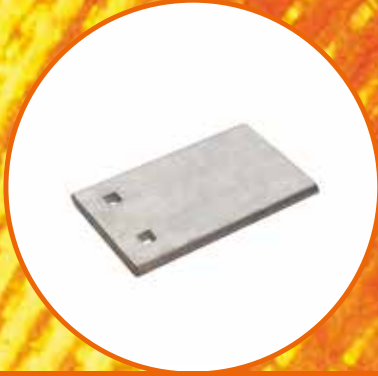


A vertical gold bar is the central focus, featuring embossed markings that include a stylized 'M' at the top, a large 'W' in the middle, and 'BO' at the bottom. The bar is set against a background of a sunset over water, with a blue sky on the left and a red and orange sky on the right.

**Tris work unit for copper
and metal bars**

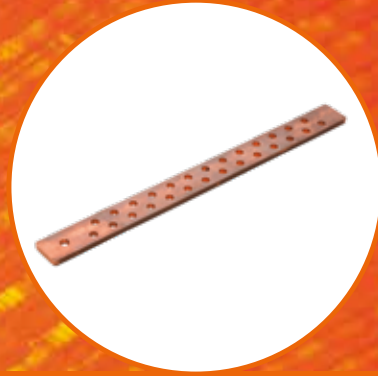
TECHNICAL APPLICATION



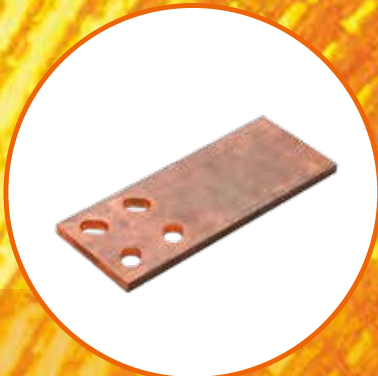
SQUARE HOLES ON ALUMINIUM



EXAMPLE OF BARS BENDED WITH FLAT BAR BENDER



EXAMPLE OF MULTIPLE HOLES



EXAMPLE OF OVAL OBLIQUE PUNCHING



BENDING REALIZED WITH UNIT ART.9046 ON BAR 200X20



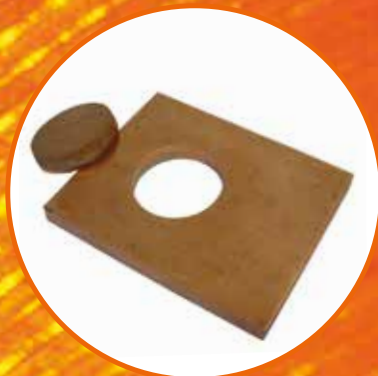
BAR WITH BEVELLED EDGE



EXAMPLE OF MULTIPLE BENDING



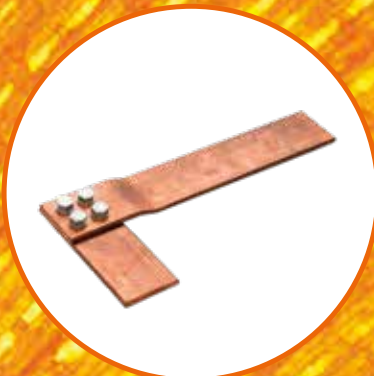
HALF-OVAL HOLE FOR DIRECT INSERTION OF THE BAR



HOLE Ø 58 REALIZED WITH A SPECIAL TOOL



EXAMPLE OF BENDING AND PUNCHING



BAR COUPLING



SPECIAL PUNCHING ON IRON

PATENTED

9042 Tris Work Unit

Suitable for small and large quantities.
Functional and time-saving, it makes the job easier



TRIS WORK UNIT FOR COPPER AND METAL BARS

9042 TRIS WORK UNIT can be used with all MULTIFOR pumps and control units. It is extremely versatile for its different operations.

Our tris unit is made up of :

- a **practical tool change-over system**.
- a **hinged tool frame fully opening**, which allows simple introduction and removal of bars.
- a **millimetric adjustment on the piston**, which regulates the stroke of the tools.
- a **protractor** for reading the bending angle of the bar (on request).

Once set up, this accessory can repeat the work cycle without checking every time lengths and angles.

These characteristics are patented.

In order to achieve the maximum working precision, as well as to save time, the tooling is mounted on a workbench, which has been **designed specially** to be rational and practical in operation. It has all the necessary adjustments and references in order to position quickly the work pieces, avoiding measurements and engravings.

Technical Characteristics

Power	200 kN
Max. Working pressure	700 Bars
Stroke	50 mm
Adjustable stroke	40 mm
Amount oil required for full stroke	0,180 lt.
Length	850 mm
Width	600 mm
Height	500 mm
Weight	90 Kg

Supplied with 1 meter ruler and protection carter.



Adjustment distance for punching and cutting.



Positioning mechanical end-stroke



Drawer to collect metal swarf

Punching, bending, cutting copper bars, metal profiles and din-rails. All these operations with only one Tris work unit.

Punching

Copper bars, aluminium and steel bars, etc.
with max. thickness 12 mm - Round holes from \varnothing 5 to \varnothing 25 mm - Oval holes from 7X13 mm to 18x25 mm

For higher thickness than 12 mm, please contact our Technical Department.

It is possible to achieve equidistant punching on bars of maximum width 120 mm.

Using special punches, which have the automatic extraction from the bar, one obtains holes.

IN 4 SECONDS*



Bending

Copper bars, aluminium and steel bars etc.
with thickness from 3 mm to 12 mm and maximum width 120 mm.

On request, tools for 160 mm bars

IN 5 SECONDS*



Cutting

Copper bars, aluminium and steel bars, etc.
with thickness from 5 mm to 12 mm and max. width 120 mm.

For higher width than 120 mm and with thicker material than 12 mm, please contact our Technical Department.

IN 3 SECONDS*



PATENTED

9042/AL

Swivel Tris work unit

For bars processing in cramped spaces (e.g. cabins).

9042/AL is used with all MULTIFOR pumps and control units.

It has the same characteristics of the TRIS 9042, but in horizontal position it can swivel on a vertical pin. By doing so, the bar remains stationary on its support surface, taking up less space in the working area.



Technical Characteristics

Power	200 kN
Max. Working pressure	700 Bar
Stroke	50 mm
Adjustable stroke	40 mm
Amount of oil required for full stroke	0,180 lt.
Length	850 mm
Width	600 mm
Height	500 mm
Weight	90 Kg
Supplied with 1-meter ruler and protection carter.	

TOOLS AND ACCESSORIES PAG. 12÷15

POWER UNITS - PUMPS AND ELECTRIC UNITS PAG. 80÷87

TRIS WORK UNIT FOR COPPER AND METAL BARS

9045

Horizontal Tris work unit

It has the same characteristics of the Unit 9042 and 9042/AL with horizontally fixed position. Small dimensions, it is lighter and economic. It uses standard tools. It is supplied with 1-meter ruler.
Not recommended for punching operations

Technical Characteristics

Length	700 mm
Width	600 mm
Height	500 mm
Weight	77 Kg



TOOLS AND ACCESSORIES PAG. 12÷15

POWER UNITS - PUMPS AND ELECTRIC UNITS PAG. 80÷87

9045V Vertical Tris Work Unit

It has the same characteristics of the Unit 9042.
Its cylinder is vertically fixed.

USED ONLY FOR CUTTING AND PUNCHING OPERATIONS.

It uses the same tools of the TRIS 9042.
Small dimensions and weight.
It is supplied with 1-meter ruler



Technical Characteristics

Length	530 mm
Width complete with 1-meter ruler	1.310 mm
Height	720 mm
Weight	67 Kg

TOOLS AND ACCESSORIES PAG. 12÷15

POWER UNITS - PUMPS AND ELECTRIC UNITS PAG. 80÷87

9046 Tris Work unit 30 Ton

It is larger and more powerful than unit 9042.
The unit 9046 is recommended for processing large size bars, larger than the standard ones.
This unit has a 30 tons cylinder that allows to work bars until 200x20 mm.

It is also possible to make special tools for punching four holes in one operation.
It is supplied with 1 meter ruler, protection carter and adapters for the use of 9042 standard tools.
On request we can realize special punches for specific workings.

Technical Characteristics

Power	300 kN
Max. Working pressure	700 bar
Stroke	65 mm
Adjustable stroke	50 mm
Amount of oil required for full stroke	0,300 lt
It punches bars up to 15 mm thickness	
It cuts bars up to 160 x 15 mm	
It bends bars up to 200x20 mm	
Length	1200 mm
Width	700 mm
Height	520 mm
Weight	192 Kg



TOOLS AND ACCESSORIES PAG. 12÷15

POWER UNITS - PUMPS AND ELECTRIC UNITS PAG. 80÷87

9044

Tris work unit

Coupled Tris cylinders

For specific works or a big production, we have made a special unit which uses two cylinders to avoid unnecessary changes of tools, allowing the realisation of punching and bending with a considerable reduction in time and labour costs. The cylinders have the same characteristics of the Tris Unit 9042.



Technical Characteristics

Lenght	940 mm
Width	600 mm
Height	720 mm
Weight	122 Kg

It is supplied with 1 meter ruler and protection carter.

TOOLS AND ACCESSORIES PAG. 12÷15

POWER UNITS - PUMPS AND ELECTRIC UNITS PAG. 80÷87

9043

Tris work unit

**For occasional and on field workings.
For bending, cutting and punching.**

We have created it expressly for small quantities. It differs from our Tris Units with bench for its simplicity and lightness as it has no specific accessories, making it simple and light. Its structure is fixed and it is used in vertical position.

We recommend to fix it on a bench or on a working table, in order to have stability.

The cylinder has an adjustable run.

Bar benders are simplified with only one male punch supplied with n. 2 female dies of different dimensions for various thicknesses. (Max 10 mm) and different bending radius.

It is supplied complete with bending tools.

Tools for cutting and punching are the same of our standard tris unit 9042.

It can be used with all our power units present in our Catalogue.

Supplied with 1-meter ruler.

It has to be connected to our power units present in our catalogue.

Technical Characteristics

General characteristics	as Tris Unit 9042
Power	200 kN
Max. Working pressure	700 bar
Width	130 mm
Lenght	230 mm
Height	610 mm
Weight	34 Kg



TOOLS AND ACCESSORIES PAG. 12÷15

POWER UNITS - PUMPS AND ELECTRIC UNITS PAG. 80÷87

9023 Punching cylinder

For flat and angular bars

It can be used with all MULTIFOR pumps and control units.

It is particularly practical and handy.

It allows the punching of flat and angular bars in difficult positions and on pylons.

It is used especially for connections in transformer cabinets and for electrical switchboards.

This tool is very reliable like all our MULTIFOR equipments.

On request, we can realize special sizes.

For a correct use of the punches, the operator should not punch bars thicker than the diameter of the same punch.

On request, it can be supplied with 90° connector.

Technical Characteristics

Power	120 kN
Max. Working pressure	700 bar
Stroke	14 mm
Internal depth	30 mm
External depth	20 mm
Copper bar thickness	10 mm max
Thickness of other materials:	according to the resistance and hole Ø
Lenght	270 mm
Width	135 mm
Weight	5,7 Kg



Kit punching cylinder 9023D

Odd size code	Ø Punch mm.
9511	7
9513	9
9515	11
9517	13
9519	15
9521	17

Kit punching cylinder 9023P

Even size code	Ø Punch mm.
9512	8
9514	10
9516	12
9518	14
9520	16
9522	18



It is supplied with metal case and n. 6 pairs of punches (odd sizes or even sizes).

THIS WORK UNIT FOR COPPER AND METAL BARS

9047 Portable bar bender

Bar bender built for bending copper bars in workshops or in site.

Thanks to its structure and to its integrated protractor, it works on small and large quantities of bars until 100 mm width.

This tool is equipped with 2 female bending tools of different dimension for several thickness and bending radius.

It can operate with all our power units included in our catalogue.

Technical Characteristics

Power	50 kN
Dimensions	78x150x190h mm
Weight	18 Kg
Stroke	50 mm
Adjustable stroke	30 mm
Material bending	copper 100x8/60x10 mm max.
Equipped with n. 2 bending tools and protractor.	



Mechanical end-stroke - maximum accuracy



Integrated protractor indicator

Punches for Tris unit

Round punches

They are composed by a male punch and a female die with stamped diameter to avoid mistakes during the assembly. Punch extraction is automatic by means of special springs. It is possible to request the female die, the male punch separately as spares and the inner part of the male punch

It is recommended to always regulate the stroke of the cylinder stem, in order to avoid excessive pressure.

N.B. For a correct use of round and oval punches, please do not use superior thickness to the diameter of the same punch.

Available punches for 15 mm thickness for 9046 Tris Unit.

SPECIAL SIZES ON REQUEST.



Round punches

Code	Ø mm	Male spare	Female spare	Inner spare
9100	5	9100M	9100F	9122/5
9101	6	9101M	9101F	9122/6
9102	7	9102M	9102F	9122/7
9103	8	9103M	9103F	9122/8
9104	9	9104M	9104F	9122/9
9105	10	9105M	9105F	9122/10
9106	11	9106M	9106F	9106S
9107	12	9107M	9107F	9107S
9108	13	9108M	9108F	9108S
9109	14	9109M	9109F	9109S
9110	15	9110M	9110F	9110S
9111	16	9111M	9111F	9111S
9112	17	9112M	9112F	9112S
9113	18	9113M	9113F	9113S
9114	19	9114M	9114F	9114S
9115	20	9115M	9115F	9115S
9116	21	9116M	9116F	9116S
9117	22	9117M	9117F	9117S
9118	23	9118M	9118F	9118S
9119	24	9119M	9119F	9119S
9120	25	9120M	9120F	9120S

Oval punches

These punches have the same characteristics as the round punches and in addition they are fitted with a positioning guide to avoid assembly errors.

It is recommended to always suggested to regulate the stroke of the cylinder stem, in order to avoid excessive pressure.

N.B. For a correct use of round and oval punches, please do not use superior thickness to the diameter of the same punch.

Available punches for 15 mm thickness for 9046 Tris Unit.

SPECIAL SIZES ON REQUEST.



Oval punches

Code	Ø mm	Male spare	Female spare	Inner spare
9130	7x13	9130M	9130F	9130S
9131	8x14	9131M	9131F	9131S
9132	9x15	9132M	9132F	9132S
9134	10x16	9134M	9134F	9134S
9136	11x17	9136M	9136F	9136S
9138	12x18	9138M	9138F	9138S
9140	13x19	9140M	9140F	9140S
9142	14x20	9142M	9142F	9142S
9144	15x21	9144M	9144F	9144S
9146	16x22	9146M	9146F	9146S
9148	17x24	9148M	9148F	9148S
9149	18x25	9149M	9149F	9149S

Special punches

Tool for multiple punching in only one operation



Bar cutter

It is a tool for our Tris units, made from special steel composed by a sharpened male and a female die. You can cut bars with maximum thickness 12 mm and maximum width 120 mm, or, on demand, bars with thinner thickness and of greater width (max 125 mm). Bar cutting takes place by removing one section of material equal to the width of the cutting point (10 mm).

Bar cutter

Code	Description
9155	Bar cutter 120x12
9155/30 Ton	Bar cutter 160x15 for 9046



Tool for radial bars with support guides for different bars.



Tool for the cutting of flexible bus bars 9158

It can be used on all our Tris Units. It cuts flexible bus bars max. 100x10 mm. Easy to assemble, as all our standard tools.



Din Rail Cutter 9055 for Tris unit

It has the same characteristics of the standard Din Rail Cutting Machine Model 9050. The installation of this tool on the Tris Units is simple



Standard bar benders

Bar bender

We have standard bar bender for different thickness and width. For bar bender selection, please consult the table enclosed.
We realize bar bender on demand.

Bar bender

Code	Description
9150	V bar bender for thickness from 4 to 6 mm
9151	V bar bender for thickness from 5 to 8 mm
9152	V bar bender for thickness from 6 to 12 mm
9153	Special flat bar bender for bars from 20-40, thickness 5÷10 mm Internal radius 30 mm
9150/160	V bar bender for thickness from 4 to 6 mm for bars with width 160 mm
9151/160	V bar bender for thickness from 5 to 8 mm for bars with width 160 mm
9152/160	V bar bender for thickness from 6 to 12 mm for bars with width 160 mm.
9154/30 Ton	Bar bender for bars 160x15 mm for Tris 9046
9154/200x20	Bar bender for bars 200x20 mm for Tris 9046

9150



9151



9152



9153

Flat bar bender



Special bar benders

9154/01

It is recommended for brackets, clamps and small bars of different material.
Max. Thickness 5 mm.
Higher thickness on demand.



9154/02

It is recommended for aluminium and lined bars



Special bar benders on demand



Accessories for Tris units

Mechanical protractor 9160

It is a very practical accessory to put on the tris cylinder for measuring bar bending angles up to 90°. It is made of steel with direct reading and eccentric corrector for resetting the rod according to the thickness and elasticity of the material to bend.

9160/30 Ton for 9046 Unit



Electrical protractor 9161

Similar to the mechanical one, the electrical protractor is equipped with a micro switch and a device to automatically stop the electric control unit.

N.B. It can be used only with electric control units 9008-9009-9010.

9161/30 Ton for 9046 Unit



Positioning valve 9162

The positioning valve is supplied with male and female rapid connectors for a rapid assembly. This two-way valve can be fitted to the Tris cylinder when you use electric control units as it permits small movements of the tools and therefore an easy positioning of the bars.

