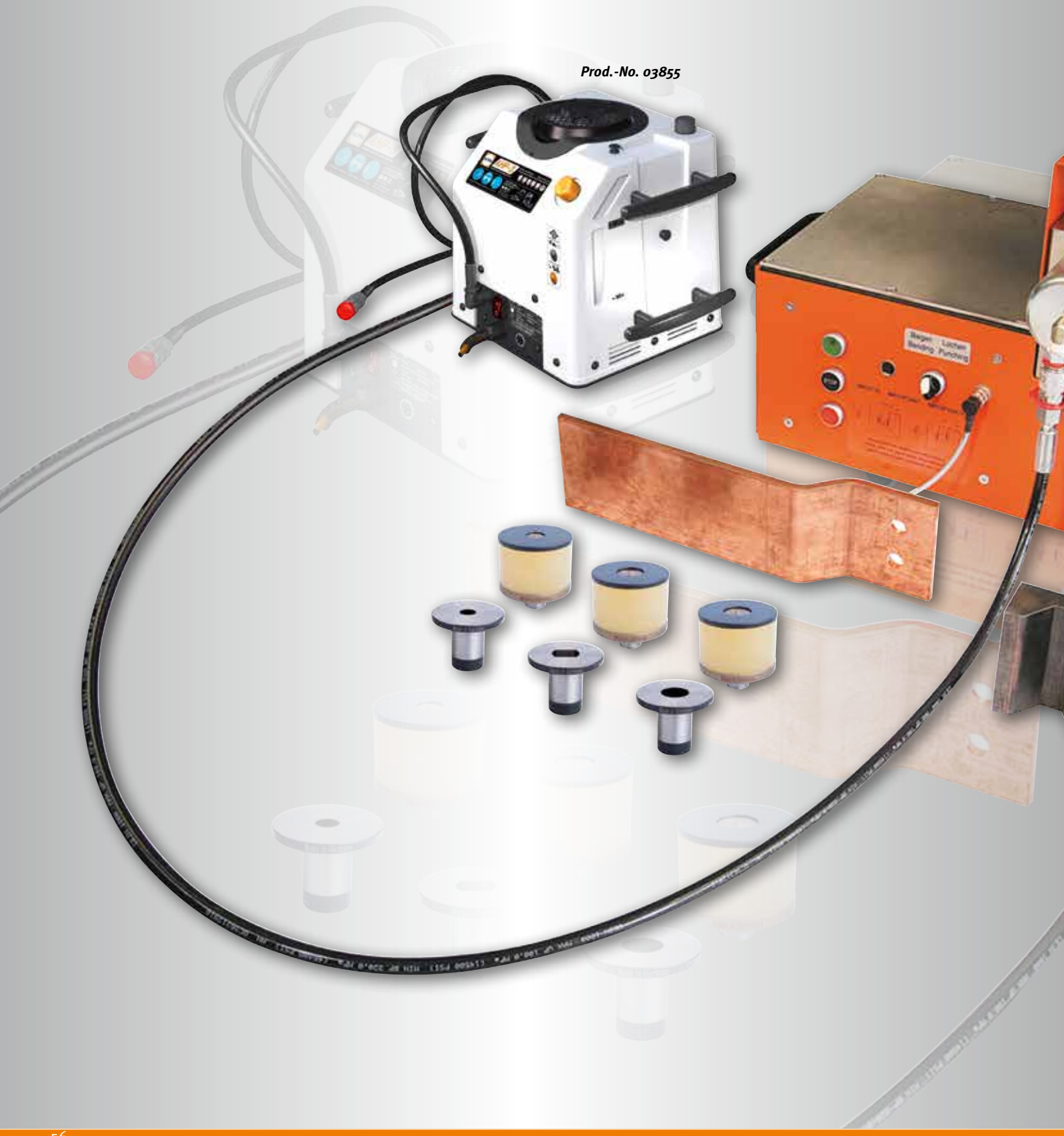
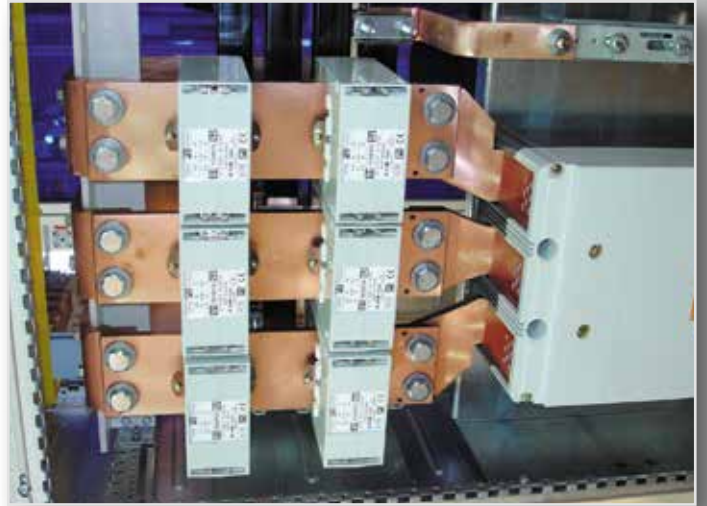


MACHINING

Prod.-No. 03855



Prod.-No. 03200



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

Bending busbars

Turn switch to "bend".

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



Perforating busbars

Switch setting to "perforate".

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

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



Technical data:

Bending

Bending Cu max:	120 x 12 mm
Bending up to:	more than 90°
smallest leg length:	50 mm
smallest U-bend:	100 mm
smallest Z-bend:	72 mm (depending on material thickness)
The values stated are based on copper rails 120 x 10 mm	

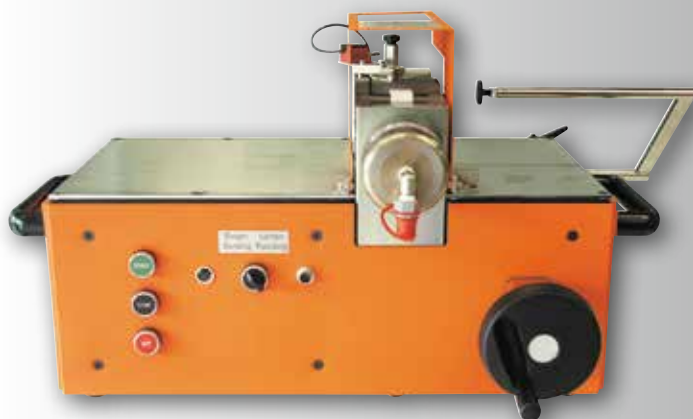
Punching

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

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



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



Prod.-No. 03200SET

Electro-hydraulic pump AHP M

Technical data:

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



Prod.-No. 03229

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



Prod.-No. 03202

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



Prod.-No. 03228



Prod.-No. 03201

Electro-hydraulic pump AHP S

Technical data:

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

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



Prod.-No. 03855



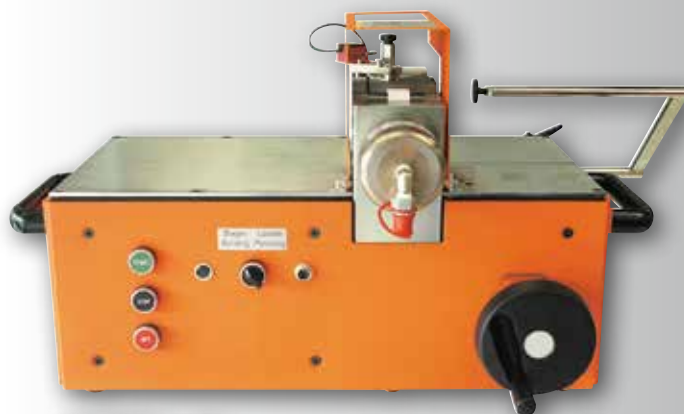
Prod.-No. 03854

ALFRA busbar set 1:

Prod.-No.

03911

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



Prod.-No. 03911

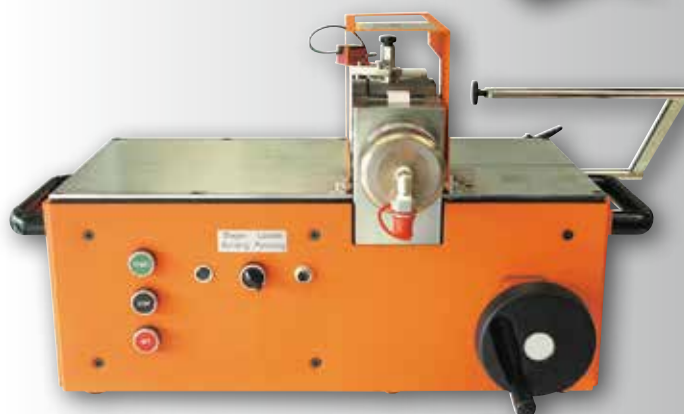


ALFRA busbar set 2:

Prod.-No.

03921

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



Prod.-No. 03921



Accessories

Available punches and dies

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

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

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

03241



longitudinal hole punches and dies

Round punches and dies



ALFRA BUSBAR CUTTING DEVICE – S 125

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

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

ALFRA busbar cutting device – S 125	Prod.-No. 03250
Replacement top cutter	03251
With use of electro-hydraulic pump AHP M in direct connection with the cutting device, we recommend the use of a footswitch with START – STOP – OFF function.	
Footswitch with START – STOP – OFF (direct connection to basic device 03200)	03865
Footswitch with START – STOP – OFF (direct connection to hydraulic pump 03855)	03863
As a drive we recommend	
electro-hydraulic pump AHP M	03855



Prod.-No. 03250

ALFRA – WORKSHOP TROLLEY

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

Ideal for transportation - also in vans with standard fittings

Specially-developed workshop trolley for storing both processing devices and saving space. The electro-hydraulic pump can be connected to a fitted 2-way valve in the trolley. The processing devices are connected to each other with hydraulic hoses.

2 support rollers fitted to the side of the table make bending and cutting of long rails easier.

The trolley has an additional drawer with tool compartments for storing all punches and dies. The trolley runs on 4 casters, 2 of which have a locking device.

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

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

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

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

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

Technical data:

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

Prod.-No.
03980

ALFRA 4-Station processing trolley

Required extra accessories

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

Hydraulic press head 10 - 300 mm ²	03360
Hydraulic cylinder	02012
Footswitch with connecting cable, 3-pole	03861



Prod.-No. 03980 supplied without additional devices



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

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

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

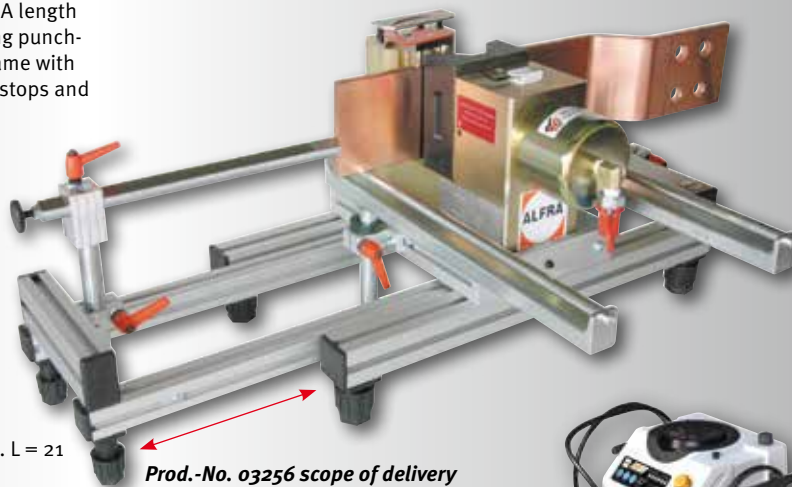
Technical data:

Bending:

Bending Cu max: 120 x 12 mm
 Bending up to: more than 90°
 smallest leg length: 50 mm
 smallest U-bend: 100 mm
 smallest Z-bend: 72 mm
 The values stated are based on copper rails 120 x 10 mm

Punching:

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



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

ALFRA busbar bending and hole punching device – LPV

Prod.-No.
03256

Accessories

Available punches and dies

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



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

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



**longitudinal hole punches
and dies**

Round punches and dies

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

Technical data:

Bending

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

Punching/perforating

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

Recommended drive type

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

Prod.-No.

ALFRA BS 160 with bending die and bending punch R=11 mm for busbars 9-12 mm

03258

Accessories

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

03259

Available punches and dies

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

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

Punches and dies for longitudinal holes up to max. L x W = 21 x 18 mm

Prod.-No. 03241

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



Prod.-No. 03258
"Perforate" setting



Prod.-No. 03258
"Bend" setting



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

for punching (without insulation) and cutting of flexible supply bars

Thickness up to 10 mm (without insulation)

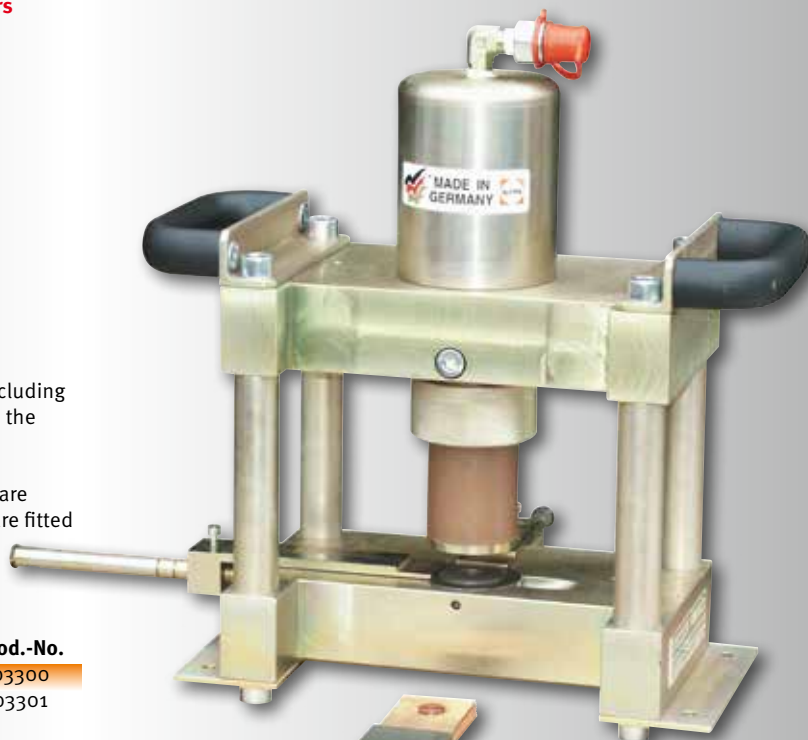
Width up to 100 mm (without insulation)

Application areas:

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

Basic device

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



Prod.-No. 03300

ALFRA ribbed busbar processing device

Cutting block

Prod.-No.

03300

03301

Accessories

Punch with neoprene and pressure plates:

Ø 6.0 mm

Ø 9.0 mm

Ø 11.0 mm

Ø 14.0 mm



03304

03305

03306

03307

Die:

Ø 6.0 mm

Ø 9.0 mm

Ø 11.0 mm

Ø 14.0 mm



03309

03310

03311

03312

Other diameters on request.



Prod.-No. 02121



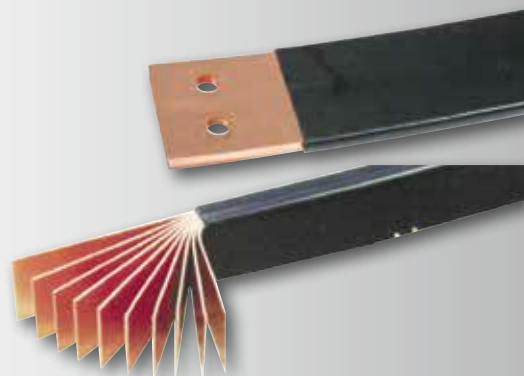
Prod.-No. 03854

We recommend our electro-hydraulic pump AHP S as a drive

Prod.-No. 03854 or our foot pump Prod.-No. 02121.



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



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

Technical data:

Piston stroke: 18 mm
Punching force: 270 kN

Overhang:

Working pressure max.: 700 bar
Punching range:
Punch Ø 5.5 - 10 mm
Material thickness max. 8 mm, (S235)
Punch Ø 10 - 21 mm
Material thickness max. 10 mm, (S235)
Weight: 16 kg
Dimensions: 220 x 110 x 335 mm

Prod.-No.

Hydraulic punch AP-65

03260

Tools for copper, aluminium and steel

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

other diameters on request where edge holes are possible



Prod.-No. 03854

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



Prod.-No. 03260



Punches and dies for AP-65