002086050
87.0 ■		2002087050
88.0 ■		2002088050
89.0 ■		2002089050
90.0		2002090050
91.0 ■		2002091050
92.0 ■		2002092050
93.0 ■		2002093050
94.0 ■		2002094050
95.0		2002095050
96.0 ■		2002096050
97.0 ■		2002097050
98.0 ■		2002098050
99.0 ■		2002099050
100.0		2002100050

■ No mass production

Ejector pin 8 x 102 mm	2001501
Tool holder AL 2/MK 2	20220
Tool holder AL 3/MK 3	20230
Tool holder AL 4/MK 4	20240
Tool holder AL 5/MK 5	20250

Shorter and more robust tool construction.
ALFRA design.
High concentricity.



ALFRA "Chip-Breaker System"
1 Pre-cutter
2 Middle cutter
3 Post-cutter

Advantages ALFRA carbide-tipped core drills "Heavy industrial version"

- Perfect gating behaviour - even at the first drill hole
- Excellent centring properties
- Low cutting pressure - low power usage
- Vibration-free working
- Chip distribution – no chip jamming
- Drilling depth can be reached in a single operation
- Drill core can be easily ejected

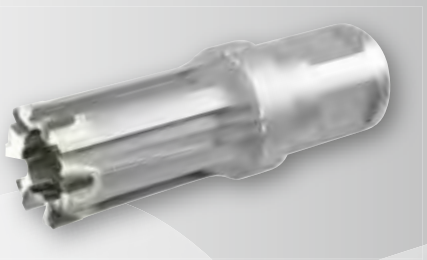
Prod.-No. 20230

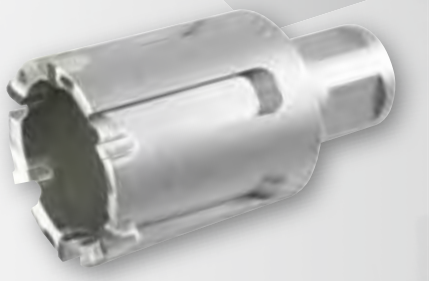
ALFRA ROTABEST® – TCT RAIL CORE DRILLS FOR RAILWAY TRACKS

- with Weldon shank 19.0 mm
- Internal bore 6.35 mm
- For highest requirements in cutting and durability when drilling railway tracks
- Polished surface: Pre- Middle - Post cutter

Suitable on:
all portable magnetic drilling machines with 19 mm Weldon shank, especially for rail drilling units from the following manufacturers:

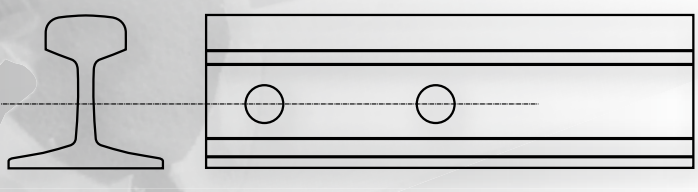
- Cembre
- Erico
- KKT
- Dubuis
- Universal
- Magtron
- Rotabroach

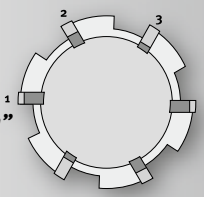




Ø in mm	cutting depth 25 mm	Prod.-No.
19.0		2005019025
20.0		2005020025
21.0		2005021025
22.0		2005022025
23.0		2005023025
24.0		2005024025
25.0		2005025025
26.0		2005026025
27.5		2005027525
28.0		2005028025
30.0		2005030025
31.0		2005031025
32.0		2005032025
33.0		2005033025
34.0		2005034025
36.0		2005036025
Ejector pin 6.35 x 77 mm		1926500

Ø in mm	cutting depth 50 mm	Prod.-No.
19.0		2005019050
20.0		2005020050
21.0		2005021050
22.0		2005022050
23.0		2005023050
24.0		2005024050
25.0		2005025050
26.0		2005026050
27.5		2005027550
28.0		2005028050
30.0		2005030050
31.0		2005031050
32.0		2005032050
33.0		2005033050
34.0		2005034050
36.0		2005036050
Ejector pin 6.35 x 102 mm		1950500





ALFRA "Chip-Breaker System"
1 Pre-cutter
2 Middle cutter
3 Post-cutter

ALFRA ROTABEST® – TCT CORE DRILLS
SUITABLE FOR FEIN + HITACHI

- **2008... with threaded arbor internal thread M18 x 6 p 1.5**
- **Also suitable for Hitachi machines**

- **2009... with Quick-IN arbor**
- **Suitable on FEIN magnetic drilling machines with Quick-IN arbor**

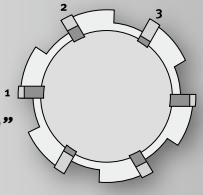
Prod.-No. 2008...

Ø in mm	Prod.-No. M18 x 6P 1.5 Cutting depth 50 mm	Prod.-No. Quick IN Cutting depth 35 mm
12.0	2008012050	2009012035
13.0	2008013050	2009013035
14.0	2008014050	2009014035
15.0	2008015050	2009015035
16.0	2008016050	2009016035
17.0	2008017050	2009017035
18.0	2008018050	2009018035
19.0	2008019050	2009019035
20.0	2008020050	2009020035
21.0	2008021050	2009021035
22.0	2008022050	2009022035
23.0	2008023050	2009023035
24.0	2008024050	2009024035
25.0	2008025050	2009025035
26.0	2008026050	2009026035
27.0	2008027050	2009027035
28.0	2008028050	2009028035
29.0	2008029050	2009029035
30.0	2008030050	2009030035
31.0	2008031050	2009031035
32.0	2008032050	2009032035
33.0	2008033050	2009033035
34.0	2008034050	2009034035
35.0	2008035050	2009035035
36.0	2008036050	2009036035
37.0	2008037050	2009037035
38.0	2008038050	2009038035
39.0	2008039050	2009039035
40.0	2008040050	2009040035
41.0	2008041050	2009041035
42.0	2008042050	2009042035
43.0	2008043050	2009043035
44.0	2008044050	2009044035
45.0	2008045050	2009045035
46.0	2008046050	2009046035
47.0	2008047050	2009047035
48.0	2008048050	2009048035
49.0	2008049050	2009049035
50.0	2008050050	2009050035
51.0	2008051050	2009051035
52.0	2008052050	2009052035
53.0	2008053050	2009053035
54.0	2008054050	2009054035
55.0	2008055050	2009055035
57.0	2008057050	2009057035
58.0	2008058050	2009058035
59.0	2008059050	2009059035
60.0	2008060050	2009060035
61.0	2008061050	2009061035
62.0	2008062050	2009062035
63.0	2008063050	2009063035
64.0	2008064050	2009064035
65.0	2008065050	2009065035
Ejector pin 6.35 x 106 mm	-	1936500

Threaded arbor M18 x 6P1.5

Prod.-No. 2009...

Prod.-No. 1936500

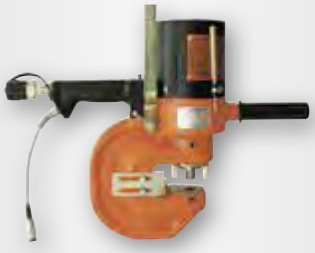


ALFRA "Chip-Breaker System"
1 Pre-cutter
2 Middle cutter
3 Post-cutter

“I never have been able to bore holes so quickly and easily in steel beams!!
With the APS 120 and the new pump, I finished my project ahead of time.”

ALFRA PRESS

- **Easily portable, fully automatic, hydraulic punching equipment for steel, bridge, container, crane and metal construction**
- **Mobile usage, no material transport**
- **Virtually noiseless punching**
- **Easy positioning through stop function of the punch**



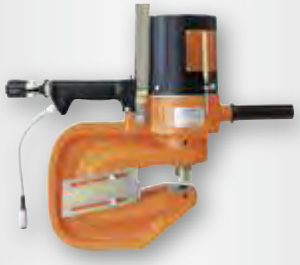
APS 70

Page	58
Prod.-No.	23002
Max. hole-Ø	22 mm 7/8“
Max. oblong hole	22 x 14 mm 7/8” x 9/16”
Max. material thickness (S235)	13 mm 1/2“
Overall punch time with pump ...	AHP-M: approx. 5 sec. AHP-L: approx. 3 sec.
Jaw depth	70 mm 2-3/4“
Max. pressure	700 bar 10,150 psi
Punching force	30 t
Punch stroke	18 mm 11/16“
Weight	29.9 kg / 65.9 lbs
Scope of delivery	Hose assembly 5 m/spanner Punch/die Ø 18 mm Depth adjustment, suspension bracket

HYDRAULIC PUMP FOR APS 70 / 120

AHP-M

Page	61
Prod.-No.	23189
Max. pressure	700 bar
Maximum pumping capacity:	1.1 l/min
Motor performance	1300 W, 230 v (50 Hz)
Fill volume	3.2 l
Weight incl. oil fill volume	29 kg



APS 120

59
23004
25 mm 1-1/16“
25 x 18 mm 1” x 11/16”
16 mm 5/8“
AHP-M: approx. 10 sec. AHP-L: approx. 7 sec.
110 mm 4-3/8“
700 bar 10,150 psi
44 t
25 mm 15/16“
47.3 kg / 104.2 lbs
Hose assembly 5 m/spanner Punch/die Ø 22 mm Depth adjustment, suspension bracket

HYDRAULIC PUMP FOR APS 70 / 120

AHP-L

61
23190
700 bar
1.7 l/min
2,200 W, 230 v (50 Hz)
3.0 l
34 kg

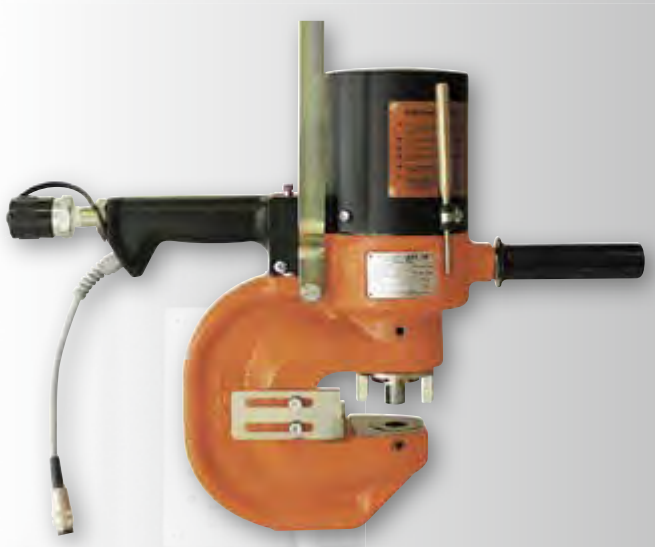
ALFRA-Press APS 70

	Prod.-No.
Hydraulic punching unit with Automatic return using neoprene spring	23002

Technical specifications:

Max. hole Ø mm	22 mm
Max. oblong hole	22 x 14 mm
Max. material thickness as per DIN S275	13 mm
total punch time with pump AHP-M	5 sec.
with pump AHP-L	3 sec.
Jaw depth	70 mm
Max. pressure	700 bar (10,150 psi)
Punching force	30 t
Punching stroke	18 mm
Weight	29.9 kg

Scope of delivery:
Punching unit, control cable, hydraulic hose 5 m, spanner,
1 x punch and die each Ø 18 mm, 1 depth adjustment, 1 suspension bracket

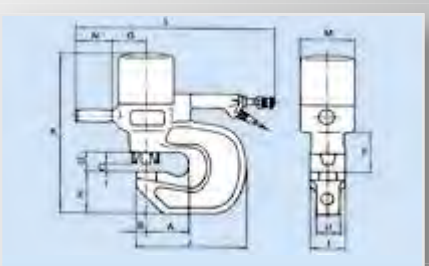


Prod.-No. 23002

Acessories

	Prod.-No.
Replacement HP connection hose, **5 m** complete with control cable and coupling	23015
Replacement HP connection hose, **10 m** complete with control cable and coupling	23016
Replacement HP connection hose, ***15 m** complete with control cable and coupling	23017

***Note:**
The pressure build-up extends at 10 m to approx. 4 sec., and at 15 m to approx. 6 sec.



Important technical note:
Standard punching units are not normally suitable for punching high strength tooling steel, stainless steels or boiler-plate steel. Refer to us for technical advice for punching work in this application range.

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N
APS 70	70	24	15	51	85	100	80	40	80	204	382	562	125	135
APS 120	110	25	18	51	111	110	90	68	100	285	442	585	144	135

ALFRA-Press APS 120

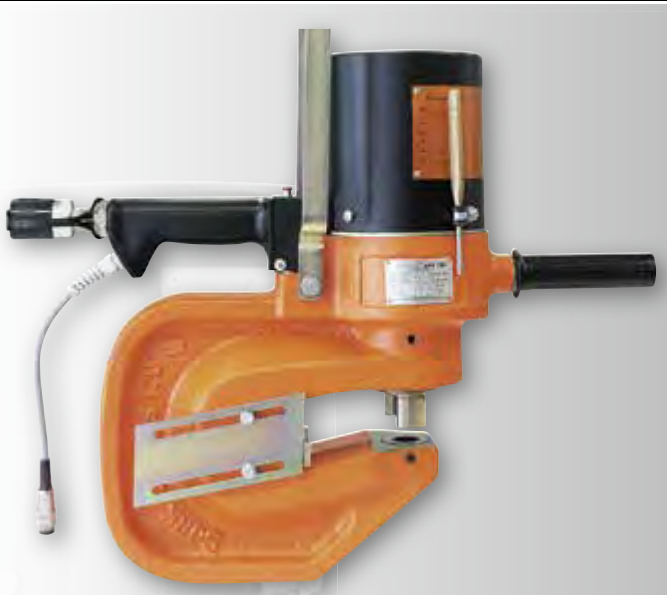
	Prod.-No.
Hydraulic punching unit with Automatic return using neoprene spring	23004

Technical specifications

Max. hole Ø mm	25 mm
Max. oblong hole	25 x 18 mm
Max. material thickness as per DIN S275	16 mm
Total punch time	
with pump AHP-M	10 sec.
with pump AHP-L	7 sec.
Jaw depth	110 mm
Max. pressure	700 bar (10,150 psi)
Punching force	44 t
Punching stroke	25 mm
Weight`	47.3 kg

Scope of delivery:

Punching unit, control cable, hydraulic hose 5 m, spanner, 1 x punch and die each Ø 22 mm, 1 depth adjustment, 1 suspension bracket



Prod.-No. 23004

Accessories

	Prod.-No.
Replacement HP connection hose, **5 m** complete with control cable and coupling	23015
Replacement HP connection hose, **10 m** complete with control cable and coupling	23016
Replacement HP connection hose, ***15 m** complete with control cable and coupling	23017

***Note:**
The pressure build-up extends at 10 m to approx. 4 sec., and at 15 m to approx. 6 sec.

1. Powerful, hydraulic drive unit for maximum punching performance and speed
2. Additional fan allows continuous use - even in warmer regions
3. Light housing made of impact-resistant plastic
4. Extra large, non-slip carrying handles on which the power cord can be wrapped
5. Extremely space-saving thanks to compact design

ALFRA ELECTRIC HYDRAULIC PUMP AHP M

Technical specifications:

Max. pressure:	700 bar
Max. pumping capacity:	1.1 l/min
Oil type:	HLP 32
Fill volume:	3.2 l
Active volume:	2.2 l
Weight:	29 kg
Operating voltage:	230 V / 50 Hz
Rating:	1.3 kW
Power consumption:	5.65 A
Motor speed:	2800 1/min

	Prod.-No.
Electric hydraulic pump AHP M	23189

ALFRA ELECTRIC HYDRAULIC PUMP AHP L

Technical specifications:

Max. pressure:	700 bar
Max. pumping capacity:	1.7 l/min
Oil type:	HLP 46
Fill volume:	3.0 l
Active volume:	2.2 l
Weight:	34 kg
Voltage, frequency:	230 V / 50 Hz
Rating:	2.2 kW
Power consumption:	9.8 A
Motor speed:	2860 1/min

	Prod.-No.
Electric hydraulic pump AHP L	23190

Not available in 110V

SERVICE-BOY

for hydraulic punching units APS of all types

This practical, time and energy-saving trolley makes handling of our ALFRA Press hydraulic punching units much easier.
Absolutely necessary for every steel and metal worker wherever punching units are already in use.

- Gas pressure shock absorbers allow the easy positioning of the punching head on the steel bar.
- The hydraulic pump remains on the trolley, and must not be dragged along behind you.
- Work tool cabinet with drawers for the clear arrangement of punching work tools and accessories.
- Solid and secure, TÜV-tested design – and more cost-effective than any "DIY-build".
- Dimensions (L x W x H): 900 x 520 x 1,970 mm

	Prod.-No.
Service-Boy	23160

Complete with tool cabinet and drawers

Prod.-No. 23160 (without punching unit / pump + accessories)

ALFRA – SPRING BALANCERS

For ALFRA-Press hydraulic hole punches

		Prod.-No.
With **clamping device,** spring failure safety mechanism, wire rope hoist 2.0 m		
9362 B	15 - 20 kg	23150
9363 B	20 - 25 kg	23151
9366 B	35 - 45 kg	23152
9367 B	45 - 55 kg	23154

according to EN 15112

Note:

The spring balancer should only be operated when the punching unit is suspended and/or under load.

Prod.-No. 23152

For all types of APS hydraulic punching units

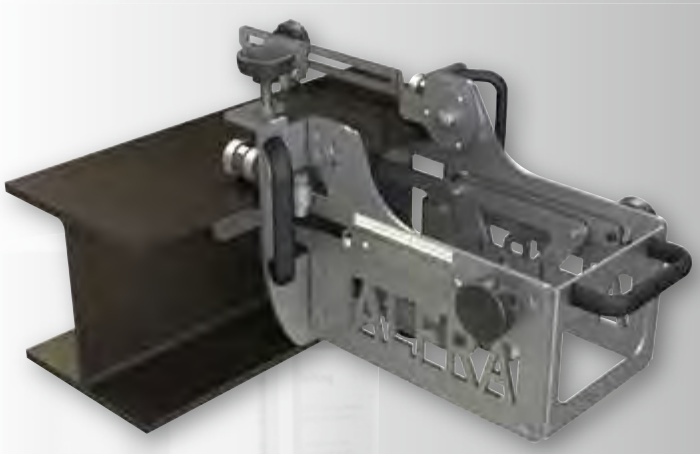
APS GO enables you to easily move our punching units over the steel bar

An adapter plate connects the punching unit to the moving system, and allows this to be removed at any time.

This generates enormous time savings, especially when punching at identical space intervals, as the measurement needs only to be set once, and the interval lengths are easy to measure.

Massive, solid heavy-duty rollers and the side-mounted hand grips enable completely effortless movement over the steel bar.

Dimensions (L x W x H): 700 x 355 x 280 mm
Weight: 14 kg / 30.8 lbs



	Prod.-No.
APS Go	23155

Punch for

APS 120	APS 70	Ø mm	Prod.-No.
■	■	7	23 -01-07
■	■	8	23 -01-08
■	■	9	23 -01-09
■	■	10	23 -01-10
■	■	11	23 -01-11
■	■	12	23 -01-12
■	■	13	23 -01-13
■	■	14	23 -01-14
■	■	15	23 -01-15
■	■	16	23 -01-16
■	■	17	23 -01-17
■	■	18	23 -01-18
■	■	19	23 -01-19
■	■	20	23 -01-20
■	■	21	23 -01-21
■	■	22	23 -01-22
■		23	23 -01-23
■		24	23 -01-24
■		25*	23 -01-25

*) with lock nut, Prod.-No. 23004-056 B

Dies for

APS 120	APS 70	Ø mm	Prod.-No.
■	■	7	23-02-07
■	■	8	23-02-08
■	■	9	23-02-09
■	■	10	23-02-10
■	■	11	23-02-11
■	■	12	23-02-12
■	■	13	23-02-13
■	■	14	23-02-14
■	■	15	23-02-15
■	■	16	23-02-16
■	■	17	23-02-17
■	■	18	23-02-18
■	■	19	23-02-19
■	■	20	23-02-20
■	■	21	23-02-21
■	■	22	23-02-22
■		23	23-02-23
■		24	23-02-24
■		25*	23-02-25

When selecting your tool, please note:
For material DIN S233: maximum material thickness = 0.8 x hole Ø
For material DIN S275: maximum material thickness = 0.5 x hole Ø

Prod.-No. 23-01-..

Prod.-No. 23-02-..

Tip:
Punches and dies can be replaced and used for Nitto / Selfer Punching systems.

Tip:
Please oil punch from time to time, when material is heavily oxidized.

5°-bevelled dies for

APS 120	APS 70	Ø mm	Prod.-No.
■	■	10	23-04-10
■	■	11	23-04-11
■	■	12	23-04-12
■	■	13	23-04-13
■	■	14	23-04-14
■	■	15	23-04-15
■	■	16	23-04-16
■	■	17	23-04-17
■	■	18	23-04-18
■	■	19	23-04-19
■	■	20	23-04-20
■	■	21	23-04-21
■	■	22	23-04-22
■	-	23	23-04-23
■	-	24	23-04-24
■	-	25	23-04-25

Prod.-No. 23-04-.. (For carriers with angled flange)

Oblong punches for

mm	APS 120	APS 70	Punch Prod.-No.	Die Prod.-No.
16 x 8	■	■	23-01-1608	23-02-1608
18 x 9	■	■	23-01-1809	23-02-1809
18 x 11	■	■	23-01-1811	23-02-1811
20 x 10	■	■	23-01-2010	23-02-2010
20 x 12	■	■	23-01-2012	23-02-2012
20 x 14	■	■	23-01-2014	23-02-2014
22 x 11	■	■	23-01-2211	23-02-2211
22 x 14	■	■	23-01-2214	23-02-2214
24 x 12	■	-	23-01-2412	23-02-2412
25 x 9*	■	-	23-01-2509	23-02-2509
25 x 12*	■	-	23-01-2512	23-02-2512
25 x 13*	■	-	23-01-2513	23-02-2513
25 x 14*	■	-	23-01-2514	23-02-2514
25 x 18*	■	-	23-01-2518	23-02-2518

*) with lock nut, Prod.-No. 23004-56B
Other dimensions are available upon request

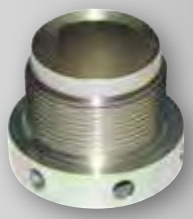
Prod.-No. 23-02-..

Prod.-No. 23-01-..

Replacement parts

	Prod.-No.
Lock nut for punch Ø 7 - 24 mm	23004-056A
Lock nut for punch Ø 25 mm (only APS 120)	23004-056B
Lock nut for punch Ø 26 mm (upon request)	23004-056C.

Prod.-No. 23004-056A
For punches Ø 7 - 24 mm



Prod.-No. 23004-056B
For punches Ø 25 mm

ALFRA ROTASPEED®

1. Longitudinal-mounted engine with quick stop and Smooth start
2. Spindle lock for easy blade change
3. Tool-free cutting height adjustment
4. Infinitely adjustable angles up to 45°
5. Illumination of the mitre setting
6. Laser pointer
7. Automatic blade guard
8. Stable guide table
9. Ergonomically designed handle
10. Safety switch

ALFRA-RotaSpeed® - Metal Circular Saw RS 230

The ideal machine for construction site and workshop for low-burr sawing without cooling.

For fast, clean cuts in pipes, threaded rods, profiles, cable channels, corrugated and trapezoidal sheet metal, sandwich plates, dry construction profiles and much more.

Advantages at a glance:

- 1800 watt heavy-duty motor for precise cutting without coolant.
- Quick and easy changing of the saw blade.
- Adjustment of the sawing depth up to 82 mm.
- The 45° is adjustable for bevel cuts up to 45°.
- Chip container.
- The ideal machine for assembly operations, façade builders, repair shops, fitters, shelf builders, roofers, exhibition booth builders, welding shops, heating and ventilation builders.
- Ideal for use where angle grinders are not strong enough or work uncleanly.
- Through mitre cuts, also ideal for welding edge preparation.
- With optical laser for targeting the desired cutting line.

ALFRA RotaSpeed® RS 230

Saw blade diameter:	230 (9")
Saw blade arbor:	25.4 mm (1")
Rating:	1,800 watt
Speed rpm -1:	2,300
Mitre joint:	0 - 45°
Cutting capacity mm 0°:	82
Cutting capacity mm 45°:	56
Max material thickness (material-dependent):	6 - 8 mm
Volt	230 - 50 Hz
Weight:	9.5 kg

	Prod.-No.
Alfra RotaSpeed® RS 230	22412

Scope of delivery:
Machine with 2 carbide-tipped blades (premium quality), instruction manual, parallel stop, tool set, spacer bushing for saw blade arbor, carrying case.

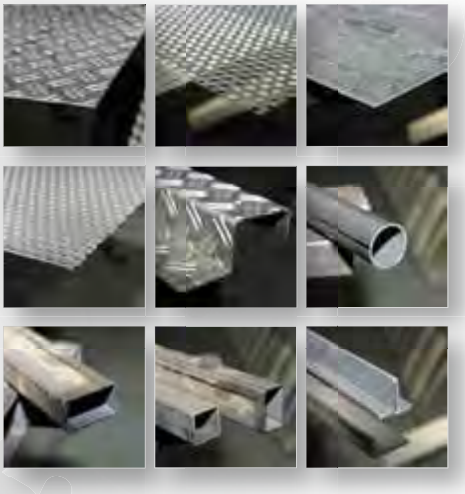
Prod.-No. 22412

ALFRA-Circular Saw Blades – RotaSpeed®

- Carbide-tipped, fits on metal cutting circular saws such as:
  ALFRA, Flex, Euroboor, Evolution, HiTech, Jepson, Metallkraft, Ridgid, etc..
- These special TCT circular saws guarantee fast, clean cuts in pipes, threaded rods, profiles, corrugated and trapezoidal sheets, cable channels, sandwich panels, dry construction profiles, fastening profiles (DIN tracks), gratings in the dry cutting method.
- Suitable for use on steel and aluminium
- High cutting performance and service life. On the basis of the price / performance-ratio, these saws are extremely economical.
- **When using these saw blades, the relevant machinery directives of the manufacturer and the usage instructions are to be observed.**

Premium quality

Saws Ø mm	Application	Dimensions mm	No. of teeth	Prod.-No.
180/7"	Steel	180 x 20	34	22205
200/8"	Steel	200 x 20	40	22255
230/9"	Steel	230 x 25.4	44	22305
230/9"	Aluminium	230 x 25.4	62	22306
230/9"	For trapezoid sheeting	230 x 25.4	80	22307



Magnetic Chip Remover

In a stainless steel round rod, you can move a magnet back and forth. The strong magnet attracts the metal chips.
Pull knob, chips fall out. For more cleanliness in the workplace.

	Prod.-No.
ALFRA magnetic chip remover, length 400 mm	18654

Prod.-No. 18654

ALFRA-RotaDry® – Metal Dry Cutter 355

Arguments that convince with quality, performance and price:

- for low-burr cutting of profiles and tubes, in steel, iron, copper, brass, aluminium, plastics, composites and stainless steel with no cooling.
- for use in applications such as metal-working, in joineries, for interior construction, etc.
- with depth adjustment for precise cutting
- angle and rip fence for mitre cuts of up to 45°
- with removable chip collection box
- with arbor adjustment for changing the saw blade
- easy to transport

Prod.-No. 22420

ALFRA RotaDry® 355

Motor	230 V/50 Hz	
Power consumption	2200 W	
Speed	1300 min^{-1}	
Cutting area 90°	13 mm wall thickness	180 x 105 mm ▱
Cutting area 90°	13 mm wall thickness	120 x 120 mm ▯
Section 90°	13 mm wall thickness	135 mm ⌀
Cutting area 45°	13 mm wall thickness	110 x 100 mm ▱
Cutting area 45°	13 mm wall thickness	100 x 100 mm ▯
Cutting area 45°	13 mm wall thickness	105 mm ⌀
Saw blade diameter	355 mm	
Weight	23 kg	

	Prod.-No.
Alfra RotaDry®355, with 1 carbide blade 72 Z	22420

Accessories:

Robust prismatic jaws	22421
The ideal assistant especially when cutting tubes with thin walls	
Work table RCT 6542	22601

Spare TCT Saw Blades

Also suitable for cutters such as:

Jepson/global/Ridgid/Ryobi

The universal TCT Saw blade for rapid cutting in:
Steel – Copper – Aluminium – Profiles – Cables – Sheeting – Solid materials

- without coolant
- regrindable
- low-noise thanks to laser ornaments

Dimensions		Steel	Stainless steel	Prod.-No.
305 x 2.2 x 25.4 mm	60 Z	•		32100
305 x 2.2 x 25.4 mm	80 Z	•		32101
355 x 2.4/2.0 x 25.4 mm	72 Z	•		32108
355 x 2.4 x 25.4 mm	90 Z	•		32102
355 x 2.6 x 25.4	90 Z	coated	•	32105

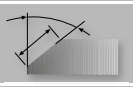
Other tooth counts upon request.

355 x 2.6 x 25.4 • 90 Z • coated

- **Edge-Milling and Deburring Devices for universal use**

KFV

KFH 150

	KFV	KFH 150
Page	76	78
Prod.-No.	25260	25100
Prism mounting	–	L = 150 mm / W = 20/40 mm
End mill Ø	45° or straight Ø 6 mm or 8 mm	TCT as per DIN, Ø 8 mm
Max. bevel width **► in multiple work steps** 	1 - 3 mm	1 - 5 mm, depending on material, with fine adjustment
Edge angle	45° and radii	45°
High-performance motor	✔	✔
Motor performance	500 watt	1,050 watt
Infinitely variable speed control	11,000 - 25,000 min^{-1} with Smooth start	8,000 – 25,000 min^{-1}
Full-wave control electronics	✔	✔
Clamping neck Ø	43 mm	43 mm
Voltage	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz
Weight	1.8 kg	3.5 kg
Dimensions: (L x W x H)	260 x 190 x 150 mm	340 x 150 x 110 mm
Cable length	3.0 m	3.0 m

MOTORS

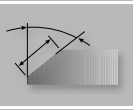
Prod.-No.	230V: 25193	110V: 25193.110	230V: 25191	110V: 25191.110

	KFT 250	KFH 250	KFT 500
			
	80	82	84
	25110	25130	25140
	L = 250 mm / W = 40 mm	L = 250 mm / W = 70 mm	L = 500 mm / W = 70 mm
	TCT as per DIN, Ø 8 mm	TCT as per DIN, Ø 12 mm	TCT as per DIN, Ø 12 mm
	1 - 5 mm, depending on material,	14 mm DIN S233-S235 6.5 mm stainless steel	1.5 - 14 mm
	45°	adjustable 30° - 45°- 30° swivelling right and left for 60° welding bevel. also for radii R = 3.0 4.0 and 5.0 using radius TCT milling cutter	45°
	✔	✔	✔
	1,050 watt	1,800 watt	1,800 watt
	8,000 – 25,000 min^{-1}	2,500 – 23,500 min^{-1}	2,500 – 23,500 min^{-1}
	✔	✔	✔
	43 mm	63 mm	63 mm
	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz
	5.0 kg	12.8 kg	18 kg
	360 x 250 x 110 mm	480 x 315 x 145 mm	450 x 500 x 160 mm
	3.0 m	3.0 m	3.0 m

MOTORS

					
	230V: 25191	110V: 25191.110	230V: 25192	110V: 25192.110	230V: 25192	110V: 25192.110

KFK 5

Page	88
Prod.-No.	25200
Prism mounting	–
End mill Ø	Inserts
Max. bevel width ► **in multiple work steps** 	45°: Steel 0 - 5 mm, aluminium 0 - 8 mm 30°: Steel 0 - 4 mm, aluminium 0 - 6 mm
Edge angle	45° (optional 30°, 60°) Radii R = 2.5
High-performance motor	✔
Motor performance	1,530 watt
Infinitely variable speed control	4,200 - 11,000 min^{-1} with Smooth start
Full-wave control electronics	✔ with thermal and overload protection
Right/left run	–
Voltage	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz
Weight	4.2 kg
Dimensions: (L x W x H)	L = 450 mm
Cable length	3.0 m

SKF 63-15

90
25010
Guide mounting with rollers 240 x 80 mm / 220 x 75 mm
Inserts
15 mm max
15° - 20° - 30° - 45° - 60° adjustable
✔
1,100 watt
2,870 min^{-1}
✔ with thermal and overload protection
–
230 V, 50 Hz + 110 V, 50 – 60 Hz
21.0 kg
440 x 200 x 280 mm
3.0 m

ALFRA Edge Deburring Unit KFV

4 applications - 1 device

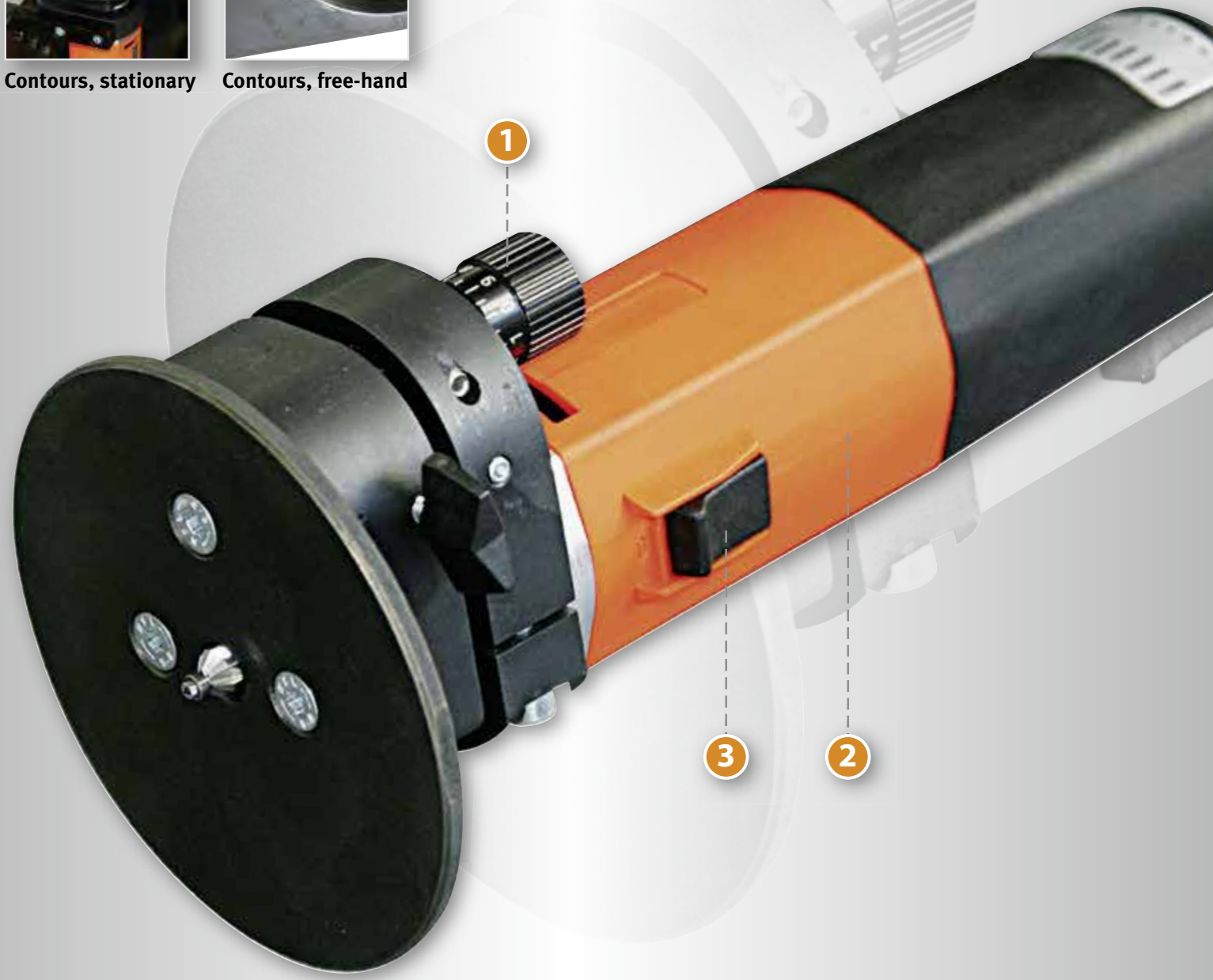
Prisms, free-hand

Prisms, stationary

Contours, stationary

Contours, free-hand

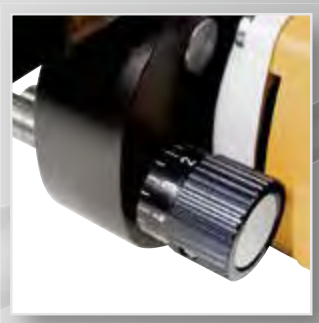
1. Infinitely variable bevel width setting using scale
2. With thermal and overload protection
3. On/Off switch



ALFRA EDGE MILLING UNIT - KFV

Drive motor (with clamping flange Ø 43 mm) 500 watts, speed control 11,000-25,000 rpm, quick-change fitting on the arbor of the attachments.

- **Contour milling fitting with support table, 72 x 64 mm**
- **Table milling fitting with support plate, Ø 120 mm**
- **Tool-less bevel height setting.**
- **Handy and powerful.**
- **For structural steel, stainless steel, aluminium and other materials.**
- **Also for radii**



Initial drill holes from:
Ø 3.0 mm for pin cutters
Ø 5.0 mm in spherical cutters

Technical specifications:

Bevel angle:	**45°**
Bevel width 45°:	**1-3 mm infinitely adjustable**
Radius:	**R = 1.0 - 1.5 - 2.0**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Rating:	**500 W**
Rotational speed:	**11,000 - 25,000 min^{-1} with Smooth start with thermal and overload protection**
Feed:	**manual**
Weight:	**1.8 kg**

Scope of delivery:

- **KFV deburring and bevelling device, drive motor with clamping flange Ø 43 mm**
- **Quick-change fitting for use with attachments**
- **Contour milling fitting with support table, 72 x 64 mm**
- **Table milling fitting with support plate, Ø 120 mm**
- **Prism milling fitting with guide rails 150 mm length**
- **Clamping shank for vice**
- **Collet 6 mm (mounted), collet 8 mm (included)**
- **1 set of operating tools**
- **Carrying case**
- **Guide stop for outer edges**

		Prod.-No.
Edge deburring unit, KFV complete	230V 50-60 Hz	25260
Edge deburring unit, KFV complete	110V 50-60 Hz	25260.110

ALFRA Edge Deburring Unit

KFH 150

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. Guidance handle
5. Clamping handle for quick adjustment
6. Guide rails made of high-strength special steel

ALFRA Edge Deburring Unit - KFH 150

The unit enables work pieces to be worked wherever machined edge milling is too expensive.

Hand-operated model for 45° deburring of larger work pieces, profiles, supports, sheet metal panels, with 90° mounting.

- **Hand-operated, for 45° bevels.**
- **Optimal guidance and safe handling.**
- **Commercially available solid carbide cutter Ø 8 mm.**

Technical specifications:

Prism mounting 45°:	**L = 150 mm**
	W = 20/40 mm
End mill:	**Solid carbide as per DIN, 8 mm Ø**
Max. bevel width:	**1 - 5 mm, depending on material, with fine adjustment**
High-performance motor	**with full-wave control electronics**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Motor performance:	**1,050 W**
Electronics:	**8,000 – 25,000 min^{-1}**
Clamping neck Ø:	**43 mm**
Weight:	**3.5 kg**

Scope of delivery:

- **Edge deburring unit KFH 150**
- **1 set of guide rails**
- **1 collet 8 mm Ø and clamping nut**
- **1 Operating instructions**

		Prod.-No.
Edge deburring unit, KFH 150	230V 50-60 Hz	25100
Edge deburring unit, KFH 150	110V 50-60 Hz	25100.110
Adapter head for edge deburring unit KFH 150		25109

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

ALFRA EDGE DEBURRING UNIT

KFT 250

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. Clamping handle for quick adjustment
5. Guide rails made of high-strength special steel
6. Chip collection container
7. Rubber feet for smooth operation and excellent stability

ALFRA Edge Deburring Unit - KFT 250

Simple, cost-effective deburring unit for light to medium use.

To obtain perfectly milled surfaces with DIN 6527 solid carbide end mills in rolling sections with no secondary milling

Position I: Material thickness from 4.5 mm

Position II: Material thickness from 1.0 mm

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

Technical specifications:

Deburring area:	**Bevel angle 45°**
Prism mounting position I:	**Material thickness from 4.5 mm**
position II:	**Material thickness from 1.0 mm**
Prism mounting:	**L = 250 mm**
Guide rail:	**W = 40 mm**
Max. bevel width:	**5 mm, depending on material. Also for stainless steel when selecting a suitable-milling cutter and RPM control, and cuts (spray edges with cutting oil).**
Weight:	**5.0 kg**
High-performance drive motor:	**1,050 W**
Triple bearing	
Double bearing-mounted milling spindle	
Spindle bearings with high-speed lubrication	
Standard clamping flange Ø:	**43 mm**
Infinitely variable speed control:	**8,000 - 25,000 min^{-1}**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Full-wave control electronics	
When under load, the tachogenerator provides additional power.	

Foot switch (optional)
Prod.-No. 25116

Scope of delivery:

- **Edge deburring unit KFT 250, with fine milling depth adjustment**
- **1 set of guide rails**
- **1 collet 8 mm Ø and clamping nut**
- **1 chip collection container**
- **1 set of operating tools**
- **1 Operating instructions**

		Prod.-No.
Edge deburring unit, KFT 250	230V 50-60 Hz	25110
Edge deburring unit, KFT 250	110V 50-60 Hz	25110.110
Table for edge deburring unit KFT 250		25111
Special accessories:		
ALFRA foot switch with device cable socket	230V	25116
ALFRA foot switch with device cable socket	110V	25116.110

ALFRA Edge Deburring Unit

KFH 250

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. 30° - 45° – 30° swivelling
5. Ergonomically shaped guide hand grip
6. Clamping handle for quick adjustment
7. Guide rails made of high-strength special steel
8. Guide rollers facilitate feeding

ALFRA Edge Deburring Unit - KFH 250

Hand-held model specially developed for working on edges (visible edges) and bevelling up to 60° on large rectangular work pieces.

- **A vital accessory for mechanical engineering.**
- **Wide speed range for different materials.**
- **Individually adjustable milling depth.**
- **Easy to handle and guide with two support rollers.**

2

6

Fine adjustment to milling depth/bevel width

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

Technical specifications:

Prism mounting:	**L = 250 mm** **W = 70 mm**
End mill Ø:	**12 mm DIN 6527**
Max. bevel width:	**14 mm (depending on the material)**
Edge angle:	**infinitely adjustable swivelling right and left. Also for radii r = 3.0, 4.0, 5.0 using radii solid-carbide milling cutter**
Rating:	**1,800 W (high-quality motor for difficult deburring tasks)**
Infinitely variable speed control:	**2,500 – 23,500 min^{-1}**
Full-wave control electronics	
When under load, the tachogenerator provides additional power.	
Clamping neck Ø:	**63 mm**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Weight:	**12.8 kg**

Scope of delivery:

- **Edge deburring unit KFH 250, with fine milling depth adjustment**
- **1 set of guide rails with two support rollers**
- **1 collet Ø 12 mm and clamping nut**
- **1 set of operating tools**
- **1 Operating instructions**

		Prod.-No.
Edge deburring unit, KFH 250	230V 50-60 Hz	25130
Edge deburring unit, KFH 250	110V 50-60 Hz	25130.110
Adapter head for edge deburring unit KFH 250		25131

Prism mounting and support rollers made of wear-resistant plastic upon request.

ALFRA Edge Deburring Unit

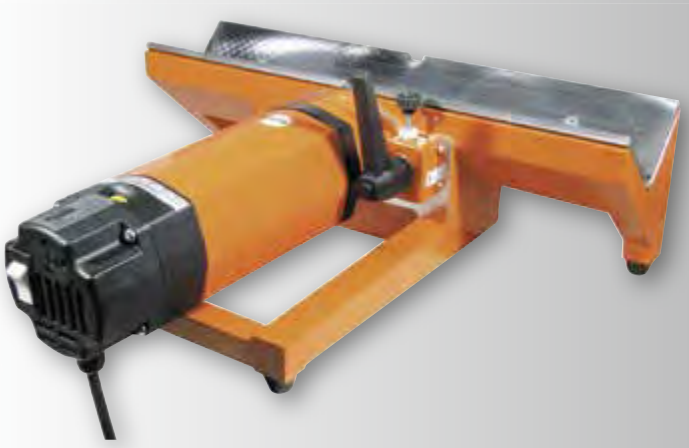
KFT 500

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. Clamping handle for quick adjustment
5. Guide rails made of high-strength special steel
6. Chip collection container
7. Rubber feet for smooth operation and excellent stability

ALFRA Edge Deburring Unit - KFT 500

For medium- and large-sized work pieces.
Max. bevel width 14 mm

To obtain perfectly milled surfaces with solid carbide end mills in rolling sections with no secondary milling.



Precise deburring by rolling milling

Foot switch (optional)
Prod.-No. 25116

Fine adjustment to milling depth/bevel width

Position I: Material thickness 6-14 mm

Position II: Material thickness from 1.5 mm

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

Technical specifications:

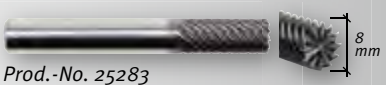
Deburring area:	**Bevel angle 45°**
Prism mounting position I:	**Material thickness 6-14 mm**
position II:	**Material thickness from 1.5 mm**
Prism mounting:	**L = 500 mm**
Guide rail:	**W = 70 mm**
Max. bevel width:	**14 mm, depending on material**
	Also for stainless steel when selecting a suitable-milling cutter and RPM control, and cuts (spray edges with cutting oil).
	Also for radii R 3.0, 4.0, 5.0 using radius solid carbide cutter
High-performance drive motor:	**1,800 W**
Triple bearing, double bearing-mounted milling spindle	
Spindle bearings with high-speed lubrication	
Clamping neck Ø:	**63 mm**
Infinitely variable speed control:	**2,500 – 23,500 min^{-1}**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Full-wave control electronics	
When under load, the tachogenerator provides additional power.	
Weight:	**18 kg**

Scope of delivery:

- **Edge deburring unit KFT 500, with fine milling depth adjustment**
- **1 set of guide rails**
- **1 collet Ø 12 mm and clamping nut DIN 6499**
- **1 chip collection container**
- **1 set of operating tools**
- **1 Operating instructions**

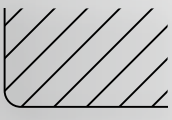
		Prod.-No.
Edge deburring unit, KFT 500	230V 50-60 Hz	25140
Edge deburring unit, KFT 500	110V 50-60 Hz	25140.110
Table for edge deburring unit KFT 500		25141
ALFRA foot switch with device cable socket	230V	25116
ALFRA foot switch with device cable socket	110V	25116.110

Shorter run times and motor-saving work.
Function: Foot switch pressed - socket is live
Foot switch released - power supply interrupted

Description	Prod.-No.				
Solid carbide milling cutter 90° Ø 6 mm, tip Ø 2.5 mm, length 31 mm, 3 cuts Suitable for: stainless steel, cast iron	25270-A	■	■		 Prod.-No. 25270-A
Solid carbide milling cutter 90° Ø 6 mm, tip Ø 2.5 mm, length 31 mm, 5 cuts Suitable for: stainless steel, cast iron	25271-A	■	■		 Prod.-No. 25271-A
Solid carbide milling cutter radius R = 0.5 Ø 6 mm, tip Ø 2.9 mm, length 31 mm, 3 cuts Radius R = 0.5 Suitable for: stainless steel, cast iron	25272-A	■	■		 Prod.-No. 25272-A
Solid carbide milling cutter radius R = 1.0 Ø 6 mm, tip Ø 2.9 mm, length 31 mm, 3 cuts Suitable for: stainless steel, cast iron	25273-A	■	■		 Prod.-No. 25273-A
Solid carbide milling cutter radius R = 1.5 Ø 6 mm, tip Ø 2.9 mm, length 31 mm, 3 cuts Suitable for: stainless steel, cast iron	25274-A	■	■		 Prod.-No. 25274-A
Solid carbide milling cutter radius R = 1.0 Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25275-A	■	■		 Prod.-No. 25275
Solid carbide milling cutter radius R = 1.5 Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25276-A	■	■		 Prod.-No. 25276-A
Solid carbide milling cutter radius R = 2.0 Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25277-A	■	■		 Prod.-No. 25277-A
Solid carbide milling cutter 90° Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25278-A	■	■		 Prod.-No. 25278-A
Solid carbide milling cutter radius R = 2.0 Ø 10 mm, tip Ø 2.9 mm, length 30 mm, 3 cuts incl. thrust bearing Suitable for: stainless steel, cast iron	25284-A	■	■		 Prod.-No. 25284-A
Solid carbide milling cutter 45° Ø 10 mm, tip Ø 2.9 mm, length 30 mm, 3 cuts incl. thrust bearing Suitable for: stainless steel, cast iron	25285-A	■	■		 Prod.-No. 25285-A
Axes with thrust bearing Axes: Ø 1.5 mm - KL: Ø 3.0 mm) Suitable for deburring end mills with tips - Ø 2.5 - 2.9 mm	25279-A	■	■		 Prod.-No. 25279-A
Axes with thrust bearing Axes: Ø 1.5 mm - KL: Ø 5.0 mm) Suitable for deburring end mills with tips - 4.8 mm	25280-A	■	■		 Prod.-No. 25280-A
Solid carbide milling cutter with serration Ø 8 mm, 4 cuts Suitable for: Steel, stainless steel, cast iron	25281			■	 Prod.-No. 25281
Solid carbide milling cutter with serration Ø 8 mm, 6 cuts Suitable for: Steel, stainless steel, cast iron, brass, bronze	25282			■	 Prod.-No. 25282
Solid carbide milling cutter with serration Ø 8 mm, 12 cuts Suitable for: Steel, stainless steel, cast iron	25283			■	 Prod.-No. 25283

ALFRA - Solid Carbide Milling Cutters (similar to DIN 6527)

- This solid carbide end mill was developed for perfect deburring.
- The chips are removed from the motor spindle into the chip collection container
- or in the chip duct.
- Total length 60 mm or 80 mm.
- **Coated design**

	Ø	Cutting	Prod.-No.	Prod.-No.	Prod.-No.	Prod.-No.
Solid Carbide Milling Cutter End mill with larger chip spaces, suitable for large bevels on soft materials such as **aluminium** as well as brass, copper, and plastics. Universal application for steel and stainless steel.						
	8 mm	3	25150P	25150P		
	12 mm	3			25160P	25160P
Solid Carbide Milling Cutter End mill with larger chip spaces, suitable for larger bevels Universal application such as for **stainless steel**, as well as steel, cast iron, non-ferrous metals, plastics						
	8 mm	4	25151P	25151P		
	12 mm	4			25161P	25161P
Solid Carbide Milling Cutter Roughing, fine cord. For attaching welding bevels. For **steel**, as well as cast iron, stainless steel (universal milling cutter)						
	8 mm	4	25154P	25154P		
	12 mm	4			25163P	25163P
Solid carbide radius milling cutter* - Solid carbide radius end mill with 2 radius grooves for dual use - For rounding off work piece edges - Universally applicable. For hard materials, the radii should be created in successive steps with increasing milling depths. - The fine adjustment of the contour of the radii to the edge of the work piece is achieved using the axial displacement of the motor in the clamping holes.						
 	R 3.0	12 mm	5			25165	25165
	R 4.0	12 mm	5			25166	25166
	R 5.0	12 mm	5			25167	25167

*Delivery time upon request.

ALFRA Edge Deburring Unit

KFK 5

1. High-performance motor with Smooth start
2. Infinitely variable bevel width setting using scale
3. Ergonomically shaped hand grip with on/off switch
4. With thermal and overload protection

ALFRA Edge Deburring Unit - KFK 5

For deburring inner and outer edges, bevelling metal parts, milling radii and holes from Ø 20 mm.
Specially developed to produce clean visible edges and weld preparation.

- **Tool-less bevel height setting.**
- **Handy and powerful.**
- **For structural steel, stainless steel, aluminium and other materials.**
- **Multiple insert holders 45° (optional 30°).**
- **Also for radii R = 2.5**

Start holes from Ø 20 mm.

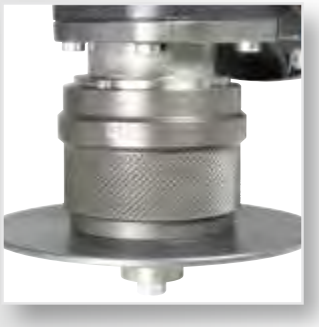
Technical specifications:

Bevel angle:	**45° (optional 30°, 60°)**
Bevel width 45°:	**Steel 0 - 5 mm 400 N/mm² steel infinitely variable**
	Steel 0 - 8 mm 250 N/mm² steel infinitely variable
Bevel width 30°:	**Steel 0 - 4 mm 400 N/mm² steel infinitely variable**
	Steel 0 - 6 mm 250 N/mm² steel infinitely variable
Radius:	**R = 2.5**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Rating:	**1,530 W**
Rotational speed:	**4,200 - 11,000 min^{-1} with Smooth start with thermal and overload protection**
Feed:	**manual**
Weight:	**4 kg**

Scope of delivery:

- **KFK 5 - Deburring and bevelling unit**
- **1 pc. 45° milling tool with inserts**
- **1 tool set**
- **Carrying case**
- **1 Operating instructions**

Prod.-No. 25207



	Prod.-No.
Edge deburring unit KFK 5 - with 45° milling head 230V 50-60 Hz	25200
Edge deburring unit KFK 5 - with 45° milling head 110V 50-60 Hz	25200.110
Edge deburring unit KFK 5 - with 30° milling head 230V 50-60 Hz	25201
Edge deburring unit KFK 5 - with 30° milling head 110V 50-60 Hz	25201.110
Additional Accessories:	
45° replacement milling head/radius R=2.5 (no inserts)	25202
30° replacement milling head (no inserts)	25203
60° replacement milling head (no inserts) upon request	25213
Adjustable guide stop for outer edges	25207
Tools:	
Insert PM25M for steel 13.47 x 3 coated	25206
Radius insert 2.5 mm	25205
Insert K10 for aluminium/cast iron	25208
Insert BK84 for steel/stainless steel	25209
Torx screws, individual, for replacement inserts	25210

ALFRA Bevel Milling Machine

SKF 63-15

ALFRA Bevel Milling Machine - SKF 63-15

- The ALFRA bevel milling machine was specially developed for weld preparation and for milling metallic materials.
- Universally applicable in construction areas thanks to its light weight and direct use on the work piece.
- Designed for one-man operation, the machine is placed on a 90° angle on the work piece, a light downward pressure applied, and guided along manually.
- The design of this side milling cutter, which uses commercially available inserts and a rotation speed of 2,870 rpm, guarantees chatter-free, uniform bevel milling.
- The roller guide rails are made of hardened steel and guarantee excellent feed rates.
- Simple, safe operation with overload protection and restart interlock.
- OFF switch integrated into the right-side hand grip (illustration).
- Pipes from Ø 160 mm to 390 mm can be externally milled by means of an additional device.
- Optional device for larger pipes, Ø of 1,000 - 1,500 - 2,000 mm upon request.

Built-in OFF switch

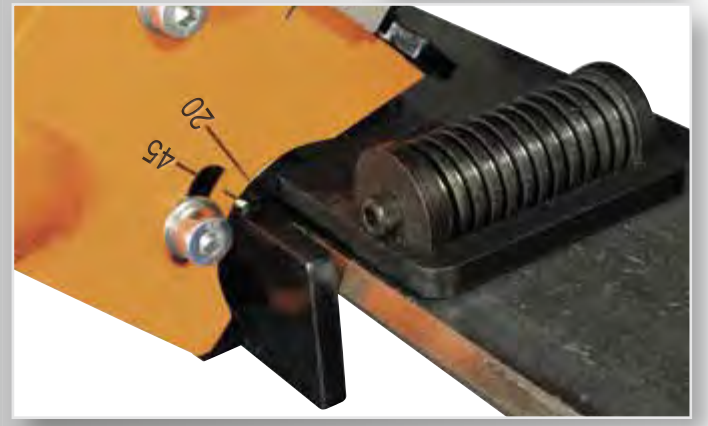
Technical specifications:

Motor voltage:	**230 V 50Hz; 230 V 60Hz; 110V 50Hz; 110V 60Hz**
Rating:	**1,100 watt**
Rotational speed:	**2,870 min^{-1}**
Bevel width:	**15 mm; max.**
Bevel angle:	**15 - 20 - 30 - 45 - 60° adjustable**
Weight:	**21 kg**
Dimensions (L x W x H):	**440 x 200 x 280 mm**

Scope of delivery:

- **Edge deburring machine SKF 63-15**
- **1 set of operating tools**
- **Operating instructions**
- **Carrying case**

2 milling disks together with 6 inserts each



		Prod.-No.
Bevel milling machine SKF 63-15	230V 50 Hz	25010
Bevel milling machine SKF 63-15	230V 60Hz	25010.230-60Hz
Bevel milling machine SKF 63-15	110V 50Hz	25010.110-50Hz
Bevel milling machine SKF 63-15	110V 60Hz	25010.110-60Hz

Option:

SKF 63/15 with reduced rpm of 1,400 rpm for use on stainless steel available upon request.

Optional accessories:

Tube insert for processing tube outer bevelling from Ø 160 mm - 390 mm	25014

Optional device for larger Ø up to 1,000 - 1,500 - 2,000 mm upon request.

Replacement parts:

Replacement milling head	25011

Consisting of: 2 milling disks and 6 high-speed inserts

Replacement milling disks, individual, with no insert	25012
Carbide insert, TiAlN/TiN-PVD multi-layer coating	25013

Universal for steel and inox, clearance angle 11°

Carbide insert, TiAlN /TiN-PVD multi-layer coating	25010.15036B

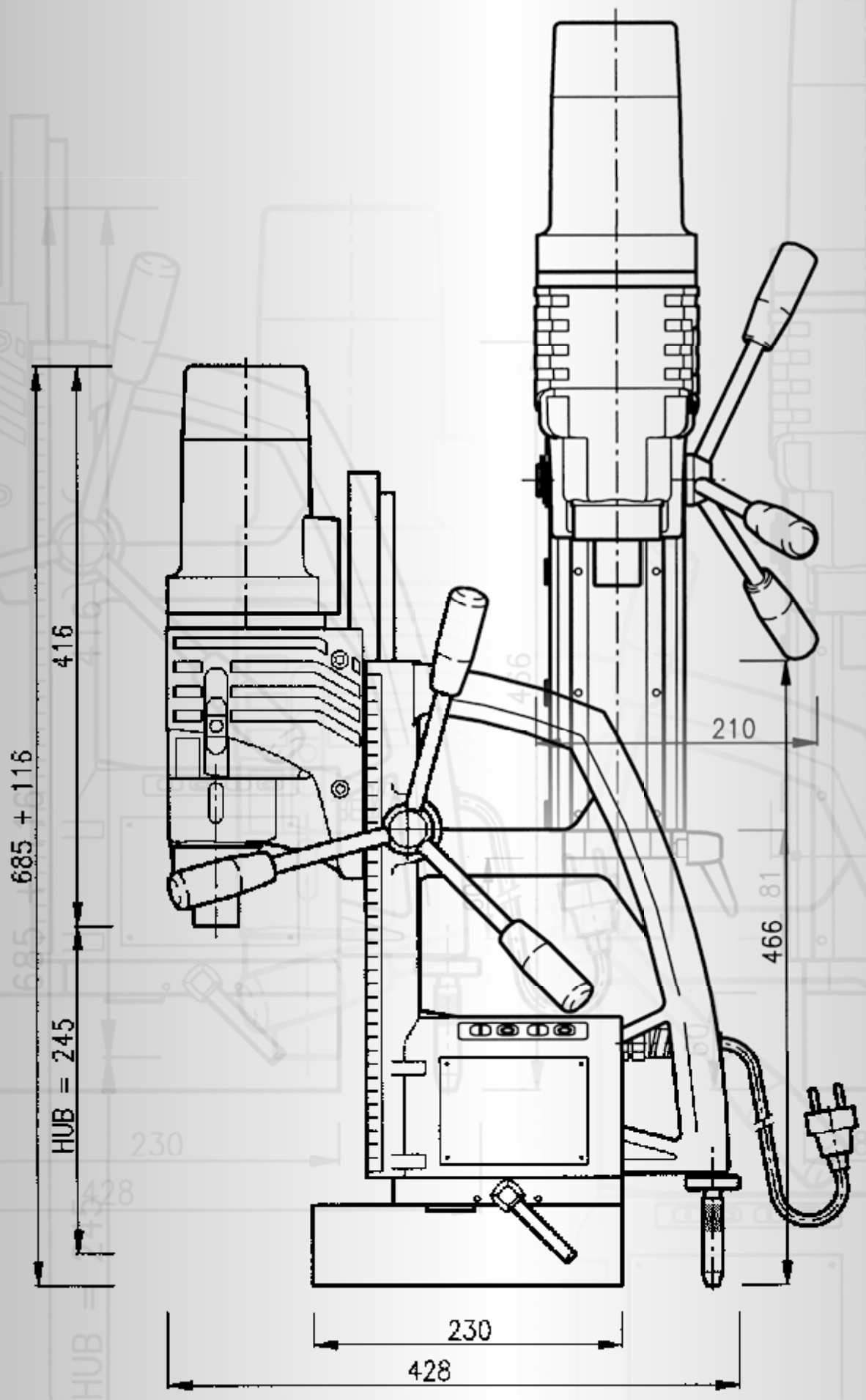
For steel < 850 N/mm²; inox <> 900 N/mm², clearance angle 20°

Carbide insert, TiAlN/TiN-PVD multi-layer coating	25010.15036E

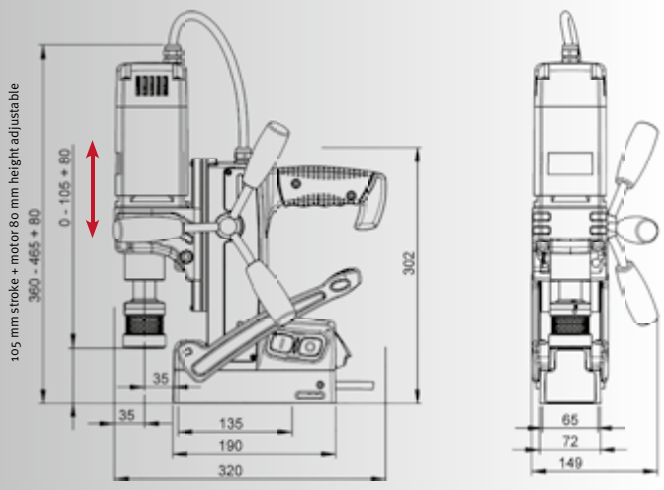
For steel < 1400 N/mm²; inox <> 900 N/mm², clearance angle 11°

Auxiliary assembly device	25019

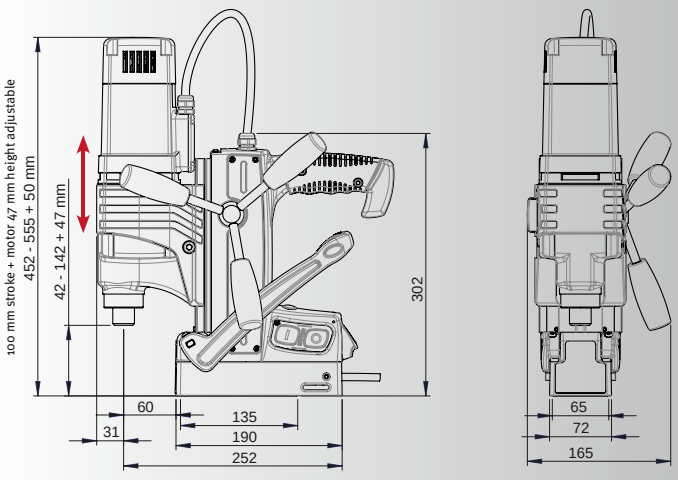
For equipping the milling disks with inserts.


685 + 116
416
HUB = 245
210
466
230
428

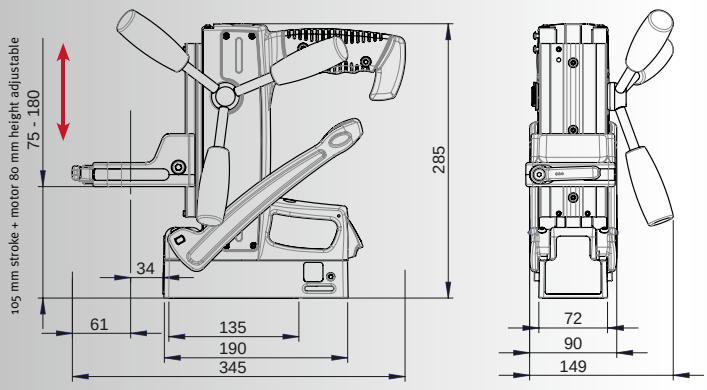
RB 35 SP



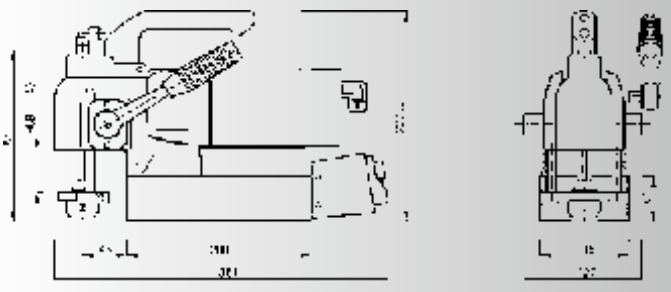
RB 50 SP



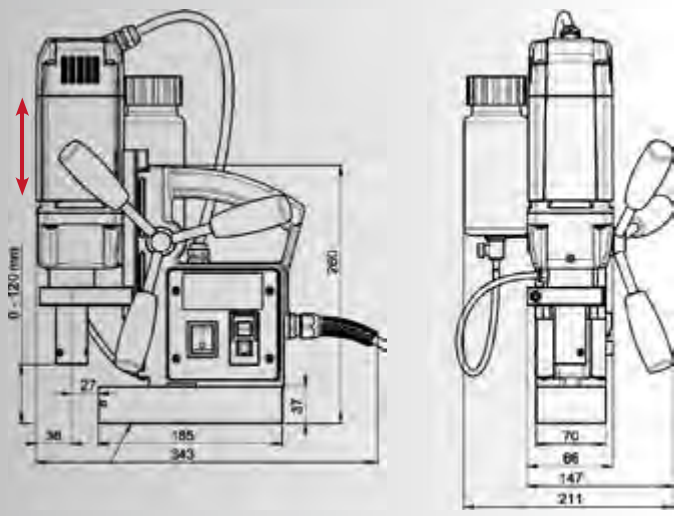
SP-V



V 32



RB 35 B



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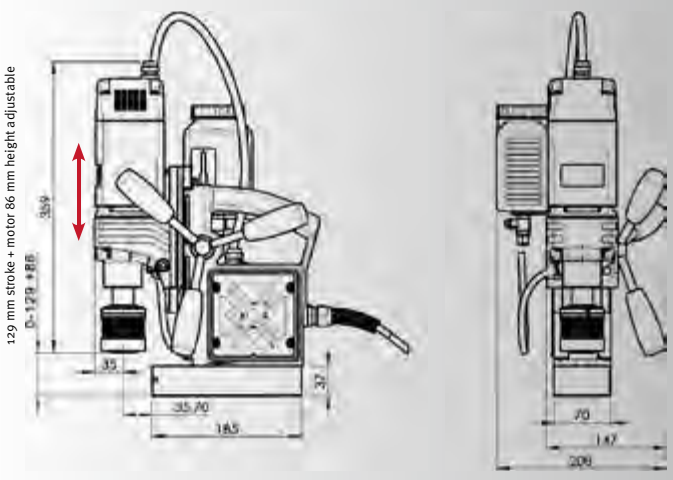
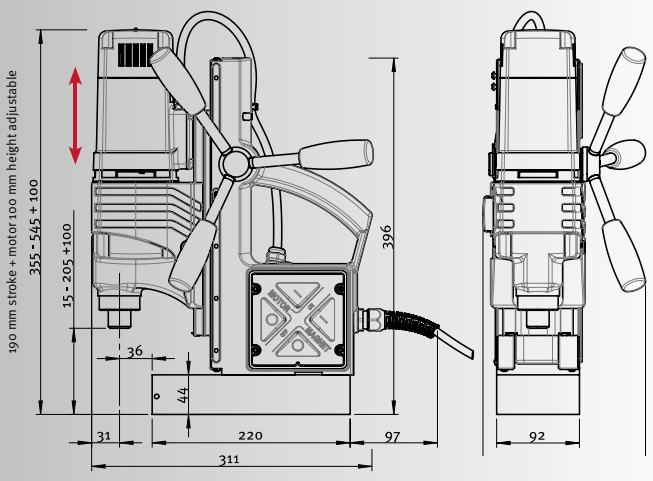
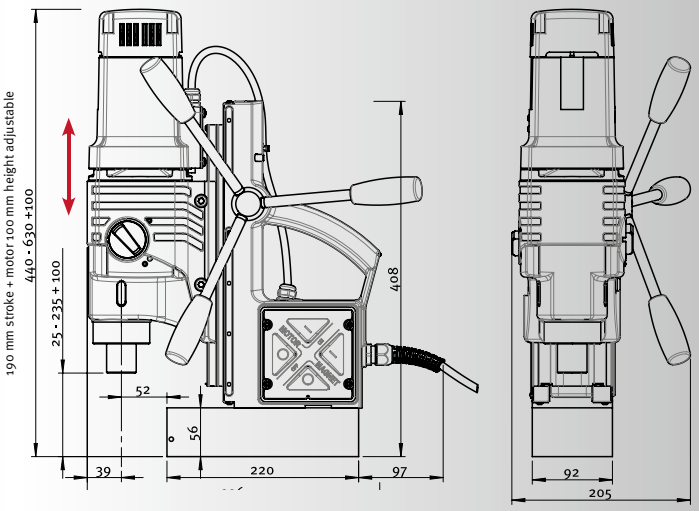


RB 50 X



RB 80 X



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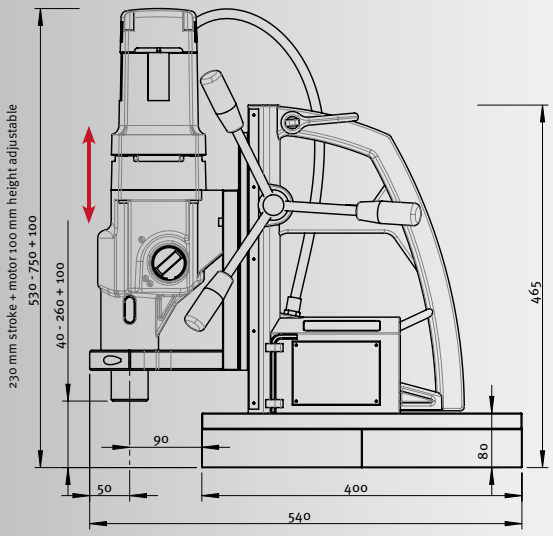
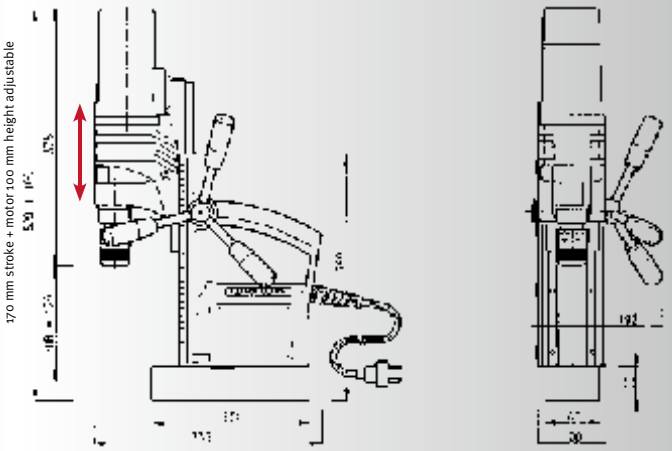
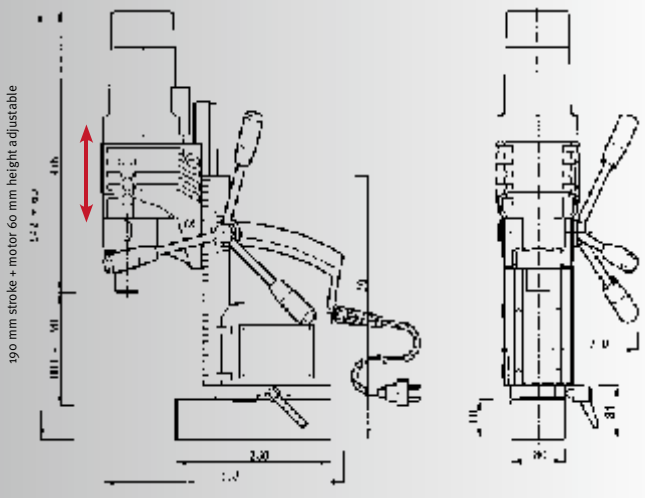


40 RL-E



60 RL-E



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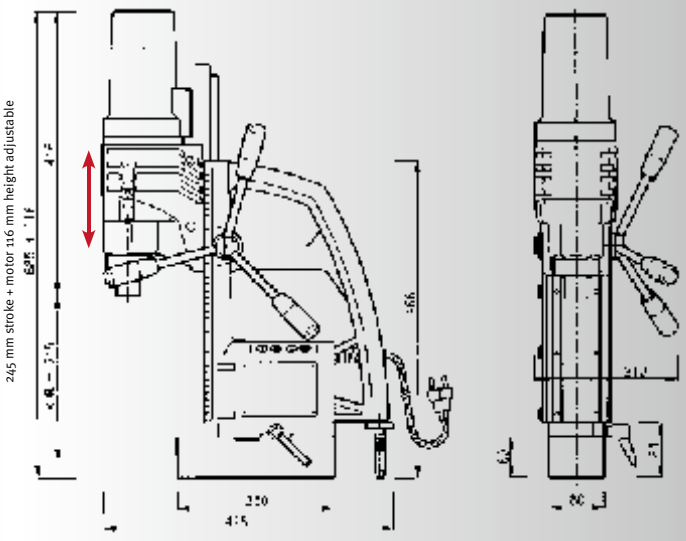
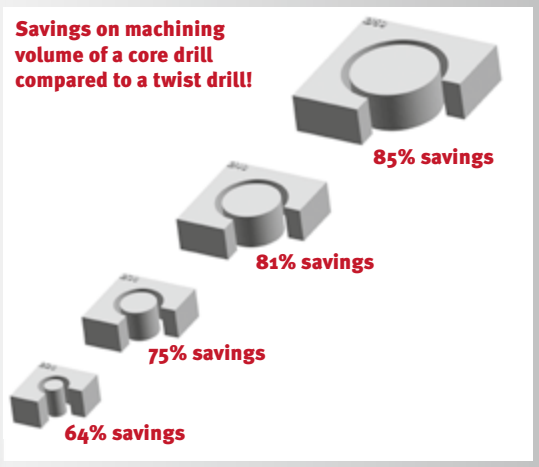


THE CORE DRILL PRINCIPLE

Metal core drilling in Germany was introduced by ALFRA

- Core drills only machine a fraction of the material which a twist drill machines with the same bore diameter.
- A drill core remains which is ejected unmachined after drilling.
- Therefore low drive power and feeding pressure are required.
- Pre-drilling must be done with twist drills which does not apply for core drilling and the desired diameter can be drilled directly.

The main drilling times are significantly reduced depending on the bore diameter.



For HSS and HSS-Co core drills

Material		unalloyed steel Up to 700 N/mm²	alloyed steel Up to 1000 N/mm²	aluminium alloy
Vc=m/min		30	20	30
Cooling lubricant		Cutter oil	Cutting oil	Cutting oil
Ø mm	Ø "rpm	rpm	rpm	rpm
Not suitable for automatic feed!				
12	15/32	796	531	796
13	33/64	735	490	735
14	35/64	682	455	682
15	19/32	637	425	637
16	5/8	597	398	597
17	43/64	562	375	562
18	45/64	531	354	531
19	3/4	503	335	503
20	25/32	478	318	478
21	53/64	455	303	455
22	7/8	434	290	434
23	29/32	415	277	415
24	15/16	398	265	398
25	63/64	382	255	382
26	1 1/32	367	245	367
27	1 1/16	354	236	354
28	1 3/32	341	227	341
29	1 9/64	329	220	329
30	1 3/16	318	212	318
31	1 7/32	308	205	308
32	1 17/64	299	199	299
33	1 19/64	290	193	290
34	1 11/32	281	187	281
35	1 3/8	273	182	273
36	1 27/64	265	177	265
37	1 29/64	258	172	258
38	1 1/2	251	168	251
39	1 17/32	245	163	245
40	1 37/64	239	159	239
41	1 39/64	233	155	233
42	1 21/32	227	152	227
43	1 11/16	222	148	222
44	1 47/64	217	145	217
45	1 25/32	212	142	212
46	1 13/16	208	138	208
47	1 55/64	203	136	203
48	1 57/64	199	133	199
49	1 15/16	195	130	195
50	1 31/32	191	127	191
60	2 3/8	159	106	159

When drilling Hardox, we recommend using ASP 30 / ASP 60 core drills. Use pure cutting oil for the drilling of Hardox and reduce the speed by 10% appr., as in the column "Alloyed steel up to 1000 N/mm²". Use only magnetic drills with high holding force or column drilling and milling machines.

For TCT core drills

Material		unalloyed steel Up to 700 N/mm²	alloyed steel Up to 1000 N/mm²	aluminium alloy
Vc=m/min		50	35	60
Cooling lubricant		Cutter oil	Cutting oil	Cutting oil
Ø mm	Ø "rpm	rpm	rpm	rpm
Not suitable for automatic feed!				
18	45/64	885	619	1062
19	3/4	838	587	1006
20	25/32	796	557	955
21	53/64	758	531	910
22	7/8	724	507	869
23	29/32	692	485	831
24	15/16	663	464	796
25	63/64	637	446	764
26	1 1/32	612	429	735
27	1 1/16	590	413	708
28	1 3/32	569	398	682
29	1 9/64	549	384	659
30	1 3/16	531	372	637
31	1 7/32	514	360	616
32	1 17/64	498	348	597
33	1 19/64	483	338	579
34	1 11/32	468	328	562
35	1 3/8	455	318	546
36	1 27/64	442	310	531
37	1 29/64	430	301	531
38	1 1/2	419	293	503
39	1 17/32	408	286	490
40	1 37/64	398	279	478
41	1 39/64	388	272	466
42	1 21/32	379	265	455
43	1 11/16	370	259	444
44	1 47/64	362	253	434
45	1 25/32	354	248	425
46	1 13/16	346	242	415
47	1 55/64	339	237	407
48	1 57/64	332	232	398
49	1 15/16	325	227	390
50	1 31/32	318	223	382
55	2 5/32	290	203	347
60	2 3/8	265	186	318
65	2 9/16	245	171	294
70	2 3/4	227	159	273
75	2 61/64	212	149	255
80	3 5/32	199	139	239
85	3 11/32	187	131	225
90	3 35/64	177	124	212
95	3 47/64	168	117	201
100	3 15/16	159	111	191

Recommended values for use of machine tap drills with tapping attachments on magnetic drills

Tapping: The tap drill to be used must be matched to the core hole prepared in the work piece. Please refer to the enclosed borehole table for metric ISO threads.

Borehole table metric ISO threads

Dimensions	Stg.	Drill Ø
M3	0.5	2.5
M4	0.7	3.3
M5	0.8	4.2
M6	1	5
M8	1.25	6.8
M10	1.5	8.5
M12	1.75	10.2
M14	2	12
M16	2	14
M18	2.5	15.5
M20	2.5	17.5

Fine thread

Dimensions	Stg.	Drill Ø
M8x1	1	7
M10x1	1	9
M12x1	1	11
M12x1.5	1.5	10.5
M14x1	1	13
M14x1.5	1.5	12.5
M16x1	1	15
M16x1.5	1.5	14.5
M20x1	1	19
M20x1.5	1.5	18.5

Tips for the production of threads

1. **Clearance hole**
   We recommend adjacent tap drills for the clearance holes which convey the chips out of the borehole in the cutting direction. The special polished section also allows a reliable re-threading when the tap drill is withdrawn from the tapped hole and moves back in an anticlockwise direction.

2. **Blind holes**
   We recommend adjacent tap drills for blind holes. The chips are guided out of the borehole against the direction of the cutting. It is particularly important to ensure that the tap drill does not run aground, because otherwise the automatic return can no longer be activated. A correspondingly large pre-borehole depth must be planned.

   If this is not done, the tap drill must be loosened manually.

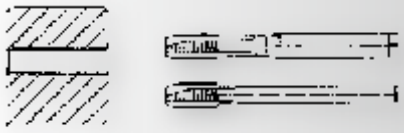
3. **Blind holes up to 1.5 x D**
   For this, our tap drills are suited to according to the adjacent figure. Also here, the chips are conveyed away out of the borehole against the cutting direction. Also here, it must be ensured that the tap drill does not run aground. A correspondingly large pre-borehole depth must be taken into account.

   If this is not done, the tap drill must be loosened manually.

Beside our tap drills with a reinforced shank, tap drills with a reduced shaft according to DIN 376 can, of course, also be used.

Please work with sufficient coolant that is recommended by the manufacturer for tapping.

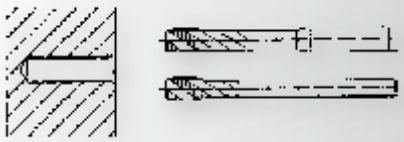
Chip ejection downward through the hole



DIN 371 with a reinforced shank form B, with spiral point, 3.5 to 5 pitches

DIN 376 with a reduced shaft, thread depth 3 x D

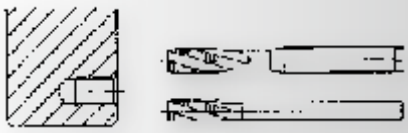
Chip ejection along the tool



DIN 371 with reinforced shank with a spiral groove, approx. 35° right-hand twist bevel C, approx. 3 pitches

DIN 376 with reduced shaft Thread depth 2.5 x D

Chip ejection along the tool



DIN 371 with reinforced shank with a spiral groove, approx. 17° right-hand twist, bevel C, approx. 2 to 3 pitches

DIN 376 with reduced shaft Thread depth 1.5 x D

Punching units APS 70/120 - Usage instructions

From the field, questions continue to be asked about the material thickness / hole diameter ratio (S/D = Ø ratio).

Intermediate material thickness and the smallest hole or punch diameter must be a certain ratio.

A specific ratio must exist between material thickness and the lowest hole or punch die Ø.

An old rule of thumb is that the punch die must be as big or even bigger than the thickness of the material to be cut. The material thickness must be but never be greater than the punch die Ø.

This rule no longer applies to our hydraulic punching units.

They are still used with fast-working, mechanical presses because the process takes place abruptly and the punch is loaded to the utmost.

For our ALFRA APS punching units, the punching process is carried out slowly and gently.

In this case, holes can also be punched the diameter of which is less than the thickness of the material to be cut.

Chart 1 clarifies the right thickness/diameter ratio. This is based on trials such as.:

Holes are to be punched in a steel plate made of S235. What is the recommended ratio?

The shear strength of S235 is about 30 kg/mm². At 30, move vertically upwards in the chart to line A, from there to the left to the S/D diameter ratio scale.

Result: The recommended ratio is 1:1.3.

The **upper limit** of the ratio is the dotted line B which specifies a ratio of 1:1.7. This would mean that the thickness of the material to be cut may be 1.7 times larger than the diameter of the punch die.

It goes without saying that the life expectancy of a punch with this diameter ratio should be considerably shorter than one with a ratio of 1: 1.3.

We therefore recommend only working to line A so that sufficient reliability exists.

Minimal punch die Ø with existing material thickness

With Chart 2, the smallest hole punch Ø can be easily determined.

Three varieties of material with different strength options are specified.

Another example:

Holes to be punched in a steel plate with a thickness of 20 mm made of S235. How large may the smallest punch die Ø be?

On the horizontal scale for material thickness, move vertically upward at 20 mm to the full line of S235. Then horizontally to the left up to the scale of the punch die Ø.

Result: = 15 mm Ø.

To get the breaking point of the stamp, move up to the second line.

It is therefore advisable only to proceed according to the first method.

ALFRA punch dies and matrices are made from high quality material. Nevertheless, it may happen that a stamp breaks.

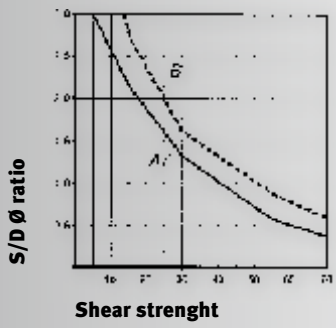
This is caused by:

1. S/D diameter ratio is not correct.
2. The material to be punched is not lying straight but wedged on the matrix.
3. The punching unit or the material is moved greatly during the punching process.
4. If the scraper is damaged or not properly set to the height, the material can be wedged when the punch die retracts.
5. The scraper is located too far from the punch die so that thin sheet metal bulges when scraping. In this case, the punch die breaks in flakes at the cutting edge.

In this case, we recommend providing the scraper with a bridge or possibly using a special change guide.

We hope that you work easily and reliably with the ALFRA Press punch units with these usage instructions.

Diameter of the punched holes/material thickness



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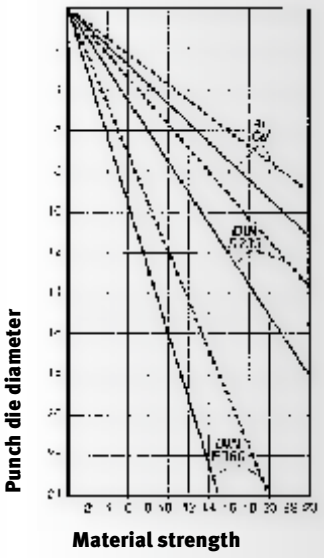


2

ALFRA Punching Units APS - Working area

Material St. 42

	Material strength mm Material DIN S233	Force needed for punching [kN] (10 kN... approximately 1 ton) • Punch diameter (mm)																				
		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
		APS 70															APS 120						
APS 70 (DIN S275)	3	25	28	32	35	39	43	46	50	53	57	60	64	67	71	74	78	82	85	89	92	96	99
	4	33	38	43	47	52	57	61	66	71	76	80	85	90	94	99	104	109	113	118	123	128	132
	5	41	47	53	59	65	71	77	83	89	94	100	106	112	118	124	130	136	142	148	154	159	165
	6	50	57	64	71	78	85	92	99	106	113	120	128	135	142	149	156	163	170	177	184	191	198
	7	58	66	74	83	91	99	107	116	124	132	141	149	157	165	174	182	190	198	207	215	223	232
	8		76	85	94	104	113	123	132	142	151	161	170	180	189	198	208	217	227	236	246	255	265
	9			96	106	117	128	138	149	159	170	181	191	202	213	223	234	245	255	266	276	287	298
	10				118	130	142	154	165	177	189	201	213	224	236	248	260	272	283	295	307	319	331
	11					143	156	169	182	195	208	221	234	247	260	273	286	299	312	325	338	351	364
	12						170	184	198	213	227	241	255	269	283	298	312	326	340	354	369	383	397
	13							200	215	230	246	261	276	292	307	322	338	353	369	384	399	415	430
APS 120 (DIN S275)	14								232	248	265	281	298	314	331	347	364	380	397	413	430	447	463
	15									266	283	301	319	337	354	372	390	408	425	443	461	478	496
	16										302	321	340	359	378	397	416	435	454	472	491	510	529
	17											341	361	382	402	422	442	462	482	502	522	542	562
	18												383	404	425	447	468	489	510	532	553	574	595

Actual punching force

APS	60	70	120	70D	110D
in kN	225	313	470	454	508

	DIN S233	DIN S275	DIN S355	DIN E335	C 25	C 35	C 45	C 60
Rm max (sheets)	470	510	630	710	600	700	800	900
Tau max = 0.85 * Rm max	376	408	504	568	480	560	640	720
coef. (Steel X / DIN S233)	1.00	1.09	1.34	1.51	1.28	1.49	1.70	1.91

Example 1: Punching unit APS 70, F max 454 = kN
Punch diameter Ø=20 mm
Material thickness T = 8 mm
Material C 45, R_m max=800 N/mm²

Calculation 1: F = F(DIN S233) * coef.(C 45/DIN S233)
F = 189 * 1.70 = 321.3 kN
F is less than F max, punch force sufficient

Example 2: Punching unit APS 70, F max = kN 313
Punch diameter Ø = 21 mm
Material thickness T = 12 mm
Material DIN S275, R_m max=510 N/mm²

Calculation 2: F = F(DIN S233) * coef.(DIN S275/DIN S233)
F = 298 * 1.09= 324.8 kN
F is greater than F max;
Punch power is not sufficient;
Please opt for our APS 120

Conversion - pressure

- Pascal (pa) = 1 Newton (N)/m²
- 1 Bar (bar) = 10 to the power of 5 Pa = 10 to the power of 5 N/m² = 10 N/m² = 750.06 mercury column
- 1 bar = 1.019 kg/cm² = 0.1 N/mm² = 14.5 psi
- 1 kg/cm² (atm) = 0.981 bar = 0.0981 N/mm² = 14.2234 psi
- 1 bar = 1.02 technical atmospheres (at) = 1.02 kg/cm² = 10 N/cm²
- 1 physical atmosphere (atm) = 1.013 bar = 1.033 kg / cm2 = 760 mm mercury column = 760 torr
- 1 torr = 1.332 mbar
- 1 m water column (mH2O, = 0.0980665 bar)
- 1 mm H2o = 0.0980665 mbar = 9.80655 Pa
- 1 N/mm² = 10 bar = 10.19 kg/cm² = 145 psi
- 1 psi = 0.069 bar = 0.0703 kg/cm2 00.0069 N/mm²

Conversion table - Pressure units

Convert the pressure units "bar" and "psi"

Bar	psi	psi	bar
1	14.5	1	0.068965517
10	145	100	6.896551724
100	1450	100	6.896551724
500	7250	5000	344.8275862
1000	14500	10000	689.6551724
1200	17400	10500	724.137931

ALFRA - TIPS FOR CORRECT DEBURRING

For the models KFH 150, KFH 250, KFT 250, KFT 500

Our precision high performance drive motors are infinitely variable. It is advisable to first start at low motor rpm, then continuously increase it during the milling.

You can see when the ideal rpm is reached on the running noise of the milling cutter and the feed.

The work material-based cutting speed can also be determined using the famous formula and the pre-set speed:

$$N = \frac{V_c}{d \bullet \pi}$$

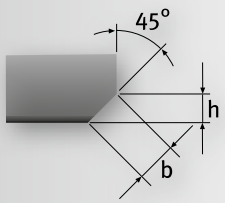
The type of material, the bevel height and the cutting edge geometry of the solid carbide milling cutters are primarily responsible for the The milling cutter speed (N), the cutting speed VC.

The bevel height (H)

The bevel height is decisive for the choice of the solid carbide milling cutter. With the KFT 250 and 500 KFT table models, it must be noted that the work piece must be grasped and guided by hand. If the milling performance is too great especially for smaller work pieces, the bevel height should be made with several infeeds.

The bevel width (B)

The bevel width can be calculated using the formula (B x H = 1.414).



Rotation direction

When guiding the work piece on the table models, it is important to note the direction of rotation.

With hand-guided models (KFH 150, KFH 250), the direction of rotation (see arrow) must be observed. Climb milling is only suitable for very small bevel heights.

Surface quality

The surface quality of the bevel is dependent on the solid carbide milling cutters used and the material as well as the selected feed rate. If the chips start to glow, the feed rate is too high or the milling cutters are too finely intermeshed.

Tool cost savings

In the above models, commercially available solid carbide end mills with front cut can be used. By moving the milling cutter in the spindle, the cutter can be used in the full working length.

Cost reduction:
The major part of the cutting area can be used by moving the cutter in the collet chuck!

ALFRA WELDING EDGE MILLING MACHINE - SKF 63-15

Material	Feed recommendations
General construction steel up to 850 N/mm²	0.8 - 1.0 m/min
Case-hardened steel over 850 N/mm²	0.75 m/min
Rust and acid-resistant steels up to 600 N/mm²	0.5 m/min
Cast steel up to 450 N/mm²	0.6 m/min
Cast iron up to 400 N/mm²	0.8 - 1.0 m/min
Aluminium	0.4 m/min

(Required: special inserts available on special request)

ALFRA - carbide inserts for the welding edge milling machine SKF-63-15

	Prod.-No.
Carbide insert, TiAlN/TiN-PVD multi-layer coating Universal for steel and stainless steel Clearance angle 11°	25013
Carbide insert, TiAlN/TiN-PVD multi-layer coating for steel ‹ 850 N/mm²; stainless steel ‹› 900 N/mm² Clearance angle 20°	25010.15036B
Carbide insert, TiAlN/TiN-PVD multi-layer coating for steel ‹ 1400 N/mm²; stainless steel ‹› 900 N/mm² Clearance angle 11°	25010.15036E

Clearance angle
is the angle between the carbide teeth and the material to be machined. ALFRA TCT core drills have several clearance angles on a cutting edge.

Cutting depth
is the maximum material thickness that can be machined with the respective tool (should not be confused with the construction height of the tool).

Chip flute
gathers up the chips generated or removes these from the borehole.

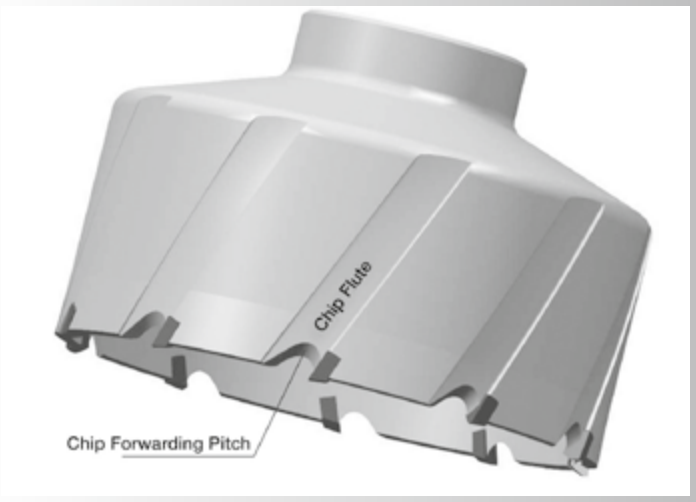
Chip breaker
directs the chips from the carbide tooth into the chip flute.

Cutting face
the chip is formed on this surface.

Angle of rake
is the angle between the tool axis and the cutting face.

Tooth projection
is the carbide projection to the core.

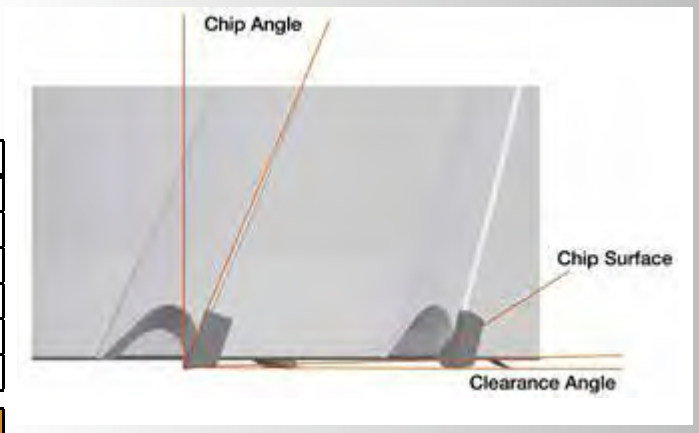
Tooth height difference
is used for the chip splitting.



Speed, cutting speed and feed rate (typical values)
Rotabest®- TCT hole cutters
Not suitable for automatic feed

Material	m/min	mm/r
Construction steel 50 kp/m²	40-60	0.08-0.12
Steel 50-70 kp/m²	30-50	0.08-0.12
Stainless steel	18-45	0.8-0.10
Cast iron	65-95	0.12-0.20
Non-ferrous metals, aluminium	100-550	0.22-0.45
Exotic alloys	10-30	0.05-0.08

Accuracy (reference value) / Input / + 0.10 mm Output /± 0 mm



09/2016

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ALFRA®

www.alfra.de

PUNCHING DRILLING LIFTING CUTTING DEBURRING

C/2016 EN

MADE IN GERMANY

The Story Behind the Cover

Two years ago we presented the world with a new and unique magnetic system, ‚TML', for the first time ever in the Cologne Hardware Fair „Eisenwarenmesse".
The name ‚TML' stands for the ability to generate an enormous holding force even on extremely thin-walled magnetic material. In spite of this excellent lifting capacity, its use of material is incredibly low, i.e. it minimizes dead weight: „Thin Material Lifting". Lifting magnets that are based upon this innovative system can be used with a material thickness as low as 2 mm.

The years from 2014 until today represent a story of success for us and all the users throughout the world who have already started to use the new TML system and have benefited from its countless advantages. This has led to the creation of an independent programme for 'Lifting–Positioning–Resolving problems', the diversity of which you can discover in this Catalogue Part C. ALFRA is the worldwide license holder for the new, patented magnetic system.

In a short period of time, a number of products have been added to the TML Lifting Magnets line and are already facilitating the daily work of metal processing companies all over the globe. In particular, the Magnetic Clamps from our TMC series (Thin Material Clamping) are increasingly gaining in popularity among operators from a wide variety of industries. Additional products are being developed.
At the same time, this new technology has also found its way into the more traditional machines that can be found within our range of products. Therefore you will also find TML magnets with permanent magnet technology used in our Metal Core Drilling Machines in Part B of our catalogue.

Nowadays, demands such as energy consciousness, risk reduction, and security optimisation are not only buzzwords but also virtues and essential requirements that we try to implement in our day-to-day work.
The ALFRA Magnetic System supports you in better fulfilling these requirements.

We would also like to mention that we have manufactured tools ‚Made in Germany' for more than 100 years. In our product line we seek to unite tradition with innovation.

We hope you will be pleased when using our products and we wish you a perfect working day!

Over the last 4 years we have reduced our CO_2 emissions by almost 400 tonnes!
We have produced 600 megawatt-hours of power for our own use!

Only if you manufacture in-house, can you control and shape the entire manufacturing process.

We have consistenly implemented a resource-saving approach to our environment into daily practice in recent years and developed a heightened awareness of "what comes from where" and how to effectively make use of these valuable resources.
With the use of alternative energy, i.e. photovoltaics, we have achieved almost climate-neutral production process in recent years.

And lest we forget: we are, of course, certified according to ISO Standards since 1997!
This means that you can feel good about our tools – not just because they are so technically advanced and are so durable.

But also because the entire production cycle has been carefully designed to ensure that our tools won't leave any traces which could pollute the environment or leave problems for the generations that will follow us.

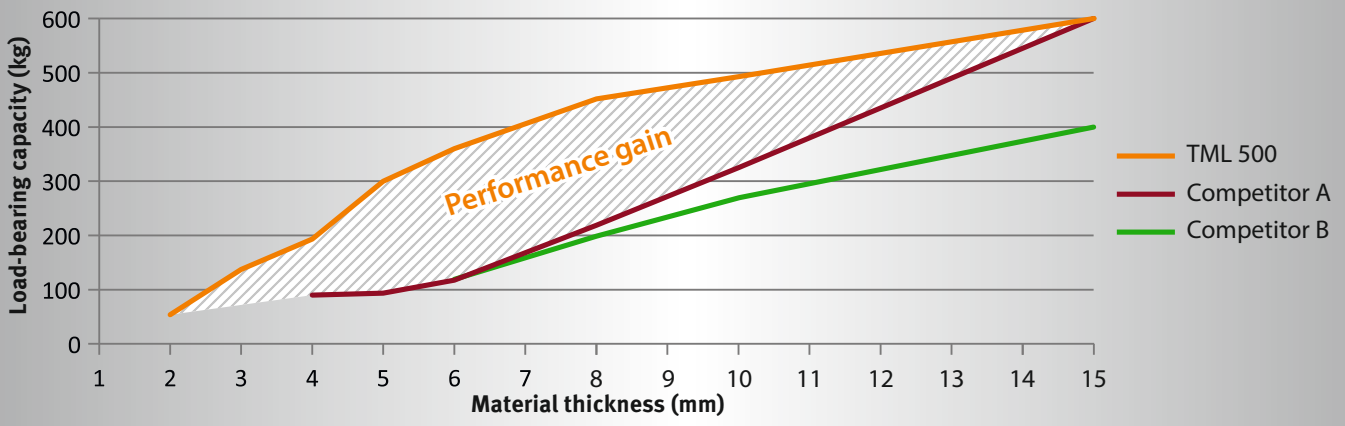
MADE IN GERMANY

GREEN ENERGY

TÜVRheinland® CERT ISO 9001

In which way do ALFRA TML Magnets stand out from conventional magnets?

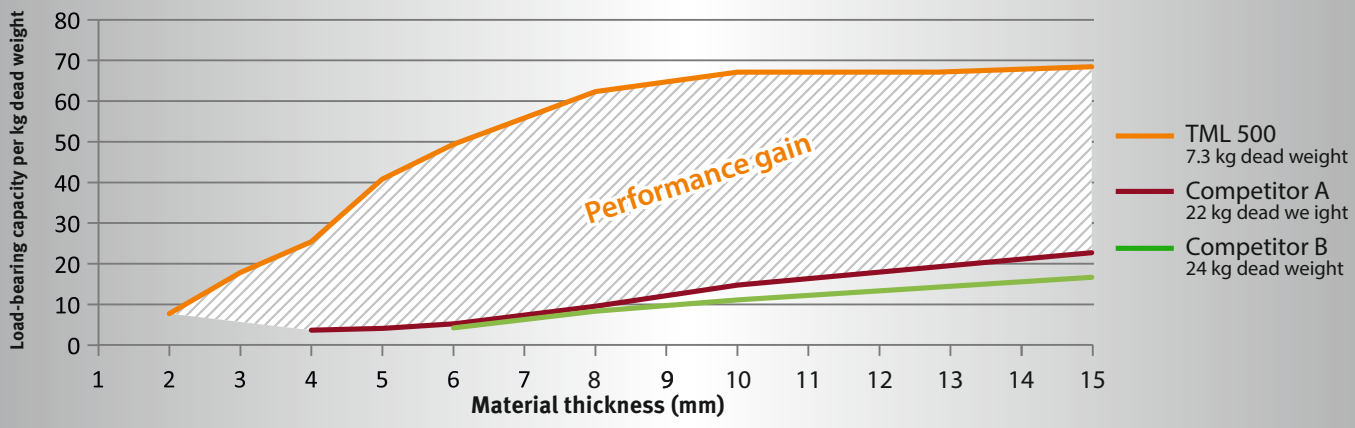
Graph A – The TML provides more performance!



A comparison of the performance data of the TML 500 and two conventional magnets reveals how powerful the TML 500 is, especially when used on thin materials.

The hatched area shows the ‚performance gain' of the TML and illustrates how big the performance difference is between TML and conventional magnets. The measurements were taken on thin-walled steel S235 by means of a pull-off station certified by the TÜV (German Technical Inspection Association).
The result: Whereas competitors A and B are not able to generate a sufficient magnetic field on thin materials, the TML achieves a load-bearing capacity of 50 kg on just 2 mm and 195 kg on 4 mm material thickness–this is unique to ALFRA.

Graph B – Less weight but more performance!



When taking the ratio of the magnets' load capacity in graph A and their dead weight into account, the hatched ‚performance gain' shows the efficiency of TML magnets in contrast to their competitors.
Conventional lifting magnets exhibit lower performance due to their extremely high dead weight and their relatively low adhesive force. The TML, however, weighs just a fraction of the weight of competitors A and B while achieving a considerably higher load-bearing capacity.

TML Lifting Magnets–the ideal tools to lift thin materials with thicknesses as low as 2 mm!

Further Benefits of the ALFRA Magnetic System

Hardened steel bottom plate with TiN-coating eliminating the need to regrind the magnet's bottom plate: reduced maintenance

Slight premagnetisation for the easy positioning of the magnet

One-handed activation possible

Magnets can be customized thanks to additional connection threads inside the housing

New design allowing for the use of the magnet even between the flanges of a steel beam

The magnetic field concentrates directly on the material and reduces scattering losses to a minimum

180° pivotable and 360°rotatable load swivel

Magnets allow welding at a distance of just 15 mm from the magnet's external side

TML

US Patent No. 8350663B1

ALFRA is the worldwide license holder for the new, patented magnetic system that allows you to drill, lift, position, transport...from a material thickness of just 2 mm!

MAGNETIC SYSTEMS PATENTED US Patent No. 8350663B1

ALFRA sets new standards in magnet technology!

Our Permanent Magnets are activated according to a patented principle, completely independent of the mains supply–providing 100 % safety and permanent stability!

LIFTING

CORE DRILLING

POSITIONING

RESOLVING PROBLEMS

MADE IN GERMANY

“Looking for solutions to meet your needs or those of your customer? You will find them in our wide range of magnets. Our sales agents will be glad to help you!“

SHIPBUILDING–TURKU/FINLAND – ALEKSI

LIFTING–RECIFE/BRAZIL – PEDRO

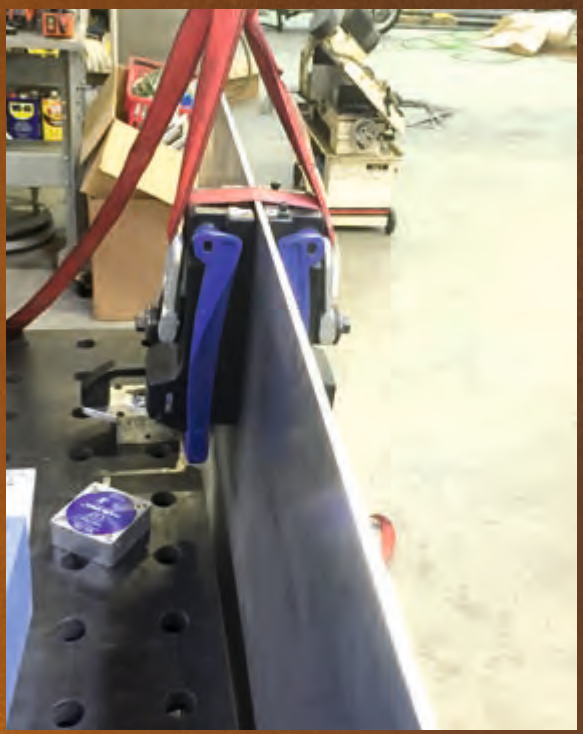
PLASMA CUTTING–MANCHESTER/UK – STEVE

CONTAINER CONSTRUCTION–WROCŁAW/POLAND – MAREK

METAL CONSTRUCTION–NUREMBERG/GERMANY – OLIVER

CUSTOM CONSTRUCTION– PRAGUE/CZECH REPUBLIC – PETR

HALL CONSTRUCTION– BLOOMFIELD/USA – RICARDO



MOULD CONSTRUCTION– SYDNEY/AUSTRALIA – ANDY

FRAME BUILDING– LINKÖPING/SWEDEN – ULF


MAGNETIC
SYSTEMS
PATENTED
US Patent No.
8350663B1
TML250

Lifting Magnet TML 250

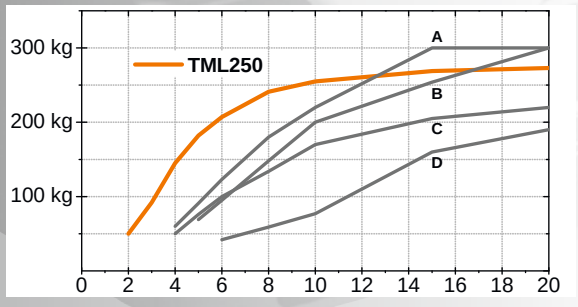
1. **Only 3.5 kg dead weight**
2. **Max. load-bearing capacity: 250 kg (with 3:1 safety factor)**
3. **360° rotatable and 180° pivotable load swivel**
4. **One-handed operation ('inside' steel beam possible)**

US Patent No. 8350663B1

- Up to 250 kg load-bearing capacity from a material thickness of 10 mm and 90 kg from just 3 mm material thickness on steel S235 plus 3:1 safety factor (i.e. the force that leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allowing for an enlarged operating range
- 360° rotatable and 180° pivotable load swivel
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TML 250:

- Dead weight: 3.5 kg
- Breakaway force: 750 kg
- Max. load-bearing capacity: 250 kg (with 3:1 safety factor)
- Length: 240 mm (closed lever), width: 91 mm, height: 191 mm (opened lever)
- Magnetic contact area: length: 135 mm, width: 65 mm



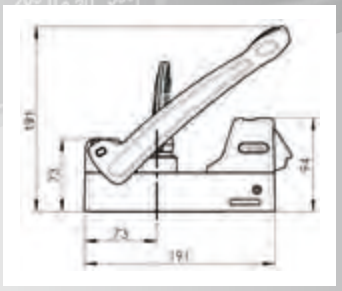
Competitors:

A: 300 kg Permanent magnet; 9 kg Dead weight

B: 300 kg Permanent magnet; 11 kg Dead weight

C: 250 kg Permanent magnet; 10 kg Dead weight

D: 250 kg Permanent magnet; 10 kg Dead weight



	Prod.-No.
ALFRA TML 250	41250


MAGNETIC
SYSTEMS
PATENTED
US Patent No.
8350663B1

Lifting Magnet TML 500

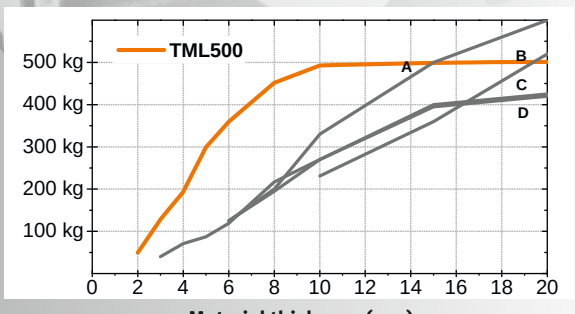
1. **Only 7.3 kg dead weight**
2. **Max. load-bearing capacity: 500 kg (with 3:1 safety factor)**
3. **360° rotatable and 180° pivotable load swivel**
4. **One-handed operation ('inside' steel beam possible)**

US Patent No. 8350663B1

- Up to 490 kg load-bearing capacity from a material thickness of 10 mm and 300 kg from just 5 mm material thickness on steel S235 plus 3:1 safety factor (i.e. the force which leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials (useable from as low as 2 mm)
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allowing for an enlarged operating range
- 360° rotatable and 180° pivotable load swivel
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

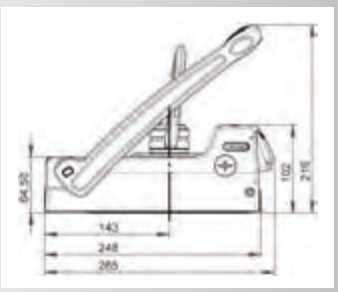
Technical data TML 500:

- Dead weight: 7.3 kg
- Breakaway force: 1500 kg
- Max. load-bearing capacity: 500 kg (with 3:1 safety factor)
- Max. load-bearing capacity during vertical lifts (90° inclination of the load): 150 kg (from 15 mm on S235 with 3:1 safety factor)
- Length: 295 mm (closed lever), width: 118 mm, height: 216 mm (opened lever)
- Magnetic contact area: length: 185 mm, width: 88 mm



Competitors:

A: 600 kg Permanent magnet; 22 kg Dead weight
B: 600 kg Permanent magnet; 24 kg Dead weight
C: 500 kg Permanent magnet; 20 kg Dead weight
D: 500 kg Permanent magnet; 8 kg Dead weight



	Prod.-No.
ALFRA TML 500	41500

Lifting Magnet TML 250 F

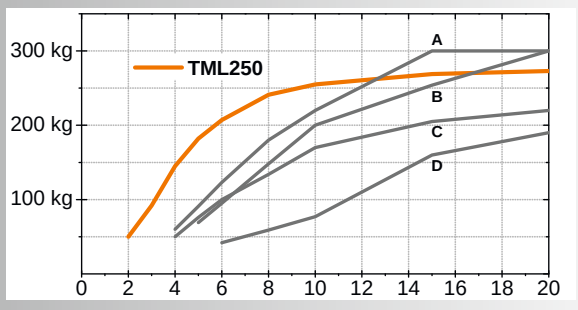
1. **Only 3.5 kg dead weight**
2. **Max. load-bearing capacity: 250 kg (with 3:1 safety factor)**
3. **One-handed operation ('inside' steel beam possible)**
4. **Ideal for use in spreader bars due to its rigid eye bolt**

US Patent No. 8350663B1

- Up to 250 kg load-bearing capacity from a material thickness of 10 mm and 90 kg from just 3 mm material thickness on steel S235 plus 3:1 safety factor (i.e. the force which leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allowing for an enlarged operating range
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

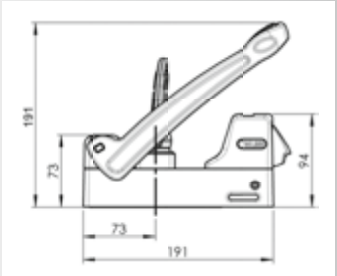
Technical data TML 250 F:

- Dead weight: 3.5 kg
- Breakaway force: 750 kg
- Max. load-bearing capacity: 250 kg (with 3:1 safety factor)
- Length: 240 mm (closed lever), width: 91 mm, height: 191 mm (opened lever)
- Magnetic contact area: length: 135 mm, width: 65 mm



Competitors:

- **A:** 300 kg Permanent magnet; 9 kg Dead weight
- **B:** 300 kg Permanent magnet; 11 kg Dead weight
- **C:** 250kg Permanent magnet; 10 kg Dead weight
- **D:** 250kg Permanent magnet; 10 kg Dead weight



	Prod.-No.
ALFRA TML 250 F	41250.F

Lifting Magnet TML 500 F

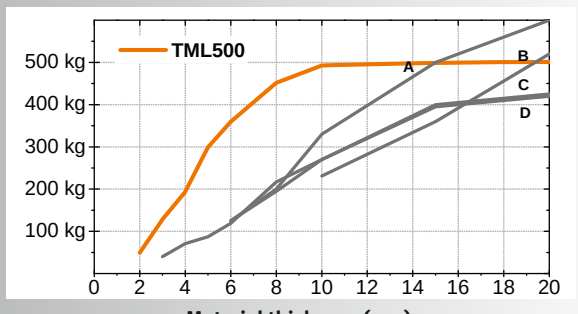
1. **Only 7.3 kg dead weight**
2. **Max. load-bearing capacity: 500 kg (with 3:1 safety factor)**
3. **One-handed operation (‘inside’ steel beam possible)**
4. **Ideal for use in spreader bars due to its rigid eye bolt**

US Patent No. 8350663B1

- Up to 490 kg load-bearing capacity from a material thickness of 10 mm and 300 kg from just 5 mm material thickness on steel S235 plus 3:1 safety factor (i.e. the force which leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials (useable from as low as 2 mm)
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allows for an enlarged operating range
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

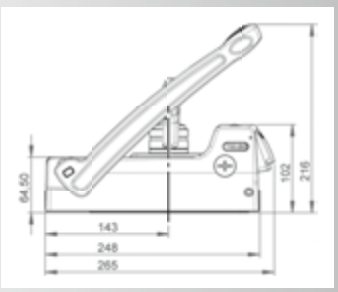
Technical data TML 500 F:

- Dead weight: 7.3 kg
- Breakaway force: 1500 kg
- Max. load-bearing capacity: 500 kg (with 3:1 safety factor)
- Length: 295 mm (closed lever), width: 118 mm, height: 216 mm (opened lever)
- Magnetic contact area: length: 185 mm, width: 88 mm



Competitors:

A: 600 kg Permanent magnet; 22 kg Dead weight
B: 600 kg Permanent magnet; 24 kg Dead weight
C: 500 kg Permanent magnet; 20 kg Dead weight
D: 500 kg Permanent magnet; 8 kg Dead weight



	Prod.-No.
ALFRA TML 500 F	41500.F


“Compact, lightweight and highly adhesive, even on thin steel sheets. I’ve finally found a drill stand with a permanent magnet that is suited to my applications and provides 100 % safety!“
Min. material thickness: only 2 mm
SP-V
MAGNETIC SYSTEMS
PATENTED
US Patent No. 8350663B1

Universal Magnetic Drill Stand SP-V

Variable clamps allow for the use of different drilling machines. This drill stand features a so-called Euro Collet Clamp and a permanent magnet allowing for the wireless use of battery-powered drilling machines and providing a nearly infinite operation range–from just 2 mm material thickness.

US Patent No. 8350663B1

SP-V	
Twist drill	Ø depending on drilling machine
Stroke	105 mm
Height adjustment	80 mm
Tool force (on 10 mm)/ magnetic holding force	2800 N / 8000 N
Tool force (6 mm S235)	2300 N
Magnetic base	72 x 190 mm
Weight	6.8 kg
Magnet	
TiN-coating	✔
Performance and weight optimisation	✔
Made in Germany	✔

Useable from just 2 mm due to permanent magnet

	Prod.-No.
ALFRA Universal Magnetic Drill Stand SP-V	18343

One magnet–endless possibilities

The TMC 300 is configurable in many different ways to suit ‚your' application. Connection threads on the top and the external sides provide maximum versatility.

1. Only 1 kg dead weight
2. Up to 300 kg load-bearing capacity (vertically)
3. Easy one-handed operation

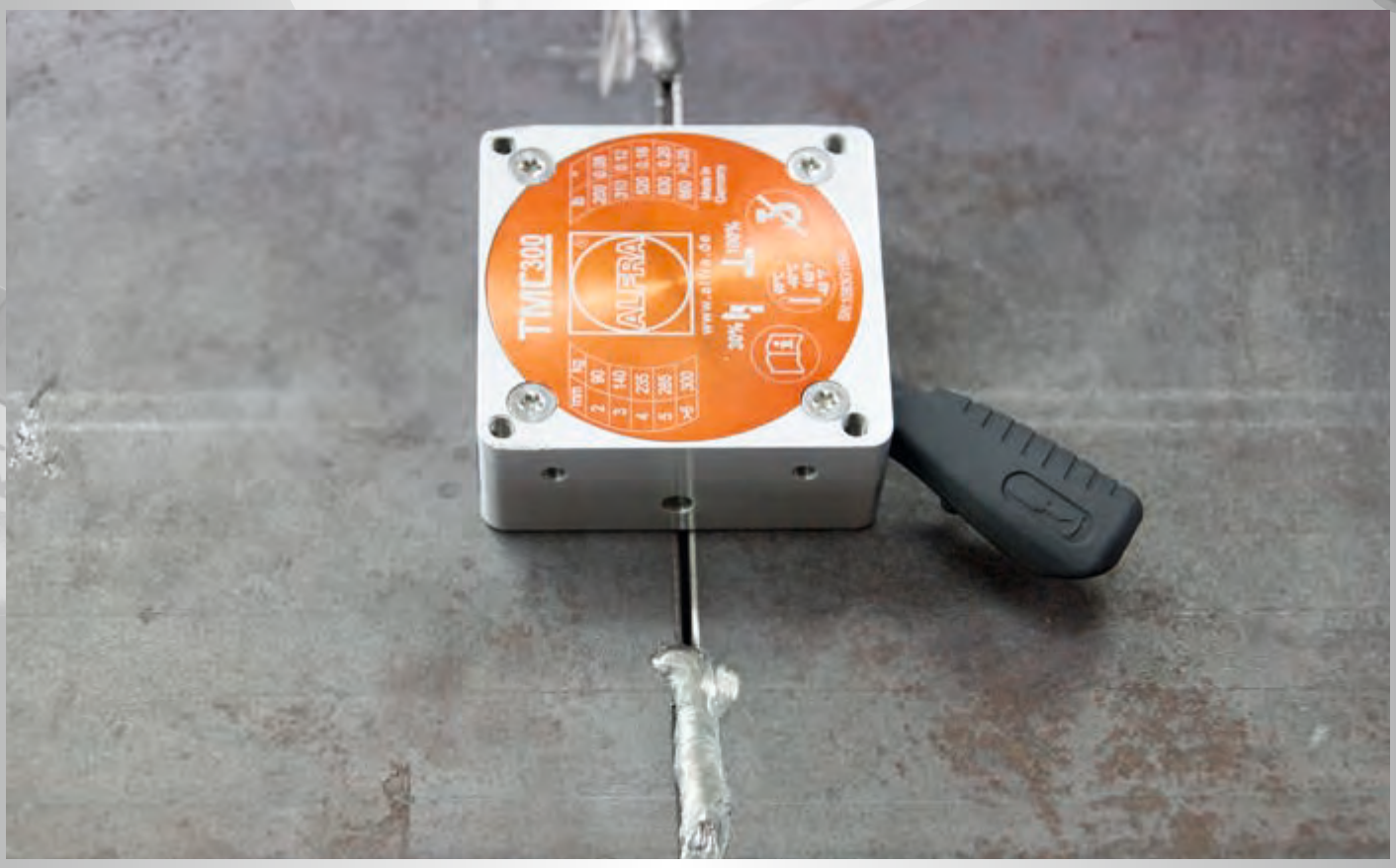
MAGNETIC SYSTEMS
PATENTED
US Patent No. 8350663B1

US Patent No. 8350663B1

- Excellent holding force up to 300 kg–even on a steel plate with 6 mm thickness only
- User-friendly one-handed operation thanks to ergonomic activation lever
- Connection threads (M5 and M6) on the top and the sides of the TMC 300 allow for the easy attachment of handling accessories such as cutting guides, angle side plates, handles, and much more
- Ideal tool to ease your work, e.g. during levelling of plates, platform construction, fixation, or any kind of clamping technique!
- The specially aligned magnetic field (patented) makes welding at a distance of 15 mm from the magnet's external side possible
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime
- Unbelievable shear force for better hold, especially during vertical applications

Technical data TMC 300:

- Dead weight: 1 kg
- Breakaway force: 300 kg (on 6 mm steel S235)
- Length: 82.5 mm; width: 80 mm; height: 32.5 mm



	Prod.-No.
ALFRA TMC 300	41100

Lifting Magnet TML 100

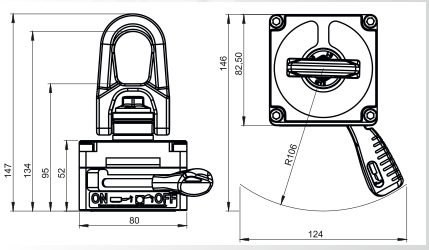
1. Only 1.7 dead weight
2. Max. load-bearing capacity: 100 kg (with 3:1 safety factor)
3. 360° rotable and 180° pivotable load swivel
4. Easy one-handed operation

US Patent No. 8350663B1

- Max. load-bearing capacity of 50 kg with 3 mm material thickness and 100 kg load-bearing capacity from just 6 mm (plus triple safety factor)
- Outstanding performance on thin-walled materials (operable from just 1 mm)
- 360° rotable and 180° pivotable load swivel–even under full load
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TML 100:

- Dead weight: 1.7 kg
- Breakaway force: 300 kg (on 6 mm steel S235)
- Max. load-bearing capacity during vertical lifts (90° inclination of the load): 30 kg (from 6 mm S235 with 3:1 safety factor)
- Length: 82.5 mm; width: 80 mm;
  height (load swivel in horizontal position): 85 mm,
  height (load swivel in vertical position): 147 mm



	Prod.-No.
ALFRA TML 100	41100.L

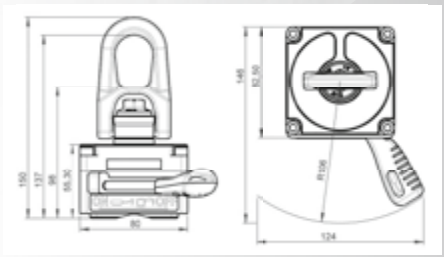
R With prism for pipes and curved surfaces
Lifts pipes from 25 mm to 200 mm in diameter

1. Only 1.8 kg dead weight
2. Max. load-bearing capacity: 90 kg (with 3:1 safety factor)
3. 360° rotatable and 180° pivotable load swivel
4. Easy one-handed operation

MADE IN GERMANY

US Patent No. 8350663B1

- Lifts pipes from 25 mm to 200 mm in diameter
- Outstanding performance on thin-walled materials (operable from just 1 mm)
- 360° rotable and 180° pivotable load swivel–even under full load
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime



Technical data TML 90 R:
- Dead weight: 1.8 kg
- Breakaway force: 270 kg (on 6 mm steel S 235)
- Max. load-bearing capacity with round pipes: 20 - 50 % of the load-bearing capacity on flat material (see TML 100), depending on pipe diameter and material thickness
- Length: 82.5 mm; width: 80 mm;
  height (load swivel in horizontal position): 88 mm
  height (load swivel in vertical position): 150 mm

	Prod.-No.
ALFRA TML 90 R	41100.L.R

Lifting Magnet TML 100 F

1. **Only 1.6 kg dead weight**
2. **Max. load-bearing capacity: 100 kg (with 3:1 safety factor)**
3. **Easy one-handed operation**
4. **Ideal for use in spreader bars due to its rigid eye bolt**

US Patent No. 8350663B1

- Max. load-bearing capacity of 50 kg with 3 mm material thickness and 100 kg load-bearing capacity from just 6 mm (plus triple safety factor)
- Outstanding performance on thin-walled materials (useable with thicknesses as low as 1 mm)
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TML 100 F:
- Dead weight: 1.6 kg
- Breakaway force: 300 kg (on 6 mm steel S235)
- Max. load-bearing capacity: 100 kg (with 3:1 safety factor)
- Length: 82.5 mm; width: 80 mm; height: 118 mm

	Prod.-No.
ALFRA TML 100 F	41100.L.F

Manual Lifting Magnet TMH 50

1. Only 1.6 kg dead weight
2. Large, stable handle

US Patent No. 8350663B1

- Up to 50 kg load-bearing capacity on a steel sheet S235 with a thickness of just 3 mm
- Protects hands and fingers from hot and sharp-edged steel
- A must have for everyone who needs to move welding parts from one place to another (max. temperature: 60°)
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TMH 50:

- Dead weight: 1.6 kg
- Max. load-bearing capacity on flat material: 50 kg (on 3 mm steel S235)
- Max. load-bearing capacity during vertical lifts: 35 kg (on 3 mm steel S235)
- Length: 126 mm; width: 80 mm; height: 100 mm (incl. lever: length 190 mm, width 124 mm)

	Prod.-No.
ALFRA TMH 50	41100.H

Manual Lifting Magnet TMH 50 R

1. Only 1.6 kg dead weight
2. Large, stable handle

R With prism for pipes and curved surfaces
Lifts pipes from 25 mm to 200 mm in diameter

- Lifts pipes from 25 mm to 200 mm in diameter
- Protects hands and fingers from hot and sharp-edged steel
- A must have for everyone who needs to move welding parts from one place to another (max. Temperature: 60°)
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TMH 50 R:

- Dead weight: 1.6 kg
- Max. load-bearing capacity on round pipes: 20 - 50 % of flat material (see TMH 50), subject to pipe diameter and material thickness
- Length: 126 mm; width: 80 mm; height: 100 mm (incl. lever: length 190 mm, width 124 mm)

	Prod.-No.
ALFRA TMH 50 R	41100.H.R

Adjustable Welding Angle TMA 600

1. Only 2.7 kg dead weight
2. Infinitely adjustable from 0° to 90°
3. Including two TMC 300 Magnetic Clamps providing a max. holding force of up to 2 x 300 kg (perpendicular to the magnetic contact area)

MADE IN GERMANY

US Patent No. 8350663B1

- Highly adjustable angle side plates with a range from 0° to 90° for holding and welding workpieces
- Quick clamping levers for easy fixation/adjusting
- A must have for everyone who needs to weld heavy workpieces together at different angles
- Lightweight, easy and trouble-free handling
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TMA 600:

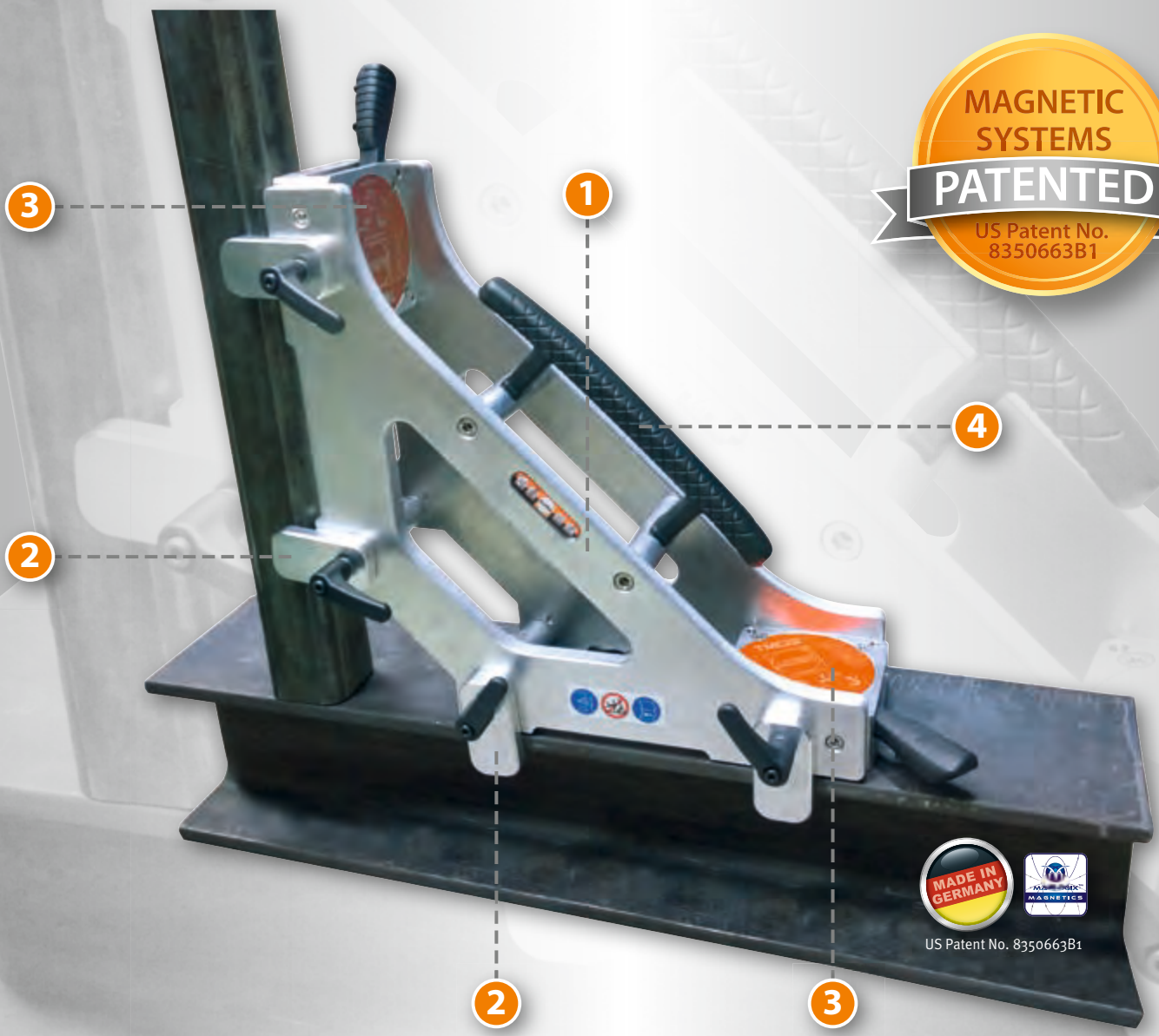
- Breakaway force: 300 kg per TMC 300 (on 6 mm steel S235)
- Shear force: up to 100 kg
- Dead weight: 2.7 kg
- Length: 162 mm; width: 124 mm; height: 223 mm

	Prod.-No.
ALFRA TMA 600	41100.A

Fixed Welding Angle TMA 600 FXL

High performance, lightweight–the TMA 600 represents the ideal Positioning Magnet for an optimum 90° alignment of components in steel and metal construction!

1. **Only 4.7 kg dead weight**
2. **Foldaway lateral stops for optimum, linear alignment**
3. **Including two TMC 300 Magnetic Clamps providing a max. load capacity up to 2 x 300 kg, operable from just 1 mm**
4. **Large, sturdy handle**



MAGNETIC SYSTEMS PATENTED
US Patent No. 8350663B1

MADE IN GERMANY

US Patent No. 8350663B1

- Extremely warp-resistant, light frame made of high-quality aluminium
- Optimal positioning and safe handling due to extra large, ergonomic, and slip-proof handle
- Additional support along the magnetic area for more precision, even when working with long, heavy workpieces
- A lot of space for safe and comfortable fillet welding
- Four adjustable lateral stops allowing for the alignment of even long work pieces in a way that is linearly and dimensionally stable
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TMA 600 F XL:
- Weight: 4.7 kg
- Width: max. 145 mm (without stop: 103 mm)
- Height: 355 mm
- Length: 355 mm

	Prod.-No.
ALFRA – TMA 600 F XL	41160.F.XL

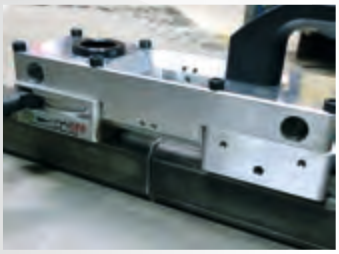
Levelling/Positioning Magnet TMP 600 MP

Extremely lightweight Positioning Magnet for all purposes with the highest requirements during alignment of metal plates and other components at the same level. The ideal tool for use in steel, container, and metal construction.

1. **Only 6.0 kg dead weight**
2. **Can take a load up to 600 kg and is operable from just 1 mm**
3. **Can be upgraded to a 'small welding bench' with the use of different supplements**

MADE IN GERMANY

US Patent No. 8350663B1



Explore maximum functionality with minimum effort: Additional components of this easy to use magnet eliminate the need for a welding bench. This magnet allows for the ideal, free and flexible positioning of plane steel sheets from just 1 mm thickness.

- Very stable connecting plate (25 mm) made of high performance aluminium for the precise alignment of components–even with heavy workpieces
- Multiple functions combined in one tool:
  - Picking up and transporting workpieces
  - Positioning assistance during welding
- The first magnet is used to pick up a workpiece, move it to another welding piece, position it and align it while the second magnet fixes it tightly in this position
- Welding is then possible on the left or right side or through the hole in the middle. A fine and precise weld formation is also possible between the magnets
- The minimum distance from the magnet for welding is only 10 - 15 mm depending on the material thickness since the patented magnetic system hardly disrupts the arc
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data (without accessories):
- Weight: 6.0 kg
- Length: max. 344 mm (incl. lever)
- Width: 200 mm
- Height: 115 mm

Optional:
- Replaceable sockets with Ø 16 mm and 28 mm fit all common welding bench clamping systems
- Plug-in supports for maximum gripping pressure under the screw clamp:
  - Max. 400 kg / 4000 N at a 20 mm distance to the side edge
  - Max. 300 kg / 3000 N at a 40 mm distance to the side edge
  - Max. 175 kg / 1750 N at a 180 mm distance to the side edge

The new TMP system offers a multitude of different combination options for positioning workpieces quickly and safely in different arrangements.

Technical data (with accessories):
- Weight: 6.5 kg
- Length: max. 344 mm
- Width: 200 mm
- Height: 115 mm

	Prod.-No.
ALFRA TMP 600 MP	41160.MP

Positioning Magnet Mag-Pry® 300

The Mag-Pry® 300 is an indispensable assistant for aligning steel plates or sheet metal covering which need to be welded together at the same level.
The perfect tool for professionals in container, mould and plate construction and in shipyards.

1. Only 2.27 kg dead weight
2. Long, stable lever arm
3. Solid support for perfect pressing
4. 300 kg holding force

MADE IN GERMANY

US Patent No. 7.587.800B2
US Patent No. 8.240.017B2

Technical data MagPry® 300:

- Prying force: 200 kg (on 3 mm steel S235)
- Height (vertical): 505 mm
- Height (horizontal): 564 mm
- Width (outside edge lever arm to bottom edge support): 79 mm
- Width: 139 mm
- Depth: 80 mm
- Weight: 2.27 kg

	Prod.-No.
ALFRA Mag-Pry®	41100.pry

Magnetic Sweeper

1. Adjustable telescopic handle
2. Max. capacity: 9 kg

- For quick and easy cleaning of floors in different working areas
- Pull capacity up to 9 kg
- Easy removal of the collected metal parts thanks to easy release mechanism on the handle
- Sweeping width: 400 mm
- Telescopic handle adjustable from 750 to 1050 mm

	Prod.-No.
ALFRA Magnetic Sweeper	18655

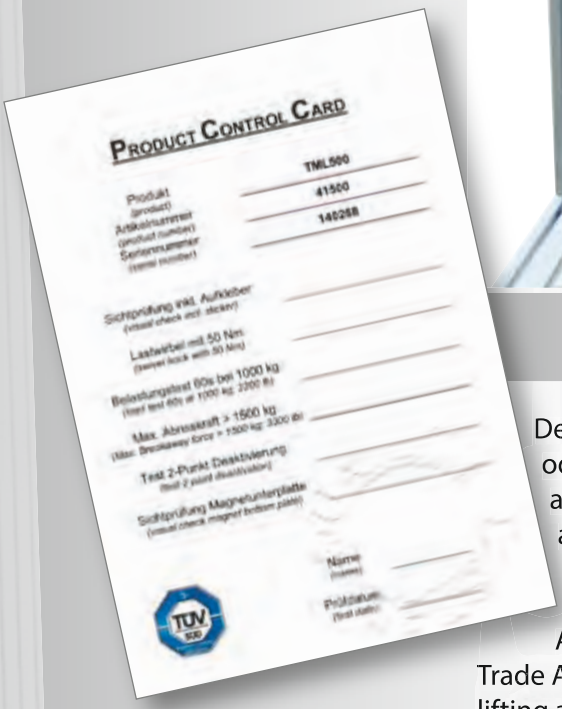
Magnetic Swarf Remover

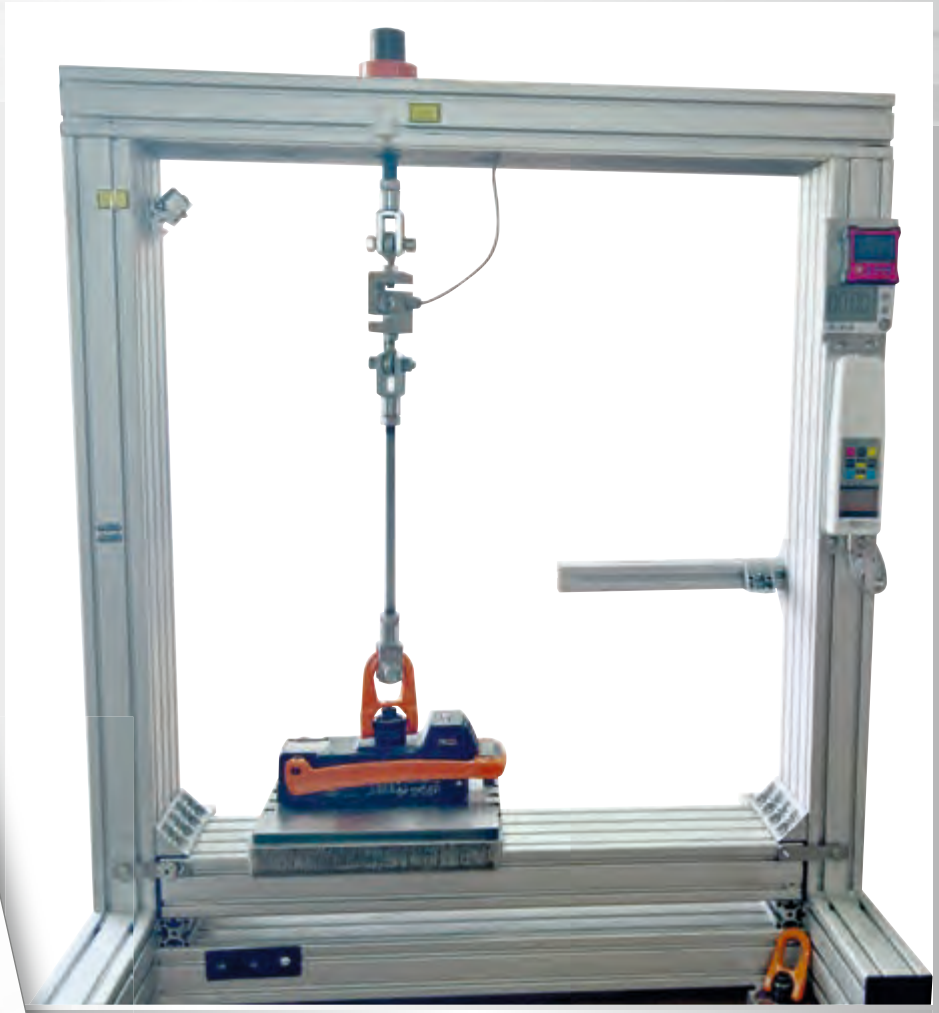
1. Telescopic handle for the release and removal of debris
2. Sturdy rubber handle
3. Strapper and protection from injury

- Move a magnet inside a stainless round bar up and down and the highly adhesive magnet attracts metal swarf. Then pull the button–swarf fall down
- More cleanness on the workplace
- Magnetic Swarf Remover, length: 400 mm

	Prod.-No.
ALFRA – Magnetic Swarf Remover	18654

Service and Inspections Carried out by the Manufacturer in Accordance with Legal Requirements





TÜV-CERTIFIED TESTING STATION IN OUR PRODUCTION SITE IN BERLIN

Despite utmost care and periodic maintenance, magnets are subject to permanent wear and tear and require regular inspections.

According to the German Trade Association Regulation 500, lifting accessories must be inspected once a year by a competent person (see BGR 500, chapter 2.8 „Operation of Lifting Accessories used with Lifting Machinery“).
We will be glad to assume the annual inspection for you first-hand and guarantee that it will be performed quickly, cost-effectively and in accordance with legal requirements.

Our engineers will evaluate your magnet with the highest possible professional expertise and repair it if necessary.

Our sales agents will be pleased to make an appointment for you. You may also send us an email:

TML-Test@alfra.de

Interesting Facts about TML/TMC Magnets
Frequently Asked Questions

1. What is the highlight of the new magnets?
Whether it is a Lifting Magnet, Positioning Magnet or a Welding Angle–magnets made by ALFRA are distinguishable due to their innovative design and provide outstanding performance and infinite new application possibilities. The patented magnetic system eliminates scattering losses and the magnet generates an extremely compact magnetic field.
A particular highlight is that the magnets are lightweight: A TML or TMC magnet easily and effortlessly achieves a lifting force that conventional lifting magnets can only reach with three times (if at all) the amount of dead weight. Another reason to choose an ALFRA Lifting Magnet is that TML and TMC magnets attain an excellent performance even on thin material–with a minimum thickness of only 1 mm!

2. How do I know how much the magnets can lift?
An illustrative graph can be found on the magnet's label indicating its load-bearing capacity, dependent upon the material's thickness. For detailed information on the load-bearing capacity of TML magnets and the factors that influence it, please refer to the operating instructions of your Lifting Magnet.
The TML 250 can for example safely lift 50 kg of steel at a thickness of 2 mm and 240 kg of steel at a thickness of 8 mm. A safety factor of 3:1 is always included. That means that, in fact, the magnet could lift 150 kg of steel at a thickness of 2 mm and 720 kg of steel at a thickness of 8 mm before it breaks away. The 3:1 safety factor is required by law. Be sure to work within the safety measures of the lifting scale and observe the performance data and safety instructions of the operating manual.

3. What do the terms *residual magnetism* and *pretension* mean?
These terms describe a reduced magnetic field that the magnet generates even when it is not activated. This pretension allows the customer to attach the magnet onto a vertical surface or even over his head and align the magnet without it falling off.
Thus, he can move the magnet to the perfect position for an optimum lifting process before pushing the activation lever down.

4. What is an *air gap*?
The small distance that may form between the magnetic contact area and the surface of the workpiece is referred to as an air gap. It may for instance occur due to a deformation of the material during the lifting process. An air gap that is too big will result in the breakaway of the magnet from the material surface. Therefore the entire magnetic contact area should rest on a plane surface of the material being lifted.

5. What is the advantage of the tight-fitting activation lever of the TML 250 and the TML 500?
The activation lever of conventional magnets protrudes at an angle of 90 degrees and sticks out to the side of the magnet–in most cases by several centimeters/inches. For this reason, the magnet can only be attached to areas that are wide enough for the protruding lever.
Due to its special design, the stable activation lever of the ALFRA TML magnets, TML 250 and TML 500, rests closely against the magnet housing. As the lever of the TML magnet is parallel to the base body of the magnet, it allows for the easy and effortless attachment of the magnet to narrow areas e.g. between I-beams.

6. Why is the bottom plate of ALFRA magnets hardened and coated?
The magnetic contact area is located on the underside of the magnet. The installed permanent magnets generate an extremely powerful magnetic field to ensure an optimum magnetic adhesion.
High-quality, specially hardened steel with approx. 450 HV 30 (approx. 1400N/mm2) prevents damage to the magnetic contact area and protects it from wear and tear. A TiN-coating by means of 2500 HV 0.05 additionally increases the durability of the magnetic contact area. For this reason, ALFRA magnets provide a long service life. However, this is not the only benefit. In contrast to conventional magnets, the bottom plate of the TML and TMC magnets no longer needs to be regrinded.

7. What is a magnetic *shearing stroke*?
The term shearing stroke describes the vertical lifting of a work piece. The most common kind of shearing stroke is the sidelong vertical lifting of steel sheets or thin steel beams from a stack.
Due to this, the Lifting Magnet is able to vertically lift the work piece up to 90°. In contrast to conventional magnets, the TML Lifting Magnet even allows for the lifting of a 4 mm thick single steel sheet from a stack. This means that the magnet's attractive force will not be exerted onto the subjacent work piece. With an ALFRA TML magnet, the so-called 'sticking together' of two work pieces now belongs in the past.

8. Can rust or paint reduce the magnet's load capacity?
Magnetic Clamps and Lifting Magnets also achieve an excellent adhesive force even on rusty, lacquered or powder-coated surfaces. For detailed information on the performance of your TMC or TML magnet please refer to the operating instructions.

9. What is the impact of extreme temperature on TML/TMC magnets?
Even high temperatures of up to 60°C have no impact on the performance of our TML and TMC magnets. At temperatures above 60°C or in the event of heat generation near the magnet (e.g. during welding), the integrated high performance permanent magnets may be damaged. For this reason the magnet should be removed from the heat source as quickly as possible.

Low temperatures do not decrease the performance of your magnet either since the magnetic molecules align simultaneously in one direction (and thus maintain the magnetic field). Although the magnet slowly loses its lifting power at -150°C, the use of TML/TMC magnets at low temperatures must be restricted due to certain components:
Components made of aluminum or plastic for example become brittle and may break at a temperature below -30°C. The grease does not endure very low temperatures and may become hard. To ensure a long service life and the safety function of your ALFRA magnet, TMC magnets may only be used up to -30°C maximum and TML magnets up to 10°C maximum.

10. Why do TML and TMC magnets have different operating temperatures?
The Lifting Magnets TML 250 and TML 500 are equipped with a special safety tab whose proper function may be limited at very low temperatures. The TML 500 is additionally equipped with a special feature–a hydraulic damper. Thanks to the integrated variable damper the user can adjust the recoil energy according to the desired requirements. As the oil inside the damper loses its viscosity with decreasing temperature, the magnet must not be used below -10°C. TML and TMC models without a safety tab and variable damper may still operate up to -30°C.

11. Does the magnet require examination after a certain period of time?
Lifting accessories such as our TML magnets must be checked regularly. This includes particularly an annual inspection of the triple safety factor. Maintenance and care of the magnets are subject to country-specific regulations and standards. In Germany regular inspections are prescribed by sec.3, subs.3 of the German Ordinance on Industrial Safety and Health (BetrSichV). The examination of the triple safety factor must be performed once a year by a competent person according to the German Trade Association Regulation BGR 500. The operator is responsible for the adherence to the regular inspection of the magnet. Always observe the regulations in your country. Clamping Magnets such as the TMC 300 must not be used for the lifting or transportation of loads and thus do not require an annual examination.

12. Who is allowed to perform the inspection?
According to the Trade Association Regulation 500 (chapter 2.8: sec.3.15), the employer determines the requirements that the person carrying out the inspection must fulfill ('competent person').
They can be experts such as engineers, machine and crane foremen or specially trained persons provided that they possess adequate knowledge as well as sufficient experience of slings and lifting accessories and are familiar with the relevant national occupational health and safety regulations, trade association regulations and generally accepted rules of technology (e.g. BGR regulations, DIN- EN-standards, DIN-standards, ISO standards).
Furthermore, the examination of the triple safety factor for the Lifting Magnet requires a special pull-off unit which is equipped with calibrated test equipment. We would be happy to perform the inspection of your ALFRA lifting accessories for you at our premises.

13. Can loads also be lifted vertically?
Due to the innovative ALFRA Magnetic System, the vertical lifting of loads is no longer a problem. In particular, the TML 500 is an excellent device to lift components vertically. The magnet's load swivel (also called load hook) is pulled up vertically by means of a flexible soft eye, following the direction of the force action, and lies close to the level housing of the TML magnet.

14. Which forces act during a vertical lift?
There are some particularities to note in terms of the vertical lifting of loads. If the load and the magnet surface tilt at an angle other than 0° to horizontal, the load-bearing capacity decreases due to the new alignment of the magnet to the gravity of Earth. As soon as the load is suspended vertically, i.e. at an angle of 90°, friction will be the only effect exerted by the magnet. Depending on the material being lifted this is not more than 10 - 35% of the maximum load-bearing capacity.
Further information on the use of TML magnets during pivoting or vertical lifting can be found in the operation manual of your ALFRA magnet. All information and safety instructions contained in the operation manual must be closely observed.

15. Are the magnets only suitable for the lifting of loads?
The wide range of ALFRA magnets includes a multitude of applications that go far beyond the lifting of loads. For example, TML magnets are ideally suited to shearing loads. Moreover, magnets made by ALFRA also represent the ideal tools to facilitate your work if you want to align, position or join ferromagnetic workpieces.

Visit ALFRA on Youtube and discover a multitude of interesting applications: simply type the product name and ALFRA to be convinced of the benefits of our permanent magnets!

We wish you much joy and success when using our products.

ALFRA - Your Alfred Raith GmbH

This catalogue was created with the greatest possible care. All technical data and information was verified before printing.
For reasons of continuous improvement and development of the ALFRA production program, we reserve the right to modify or even remove products in this catalogue from our delivery program. For this reason technical data and products which are contained in this catalogue may vary without prior notification.

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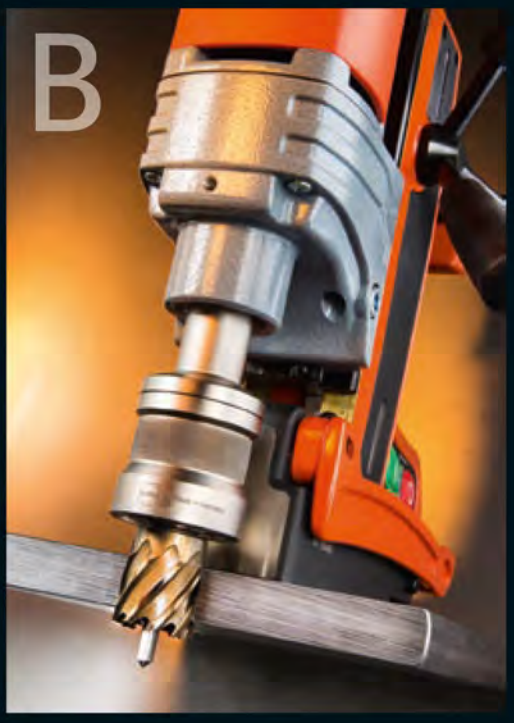

10/2016

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ALFRA®

www.alfra.de

PUNCHING DRILLING LIFTING CUTTING DEBURRING

D/2016 EN

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The History about the Cover Picture

ALFRA is expert for holes. This may initially sound a bit strange, but also very simple.
In fact, we deal with various techniques and tools for more than 40 years to realize cut-outs into different materials in a preferably precise and simple way.
The product pictured on the cover page is one of our classics: the carbide-tipped Hole Saw.
You may claim, without exaggeration, that they were often copied, but never achieved.

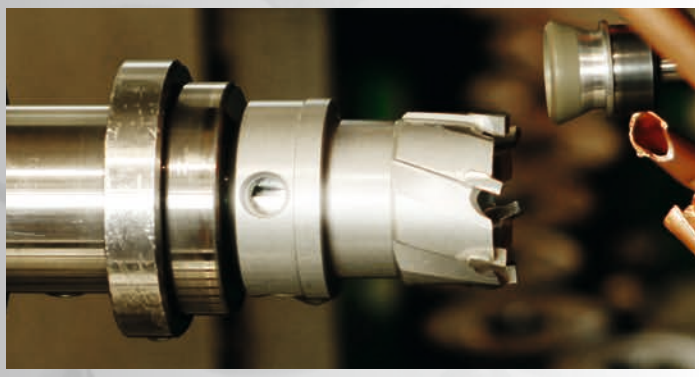
Basis for our tools are optimized base materials for the blanks as well as best and balanced qualities for the carbide teeth. Tapered center drills for effort-saving spot drilling without drifting as well as ejector springs for an autonomous compulsion of the drilled-out part are additonal specialties.

The use of our TCT Hole Saws in steel, stainless steel, aluminum, plastic and many other materials results in circular, precise holes within tolerances. Over a long period we have developed this product further and made it to a product which, nowadays, users appreciate around the world.
For just making any hole there are alternatives.
However, for making exact, process-reliable, ergonomic and safe cut-outs with repeated accuracy, there is no way to come around TCT Hole Saws "Made in Germany", "Made by ALFRA".

In this catalogue you will find many articles of the same quality standards which will ease your everyday work and help you to deliver a clean work result. For professionals achieve the best results only with professional tools.

Have a good time and we wish you lots of pleasure when using our products!

Yours, Alfred Raith GmbH from Hockenheim/Germany.



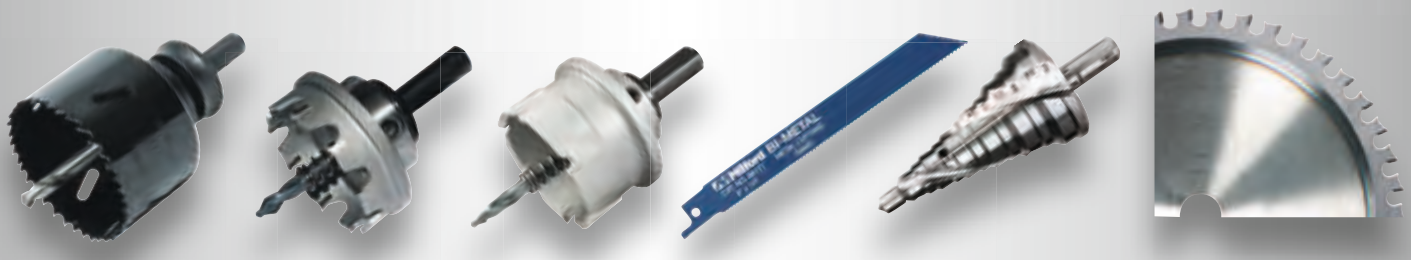
Over the last 4 years we have reduced our CO_2 emissions by almost 400 tonnes!
We have produced 600 megawatt-hours of power for our own use!

Only if you manufacture in-house, can you control and shape the entire manufacturing process.

We have consistenly implemented a resource-saving approach to our environment into daily practice in recent years and developed a heightened awareness of "what comes from where" and how to effectively make use of these valuable resources.
With the use of alternative energy, i.e. photovoltaics, we have achieved almost climate-neutral production process in recent years.

And lest we forget: we are, of course, certified according to ISO Standards since 1997!
This means that you can feel good about our tools – not just because they are so technically advanced and are so durable.

But also because the entire production cycle has been carefully designed to ensure that our tools won't leave any traces which could pollute the environment or leave problems for the generations that will follow us.



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GREEN ENERGY

TÜVRheinland® CERT ISO 9001

Cutting Tools

Hole Saws
HSS-Bi-Metal/Sets

Page 6 - 10

TCT-Hole Saws
Short Type

Page 11 - 15

TCT-Hole Saws
Long Type

Page 16 - 17

TCT-Hole Saws
MBS-Light

Page 18 - 19

TCT-Hole Saws
MBS-Pro

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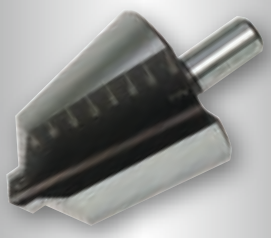
TCT-Hole Saws
FRP Type

Page 22 - 23

Precision
Multi-Step Drills

Page 25 - 27



Precision Conical
One-Lip Bits

Page 28

Welding Point Drills

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Countersink Tools

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Sabre Saw Blades

Page 32 - 34

Special-Jigsaw Blades

Page 35

ALFRA HSS-Bi-Metal Hole Saws

Features:

- High concentricity
- With solid base plate, thus more threads and higher stability as well as concentric running exactness.
- For material from 2 mm – with positive chipping and cutting angles as well as combi-toothing 4/6 tpi. This variable spacing provides a more even cut, for a minor generation of vibrations and heat. Lower expenditure of energy when cutting.
- Cutting Depth: 38 mm (1-1/2").
- Lateral slots help to remove the core.
- Suitable for unalloyed steel (up to 700 N/mm²), nonferrous metals, light metals, plastics, gypsum, pulp wood- and plywood boards, lightweight building boards and general wood processing.
- Drill bit exchangeable with other commercially available arbors.

Also steel/stainless steel up to approx. 3 mm, can be worked easily (for frequent use, we recommend our TCT Hole Saws).

... designed to work on softwoods.

ALFRA – HSS-Bi-Metal Hole Saws

ALFRA HSS-Bi-Metal Hole Saws are applicable in portable and pillar drilling machines. When using pillar drilling machines, use manual feed only.

Features:

- High concentricity.
- With solid base plate, thus more threads and higher stability as well as concentric running exactness.
- With positive chipping and cutting angles as well as combi-toothing 4/6 tpi. This variable spacing provides a more even cut, for a minor generation of vibrations and heat. Lower expenditure of energy when cutting.
- Cutting Depth: 38 mm (1-1/2").
- Lateral slots help to remove the core.
- Suitable for unalloyed steel (up to 700 N/mm²), nonferrous metals, light metals, plastics, gypsum, pulp wood- and plywood boards, lightweight building boards and general wood processing.
- Drill bit exchangeable with other commercially available arbors.

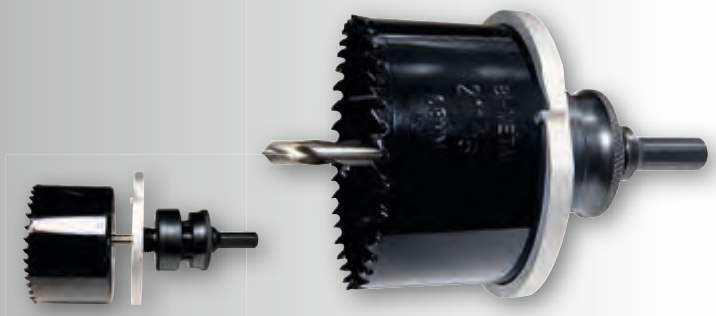
Tip:
Start drilling operation with light pressure. Continue with light and steady pressure, avoid pendulum motion, follow the speed chart, use coolant. When cutting wood or wood substitutes, remove drill dust in time.

Combi toothing 4/6 tpi

from Ø 14.0 to 210 mm available

Saw-Ø mm	Inches	Prod.-No.
14.0	9/16"	0500014
16.0	5/8"	0500016
17.0	11/16"	0500017
19.0	3/4"	0500019
20.0	15/19"	0500020
21.0	13/16"	0500021
22.0	7/8"	0500022
24.0	15/16"	0500024
25.0	1"	0500025
27.0	11/16"	0500027
29.0	1-1/8"	0500029
30.0	1-3/16"	0500030
32.0	1-1/4"	0500032
33.0	1-5/16"	0500033
35.0	1-3/8"	0500035
37.0	1-7/16"	0500037
38.0	1-1/2"	0500038
40.0	1-9/16"	0500040
41.0	1-5/8"	0500041
43.0	1-11/16"	0500043
44.0	1-3/4"	0500044
46.0	1-13/16"	0500046
48.0	1-7/8"	0500048
51.0	2"	0500051
52.0	2-1/16"	0500052
54.0	2-1/8"	0500054
57.0	2-1/4"	0500057
59.0	2-5/16"	0500059
60.0	2-3/8"	0500060
64.0	2-1/2"	0500064
65.0	2-9/16"	0500065
67.0	2-5/8"	0500067
68.0	2-11/16"	0500068
70.0	2-3/4"	0500070
73.0	2-7/8"	0500073

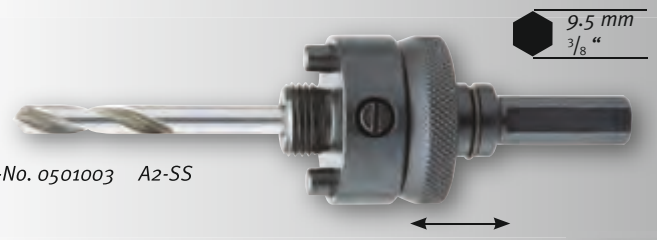
Saw Ø mm	Inches	Prod.-No.
74.0	2-11/12"	0500074
76.0	3"	0500076
79.0	3-1/8"	0500079
83.0	3-1/4"	0500083
86.0	3-3/8"	0500086
89.0	3-1/2"	0500089
92.0	3-5/8"	0500092
95.0	3-3/4"	0500095
98.0	3-7/8"	0500098
102.0	4"	0500102
105.0	4-1/8"	0500105
108.0	4-1/4"	0500108
111.0	4-3/8"	0500111
114.0	4-1/2"	0500114
121.0	4-3/4"	0500121
127.0	5"	0500127
140.0	5-1/2"	0500140
152.0	6"	0500152
From Ø 160.0 mm only suitable for wood and wood substitutes.		
160.0	6-5/16"	0500160
168.0	6-10/16"	0500168
177.0	7"	0500177
210.0	8-5/16"	0500210



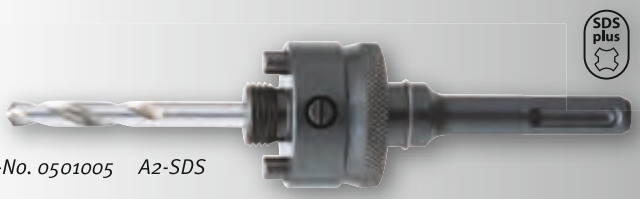
Prod.-No. 0501013 with bi-metal hole saw Ø 68 mm + A2-SS

Prod.-No. 0501001 A6-SS

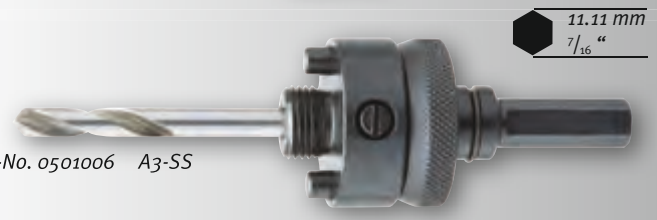
Prod.-No. 0501002 A6-SDS



Prod.-No. 0501003 A2-SS



Prod.-No. 0501005 A2-SDS



Prod.-No. 0501006 A3-SS

Prod.-No. 0501013

Arbors

with pilot drill

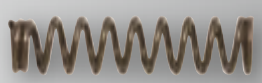
Saw-Ø mm	Saw-Ø inch	Type	Shank-Ø		Prod-No.
14 - 30	9/16" - 1-3/16"	A 6-SS	9.5	hexagon	0501001
14 - 30	9/16" - 1-3/16"	A 6-SDS	SDS		0501002
32 - 152	1-1/4" - 6"	A 2-SS	9.5	hexagon	0501003
32 - 152	1-1/4" - 6"	A 2-SDS	SDS		0501005
32 - 210	1-1/4" - 8-5/16"	A 3-SS	11.11	hexagon	0501006
32 - 210	1-1/4" - 8-5/16"	A 5-SS	16.0	hexagon	0501008

Prod.-No. 0501010

Accessories:

Rim countersink for Ø 68 mm (with TCT-teeth)	0501013
Extension shaft 300 mm x 9.5 mm for A 6-SS + A 2-SS, A3-SS	0501010
Spare Center Drill HSS Ø 6.35 mm x 80 mm for A 6-SS + A 6-SDS + A 2-SS + A 2-SDS + A 3-SS + A 5-SS	0502001
Ejector Spring	0502004

Prod.-No. 0502001



Prod.-No. 0502004

Important: Disable impact drill position when using SDS-shanks!

ALFRA – HSS Bi-Metal Hole Saw Sets

The following HSS-Bi-Metal Hole Saw Sets enlarge our range. These sets were especially compiled for electricians, mechanics, plumbers and for general, universal applications. These sets improve the presentation. Storage in solid tool cases.

Hole Saw Set Standard

Prod.-No. 0503006

Contents:
Ø 16 mm (5/8")
Ø 19 mm (3/4")
Ø 22 mm (7/8")
Ø 29 mm (1-1/8")
Ø 35 mm (1-3/8")
Ø 44 mm (1 3/4")
Ø 52 mm (2-1/16")
Ø 57 mm (2-1/4")
Ø 67 mm (2-5/8")
Arbor A6-SS, Arbor A2-SS, Spare Twist Drill

Prod.-No. 0503006

Hole Saw Set Professional

Prod.-No. 0503007

Contents:
Ø 16 mm (5/8")
Ø 19 mm (3/4")
Ø 22 mm (7/8")
Ø 25 mm (1")
Ø 29 mm (1-1/8")
Ø 32 mm (1-1/4")
Ø 35 mm (1-3/8")
Ø 38 mm (1-1/2")
Ø 44 mm (1-3/4")
Ø 51 mm (2")
Ø 64 mm (2-1/2")
Ø 76 mm (3")
Arbor A6-SS, Arbor A2-SS, Spare Twist Drill

Prod.-No. 0503007

Hole Saw Set Electro

Prod.-No. 0503008

Contents:
Ø 22 mm (7/8")
Ø 29 mm (1-1/8")
Ø 35 mm (1-3/8")
Ø 44 mm (1-3/4")
Ø 51 mm (2")
Ø 64 mm (2-1/2")
Ø 68 mm (2-11/16")
Arbor A6-SS, Arbor A2-SS, Spare Twist Drill

Prod.-No. 0503008

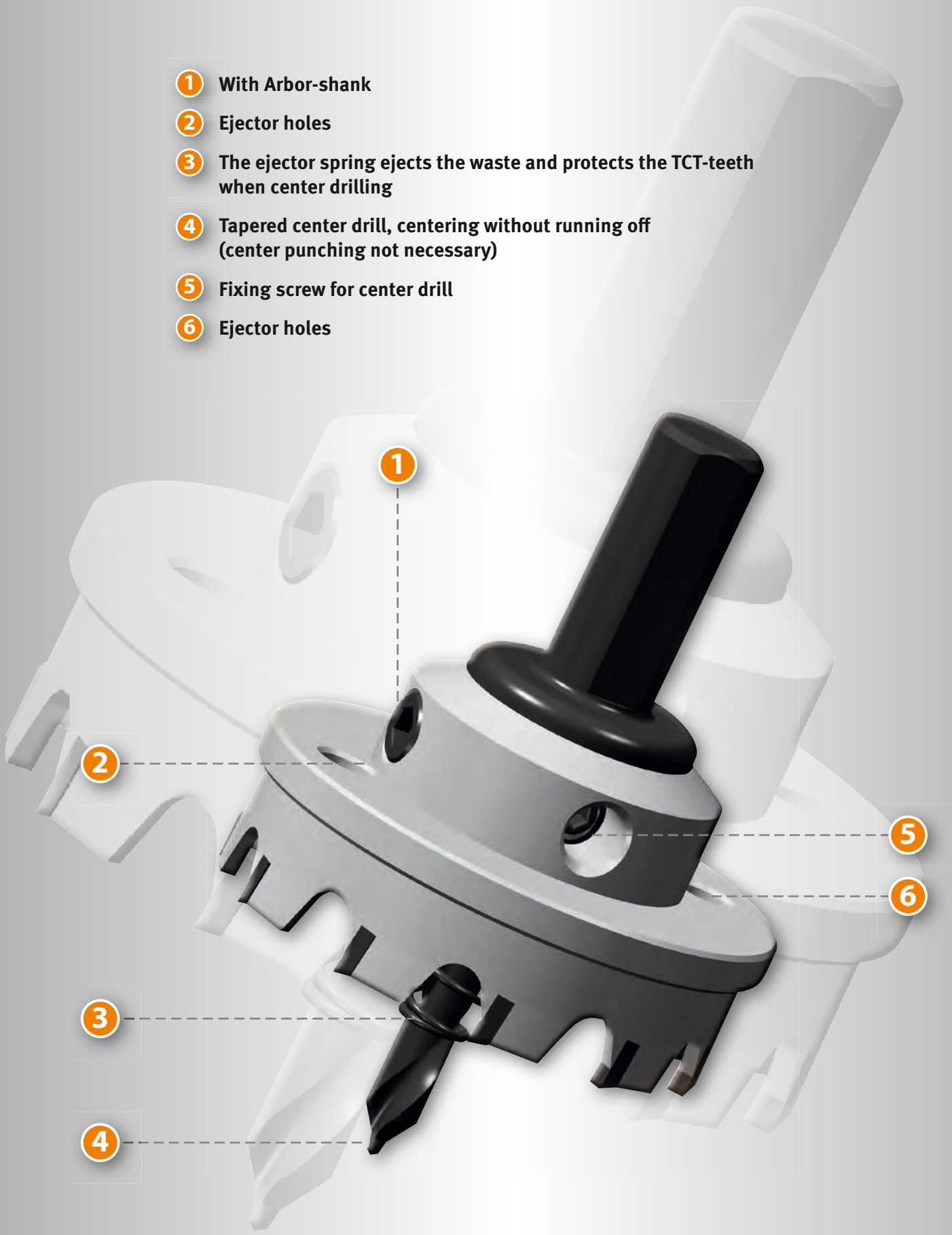
Hole Saw Set Sanitary

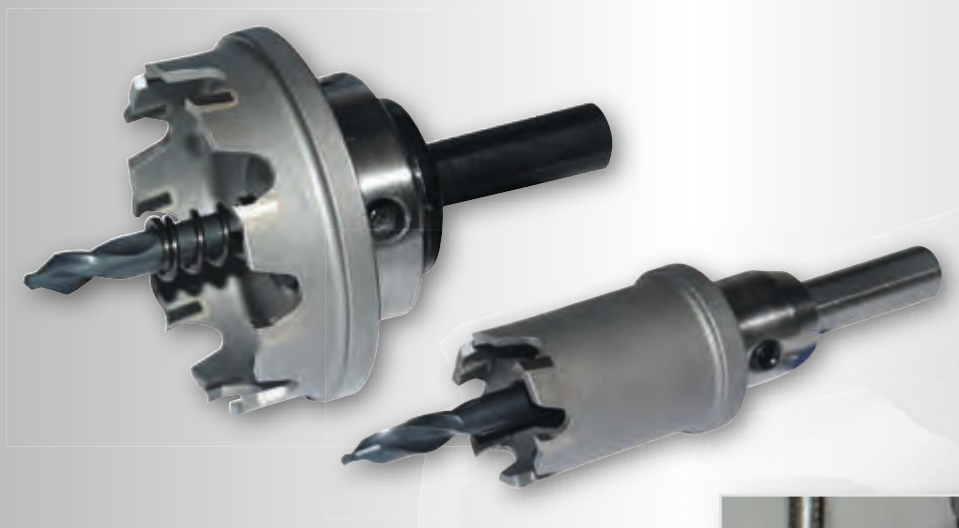
Prod.-No. 0503009

Contents:
Ø 16 mm (5/8")
Ø 19 mm (3/4")
Ø 24 mm (15/16")
Ø 29 mm (1-1/8")
Ø 38 mm (1-1/2")
Ø 44 mm (1-3/4")
Ø 57 mm (2-1/4")
Ø 67 mm (2-5/8")
Arbor A6-SS, Arbor A2-SS, Spare Twist Drill

Prod.-No. 0503009

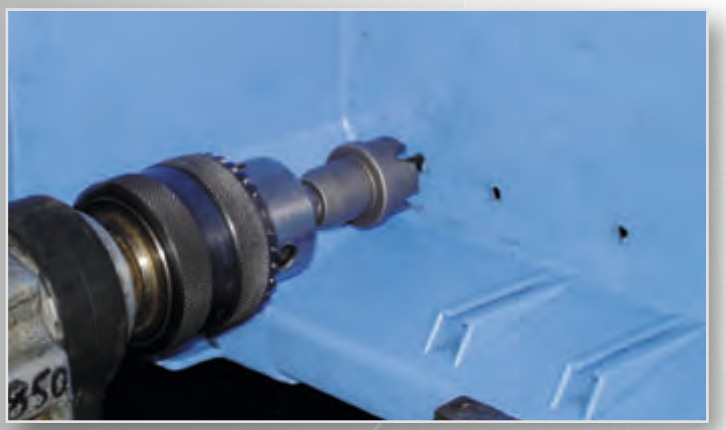
1. With Arbor-shank
2. Ejector holes
3. The ejector spring ejects the waste and protects the TCT-teeth when center drilling
4. Tapered center drill, centering without running off (center punching not necessary)
5. Fixing screw for center drill
6. Ejector holes





TCT-Hole Saws – short-/long type

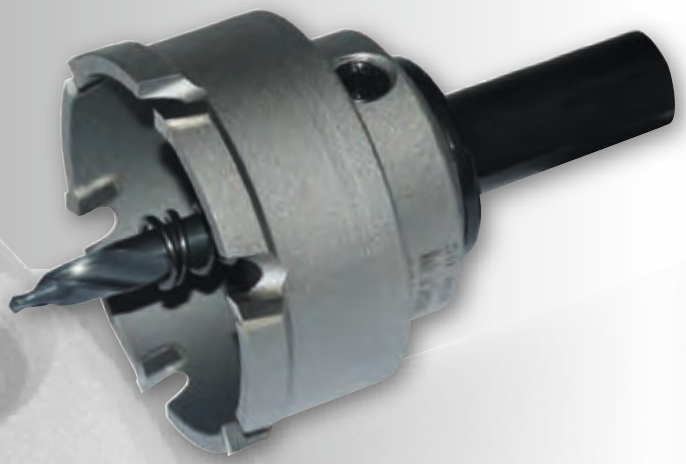
Stainless steel



Plastic

TCT-Hole Saws – FRP type

Poroton brick stone



TCT-Hole Saws – MBS type

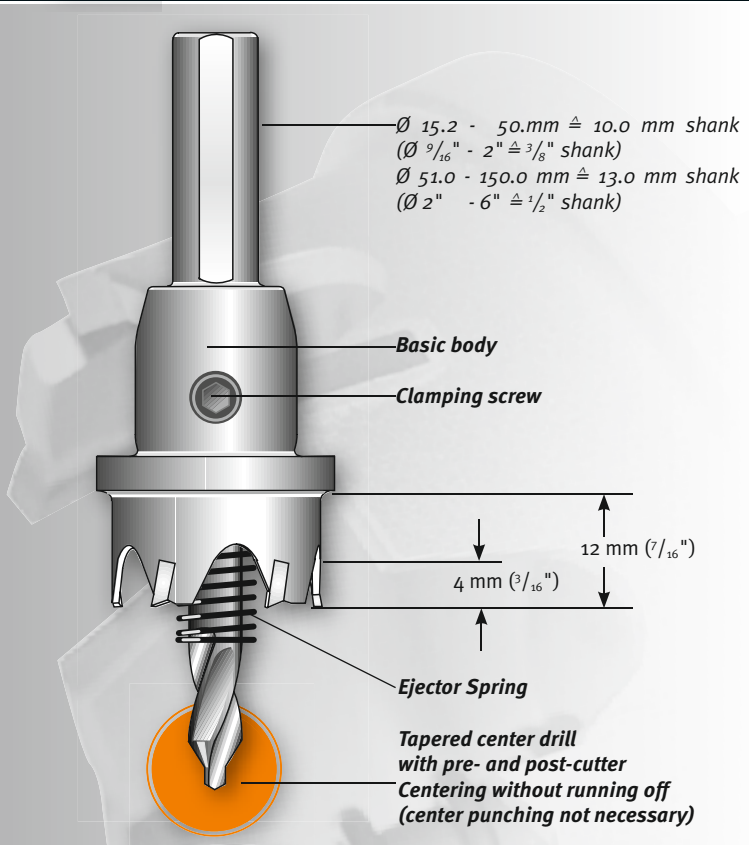
Sanitary pipes – type SML

MBS Pro
Use on Rotabest Magnetic Drilling Machine
with MT3 – Arbor Prod.-No.: 0734003

Checker plate (stainless steel)

Sanitary pipes – type SML

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 (1/16"), unalloyed steels up to 4 mm (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.

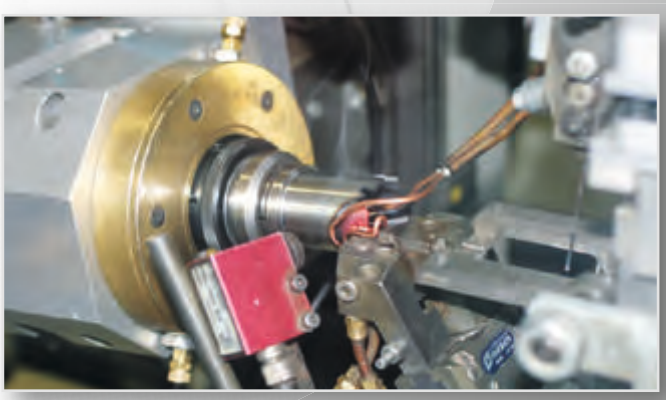
Features:

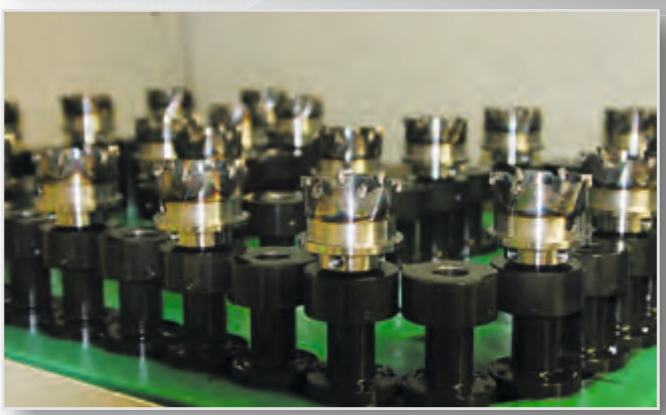
- High concentric running exactness through solid construction.
- CAD-optimized cutting angles with specially ground section ensures high cutting capacity and long tool life.
- Quick removal of drilled core through ejector spring for all hole saws up to 150 mm (5-29/32") Ø.
- Carbide tipping enables 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 Ø 31 mm (1-7/32").
- For use on hand drilling machines (recommended up to max. Ø 40 mm; 1-9/16") or stationary machines.

Tips:

- At thicker materials: cut 2-3 mm (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 parrafin instead of oil when cutting aluminium.
- **Keep in mind: Always wear safety goggles.**

Another special technical feature:
From Ø 15.2 mm (3/16") to 30.0 mm (1-1/8"), the hole saw is made of one piece.
From Ø 31.0 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 15.2		4	0600152
Ø 16.0	5/8"	4	0600160
Ø 17.0		4	0600170
Ø 18.0	11/16"	4	0600180
Ø 18.6		4	0600186
Ø 19.0	3/4"	4	0600190
Ø 20.0		5	0600200
Ø 20.4		5	0600204
Ø 21.0	13/16"	5	0600210
Ø 22.0		5	0600220
Ø 22.5		5	0600225
Ø 23.0	7/8"	5	0600230
Ø 24.0	15/16"	5	0600240
Ø 25.0		5	0600250
Ø 26.0	1"	5	0600260
Ø 27.0	1-1/16"	5	0600270
Ø 28.0		5	0600280
Ø 28.3		5	0600283
Ø 29.0	1-1/8"	5	0600290
Ø 30.0	1-3/16"	5	0600300
Ø 31.0		6	0600310
Ø 32.0	1-1/4"	6	0600320
Ø 33.0		6	0600330
Ø 34.0	1-5/16"	6	0600340
Ø 35.0	1-3/8"	6	0600350
Ø 36.0		6	0600360
Ø 37.0	1-7/16"	7	0600370
Ø 38.0		7	0600380
Ø 39.0	1-1/2"	7	0600390
Ø 40.0	1-9/16"	7	0600400
Ø 41.0		8	0600410
Ø 42.0	1-5/8"	8	0600420
Ø 43.0	1-11/16"	8	0600430
Ø 44.0		8	0600440
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

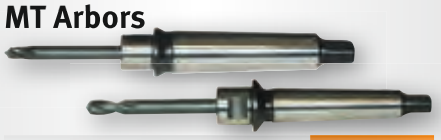
Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 77.0		13	0600770
Ø 78.0	3-1/16"	14	0600780
Ø 79.0	3-1/8"	14	0600790
Ø 80.0		14	0600800
Ø 81.0	3-3/16"	14	0600810
Ø 82.0		14	0600820
Ø 83.0	3-1/4"	14	0600830
Ø 84.0	3-5/16"	15	0600840
Ø 85.0		15	0600850
Ø 86.0	3-3/8"	15	0600860
Ø 87.0	3-7/16"	15	0600870
Ø 88.0		15	0600880
Ø 89.0	3-1/2"	16	0600890
Ø 90.0	3-9/16"	16	0600900
Ø 91.0		16	0600910
Ø 92.0	3-5/8"	16	0600920
Ø 93.0		16	0600930
Ø 94.0	3-11/16"	16	0600940
Ø 95.0	3-3/4"	17	0600950
Ø 96.0		17	0600960
Ø 97.0	3-13/16"	17	0600970
Ø 98.0	3-7/8"	17	0600980
Ø 99.0		17	0600990
Ø 100.0	3-15/16"	17	0601000
Ø 105.0	4"	18	0601050
Ø 110.0		18	0601100
Ø 115.0	4-1/2"	20	0601150
Ø 120.0		20	0601200
Ø 125.0		20	0601250
Ø 130.0	5"	20	0601300
Ø 135.0		24	0601350
Ø 140.0	5-1/2"	24	0601400
Ø 145.0		24	0601450
Ø 150.0		24	0601500

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



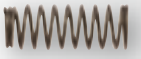
MT-2 (Ø 31.0 - 100.0 mm)	0734002
MT-3 (Ø 31.0 - 150.0 mm)	0734003

SDS Arbor

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

Spare Ejector

from Ø 15.2 - 150.0	Ø 6 mm	0602006



Coolant ALFRA

ALFRA BIO 2000

For mild steel DIN S233, 250 ml	21010

ALFRA 4000

For titanium and manganese-carbon steels

300 ml	21040

Prod.-No. 0600001

Set Metric

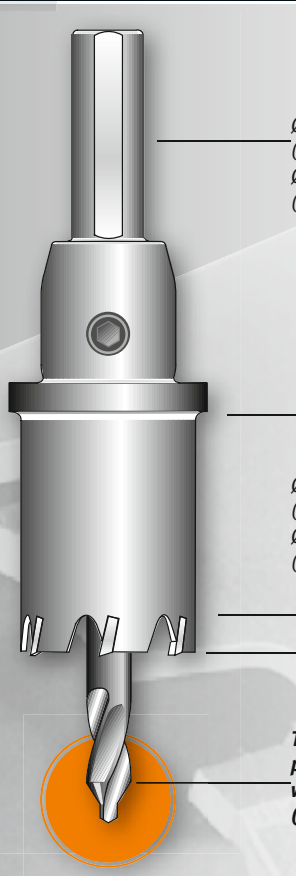
	Prod.-No.
Set Metric	0600001

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

Prod.-No. 21010

Prod.-No. 21040

ALFRA TCT-Hole Saws – Long Type



Ø 20.0 - 50.0 mm ≙ 10.0 mm shank
(Ø 25/32" - 1-15/16" ≙ 3/8" shank)
Ø 51.0 - 100.0 mm ≙ 13.0 mm shank
(Ø 2" - 4" ≙ 1/2" shank)

Ø 20.0 - 59.0 mm ≙ 35.0 mm
(Ø 25/32" - 2-5/15" ≙ 1-3/8")
Ø 60.0 - 100.0 mm ≙ 60.0 mm
(Ø 2-3/8" - 4" ≙ 2-3/8")

4 mm (3/16")

Tapered center drill with pre- and post-cutter Centering without running off (center punching not necessary)

EDELSTAHL
STAINLESS STEEL

Features:

- Especially developed for the use on pipes, vaulted materials, for unalloyed and alloyed steels, nonferrous metals, plastics as well as glass fibre reinforced plastic.
- For material thickness up to 4 mm (3/16"), 2 mm (1/16") stainless steel.
- For use on hand drilling machines, recommended up to max. Ø 40 mm (1-9/16") or stationary machines.

Tips:

- Start drilling operation with light pressure, when drilling pipes. Avoid pendulum motions.
- **Keep in mind: Always wear safety goggles.**

Special tools for special applications on request!

ALFRA TCT-Hole Saws – Long Type

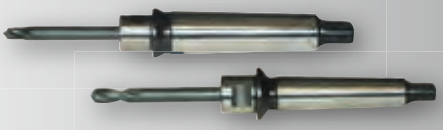
Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 16.0	5/8"	4	0700160
Ø 17.0		4	0700170
Ø 18.0	11/16"	4	0700180
Ø 19.0	3/4"	4	0700190
Ø 20.0		5	0700200
Ø 21.0	13/16"	5	0700210
Ø 22.0		5	0700220
Ø 23.0	7/8"	5	0700230
Ø 24.0	15/16"	6	0700240
Ø 25.0		6	0700250
Ø 26.0	1"	6	0700260
Ø 27.0	1-1/16"	6	0700270
Ø 28.0		6	0700280
Ø 29.0	1-1/8"	6	0700290
Ø 30.0	1-3/16"	6	0700300
Ø 31.0		8	0700310
Ø 32.0	1-1/4"	8	0700320
Ø 33.0		8	0700330
Ø 34.0	1-5/16"	8	0700340
Ø 35.0	1-3/8"	8	0700350
Ø 36.0		8	0700360
Ø 37.0	1-7/16"	8	0700370
Ø 38.0		8	0700380
Ø 39.0	1-1/2"	8	0700390
Ø 40.0	1-9/16"	10	0700400
Ø 41.0		10	0700410
Ø 42.0	1-5/8"	10	0700420
Ø 43.0	1-11/16"	10	0700430
Ø 44.0		10	0700440
Ø 45.0	1-3/4"	10	0700450
Ø 46.0		10	0700460
Ø 47.0	1-13/16"	10	0700470
Ø 48.0	1-7/8"	10	0700480
Ø 49.0		10	0700490
Ø 50.0	1-15/16"	12	0700500
Ø 51.0	2"	12	0700510
Ø 52.0		12	0700520
Ø 53.0	2-1/16"	12	0700530
Ø 54.0	2-1/8"	12	0700540
Ø 55.0		12	0700550
Ø 56.0	2-3/16"	12	0700560
Ø 57.0	2-1/4"	12	0700570
Ø 58.0		12	0700580
Ø 59.0	2-5/16"	12	0700590
Ø 60.0	2-3/8"	14	0700600
Ø 61.0		14	0700610
Ø 62.0	2-7/16"	14	0700620
Ø 63.0		14	0700630
Ø 64.0	2-1/2"	14	0700640
Ø 65.0		14	0700650
Ø 66.0	2-9/16"	14	0700660
Ø 67.0	2-5/8"	16	0700670
Ø 68.0		16	0700680
Ø 69.0	2-11/16"	16	0700690
Ø 70.0	2-3/4"	16	0700700
Ø 71.0		16	0700710
Ø 72.0	2-13/16"	16	0700720
Ø 73.0	2-7/8"	16	0700730
Ø 74.0	2-15/16"	16	0700740
Ø 75.0		16	0700750
Ø 76.0	3"	18	0700760
Ø 77.0		18	0700770
Ø 78.0	3-1/16"	18	0700780
Ø 79.0	3-1/8"	18	0700790
Ø 80.0		18	0700800
Ø 81.0	3-3/16"	18	0700810
Ø 82.0		18	0700820
Ø 83.0	3-1/4"	18	0700830
Ø 84.0	3-5/16"	20	0700840
Ø 85.0		20	0700850
Ø 86.0	3-3/8"	20	0700860
Ø 87.0	3-7/16"	20	0700870
Ø 88.0		20	0700880
Ø 89.0	3-1/2"	20	0700890
Ø 90.0	3-9/16"	20	0700900
Ø 91.0		20	0700910
Ø 92.0	3-5/8"	20	0700920
Ø 93.0		20	0700930
Ø 94.0	3-11/16"	22	0700940
Ø 95.0	3-3/4"	22	0700950
Ø 96.0		22	0700960
Ø 97.0	3-13/16"	22	0700970
Ø 98.0	3-7/8"	22	0700980
Ø 99.0		22	0700990
Ø 100.0	3-15/16"	22	0701000

HSS-Spare Drill

with tapered center tip

from Ø 20.0 - 59.0 Ø 6x80 mm	0702680
from Ø 60.0 - 100.0 Ø 8x100 mm	0702800

MT Arbors



MT-2 (from Ø 31.0)	0734002
MT-3 (from Ø 31.0)	0734003

SDS Arbor

SDS arbor shank (for use with Ø 31 - 59 mm)	060sds6

Highly recommendet accessories – coolant and lubricant!

ALFRA 2000

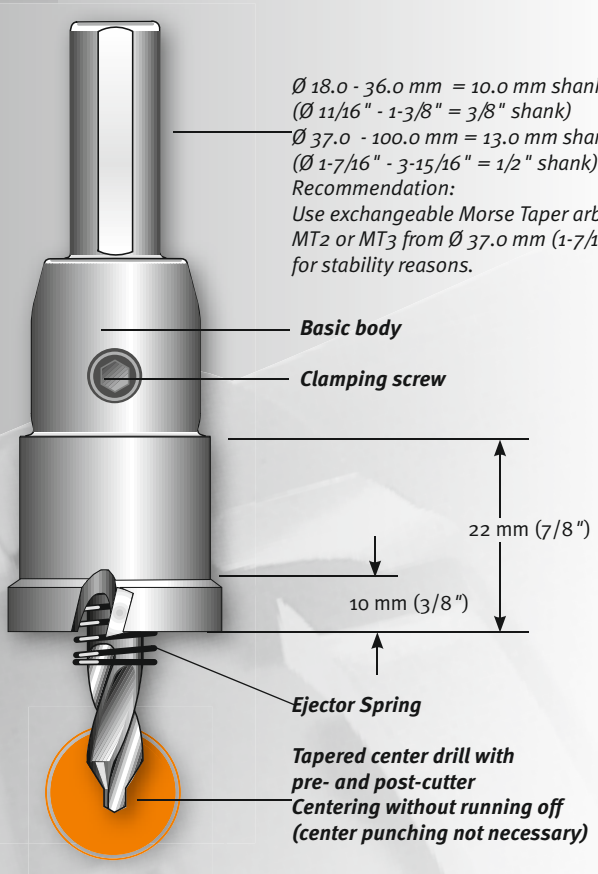
ALFRA 2000 is a fully synthetic cutting oil, developed for high-quality cutting, threading and drilling of metals of any degree of hardness, ferrous metal, steel alloys, stainless steel, copper, aluminium and their alloys.
ALFRA BIO 2000 is free of hydrocarbon, sulphur and chlorine.

	Prod.-No.
Aerosol can 250 ml	21010
5 ltr. Plastic container	21012
60 ltr. Barrel	21021

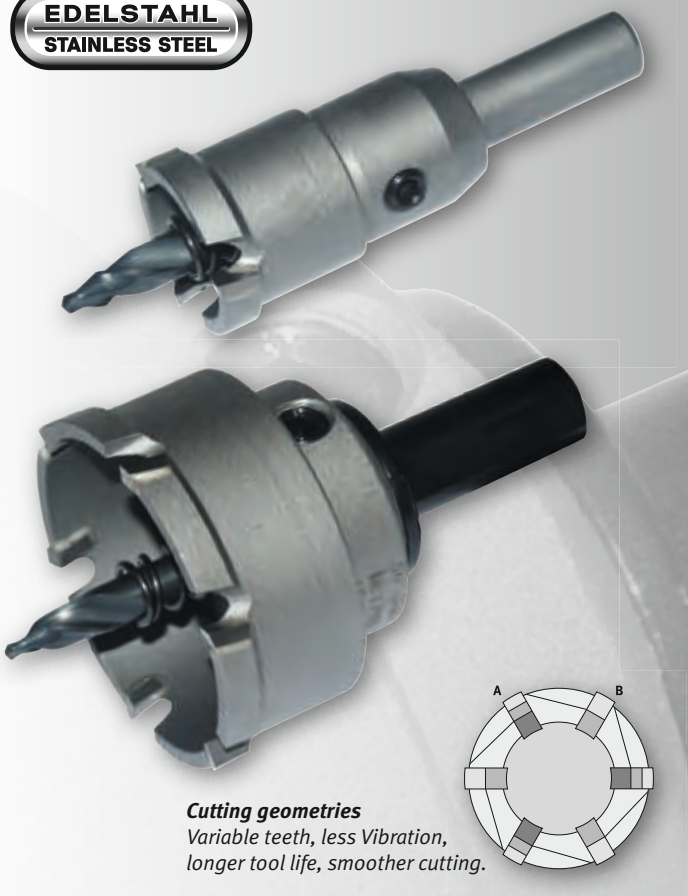
ALFRA 4000

Suitable for core drilling applications with ALFRA cutters. Also ideal for twist drilling, thread tapping, reaming, countersinking, and difficult cutting applications. It meets to the requirements of work hygiene and safety.
ALFRA 4000 is a pump spray, free from propellant gas ideal for drilling and tapping of high-alloy, stainless steels; chromium nickel steels; titanium and manganese-carbon steels

	Prod.-No.
Aerosol can 300 ml	21040



EDELSTAHL
STAINLESS STEEL



Cutting geometries
Variable teeth, less Vibration, longer tool life, smoother cutting.

MBS – for almost limitless use

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. Ø 40 mm; 1-9/16").

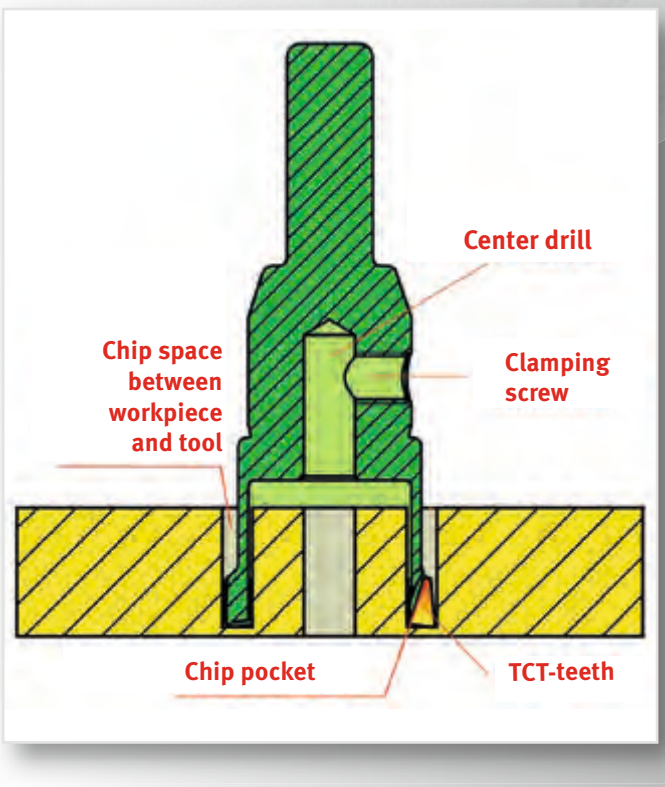
- **Portable drilling Machines:** **up to 4 mm (1/8") material thickness**
- **Stationary drilling Machines:** **up to 10 mm (3/8") material thickness (for material thickness over 6 mm (15/64"), it is necessary to settle and empty the chips several times).**

In case of heavy operation, we recommend Morse Taper Tool Holders, which are suitable from Ø 37 mm (1-7/16").

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

Another special technical feature:
From Ø 37 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.



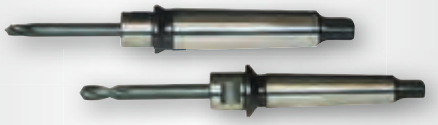
Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 18.6	11/16"	4	0730018
Ø 19.0	3/4"	4	0730019
Ø 20.4		4	0730020
Ø 21.0	13/16"	4	0730021
Ø 22.5		4	0730022
Ø 23.0	7/8"	4	0730023
Ø 24.0	15/16"	4	0730024
Ø 25.0		4	0730025
Ø 26.0	1"	6	0730026
Ø 27.0	1-1/16"	6	0730027
Ø 28.3		6	0730028
Ø 29.0	1-1/8"	6	0730029
Ø 30.0	1-3/16"	6	0730030
Ø 31.0		6	0730031
Ø 32.0	1-1/4"	6	0730032
Ø 33.0		6	0730033
Ø 34.0	1-5/16"	6	0730034
Ø 35.0	1-3/8"	6	0730035
Ø 36.0		6	0730036
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
Ø 79.0	3-1/8"	12	0730079
Ø 80.0		12	0730080
Ø 81.0	3-3/16"	12	0730081

Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 82.0		12	0730082
Ø 83.0	3-1/4"	12	0730083
Ø 84.0	3-5/16"	12	0730084
Ø 85.0		12	0730085
Ø 86.0	3-3/8"	14	0730086
Ø 87.0	3-7/16"	14	0730087
Ø 88.0		14	0730088
Ø 89.0	3-1/2"	14	0730089
Ø 90.0	3-9/16"	14	0730090
Ø 91.0		14	0730091
Ø 92.0	3-5/8"	14	0730092
Ø 93.0		14	0730093
Ø 94.0	3-11/16"	14	0730094
Ø 95.0	3-3/4"	14	0730095
Ø 96.0		14	0730096
Ø 97.0	3-13/16"	14	0730097
Ø 98.0	3-7/8"	14	0730098
Ø 99.0		14	0730099
Ø 100.0	3-15/16"	14	0730100

HSS-Spare Drill
with tapered center tip

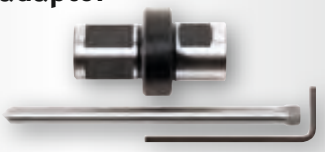
from Ø 18.0 - 60.0 Ø 6x50 mm	0602650
from Ø 61.0 - 100.0 Ø 8x50 mm (old design)	0602850

MT Arbors



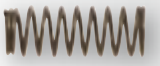
MT-2 (from Ø 37.0 mm)	0734002
MT-3 (from Ø 37.0 mm)	0734003

Weldon adaptor



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

Spare Ejector
For tapered center drill



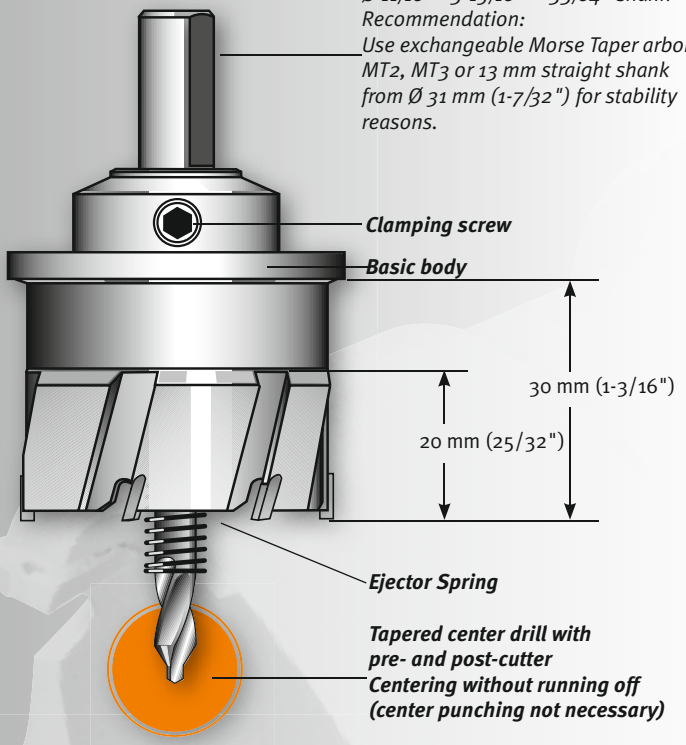
from Ø 18.0 - 60.0 mm Ø 6 mm	0732006
from Ø 61.0 - 100.0 mm Ø 8 mm	0732008

Drilling in checker sheet

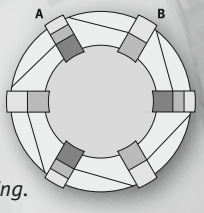
Drilling in square profiles

Drilling in flat steel

Drilling in pipes



EDELSTAHL
STAINLESS STEEL



Cutting geometries
Variable teeth, less Vibration, longer tool life, smoother cutting.

MBS-Multirange Hole Saws for universal use. **Max. cutting depth 20 mm (25/32")**

Suitable for flat materials but also for pipes and curved surfaces. Cutting of overlapping holes is possible. CAD optimized precision tools with high cutting performance and durability.

For use on stationary and portable drilling machines
(recommended up to max. Ø 40 mm; 1-9/16")

- **Portable drilling Machines: up to 6 mm (15/64") material thickness**
- **Stationary drilling Machines: up to 20 mm (25/32") material thickness at cutting depths from 6 mm (15/64") we recommend clearing the chips.**

MBS hole saws can be resharpened, and it is possible to replace broken out teeth depending on the condition of the hole saw.

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

Another special technical feature:
From Ø 31 mm (1-7/32"), 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.

MBS – for almost limitless use

e.g., on Rotabest Magnetic Drilling Machine (with MT2 or MT3 – arbors) and Weldon adaptor Prod.-No. 060WD on Machines with Weldon Shank.

Ø mm	Ø Inches	No. of teeth	Prod.-No.
Ø 18.0	11/16"	6	0760018
Ø 18.6		6	07600186
Ø 19.0	3/4"	6	0760019
Ø 20.0		6	0760020
Ø 20.4		6	07600204
Ø 21.0	13/16"	6	0760021
Ø 22.0		6	0760022
Ø 22.5		6	07600225
Ø 23.0	7/8"	6	0760023
Ø 24.0	15/16"	6	0760024
Ø 25.0		6	0760025
Ø 26.0	1"	6	0760026
Ø 27.0	1-1/16"	6	0760027
Ø 28.0		6	0760028
Ø 28.3		6	07600283
Ø 29.0	1-1/8"	6	0760029
Ø 30.0	1-3/16"	6	0760030
As from Ø 31.0 mm (1-7/32") we recommend the use of MT arbors			
Ø 31.0		6	0760031
Ø 32.0	1-1/4"	6	0760032
Ø 33.0		6	0760033
Ø 34.0	1-5/16"	6	0760034
Ø 35.0	1-3/8"	6	0760035
Ø 36.0		6	0760036
Ø 37.0	1-7/16"	6	0760037
Ø 38.0		6	0760038
Ø 39.0	1-1/2"	6	0760039
Ø 40.0	1-9/16"	6	0760040
Ø 41.0		6	0760041
Ø 42.0	1-5/8"	6	0760042
Ø 43.0	1-11/16"	6	0760043
Ø 44.0		6	0760044
Ø 45.0	1-3/4"	6	0760045
Ø 46.0		6	0760046
Ø 47.0	1-13/16"	6	0760047
Ø 48.0	1-7/8"	6	0760048
Ø 49.0		6	0760049
Ø 50.0	1-15/16"	6	0760050
Ø 51.0	2"	6	0760051
Ø 52.0		6	0760052
Ø 53.0	2-1/16"	6	0760053
Ø 54.0	2-1/8"	6	0760054
Ø 55.0		6	0760055
Ø 56.0	2-3/16"	6	0760056
Ø 57.0	2-1/4"	6	0760057
Ø 58.0		6	0760058
Ø 59.0	2-5/16"	6	0760059
Ø 60.0	2-3/8"	8	0760060
Ø 61.0		8	0760061
Ø 62.0	2-7/16"	8	0760062
Ø 63.0		8	0760063
Ø 64.0	2-1/2"	8	0760064
Ø 65.0		8	0760065
Ø 66.0	2-9/16"	8	0760066
Ø 67.0	2-5/8"	8	0760067
Ø 68.0		8	0760068
Ø 69.0	2-11/16"	8	0760069
Ø 70.0	2-3/4"	8	0760070
Ø 71.0		10	0760071
Ø 72.0	2-13/16"	10	0760072
Ø 73.0	2-7/8"	10	0760076
Ø 74.0	2-15/16"	10	0760074
Ø 75.0		10	0760075

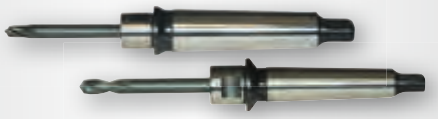
Ø mm	Ø Inches	No. of teeth	Prod.-No.
For drilling stainless steel from Ø 76.0 mm we recommend using Rotabest AL cutters (Prod.-No. 200207...)			
Ø 76.0	3"	10	0760076
Ø 77.0		12	0760077
Ø 78.0	3-1/16"	12	0760078
Ø 79.0	3-1/8"	12	0760079
Ø 80.0		12	0760080
Ø 81.0	3-3/16"	12	0760081
Ø 82.0		12	0760082
Ø 83.0	3-1/4"	12	0760083
Ø 84.0	3-5/16"	12	0760084
Ø 85.0		12	0760085
Ø 86.0	3-3/8"	14	0760086
Ø 87.0	3-7/16"	14	0760087
Ø 88.0		14	0760088
Ø 89.0	3-1/2"	14	0760089
Ø 90.0	3-9/16"	14	0760090
Ø 91.0		14	0760091
Ø 92.0	3-5/8"	14	0760092
Ø 93.0		14	0760093
Ø 94.0	3-11/16"	14	0760094
Ø 95.0	3-3/4"	14	0760095
Ø 96.0		14	0760096
Ø 97.0	3-13/16"	14	0760097
Ø 98.0	3-7/8"	14	0760098
Ø 99.0		14	0760099
Ø 100.0	3-15/16"	14	0760100

HSS-Spare Drill

with tapered center tip

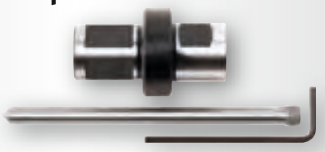
from Ø 18.0 - 60.0 Ø 6x80 mm	0732680
from Ø 61.0 - 100.0 Ø 8x80 mm (old design)	0732880

MT Arbors



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

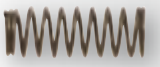
Weldon adapter



from Ø 31.0 mm (incl. ejector pin Prod. No. 1950500)	060WD

Spare Ejector

For tapered center drill



from Ø 15.2 - 100.0 Ø 6 mm suitable for spare drill Ø 6 mm	0762006

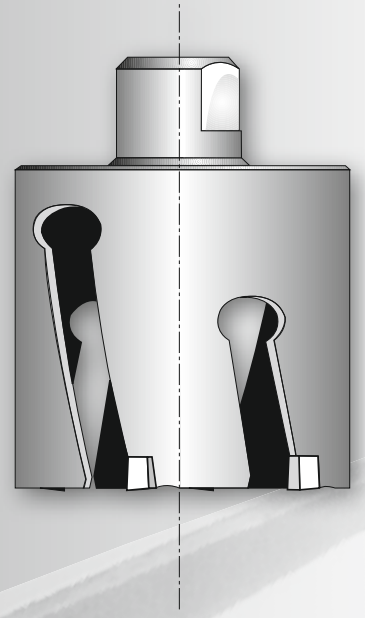
Drilling structured sheet metals

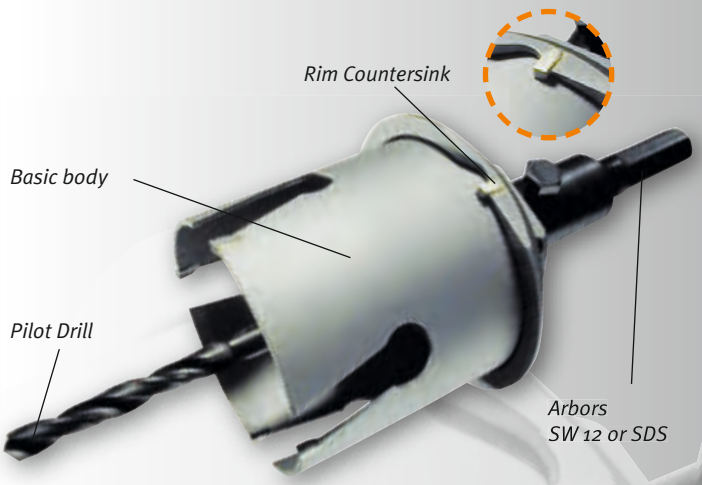
Drilling tubes

Drilling flat steels

Free-hand drilling up to Ø 30 mm

ALFRA TCT-Hole Saws – FRP type





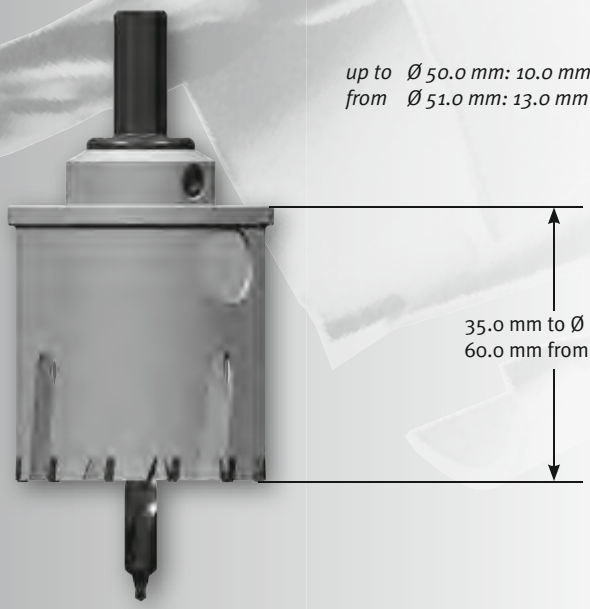
Prod.-No. 0740068060 – FRP Ø 68 mm with tool holder and rim countersink

Cutting depth 60 mm (2-3/8")

- Specially designed for wood, plain, laminated and coated chip board, plywood, paper-base laminate, PVC, glass fibre reinforced plastic, gas concrete, Ytong stone, plasterboard, hollow gauged brick/stones.
- No blocking due to optimal cutting geometry.
- Simple drill core removal based on new chip space design.
- In the event of a tooth breaking, it can easily be replaced and re-sharpened.
- Only use when rotating, switch off hammer action.
- Ideal for electricians, plumbers and heating engineers, carpenters and cabinet makers, stair construction and kitchen furniture fitters.

Perfect assembly of sockets in e.g. wood, gypsum plaster board,...

ALFRA TCT-Hole Saws – FRP Multi-Tooth



with arbor shank

- Cutting depth 35.0 / 60.0 for sandwich-composite material, wood and chipboard coated with insulation and sheet metal (also stainless), e.g., counters and refrigerators.

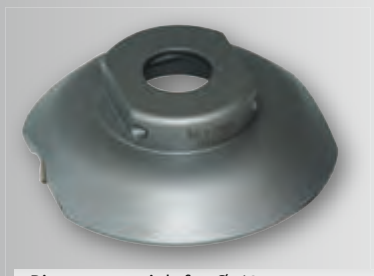
When ordering, please indicate material and thickness!

Ø mm	TCT-Hole Saws FRP inch single drill bit, cutting depth 60 mm	Prod.-No.
25.0	Sanitary and heating pipes	0740025060
30.0	Sanitary and heating pipes	0740030060
35.0	Sanitary and heating pipes	0740035060
	Cavity wall branch box, halogen reflector lamp	
40.0	Sanitary drain pipes	0740040060
45.0	Water and heating pipes	0740045060
50.0	with insulation	0740050060
55.0	Recessed lights Ø 55 mm	0740055060
58.0	Recessed lights Ø 58 mm	0740058060
60.0	Recessed lights Ø 60 mm	0740060060
63.0	Switch box Ø 60 mm	0740063060
65.0	Cavity wall box Ø 65 mm	0740065060
68.0	Cavity wall box Ø 68 mm	0740068060
70.0	Cavity wall branch boxes Ø 70 mm	0740070060
74.0	Cavity wall branch boxes Ø 74 mm	0740074060
80.0	Junction boxes, cable gland covers, Recessed lights Ø 80 mm	0740080060
85.0	Recessed lights Ø 85 mm	0740085060
90.0	Recessed lights Ø 90 mm	0740090060
105.0	Discharge air pipes	0740105060

Ø mm	TCT-Hole Saws FRP Multi-tooth No series production. Delivery on request. with arbor, cutting depth 35/60 mm.	Prod.-No.
40.0	Sanitary drain pipes	0750040040
45.0	Water and heating pipes	0750045040
50.0	with insulation	0750050040
55.0		0750055040
60.0		0750060060
63.0	Switch boxes, diameter 60 mm	0750063060
65.0		0750065060
68.0	socket drill	0750068060
70.0		0750070060
74.0	Junction boxes, diameter 70 + 74 mm	0750074060
75.0		0750075060
80.0	Junction boxes	0750080060
85.0		0750085060
90.0		0750090060
95.0		0750095060
100.0		0750100060
105.0	Discharge air pipes	0750105060
Intermediate sizes and other cutting depths on request		0759 ... ...

HSS spare drill for FRP Multi-tooth

Ø 30.0 - 59.0 mm = 8 x 80	0752880
Ø 61.0 - 105.0 mm = 8 x 100	0752800



Rim countersink for Ø 68 mm 0741068000

Tool Holder wrench size 12 0742000001

Arbor SDS 0742000002

Spare center drill HSS 7.2 mm 0742000003

Prod.-No. 0743000001

FRP Hole Saw Set Electrician

Content: 0743000001

1 each of Ø 35 / 68 / 74 mm
1 Tool Holder wrench size 12
1 HSS drill

Prod.-No. 0743000002

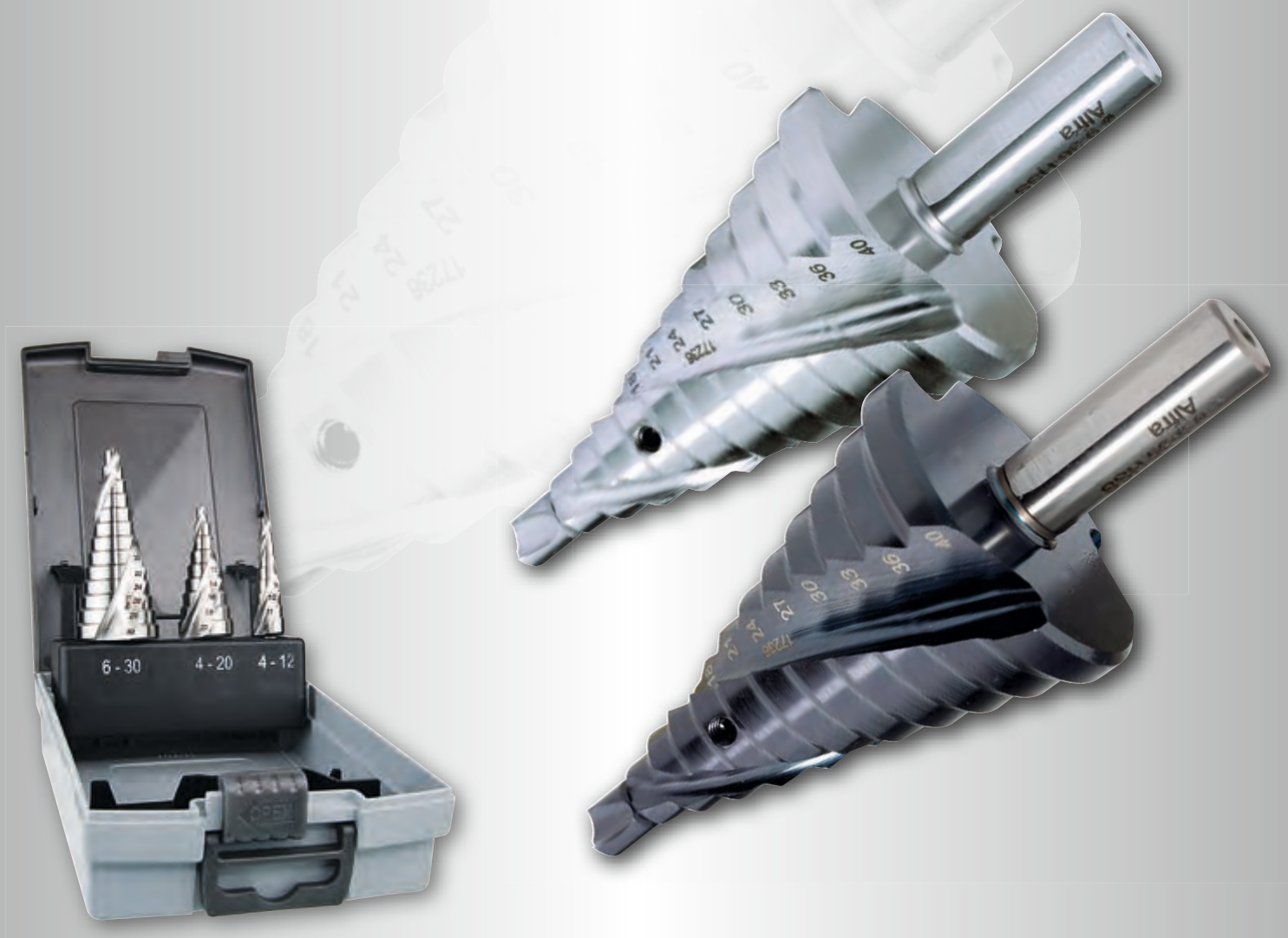
FRP Hole Saw Set Lighting

Content: 0743000002

1 each of Ø 35 / 60 / 68 / 80 / 85 mm
1 Tool Holder wrench size 12
1 HSS drill

ALFRA - Precision Multi-Step Drills

- Spiral grooved, each step with axial and radial relief grinding according to its diameter
- Laser-etched scale in the chip space
- Special drill tip enables centering and drilling even through thin-walled materials
- Burr-free drilling with no deformation of the sheet
- Regrindable
- Available in HSS and HSS with TiAlN coating



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.

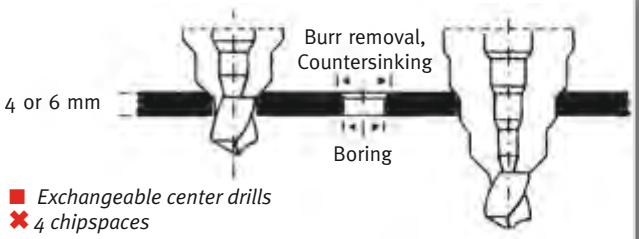
With the Multi-Step Drills, sheet metals can be centered, drilled and subsequently deburred in one work step.

- 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.



■ *Exchangeable center drills*
✖ *4 chipspaces*

Description	Shank Ø	Prod.-No.
AMS	10.0	08080
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)**		
AMS – TiAlN coated	10.0	08081
3 chip spaces, spiral grooved, replaceable center drill TiAlN coated **Steps Ø 9 - 12 - 15 - 18 - 21 - 24 - 27 - 30 - 33 - 36 mm (Step „40" is for deburring)**		
AM 1	12.0	08002
Steps Ø 25 - 28 - 31 - 34 - 37 - 40 - 43 - 46 - 49 - 52 - 55 - 58 mm		
PVD	10.0	08003
For the **electrical industry**, matched to holes for armoured conduit thread clearance holes, saves considerable time when producing borings for PG **Steps Ø PG 7 - PG 9 - PG 11 - PG 13 - PG 16 - PG 21 - 33 mm - PG 29 - 40 mm**		

Prod.-No. 08080 ■

Prod.-No. 08081 ■

Prod.-No. 08002 ■ ✖

Prod.-No. 08003 ■ ✖

Multi-Step Drills – HSS DM 05

Description	Shank Ø	Prod.-No.
PVD-TiN-coated	10.0	08004
Steps Ø PG 7 – PG 9 – PG 11 – PG 13 – PG 16 – PG 21 - 33 mm – PG 29 - 40 mm		
SVB	10.0	08016
Pre-drill specifically for punches & dies		
Steps Ø 8.5 - 11.5 - 12.5 - 16.5 - 21.0		
DKS 40	10.0	08084
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		
DKS 40 – TiAlN coated	10.0	08085
3 chip spaces, spiral grooved, replaceable center drill For metric borings acc. to EN 50262,		
Core - and clearance holes M 10 - M 40		
Steps Ø 10.5 - 12.5 - 14.5 - 16.5 - 18.5 - 20.5 - 23.5 - 25.5 - 32.5 - 38.5 - 40.5		
DKI 40-VA	10.0	08032
4 chip spaces, replaceable center drill of HSS-Co 5 steel. For stainless steel to 3 mm thick		
Core - and clearance holes M 10 - M 40		
Steps Ø 10.5 - 12.5 - 14.5 - 16.5 - 18.5 - 20.5 23.5 - 25.5 - 32.5 - 38.5 - 40.5		
Spare center drill TiN-beschichtet		08006
suitable for AMS – PVD – PVK – DKI – DKS		
Spare center drill		08007
suitable for AMS – PVD – PVK – DKI – DKS		
Spare center drill TiAlN coated		08008
suitable for AMS – PVD – PVK – DKI – DKS		

Prod.-No. 08004 ■ ✖

Pre-drill specifically for punches & dies

Prod.-No. 08016

Prod.-No. 08084 ■

Prod.-No. 08085 ■

Prod.-No. 08032 ■ ✖

Prod.-No. 08007

Prod.-No. 08008

■ *Replaceable center drill*
✖ *With 4 chip spaces*

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.

Description	Bore range	Shank Ø	Length	Prod.-No.
AM-12	4 - 12 mm x 1 mm	6.0	70 mm	08070
AM-20	4 - 20 mm x 2 mm	9.0	77 mm	08071
AM-30	6 - 30 mm x 2 mm	10.0	98 mm	08072

Set in plastic case	08073

Content:
1 of each Type AM-12/AM-20/AM-30

High-performance coolant stick	09012

Prod.-No. 08072

Prod.-No. 09012

Prod.-No. 08073

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
	countersink	500 - 180	50 - 70	800 - 400	1000 - 400
AM-1	drill	800	360	1000	1000
	countersink	200 - 100	100 - 50	500 - 200	600 - 250
PVD+PVK+DKI	drill	800	360	1000	1000
DKS + SVB	countersink	400 - 200	200 - 100	800 - 500	1000 - 600

Precision Conical One-Lip Bits – HSS DM 05

ALFRA Precision Conical One-Lip Bits are the ideal tools for general sheet metal working. Fields of applications include HVAC, electronic industries, engineering and panel building.

To be used on non-ferrous metals, stainless steels, thermo- and duro-plastic plastics, as well as on all common sheet steels up to a material thickness of max. 4 mm. With ALFRA Conical One-Lip Bits, you can center, spot drill and bore up in one work step.

If treated carefully, can be reground many times.

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

Packing: separately in plastic box with operation manual.

Size	Bore Range mm	Shank-Ø	Prod.-No.
1	3.0 - 14.0	6.0	09001
2	6.0 - 20.0	8.0	09002
3	16.0 - 30.5	10.0	09003
4	26.0 - 40.0	12.0	09004
5	35.0 - 50.0	12.0	09005
6	46.0 - 60.0	13.0	09006
7 L	4.0 - 30.5	10.0	09007
8*	6.0 - 22.5	8.0	09008
Set 1	Size 1 + 2 + 3 + Stick		09009
Coolant stick, separately			09012

***Special Antenna-Bit**

- Conical one-lip bit with cylindrical end section to drill holes for car antennas.
- Burr-free, no deformation, no countersinking, dimensional accuracy
- Size 6.0 - 22.5 mm.

Precision Conical One-Lip Bit Set

	Prod.-No.
Tin box	09009

Content:
1 x Size 1
1 x Size 2
1 x Size 3

Prod.-No. 09001

Prod.-No. 09002

Prod.-No. 09003

Prod.-No. 09004

Prod.-No. 09005

Prod.-No. 09006

Prod.-No. 09007

*Prod.-No. 09008**

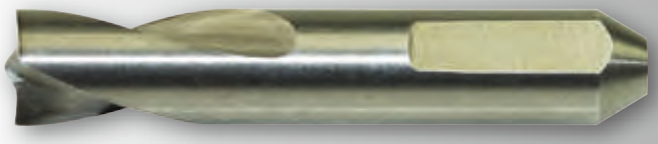
Prod.-No. 09009

Welding Point Drills – short type

For pneumatic machines, for breaking welding points.
Made of special steel with chamfered shaft and center tip,
CNC-polished.

Ø mm	Steel quality	lenght	Machine	Prod.-No.
8.0	HSS-Co	44.0	Variodrill	10016
8.0	HSS-Co	39.5	Spotle	10007
8.0	HSS-CoTiN	39.5	Spotle	10014
8.0	HSS-CoTiN	44.0	Variodrill	10015

P.U. 5 pieces



Prod.-No. 10016

Prod.-No. 10007

Prod.-No. 10014

Prod.-No. 10015

Welding Point Drills – long type

- Absolutely clean and burr-free counterboring of weld points due to ALFRA cross polished section with center-point.
- Guaranteed chatter-free work.
- Center punch of weld points is unnecessary. The drill centers itself.
- Use in all hand drills.
- No subsequent regrinding of the weld point.
- Can be regrinded.
- For low-speed drilling machines (max. 1000 U/min.).

Ø mm	quality of steel	length	P.U.	Prod.-No.
6.0	HSS	66	10	10017
8.0	HSS	79	10	10008
10.0	HSS	89	10	10018

Prod.-No. 10008

- ALFRA HSS precision countersink tools are the perfect tools for all deburring works.
- ALFRA HSS precesion countersink tools guarantee an excellent of grooves as well as the best center-pointing features.
- Applicable on steel, cast, light and non-ferrous metal.
- NEW: innovative relief-grinding for better cutting quality.

Prod.-No. 1101...

ALFRA HSS Precision Countersink Tools

(α) 90° DIN 335 C with cylinder shank

Nom. Ø	Smallest Ø	shank Ø h 8	Total-length	Prod.-No.
6.3	1.5	5	45	1101063
8.3	2.0	6	50	1101083
10.4	2.5	6	50	1101104
12.4	2.8	8	56	1101124
15.0	3.2	10	60	1101150
16.5	3.2	10	60	1101165
19.0	3.5	10	63	1101190
20.5	3.5	10	63	1101205
25.0	3.8	10	67	1101250
31.0	4.2	12	71	1101310

Prod.-No. 1102...

with wear-resistant TiAlN-Coating

6.3	1.5	5	45	1102063
8.3	2.0	6	50	1102083
10.4	2.5	6	50	1102104
12.4	2.8	8	56	1102124
16.5	3.2	10	60	1102165
20.5	3.5	10	63	1102205
25.0	3.8	10	67	1102250
31.0	4.2	12	71	1102310

Prod.-No. 1104...

Countersink tools with cylinder shank

with oblique drilling 90° of HSS-E

These tools have an improved relief-grinding for even more quiet and chater-free working. The chip-flow through the hole avoids chips beeing seized with the work piece

Ø mm	for sagging	shank	length Ø h8	Prod.-No.
10	2 - 5	6	45	1104100
14	5 - 10	8	48	1104140
21	10 - 15	10	65	1104210
28	15 - 20	12	85	1104280
35	20 - 25	15	95	1104350

	Prod.-No.
Countersink Set Ø 6.3 - 20.5	1105003
Content: (Nom-Ø) 6.3 – 8.3 – 10.4 – 12.4 – 16.5 – 20.5	
Countersink Set Ø 6,3 - 25,0	1105004
Content: (Nom-Ø) 6.3 – 8.3 – 10.4 – 12.4 – 16.5 – 20.5 – 25.0	
Countersink Set TiAlN-coated	1105009
Content: (Nom-Ø) 6.3 – 8.3 – 10.4 – 12.4 – 16.5 – 20.5 – 25.0	
Countersink Set Special	1105006
Countersink tools with oblique bore 90° made of HSS-E	

Content:
1 countersink 10 mm Ø for drilling 2 - 5 mm
1 countersink 14 mm Ø for drilling 5 - 10 mm
1 countersink 21 mm Ø for drilling 10 - 15 mm
1 countersink 28 mm Ø for drilling 15 - 20 mm

Prod.-No. 1105003

Prod.-No. 1105004

Prod.-No. 1105009

Prod.-No. 1105006

ALFRA Sabre Saw Blades For Professional Use

for Metal flexible version

Application Range Metal processing	Material thickness mm	Steel-Quality	Length	Width	Thickness	Teeth Inch	Milford Prod.-No.	Alfra Prod.-No.
Metal processing; soft metals, Copper-, aluminium-, brass-cables, wires and pipes	> 3 mm	HSS-Bi-Metal	100 mm	16 mm	0.9 mm	14	88161	30055
Metal processing; soft metals, Plastic, laminate and wood with nails	> 3 mm	HSS-Bi-Metal	150 mm	16 mm	0.9 mm	8/12	88215	30040
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc.	> 6 mm	HSS-Bi-Metal	150 mm	16 mm	0.9 mm	10	88176	30058
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc.	> 3 mm	HSS-Bi-Metal	150 mm	16 mm	0.9 mm	14	88177	30059
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc.	> 1,15 mm	HSS-Bi-Metal	150 mm	16 mm	0.9 mm	18	88178	30060
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc. With universal toothing	3-6 mm	HSS-Bi-Metal	150 mm	16 mm	0.9 mm	10/14	88216	30062
Metal processing; soft metals, Plastic, laminate and wood with nails	> 3 mm	HSS-Bi-Metal	225 mm	16 mm	0.9 mm	8/12	88219	30041
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc.	> 6 mm	HSS-Bi-Metal	225 mm	16 mm	0.9 mm	10	88174	30063
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc.	> 3 mm	HSS-Bi-Metal	225 mm	16 mm	0.9 mm	14	88186	30064
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc.	> 1,15 mm	HSS-Bi-Metal	225 mm	16 mm	0.9 mm	18	88187	30065
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc. With universal toothing	3-6 mm	HSS-Bi-Metal	225 mm	16 mm	0.9 mm	10/14	88217	30066
All kind of metals, stainless steel, Steel pipes, cast iron, alloys, etc. With universal toothing	> 6 mm	HSS-Bi-Metal	290 mm	16 mm	0.9 mm	10/14	88218	30072

Metal processing; soft metals, plastic, laminate an wood with nails – particular for pallets	> 3 mm	HSS-Bi-Metal	228 mm	19 mm	0.9 mm	10/14	88226	30045

For Wood

Application Range Meta processing	Material	Steel-	Length	Width	Thickness	Teeth	Milford	Alfra
Special sabre saw for wood with nails; plasterboard In particular for the refurbishing		HSS-Bi-Metal	150 mm	19 mm	0.9 mm	5/8	88142	30085
Special sabre saw for wood Plastics or Laminates -curve sections-		HSS-Bi-Metal	150 mm		0.9 mm	4/6	88143	30086
Special sabre saw for wood, plasterboard In particular for the refurbishing		HSS-Bi-Metal	210 mm	19 mm	0.9 mm	6	88144	30087
Special sabre saw for wood, plasterboard In particular for the refurbishing		HSS-Bi-Metal	290 mm	19 mm	0.9 mm	6	88145	30088

For wood (coated)

Special sabre saw for wood With a special lamination for minimum friction	HSS-Bi-Metal	228 mm	19 mm	1.0 mm	7	87960	30031

ORIGINAL ASTROFLEX® – HSS-BI-METAL SABRE SAW BLADES

For Rems- and Roller Sabre Sawing Machines

ALFRA-Special-Sabre-Saw Blades can be used problem-free on these machines. Made of HSS-Bi-Metal, heat treated to the point.

- Made of high alloy HSS-Bi-Metal.
- Heat treated to the point.
- Highest heat hardness and wear resistance.
- Toothing in crossed version.

for free-hand and flush cutting

Application range	Steel quality	Length	Width	Thickness	Teeth per Inch	Blade No.	Alfra Prod.No.
For free-hand and flush cutting	HSS-Bi-Metal	150 mm	25 mm	1.1 mm	14		30105
	HSS-Bi-Metal	200 mm	25 mm	1.1 mm	14		30103
e. g. refurbishing, on walls and overhead	HSS-Bi-Metal	300 mm	25 mm	1.1 mm	14		30104

Packaging unit: 5 pieces

ALFRA – SPECIAL JIGSAW BLADES

Made of HSS Bi-Metal for burr- and distortion-free cutting of thin sheet metals and plates, as well as for pipes in ventilation and air condition constructions. Precise crossing, highest endurance.

Prod.-No. 31014 - 31017

Prod.-No. 31018 - 31021

Application range	Length mm	Thickness mm	Width mm	Teeth		Prod.-No.
For sheet metals as from 1.1 mm thickness, plastic up to 3 mm, wood up to 5 mm	96	0.6	12.5	14	}	31014
	96	0.6	12.5	18		31015
For sheet metals 0.7 - 1.1 mm thickness	96	0.6	12.5	24		31016
For sheet metals up to 0.7 mm thickness	96	0.6	12.5	32		31017
For sheet metals as from 1.1 mm thickness, plastic up to 3 mm, wood up to 5 mm	97	0.6	12.5	14	}	31018
	97	0.6	12.5	18		31019
For sheet metals 0.7 - 1.1 mm thickness	97	0.6	12.5	24		31020
For sheet metals up to 0.7 mm thickness	97	0.6	12.5	32		31021

Attention: do not use any pressure, feed only with dead weight of machine.

HSS-Metal Circular Saw Blades – Ø 275 x 2,5 x 40 mm

- For Eisele and Trennjäger machines, also suitable for Häberle and Wegoma machines.
- Made of HSS DMo5 steel, steam surface coated.

		Art.-Nr.
Dimension: 275 x 2.5 x 40		32060
Side holes: 2/8/55 + 4/11/63 mm		
Pitch:	4 t = 220 BW	32061
	6 t = 140 HZ	32062
	7 t = 120 HZ	32063
	8 t = 110 HZ	32064

HSS-Metal Circular Saw Blades – DM 05

Tooth form BW = Curved tooth with alternating chamfer
Tooth form C = Curved tooth with taper tap and regroover (HZ)
t = Pitch

When ordering, please indicate pitch, number of teeth and tooth form

Ø mm	Cutting Width mm	Bore, Side Holes (mm) Make	Pitch, Numer of Teeth, Tooth Form	Prod.-No.
225	2.0	32 2/8/45 + 2/11/63	3t = 220 BW, 4t = 180 BW,	32015
225	2.0	40 2/8/55 + 4/12/64	6t = 120 HZ, 8t = 90 HZ	32015
250	2.0	40 2/8/55 + 4/12/64	4t = 200 BW,	32012
250	2.0	32 2/8/45 + 2/12/64 + 4/9/50	6t = 128 HZ, 8t = 100 HZ,	32021
250	2.5	40 2/8/55 +4/12/64	4t = 200 BW, 6t = 128 HZ, 8t = 100 HZ,	32022
275	2.0	40 2/8/55 + 4/12/64	3t = 280 BW, 4t = 220 BW,	32023
275	2.5	32 2/8/45 + 2/12/64 + 4/9/50	6t = 140 HZ, 7t = 120 HZ, 8t = 110 HZ	32028
300	2.5	40 2/8/55 + 4/12/64	4t = 220 BW, 6t = 160 HZ,	32030
300	2.5	32 2/8/45 + 2/12/64 + 4/9/50	8t = 120 HZ	32035
315	2.5	40 2/8/55 + 4/12/64	4t = 220 BW, 6t = 160 HZ,	32037
315	2.5	32 2/8/45 + 2/12/64 + 4/9/50	8t = 120 HZ	32041
315	3.0	40 2/8/55 + 4/12/64		32044
350	3.0	40 2/8/55 + 4/12/64	4t = 280 BW, 6t = 180 HZ, 8t = 140 HZ	32050
350	3.0	50 4/15/80 + 4/14/85	10t = 110 HZ	32053
370	3.0	50 4/15/80 + 4/14/85	5t = 220 BW, 7t = 160 HZ, 9t= 120 HZ, 11t= 100 HZ	32055
400	3.0	40 2/15/80 + 4/12/65 + 2/15/100	6t = 200 HZ, 8t = 160 HZ,	32057
400	3.5	50 4/15/80 + 4/14/85	10t = 128 HZ, 12t= 100 HZ	32058

Also suitable for cutters such as:

Jepson/Global/Ridgid/Ryobi

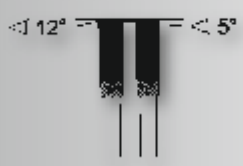
and other brands with arbor revolution = 1500 r.p.m.

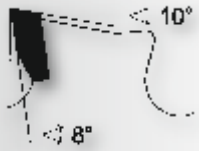
The universal TCT Saw blade for rapid cutting in:
Steel – Copper – Aluminium – Profiles – Cables – Sheeting – Solid materials

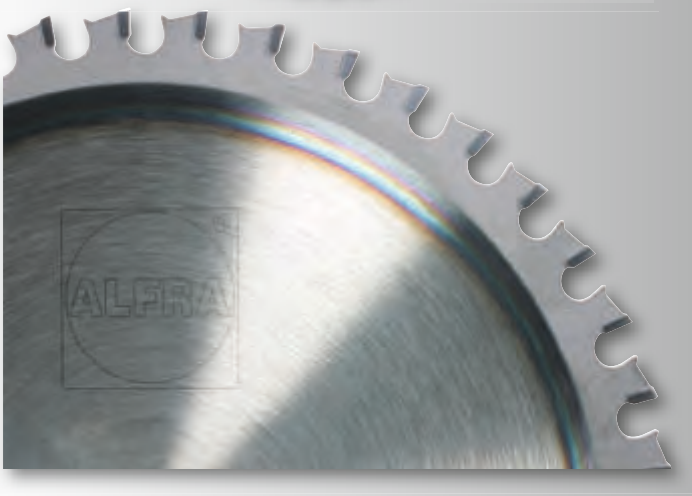
- without coolant.
- regrindable.
- low noise thanks to laser ornaments.

Dimensions		Steel	Stainless steel	Prod.-No.
305 x 2.2 x 25.4 mm	60 Z	•		32100
305 x 2.2 x 25.4 mm	80 Z	•		32101
355 x 2.4/2,0 x 25.4 mm	72 Z	•		32108
355 x 2.4 x 25.4 mm	90 Z	•		32102
355 x 2.6 x 25.4	90 Z	coated	•	32105

Other tooth counts upon request.







355 x 2.6 x 25.4 • 90 Z • coated

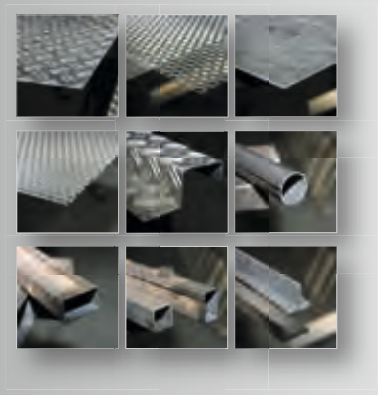
See also machine description in catalogue part B

ALFRA-Circular Saw Blades – RotaSpeed®

- Tungsten carbide tipped, suitable for metal cutting saws from: ALFRA, Flex, Euroboor, Evolution, Hitech, Jepson, Metallkraft, Ridgid, etc.
- These special TCT circular saws ensure fast and clean cuts in pipes, threaded rods, profiles, corrugated and trapezoidal sheets, wire ducts, sandwich panels, dry mortarless construction profiles, fastening profiles (DIN rails), grates using dry cutting method.
- For use on metals, CrNi steel*, aluminium.
- High cutting performance and tool life. The excellent price/performance ratio makes these saws highly economical.
- **The corresponding manufacturer's machine guidelines and notes on use must be observed when using these saw blades.**

Premium quality

Cutting-Ø mm	Application	Dimensions mm	No. of teeth	Prod.-No.
180/7"	Steel	180 x 30	34	22205
200/8"	Steel	200 x 30	40	22255
230/9"	Steel	230 x 25,4	44	22305
230/9"	Aluminium	230 x 25,4	62	22306
230/9"	For trapezoid sheeting	230 x 25,4	80	22307



Magnetic Chip Remover

In a stainless steel round rod, you can move a magnet back and forth. The strong magnet picks up metal chips - pull a knob and the chips fall off. For more cleanliness in the work place.

	Prod.-No.
ALFRA magnetic chip remover, length 400 mm	18654

Prod.-No. 18654

ASTROFLEX® – METAL HAND SAW BLADES

Typenauswahl

FLEX: High–Carbon Steel Blade
Economical blade, especially designed for aluminium profiles or wood.

BI-METAL: High–Speed Steel with Bi-Metal Strip
Blade with high durability and heat resistance for flexible and robust applications, such as for steel pipes and stainless steel sheets.

Type	No. of teeth/Inches		Prod.-No.
FLEX	18 Z	Wavy Set	3300F18
FLEX	24 Z	Wavy Set	3300F24
FLEX	32 Z	Wavy Set	3300F32

Type	No. of teeth/Inches		Prod.-No.
BI-METAL	18 Z	Wavy Set	3300BiM18
BI-METAL	24 Z	Wavy Set	3300BiM24
BI-METAL	32 Z	Wavy Set	3300BiM32

- Customer brand execution in colour, imprint and packaging from 5.000 pieces possible.
- Packaging unit: 100 pieces.

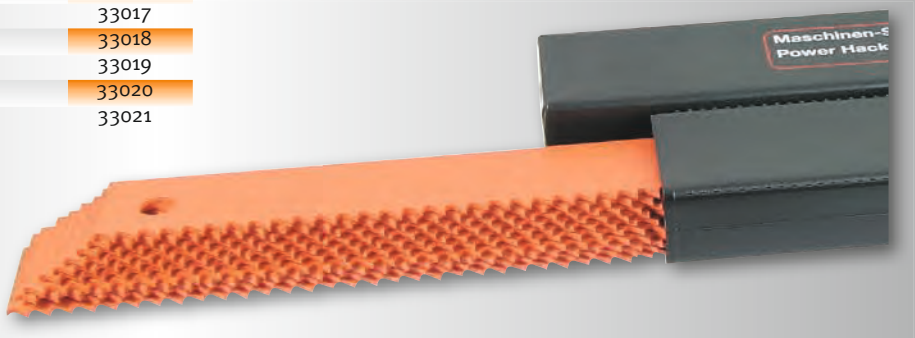
ALFRA MACHINE SAW BLADES – HSS DM 05

For Hacksawing machines
- You can use the efficiency of the whole machine with these machine saw blades.
- For sawing solid material, pipes and profiles of all strengths.
- **Also for high-strength steels.**

- With parabolic tooth against early break.
- Sharp-edged and wear-resistant, with fine carbide repartition in micro structure.
- Straightened by master hand.
- For all types of machines.

Dimension mm	available toothing tpt					Prod.-No.
300 x 25 x 1.5	8	10	14			33010
350 x 30 x 1.5	6	8	10	14		33011
350 x 30 x 2.0	4	6	8	10		33012
400 x 30 x 1.5	6	8	10	14	18	33013
400 x 30 x 2.0	4	6	8	10		33014
450 x 30 x 2.0	4	6	8	10		33015
450 x 35 x 2.0	4	6	8	10		33016
450 x 40 x 2.0K	4	6	8	10		33017
500 x 40 x 2.0	4	6	8	10		33018
575 x 50 x 2.5K	3	4	6			33019
650 x 55 x 2.5K	3	4	6			33020
700 x 55 x 2.5K	3	4	6			33021

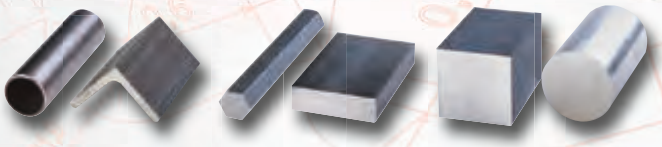
K = Kasto with displaced side holes
Other dimensions and toothings on request.
Length measured from hole center to center.
Packaging unit: 10 pieces



Rix® Astroflex® M42

Universal saw blade for cutting materials with tensile strength up to 1,300 N/mm².

- ✔ Mild steel
- ✔ Case-hardened steel
- ✔ Free cutting steel
- ✔ Heat-treatable steel



Width x Thickness mm	Combi Tooth Pitch											
	0.75/1.25	1/2	1.5/2.0	2/3	3/4	4/5	4/6	5/6	5/8	6/10	8/12	10/14
6 x 0.90												●
10 x 0.90										●	●	●
13 x 0.65										●	●	●
13 x 0.90									●	●		●
20 x 0.90							●		●	●	●	●
27 x 0.90				●	●	●	●	●	●	●	●	●
34 x 1.10				●	●	●	●	●	●	●	●	
41 x 1.30			●	●	●	●	●	●	●			
54 x 1.30			●	●	●	●	●					
54 x 1.60	●	●	●	●	●	●	●					
67 x 1.60	●	●	●	●	●							
80 x 1.60	●	●	●	●								

RIXOL-2000

Coolant concentrate

- Universal use for sawing and drilling of steel, stainless steel, cast iron, nonferrous metal and aluminium alloys.
- Water emulssive, contains mineral oil, rot-proof, stable solution.
- Provides good rust protection and lubrication. Causes no irritation of the skin.
- No smoke development and no coagulation.
- Factor I for hand refranctometer.
- Mixture: Circular saws 5 - 12%, Band saws 6 - 20 %

	Prod.-No.
20 ltr. Plastic container	21001
208 ltr. Barrel	on request

Excellently suited for Rotabest® magnetic drills, as it is water-mixable.

ALFRA 2000

High performance cutting oil

- ALFRA BIO 2000 is an entirely synthetic cutting oil, developed for the metal working industry for core drilling, turning, drilling, milling, reaming, countersink, rubbing, tapping.
- Ideally qualified for all steel and steel alloys, chrome-nickel steel, copper, aluminium alloys.
- With special high pressure and anti wear additives.
- With corrosion and rust protection.
- Increases tool life up to 200 % and shortens operating time, reduces the number of rejects.

	Prod.-No.
Can 250 ml	21010
5 ltr. Plastic container	21012
60 ltr. Barrel	21021

Prod.-No. 21010

	Prod.-No.
High-performance coolant stick	09012

Prod.-No. 09012

ALFRA 4000

High Performance Cutting Oil Spray

- Suitable for core drilling applications with ALFRA cutters. Also ideal for twist drilling, thread tapping, reaming, countersinking, and difficult cutting applications.
- For use on: common steels; high-alloy, stainless steels; chromium nickel steels; titanium and manganese-carbon steels.
- 100% pure active substance.
- Optimal cutting performance.
- For working on walls and ceilings.
- Free from propellant gas.
- Free from chlorine and solvent.
- Pump spray.
- Optimal dosing quantity.

	Prod.-No.
Can 300 ml	21040

Prod.-No. 21040


Chip Flute
Chip Forwarding Pitch

Clearance Angle

Is the angle between the TCT tooth and the material to be cut. ALFRA TCT Cutters are equipped with serveral clearance angles at a cutting edge.

Cutting Depth

Is the maximum material thickness which might be cut with the particular tool (not to be mistaken with the constructive height of the tool).

Chip Flute

Takes the generated chips and advances this out of the bore.

Chip Forwarding Pitch

Forwards the chips from the TCT tooth to the chip flute.

Chip Surface

On this surface the chip is formed.

Chip Angle

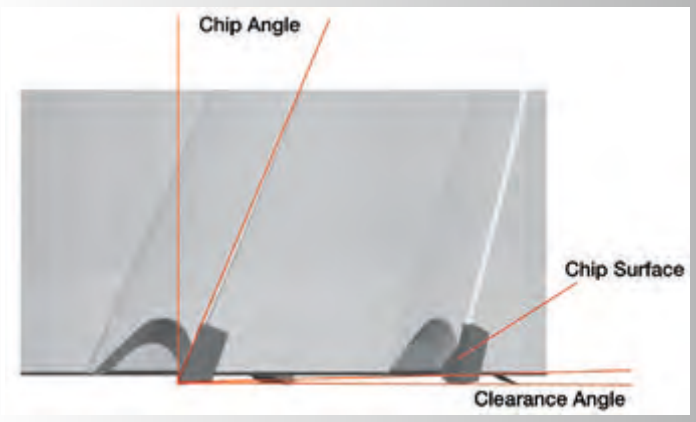
Is the angle between tool axis and chip surface.

Tooth Excess Length

Is the carbide excess to the basic body.

Tooth Height Difference

Acts as a chip breaker.



RPM, cutting speed and feed (approximate value)
Rotabest®-TCT cutter
Not suitable for automatic feed

Material	m/min	mm/U
Constructional steel 50 kp/m²	40-60	0.08-0.12
Steel 50-70 kp/m²	30-50	0.08-0.12
Stainless steel	18-45	0.8-0.10
Cast iron	65-95	0.12-0.20
Non-ferrous metals, Aluminium	100-550	0.22-0.45
Exotic alloys	10-30	0.05-0.08

Exactness (approximate value)/input/+ 0.10 mm Output/± 0 mm

HSS Bi Metal Hole Saws – Notes on use

1. Use the hole saws at the recommended cutting speed, see guide table on the packaging.
2. Do not apply excess pressure. Apply a little more pressure for a harder material and less pressure for a softer material.
3. In order to achieve good centring, the centre drill must project approximately 6 mm beyond the teeth. It is recommended that the hole is first predrilled with a twist drill and then the centre drill is used in the adapter as a centring pin.
4. Use a good cutting oil when drilling metal. This extends the hole saw's service life and prevents premature blunting of the tooth tips.
5. The arbor of the adapter must be firmly clamped with the flattened sides correctly seated in the chuck.
6. The hole saw must cut into the workpiece at a right angle. Avoid tilting. Risk of accident.
7. If large hole saw diameters are used in hand-held drills, the hand-held drill must be held particularly firmly. A drill stand should be used where possible.
8. The adapter must be firmly screwed into the hole saw with all its thread and the driver pins must be firmly seated in the driver holes.
9. Secure the driver pins with the rotating ring or lock in the case of a quick-change adapter.
10. Wear protective goggles when working with the bi-metal hole saws and keep hands away in case saw runs out. Never attempt to stop with your hands a saw that is running off.
11. Lift the saw clear frequently, especially when cutting timber, chipboard and wood substitutes and remove the sawdust and chips. If this is not done, the tooth tips can burn and the hole saw will jam in the cut.
12. We recommend the following procedure when drilling timber, chipboard and wood substitutes:

Enlarging existing holes

Existing holes 32 mm (1-1/4") or more in diameter may be enlarged with a simple trick:
Take a 32 mm diameter hole saw and screw this inside the hole saw on the projecting thread of the A2 adapter. The inner hole saw then acts as a kind of guiding hole saw for extending existing holes, see photo.

Drill a number of holes immediately inside the cut. This helps carry the chips away and avoids frequent interruptions in cutting to clean the tooth tips.

If the workpiece is especially thick ...
... it is also recommended that you cut from both sides, or drill a number of holes immediately inside the circular cut. This helps carry the chips away and avoids frequent interruptions in cutting to clean the tooth tips.

What you absolutely must avoid:

1. Drilling at too fast or too slow a cutting speed. The teeth will glide over the material and become prematurely blunt.
2. Avoid bringing the saw teeth abruptly down on the workpiece, the teeth will break off.
3. Never cut metallic materials dry. Always use a cutting oil.
4. Never bring the saw up to the workpiece on a slant. There is a risk of injury when hand drills are used. The saw can break up or the arbor could be damaged.
5. Ensure that the hole saw is running true. Check the chuck as necessary.
6. Never screw the adapter's guide pins only partially into the hole saw guide holes. The thread of the hole saw could be torn out.
7. Never regrind the hole saw freely by hand. Have hole saws reground by a specialist. Care must be taken to ensure sufficient residual setting and a uniform tooth height.
8. If the tool arbor is pushed into the chuck or if the arbor shears off, the advance pressure is too great.
9. If the hole saw is unevenly worn on the outside, then the saw is not running true or the material to be sawn was not correctly clamped.
10. If the tooth tips are blued, the saw has been used without cutting oil, or at too high a cutting speed.

HSS Bi-Metal Hole Saws – Speed Chart

Diameter mm	Mild Steel	Cast Iron	Tool steel + stainless steels	Brass	Aluminium	Wood
14	580	400	300	790	900	3000
16	550	365	275	730	825	3000
17	500	330	250	665	750	3000
19	460	300	230	600	690	3000
20	440	290	220	580	660	3000
21	425	280	210	560	635	3000
22	390	260	195	520	585	3000
24	370	245	185	495	555	3000
25	350	235	175	470	525	2700
27	325	215	160	435	480	2700
29	300	200	150	400	450	2700
30	285	190	145	380	425	2400
32	275	180	140	380	410	2400
33	260	175	135	345	390	2400
35	250	165	125	330	375	2400
37	240	160	120	315	360	2400
38	230	150	115	300	345	2400
40	220	145	110	290	330	2100
41	210	140	105	280	315	2100
43	205	135	100	270	305	2100
44	195	130	95	260	295	2100
46	190	125	95	250	285	2100
48	180	120	90	240	270	2100
51	170	115	85	230	255	2000
52	165	110	80	220	245	2000
54	160	105	80	210	240	2000
57	150	100	75	200	225	2000
59	145	100	75	195	225	2000
60	140	95	70	190	220	2000
64	135	90	65	180	205	1800
65	130	85	65	175	200	1800
67	130	85	65	170	195	1800
70	125	80	60	160	185	1800
73	120	80	60	160	180	1800
76	115	75	55	150	170	1500
79	110	70	55	140	165	1500
83	105	70	50	140	155	1500
86	100	65	50	130	150	1200
89	95	65	45	130	145	1200
92	95	60	45	120	140	1200
95	90	60	45	120	135	1200
98	90	60	45	120	135	1200
102	85	55	40	110	130	1000
105	80	55	40	110	120	1000
108	80	55	40	110	120	900
111	80	50	40	100	120	900
114	75	50	35	100	105	900
121	75	50	35	95	95	900
127	65	45	30	90	90	800
133	60	40	25	86	85	800
140	60	40	25	85	85	800
146	55	35	25	75	75	800
152	55	35	25	75	75	800

These speeds are benchmarks. The speed can we higher or lower, this depends on the material type and the cutting behaviour.
Attention: Do not use cutting oil, if you are cutting cast iron. If you are cutting aluminium use paraffin wax or paraffin.

Calculation of the Cutting Speed

n = Speed (1/min)
v_c = Cutting speed (m/min)
d = Tool diameter (mm)

$$v_c = \frac{\pi \times d \times n}{1000}$$

Speed calculation

n = Speed (1/min)
v_c = Cutting Speed (m/min)
d = Tool diameter (mm)

$$n = \frac{v_c \times 1000}{d \bullet \pi}$$

Worked sample:

d = 20 mm
v_c = 50 m/min

$$n = \frac{50000}{20 \bullet \pi} = 795{,}77\ 1/\text{min}$$

Tool Ø	Cutting speed (m/min)												
		Stainless steel material				Mild steel - ST material							
	20	25	30	35	40	45	50	55	60	65	70	75	80
16	398	498	597	697	796	896	995	1095	1194	1294	1393	1493	1592
18	354	442	531	619	708	796	885	973	1062	1150	1238	1327	1415
20	318	398	478	557	637	717	796	876	955	1035	1115	1194	1274
22	290	362	434	507	579	651	724	796	869	941	1013	1086	1158
24	265	332	398	464	531	597	663	730	796	863	929	995	1062
26	245	306	367	429	490	551	612	674	735	796	857	919	980
28	227	284	341	398	455	512	569	626	682	739	796	853	910
30	212	265	318	372	425	478	531	584	637	690	743	796	849
32	199	249	299	348	398	448	498	547	597	647	697	746	796
34	187	234	281	328	375	422	468	515	562	609	656	703	749
36	177	221	265	310	354	398	442	487	531	575	619	663	708
38	168	210	251	293	335	377	419	461	503	545	587	629	670
40	159	199	239	279	318	358	398	438	478	518	557	597	637
42	152	190	227	265	303	341	379	417	455	493	531	569	607
44	145	181	217	253	290	326	362	398	434	470	507	543	579
46	138	173	208	242	277	312	346	381	415	450	485	519	554
48	133	166	199	232	265	299	332	365	398	431	464	498	531
50	127	159	191	223	255	287	318	350	382	414	446	478	510
52	122	153	184	214	245	276	306	337	367	398	429	459	490
54	118	147	177	206	236	265	295	324	354	383	413	442	472
56	114	142	171	199	227	256	284	313	341	370	398	427	455
58	110	137	165	192	220	247	275	302	329	357	384	412	439
60	106	133	159	186	212	239	265	292	318	345	372	398	425
62	103	128	154	180	205	231	257	283	308	334	360	385	411
64	100	124	149	174	199	224	249	274	299	323	348	373	398
66	97	121	145	169	193	217	241	265	290	314	338	362	386
68	94	117	141	164	187	211	234	258	281	304	328	351	375
70	91	114	136	159	182	205	227	250	273	296	318	341	364
72	88	111	133	155	177	199	221	243	265	288	310	332	354
74	86	108	129	151	172	194	215	237	258	280	301	323	344
76	84	105	126	147	168	189	210	230	251	272	293	314	335
78	82	102	122	143	163	184	204	225	245	265	286	306	327
80	80	100	119	139	159	179	199	219	239	259	279	299	318
82	78	97	117	136	155	175	194	214	233	252	272	291	311
84	76	95	114	133	152	171	190	209	227	246	265	284	303
86	74	93	111	130	148	167	185	204	222	241	259	278	296
88	72	90	109	127	145	163	181	199	217	235	253	271	290
90	71	88	106	124	142	159	177	195	212	230	248	265	283
92	69	87	104	121	138	156	173	190	208	225	242	260	277
94	68	85	102	119	136	152	169	186	203	220	237	254	271
96	66	83	100	116	133	149	166	182	199	216	232	249	265
98	65	81	97	114	130	146	162	179	195	211	227	244	260
100	64	80	96	111	127	143	159	175	191	207	223	239	255

FRP Hole Saws

Ø mm	Timber Chipboard	Plastics	Masonry	Wall tiles*
25/30/35	1000	800	800	500
40/45/50	800	600	700	400
58 bis 74	600	400	600	400
80/105	400	300	300	300

* Drilling in tiles only up to a scratch hardness of 6, mark centre, set the centre drill and drill through the glaze with at a low speed, allow the saw teeth to penetrate the glazing uniformly, running as smoothly and level as possible, so that the edge of the hole is made without chipping. Continue drilling at a normal drilling speed. Tiles with a scratch hardness greater than 6 may only be cut with diamond or carbide hole saws.

Notes on use
- Use rotation only. Switch off impact or hammer drill.
- Impact and shock on the sharp, ground carbide cutters can lead to small carbide splinters and thus to a severe loss of performance.
- Do not tilt the hole saw in the hole.
- Remove the drill core after each operation. Remove the sawdust when drilling timber and timber products.

Notes on use
For multipurpose hole saw with rim countersink
- The rim countersink is placed between hole saw and adapter and the carbide cutter is used to make a countersink in timber and timber substitutes. This makes it possible to fit sockets flush.

Important notes on use
- The hole saw with rim countersink may not be stopped before it is removed.
- Advance with care, to prevent the cut edges tearing.

Speed Chart – Multi-Step Drills/Conical One-Lip Bits

ALFRA-Multi-step drills

These drills were especially to drill perfectly round and simultaneously deburred holes insheet metals of 3 - 6 mm. The radius transition simultaneously deburrs or bezels the holes. While conical one-lip bits drill slightly conical holes, cylindrical holes can be drilled with ALFRA Multi-step drills. The tools are axial-radially relief ground and can be resharpened at 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.
Imperatively use sufficient cooling **(ALFRA coolant stick or bore emulsion).**

Type		Stahl-blech S235	V2A Bleche	NE-Metalle	Kunst-stoff weich
AM	anbohren	800	360	1000	1000
	aufsenken	500 - 180	50 - 70	800 - 400	1000 - 400
AM-1	anbohren	800	360	1000	1000
	aufsenken	200 - 100	100 - 50	500 - 200	600 - 250
PVD, PVK, DKI	anbohren	800	360	1000	1000
PVD-VA + SVB	aufsenken	400 - 200	200 - 100	800 - 500	1000 - 600

ALFRA HSS DM 05 precision Multistep Drill

- **Take notice of the cuttig speed**
- **Grease the cutting lips in case of application**

The holes are deburred on both sides by the multistep drills. The multistep drill drills holes in thin materials, enlarges existing holes, makes inclined holes, drills pipes, makes holes penetrating each other. Suitable for any hand drill. For steel — PVC — polystrol — polyester — Plexiglas — card — plywood and similar materials. Can be reground many times, if treated carefully.

Material	unalloyed Mild steel 700 N/mm²	Mild steel 1000 N/mm²	Alloy steel > 250 N/mm²	Stainless steel < 1000 N/mm²	Al. alloy up to 11% Si	Thermo-plastic	Duro-plastic	Wood
Material gauge	4.0 mm	4.0 mm	4.0 mm	3.0 mm	4.0 mm	4.0 mm	4.0 mm	25.0 mm
Drilling paste	X	X	X	X	X	H_2O	Air	
m/min	20 - 25	10 - 16	8 - 12	5 - 12	10 - 16	12 - 25	8 - 12	40 - 100
Ø mm	U/min	U/min	U/min	U/min	U/min	U/min	U/min	U/min
3.0 - 14.0	2600 - 600	2100 - 450	1060 - 230	500 - 300	2600 - 550	2100 - 450	1500 - 340	3000 - 1000
6.0 - 20.0	1500 - 400	1200 - 320	640 - 160	400 - 250	1590 - 400	1270 - 320	950 - 240	2800 - 1000
6.0 - 22.5	1500 - 250	1200 - 280	640 - 140	400 - 250	1500 - 350	1270 - 280	950 - 210	2000 - 800
16.0 - 30.0	300 - 200	400 - 210	200 - 100	150 - 80	500 - 260	400 - 210	300 - 160	1500 - 800
26.0 - 40.0	330 - 200	270 - 160	130 - 80	100 - 60	330 - 200	270 - 160	200 - 120	1000 - 400
36.0 - 50.0	220 - 160	180 - 130	90 - 60	80 - 40	220 - 160	180 - 130	130 - 100	600 - 200
46.0 - 60.0	200 - 130	160 - 100	80 - 50	40 - 20	200 - 130	160 - 100	120 - 80	500 - 100

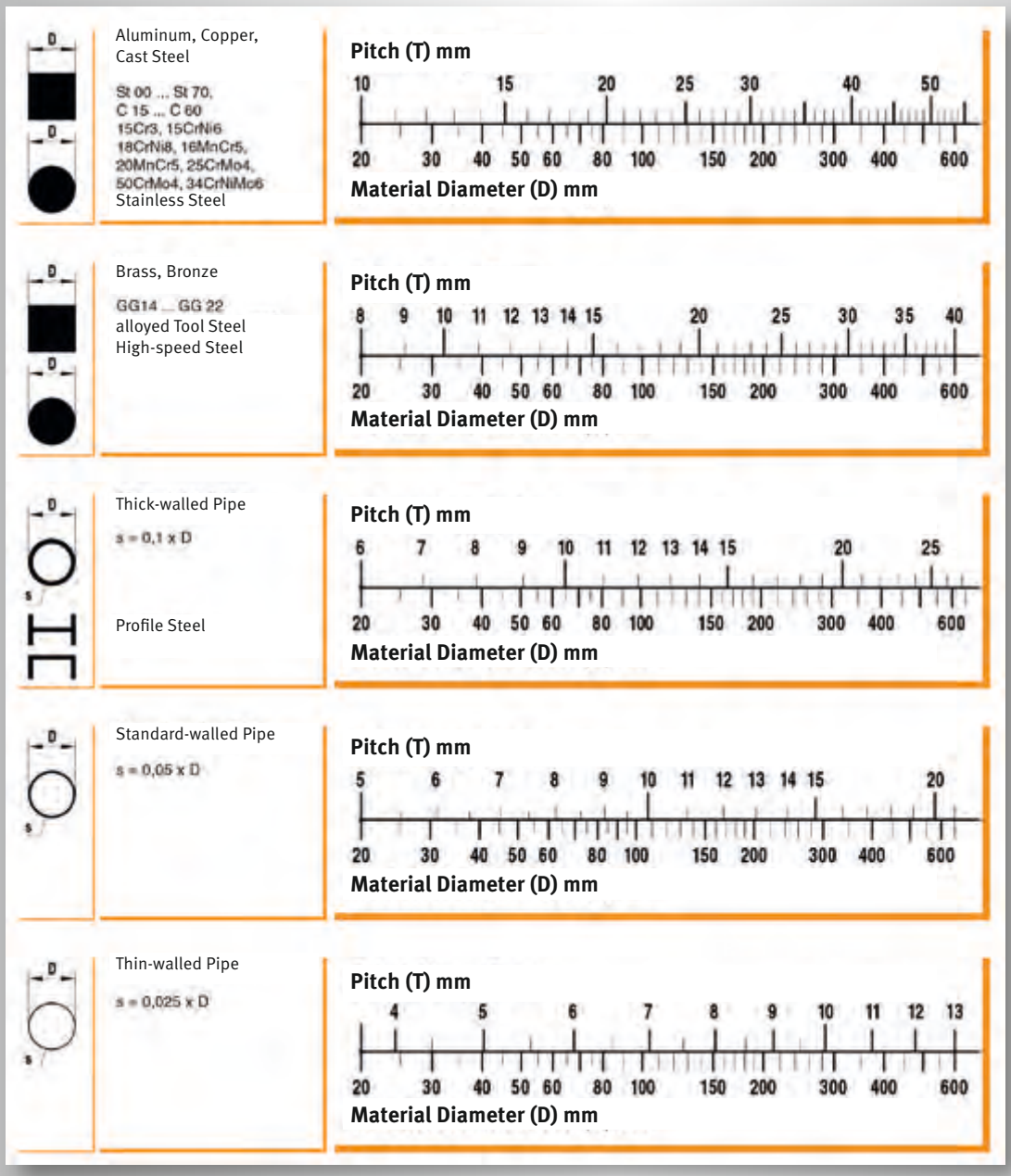
TAPER AND DEBURRING COUNTERBORES

Material	unalloyed Steel 700 N/mm²	unalloyed Steel 700 N/mm²	alloyed Steel 1000 N/mm²	Cast Iron < 250 N/mm²	Cast Iron > 250 N/mm²	Stainless Steel < 1000 N/mm²	CuZn alloyed brittle	CuZn alloyed tough	Alum. alloyed bis 11% Si	Thermo-plastic	Duro-plastic
Cutting Spray	X	X	X	X	X	X	X	X	X	H2O	Air
m/min	15	10	6	12	8	6	20	15	25	20	15
Ø mm	U/min	U/min	U/min	U/min	U/min	U/min	U/min	U/min	U/min	U/min	U/min
4.3	1100	740	440	890	590	400	1480	1110	1850	1480	1110
5.0	950	640	380	760	510	340	1270	950	1590	1270	950
5.3	900	600	360	720	480	320	1200	900	1500	1200	900
5.8	820	550	330	660	440	290	1100	820	1370	1100	820
6.0	800	530	320	640	420	280	1060	800	1330	1060	800
6.3	760	510	300	610	400	260	1010	760	1260	1010	760
7.0	680	450	270	550	360	230	910	680	1140	910	680
7.3	650	440	260	520	350	220	870	650	1090	870	650
8.0	600	400	240	480	320	200	800	600	990	800	600
8.3	580	380	230	460	310	190	770	580	960	770	580
9.4	510	340	200	410	270	160	680	510	850	680	510
10.0	480	320	190	380	250	150	640	480	800	640	480
10.4	460	310	180	370	240	140	610	460	770	610	460
11.5	420	280	170	330	220	130	550	420	690	550	420
12.4	390	260	150	310	210	110	510	390	640	510	390
13.4	360	240	140	290	190	100	480	360	590	480	360
14.4	340	220	130	270	170	90	450	320	550	450	320
15.0	320	210	130	250	170	90	420	320	530	420	320
16.5	290	190	120	230	150	80	390	290	480	390	290
19.0	250	170	100	200	130	60	340	250	420	340	250
20.5	230	160	90	190	120	50	310	230	390	310	230
23.0	210	140	80	170	110	50	280	210	350	280	210
25.0	190	130	80	150	100	50	250	190	320	250	190
26.0	180	120	70	150	100	40	240	180	310	240	180
28.0	170	110	70	140	90	40	230	170	280	230	170
30.0	160	110	60	130	80	40	210	160	270	210	160
31.0	150	100	60	120	80	30	210	150	260	210	150
32.0	150	100	60	120	80	30	210	150	260	210	150
34.0	140	90	60	110	70	30	190	140	230	190	140
37.0	130	90	50	100	70	30	170	130	220	170	130
40.0	120	80	50	100	60	30	160	120	200	160	120
50.0	100	60	40	80	50	20	130	100	160	130	100
63.0	80	50	30	60	40	20	100	80	130	100	80
80.0	60	40	20	50	30	20	80	60	100	80	60

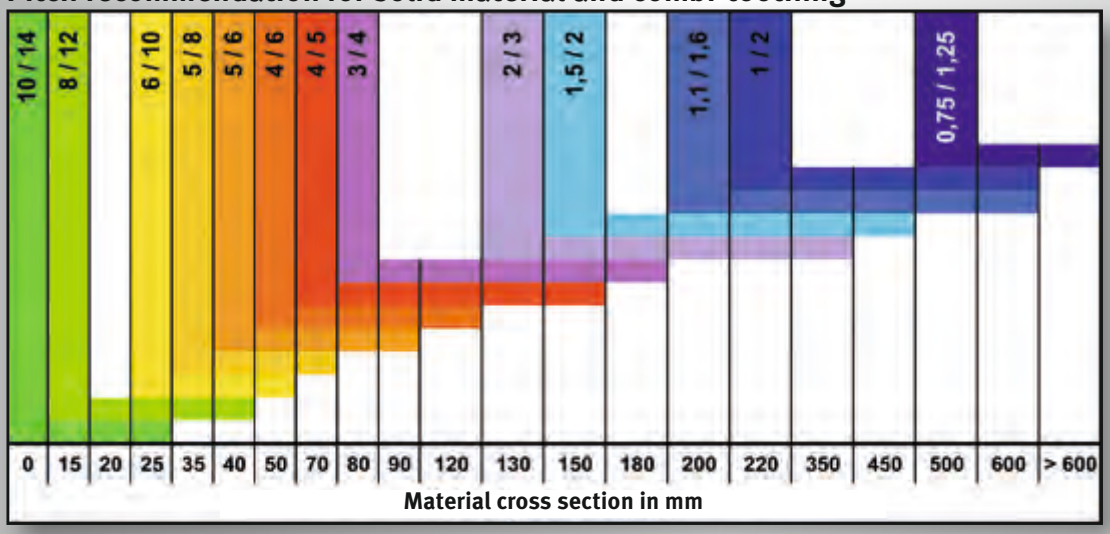
Sabre Saw Blades - Comparison Chart

Milford	Bahco	Bosch	MPS	Milwaukee	Metabo	Lenox	WILPU
	3840-100-6-ST	-	-	-	-	456RP	-
	3840-100-10-ST	-	4433	48 00 5090	-	-	-
88161	3840-100-14-ST	S522BF	4410	48 00 5181	-	414R	
88162	3840-100-18-ST	S522EF	4400	48 00 5183	-	418R	3014/100
88163	3840-100-24-ST	S522AF	4403	48 00 5185	-	424R	3015/100
	3840-100-10-SC	-	-	48 00 5161	-	-	-
88151	3840-100-14-SC	S422BF	-	48 00 5162	6 31990	314RC	3017/90
88152	3840-100-18-SC	-	-	48 00 5163	-	318RC	-
88166	3840-150-6-ST	-	4035	-	-	-	-
88125	3840-150-8/12-ST	S123XF S922VF	4430 VP 4440 VP	48 00 5091	31914 6 6 31492 6 31911	650R	1014C/150
88176	3840-150-10-ST	S922HF	4430 4041	48 00 5092 48 00 5712	-	610R 6110R	3018/150
88177	3840-150-14-ST	S922BF	4411	48 00 5182 48 00 5782	6 31491	614R 6114R 6514R	3013/150
88178	3840-150-18-ST	S922EF	4401	48 00 5184 48 00 5784	6 31454	618R 6118R 9518R	3014/150
88179	3840-150-24-ST	S922AF	4405	48 00 5186	-	624R	3015/150
88142	3840-150-5/8-SL	-	4016	-	6 31984	-	-
88143	3840-150-4/6-SC	S711DF	-	48 00 5041	6 31985	676RC	-
88219	3840-228-8/12-ST	S1122VF	4434 VP 4431 VP 4441 VP	48 00 5093	6 31495	-	1014C/225
88174	3840-228-10-ST	S1122HF	4434 4431	48 00 5713	-	810R 9110R	3018/200
88186	3840-228-14-ST	S1122BF	4416	48 00 5787 48 00 5187	6 31494	9514R 9114R	3013/200
88187	3840-228-18-ST	S1122EF	4429 4402	48 00 5188 48 00 5788	6 31493	818R 9118R	3014/200
88144	3840-228-6-SL	S1111DF	4444	-	-	-	3021/225
	3840-300-14-ST	-	4422 4061	-	-	12114R	-
	3840-300-18-ST	-	-	48 00 5189 48 00 5789	-	118R 12118R	-
88145	3840-300-6-SL	S1411DF	4015 4017	48 00 5037	-	-	3021/300
88230	3840-300-8/12-SL	S1222VF	4432 VP	48 00 5094 48 00 5194	6 31407	110R	1014C/280
88220	3840-150-5/8-DSL	S611DF S610DF	-	48 00 5031 48 00 5021	6 31925	-	3021/150 3055/150
88221	3840-228-5/8-DSL	S3456XF S1110DF	4464 VP 4474 VP	48 00 5026	6 31926 6 31915	966R	-
88222	3840-300-5/8-DSL	-	-	48 00 5027	-	106R	-
87950	3842-150-7-SL	S644D	4011 4012 4013	48 00 5015	6 31470	656R 606R	3021/150 3019/150
87960	3842-228-7-SL	-	-	48 00 5016 48 00 5036	-	956R	3030/225
87970	3842-300-7-SL	-	4010	48 00 5017	6 31489 6 31472	156R	3030/300
	3846-150-6-SL	S641HM	4073 4014	48 00 5052	6 31137	6565RCT 636RP	3040/150HM
	3846-228-3-ST	S1141HM	4075	-	-	8535RCT	3041/225HM
	3846-228-6-ST	-	-	-	-	-	-
	3846-300-3-ST	S1241HM	4080	-	6 31146	-	3041/300HM
	3846-300-6-ST	-	4060	-	-	-	-
	3846-100-G-ST	-	-	48 02 1400	-	-	-
	3846-150-G-ST	S1130Riff	4084	48 02 1420	6 31818	600RG	D12/230
88228	3840-228-10/14-PR13	-	4426 4436 4437 4438	48 00 5193	-	-	-
	3840-150-8-UST-5P 3840-200-8-UST-5P 3840-300-8-UST-5P	- - -	- - -	48 00 5500 48 00 5510 48 00 5515	- - -	608ER 708ER -	- - -

At first select material and form.
Then look for material diameter (D) on the related scale and read off the pitch value (T).



Pitch recommendation for solid material and combi-toothing

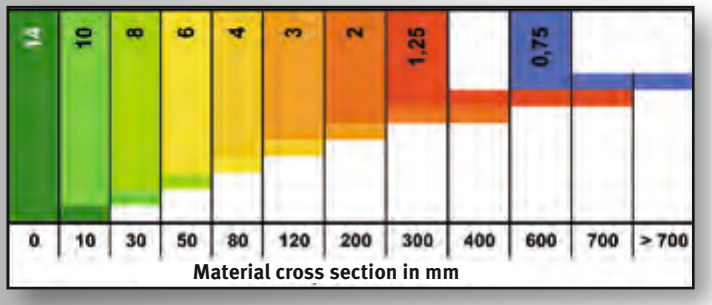


Pitch recommendation for pipes

Wall thickness	Pipe outside diameter 20	40	60	80	100	120	150	200	300	500
2	14	10 / 14	10 / 14	10 / 14	10 / 14	8 / 12	8 / 12	8 / 12	8 / 12	5 / 8
3	14	10 / 14	10 / 14	8 / 12	8 / 12	8 / 12	8 / 12	6 / 10	6 / 10	5 / 8
4	10 / 14	10 / 14	8 / 12	8 / 12	8 / 12	6 / 10	6 / 10	5 / 8	5 / 8	4 / 6
5	10 / 14	10 / 14	8 / 12	8 / 12	6 / 10	6 / 10	5 / 8	4 / 6	4 / 6	4 / 6
6	10 / 14	8 / 12	8 / 12	6 / 10	6 / 10	5 / 8	5 / 8	4 / 6	4 / 6	4 / 6
8	10 / 14	8 / 12	8 / 12	6 / 10	5 / 8	5 / 8	4 / 6	4 / 6	4 / 6	4 / 6
10		8 / 12	6 / 10	5 / 8	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 5
12		8 / 12	6 / 10	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 5
15		8 / 12	6 / 10	4 / 6	4 / 6	4 / 6	4 / 6	4 / 5	4 / 5	4 / 5
20			4 / 6	4 / 6	4 / 6	4 / 6	4 / 5	4 / 5	4 / 5	3 / 4
30				4 / 6	4 / 6	4 / 5	4 / 5	4 / 5	4 / 5	2 / 3
50							4 / 5	3 / 4	2 / 3	2 / 3
80								3 / 4	2 / 3	1,5 / 2
> 100									1,5 / 2	1 / 2

Pitch (tpi)

Pitch recommendation for solid material and standard pitches (tpi)



METAL BAND SAWS - R.P.M. RECOMMENDATIONS

Material	DIN	m/min Rapid	m/min M 42	cm² /min (bei M 42)	Cutting Oil	Emulsion
Construction Steel	St 37 / St 42	40 - 60 35 - 50	70 - 90 50 - 70	70	-	1 : 8
Case-hardened Steel	C10/C15 14 NiCr 14 21 NiCrMo 2 16 MnCr 5	50 - 70 30 - 35 30 - 35 35 - 40	40 - 70	40		1 : 8
Nitriding Steel	34 CrAl6	30 - 35	35 - 45	40	-	1 : 8
Machining Steel	9 S20	50 - 70	50 - 70	100	-	1 : 8
Free-cutting Steel	C35 / C45 / Ck 45 40 Mn 4 36 NiCr 6 34 CrNiMo 6 42 CrMo 4	40 - 60 40 - 50 35 - 45 35 - 45 35 - 45	55 - 75	80 40 40 40 40	-	1 : 8
Ball-bearing Steel	100 Cr 6	25 - 35	30 - 50	40	-	1 : 8
Spring Steel	65 Si 7 50 CrV 4	30 - 40 30 - 40	30 - 50	40	-	1 : 8
Unalloyed Tool Steel	C 125 W 1 C80W 1	30 - 40 30 - 40	30 - 50	25	-	1 : 8
Alloyed Tool Steel	125 Cr 1 X210 Cr12 X 42 Cr 13 58 SiCr 8 X 165 CrV 12 100 CrMo 5 56 NiCrMoV 7 45 wCrV 7 X 32 CrMoV 3 3	30 - 40 20 - 30 25 - 35 30 - 40 20 - 30 25 - 35 30 - 40 30 - 40 35 - 40	30 - 50	20	ja	1 : 8
High-speed Steel	S 6-5-2-5 S 6-5-2 S 3-3-2 S-18-0-1 S 18-1-2-10		25 - 45	25	ja	1 : 5
Valve Steel	X 45 CrSi 9 3 X 45 CrNi W 18 9		25 - 35	20	ja	1 : 5
Hochwarmfeste Stähle	W.Nr4922 W.Nr4980		15 - 30	15	ja	1 : 5
Highly Heat Resisting Steel	W.Nr.4713 W.Nr.4742 W.Nr.4841		15 - 30	15	ja	1 : 5
Stainless and Acid-proof Steel	X 5 CrNi 18 9 X 10 CrNiMoTi 18 10		25 - 35	20	ja	1 : 5
Cast Iron	GG 15 GG 30 GTW40 GTS65 GGG50	30 - 40 30 - 40 30 - 40 30 - 40 30 - 40	40 40 40 40 40	40		
Titan			10 - 25	6, 5 - 7	ja	1 : 5
Copper		100 - 300	100			1 : 5
Brass	CuZn 10 CuZn 40 Pb 2 CuZn 31 Si	100 - 400 100 - 400 100 - 400	100 100 100			1 : 5
Bronze	CuSn 6 G-CuSn 8 G-CuSn 5 Zn Pb G-CuSn 10 Zn CuAl8 CuAl8 Fe G-CuAl10 Fe	80 - 120 80 - 120 80 - 120 80 - 120 35 - 45 25 - 35 25 - 35	80 80 80 80 50 35 35			1 : 5

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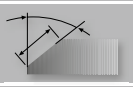
- **Edge-Milling and Deburring Devices for universal use**

KFV

KFH 150

	KFV	KFH 150
Page	76	78
Prod.-No.	25260	25100
Prism mounting	–	L = 150 mm / W = 20/40 mm
End mill Ø	45° or straight Ø 6 mm or 8 mm	TCT as per DIN, Ø 8 mm
Max. bevel width **► in multiple work steps** 	1 - 3 mm	1 - 5 mm, depending on material, with fine adjustment
Edge angle	45° and radii	45°
High-performance motor	✔	✔
Motor performance	500 watt	1,050 watt
Infinitely variable speed control	11,000 - 25,000 min^{-1} with Smooth start	8,000 – 25,000 min^{-1}
Full-wave control electronics	✔	✔
Clamping neck Ø	43 mm	43 mm
Voltage	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz
Weight	1.8 kg	3.5 kg
Dimensions: (L x W x H)	260 x 190 x 150 mm	340 x 150 x 110 mm
Cable length	3.0 m	3.0 m

MOTORS

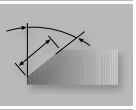
Prod.-No.	230V: 25193	110V: 25193.110	230V: 25191	110V: 25191.110

	KFT 250	KFH 250	KFT 500
			
	80	82	84
	25110	25130	25140
	L = 250 mm / W = 40 mm	L = 250 mm / W = 70 mm	L = 500 mm / W = 70 mm
	TCT as per DIN, Ø 8 mm	TCT as per DIN, Ø 12 mm	TCT as per DIN, Ø 12 mm
	1 - 5 mm, depending on material,	14 mm DIN S233-S235 6.5 mm stainless steel	1.5 - 14 mm
	45°	adjustable 30° - 45°- 30° swivelling right and left for 60° welding bevel. also for radii R = 3.0 4.0 and 5.0 using radius TCT milling cutter	45°
	✔	✔	✔
	1,050 watt	1,800 watt	1,800 watt
	8,000 – 25,000 min^{-1}	2,500 – 23,500 min^{-1}	2,500 – 23,500 min^{-1}
	✔	✔	✔
	43 mm	63 mm	63 mm
	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz
	5.0 kg	12.8 kg	18 kg
	360 x 250 x 110 mm	480 x 315 x 145 mm	450 x 500 x 160 mm
	3.0 m	3.0 m	3.0 m

MOTORS

					
	230V: 25191	110V: 25191.110	230V: 25192	110V: 25192.110	230V: 25192	110V: 25192.110

KFK 5

Page	88
Prod.-No.	25200
Prism mounting	–
End mill Ø	Inserts
Max. bevel width ► **in multiple work steps** 	45°: Steel 0 - 5 mm, aluminium 0 - 8 mm 30°: Steel 0 - 4 mm, aluminium 0 - 6 mm
Edge angle	45° (optional 30°, 60°) Radii R = 2.5
High-performance motor	✔
Motor performance	1,530 watt
Infinitely variable speed control	4,200 - 11,000 min^{-1} with Smooth start
Full-wave control electronics	✔ with thermal and overload protection
Right/left run	–
Voltage	230 V, 50 – 60 Hz + 110 V, 50 – 60 Hz
Weight	4.2 kg
Dimensions: (L x W x H)	L = 450 mm
Cable length	3.0 m

SKF 63-15

90
25010
Guide mounting with rollers 240 x 80 mm / 220 x 75 mm
Inserts
15 mm max
15° - 20° - 30° - 45° - 60° adjustable
✔
1,100 watt
2,870 min^{-1}
✔ with thermal and overload protection
–
230 V, 50 Hz + 110 V, 50 – 60 Hz
21.0 kg
440 x 200 x 280 mm
3.0 m

ALFRA Edge Deburring Unit KFV

4 applications - 1 device

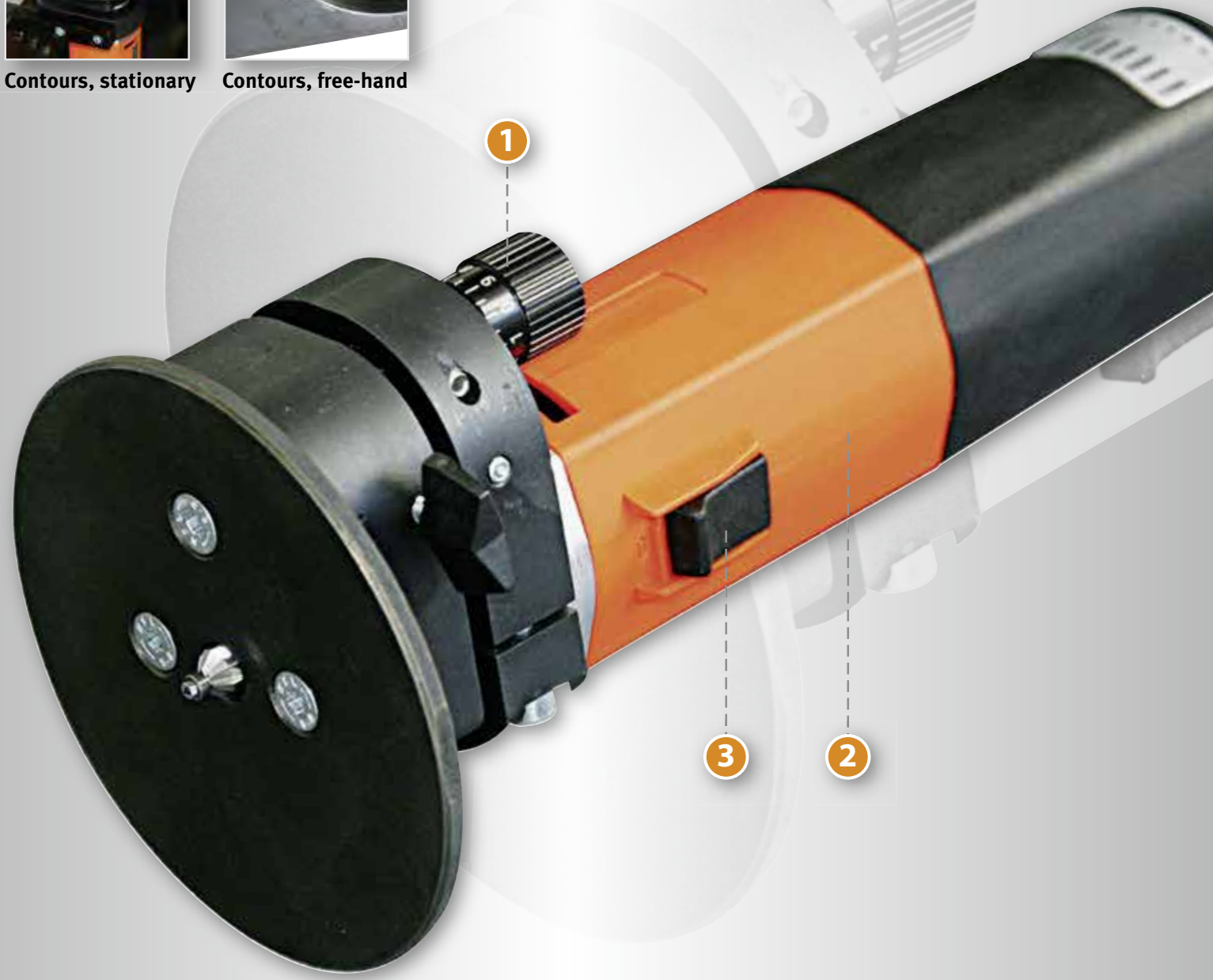
Prisms, free-hand

Prisms, stationary

Contours, stationary

Contours, free-hand

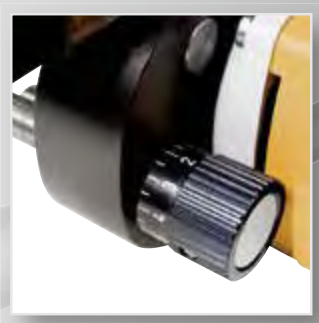
1. Infinitely variable bevel width setting using scale
2. With thermal and overload protection
3. On/Off switch



ALFRA EDGE MILLING UNIT - KFV

Drive motor (with clamping flange Ø 43 mm) 500 watts, speed control 11,000-25,000 rpm, quick-change fitting on the arbor of the attachments.

- **Contour milling fitting with support table, 72 x 64 mm**
- **Table milling fitting with support plate, Ø 120 mm**
- **Tool-less bevel height setting.**
- **Handy and powerful.**
- **For structural steel, stainless steel, aluminium and other materials.**
- **Also for radii**



Initial drill holes from:
Ø 3.0 mm for pin cutters
Ø 5.0 mm in spherical cutters

Technical specifications:

Bevel angle:	**45°**
Bevel width 45°:	**1-3 mm infinitely adjustable**
Radius:	**R = 1.0 - 1.5 - 2.0**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Rating:	**500 W**
Rotational speed:	**11,000 - 25,000 min^{-1} with Smooth start with thermal and overload protection**
Feed:	**manual**
Weight:	**1.8 kg**

Scope of delivery:

- **KFV deburring and bevelling device, drive motor with clamping flange Ø 43 mm**
- **Quick-change fitting for use with attachments**
- **Contour milling fitting with support table, 72 x 64 mm**
- **Table milling fitting with support plate, Ø 120 mm**
- **Prism milling fitting with guide rails 150 mm length**
- **Clamping shank for vice**
- **Collet 6 mm (mounted), collet 8 mm (included)**
- **1 set of operating tools**
- **Carrying case**
- **Guide stop for outer edges**

		Prod.-No.
Edge deburring unit, KFV complete	230V 50-60 Hz	25260
Edge deburring unit, KFV complete	110V 50-60 Hz	25260.110

ALFRA Edge Deburring Unit

KFH 150

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. Guidance handle
5. Clamping handle for quick adjustment
6. Guide rails made of high-strength special steel

ALFRA Edge Deburring Unit - KFH 150

The unit enables work pieces to be worked wherever machined edge milling is too expensive.

Hand-operated model for 45° deburring of larger work pieces, profiles, supports, sheet metal panels, with 90° mounting.

- **Hand-operated, for 45° bevels.**
- **Optimal guidance and safe handling.**
- **Commercially available solid carbide cutter Ø 8 mm.**

Technical specifications:

Prism mounting 45°:	**L = 150 mm**
	W = 20/40 mm
End mill:	**Solid carbide as per DIN, 8 mm Ø**
Max. bevel width:	**1 - 5 mm, depending on material, with fine adjustment**
High-performance motor	**with full-wave control electronics**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Motor performance:	**1,050 W**
Electronics:	**8,000 – 25,000 min^{-1}**
Clamping neck Ø:	**43 mm**
Weight:	**3.5 kg**

Scope of delivery:

- **Edge deburring unit KFH 150**
- **1 set of guide rails**
- **1 collet 8 mm Ø and clamping nut**
- **1 Operating instructions**

		Prod.-No.
Edge deburring unit, KFH 150	230V 50-60 Hz	25100
Edge deburring unit, KFH 150	110V 50-60 Hz	25100.110
Adapter head for edge deburring unit KFH 150		25109

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

ALFRA EDGE DEBURRING UNIT

KFT 250

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. Clamping handle for quick adjustment
5. Guide rails made of high-strength special steel
6. Chip collection container
7. Rubber feet for smooth operation and excellent stability

ALFRA Edge Deburring Unit - KFT 250

Simple, cost-effective deburring unit for light to medium use.

To obtain perfectly milled surfaces with DIN 6527 solid carbide end mills in rolling sections with no secondary milling

Position I: Material thickness from 4.5 mm

Position II: Material thickness from 1.0 mm

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

Technical specifications:

Deburring area:	**Bevel angle 45°**
Prism mounting position I:	**Material thickness from 4.5 mm**
position II:	**Material thickness from 1.0 mm**
Prism mounting:	**L = 250 mm**
Guide rail:	**W = 40 mm**
Max. bevel width:	**5 mm, depending on material. Also for stainless steel when selecting a suitable-milling cutter and RPM control, and cuts (spray edges with cutting oil).**
Weight:	**5.0 kg**
High-performance drive motor:	**1,050 W**
Triple bearing	
Double bearing-mounted milling spindle	
Spindle bearings with high-speed lubrication	
Standard clamping flange Ø:	**43 mm**
Infinitely variable speed control:	**8,000 - 25,000 min^{-1}**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Full-wave control electronics	
When under load, the tachogenerator provides additional power.	

Foot switch (optional)
Prod.-No. 25116

Scope of delivery:

- **Edge deburring unit KFT 250, with fine milling depth adjustment**
- **1 set of guide rails**
- **1 collet 8 mm Ø and clamping nut**
- **1 chip collection container**
- **1 set of operating tools**
- **1 Operating instructions**

		Prod.-No.
Edge deburring unit, KFT 250	230V 50-60 Hz	25110
Edge deburring unit, KFT 250	110V 50-60 Hz	25110.110
Table for edge deburring unit KFT 250		25111
Special accessories:		
ALFRA foot switch with device cable socket	230V	25116
ALFRA foot switch with device cable socket	110V	25116.110

ALFRA Edge Deburring Unit

KFH 250

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. 30° - 45° – 30° swivelling
5. Ergonomically shaped guide hand grip
6. Clamping handle for quick adjustment
7. Guide rails made of high-strength special steel
8. Guide rollers facilitate feeding

ALFRA Edge Deburring Unit - KFH 250

Hand-held model specially developed for working on edges (visible edges) and bevelling up to 60° on large rectangular work pieces.

- **A vital accessory for mechanical engineering.**
- **Wide speed range for different materials.**
- **Individually adjustable milling depth.**
- **Easy to handle and guide with two support rollers.**

2

6

Fine adjustment to milling depth/bevel width

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

Technical specifications:

Prism mounting:	**L = 250 mm** **W = 70 mm**
End mill Ø:	**12 mm DIN 6527**
Max. bevel width:	**14 mm (depending on the material)**
Edge angle:	**infinitely adjustable swivelling right and left. Also for radii r = 3.0, 4.0, 5.0 using radii solid-carbide milling cutter**
Rating:	**1,800 W (high-quality motor for difficult deburring tasks)**
Infinitely variable speed control:	**2,500 – 23,500 min^{-1}**
Full-wave control electronics	
When under load, the tachogenerator provides additional power.	
Clamping neck Ø:	**63 mm**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Weight:	**12.8 kg**

Scope of delivery:

- **Edge deburring unit KFH 250, with fine milling depth adjustment**
- **1 set of guide rails with two support rollers**
- **1 collet Ø 12 mm and clamping nut**
- **1 set of operating tools**
- **1 Operating instructions**

		Prod.-No.
Edge deburring unit, KFH 250	230V 50-60 Hz	25130
Edge deburring unit, KFH 250	110V 50-60 Hz	25130.110
Adapter head for edge deburring unit KFH 250		25131

Prism mounting and support rollers made of wear-resistant plastic upon request.

ALFRA Edge Deburring Unit

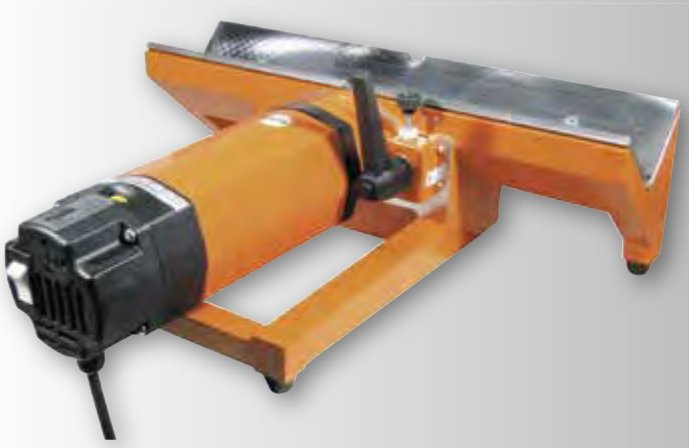
KFT 500

1. High-performance motor with double-bearing-mounted milling spindle
2. Full-wave control electronics
3. Fine adjustment to milling depth/bevel width
4. Clamping handle for quick adjustment
5. Guide rails made of high-strength special steel
6. Chip collection container
7. Rubber feet for smooth operation and excellent stability

ALFRA Edge Deburring Unit - KFT 500

For medium- and large-sized work pieces.
Max. bevel width 14 mm

To obtain perfectly milled surfaces with solid carbide end mills in rolling sections with no secondary milling.



Precise deburring by rolling milling

Foot switch (optional)
Prod.-No. 25116

Fine adjustment to milling depth/bevel width

Position I: Material thickness 6-14 mm

Position II: Material thickness from 1.5 mm

Cost reduction:
Most of the cutting area can be accessed by moving the milling cutter in the collet.

Technical specifications:

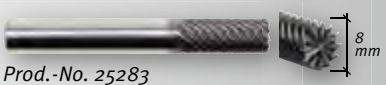
Deburring area:	**Bevel angle 45°**
Prism mounting position I:	**Material thickness 6-14 mm**
position II:	**Material thickness from 1.5 mm**
Prism mounting:	**L = 500 mm**
Guide rail:	**W = 70 mm**
Max. bevel width:	**14 mm, depending on material**
	Also for stainless steel when selecting a suitable-milling cutter and RPM control, and cuts (spray edges with cutting oil).
	Also for radii R 3.0, 4.0, 5.0 using radius solid carbide cutter
High-performance drive motor:	**1,800 W**
Triple bearing, double bearing-mounted milling spindle	
Spindle bearings with high-speed lubrication	
Clamping neck Ø:	**63 mm**
Infinitely variable speed control:	**2,500 – 23,500 min^{-1}**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Full-wave control electronics	
When under load, the tachogenerator provides additional power.	
Weight:	**18 kg**

Scope of delivery:

- **Edge deburring unit KFT 500, with fine milling depth adjustment**
- **1 set of guide rails**
- **1 collet Ø 12 mm and clamping nut DIN 6499**
- **1 chip collection container**
- **1 set of operating tools**
- **1 Operating instructions**

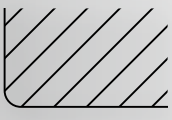
		Prod.-No.
Edge deburring unit, KFT 500	230V 50-60 Hz	25140
Edge deburring unit, KFT 500	110V 50-60 Hz	25140.110
Table for edge deburring unit KFT 500		25141
ALFRA foot switch with device cable socket	230V	25116
ALFRA foot switch with device cable socket	110V	25116.110

Shorter run times and motor-saving work.
Function: Foot switch pressed - socket is live
Foot switch released - power supply interrupted

Description	Prod.-No.				
Solid carbide milling cutter 90° Ø 6 mm, tip Ø 2.5 mm, length 31 mm, 3 cuts Suitable for: stainless steel, cast iron	25270-A	■	■		 Prod.-No. 25270-A
Solid carbide milling cutter 90° Ø 6 mm, tip Ø 2.5 mm, length 31 mm, 5 cuts Suitable for: stainless steel, cast iron	25271-A	■	■		 Prod.-No. 25271-A
Solid carbide milling cutter radius R = 0.5 Ø 6 mm, tip Ø 2.9 mm, length 31 mm, 3 cuts Radius R = 0.5 Suitable for: stainless steel, cast iron	25272-A	■	■		 Prod.-No. 25272-A
Solid carbide milling cutter radius R = 1.0 Ø 6 mm, tip Ø 2.9 mm, length 31 mm, 3 cuts Suitable for: stainless steel, cast iron	25273-A	■	■		 Prod.-No. 25273-A
Solid carbide milling cutter radius R = 1.5 Ø 6 mm, tip Ø 2.9 mm, length 31 mm, 3 cuts Suitable for: stainless steel, cast iron	25274-A	■	■		 Prod.-No. 25274-A
Solid carbide milling cutter radius R = 1.0 Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25275-A	■	■		 Prod.-No. 25275
Solid carbide milling cutter radius R = 1.5 Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25276-A	■	■		 Prod.-No. 25276-A
Solid carbide milling cutter radius R = 2.0 Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25277-A	■	■		 Prod.-No. 25277-A
Solid carbide milling cutter 90° Ø 10 mm, tip Ø 4.8 mm, length 30 mm, 6 cuts Suitable for: stainless steel, cast iron	25278-A	■	■		 Prod.-No. 25278-A
Solid carbide milling cutter radius R = 2.0 Ø 10 mm, tip Ø 2.9 mm, length 30 mm, 3 cuts incl. thrust bearing Suitable for: stainless steel, cast iron	25284-A	■	■		 Prod.-No. 25284-A
Solid carbide milling cutter 45° Ø 10 mm, tip Ø 2.9 mm, length 30 mm, 3 cuts incl. thrust bearing Suitable for: stainless steel, cast iron	25285-A	■	■		 Prod.-No. 25285-A
Axes with thrust bearing Axes: Ø 1.5 mm - KL: Ø 3.0 mm) Suitable for deburring end mills with tips - Ø 2.5 - 2.9 mm	25279-A	■	■		 Prod.-No. 25279-A
Axes with thrust bearing Axes: Ø 1.5 mm - KL: Ø 5.0 mm) Suitable for deburring end mills with tips - 4.8 mm	25280-A	■	■		 Prod.-No. 25280-A
Solid carbide milling cutter with serration Ø 8 mm, 4 cuts Suitable for: Steel, stainless steel, cast iron	25281			■	 Prod.-No. 25281
Solid carbide milling cutter with serration Ø 8 mm, 6 cuts Suitable for: Steel, stainless steel, cast iron, brass, bronze	25282			■	 Prod.-No. 25282
Solid carbide milling cutter with serration Ø 8 mm, 12 cuts Suitable for: Steel, stainless steel, cast iron	25283			■	 Prod.-No. 25283

ALFRA - Solid Carbide Milling Cutters (similar to DIN 6527)

- This solid carbide end mill was developed for perfect deburring.
- The chips are removed from the motor spindle into the chip collection container
- or in the chip duct.
- Total length 60 mm or 80 mm.
- **Coated design**

	Ø	Cutting	Prod.-No.	Prod.-No.	Prod.-No.	Prod.-No.
Solid Carbide Milling Cutter End mill with larger chip spaces, suitable for large bevels on soft materials such as **aluminium** as well as brass, copper, and plastics. Universal application for steel and stainless steel.						
	8 mm	3	25150P	25150P		
	12 mm	3			25160P	25160P
Solid Carbide Milling Cutter End mill with larger chip spaces, suitable for larger bevels Universal application such as for **stainless steel**, as well as steel, cast iron, non-ferrous metals, plastics						
	8 mm	4	25151P	25151P		
	12 mm	4			25161P	25161P
Solid Carbide Milling Cutter Roughing, fine cord. For attaching welding bevels. For **steel**, as well as cast iron, stainless steel (universal milling cutter)						
	8 mm	4	25154P	25154P		
	12 mm	4			25163P	25163P
Solid carbide radius milling cutter* - Solid carbide radius end mill with 2 radius grooves for dual use - For rounding off work piece edges - Universally applicable. For hard materials, the radii should be created in successive steps with increasing milling depths. - The fine adjustment of the contour of the radii to the edge of the work piece is achieved using the axial displacement of the motor in the clamping holes.						
 	R 3.0	12 mm	5			25165	25165
	R 4.0	12 mm	5			25166	25166
	R 5.0	12 mm	5			25167	25167

*Delivery time upon request.

ALFRA Edge Deburring Unit

KFK 5

1. High-performance motor with Smooth start
2. Infinitely variable bevel width setting using scale
3. Ergonomically shaped hand grip with on/off switch
4. With thermal and overload protection

ALFRA Edge Deburring Unit - KFK 5

For deburring inner and outer edges, bevelling metal parts, milling radii and holes from Ø 20 mm.
Specially developed to produce clean visible edges and weld preparation.

- **Tool-less bevel height setting.**
- **Handy and powerful.**
- **For structural steel, stainless steel, aluminium and other materials.**
- **Multiple insert holders 45° (optional 30°).**
- **Also for radii R = 2.5**

Start holes from Ø 20 mm.

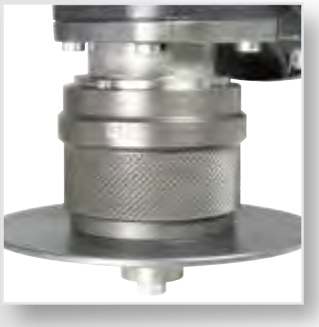
Technical specifications:

Bevel angle:	**45° (optional 30°, 60°)**
Bevel width 45°:	**Steel 0 - 5 mm 400 N/mm² steel infinitely variable**
	Steel 0 - 8 mm 250 N/mm² steel infinitely variable
Bevel width 30°:	**Steel 0 - 4 mm 400 N/mm² steel infinitely variable**
	Steel 0 - 6 mm 250 N/mm² steel infinitely variable
Radius:	**R = 2.5**
Motor voltage:	**230 V 50-60Hz; 110V 50-60Hz**
Rating:	**1,530 W**
Rotational speed:	**4,200 - 11,000 min^{-1} with Smooth start with thermal and overload protection**
Feed:	**manual**
Weight:	**4 kg**

Scope of delivery:

- **KFK 5 - Deburring and bevelling unit**
- **1 pc. 45° milling tool with inserts**
- **1 tool set**
- **Carrying case**
- **1 Operating instructions**

Prod.-No. 25207



	Prod.-No.
Edge deburring unit KFK 5 - with 45° milling head 230V 50-60 Hz	25200
Edge deburring unit KFK 5 - with 45° milling head 110V 50-60 Hz	25200.110
Edge deburring unit KFK 5 - with 30° milling head 230V 50-60 Hz	25201
Edge deburring unit KFK 5 - with 30° milling head 110V 50-60 Hz	25201.110
Additional Accessories:	
45° replacement milling head/radius R=2.5 (no inserts)	25202
30° replacement milling head (no inserts)	25203
60° replacement milling head (no inserts) upon request	25213
Adjustable guide stop for outer edges	25207
Tools:	
Insert PM25M for steel 13.47 x 3 coated	25206
Radius insert 2.5 mm	25205
Insert K10 for aluminium/cast iron	25208
Insert BK84 for steel/stainless steel	25209
Torx screws, individual, for replacement inserts	25210

ALFRA Bevel Milling Machine

SKF 63-15

ALFRA Bevel Milling Machine - SKF 63-15

- The ALFRA bevel milling machine was specially developed for weld preparation and for milling metallic materials.
- Universally applicable in construction areas thanks to its light weight and direct use on the work piece.
- Designed for one-man operation, the machine is placed on a 90° angle on the work piece, a light downward pressure applied, and guided along manually.
- The design of this side milling cutter, which uses commercially available inserts and a rotation speed of 2,870 rpm, guarantees chatter-free, uniform bevel milling.
- The roller guide rails are made of hardened steel and guarantee excellent feed rates.
- Simple, safe operation with overload protection and restart interlock.
- OFF switch integrated into the right-side hand grip (illustration).
- Pipes from Ø 160 mm to 390 mm can be externally milled by means of an additional device.
- Optional device for larger pipes, Ø of 1,000 - 1,500 - 2,000 mm upon request.

Built-in OFF switch

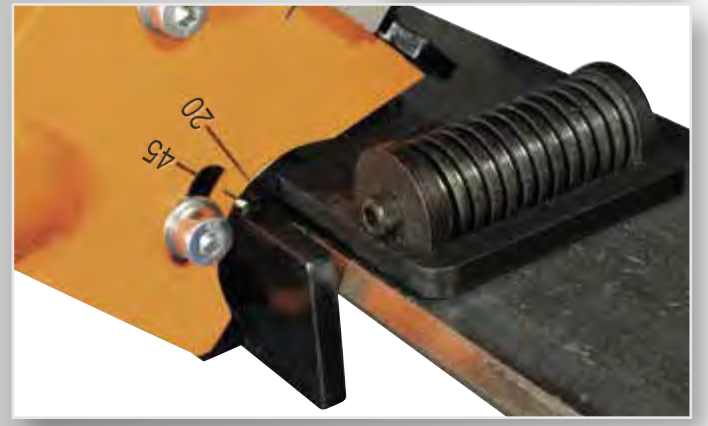
Technical specifications:

Motor voltage:	**230 V 50Hz; 230 V 60Hz; 110V 50Hz; 110V 60Hz**
Rating:	**1,100 watt**
Rotational speed:	**2,870 min^{-1}**
Bevel width:	**15 mm; max.**
Bevel angle:	**15 - 20 - 30 - 45 - 60° adjustable**
Weight:	**21 kg**
Dimensions (L x W x H):	**440 x 200 x 280 mm**

Scope of delivery:

- **Edge deburring machine SKF 63-15**
- **1 set of operating tools**
- **Operating instructions**
- **Carrying case**

2 milling disks together with 6 inserts each



		Prod.-No.
Bevel milling machine SKF 63-15	230V 50 Hz	25010
Bevel milling machine SKF 63-15	230V 60Hz	25010.230-60Hz
Bevel milling machine SKF 63-15	110V 50Hz	25010.110-50Hz
Bevel milling machine SKF 63-15	110V 60Hz	25010.110-60Hz

Option:

SKF 63/15 with reduced rpm of 1,400 rpm for use on stainless steel available upon request.

Optional accessories:

Tube insert for processing tube outer bevelling from Ø 160 mm - 390 mm	25014

Optional device for larger Ø up to 1,000 - 1,500 - 2,000 mm upon request.

Replacement parts:

Replacement milling head	25011

Consisting of: 2 milling disks and 6 high-speed inserts

Replacement milling disks, individual, with no insert	25012
Carbide insert, TiAlN/TiN-PVD multi-layer coating	25013

Universal for steel and inox, clearance angle 11°

Carbide insert, TiAlN /TiN-PVD multi-layer coating	25010.15036B

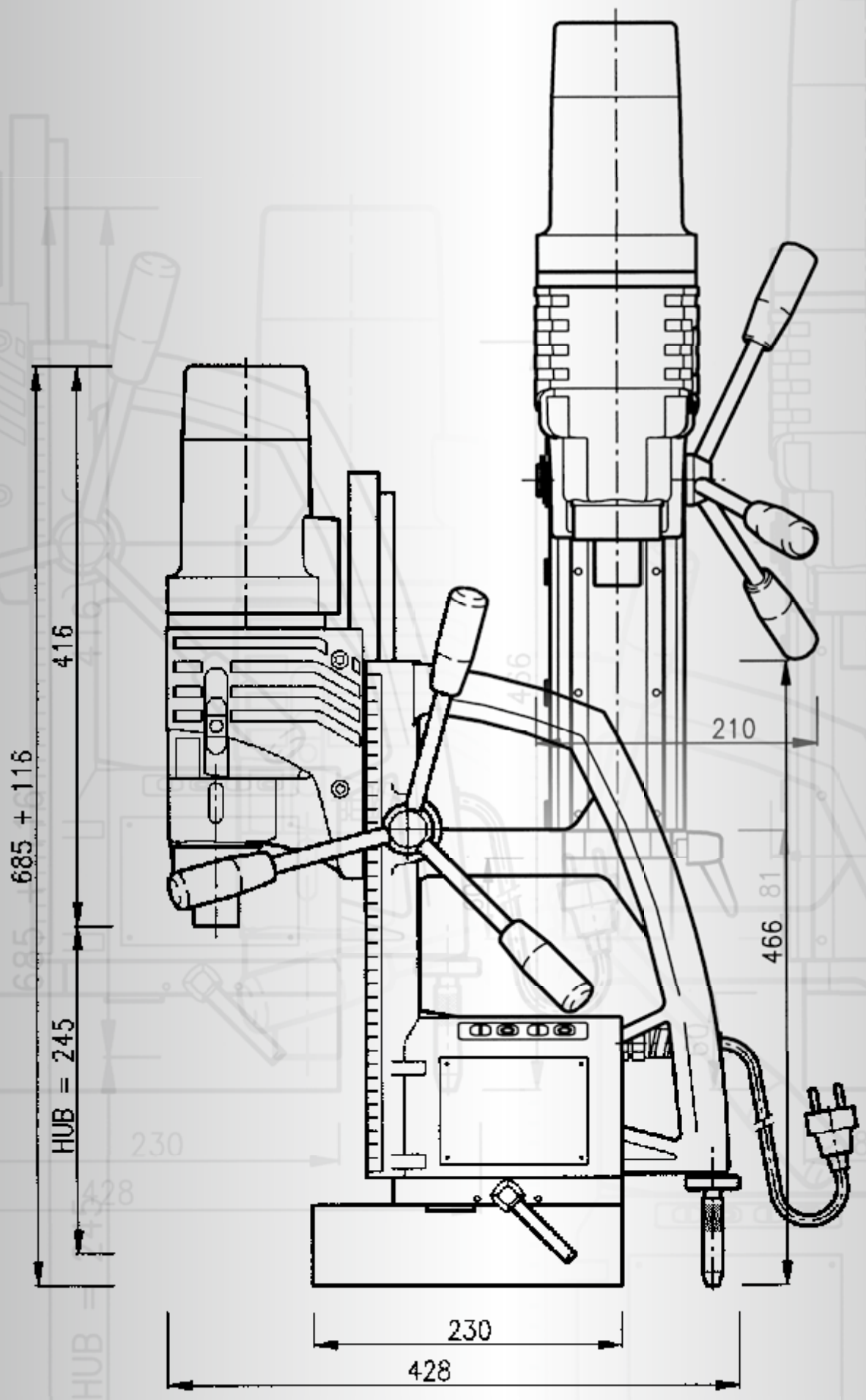
For steel < 850 N/mm²; inox <> 900 N/mm², clearance angle 20°

Carbide insert, TiAlN/TiN-PVD multi-layer coating	25010.15036E

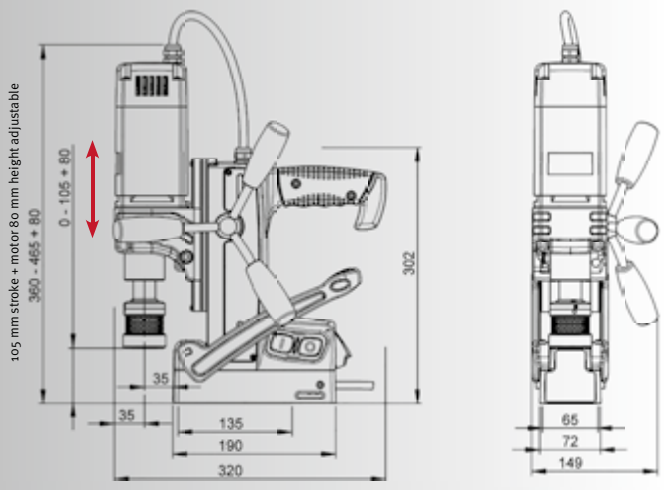
For steel < 1400 N/mm²; inox <> 900 N/mm², clearance angle 11°

Auxiliary assembly device	25019

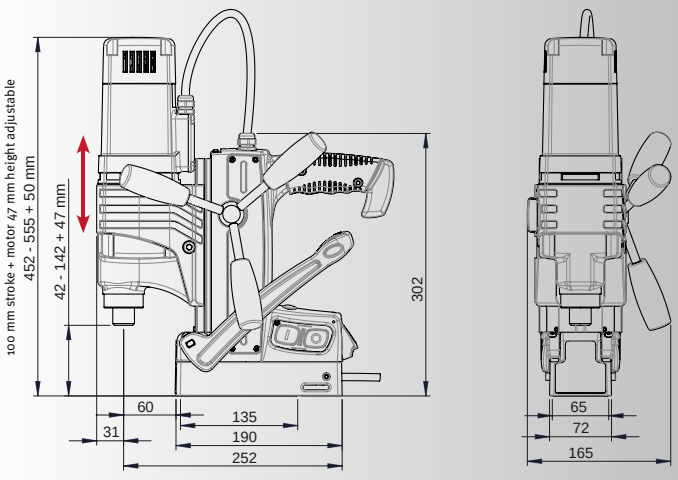
For equipping the milling disks with inserts.


685 + 116
416
HUB = 245
210
466
230
428

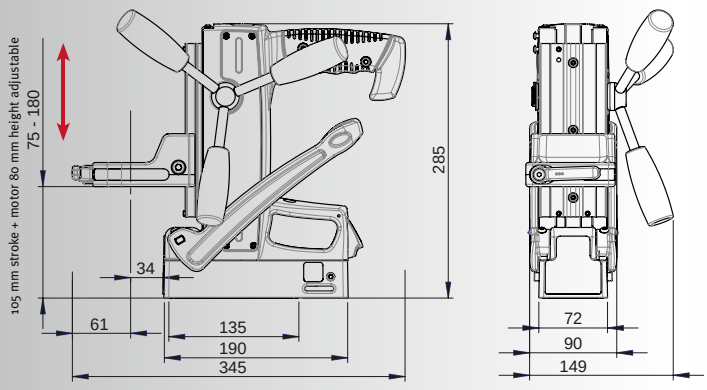
RB 35 SP



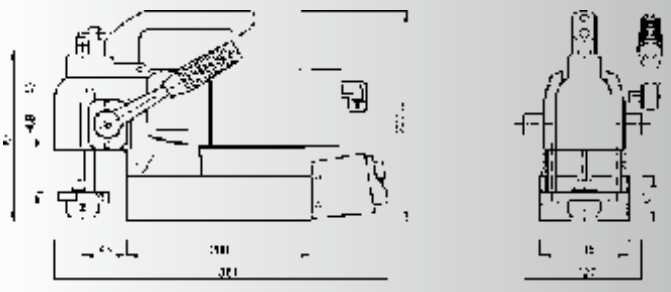
RB 50 SP



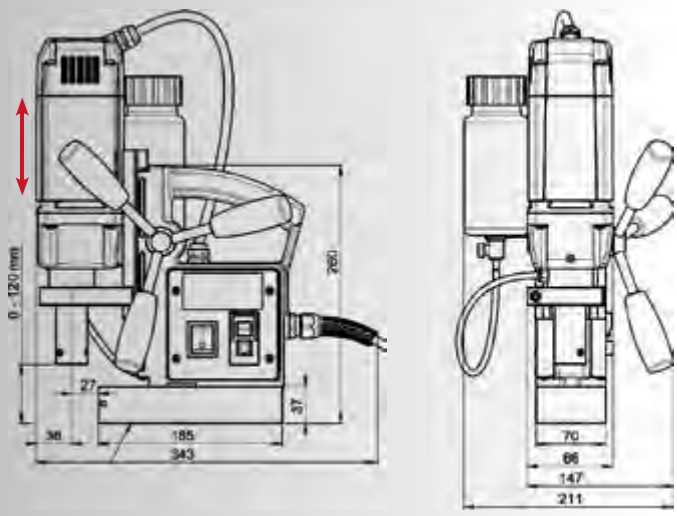
SP-V



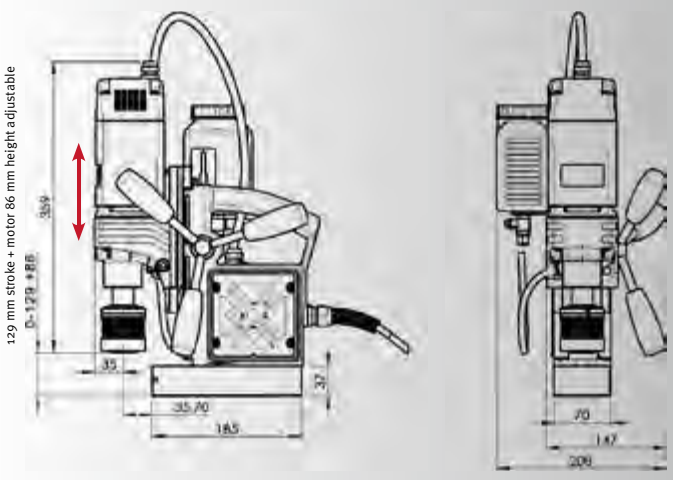
V 32



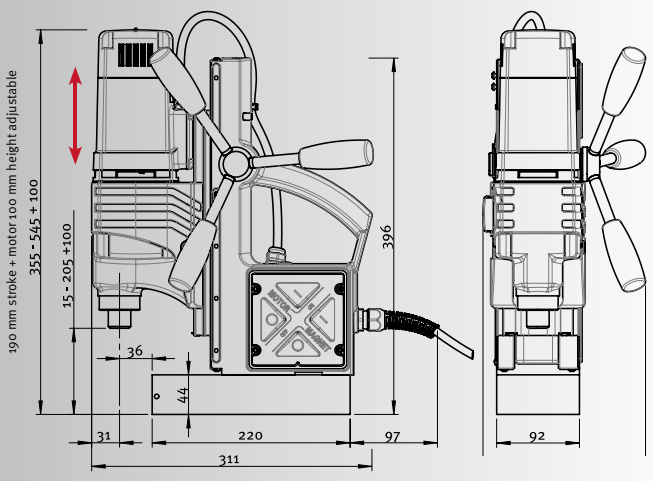
RB 35 B



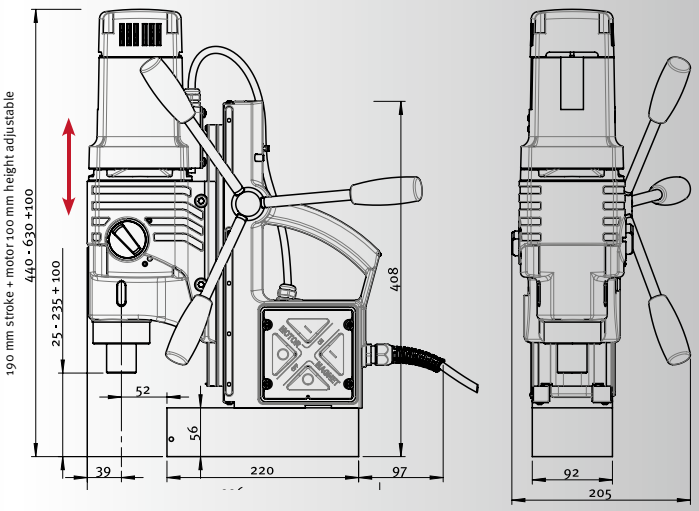
Piccolo 35/50 X



RB 50 X



RB 80 X



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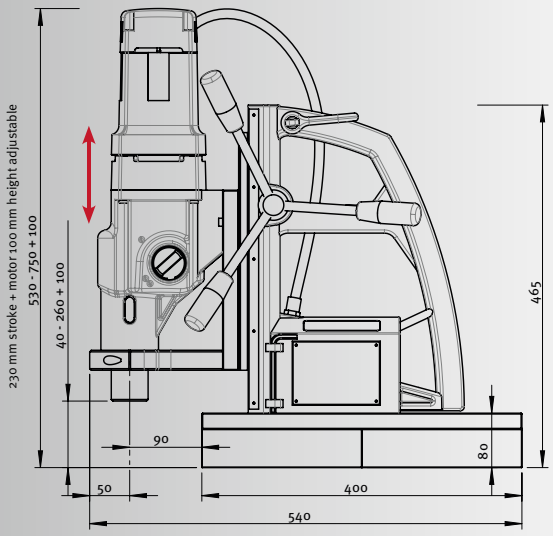
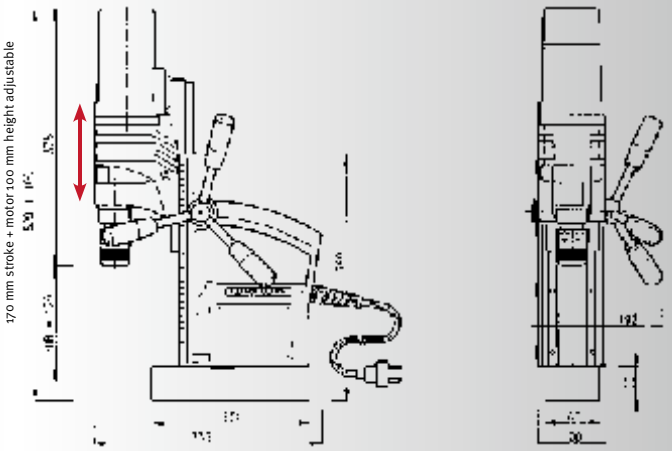
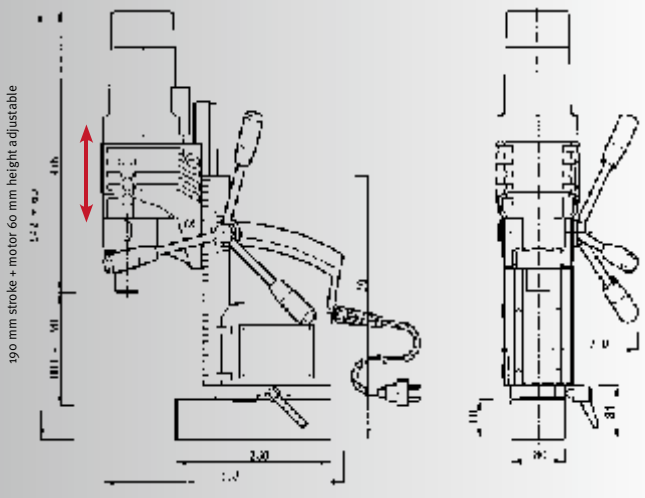


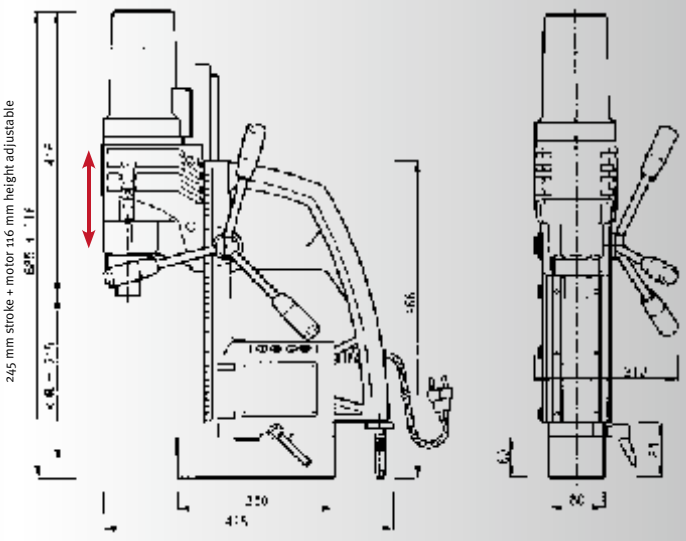
40 RL-E



60 RL-E



100 RL-E

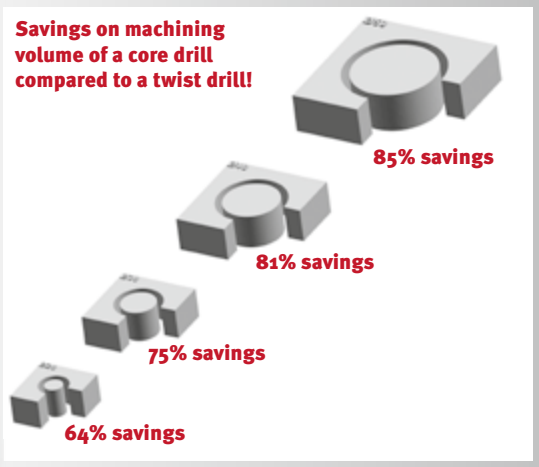


THE CORE DRILL PRINCIPLE

Metal core drilling in Germany was introduced by ALFRA

- Core drills only machine a fraction of the material which a twist drill machines with the same bore diameter.
- A drill core remains which is ejected unmachined after drilling.
- Therefore low drive power and feeding pressure are required.
- Pre-drilling must be done with twist drills which does not apply for core drilling and the desired diameter can be drilled directly.

The main drilling times are significantly reduced depending on the bore diameter.



For HSS and HSS-Co core drills

Material		unalloyed steel Up to 700 N/mm²	alloyed steel Up to 1000 N/mm²	aluminium alloy
Vc=m/min		30	20	30
Cooling lubricant		Cutter oil	Cutting oil	Cutting oil
Ø mm	Ø "rpm	rpm	rpm	rpm
Not suitable for automatic feed!				
12	15/32	796	531	796
13	33/64	735	490	735
14	35/64	682	455	682
15	19/32	637	425	637
16	5/8	597	398	597
17	43/64	562	375	562
18	45/64	531	354	531
19	3/4	503	335	503
20	25/32	478	318	478
21	53/64	455	303	455
22	7/8	434	290	434
23	29/32	415	277	415
24	15/16	398	265	398
25	63/64	382	255	382
26	1 1/32	367	245	367
27	1 1/16	354	236	354
28	1 3/32	341	227	341
29	1 9/64	329	220	329
30	1 3/16	318	212	318
31	1 7/32	308	205	308
32	1 17/64	299	199	299
33	1 19/64	290	193	290
34	1 11/32	281	187	281
35	1 3/8	273	182	273
36	1 27/64	265	177	265
37	1 29/64	258	172	258
38	1 1/2	251	168	251
39	1 17/32	245	163	245
40	1 37/64	239	159	239
41	1 39/64	233	155	233
42	1 21/32	227	152	227
43	1 11/16	222	148	222
44	1 47/64	217	145	217
45	1 25/32	212	142	212
46	1 13/16	208	138	208
47	1 55/64	203	136	203
48	1 57/64	199	133	199
49	1 15/16	195	130	195
50	1 31/32	191	127	191
60	2 3/8	159	106	159

When drilling Hardox, we recommend using ASP 30 / ASP 60 core drills. Use pure cutting oil for the drilling of Hardox and reduce the speed by 10% appr., as in the column "Alloyed steel up to 1000 N/mm²". Use only magnetic drills with high holding force or column drilling and milling machines.

For TCT core drills

Material		unalloyed steel Up to 700 N/mm²	alloyed steel Up to 1000 N/mm²	aluminium alloy
Vc=m/min		50	35	60
Cooling lubricant		Cutter oil	Cutting oil	Cutting oil
Ø mm	Ø "rpm	rpm	rpm	rpm
Not suitable for automatic feed!				
18	45/64	885	619	1062
19	3/4	838	587	1006
20	25/32	796	557	955
21	53/64	758	531	910
22	7/8	724	507	869
23	29/32	692	485	831
24	15/16	663	464	796
25	63/64	637	446	764
26	1 1/32	612	429	735
27	1 1/16	590	413	708
28	1 3/32	569	398	682
29	1 9/64	549	384	659
30	1 3/16	531	372	637
31	1 7/32	514	360	616
32	1 17/64	498	348	597
33	1 19/64	483	338	579
34	1 11/32	468	328	562
35	1 3/8	455	318	546
36	1 27/64	442	310	531
37	1 29/64	430	301	531
38	1 1/2	419	293	503
39	1 17/32	408	286	490
40	1 37/64	398	279	478
41	1 39/64	388	272	466
42	1 21/32	379	265	455
43	1 11/16	370	259	444
44	1 47/64	362	253	434
45	1 25/32	354	248	425
46	1 13/16	346	242	415
47	1 55/64	339	237	407
48	1 57/64	332	232	398
49	1 15/16	325	227	390
50	1 31/32	318	223	382
55	2 5/32	290	203	347
60	2 3/8	265	186	318
65	2 9/16	245	171	294
70	2 3/4	227	159	273
75	2 61/64	212	149	255
80	3 5/32	199	139	239
85	3 11/32	187	131	225
90	3 35/64	177	124	212
95	3 47/64	168	117	201
100	3 15/16	159	111	191

Recommended values for use of machine tap drills with tapping attachments on magnetic drills

Tapping: The tap drill to be used must be matched to the core hole prepared in the work piece. Please refer to the enclosed borehole table for metric ISO threads.

Borehole table metric ISO threads

Dimensions	Stg.	Drill Ø
M3	0.5	2.5
M4	0.7	3.3
M5	0.8	4.2
M6	1	5
M8	1.25	6.8
M10	1.5	8.5
M12	1.75	10.2
M14	2	12
M16	2	14
M18	2.5	15.5
M20	2.5	17.5

Fine thread

Dimensions	Stg.	Drill Ø
M8x1	1	7
M10x1	1	9
M12x1	1	11
M12x1.5	1.5	10.5
M14x1	1	13
M14x1.5	1.5	12.5
M16x1	1	15
M16x1.5	1.5	14.5
M20x1	1	19
M20x1.5	1.5	18.5

Tips for the production of threads

1. **Clearance hole**
   We recommend adjacent tap drills for the clearance holes which convey the chips out of the borehole in the cutting direction. The special polished section also allows a reliable re-threading when the tap drill is withdrawn from the tapped hole and moves back in an anticlockwise direction.

2. **Blind holes**
   We recommend adjacent tap drills for blind holes. The chips are guided out of the borehole against the direction of the cutting. It is particularly important to ensure that the tap drill does not run aground, because otherwise the automatic return can no longer be activated. A correspondingly large pre-borehole depth must be planned.

   If this is not done, the tap drill must be loosened manually.

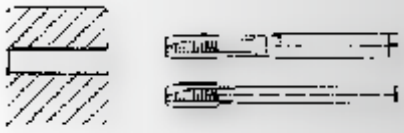
3. **Blind holes up to 1.5 x D**
   For this, our tap drills are suited to according to the adjacent figure. Also here, the chips are conveyed away out of the borehole against the cutting direction. Also here, it must be ensured that the tap drill does not run aground. A correspondingly large pre-borehole depth must be taken into account.

   If this is not done, the tap drill must be loosened manually.

Beside our tap drills with a reinforced shank, tap drills with a reduced shaft according to DIN 376 can, of course, also be used.

Please work with sufficient coolant that is recommended by the manufacturer for tapping.

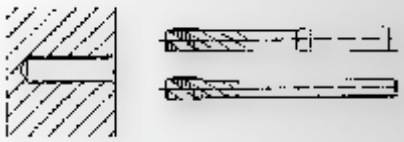
Chip ejection downward through the hole



DIN 371 with a reinforced shank form B, with spiral point, 3.5 to 5 pitches

DIN 376 with a reduced shaft, thread depth 3 x D

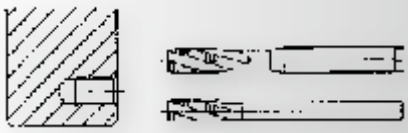
Chip ejection along the tool



DIN 371 with reinforced shank with a spiral groove, approx. 35° right-hand twist bevel C, approx. 3 pitches

DIN 376 with reduced shaft Thread depth 2.5 x D

Chip ejection along the tool



DIN 371 with reinforced shank with a spiral groove, approx. 17° right-hand twist, bevel C, approx. 2 to 3 pitches

DIN 376 with reduced shaft Thread depth 1.5 x D

Punching units APS 70/120 - Usage instructions

From the field, questions continue to be asked about the material thickness / hole diameter ratio (S/D = Ø ratio).

Intermediate material thickness and the smallest hole or punch diameter must be a certain ratio.

A specific ratio must exist between material thickness and the lowest hole or punch die Ø.

An old rule of thumb is that the punch die must be as big or even bigger than the thickness of the material to be cut. The material thickness must be but never be greater than the punch die Ø.

This rule no longer applies to our hydraulic punching units.

They are still used with fast-working, mechanical presses because the process takes place abruptly and the punch is loaded to the utmost.

For our ALFRA APS punching units, the punching process is carried out slowly and gently.

In this case, holes can also be punched the diameter of which is less than the thickness of the material to be cut.

Chart 1 clarifies the right thickness/diameter ratio. This is based on trials such as.:

Holes are to be punched in a steel plate made of S235. What is the recommended ratio?

The shear strength of S235 is about 30 kg/mm². At 30, move vertically upwards in the chart to line A, from there to the left to the S/D diameter ratio scale.

Result: The recommended ratio is 1:1.3.

The **upper limit** of the ratio is the dotted line B which specifies a ratio of 1:1.7. This would mean that the thickness of the material to be cut may be 1.7 times larger than the diameter of the punch die.

It goes without saying that the life expectancy of a punch with this diameter ratio should be considerably shorter than one with a ratio of 1: 1.3.

We therefore recommend only working to line A so that sufficient reliability exists.

Minimal punch die Ø with existing material thickness

With Chart 2, the smallest hole punch Ø can be easily determined.

Three varieties of material with different strength options are specified.

Another example:

Holes to be punched in a steel plate with a thickness of 20 mm made of S235. How large may the smallest punch die Ø be?

On the horizontal scale for material thickness, move vertically upward at 20 mm to the full line of S235. Then horizontally to the left up to the scale of the punch die Ø.

Result: = 15 mm Ø.

To get the breaking point of the stamp, move up to the second line.

It is therefore advisable only to proceed according to the first method.

ALFRA punch dies and matrices are made from high quality material. Nevertheless, it may happen that a stamp breaks.

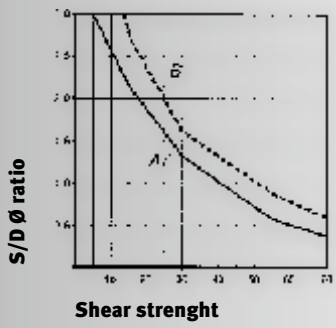
This is caused by:

1. S/D diameter ratio is not correct.
2. The material to be punched is not lying straight but wedged on the matrix.
3. The punching unit or the material is moved greatly during the punching process.
4. If the scraper is damaged or not properly set to the height, the material can be wedged when the punch die retracts.
5. The scraper is located too far from the punch die so that thin sheet metal bulges when scraping. In this case, the punch die breaks in flakes at the cutting edge.

In this case, we recommend providing the scraper with a bridge or possibly using a special change guide.

We hope that you work easily and reliably with the ALFRA Press punch units with these usage instructions.

Diameter of the punched holes/material thickness



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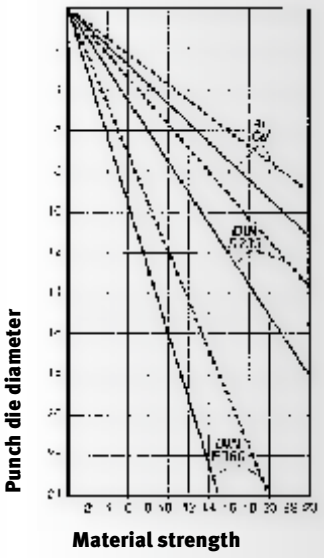


2

ALFRA Punching Units APS - Working area

Material St. 42

	Material strength mm Material DIN S233	Force needed for punching [kN] (10 kN... approximately 1 ton) • Punch diameter (mm)																				
		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
		APS 70															APS 120						
APS 70 (DIN S275)	3	25	28	32	35	39	43	46	50	53	57	60	64	67	71	74	78	82	85	89	92	96	99
	4	33	38	43	47	52	57	61	66	71	76	80	85	90	94	99	104	109	113	118	123	128	132
	5	41	47	53	59	65	71	77	83	89	94	100	106	112	118	124	130	136	142	148	154	159	165
	6	50	57	64	71	78	85	92	99	106	113	120	128	135	142	149	156	163	170	177	184	191	198
	7	58	66	74	83	91	99	107	116	124	132	141	149	157	165	174	182	190	198	207	215	223	232
	8		76	85	94	104	113	123	132	142	151	161	170	180	189	198	208	217	227	236	246	255	265
	9			96	106	117	128	138	149	159	170	181	191	202	213	223	234	245	255	266	276	287	298
	10				118	130	142	154	165	177	189	201	213	224	236	248	260	272	283	295	307	319	331
	11					143	156	169	182	195	208	221	234	247	260	273	286	299	312	325	338	351	364
	12						170	184	198	213	227	241	255	269	283	298	312	326	340	354	369	383	397
	13							200	215	230	246	261	276	292	307	322	338	353	369	384	399	415	430
APS 120 (DIN S275)	14								232	248	265	281	298	314	331	347	364	380	397	413	430	447	463
	15									266	283	301	319	337	354	372	390	408	425	443	461	478	496
	16										302	321	340	359	378	397	416	435	454	472	491	510	529
	17											341	361	382	402	422	442	462	482	502	522	542	562
	18												383	404	425	447	468	489	510	532	553	574	595

Actual punching force

APS	60	70	120	70D	110D
in kN	225	313	470	454	508

	DIN S233	DIN S275	DIN S355	DIN E335	C 25	C 35	C 45	C 60
Rm max (sheets)	470	510	630	710	600	700	800	900
Tau max = 0.85 * Rm max	376	408	504	568	480	560	640	720
coef. (Steel X / DIN S233)	1.00	1.09	1.34	1.51	1.28	1.49	1.70	1.91

Example 1: Punching unit APS 70, F max 454 = kN
Punch diameter Ø=20 mm
Material thickness T = 8 mm
Material C 45, R_m max=800 N/mm²

Calculation 1: F = F(DIN S233) * coef.(C 45/DIN S233)
F = 189 * 1.70 = 321.3 kN
F is less than F max, punch force sufficient

Example 2: Punching unit APS 70, F max = kN 313
Punch diameter Ø = 21 mm
Material thickness T = 12 mm
Material DIN S275, R_m max=510 N/mm²

Calculation 2: F = F(DIN S233) * coef.(DIN S275/DIN S233)
F = 298 * 1.09= 324.8 kN
F is greater than F max;
Punch power is not sufficient;
Please opt for our APS 120

Conversion - pressure

- Pascal (pa) = 1 Newton (N)/m²
- 1 Bar (bar) = 10 to the power of 5 Pa = 10 to the power of 5 N/m² = 10 N/m² = 750.06 mercury column
- 1 bar = 1.019 kg/cm² = 0.1 N/mm² = 14.5 psi
- 1 kg/cm² (atm) = 0.981 bar = 0.0981 N/mm² = 14.2234 psi
- 1 bar = 1.02 technical atmospheres (at) = 1.02 kg/cm² = 10 N/cm²
- 1 physical atmosphere (atm) = 1.013 bar = 1.033 kg / cm2 = 760 mm mercury column = 760 torr
- 1 torr = 1.332 mbar
- 1 m water column (mH2O, = 0.0980665 bar)
- 1 mm H2o = 0.0980665 mbar = 9.80655 Pa
- 1 N/mm² = 10 bar = 10.19 kg/cm² = 145 psi
- 1 psi = 0.069 bar = 0.0703 kg/cm2 00.0069 N/mm²

Conversion table - Pressure units

Convert the pressure units "bar" and "psi"

Bar	psi	psi	bar
1	14.5	1	0.068965517
10	145	100	6.896551724
100	1450	100	6.896551724
500	7250	5000	344.8275862
1000	14500	10000	689.6551724
1200	17400	10500	724.137931

ALFRA - TIPS FOR CORRECT DEBURRING

For the models KFH 150, KFH 250, KFT 250, KFT 500

Our precision high performance drive motors are infinitely variable. It is advisable to first start at low motor rpm, then continuously increase it during the milling.

You can see when the ideal rpm is reached on the running noise of the milling cutter and the feed.

The work material-based cutting speed can also be determined using the famous formula and the pre-set speed:

$$N = \frac{V_c}{d \bullet \pi}$$

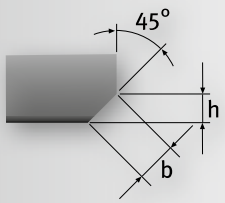
The type of material, the bevel height and the cutting edge geometry of the solid carbide milling cutters are primarily responsible for the The milling cutter speed (N), the cutting speed VC.

The bevel height (H)

The bevel height is decisive for the choice of the solid carbide milling cutter. With the KFT 250 and 500 KFT table models, it must be noted that the work piece must be grasped and guided by hand. If the milling performance is too great especially for smaller work pieces, the bevel height should be made with several infeeds.

The bevel width (B)

The bevel width can be calculated using the formula (B x H = 1.414).



Rotation direction

When guiding the work piece on the table models, it is important to note the direction of rotation.

With hand-guided models (KFH 150, KFH 250), the direction of rotation (see arrow) must be observed. Climb milling is only suitable for very small bevel heights.

Surface quality

The surface quality of the bevel is dependent on the solid carbide milling cutters used and the material as well as the selected feed rate. If the chips start to glow, the feed rate is too high or the milling cutters are too finely intermeshed.

Tool cost savings

In the above models, commercially available solid carbide end mills with front cut can be used. By moving the milling cutter in the spindle, the cutter can be used in the full working length.

Cost reduction:
The major part of the cutting area can be used by moving the cutter in the collet chuck!

ALFRA WELDING EDGE MILLING MACHINE - SKF 63-15

Material	Feed recommendations
General construction steel up to 850 N/mm²	0.8 - 1.0 m/min
Case-hardened steel over 850 N/mm²	0.75 m/min
Rust and acid-resistant steels up to 600 N/mm²	0.5 m/min
Cast steel up to 450 N/mm²	0.6 m/min
Cast iron up to 400 N/mm²	0.8 - 1.0 m/min
Aluminium	0.4 m/min

(Required: special inserts available on special request)

ALFRA - carbide inserts for the welding edge milling machine SKF-63-15

	Prod.-No.
Carbide insert, TiAlN/TiN-PVD multi-layer coating Universal for steel and stainless steel Clearance angle 11°	25013
Carbide insert, TiAlN/TiN-PVD multi-layer coating for steel ‹ 850 N/mm²; stainless steel ‹› 900 N/mm² Clearance angle 20°	25010.15036B
Carbide insert, TiAlN/TiN-PVD multi-layer coating for steel ‹ 1400 N/mm²; stainless steel ‹› 900 N/mm² Clearance angle 11°	25010.15036E

Clearance angle
is the angle between the carbide teeth and the material to be machined. ALFRA TCT core drills have several clearance angles on a cutting edge.

Cutting depth
is the maximum material thickness that can be machined with the respective tool (should not be confused with the construction height of the tool).

Chip flute
gathers up the chips generated or removes these from the borehole.

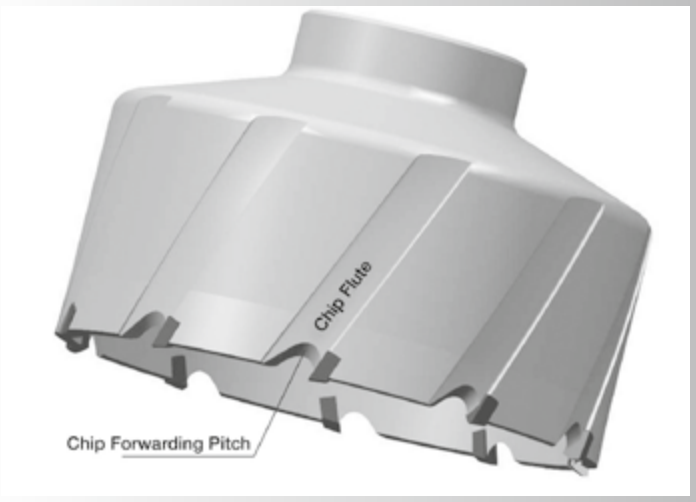
Chip breaker
directs the chips from the carbide tooth into the chip flute.

Cutting face
the chip is formed on this surface.

Angle of rake
is the angle between the tool axis and the cutting face.

Tooth projection
is the carbide projection to the core.

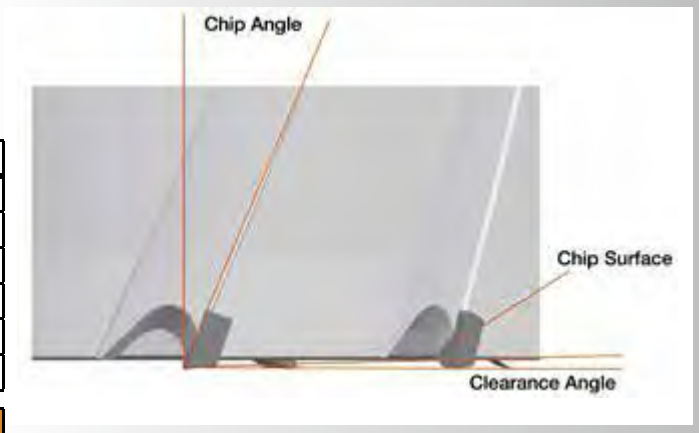
Tooth height difference
is used for the chip splitting.



Speed, cutting speed and feed rate (typical values)
Rotabest®- TCT hole cutters
Not suitable for automatic feed

Material	m/min	mm/r
Construction steel 50 kp/m²	40-60	0.08-0.12
Steel 50-70 kp/m²	30-50	0.08-0.12
Stainless steel	18-45	0.8-0.10
Cast iron	65-95	0.12-0.20
Non-ferrous metals, aluminium	100-550	0.22-0.45
Exotic alloys	10-30	0.05-0.08

Accuracy (reference value) / Input / + 0.10 mm Output /± 0 mm



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