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PUNCHING



DRILLING



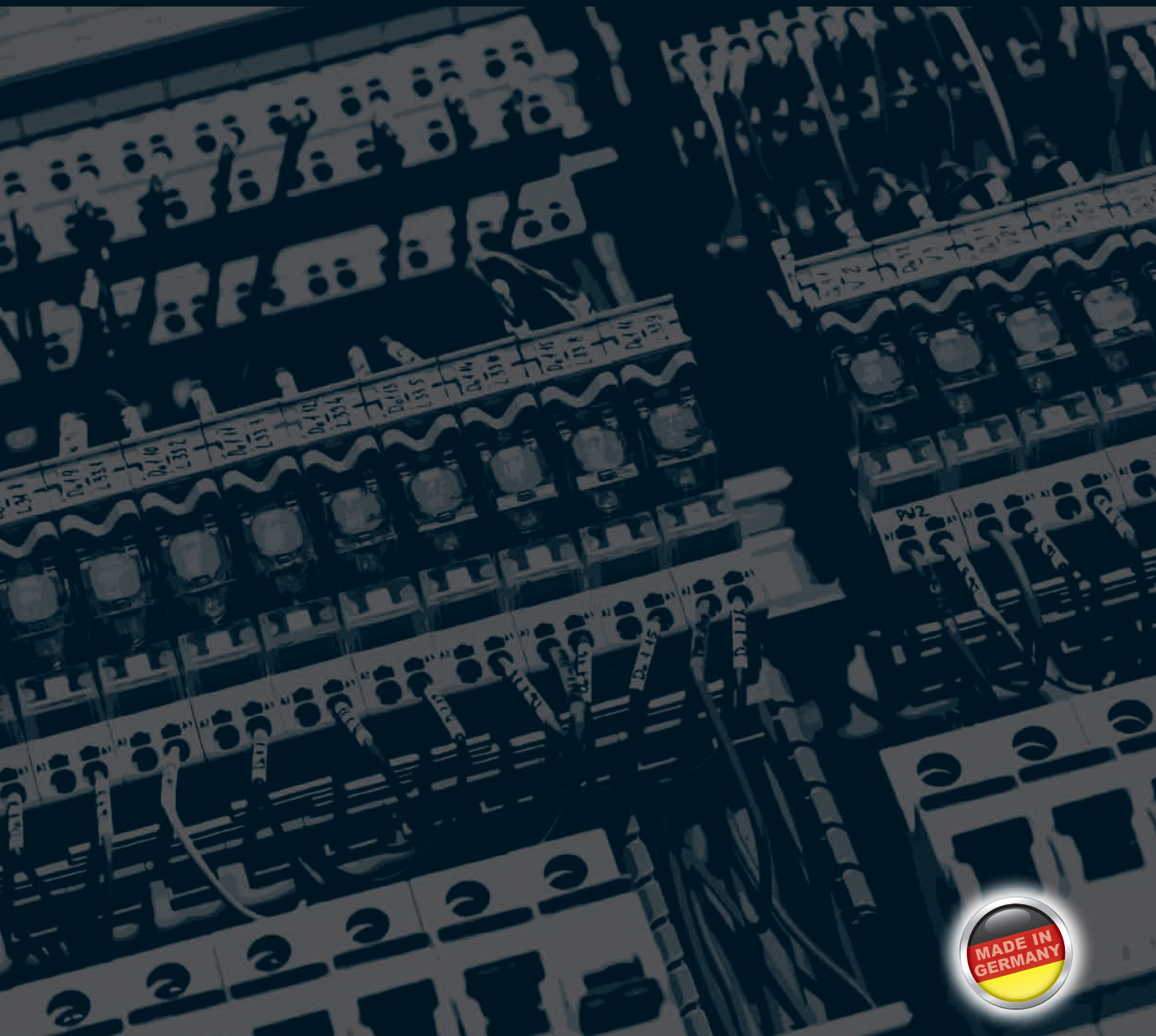
LIFTING



CUTTING



DEBURRING



***QUALITY TOOLS AND MACHINES
FOR CONTROL CABINET AND SWITCHGEAR ENGINEERING***

100 A EN



WELCOME!

We take pride in our achievement - over 60% in-house manufacturing in four locations in Germany. From our home town in the motorcar race city of Hockenheim, we ship our products on a regular basis to over 120 countries around the world. Our network of agents ensures that practically anybody - really anybody - can use our high-quality products and benefit from their various advantages.

What do we do at ALFRA? - To put it simple: We make holes!

This means, that we manufacture and sell implements, machines and tools for punching and drilling. These are mainly intended for applications in the field of metal-working, with material thickness ranging from 0.8 to more than 100 mm.

On top of that, our product range includes many supplementary items, e.g. in the field of cutting and deburring technology, etc.

Come and test us - we look forward to seeing you among our many satisfied customers.

Made in Germany - Made by ALFRA

Don't be satisfied with less!

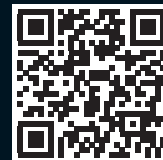
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for the latest product and application videos.

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Made in Germany

JOIN US IN PROMOTING "MADE IN GERMANY", FOR REASONS WHICH ARE TODAY EVEN MORE IMPORTANT AND VALID THAN EVER BEFORE:




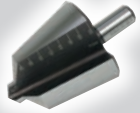


- JOB SECURITY
- PROMOTION OF JOB TRAINING
- COMMUNICATION
- QUALITY MANAGEMENT
- ENVIRONMENTAL AWARENESS
- SAFEGUARDING THE FUTURE

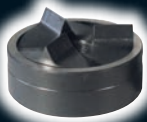


TOOLS AND MACHINES FOR CONTROL CABINET AND SWITCHGEAR ENGINEERING

					
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CUTTING TOOLS

		
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SPLITTER PUNCHING TOOLS - TRICUT™

3-fold splitter punch • Made in Germany by ALFRA

Sheet metal punching system with splitter punch for mild steel (S235).

Operation:

By means of spanner or hydraulic device.

Suitable for sheet thickness (S235):

1.5 mm with screws Ø 6.0 mm

2.0 mm with screws Ø 9.5 mm

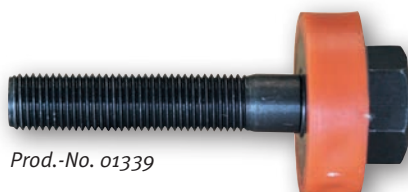
3.0 mm with screws Ø 19.0 mm

Pre-drilling: screws Ø 6.0 mm: Ø at least 6.2 mm

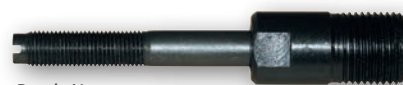
screws Ø 9.5 mm: Ø at least 9.7 mm

screws Ø 19.0 mm: Ø at least 19.5 mm

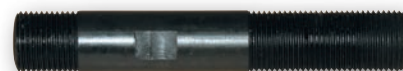
- Apply grease to tension screws. Metal lubricating paste protects against wear and seizure › see page 28.
- For hand operation, tension screws with ball bearings (BB) must be used › see below.
- Accessories (tension screws, pre-drills, ...) › see page 27.



Prod.-No. 01339



Prod.-No. 02003



Prod.-No. 02002

Ø in mm	Size metric	Size PG	Size INCH	Size conduit & pipe	Prod.-No. (punch and die)	Suitable tension screw with ball bearing Ø x l in mm	Prod.-No.	Suitable hydr. screw Ø in mm	Prod.-No.
12.5	M 12	-	0.492		01770	6.0 x 40.0	01334	19.0 x 6.0	02022
15.2	-	9	0.598		01771	9.5 x 50.0	01339	19.0 x 9.5	02003
16.2	M 16	-	0.638		01772	9.5 x 50.0	01339	19.0 x 9.5	02003
18.6	-	11	0.732		01773	9.5 x 50.0	01339	19.0 x 9.5	02003
20.4	M 20	13	0.803		01774	9.5 x 50.0	01339	19.0 x 9.5	02003
22.5	-	16	7/8"	1/2"	01775	9.5 x 50.0	01339	19.0 x 9.5	02003
25.4	M 25	-	1"		01776	9.5 x 50.0	01339	19.0 x 9.5	02003
28.3	-	21	1.114	3/4"	01777	9.5 x 50.0	01339	19.0 x 9.5	02003
28.3	-	21	1.114	3/4"	01778	19.0 x 55.0	01340	19	02002
30.5	-	-	1 7/32"		01779	9.5 x 50.0	01339	19.0 x 9.5	02003
32.5	M 32	-	1.280		01780	19.0 x 55.0	01340	19	02002
34.6	-	-	1.362	1"	01788	19.0 x 55.0	01340	19	02002
37.0	-	29	1.457		01781	19.0 x 55.0	01340	19	02002
40.5	M 40	-	1.594		01782	19.0 x 75.0	01341	19	02002
43.2	-	-	1 11/16"	1 1/4"	01789	19.0 x 75.0	01341	19	02002
47.0	-	36	1.850		01783	19.0 x 75.0	01341	19	02002
49.6	-	-	1 15/16"	1 1/2"	01790	19.0 x 75.0	01341	19	02002
50.5	M 50	-	1.988		01784	19.0 x 75.0	01341	19	02002
54.0	-	42	2 1/8"		01785	19.0 x 75.0	01341	19	02002
60.0	-	48	2.362		01786	19.0 x 75.0	01341	19	02002
61.5	-	-	2 3/8"	2"	01791	19.0 x 75.0	01341	19	02002
63.5	M 63	-	2 1/2"		01787	19.0 x 75.0	01341	19	02002

TIP: Use hydraulic screws made of high-alloy tool steel for heavier duty applications (made from a single piece) – 19.0 x 9.5 mm Prod.-No. 02010



SPLITTER PUNCHING TOOLS - TRICUT™ - SETS



3-fold splitter punch • Made in Germany by ALFRA

■ All sets are delivered in robust and practical plastic cases.

Splitter Punching Tool Set TriCut™ – Metric

for mild steel (S235)

Prod.-No.

01754

Contents: 6 dimensions,

- 1 punch and die each
- M 12 - M 16 - M 20 - M 25 - M 32 - M 40
- 1 BB-screw Ø 6.0 x 40.0 mm
- 1 BB-screw Ø 9.5 x 50.0 mm
- 1 BB-screw Ø 19.0 x 55.0 mm
- 1 pre-drill HSS Ø 10.0 mm
- 1 tin of lubricating paste

Prod.-No. 01754



Splitter Punching Tool Set TriCut™ – Metric

for mild steel (S235)

Prod.-No.

01755

Contents: 7 dimensions,

- 1 punch and die each
- M 16 - M 20 - M 25 - M 32 - M 40 - M 50 - M 63
- 2 BB-screws Ø 9.5 x 50.0 mm
- 1 BB-screw Ø 19.0 x 55.0 mm
- 1 BB-screw Ø 19.0 x 75.0 mm
- 1 pre-drill HSS Ø 10.0 mm
- 1 tin of lubricating paste

Prod.-No. 01755



Splitter Punching Tool Set TriCut™ – PG

for mild steel (S235)

Prod.-No.

01750

Contents: 6 dimensions,

- 1 punch and die each
- PG 9 - 11 - 13 - 16 - 21 and Ø 30.5
- 2 BB-screws Ø 9.5 x 50.0 mm
- 1 pre-drill HSS Ø 10.0 mm
- 1 tube of lubricating paste

Prod.-No. 01750



Splitter Punching Tool Set TriCut™ – PG

for mild steel (S235)

Prod.-No.

01751

Contents: 10 dimensions,

- 1 punch and die each
- PG 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42 - 48 and Ø 30.5
- 2 BB-screws Ø 9.5 x 50.0 mm
- 1 BB-screw Ø 19.0 x 55.0 mm
- 1 BB-screw Ø 19.0 x 75.0 mm
- 1 pre-drill HSS Ø 10.0 mm
- 1 tin of lubricating paste

Prod.-No. 01751



Splitter Punching Tool Set TriCut™ – Metric

for mild steel (S235)

Prod.-No.

01762

Contents: 5 TriCut™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm

Prod.-No. 01762



Splitter Punching Tool Set TriCut™ – Metric

for mild steel (S235)

Prod.-No.

01757

Contents: 7 TriCut™ punches and dies M 16 - M 63
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 - 50.5 - 63.5 mm

Prod.-No. 01757





SPLITTER PUNCHING TOOLS TRICUT+™

3-fold splitter punch • Made in Germany by ALFRA

Sheet metal punching system with splitter punch
for **stainless steel (F = 600 N/mm²)** and mild steel (S235).

Operation:

By means of spanner or hydraulic device.

Suitable for sheet metal thickness (stainless steel F = 600 N/mm²):

2.0 mm with screws Ø 11.1 mm

2.5 mm with screws Ø 19.0 mm

Pre-drilling: screws Ø 11.1 mm: Ø at least 11.3 mm

screws Ø 19.0 mm: Ø at least 19.5 mm

■ Apply grease to tension screws. Metal lubricating paste protects against wear and seizure > see page 28.

■ For hand operation, tension screws with ball bearings (BB) must be used > see below.

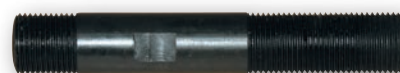
■ Accessories (tension screws, pre-drills, ...) > see page 27.



Prod.-No. 01342



Prod.-No. 02007



Prod.-No. 02002

Ø in mm	Size metric	Size PG	Size INCH	Size conduit & pipe	Prod.-No. (punch and die)	Suitable tension screw with ball bearing Ø x l in mm	Prod.-No.	Suitable hydr. screw Ø in mm	Prod.-No.
15.2	-	9	0.598		01600	11.1 x 60.0	01342	19.0 x 11.1	02007
16.2	M 16	-	0.638		01656	11.1 x 60.0	01342	19.0 x 11.1	02007
18.6	-	11	0.732		01603	11.1 x 60.0	01342	19.0 x 11.1	02007
20.4	M 20	13	0.803		01606	11.1 x 60.0	01342	19.0 x 11.1	02007
22.5	-	16	7/8"	1/2"	01609	11.1 x 60.0	01342	19.0 x 11.1	02007
25.4	M 25	-	1"		01659	11.1 x 60.0	01342	19.0 x 11.1	02007
28.3	-	21	1.114	3/4"	01612	19.0 x 55.0	01340	19	02002
30.5	-	-	1 7/32"		01615	19.0 x 55.0	01340	19	02002
32.5	M 32	-	1.280		01662	19.0 x 55.0	01340	19	02002
34.6	-	-	1.362	1"	01618	19.0 x 55.0	01340	19	02002
37.0	-	29	1.457		01621	19.0 x 55.0	01340	19	02002
40.5	M 40	-	1.594		01665	19.0 x 75.0	01341	19	02002
43.2	-	-	1 11/16"	1 1/4"	01624	19.0 x 75.0	01341	19	02002
47.0	-	36	1.850		01627	19.0 x 75.0	01341	19	02002
49.6	-	-	1 15/16"	1 1/2"	01630	19.0 x 75.0	01341	19	02002
50.5	M 50	-	1.988		01668	19.0 x 75.0	01341	19	02002
54.0	-	42	2 1/8"		01633	19.0 x 75.0	01341	19	02002
60.0	-	48	2.362		01636	19.0 x 75.0	01341	19	02002
61.5	-	-	2 3/8"	2"	01640	19.0 x 75.0	01341	19	02002
63.5	M 63	-	2 1/2"		01671	19.0 x 75.0	01341	19	02002

TIP: Use hydraulic screws made of high-alloy tool steel for heavier duty applications (made from a single piece) – 19.0 x 11.1 mm Prod.-No. 02011

Supplementary set

Splitter Punching Tool Set TriCut+™ – Metric Prod.-No.

for mild steel (S235) and stainless steel sheets

01652

Contents: 5 TriCut+™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
in a plastic case

Prod.-No. 01652



Splitter Punching Tool Set TriCut+™ – Metric Prod.-No.

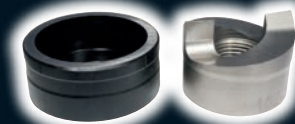
for mild steel (S235) and stainless steel sheets

01653

Contents: 7 TriCut+™ punches and dies M 16 - M 63
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 - 50.5 - 63.5 mm
in a plastic case

Prod.-No. 01653





SPLITTER PUNCHING TOOLS TWINCUT™



2-fold splitter punch • Made in Germany by ALFRA

Sheet metal punching system with splitter punch for **stainless steel (F = 600 N/mm²) and mild steel (S235).**

Operation:

By means of spanner or hydraulic device.

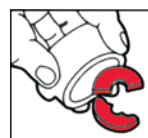
Suitable for sheet metal thickness (stainless steel F = 600 N/mm²):

2.0 mm with screws Ø 9.5 mm

2.5 mm with screws Ø 11.1 mm

3.0 mm with screws Ø 19.0 mm

- Apply grease to tension screws. Metal lubricating paste protects against wear and seizure › see page 28.
- For hand operation, tension screws with ball bearings (BB) must be used › see below.
- Accessories (tension screws, pre-drills, ...) › see page 27.



Low pressure build-up by 2-fold splitter punch



Ø in mm	Size metric	Size PG	Size INCH	Size conduit & pipe	Prod.-No. (punch and die)	Suitable tension screw with ball bearing Ø x l in mm	Prod.-No.	Suitable hydr. screw Ø in mm	Prod.-No.
12.7	M 12	7	1/2"	0.500	01510	9.5 x 50	01339	19.0 x 9.5	02003
15.2	-	9		0.598	01513	9.5 x 50	01339	19.0 x 9.5	02003
16.2	M 16	-		0.638	01516	9.5 x 50	01339	19.0 x 9.5	02003
18.6	-	11		0.732	01519	9.5 x 50	01339	19.0 x 9.5	02003
20.4	M 20	13		0.803	01522	11.1 x 60	01342	19.0 x 11.1	02007
22.5	-	16	7/8"	0.886	01525	11.1 x 60	01342	19.0 x 11.1	02007
25.4	M 25	-	1"	1.000	01528	11.1 x 60	01342	19.0 x 11.1	02007
28.3	-	21		1.114	01531	19.0 x 55	01340	19	02002
30.5	-	-	1 7/32"	1.201	01534	19.0 x 55	01340	19	02002
32.5	M 32	-		1.280	01537	19.0 x 55	01340	19	02002
37.0	-	29		1.457	01540	19.0 x 55	01340	19	02002
40.5	M 40	-		1.594	01543	19.0 x 75	01341	19	02002
47.0	-	36		1.850	01546	19.0 x 75	01341	19	02002
50.5	M 50	-		1.988	01549	19.0 x 75	01341	19	02002
54.0	-	42	2 1/8"	2.126	01552	19.0 x 75	01341	19	02002
60.0	-	48		2.362	01555	19.0 x 75	01341	19	02002
63.5	M 63	-	2 1/2"	2.500	01558	19.0 x 75	01341	19	02002



MonoCut™ PUNCHING TOOLS

with 3 cutting tips • Made in Germany by ALFRA

Sheet metal punching system with splitter punch for **mild steel (S235)**.

Operation:

By means of spanner or hydraulic device.

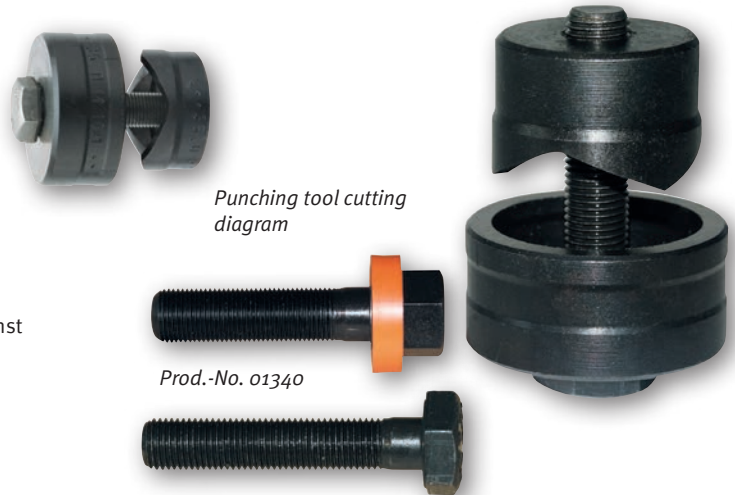
Suitable for mild steel (S235) sheet thicknesses:

2.0 mm with screws Ø 9.5 mm or

3.0 mm with screws Ø 19.0 mm.

Pre-drilling: screws Ø 9.5 mm: Ø at least 11.0 mm
screws Ø 19.0 mm: Ø at least 20.5 mm
screws Ø 28.3 mm: Ø at least 30.5 mm

- Apply grease to tension screws. Metal lubricating paste protects against wear and seizure › see page 28.
- For hand operation, tension screws with ball bearings (BB) must be used › see below.
- Accessories (tension screws, pre-drills, ...) › see page 27.



Punching tool cutting diagram

Prod.-No. 01340

Prod.-No. 01336

Ø in mm	Size metric	Size PG	Size INCH	Size conduit & pipe	Prod.-No. (punch, die + tension screw)	Suitable tension screw Ø x l in mm	Prod.-No.	Suitable tension screw with ball bearing Ø x l in mm	Prod.-No.
12.7	M 12	7	1/2"	0.500	01001	9.5 x 40	01335	9.5 x 50	01339
15.2	-	9		0.598	01005	9.5 x 40	01335	9.5 x 50	01339
16.2	M 16	-		0.638	01009	9.5 x 40	01335	9.5 x 50	01339
18.6	-	11		0.732	01021	9.5 x 40	01335	9.5 x 50	01339
19.0	-	-	3/4"	0.748	01025	9.5 x 40	01335	9.5 x 50	01339
20.0	-	-		0.787	01029	9.5 x 40	01335	9.5 x 50	01339
20.4	M 20	13		0.803	01033	9.5 x 40	01335	9.5 x 50	01339
22.0	-	-		0.866	01041	9.5 x 40	01335	9.5 x 50	01339
22.5	-	16	7/8"	0.886	01045	9.5 x 40	01335	9.5 x 50	01339
25.0	-	-		0.984	01053	9.5 x 50	01336	9.5 x 50	01339
25.4	M 25	-	1"	1.000	01057	9.5 x 50	01336	9.5 x 50	01339
28.3	-	21		1.114	01069	9.5 x 50	01336	9.5 x 50	01339
28.3	-	21		1.114	01073	19.0 x 55	01337	19.0 x 55	01340
30.1	-	-		1.185	01085	9.5 x 50	01336	9.5 x 50	01339
30.5	-	-	1 7/32"	1.201	01093	9.5 x 50	01336	9.5 x 50	01339
31.7	-	-	1 1/4"	1.248	01101	9.5 x 50	01336	9.5 x 50	01339
32.5	M 32	-		1.280	01105	9.5 x 50	01336	9.5 x 50	01339
34.6	-	-		1.362	01117	19.0 x 55	01337	19.0 x 55	01340
35.0	-	-	1 3/8"	1.378	01121	9.5 x 50	01336	9.5 x 50	01339
35.0	-	-	1 3/8"	1.378	01125	19.0 x 55	01337	19.0 x 55	01340
37.0	-	29		1.457	01129	19.0 x 55	01337	19.0 x 55	01340
38.0	-	-	1 1/2"	1.496	01133	19.0 x 55	01337	19.0 x 55	01340
40.5	M 40	-		1.594	01149	19.0 x 55	01337	19.0 x 55	01340
42.8	-	-		1.685	01157	19.0 x 55	01337	19.0 x 55	01340
43.2	-	-	1 11/16"	1.701	01161	19.0 x 55	01337	19.0 x 55	01340
47.0	-	36		1.850	01165	19.0 x 75	01338	19.0 x 75	01341
49.6	-	-	1 15/16"	1.953	01169	19.0 x 75	01338	19.0 x 75	01341
50.5	M 50	-		1.988	01177	19.0 x 75	01338	19.0 x 75	01341
54.0	-	42	2 1/8"	2.126	01189	19.0 x 75	01338	19.0 x 75	01341
60.0	-	48		2.362	01201	19.0 x 75	01338	19.0 x 75	01341
61.5	-	-	2 3/8"	2.421	01205	19.0 x 75	01338	19.0 x 75	01341
63.5	M 63	-	2 1/2"	2.500	01209	19.0 x 75	01338	19.0 x 75	01341
From Ø 68.0 mm onwards we recommend the use of hydraulic devices.									
68.0	-	-		2.677	01241	19.0 x 75	01338	19.0 x 75	01341
70.0	-	-	2 3/4"	2.756	01221	19.0 x 75	01338	19.0 x 75	01341
75.5	M 75	-	2 7/8"	2.972	01225	19.0 x 75	01338	19.0 x 75	01341
76.2	-	-	3"	3.000	01229	19.0 x 75	01338	19.0 x 75	01341
80.0	-	-	3 1/8"	3.150	01237	19.0 x 75	01338	19.0 x 75	01341
82.0	-	-		3.228	01245	19.0 x 75	01338	19.0 x 75	01341
					Die				
89.0	-	01251	3 1/2"	3.504	3"	01252	From 89.0 mm onwards the use of hydraulic devices is necessary. Accessories required: Hydraulic screw 28.3 x 155 mm Prod.-No. 01398 or special tension screw 01398L and lock nut no. 7, Prod.-No. 01419		
92.0	-	01253	3 5/8"	3.622		01254			
100.5	-	01257		3.957		01258			
115.5	-	01265	4 1/2"	4.547	4"	01266			
120.0	-	01267		4.724		01268			



MonoCut™ PUNCHING TOOLS – SETS

with 3 cutting tips • Made in Germany by ALFRA



■ All sets are delivered in robust and practical plastic cases.

MonoCut™ Punching Tool Set – Metric

Prod.-No.
01290

Contents: 5 metric dimensions
1 punch and die each
M 16/20/25/32/40



MonoCut™ Punching Tool Set – Metric

Prod.-No.
01291

Contents: 7 metric dimensions
1 punch and die each
M 16/20/25/32/40/50/63

Prod.-No. 01290 – 5 metric dimensions



MonoCut™ Punching Tool Set – PG

Prod.-No.
01451

Contents: 5 PG dimensions
1 punch and die each PG 9/11/13/16/21
2 BB-screws Ø 9.5 x 50.0 mm
1 pre-drill HSS Ø 11.0 mm
1 tube of lubricating paste

Prod.-No. 01291 – 7 metric dimensions



MonoCut™ Punching Tool Set – PG

Prod.-No.
01298

Contents: 11 PG dimensions
1 punch and die each PG 7/9/11/13/16/21/29/36/42/48
and Ø 30.5 mm

Prod.-No. 01451 – 5 PG dimensions



Prod.-No. 01298 – 11 PG dimensions



ALFRA PUNCHING TOOLS – SANITARY

with 3 cutting tips • Made in Germany by ALFRA

- For punching holes in kitchen sinks

Size mm	Designation	Screw size mm	Prod.-No.
Ø 28.3	Puncher, compl.	M 10 x 1	01293
Ø 31.7	Puncher, compl.	M 10 x 1	01294
Ø 35.0	Puncher, compl.	M 10 x 1	01295
Ø 37.0	Puncher, compl.	M 10 x 1	01292
	Spare tension screw	M 10 x 1	01299



Punching tool set – sanitary

Prod.-No.
01450

with 3 dimensions in a plastic case

Contents: 3 punching tools 28.3 + 31.7 + 35.0 mm
3 tension screws M 10.0 x 1
1 HSS-Co pre-drill Ø 11.0 mm
1 metal lubricating paste



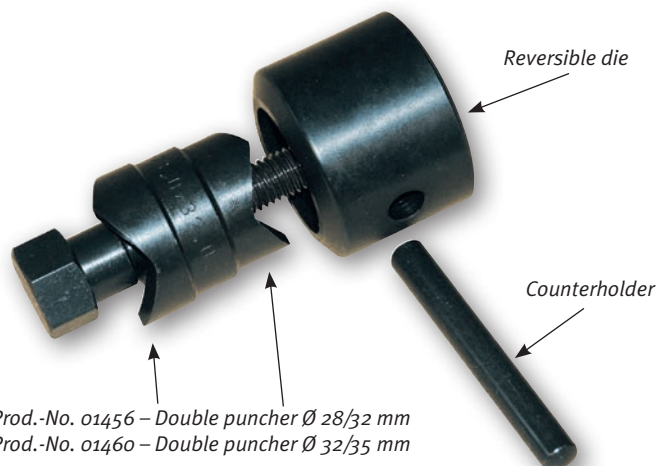
Prod.-No. 01450

ALFRA DOUBLE PUNCHING TOOLS – SANITARY

with 3 cutting tips

- For punching holes in kitchen sinks
- Size 19 spanner operation

Size mm	Designation	Screw size mm	Prod.-No.
28 and 32	Puncher, compl.	10 x 55 special	01456
32 and 35	Puncher, compl.	10 x 55 special	01460
	Spare tension screw	10 x 55 special	01457



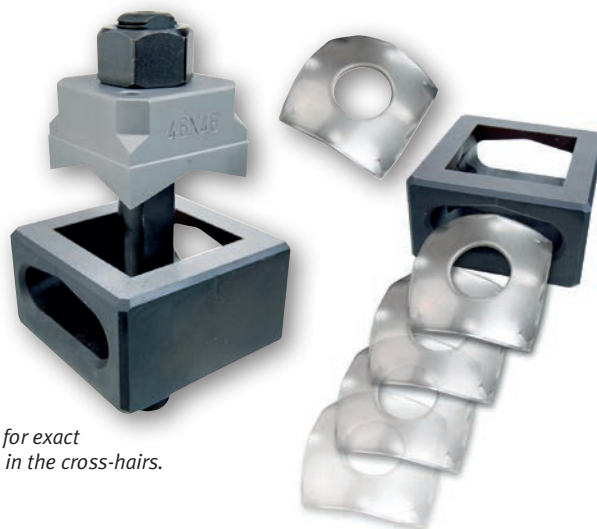


PUNCHING TOOLS – SQUARE

Made by ALFRA Germany



- All punches have a lateral ejection for the waste piece.
No jamming inside the die.
- For mild steel (S235).
- The punches are delivered in robust and practical plastic cases.
- When placing an order for hydraulic operation please specify the hydraulic model.



4 markings for exact positioning in the cross-hairs.

Lateral ejection – utility model no. G9104064.7

Size mm	Max. material thickness mm / (S235)	For operation by		Prod.-No. Puncher	Prod.-No. Tie bolt	Spare parts			Pre-drilling Ø mm
						Prod.-No. Lock nut	Prod.-No. BB forcing nut	Prod.-No. Adapter for hydraulics	
12.7 x 12.7	1.75	■	■	01300	01348	01355	01352	01353	10
15.8 x 15.8	1.75	■	■	01301	01348	01355	01352	01353	10
19.0 x 19.0	2.0	■	■	01302	01347	01351	01352	01353	14
22.2 x 22.2	2.0	■	■	01303	01347	01351	01352	01353	14
24.0 x 24.0	2.0	■	■	01331	01347	01351	01352	01353	14
25.4 x 25.4	2.0	■	■	01304	01360	01354	01359	01361	17
45.5 x 45.5	3.0		■	01313	01345	01350			20
46.0 x 46.0	3.0		■	01305	01345	01350			20
50.8 x 50.8	3.0		■	01306	01344	01350			24
68.0 x 68.0	3.0		■	01308	01344	01349			24
92.0 x 92.0	3.0		■	01309	01343	01349			30
125.0 x 125.0	3.0		■	01431	01343	01356			30
138.0 x 138.0	3.0		■	01311	01343	01356			30

PUNCHING TOOLS FOR STAINLESS STEEL – SQUARE

Made in Germany by ALFRA

- Special version for stainless steel ($F = 600 \text{ N/mm}^2$) and mild steel (S235).

Size mm	Max. material thickness mm / VA	For operation by		Prod.-No. Puncher	Prod.-No. Tie bolt	Spare parts		Pre-drilling Ø mm
						Prod.-No. Lock nut	Prod.-No. BB forcing nut	
46.0 x 46.0	2.0	■			01312	01345	01350	20
68.0 x 68.0	2.0	■			01315	01344	01349	24
92.0 x 92.0	2.0	■			01316	01343	01349	30

- Other sizes available on request.





PUNCHING TOOLS – RECTANGULAR

Made by ALFRA Germany

- All punches have a lateral ejection for the waste piece. No jamming inside the die.
- Complete for hand and hydraulic operation.
- For mild steel (S235).
- The punches are delivered in sturdy plastic cases.
- When placing an order for hydraulic operation please specify the hydraulic model.



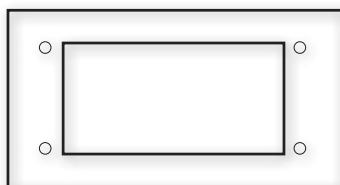
Prod.-No. 01329

Size mm	Max. material thickness mm / (S235)	For operation by		Prod.-No. Puncher	Prod.-No. Tie bolt	Spare parts			Pre-drilling Ø mm
						Prod.-No. Lock nut or bridge	Prod.-No. BB forcing nut	Prod.-No. Adapter for hydraulics	
17.0 x 19.0	2.0	■	■	01317	01347	01351	01352	01353	14
21.8 x 25.8	2.0	■	■	01318	01360	01351	01359	01361	17
22.0 x 30.0	2.0	■	■	01319	01360	01351	01359	01361	17
22.0 x 42.0	2.0	■	■	01320	01360	01351	01359	01361	17
25.0 x 50.0	2.0	■	■	01332	01360	01418	01359	01361	17
45.0 x 92.0	2.0		■	01314	01344	01349			24
46.0 x 92.0	2.0		■	01329	01344	01349			24
68.0 x 138.0	3.0		■	01330	01343	01358			30

PUNCHING TOOLS – RECTANGULAR FOR HEAVY CONNECTORS


Made in Germany by ALFRA

- Only for hydraulic operation.
- For mild steel (S235).



4 centring mandrels are placed in the correct position in the die. When die and punch are pressed against each other, the drilling position is marked on the metal sheet between them. These 4 marks can then be used as a drilling template. The assembly holes for connectors can then be drilled easily using a twist drill.



Size mm	Max. material thickness mm / (S235)	For operation by	Number of pins	Spare parts			Pre-drilling Ø mm
				Prod.-No. Puncher	Prod.-No. Tie bolt	Prod.-No. Lock nut	
36.0 x 52.0	2.0	■	6-pin	01325	01344	01350	24
36.0 x 65.0	2.0	■	10-pin	01326	01344	01350	24
36.0 x 86.0	2.0	■	16-pin	01327	01344	01350	24
36.0 x 91.0	2.0	■		01323	01344	01349	24
36.0 x 112.0	2.0	■	24-pin	01328	01344	01357	24
46.0 x 86.0	2.0	■		01322	01344	01349	24
46.0 x 112.0	2.0	■		01324	01343	01349	30

- Other sizes are available on request.

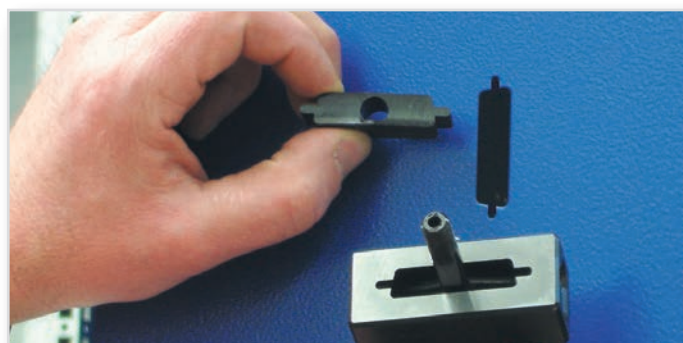
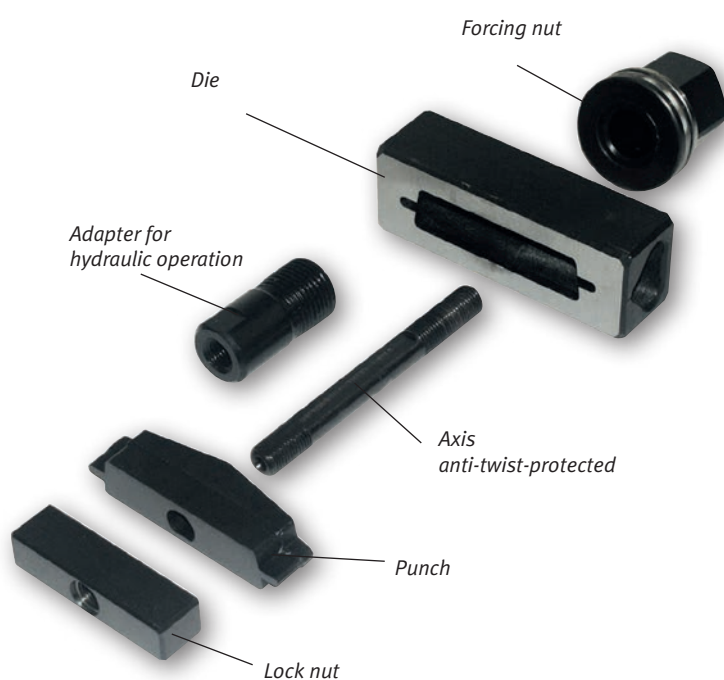


ALFRA PUNCHING TOOLS – SUB-MIN-D



Made by ALFRA Germany

- For multiple connector "Sub-Min-D".
- For punching the cut-outs for 9 - 50-pin connectors.
Anti-twist-protected axes are used as tie bolts for punch and die.
- All punches have a lateral ejection for the waste piece. No jamming inside the die.
- The punches are delivered in robust and practical plastic cases.



Size mm	Max. material thickness mm/(S235)/VA	For operation by		Spare parts					Pre-drilling Ø mm
				Prod.-No. Puncher	Prod.-No. Tie bolt	Prod.-No. Lock nut	Prod.-No. BB forcing nut	Prod.-No. Adapter for hydraulics	
9-pin - 19.8 x 11.3	2.0/1.5	■	■	01366	01438	01442	01352	01353	10
15-pin - 28.2 x 11.3	2.0/1.5	■	■	01367	01438	01443	01352	01353	10
25-pin - 41.9 x 11.3	1.75/1.25	■	■	01368	01438	01447	01352	01353	10
37-pin - 58.4 x 11.3	1.75/1.25	■	■	01369	01438	01444	01352	01353	10
50-pin - 55.7 x 13.9	1.65/1.0	■	■	01370	01438	01445	01352	01353	10



ALFRA – SPECIAL NIBBLING TOOL ASN

Made by ALFRA Germany

Application:

- Pre-punched round holes can be expanded easily and at low cost to make square and rectangular holes.
- Especially recommended for manufacturing rare dimensions, square and rectangular shapes (special shapes), which would otherwise require the expensive production of special tools.

Operation:

- Use a puncher and a compact hand punch to pre-punch a pilot hole $\varnothing 21.5$ mm or $\varnothing 28.5$ mm.

Use a nibbling tool with compact punch to expand a round hole into a square or rectangular hole of any size by multiple punching (nibbling) to the final dimension required.

The final dimension should be marked to avoid skew punches.

Material thickness:

max. 2.0 mm (S235)

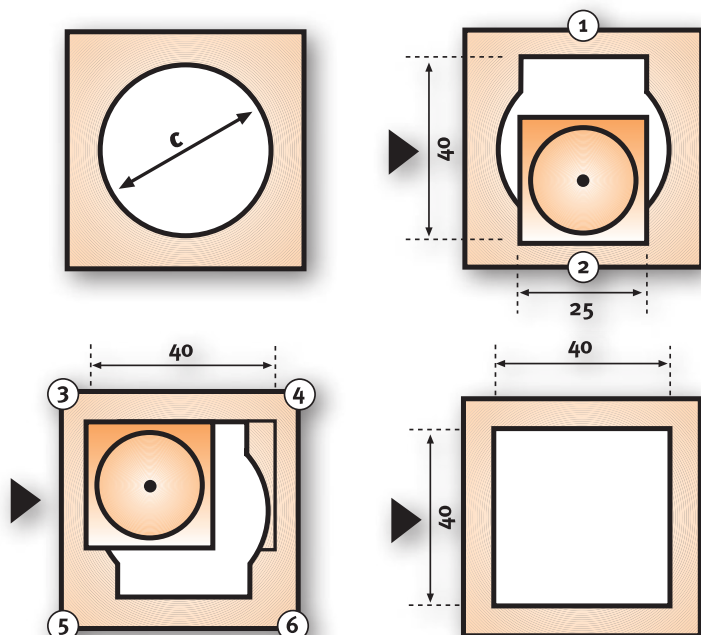
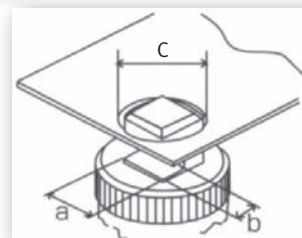
Dimensions:

	a	b	c
ASN 15	15.0	6.5	21.5
ASN 20	20.0	9.0	28.5

Prod.-No.

ASN 15	03016
ASN 20	03017
Spare punch ASN 15	03018
Spare punch ASN 20	03019

Prod.-No. 03016



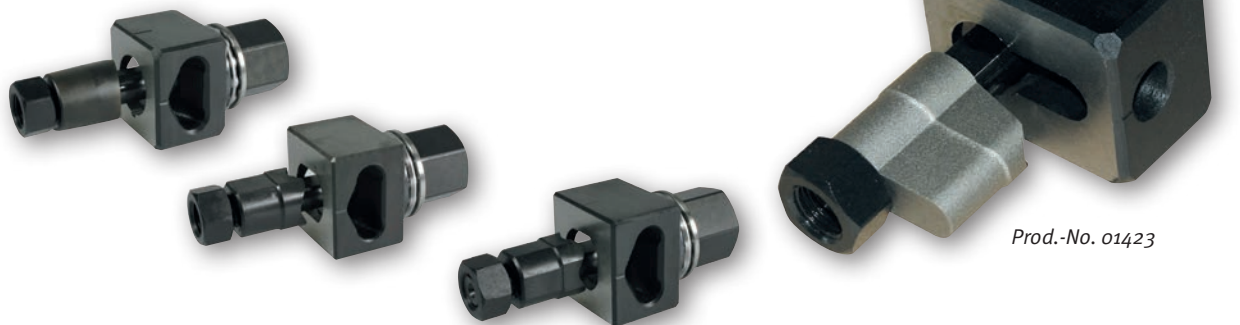


ALFRA PUNCHING TOOLS – CUSTOMISED







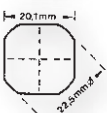

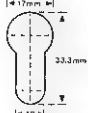



Made by ALFRA Germany

- All punches have a lateral ejection for the waste piece. No jamming inside the die.
- The punches are delivered in robust and practical plastic cases.
- When placing an order for hydraulic operation please specify the hydraulic model.



Prod.-No. 01423

Spare parts

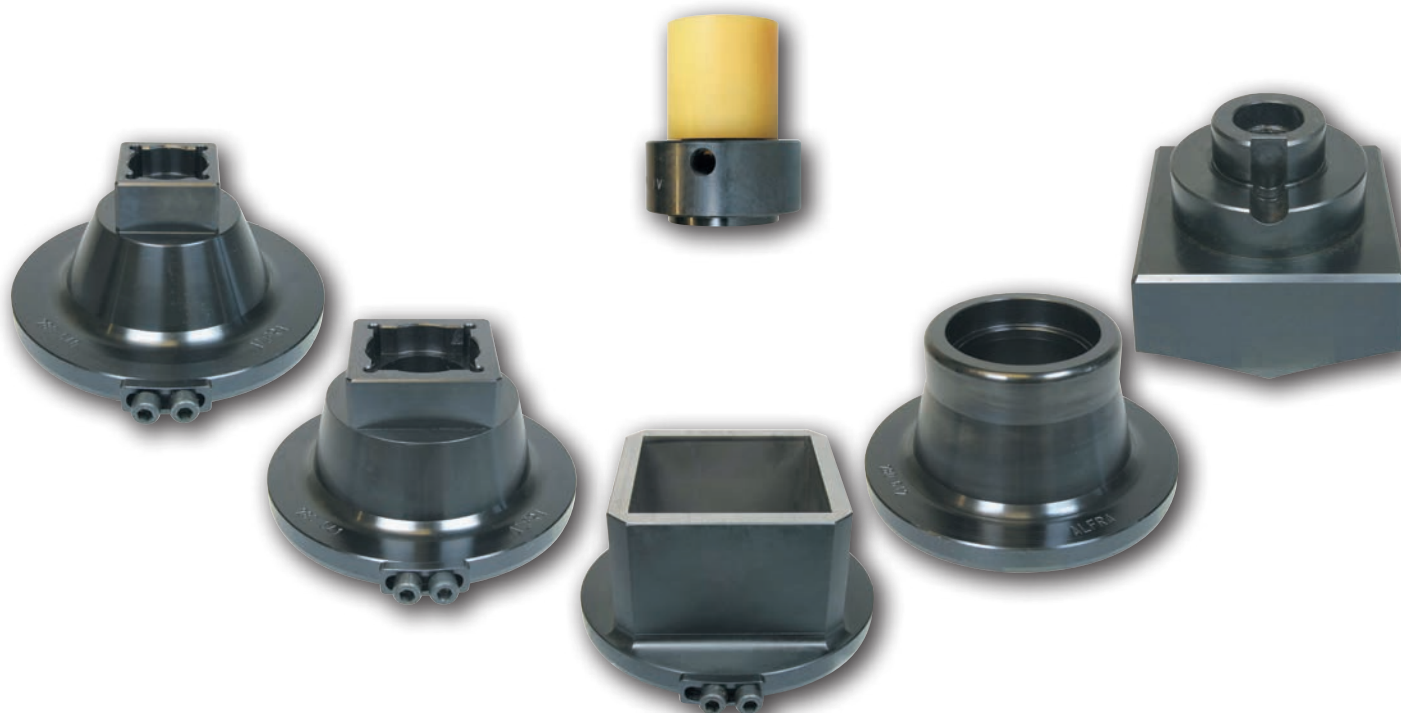
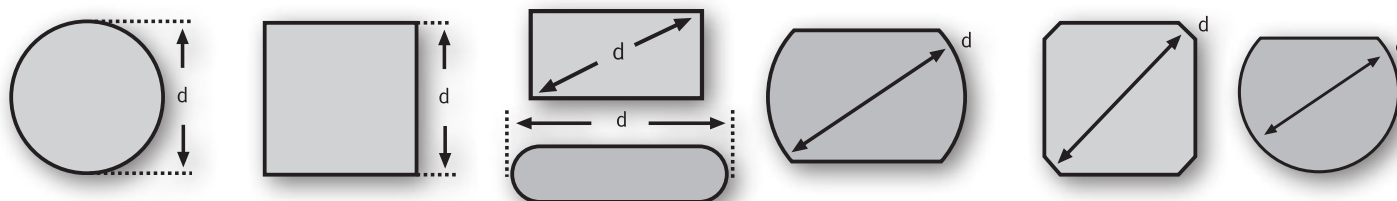
Size mm	Max. material thickness mm / (S235)	For	Prod.-No. operation by	Prod.-No. Puncher bolt	Prod.-No. Tie nut	Prod.-No. Lock nut	Prod.-No. BB forcing for hydraulics	Pre-drilling Adapter mm
 Ø 22.5 with 3 mm nose	2.0		01420	01333	01351	01352	01353	14
 Ø 22.5 flattened on 2 sides to 18.5 mm	2.0		01421	01347	01351	01352	01353	14
 Ø 22.5 flattened on 4 sides to 20.1 mm	2.0		01422	01347	01351	01352	01353	14
 33.3 x 17.0x10.0 for profile cylinders	2.0		01423	01347	01351	01352	01353	14
 Ø 16.3 flattened on 4 sides to 14.1 mm	1.75		01427	01348	01355	01352	01353	11



CUSTOMISED PUNCHING TOOLS

Made by ALFRA Germany

- We can manufacture all punching tools in round, square, rectangular shapes according to drawings at short notice.
- Please specify in your inquiry whether you require the tool for hand or hydraulic operation, and state the material thickness and material number.
- Tools – punches – dies suitable for novopress
e.g. HSTL 880/HTL 400 – AVAILABLE from us!!!
- Ask about our technical consultation service.



ALFRA HYDRAULIC HAND PUNCHERS





COMPACT HAND HYDRAULIC PUNCHING SETS

Aluminium design – weight only 1.6 kg • Made in Germany by ALFRA

Practical hand punch without hose and cylinder.
Ideal for workshop and assembly.

Punching capacity

Round holes up to Ø 82 mm
Square holes up to 68 x 68 mm
Rectangular holes up to 46 x 86 mm

Punching force: 75 kN
Operating pressure max.: 650 bar
Weight: 1.6 kg

Pressure control valve

Extended tool life thanks to the built-in pressure control valve.
"Automatic pressure switch off at 650 bar"



Compact hand hydraulic punching set

Prod.-No.

02001

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 11 mm
1 set of distance bushes (3 pieces)

Compact hand hydraulic punching set MonoCut™ – PG

Prod.-No.

02006

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
8 MonoCut™ punches and dies
PG 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 11 mm
1 set of distance bushes (3 pieces)



Prod.-No. 02006

Compact hand hydraulic punching set TriCut™ – PG

Prod.-No.

01752

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
9 TriCut™ punches and dies
PG 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42 - 48
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 10 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01752

Compact hand hydraulic punching set TriCut™ – Metric

Prod.-No.

01765

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
5 TriCut™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 10 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01765



COMPACT HAND HYDRAULIC PUNCHING SETS



Aluminium design – weight only 1.6 kg • Made in Germany by ALFRA

Compact hand hydraulic punching set TriCut™ – Metric

Prod.-No.

for mild steel (S235)

01758

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
7 TriCut™ punches and dies M 16 - M 63
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 - 50.5 - 63.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 10 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01758



Compact hand hydraulic punching set TriCut+™ – PG

Prod.-No.

for mild steel (S235) and stainless steel sheets

01650

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
8 TriCut+™ punches and dies
PG 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01650



Compact hand hydraulic punching set TriCut+™ – Metric

Prod.-No.

for mild steel (S235) and stainless steel sheets

01642

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
5 TriCut+™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01642



Compact hand hydraulic punching set TriCut+™ – Metric

Prod.-No.

for mild steel (S235) and stainless steel sheets

01654

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
7 TriCut+™ punches and dies M 16 - M 63
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 - 50.5 - 63.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01654



Compact hand hydraulic punching set TwinCut™ – Metric

Prod.-No.

for mild steel (S235) and stainless steel sheets

01570

in a sturdy and practical plastic case

Contents: 1 aluminium compact hand hydraulic punch
5 TwinCut™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01570





COMPACT COMBI HAND HYDRAULIC PUNCHING SETS

Aluminium design – weight only 1.9 kg • Made in Germany by ALFRA

With cylinder head at 90° and rotatable through 360°, making it particularly suitable for use in tight spaces.
Single-handed operation for easy positioning of the die on the cross-hairs.

Punching capacity

Round holes up to Ø 82 mm
Square holes up to 68 x 68 mm
Rectangular holes up to 46 x 86 mm

Punching force: 75 kN
Operating pressure max.: 650 bar
Weight: 1.9 kg



Pressure control valve

Extended tool life thanks to the built-in pressure control valve.
"Automatic pressure switch off at 650 bar"



at 90° angle and rotatable through 360°

Compact combi hand hydraulic

Prod.-No.

02050

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 11 mm
1 set of distance bushes (3 pieces)

Compact combi hand hydraulic set MonoCut™ – PG

Prod.-No.

02052

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
10 MonoCut™ punches and dies
PG 7 - 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42 - 48
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 11 mm
1 set of distance bushes (3 pieces)



Prod.-No. 02052

Compact combi hand hydraulic set TriCut™ – PG

Prod.-No.

01753

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
9 TriCut™ punches and dies
PG 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42 - 48
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 10 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01753

Compact combi hand hydraulic set TriCut™ – Metric

Prod.-No.

01766

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
5 TriCut™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 10 mm
1 set of distance bushes (3 pieces)



Prod.-No. 01766



COMPACT COMBI HAND HYDRAULIC PUNCHING SETS



Aluminium design – weight only 1.9 kg • Made in Germany by ALFRA

Compact combi hand hydraulic set TriCut™ – Metric

for mild steel (S235)

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
7 TriCut™ punches and dies M 16 - M 63
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 - 50.5 - 63.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 HSS pre-drill Ø 10 mm
1 set of distance bushes (3 pieces)

Prod.-No.

01759



Prod.-No. 01759



Compact combi hand hydraulic set TriCut+™ – PG

for mild steel (S235) and stainless steel sheets

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
8 TriCut+™ punches and dies
PG 9 - 11 - 13 - 16 - 21 - 29 - 36 - 42
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)

Prod.-No.

01651



Prod.-No. 01651



Compact combi hand hydraulic set TriCut+™ – Metric

for mild steel (S235) and stainless steel sheets

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
5 TriCut+™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)

Prod.-No.

01643



Prod.-No. 01643



Compact combi hand hydraulic set TriCut+™ – Metric

for mild steel (S235) and stainless steel sheets

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
7 TriCut+™ punches and dies M 16 - M 63
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 - 50.5 - 63.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)

Prod.-No.

01655



Prod.-No. 01655



Compact combi hand hydraulic punching set TwinCut™ – Metric

for mild steel (S235) and stainless steel sheets

in a sturdy and practical plastic case

Contents: 1 aluminium compact combi hand hydraulic punch
5 TwinCut™ punches and dies M 16 - M 40
Ø 16.2 - 20.4 - 25.4 - 32.5 - 40.5 mm
1 hydraulic screw Ø 19 mm
1 hydraulic screw Ø 19 x 9.5 mm
1 hydraulic screw Ø 19 x 11.1 mm
1 HSS pre-drill Ø 11.5 mm
1 set of distance bushes (3 pieces)

Prod.-No.

01575



Prod.-No. 01575





ALFRA BATTERY-OPERATED COMPACT HYDRAULIC PUNCHER

Made in Germany by ALFRA

Practical hand hydraulic tool with high-performance rechargeable 18 V battery for punching round, square and rectangular cut-outs for control cabinet and switchgear engineering. Extremely manageable and light thanks to the aluminium head which guarantees high tensile strength.

- Light and handy, only 3.7 kg with the rechargeable battery package.
- With pressure control valve.
- High-performance drive motor with ergonomic "soft touch" grip design.
- The rechargeable batteries can be inserted from two sides so you can balance the weight.

Technical data:

Punching

Round holes:

up to 82 mm Ø

3.0 mm mild steel (S235),

2.0 mm stainless steel (F = 600 N/mm²)

89 - 120 mm Ø only with special tension

screw* and distance bush*

2.0 mm mild steel (S235),

1.5 mm stainless steel (F = 600 N/mm²)

68 x 68 mm

3.0 mm mild steel (S235),

2.0 mm stainless steel (F = 600 N/mm²)

92 x 92 mm only with special tension

screw* and distance bush*

2.0 mm mild steel (S235),

1.5 mm stainless steel (F = 600 N/mm²)

Shaped holes:

Drive

Punching force

75 kN with pressure control valve

Rechargeable battery

Charging time

18 V, 3.0 Ah NiMH

Charging cycles

45 min. after complete discharge

Use

~ 500 under normal conditions

0° to + 40° C, loss of capacity below 0° C

Battery charger

Charges all rechargeable batteries from 18 to 28 V, compatible for NiCD, NiMH and Li-ion batteries. Automatic temperature monitoring. The change from quick-charge to maintenance charge prevents the battery cells being overcharged.

The state of charge is indicated by the LED display.

The PCB is completed encapsulated.

Punching time/punching capacity

Ø 22.5 mm 2 mm mild steel (S235) 5 sec. 190 holes/battery charge

Ø 63.5 mm 2 mm mild steel (S235) 7 sec. 100 holes/battery charge

68 x 68 mm 2 mm mild steel (S235) 7 sec. 70 holes/battery charge

Weight

3.7 kg with rechargeable battery

2.7 kg without rechargeable battery

Complete weight 7.8 kg without punching tools



Prod.-No. 02070



Prod.-No. 02072

Prod.-No. 02071

Scope of supply:

ALFRA battery-operated compact hand hydraulic punch with 2 rechargeable batteries 18 V, battery charger 18 - 28 V
Hydraulic screw - 9.5 x 19 mm - Prod.-No.: 02003
Hydraulic screw - 19 x 120 mm - Prod.-No.: 02002
Set of distance bushes, 3 pieces - Prod.-No.: 02004
Pre-drill 11 mm Ø - Prod.-No.: 08023
in a sturdy and practical plastic case

Prod.-No.

02070

Spare parts:

Spare battery

Prod.-No.

02071

Battery charger 220 V - 240 V

02072

ALFRA battery-operated compact hand hydraulic punch, w/o battery, w/o case

02074

* Special tension screw for square puncher 92 x 92 mm

01395

* Special tension screw for round puncher 89 x 120 mm

01398L
















* Special distance bush

01396



PUMP OVERVIEW



<p>Recommended combination</p> <p>Possible combination</p>	 FOOT PUMP	 AHP 03-01	 SC-05 III B	 DSP-120	 LHP 700	 ALH 600
Prod.-No.	02121	03853	03852	02027	02140	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 foot switch



COMPACT FLEX HAND HYDRAULIC PUNCH

Aluminium design – weight only 2.0 kg • Made in Germany by ALFRA

- Hand punch with hydraulic hose and cylinder.
- Ideal for use in tight spaces.

Punching capacity

Round holes	up to Ø 82 mm
Square holes	up to 68 x 68 mm
Rectangular holes	up to 46 x 86 mm

Punching force:	75 kN
Operating pressure max.:	650 bar
Hydraulic hose length:	600 mm
Weight:	2.0 kg

Contents: 1 compact flex hand hydraulic punch
1 hydraulic screw Ø 19.0 mm
1 hydraulic screw Ø 19.0 x 9.5 mm
1 HSS pre-drill Ø 11.0 mm
1 set of distance bushes, 3 pieces

Prod.-No.

Compact flex hand hydraulic punch
in a sturdy and practical plastic case

02065

Compact flex hand hydraulic punch, individual

02066



Prod.-No. 02065



Prod.-No. 02066

ALFRA FOOT PUMP

Made by ALFRA Germany

- Max. operating pressure 700 bar.
- Built-in pressure control valve.
- For all round, square, rectangular and special shape punchers.
- The foot pump leaves both hands free for exact positioning and punching on the control cabinet. The foot pump carrier frame is splayed, guaranteeing safe work without tilting.

Tank volume	270 cm ³
Useful oil volume	210 cm ³
Pumping capacity	1.7 cm ³ per piston stroke

Contents: 1 hydraulic cylinder with quick coupling
1 hydraulic hose 2.8 m
1 hydraulic screw Ø 19.0 and 19.0 x 9.5 mm
1 set of distance bushes, 5 pieces
1 pre-drill Ø 11.0 mm
without punches and dies

Prod.-No.

Foot pump set with hydraulic cylinder and accessories

02120

Individual foot pump, with 2.8 m hydraulic hose

02121



Prod.-No. 02120





ALFRA ELECTRO-HYDRAULIC PUMP AHP 03-1



Made in Germany by ALFRA

Technical data:

Motor voltage:	230 V / 50 Hz (110 V / 50 + 60 Hz on request)
Motor output:	0.55 kW, 2,720 rpm
Max. operating pressure:	700 bar
Pump capacity:	0.62 l / min. at 60 Hz 0.52 l / min. at 50 Hz
Tank volume:	2.5 l / useful volume 1.5 l
Temperature switch:	80°C +/- 5°
Weight:	17 kg
Dimensions L x W x H:	330 x 180 x 350 mm

Prod.-No.

Electro-hydraulic pump AHP 03-1 with hand switch,
2.0 m hydraulic hose with quick coupling

03853

Option:

Foot switch with 2 pedals, start-stop function

03866



Prod.-No. 03853

ALFRA ELECTRO-HYDRAULIC PUMP SC-05 III B

Made in Germany by ALFRA

Technical data:

Motor voltage:	230 V/50 Hz (110 V/50 Hz or 60 Hz on request)
Motor output:	1.1 kW
Max. operating pressure:	700 bar
Default setting:	620 bar
Pump capacity:	0.9 l/min.
Tank volume:	5.0 l
Weight:	29 kg
Dimensions L x W x H:	500 x 230 x 370 mm

Prod.-No.

Electro-hydraulic pump SC-05 III B
with 2.0 m hydraulic hose + quick coupling

03852

Option:

Foot switch for start function, 1 pedal

03861

Foot switch for start-stop-off function, 3 pedals

03865



Prod.-No. 03852



ALFRA ELECTRO-HYDRAULIC PUMP DSP-120

Compact electro-hydraulic pump, two-stage operation with holding function for single-acting hydraulic cylinder.

Technical data

Operating voltage:	230 V/50 Hz
Motor output:	0.4 kW
Max. operating pressure:	700 bar
Pump capacity at 0 - 20 bar:	2.0 l/min
Pump capacity at 20 - 700 bar:	0.2 l/min
Tank volume:	1.2 l
Useful oil volume:	0.8 l
Weight approx.	7.5 kg

Prod.-No.

Electro-hydraulic pump with accessories

02025

Contents:	1x	hydraulic cylinder SKP-1
	1x	hydraulic hose 1.8 m
	1x	hydraulic screw Ø 19.0 and 19.0 x 9.5 mm
	1x	set of distance bushes, several pieces
	1x	pre-drill Ø 11.0 mm
	1x	hand switch
		without punches and dies

Electro-hydraulic pump, individual, 220 V, with 1.8 m

02027

hydraulic hose, quick coupling and hand switch

02029

Foot switch with 2 pedals

02030

Hand switch



Prod.-No. 02025

ALFRA AIR HYDRAULIC PUMP - LHP 700

Air hydraulic pump for operating single-acting hydraulic cylinders for punching tools, cable shears, pressing devices or similar applications.

- Robust tank
- Tank ventilation filter
- Reduced noise level
- Oil level indicator on the tank
- Precise starting under load is possible
- Exact control – the relief valve operated via the foot pedal permits the load to be reduced exactly
- Hydraulic hose 2.0 m with quick coupling

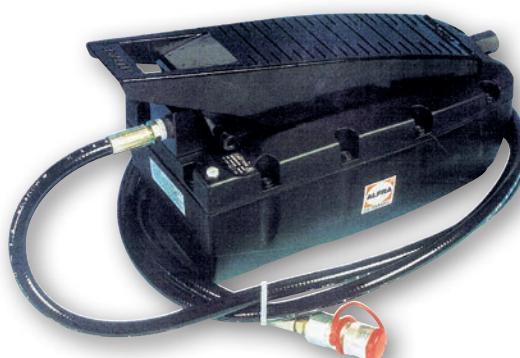
Technical data

Max. operating pressure:	700 bar
(for a feed pressure of 7 bar)	
Feed line pressure/working range:	2.8 - 10 bar
Air connection:	1/4" thread
Pump capacity, pressureless:	1.0 l/min
Pump capacity p max.	
(with 7 bar air):	0.1 l/min
Tank volume:	2.4 l
Useful oil volume:	2.1 l
Weight:	6.3 kg

Prod.-No.

Air hydraulic pump

02140



Prod.-No. 02140



ACCESSORIES – TIE BOLTS FOR HYDRAULIC OPERATION

Made in Germany by ALFRA



		Prod.-No.
Hydraulic screw	6.0 x 46 mm	02024
Adapter	19.0 x 6.0 mm	02023
Hydraulic screw compl.	19.0 x 6.0 mm	02022
Hydraulic screw	9.5 x 75 mm	02009
Adapter	19.0 x 9.5 mm	01353
Hydraulic screw compl.	19.0 x 9.5 mm	02003
Hydraulic screw	19.0 x 9.5 mm*	02010
Hydraulic screw	11.1 x 75 mm	01424
Adapter	19.0 x 11.1 mm	01425
Hydraulic screw compl.	19.0 x 11.1 mm	02007
Hydraulic screw	19.0 x 11.1 mm*	02011
Hydraulic screw	19.0 x 120 mm	02002

* Hydraulic screw made of high-alloy tool steel for heavier duty application



ACCESSORIES – 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 03-1	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		
Set of distance bushes, 5 pieces		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 drilling-Ø 8.5/11.5/12.5/16.5/21.0 mm		08016



Prod.-No. 02013



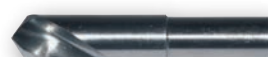
Prod.-No. 02012



Prod.-No. 02014



Prod.-No. 08016



Prod.-No. 08023



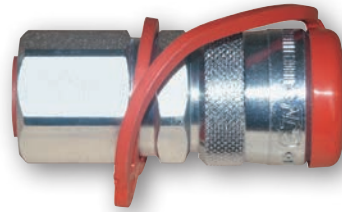
QUICK CONNECTION COUPLINGS – FOR ALFRA HYDRAULIC DEVICES

- Drip-free coupling and decoupling
- Handy to use
- Dust protection cap
- Operating pressure up to 1,000 bar

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



Prod.-No. 01453



Prod.-No. 01452

HYDRAULIC OIL – FOR ALFRA HYDRAULIC PUMPS

For refilling hydraulic pumps

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

Caution:
Observe extreme cleanliness when refilling hydraulic devices.



Prod.-No. 01455

ALFRA – SPECIAL METAL LUBRICATING PASTE

To prevent seizure and wear

Areas of application:

- Prevents seizure, wear, cold-welding, fusing and fretting corrosion of the threads of screws, nuts, bolts, pipe threads and fittings.
- ALFRA special metal lubricating paste is excellently suitable for lubricating the cutting tips of punching tools as well as heavy-duty bearings and sliding surfaces.
- Active separation and silicone-free.
- Contents: 120 g

	Prod.-No.
ALFRA special metal lubricating paste	33005

Absolutely recommended when punchers are used with spanners.



Prod.-No. 33005



ALFRA – NOTCH PLIERS



- Easily and quickly punches notches in sheet metal up to 2.0 mm thick.
- Saves the time-consuming filing of grooves for the anti-twist-protection of pushbuttons, switches and instruments.
- Notch sizes 3.2 mm and 4.8 mm possible.
- Max. material thickness 2.0 mm mild steel (S235).
- Notch punch can be exchanged.
- Long tool life because punch and die are made of hardened tool steel.
- Easy punching thanks to large leverage.
- Plastic-coated handles.
- Weight 1.3 kg



Prod.-No. 03015

The notch punch is inserted into the pre-punched opening, aligned to the cross-hairs marking and then the pliers are actuated. A clean notch is the result!

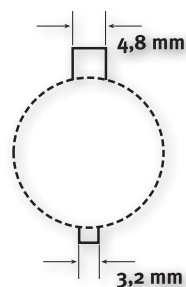
ALFRA notch pliers

Prod.-No.
03015

Spare parts

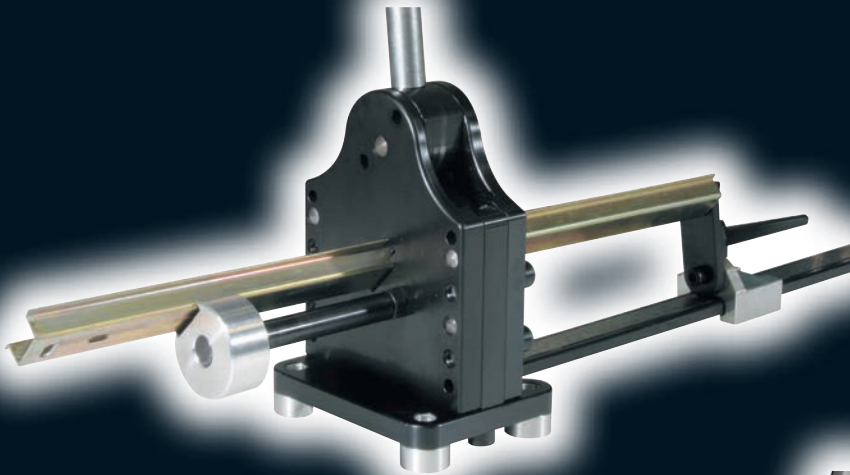
Notch punch with rivet pin

Prod.-No.
030151





ALFRA PROFILE RAIL CUTTING DEVICES





ALFRA – UNIVERSAL CUTTING AND PUNCHING DEVICE



Made by ALFRA Germany

For DIN carrier rails, for hand lever operation for **cutting pieces to length and punching holes lengthways and crossways** in the carrier rails depicted.

- With a reinforced eccentric located directly above the shearing blade
- Little force required due to better force transfer
- Burr-free cutting without waste
- Maintenance-free
- Anodised, laser-engraved length stop 1,000 mm long with rail-support element for accurate angled cutting, with millimetre and inch scales
- Shearing blade can be resharpened, punch can be exchanged
- Customised versions can also be made (please send in a sample rail approx. 1,000 mm in length)

Scope of supply standard version

Prod.-No.

with punch for cross and oblong holes 12 x 6.4 mm
1,000 mm length stop and rail-support element
incl. C-profile 3415

03001

with punch for cross and oblong holes 12 x 6.4 mm
1000 mm length stop and rail-support element
incl. G-profile according to EN 60 715

03001G

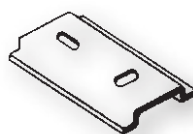
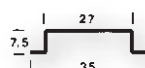
as above, but with round hole punches 5.5 or 6.0 mm Ø
as 03001, but with hydraulic cylinder

03002

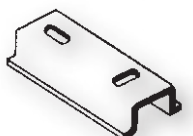
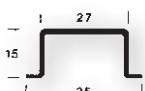
03003

Standard version

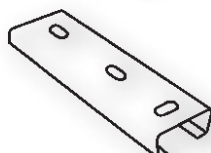
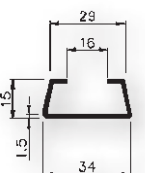
Carrier rail 35 mm/7.5
according to EN 60 715



Carrier rail 35 mm/15
according to EN 60 715



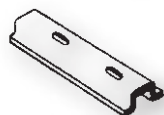
C-profile 3415
(included in Prod.-No. 03001)



G-profile
according to EN 60 715
(included in Prod.-No. 03001G)



Carrier rail 15 mm/5.5
according to EN 60 715



Copper earthing rail
10 mm x 3 mm



Spare parts for the universal cutting and punching device

Prod.-No.

Spare punch + die 12 x 6.4 mm for oblong hole

03005

Spare punch + die 12 x 6.4 mm for cross hole

03006

Spare punch + die 5.5 mm for round hole

03007

Spare punch + die 6.0 mm for round hole

03008

Rail-support element, separate

03012

Special versions for carrier rails or flat rails,
also made of stainless steel or aluminium as well as plastic, on request

03011

Prod.-No. 03001



Tool for mounting holes (lengthways and crossways)
integrated. Rail-support element for accurate 90° cuts



Prod.-No. 03003

We recommend our pump type AHP 03-1 as a drive (Prod.-No. 03853)



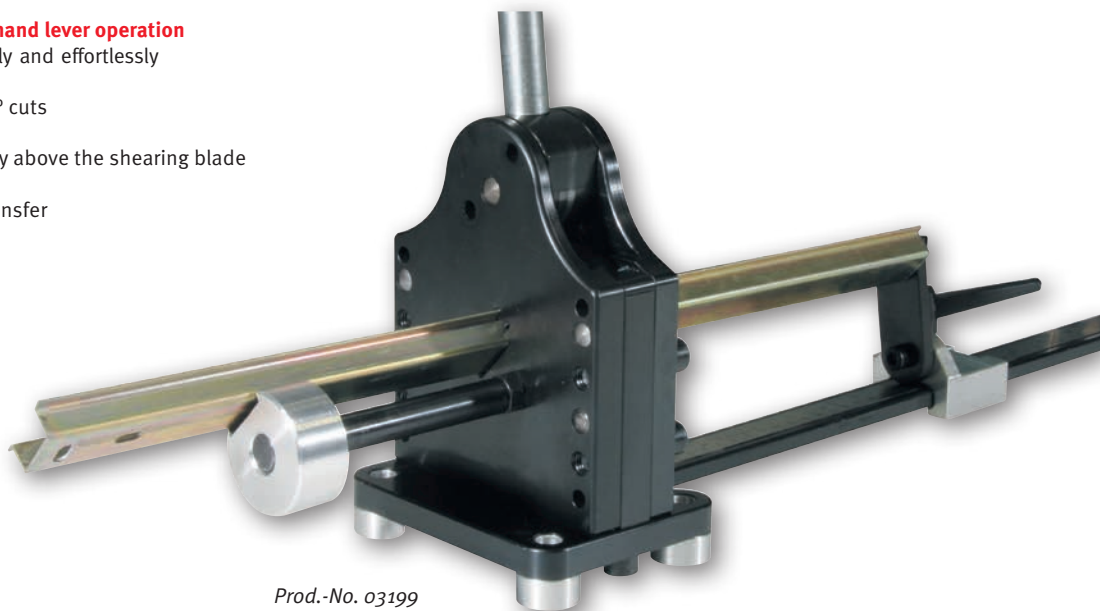
ALFRA PROFILE RAIL CUTTING DEVICE – DUO

Made by ALFRA Germany

For the most common DIN carrier rails, with hand lever operation

Cuts profile rails TS 35/7.5 + 35/15 mm exactly and effortlessly

- With rail-support element for accurate 90° cuts
- With a reinforced eccentric located directly above the shearing blade
- Little force required due to better force transfer
- Maintenance-free
- Cutting without waste
- Shearing blade can be resharpened
- Anodised, laser-engraved length stop 1000 mm long with rail-support element for accurate angled cutting, with millimetre and inch scales
- Easy to fit to the workbench
- Scales in metric and inch measurements



Prod.-No. 03199

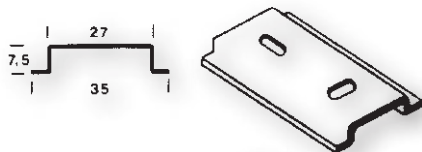
Prod.-No.

03199

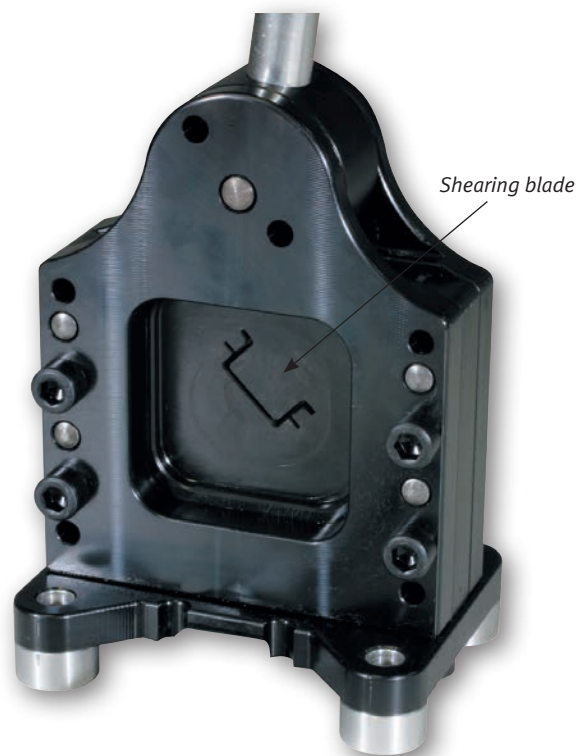
ALFRA profile rail cutting device – Duo

Profile rails

Carrier rail 35 mm/7.5 according to EN 60 715



Carrier rail 35 mm/15 according to EN 60 715



Reinforced eccentric

Rail-support element for accurate 90° cuts



ALFRA PROFILE RAIL CUTTING DEVICE – ALC-02



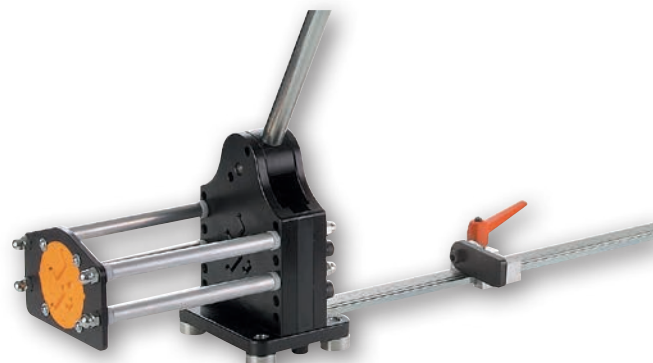
Made by ALFRA Germany

For DIN carrier rails, with hand lever operation

Cuts profile and earthing rails exactly and effortlessly

Standard version for TS 35/7.5 - 35/15 - 15/5.5 - Cu 10.0 x 3.0 mm

- With a reinforced eccentric located directly above the shearing blade
- Little force required due to better force transfer
- Burr-free cutting without waste
- Maintenance-free
- Anodised, laser-engraved length stop 1,000 mm long with rail-support element for accurate angled cutting, with millimetre and inch scales
- Shearing blade can be resharpened
- Rail-support element for accurate 90° cuts
- Easy to fit to the workbench
- Customised versions can also be made (please send in a sample rail approx. 1,000 mm in length)



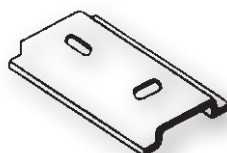
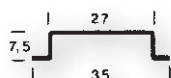
Rail-support element for accurate 90° cuts

ALFRA profile rail cutting device – ALC-02

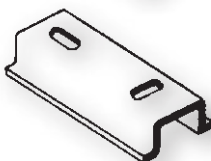
Prod.-No.
03004

Standard version

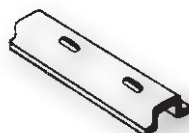
Carrier rail 35 mm/7.5
according to EN 60 715



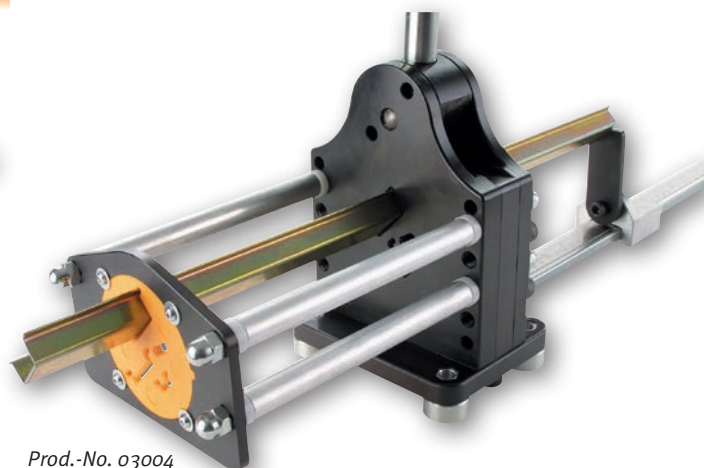
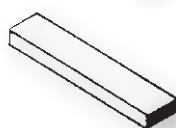
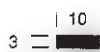
Carrier rail 35 mm/15
according to EN 60 715



Carrier rail 15 mm/5.5
according to EN 60 715

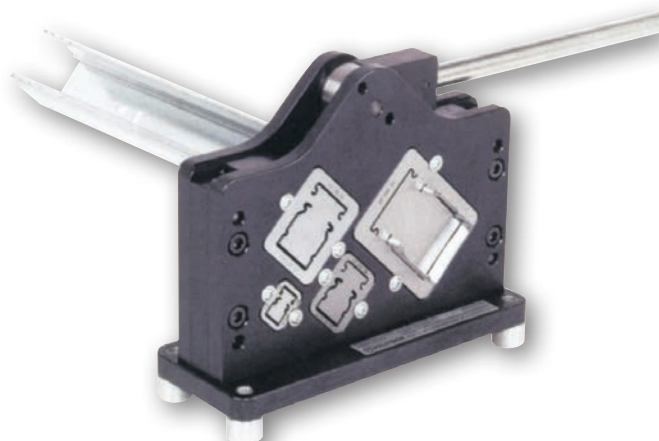


Copper earthing rail
10 mm x 3 mm



Prod.-No. 03004

Customised versions for special profiles such as cable ducts available on request!





ALFRA WIRING DUCT CUTTING DEVICE

• **ERGONOMIC HAND LEVER
FOR OPTIMUM TRANSMISSION OF FORCE**

• **LENGTH STOP
(METRIC/INCH MARKINGS – LASER-ENGRAVED)**

• **INCREASED OPENING HEIGHT
(ALSO SUITABLE FOR DUCTS WITH
SPECIAL BRIDGE)**

• **HINGED, SPRING-LOADED BLADE
GUARD**

• **FULL-SURFACE SUPPORT
(DUCT DOES NOT SAG)**



ALFRA WIRING DUCT CUTTING DEVICE – VKS 125



Made in Germany by ALFRA

Cuts wiring ducts and covers up to 125 mm width exactly and effortlessly in seconds.

Both the tool and the length stop have fastening tabs to make fitting to the workbench easier.

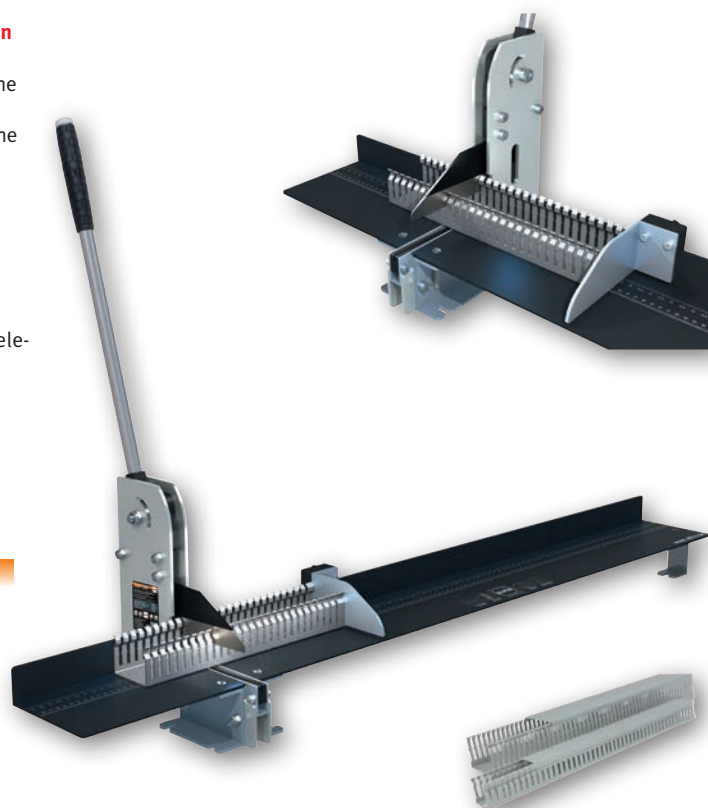
The VKS 125 is equipped with a spring-loaded blade guard which covers the blade when it is not in use.

- Hand lever operation
- Burr-free cutting without waste
- Accurate 90° cuts
- Full-surface support with laser engraving
- Little force required for cutting
- Anodised, laser-engraved length stop 1,000 mm long with rail-support element for accurate angled cutting, with millimetre and inch scales
- Maintenance-free
- Easy to fit to the workbench

"... no more plastic chips or deburring ever again!"

ALFRA VKS 125
Blade for VKS 125

Prod.-No.
031920
03192



Prod.-No. 031920

Amortisation calculation

Assumption:

At least 10 cuts of profile rails or wiring ducts per day

1. Conventional method:

a1)	Number of cuts per day	=	10
b1)	Working time per cut (includes providing the auxiliary tools, measuring up, marking, cutting to length, deburring etc.)	=	2.00 min
c1)	Labour costs per minute	=	€ 0.70

Result:

The cost incurred daily is € 14.00 (10 x 2.00 x 0.70)

2. Method using DIN rails cutting device or wiring duct cutting device

a2)	Number of cuts per day	=	10
b2)	Working time per cut	=	0.3 min
c2)	Labour costs per minute	=	€ 0.70

Result:

The cost incurred daily is € 2.10 (10 x 0.3 x 0.70)

Difference between 1 and 2 = € 11.90 per working day

Cutting device Prod.-No. 03001 VK = € 1,430.00 : 11.90 = **120 days**

Cutting device Prod.-No. 03004 VK = € 1,070.00 : 11.90 = **90 days**

Cutting device Prod.-No. 03199 VK = € 662.00 : 11.90 = **56 days**

Cutting device Prod.-No. 031920 VK = € 849.00 : 11.90 = **71 days**





ALFRA MOUNTING TABLE AMT150

Made in Germany by ALFRA



AMT 150

Prod.-No.	03100	
Simple and variable fixing of mounting plates using quick-acting clamps.	✓	
Intelligent clamping system permits the unrestricted processing of the complete mounting plate	✓	
Continuously adjustable from vertical to horizontal position	by hand crank or cordless drill	
Continuous height adjustment	using angle of tilt	
Electric motor	-	
Battery operation	-	
Adjustable angle of tilt	0 - 80°	
Working height	fixed: 100 cm	
4 lockable casters	✓	
Max. size of mounting plates W x H	1,100 x 1,900 mm	
Max. load-bearing capacity	200 kg	
Space required:	1,400 x 1,200 mm	
Weight	83 kg	
Scope of supply	Mounting Table AMT 150 2 x clamping unit with screw 2 x clamping unit with quick release Screw adapter for operation with cordless drill	

OPTIONS FOR ALL AMTs



EXTENSION SET
Table extension for the horizontal support of mounting plates
Prod.-No. 03100-001



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



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

OPTION FOR AMT 150

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



ALFRA ELECTRICAL MOUNTING TABLE AMTE 200 // AMTE 250



Made in Germany by ALFRA



AMTE 200



AMTE 250

031002



by battery-operated electric motors
using angle of tilt
by battery-operated electric motors



0 - 80°

fixed: 90 cm



1,100 x 1,900 mm

200 kg

1,400 x 1,200 mm

93 kg

Electrical Mounting Table AMTE 200
2 x clamping unit with screw
2 x clamping unit with quick release
External charger for the battery

031001



by battery-operated electric motors
by battery-operated electric motors



0 - 80°

variable: 80 - 110 cm



1,100 x 1,900 mm

300 kg

1,400 x 1,200 mm

140 kg

Electrical Mounting Table AMTE 250
2 x clamping unit with screw
2 x clamping unit with quick release
External charger for the battery

OPTIONS FOR ALL AMTs



CONTROL CABINET SET
Prod.-No. 03100-005

OPTIONS FOR AMTE 200 / 250



GUIDE FOR WIRE
Prod.-No. 031001-003



WIRE ROLL HOLDER
Prod.-No. 031001-002

OPTION FOR AMTE 250



ROLLER CONVEYOR
for the insertion of the mounting plate
into the control cabinet from the side
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

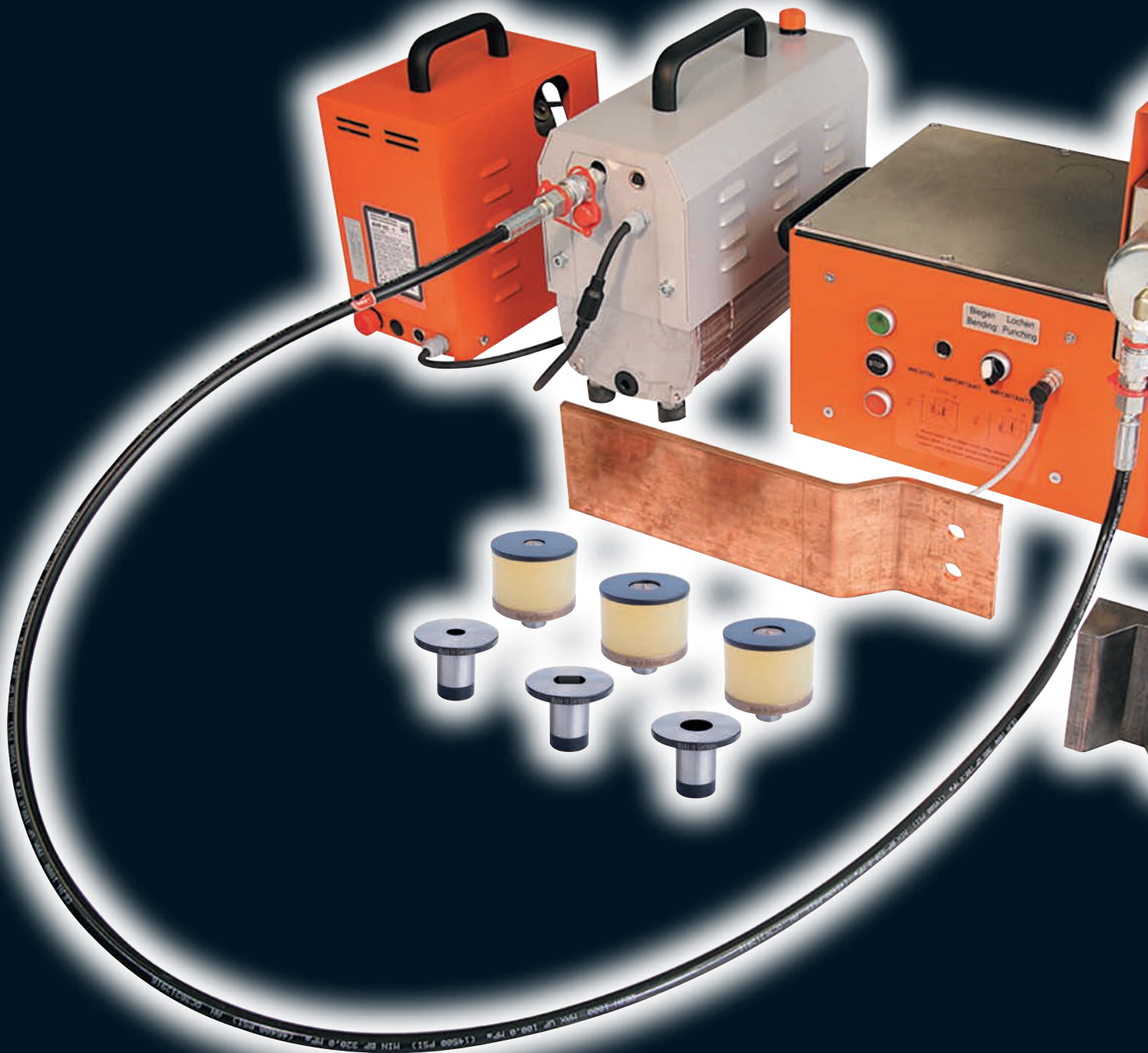


ALFRA BUSBAR

MACHINING

Prod.-No. 03853

Prod.-No. 03852



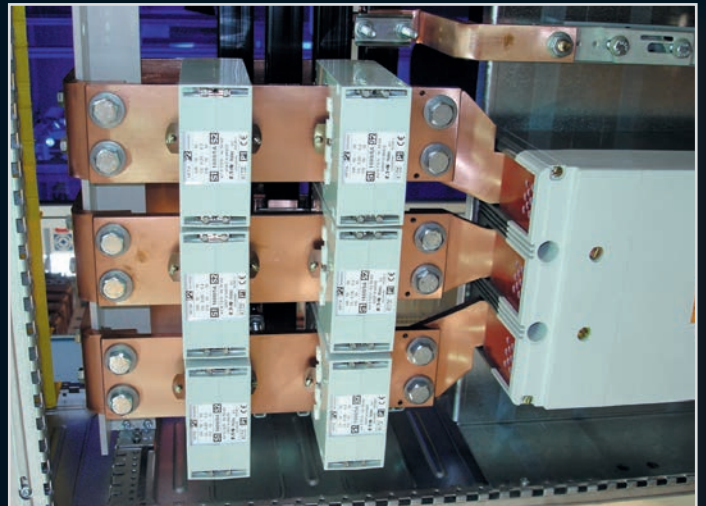
Prod.-No. 03200



Prod.-No. 03202



Prod.-No. 03201





ALFRA BUSBAR BENDING AND PUNCHING MACHINE

Made in Germany by ALFRA

A universal working cylinder is used to bend busbars 120 x 12 mm (160 x 10 mm on request) easily and punch holes from Ø 6.6 to 21.5 mm or oblong holes by simple insertion of hole punches.

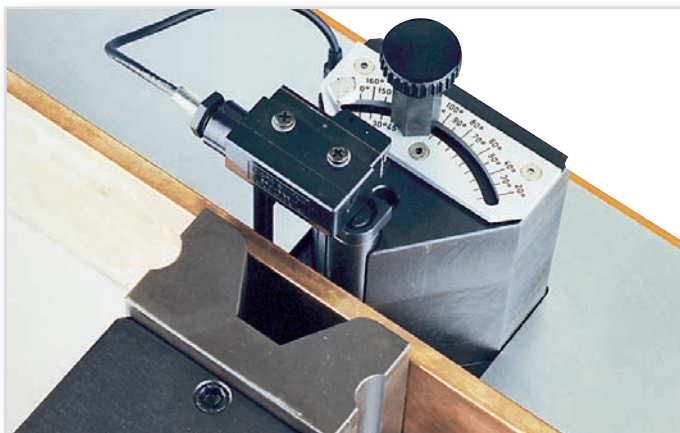
Bending busbars

Switch position to "bending".

For bending, the bending die is inserted into the hydraulic piston and the electric angle reader is set into the round guide groove of the counter block. The contact cable is connected to the electric motor.

The desired angle is fixed on the angle scale using a set screw. Depending on material thickness, we recommend setting the angle 1° - 3° larger than the desired angle, because copper springs back.

The first bending angle should be checked. This bending angle can be reproduced as often as required, because the bending process is interrupted by the electric contact switch as soon as the angle has been reached.



Punching busbars

Switch position to "punching".

The punch with neoprene stripper and the corresponding die are inserted in the mounting hole.

The punch is fixed at the side using a headless screw. The machining block can be continuously raised or lowered hydraulically using the handwheel in accordance with the busbar width and the required hole layout. A counter fixed on the handwheel indicates the height of the hole centre in mm.

We recommend centre-punching the busbar with subsequent alignment of the centring tip of the punch to this point – thus guaranteeing an exact hole pattern.

The neoprene stripper and a built-in electric sensor ensure automatic punch retraction.



Technical data:

Bending

Bending Cu max.	120 x 12 mm
Bending angle up to:	over 90°
Smallest leg length:	50 mm
Smallest U-bending:	100 mm
Smallest Z-bending:	72 mm (depending on material thickness)

The specified values are based on a Cu rail 120 x 10 mm

Punching

Punching Cu:	6.6 - 21.5 mm including oblong holes up to max. L = 21 mm
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Material thickness Cu max.:	12 mm
Material width up to:	110 mm centric
Outer dimensions L x W x H:	700 x 410 x 410 mm
Weight:	60 kg

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





ALFRA BUSBAR BENDING AND PUNCHING MACHINE



Made in Germany by ALFRA

	Prod.-No.
ALFRA busbar bending and punching machine with electric angle reader R10, bending die R10 and length stop	03200SET
Electric angle reader R10	03201
Bending die R10	03202
Length stop	03203
Bending die with movable jaws (120 x 10 mm Cu)	03228
Digital angle reader	03229
Step-by-step bending tool with 2 pairs of pressure plates for 5 and 10 mm steps (max. range: 100 x 5 mm / 60 x 10 mm Cu)	03246

Electro-hydraulic pump SC-05 III B

Technical data:

Motor voltage:	230 V/50 Hz (110 V/50 Hz or 60 Hz on request)
Motor output:	1.1 kW
Max. operating pressure:	700 bar
Default setting:	620 bar
Pump capacity:	0.9 l/min.
Tank volume:	5.0 l
Weight:	29 kg
Dimensions L x W x H:	500 x 230 x 370 mm

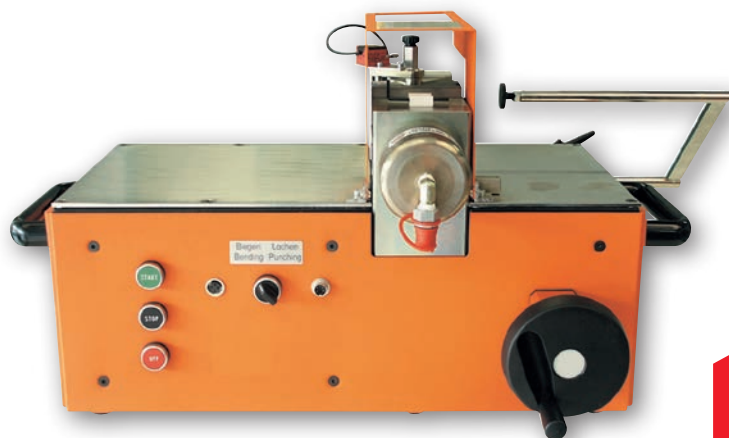
	Prod.-No.
Electro-hydraulic pump SC-05 III B with 2.0 m hydraulic hose + quick coupling	03852
Option:	
Foot switch for start function, 1 pedal	03861
Foot switch for start-stop-off function, 3 pedals	03865

Electro-hydraulic pump AHP 03-1

Technical data:

Motor voltage:	230V/50Hz (110 V/50 or 60 Hz on request)
Motor output:	0.55 kW
Max. operating pressure:	700 bar
Pump capacity:	0.52 l / min. at 50 Hz
Tank volume:	2.5 l
Temperature switch:	80°C +/- 5°
Weight:	17 kg
Dimensions L x W x H:	330 x 180 x 350 mm

	Prod.-No.
Electro-hydraulic pump AHP 03-1 with hand switch and 2.0 m hydraulic hose + quick coupling	03853
Option:	
Foot switch with 2 pedals, start-stop function	03866



Prod.-No. 03200SET



Freely programmable digital angle reader
Can be used with the devices
Prod.-No. 03200 and 03980

← R10

Prod.-No. 03229

Prod.-No. 03201



Prod.-No. 03228



Prod.-No. 03202



Prod.-No. 03852



Prod.-No. 03853



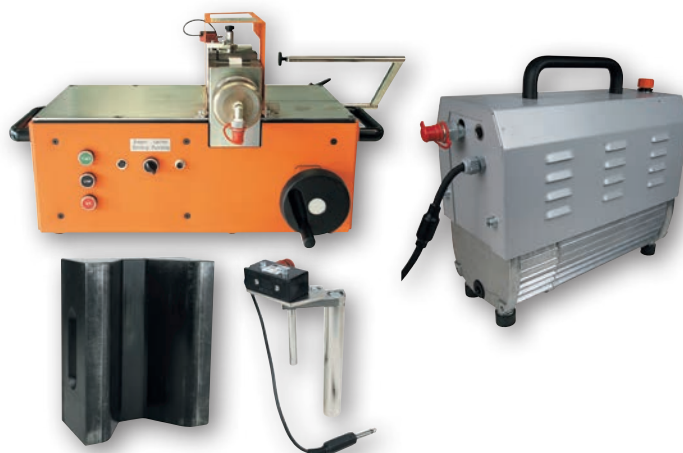
ALFRA BUSBAR BENDING AND PUNCHING MACHINE

Made in Germany by ALFRA

ALFRA busbar set 1:

- Prod.-No. 03200SET
ALFRA busbar bending and punching machine
with electric angle reader R10, bending die R10
and length stop
- Prod.-No. 03852
Electro-hydraulic pump **SCo5 III B**

Prod.-No.
03910

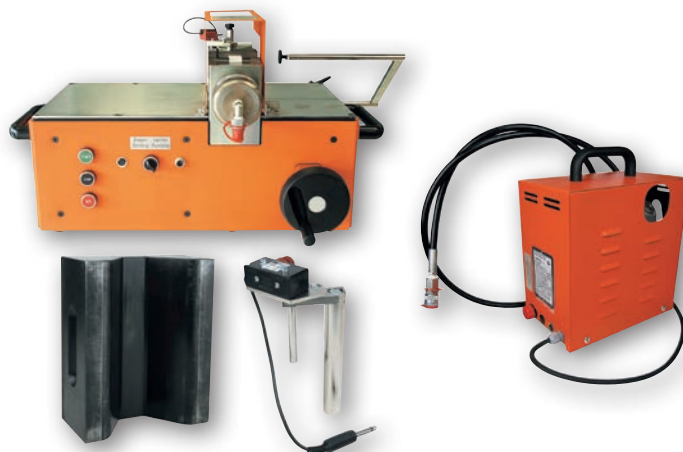


Prod.-No. 03910

ALFRA busbar set 2:

- Prod.-No. 03200SET
ALFRA busbar bending and punching device
with electric angle reader R10, bending die R10
and length stop
- Prod.-No. 03853
Electro-hydraulic pump **AHP 03-1**

Prod.-No.
03920



Prod.-No. 03920

Accessories

Punches and dies available

Punch Ø mm	Metric screw connection	Prod.-No.
6.6	6.0 up to 5 mm material thickness	03204
9.0	8.0 up to 6 mm material thickness	03205
9.5	8.0 up to 6 mm material thickness	03206
11.0	10.0 up to 12 mm material thickness	03207
11.5	10.0 up to 12 mm material thickness	03208
13.5	12.0 up to 12 mm material thickness	03209
14.0	12.0 up to 12 mm material thickness	03210
17.5	16.0 up to 12 mm material thickness	03211
18.0	16.0 up to 12 mm material thickness	03212
21.0	20.0 up to 12 mm material thickness	03213
21.5	20.0 up to 12 mm material thickness	03214

Dies -S- max. mat. thickness	Prod.-No.	Dies -L- max. mat. thickness	Prod.-No.
6.6 5	03215	6.6 5	03230
9.0 5	03216	9.0 6	03231
9.5 5	03217	9.5 6	03232
11.0 5	03218	11.0 12	03233
11.5 5	03219	11.5 12	03234
13.5 5	03220	13.5 12	03235
14.0 5	03221	14.0 12	03236
17.5 5	03222	17.5 12	03237
18.0 5	03223	18.0 12	03238
21.0 5	03224	21.0 12	03239
21.5 5	03225	21.5 12	03240

Punches and dies for oblong holes up to max. L x W = 21 x 18 mm	Prod.-No.
up to 5 mm material thickness	03226
up to 12 mm material thickness	03241



Round punches and dies



ALFRA BUSBAR CUTTING MACHINE – S 125



Made in Germany by ALFRA

**For the clean and burr-free cutting of copper busbars
125 x 12 mm.**

- Ideal supplement to the busbar bending and punching machine.
- Cutting time with electro-hydraulic pump 5 - 15 sec.
depending on busbar width.
- Blank holder and support element for centred and accurate cutting.
- Top blade can be exchanged and resharpened.
- Weight: 16 kg

	Prod.-No.
ALFRA busbar cutting machine – S 125	03250

Spare top blade	03251
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**When the electro-hydraulic pump SC-05 III B is used in direct connection
with the cutting machine, we recommend the use of a foot switch with
START – STOP – OFF function.**

Foot switch with START – STOP – OFF (connection directly to the basic machine 03200)	03865
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Foot switch with START – STOP – OFF (connection directly to the hydraulic pump 03852)	03863
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As a drive, we recommend

Electro-hydraulic pump AHP 03-01	03853
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Prod.-No. 03250

*For use with customer's own drive up to 700 bar please specify coupling
size when placing an order.*

ALFRA – WORKSHOP CART

Made in Germany by ALFRA

**For the busbar bending and punching machine 03200SET as well as the
busbar cutting machine 03250**

Ideal to transport – even in vans with shelving equipment

Specially developed workshop cart in order to accommodate both machines while saving space. Inside the cart, the electro-hydraulic pump can be connected to a built-in 2-way valve. The machines are coupled to one another using hydraulic hoses. 2 support rollers fixed to the side of the table facilitate the bending and cutting of longer busbars.

The cart also has a drawer with tool compartments for holding all the punches and dies. The cart can be moved on 4 casters, 2 of which can be locked in place.

The equipment includes a single and a double socket outlet as well as a self-recoiling 230 V connection cable 3 metres long.

Table size:	1,050 x 700 mm
Dimensions:	L=1,150, B=700, H=900 mm
Weight:	100 kg without machines

	Prod.-No.
Workshop cart, with 2-way valve, coupling, drawer with tool compartments	03950



Prod.-No. 03950 Illustration shows an equipped workshop cart



ALFRA MACHINING CART-4 STATIONS

Made in Germany by ALFRA

- For**
- bending busbars 120 x 12 mm,
 - punching busbars Ø 6.6 - 21.5 mm,
 - cutting busbars 125 x 12 mm,
 - two additional hydraulic outlets for different applications

- The machining stations busbar bending and punching as well as cutting are sunk in the table. They make fast and clean work possible.
 - The universal working cylinder can be continuously raised or lowered hydraulically using the handwheel in accordance with the hole pattern to be punched.
 - The machines are coupled to a central hydraulic unit located inside the cart.
 - An extractable support extension at the side is provided for long busbars.
 - Pressing heads (e.g. pressing head 10 - 300 mm² Prod.-No. 03360) and the hydraulic cylinder Prod.-No. 02012 for punching holes can be connected to the 2 additional hydraulic hoses at the side.
 - The scope of supply includes 1 foot switch with connection cable. Up to 3 **additional** foot switches can be connected to the different stations.
 - There are 4 tool drawers with compartments for hole punches and dies in the cart.
- It can be moved on 4 casters, 2 of which can be locked in place.**

Technical data:

Motor voltage:	400 V / 50 Hz
Motor output:	1.1 kW
Max. operating pressure:	700 bar
Default setting:	600 bar
Pump capacity:	0.88 l/min.
Tank volume:	17.0 l
Useful oil volume:	13.0 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.
03980

ALFRA 4-station machining cart

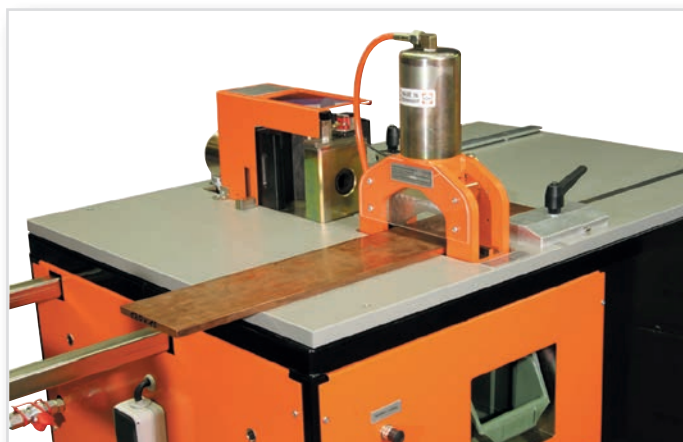
Extra accessories required

Punches and dies Ø 6.6 - 21.5 mm
Punches: Prod.-No. 03204 - 03214
Dies: Prod.-No. 03215 - 03240

Hydraulic pressing head 10 - 300 mm ²	03360
Hydraulic cylinder	02012
Foot switch with connection cable, 3-pole	03861



Prod.-No. 03980 delivered without additional machines



There are 4 tool drawers with compartments for hole punches and dies in the cart.



ALFRA BUSBAR BENDING AND PUNCHING MACHINE – LPV



Made in Germany by ALFRA

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

The machine comprises a main frame made of torsion-free aluminium profile with the mount for the basic bending and punching machine. A length stop makes it easier to set the hole pattern for punching. To make work with longer copper rails easier, the retractable frame with support bracket can be extended to approx. 700 mm. All stops and support brackets are easily and quickly fixed in place by means of clamping levers.

Technical data:

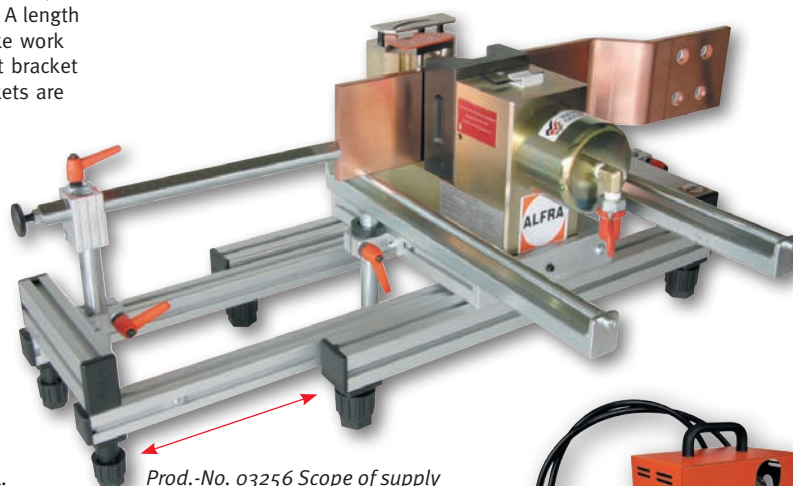
Bending:

Bending Cu max.	120 x 12 mm
Bending angle up to:	over 90°
Smallest leg length:	50 mm
Smallest U-bending:	100 mm
Smallest Z-bending:	72 mm (depending on material thickness)

The specified values are based on Cu rails 120 x 10 mm

Punching:

Punching Cu:	Ø 6.6 - 21.5 mm including oblong holes up to max. L = 21 mm
Material thickness Cu max.:	12 mm
Material width up to:	110 mm centric
Dimensions L x W x H:	615 x 370 x 315 mm
Weight:	44 kg



Prod.-No. 03256 Scope of supply without punches and dies

We recommend our electro-hydraulic pump AHP 03-1 Prod.-No. 03853 as a drive

Accessories

Punches and dies available

Punch Ø mm	Metric screw connection	Prod.-No.
6.6	6.0 up to 5 mm material thickness	03204
9.0	8.0 up to 6 mm material thickness	03205
9.5	8.0 up to 6 mm material thickness	03206
11.0	10.0 up to 12 mm material thickness	03207
11.5	10.0 up to 12 mm material thickness	03208
13.5	12.0 up to 12 mm material thickness	03209
14.0	12.0 up to 12 mm material thickness	03210
17.5	16.0 up to 12 mm material thickness	03211
18.0	16.0 up to 12 mm material thickness	03212
21.0	20.0 up to 12 mm material thickness	03213
21.5	20.0 up to 12 mm material thickness	03214



Dies -S- max. mat. thickness	Prod.-No.	Dies -L- max. mat. thickness	Prod.-No.
6.6 5	03215	6.6 5	03230
9.0 5	03216	9.0 6	03231
9.5 5	03217	9.5 6	03232
11.0 5	03218	11.0 12	03233
11.5 5	03219	11.5 12	03234
13.5 5	03220	13.5 12	03235
14.0 5	03221	14.0 12	03236
17.5 5	03222	17.5 12	03237
18.0 5	03223	18.0 12	03238
21.0 5	03224	21.0 12	03239
21.5 5	03225	21.5 12	03240

Punches and dies for oblong holes up to max. L = 21 mm	Prod.-No.
up to 5 mm material thickness	03226
up to 12 mm material thickness	03241



Oblong punch and die

Round punches and dies



ALFRA BUSBAR BENDING AND PUNCHING MACHINE – BS 160

Made in Germany by ALFRA

- The machine comprises a main frame made of special aluminium and a hydraulic cylinder up to 600 bar.
- By means of the bending bars R=11 mm and R=5 mm and a height adjustment feature, all busbars up to max. 160 mm width can be bent in different angles.
- The angle scale is engraved in the upper section.
- Conversion from bending to punching is simple and easy.

Technical data:

Bending

Bending Cu max.:	160 x 12 mm
Bending angle up to:	92°
Smallest leg length:	50 mm inside dimension
Smallest U-bending:	160 mm inside dimension
Smallest Z-bending:	55 mm (depending on material) inside dimension

Punching

Punching Cu max.:	Ø 6.6 - 21.5 mm including oblong holes up to max. L = 21 mm
Material thickness Cu max.:	12 mm
Material width up to:	160 mm centric
Dimensions L x W x H:	390 x 150 x 330 mm
Weight:	20 kg

Recommended type of drive

Electro-hydraulic pump AHP 03-1	Prod.-No. 03853
Air-hydraulic pump LHP 700	Prod.-No. 02140
Foot pump	Prod.-No. 02121

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

Bending punch R=5 mm for busbars 3-8 mm	03259
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Punches and dies available

Punch Ø mm	Metric screw connection	Prod.-No.
6.6	6.0 up to 5 mm material thickness	03204
9.0	8.0 up to 6 mm material thickness	03205
9.5	8.0 up to 6 mm material thickness	03206
11.0	10.0 up to 12 mm material thickness	03207
11.5	10.0 up to 12 mm material thickness	03208
13.5	12.0 up to 12 mm material thickness	03209
14.0	12.0 up to 12 mm material thickness	03210
17.5	16.0 up to 12 mm material thickness	03211
18.0	16.0 up to 12 mm material thickness	03212
21.0	20.0 up to 12 mm material thickness	03213
21.5	20.0 up to 12 mm material thickness	03214

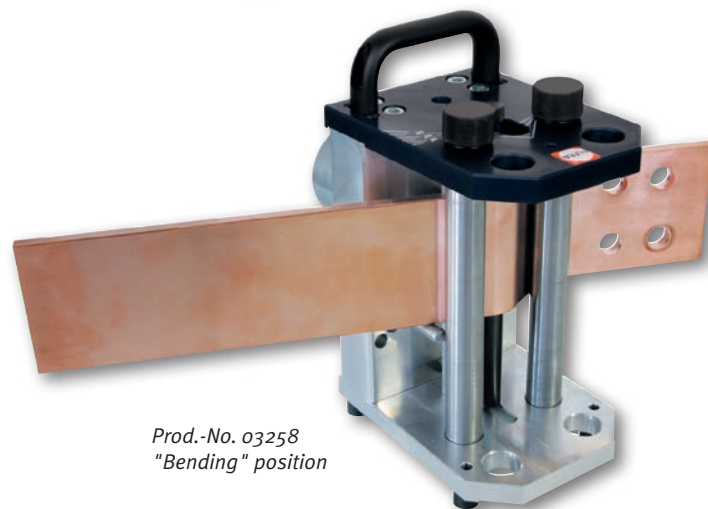
Dies -S- max. mat. thickness	Prod.-No.	Dies -L- max. mat. thickness	Prod.-No.
6.6	5 03215	6.6	5 03230
9.0	5 03216	9.0	6 03231
9.5	5 03217	9.5	6 03232
11.0	5 03218	11.0	12 03233
11.5	5 03219	11.5	12 03234
13.5	5 03220	13.5	12 03235
14.0	5 03221	14.0	12 03236
17.5	5 03222	17.5	12 03237
18.0	5 03223	18.0	12 03238
21.0	5 03224	21.0	12 03239
21.5	5 03225	21.5	12 03240

Punches and dies for oblong holes up to max. L x W = 21 x 18 mm	Prod.-No.
up to 5 mm material thickness	03226
up to 12 mm material thickness	03241

Bending busbars up to 160 x 12 mm
Busbar punching Ø 6.6 to 21.5 mm



Prod.-No. 03258
"Punching" position



Prod.-No. 03258
"Bending" position



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



ALFRA – MACHINE FOR PROCESSING LAMINATED BUSBARS



Made in Germany by ALFRA

For punching from M6 – M14 (without insulation) and cutting of bendable laminated busbars

Thickness up to 10 mm (without insulation)

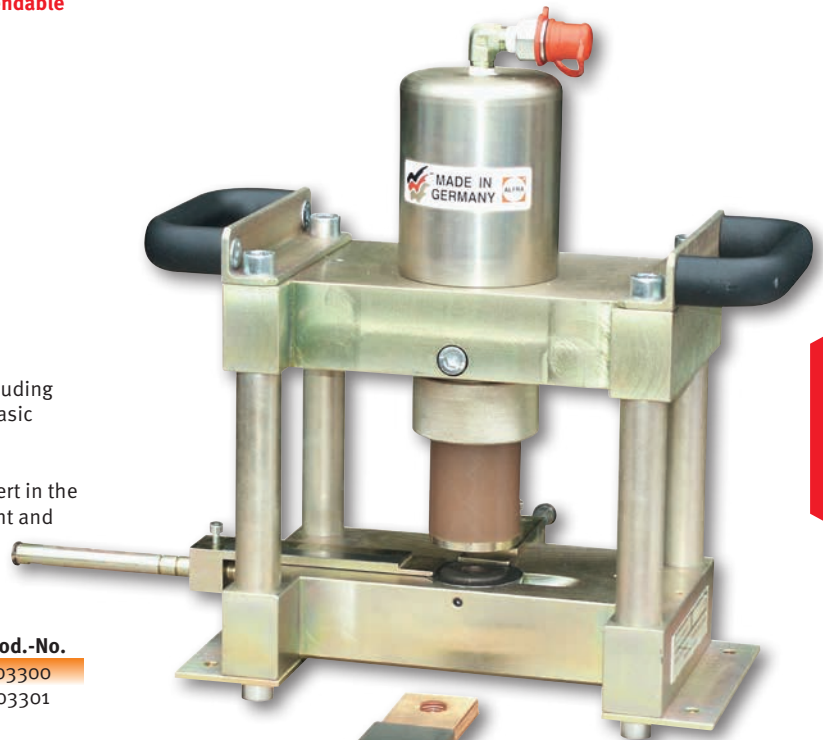
Width up to 100 mm (without insulation)

Area of application:

- Cutting and punching on laminated Cu rails
- Cutting thickness: max. 10 mm
- Hole range: Through holes for M6 – M14 screws
- Dimensions H x W x D: 400 x 250 x 150 mm (without stop)
- Weight: 32 kg

Basic machine

- Serves for holding: Cutting block and hole punching tools
- The pressure unit, made up of hydraulic piston and cylinder including punch holder in the top part, is permanently integrated in the basic unit.
- There is a centric mounting hole for the die and cutter block insert in the bottom part. In addition, there are hinged stops mounted in front and on the sides for punching in the machine.



Prod.-No. 03300

	Prod.-No.
ALFRA machine for processing laminated busbars	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

Dies:

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

Other Ø on request.



Prod.-No. 02121

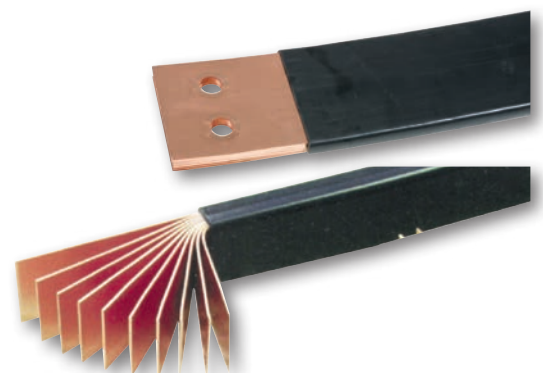


Prod.-No. 03853



Prod.-No. 03301 cutting block with length stop. Is inserted into the basic machine.

We recommend our foot pump Prod.-No. 02121 or our electro-hydraulic pump AHP 03-1 Prod.-No. 03853 as a drive





ALFRA HYDRAULIC PUNCHER – AP-65

- Specially developed for assembly applications. Compact and powerful design. Easily portable – flexible in application.
- For punching steel and copper
- Area of application: For punching busbars, general punching tasks in structural and bridge construction, scaffolding etc.

Technical data:

Piston stroke: 18 mm
Punching force: 270 kN

Outreach:

Working pressure max.: 700 bar
Punching range: 65 mm
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 puncher AP-65

03260

Tools for copper, aluminium and steel

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

Other Ø on request



Prod.-No. 03853

As a drive, we recommend our electric-hydraulic pump
AHP 03-1 Prod.-No. 03853



Prod.-No. 03260



Punches and dies for AP-65



ALFRA HYDRAULIC HAND CRIMPING TOOL

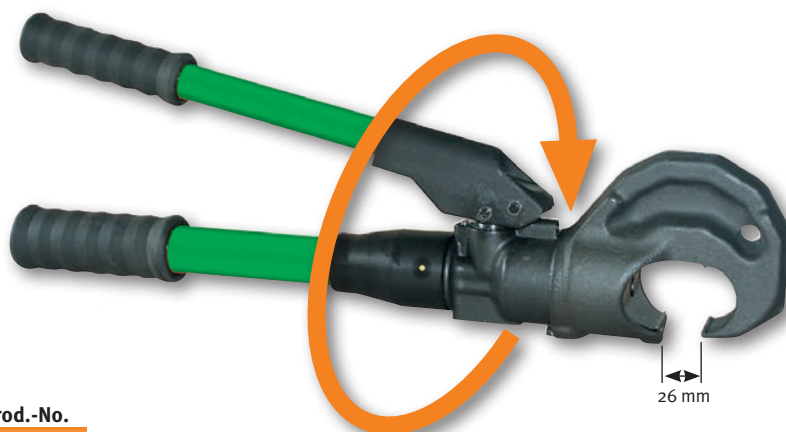


C-form for easy handling

- C-form, pressing head can be turned through 320°, hydraulics integrated in the handle. Automatic switchover from quick feed to pressing feed.
- Built-in pressure control valve. For exchangeable hexagonal pressing inserts, half-shell shape.
- Supplied in a plastic case.

Technical data:

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



Prod.-No.
03361

Hydraulic hand crimping tool

Prod.-No. 03361 Head can be turned through 320°

Hexagonal pressing inserts/cross-sections in mm²

Pressing form half-shell shape, for cable shoes and connectors

suitable for pressing tools 03360/03380/03361

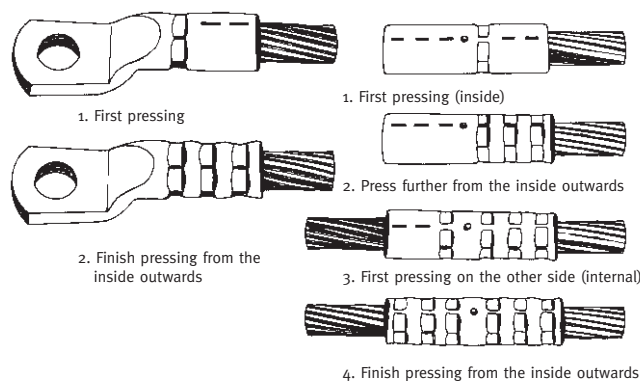
Tool code	Pressing width	Copper	Aluminium	Prod.-No.
8	14	16	—	03365
10	14	25	—	03366
12	12	35	25	03367
14	12	50	35	03368
16	12	70	50	03369
18	12	95	70	03370
20	12	120	—	03371
22	14	150	95 + 120	03372
25	14	185	150	03373
28	14	240	185	03374
30	5	—	—	03375
32	5	300	240	03376
34	5	—	300	03377



Hexagonal pressing inserts

Hints on hexagonal pressings

(manufacturer's instructions are decisive)





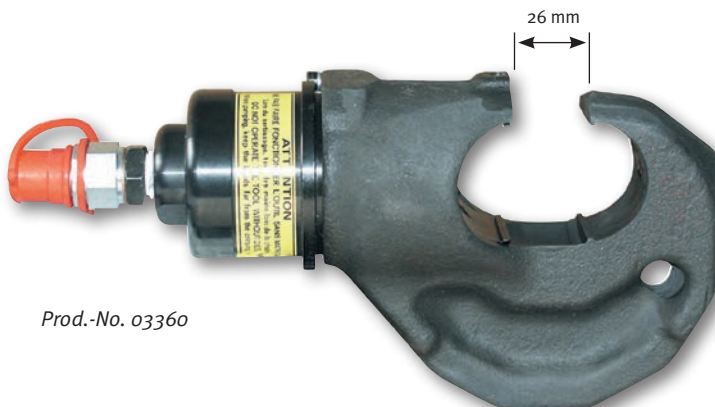
ALFRA HYDRAULIC CRIMPING HEADS

C-form for easy handling

- For pressing cable shoes and connectors made of copper and aluminium from 10 – 300 mm².
- Hexagonal pressing inserts half-shell shape.
- Supplied in a sheet metal transport box.
- The electro-hydraulic pump Prod.-No. 03853 or the foot pump 02121 can be used for operating both pressing heads.

Technical data:

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



Prod.-No. 03360

Hydraulic pressing head	Prod.-No. 03360
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Technical data:

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



Prod.-No. 03380

Hydraulic pressing head	Prod.-No. 03380
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Hexagonal pressing inserts/cross-sections in mm²

Pressing form half-shell shape, for cable shoes and connectors

suitable for pressing tools 03360/03380/03361

Tool code	Pressing width	Copper	Aluminium	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 pressing inserts



ALFRA HYDRAULIC CABLE CUTTER – AKS 85



Ideal for cutting cables up to Ø 85 mm

Advantages

- Guide cutting blade.
- Independent, can be used in any position.
- Clean cuts with minimum deformation.

Areas of application:

Energy companies, power distributor construction, telecommunications, municipal utilities and their service providers, crane construction, mining, shipbuilding, maintenance or repair etc.

Technical data:

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

Cutting capacity:

Telephone cable:	up to Ø 85 mm
Electric cable with armour:	up to Ø 85 mm
Insulated aluminium cable: (earthing cable)	3 x 240 mm ²
Insulated aluminium cable: (single conductor)	630 mm ²
Aluminium rope cable:	up to Ø 46 mm
Copper rope cable:	up to Ø 28 mm

Please specify your exact cable type (fine wire, solid, insulated...) – then we can check the cutting capacity.

Hydraulic cable cutter AKS 85
Supplied in a canvas bag

Prod.-No.
04002



Prod.-No. 04002



ALFRA HYDRAULIC HAND CABLE CUTTER – HKS 85

With integrated hand hydraulics for cutting cables up to Ø 85 mm

The most favourable working position can be selected thanks to the hydraulics located in the rotatable handle.

The cable cutter can be used independently of hydraulic pumps on scaffolds, high-voltage poles or down shafts etc.

Areas of application:

Energy companies, power distributor construction, telecommunications, municipal utilities and their service providers, crane construction, mining, shipbuilding, maintenance or repair etc.

Technical data:

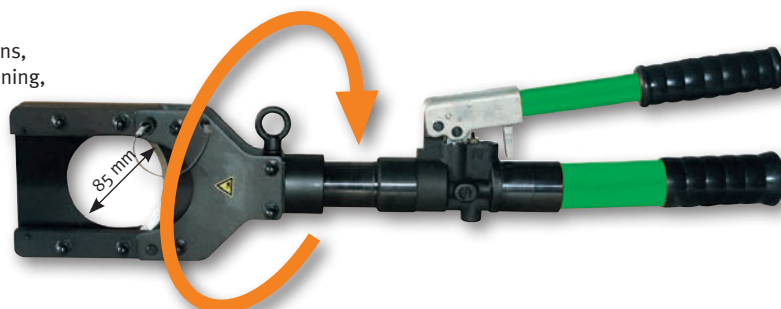
Cutting force:	55 kN
Cutting pressure:	700 bar
Weight:	6.6 kg
Length:	740 mm

The cutting capacity data correspond to type AKS 85.

Hydraulic hand cable cutter HKS 85
Supplied in a canvas bag

Prod.-No.
04015

Prod.-No. 04015 **Head can be turned through 320°**





ALFRA PRESS

Made in Germany by ALFRA







ALFRA PRESS – OVERVIEW



ALFRA PRESS AP 250



ALFRA PRESS AP 400

Page 56

Page 58

Control cabinet housing,
control cabinet doors,
mounting plates

Control cabinet housing,
control cabinet doors,
mounting plates

Prod.-No.

03170

03195

Outreach with stop in mm

250

400

Overall height in mm

820

1,700

Total weight approx.

50

220

Space required in mm

1,000 x 1,000

1,200 x 800

Tool dimensions in mm:

Round Ø

3.2 – 40.5

3.2 – 40.5

Square up to

28.0 x 28.0

28.0 x 28.0

Rectangular up to

22.0 x 30.0

22.0 x 30.0

Max. diagonals from

40.0

40.0

Max. material thickness in mm:

Steel S235 / stainless steel

2.5 / 2.0

2.5 / 2.0

Aluminium / plastic

4.0

4.0

Hydraulic system:

Mode of operation

single-acting

single-acting

Punching force F

46 kN at 600 bar

46 kN at 600 bar

Punching stroke in mm

50

50

Operating voltage

-

-

Workpiece chamfer in mm

22

22



ALFRA PRESS – OVERVIEW



ALFRA PRESS AP 500

Page 60

Control cabinet doors,
mounting plates,
various control cabinet housings

03093

500

1,500

200

1,500 x 1,500 mm



ALFRA PRESS AP 600-2

Page 62

Control cabinet doors,
mounting plates

03090

600

1,600

360

2,000 x 3,000



ALFRA PRESS AP 800

Page 64

Control cabinet doors,
mounting plates

03400

800

1,700

850

2,360 x 4,440

3.2 – 63.5

46.0 x 46.0

36.0 x 52.0

64.0

3.0 / 2.0

4.0

double-acting

48 kN at 130 bar

66

220

30

3.2 – 70.0

68.0 x 68.0

36.0 x 65.0

90.0

3.0 / 2.0

4.0

double-acting

60 kN at 165 bar

66

400

30

3.2 – 120.0

110.0 x 110.0

46.0 x 92.0

140.0

3.0 / 2.0

4.0

double-acting

135 kN at 190 bar

72

400

40

Punching without pilot hole with



ALFRA PRESS

AP 250

Outreach 250 mm





ALFRA PRESS AP 250

Made in Germany by ALFRA



For the quick punching out of round, square, rectangular or special shapes without pre-drilling in control cabinet doors, terminal boxes, cable ducts, housings, cable guiding plates etc. up to the edge area. Tool change is easy and can be done in seconds.

Description:

- For flexible use – on a mobile frame (optional) or mounted stationary on the workbench.
- Quick tool change helps in case of problems with many through-hole variants.
- Different die holders are available – also for punching right up to the edge.
- Punching in a row is no problem thanks to attachable fold-away stops.
- Tip: Use the laser pointer as an option – no marking, no centre-punching, a simple cross-hair with a pen is enough.
- As an "entry level solution", operation by means of a manual pump is even enough – for "punching without pilot drilling" at a favourable price.

Technical data:

Outreach with stop:	250 mm
Outreach without stop:	265 mm
Punching stroke:	50 mm
Punching force F:	46 kN at 600 bar
Hydraulic connection:	R 1/4"
Weight without frame:	50 kg
Weight with frame:	120 kg
Space required with frame approx.:	Ø 1,000 mm

Punching capacity:

Round	Ø 3.2 - 40.5 mm
Square	28.0 x 28.0 mm
Rectangular	22.0 x 30.0 mm
Special shapes up to a max. diagonal of	40.0 mm

Material thicknesses (max.):

Mild 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)

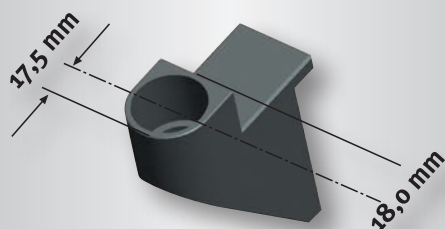
03170

Please note:

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

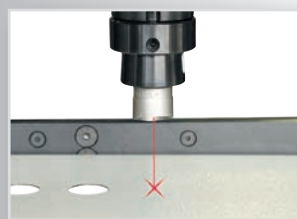
Special tools can be made at short notice in our own tool-making department!

Performance characteristics when punching in the edge area with die holder type I



Smallest possible axis dimension (edge distance) when using die holder type I

Prod.-No. 03174



Laser pointer for the optical indication of the tool centre



Cylinder prepared for the installation of a laser pointer



Limit switch for stroke limit (option)



Tool tray, can be swivelled



Length and depth stop with fold-away limit stops



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



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

Prod.-No. 03190

Punching without pilot hole with



ALFRA PRESS

AP 400

Outreach 400 mm





ALFRA PRESS AP 400



Made in Germany by ALFRA

For the quick punching out of round, square, rectangular or special shapes without pre-drilling in control cabinet doors, terminal boxes, cable ducts, housings, cable guiding plates etc. up to the edge area. Tool change is easy and can be done in seconds.

Description:

- For flexible use – on a mobile frame.
- Quick tool change helps in case of problems with many through-hole variants.
- Different die holders are available – also for punching right up to the edge.
- Punching in a row is no problem thanks to attachable fold-away stops.
- Tip: Use the laser pointer as an option – no marking, no centre-punching, a simple cross-hair with a pen is enough.
- As an "entry level solution", operation by means of a manual pump is even enough – for "punching without pilot drilling" at a favourable price.

Technical data:

Outreach with stop:	400 mm
Outreach without stop:	430 mm
Punching stroke:	50 mm
Punching force F:	46 kN at 600 bar
Hydraulic connection:	R 1/4"
Weight:	220 kg
Space required with frame approx.:	1,200 x 800 mm

Punching capacity:

Round 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 shapes up to a max. diagonal of	40.0 mm

Material thicknesses (max.):

Steel sheets (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)

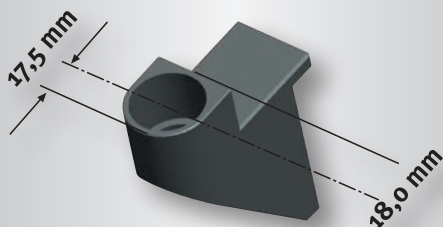
03195

Please note:

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

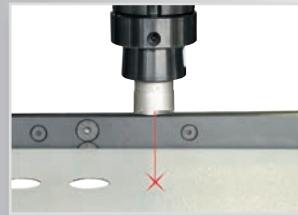
Special tools can be made in our own workshop at short notice!

Performance characteristics when punching in the edge area with die holder type I



Smallest possible axis dimension (edge distance) when using die holder type I

Prod.-No. 03174



LASER POINT

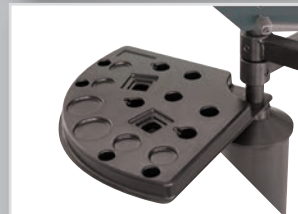
Laser pointer for the optical indication of the tool centre



Cylinder prepared for the installation of a laser pointer



Die holder type II



Tool tray, can be swivelled



Length and depth stop with fold-away limit stops (option)



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



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

Prod.-No. 03190

Punching without pilot hole with



ALFRA PRESS

AP 500

Outreach 500 mm





ALFRA PRESS AP 500

Made in Germany by ALFRA



The stationary punching machine was developed for control cabinet and switchgear manufacturers, for the quick punching of round, square, rectangular or special shapes in metal sheets and control cabinet doors up to 2000 mm x 1000 mm and 30 mm folding height. Punching up to the edge is possible. Tool change is quick and easy and can be done in seconds. Control cabinets/housings from 300 mm depth onwards can also be machined.

Description:

- Stable pressing body with adjustable feet.
- Double-acting hydraulic cylinder, flanged on machine body using force and positive connection.
- Piston rod \varnothing 55 mm in a torsion-resistant position, made of hardened stainless steel with tool holder.
- Die seat, friction-locked to the pressing body.
- Quick tool change helps in case of problems with many through-hole variants.
- Blank holder with protective function, fixed with electric safety locking for accident prevention.
- Vertically adjustable length and depth stop – available in 2 versions.
- Measuring tape indication for length and depth stop.
- Dual-circuit hydraulic unit with electric pump, oil tank and solenoid valves (very quiet).
- Safety foot switch with double pedal for the infinitely variable operation of the punching and return stroke.
- Tip: Use the laser pointer as an option – no marking, no centre-punching, a simple cross-hair with a pen is enough.

Technical data:

Outreach with stop:	500 mm
Outreach without stop:	540 mm
Punching stroke:	66 mm
Punching force F:	48 kN at 130 bar
Motor output:	0.37 kW
Operating voltage:	220 V
Weight approx.	200 kg
Overall height:	1,500 mm
Working height:	1,000 mm
Width of the punching body:	130 mm
Depth of the punching body:	950 mm
Length of the stop rail:	1,500 mm
Approx. space requirements:	1,500 x 1,500 mm
Punching capacity:	
Round from	\varnothing 3.2 - 63.5 mm
Square up to	46.0 x 46.0 mm
Special shapes up to a max. diagonal of	60.0 mm

Material thicknesses (max.):

Steel sheets (S235)	3.0 mm
Stainless steel ($F = 600 \text{ N/mm}^2$)	2.0 mm
Aluminium ($F = 22 \text{ N/mm}^2$)	4.0 mm
Punchable plastics	4.0 mm

Prod.-No.

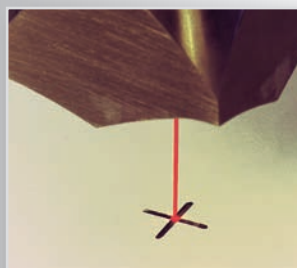
ALFRA PRESS AP 500 (without options)

03093

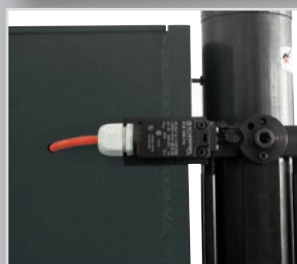
Please note:

- All the round 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 made at short notice in our own tool-making department!



Laser pointer for the optical indication of the tool centre



Electric safety locking for accident prevention



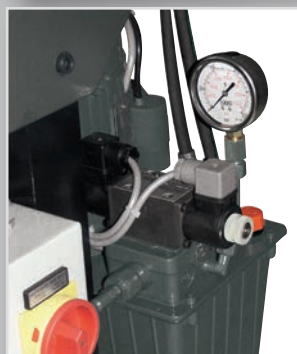
Stop system can be moved in Y-direction, 2 guide shafts in the pressing body.



Die seat holder



Measuring tape indication for Y-axis



Dual-circuit hydraulic unit

Punching without pilot hole with



ALFRA PRESS

AP 600-2

Outreach 600 mm





ALFRA PRESS AP 600-2

Made in Germany by ALFRA



The stationary punching machine was developed for control cabinet and switchgear manufacturers, for the quick punching of round, square, rectangular or special shapes in metal sheets and control cabinet doors up to 2200 mm x 1000 mm and 30 mm folding height. Punching up to the edge is possible. Tool change is quick and easy and can be done in seconds – even with the door inserted. Stop system can be moved in X- and Y-direction.

Description:

- Sturdy pressing body in robust, torsion-resistant welded structure.
- Double-acting hydraulic cylinder, flanged on machine body using force and positive connection.
- Piston rod Ø 55 mm in a torsion-resistant position, made of hardened stainless steel with tool holder.
- Die seat, friction-locked to the pressing body.
- Quick tool change helps in case of problems with many through-hole variants.
- Blank holder with protective function, fixed with electric safety locking for accident prevention.
- Length and depth stop can be moved in X- and Y-direction, mounted in hardened double spherical guides for smooth movement.
- Measuring tape indication for length and depth stop.
- Digital measuring indicator for X- and Y-axis available as an option.
- Dual-circuit hydraulic unit with electric pump, oil tank and solenoid valves (very quiet).
- Safety foot switch with double pedal for the infinitely variable operation of the punching and return stroke.
- Tip: Use the laser pointer as an option – no marking, no centre-punching, a simple cross-hair with a pen is enough.

Technical data:

Outreach with stop:	600 mm
Punching stroke:	66 mm
Punching force F:	60 kN at 165 bar
Motor output:	0.75 KW
Operating voltage:	400 V
Weight approx.	360 kg
Overall height:	1,600 mm
Working height:	1,000 mm
Width of the punching body:	310 mm
Depth of the punching body:	1,150 mm
Length of the stop rail:	1,500 mm
Approx. space requirements:	2,000 x 3,000 mm

Punching capacity:

Round from	Ø 3.2 - 70.0 mm
Square up to	68.0 x 68.0 mm
Special shapes up to a max. diagonal of	90.0 mm

Material thicknesses (max.):

Steel sheets (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

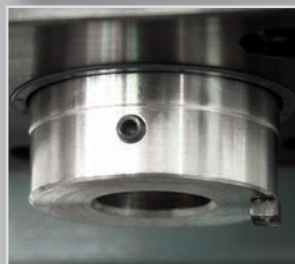
Please note:

- All the round 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 made at short notice in our own tool-making department!



Laser pointer for the optical indication of the tool centre



Sturdy piston rod (Ø 55 mm) with anti-twist tool protection



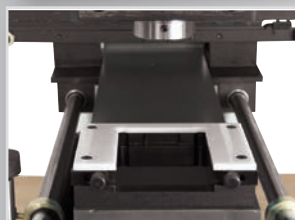
Tool drawer with compartments



Dual-circuit hydraulic unit in the cabinet base



Mutual quick-clamping system for folding up or down as required



Die seat holder. Tool change possible even with a control cabinet door clamped in place.



Length and depth stop routed on both sides in double spherical guides. 2 adjustable stops each on the right and left of the Y-axis.

Punching without pilot hole with



ALFRA PRESS

AP 800

Outreach 800 mm





ALFRA PRESS AP 800

Made in Germany by ALFRA



The stationary punching machine was developed for control cabinet and switchgear manufacturers, for the quick punching of round, square, rectangular or special shapes in metal sheets and control cabinet doors up to 2200 mm x 1000 mm and 40 mm folding height. Punching up to the edge is possible. Tool change is quick and easy and can be done in seconds – even with the door inserted. Stop system can be moved in X- and Y-direction.

Description:

- Sturdy pressing body in robust, torsion-resistant welded structure mounted on stationary frame with rubber-bonded metal feet.
- Swivel control desk with digital display, emergency off button, electric operating buttons and two-handed control.
- Double-acting hydraulic cylinder, flanged on machine body using positive connection and force fit.
- Piston rod Ø 63 mm in a torsion-resistant position, made of hardened stainless steel with tool holder.
- Die seat, friction-locked to the pressing body.
- Time relay for piston return saves working time.
- Blank holder/stripper combination with finger protection.
- X – Y stop system, easy to move, in sturdy and precise profile roller guides.
- Positive and frictional workpiece support and clamping device.
- Swivelling workpiece support on the left of the pressing body for easy lifting of the workpiece.
- Stop system locking by electrically operated hydraulic brakes.
- Digital distance measurement and display of the X- and Y-travel paths with a display accuracy of 0.1 mm and a measuring accuracy of 1 %.
- Quick tool change helps in case of problems with many through-hole variants.
- Dual-circuit hydraulic unit with electric pump, oil tank and solenoid valves, very quiet.
- Tip: Use laser pointer as option for the optical indication of the tool centre.

Technical data:

Outreach with stop:	800 mm
Punching stroke:	72 mm
Punching force F:	135 kN at 190 bar
Motor output:	1.5 kW
Operating voltage:	400 V
Weight approx.	850 kg
Overall height:	1,700 mm
Working height:	1,000 mm
Width of the punching body:	280 mm
Depth of the punching body:	1,700 mm
Approx. space requirements:	2,360 x 4,440 mm

Punching capacity:

Round from	Ø 3.2 - 120.0 mm
Square up to	110.0 x 110.0 mm
Special shapes up to a max. diagonal of	140.0 mm

Material thicknesses (max.):

Steel sheets (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

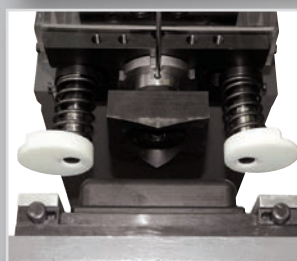
Special tools can be made at short notice in our own tool-making department!



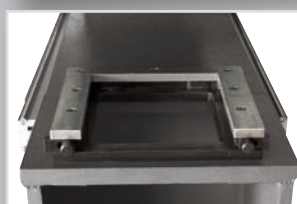
Swivel control desk with two-handed operation



Positive and frictional workpiece support with quick-clamping system



Tool holder, anti-twist-protected in the piston rod, blank holder/stripper combination.



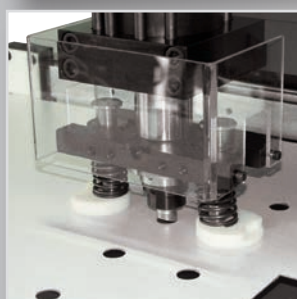
Die holder, tool change possible even with a control cabinet door clamped in place.



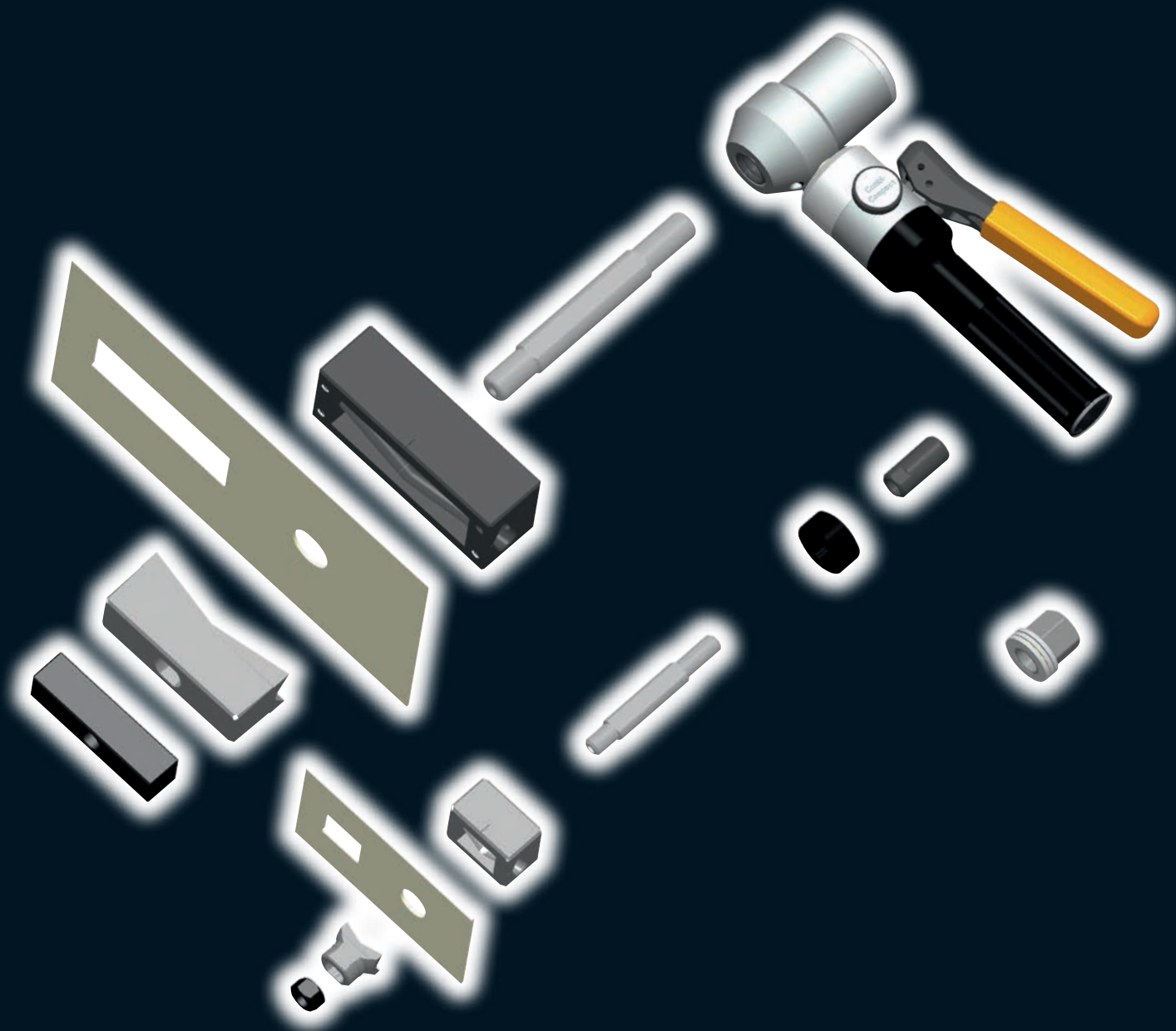
Distance measurement of X- and Y-travel paths



Dual-circuit hydraulic unit












Blank holder/stripper combination





PUNCH & DIE – TABLE OF TYPES AND APPLICATION POSSIBILITIES

Punch dimension	For use with			
	Wrench	Hand-Hydraulic punch Compact, Compact-Combi, Compact Flex	Battery packed Hydraulic punch Akku Compact	Foot- and electro- hydraulic pump with hydraulic cylinder
 MonoCut™ PUNCH ROUND				
12,7 - 82,0 mm	✓	✓	✓	✓
89,0 - 120,0 mm	-	-	✓ with special screw	✓
 SPLITTER PUNCH ROUND TriCut™/ TriCut+™/ TwinCut™				
12,5 - 63,5 mm	✓	✓	✓	✓
 PUNCHER SQUARE				
12,7 x 12,7 mm - 25,4 x 25,4 mm	✓	✓	✓	✓
45,5 x 45,5 mm - 68,0 x 68,0 mm	-	✓	✓	✓
92,0 x 92,0 mm	-	-	✓ with special screw	✓
125,0 x 125,0 mm - 138,0 x 138,0 mm	-	-	-	✓
 PUNCHER SQUARE FOR STAINLESS STEEL				
46,0 x 46,0 mm - 68,0 x 68,0 mm	-	✓	✓	✓
92,0 x 92,0 mm	-	-	✓ with special screw	✓
 PUNCHER RECTANGULAR				
17,0 x 19,0 mm - 25,0 x 50,0 mm	✓	✓	✓	✓
45,0 x 92,0 mm - 46,0 x 92,0 mm	-	✓	✓	✓
68,0 x 138,0 mm	-	-	-	✓
 PUNCHER RECTANGULAR FOR HEAVY CONNECTORS				
36,0 x 52,0 mm - 46,0 x 86,0 mm	-	✓	✓	✓
46,0 x 112,0 mm	-	-	-	✓
  PUNCHER SPECIAL SHAPES				
Ø 22,5 mm with 3 mm nose	✓	✓	✓	✓
Ø 22,5 mm 2-side flattened to 18,5 mm	✓	✓	✓	✓
Ø 22,5 mm 4-side flattened to 20,1 mm	✓	✓	✓	✓
BKS-Profile cylinder	✓	✓	✓	✓
Ø 16,3 mm 4-side flattened to 14,1 mm	✓	✓	✓	✓
 PUNCHER - SUB-MIN-D				
9 polig - 50 polig	✓	✓	✓	✓

PUNCHER – FOR MANUAL AND HYDRAULIC OPERATION



Square, rectangular and special shapes

1. Screw draw stud **3** with thread fully into the hydraulic cylinder **8**.
2. Die **4** must not be canted when placed on draw stud **3**.
Use distance bushes **5** if necessary.
3. Insert draw stud **3** through pre-drilled hole in the control cabinet door.
4. Set the punch **2** squarely on the hydraulic draw stud from the rear and tighten the lock nut **1**.
5. Align the puncher **2** on the cross-hair with the four markings.

Operating the hydraulic pump

- Draw the punch fully through the metal.
- Do not use force.
- Release the pressure on the hydraulic cylinder after the punching operation by opening the valve wheel on the pump (hydraulic cylinder body).
- Disassemble the puncher and remove the waste from the die.

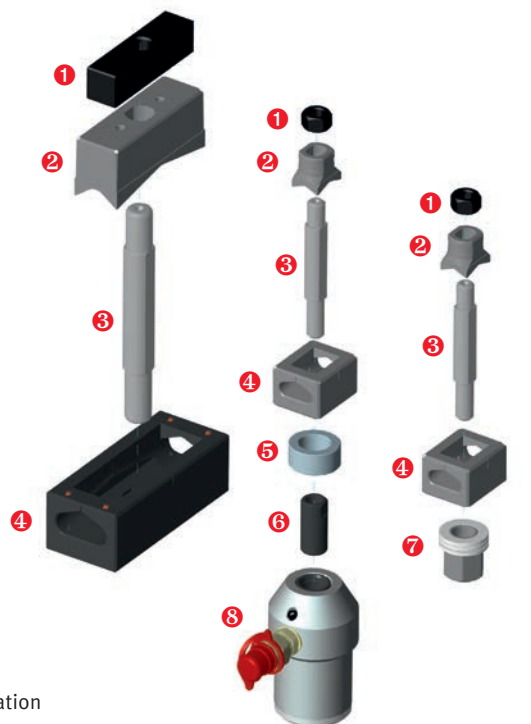
Caution:

- Only operate the puncher until the metal is cut. Avoid the punch acting against the inside of the die.
- Staggered punching (nibbling) is not possible.
- Never use force.

Important!

- Draw stud, cutter and guides should always be oiled or greased; punch and die then move more easily.
- Sharpen the punch in good time, depending on degree of bluntness.

- | | | |
|--------------------|--|---|
| 1 lock nut | 4 die | 7 forcing nut for manual operation |
| 2 punch | 5 distance bush | 8 hydraulic cylinder |
| 3 draw stud | 6 adapter for hydraulic operation | |



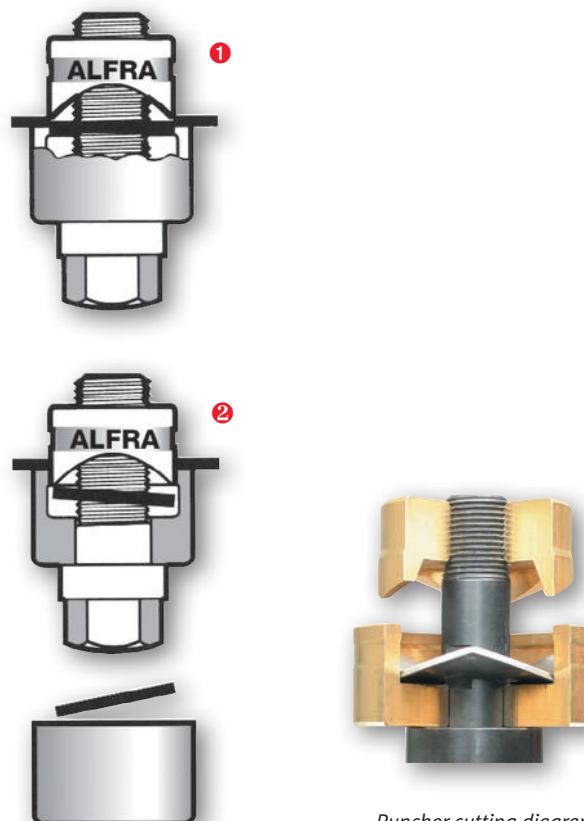
When operated with wrench, use forcing nut **7** instead of adapter **6**

PUNCHER – DID YOU KNOW?

MonoCut™ punchers with three cutting tips

The waste drops easily out of the die, if you turn the punch 2-3 turns further into the die using a spanner after the punching operation. **1**

This pushes the waste piece over the edge of the die and so falls freely out of the die if you have predrilled 11 or 21 mm. **2**



Puncher cutting diagram



TCT CUTTING TOOLS – TECHNICAL TERMS

Clearance Angle

Is the angle between the TCT tooth and the material to be cut.
ALFRA TCT Cutters are equipped with several 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.

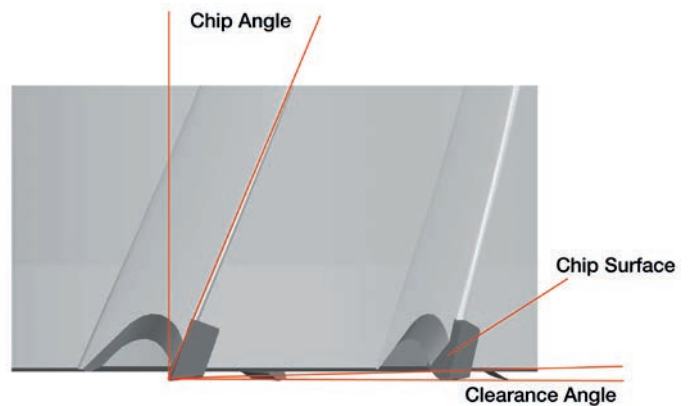
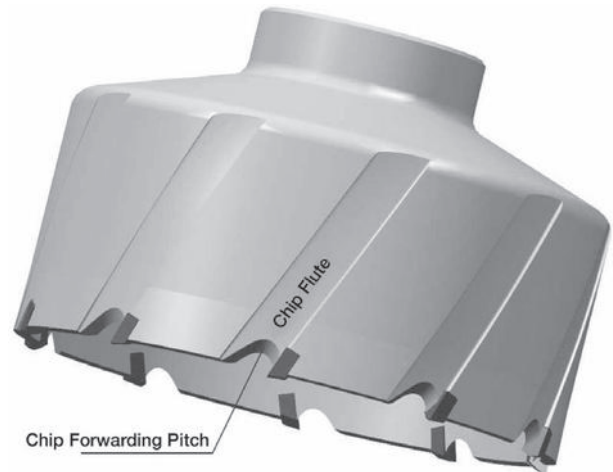
RPM, cutting speed and feed (approximate value)

Rotabest®-TCT cutter

Not suitable for automatic feed

Material	m/min	mm/rpm
Constructional steel 50 kp/m ²	40-60	0.08-0.12
Steel 50-70 kp/m ²	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



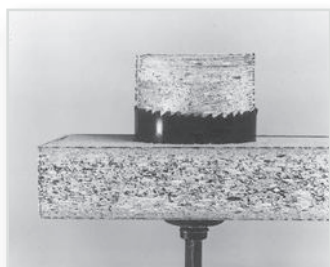
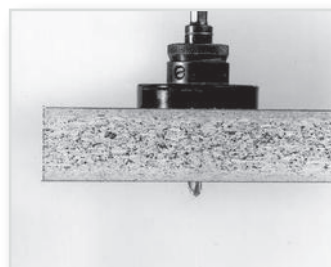
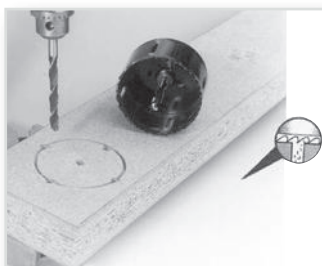
To achieve the best results:

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:

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.



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.



What you absolutely must avoid:

1. Drilling at too fast or too slow 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

Recommended Speed for various materials (RPM)

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 be 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)

$$v_c = \frac{\pi \times d \times n}{1000}$$

TGT-HOLE SAWS – SPEED CHART



Speed calculation

n = Speed (1/min)

v_c = Cutting Speed (m/min)

d = Tool diameter (mm)

$$n = \frac{v_c \times 1000}{d \cdot \pi}$$

d = 20 mm

v_c = 50 m/min

$$n = \frac{50000}{20 \cdot \pi} = 795.77 \text{ 1/min}$$

Worked sample:

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 to 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.

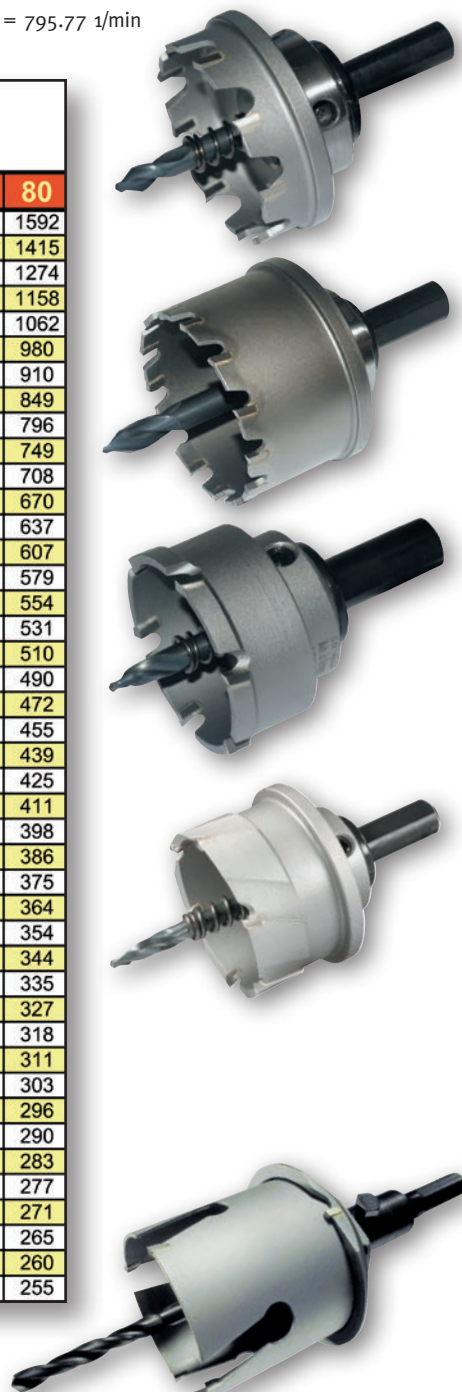
Notes on use

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 made to drill perfectly round and simultaneously deburred holes in sheet metals of 4 - 6 mm. The radius transition simultaneously deburrs or bevels 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**)?

ALFRA HSS DM 05 precision Multistep Drill

- Take notice of the cutting 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	Mild steel ≤ 700 N/mm ²	Mild steel > 700 N/mm ²	Alloy steel ≤ 1000 N/mm ²	Cast iron ≤ 250 N/mm ²	Cast iron > 250 N/mm ²	Stainless steel	CuZn alloy brittle	CuZn alloy tough	Al alloy ≤ 11% Si	Thermo- plastic	Duro- plastic	Wood
Material gauge	5.0 mm	5.0 mm	5.0 mm	5.0 mm	5.0 mm	3.0 mm	5.0 mm	5.0 mm	5.0 mm	5.0 mm	5.0 mm	25.0 mm
Lubricant	Drilling paste	Drilling paste	Drilling paste	Air	Air	Drilling paste	Air	Air	Drilling paste	H ₂ O	Air	Air
Vc = m/min	25	20 - 25	20	15	10	5	60	35	30	20	15	> 40
Ø mm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm
4.0 - 12.0	1900 - 600	1700 - 580	1550 - 520	1190 - 400	800 - 250	400 - 130	4700 - 1550	2750 - 920	2350 - 790	1550 - 520	1190 - 400	3000 - 1000
4.0 - 20.0	1900 - 400	1700 - 350	1550 - 300	1190 - 240	800 - 160	400 - 80	4700 - 950	2750 - 550	2350 - 470	1550 - 300	1190 - 240	3000 - 650
12.0 - 20.0	600 - 400	600 - 350	520 - 300	400 - 240	250 - 160	130 - 80	1550 - 950	920 - 550	790 - 470	520 - 300	400 - 240	1000 - 650
4.0 - 24.0	1900 - 300	1700 - 280	1550 - 250	1190 - 200	800 - 130	400 - 65	4700 - 790	2750 - 460	2350 - 400	1550 - 250	1190 - 200	3000 - 550
6.0 - 30.0	1300 - 250	1200 - 230	1000 - 200	780 - 150	530 - 100	250 - 50	3150 - 630	1850 - 370	1590 - 310	1000 - 200	780 - 150	2100 - 420
20.0 - 30.0	400 - 250	350 - 230	300 - 200	230 - 150	160 - 100	80 - 50	950 - 630	550 - 370	470 - 310	300 - 200	230 - 150	650 - 420
6.0 - 36.0	1300 - 220	1200 - 200	1000 - 170	780 - 130	530 - 90	250 - 45	3150 - 530	1850 - 300	1590 - 260	1000 - 170	780 - 130	2100 - 350
30.0 - 40.0	250 - 200	230 - 180	200 - 150	150 - 120	100 - 80	50 - 40	630 - 470	370 - 280	310 - 240	200 - 150	150 - 120	420 - 310
40.0 - 50.0	200 - 160	180 - 140	150 - 125	120 - 90	80 - 65	40 - 30	470 - 380	280 - 220	240 - 190	150 - 125	120 - 90	310 - 250
50.0 - 60.0	160 - 130	140 - 110	125 - 100	90 - 80	65 - 50	30 - 25	380 - 310	220 - 185	190 - 150	125 - 100	90 - 80	250 - 210

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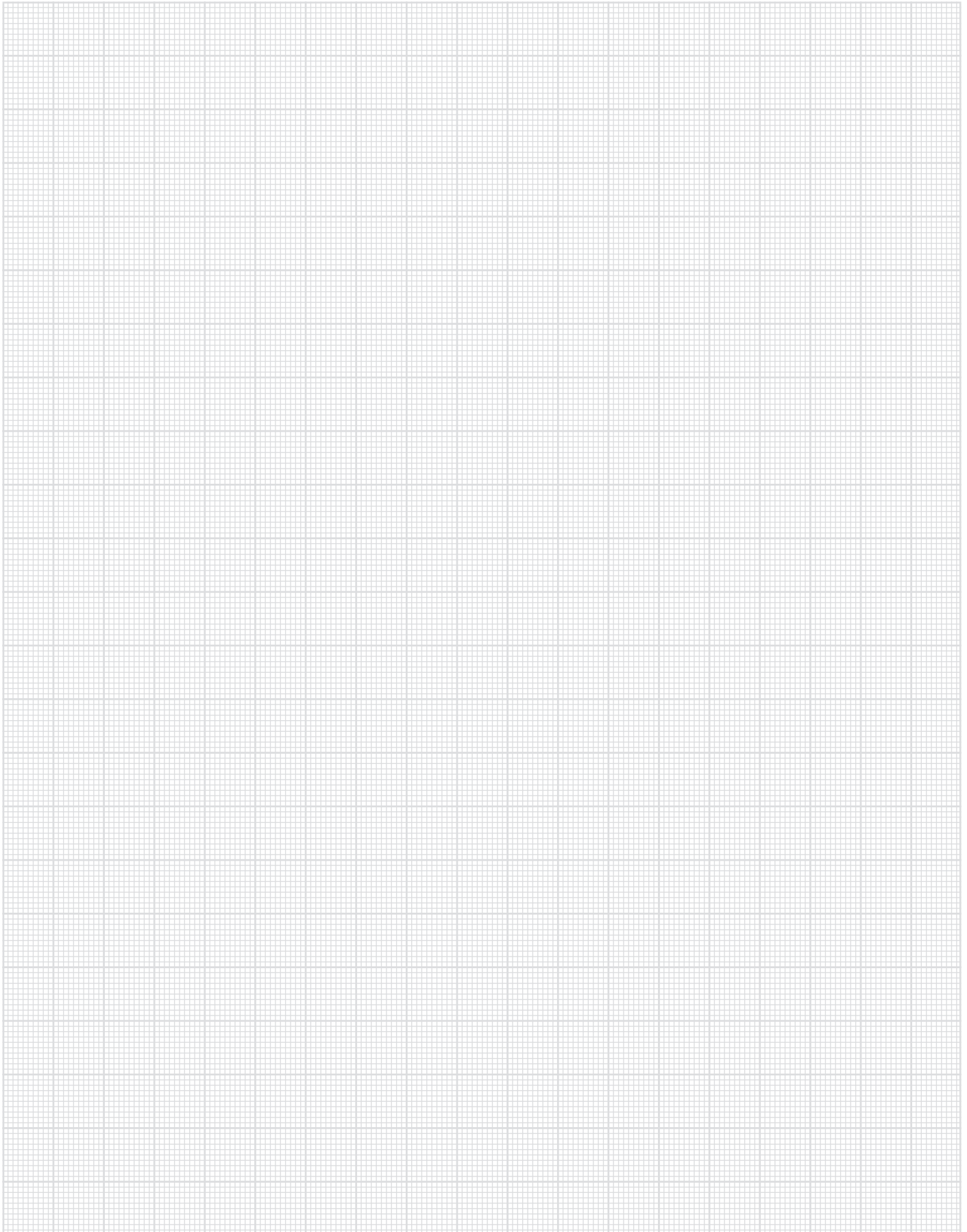
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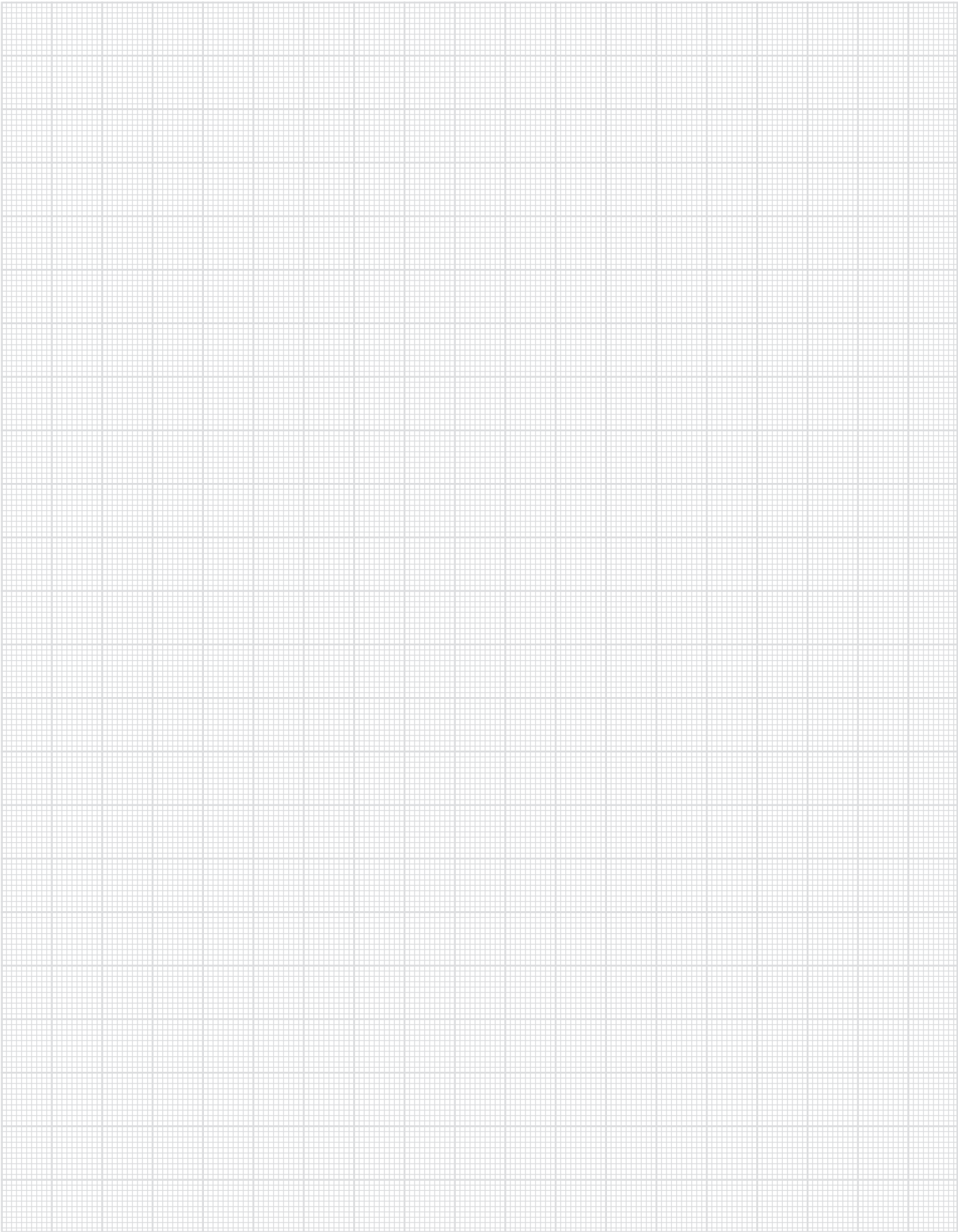
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A

TOOLS AND MACHINES FOR CONTROL CABINET
AND SWITCHGEAR ENGINEERING / CUTTING TOOLS



B

DRILLING – PUNCHING – CUTTING – DEBURRING – TML

