M U B E A - P U N C H

Size:

Serial No.:

Motor type:

Motor rating:

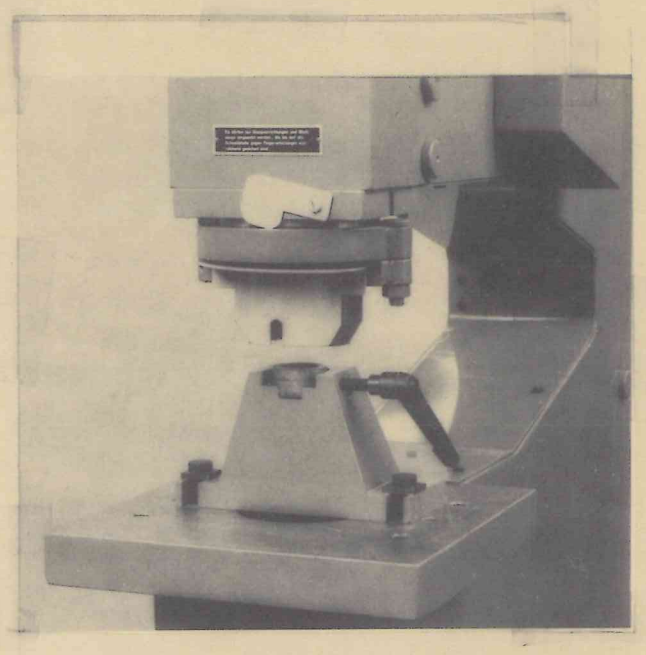
Operating voltage:

Operating Instructions

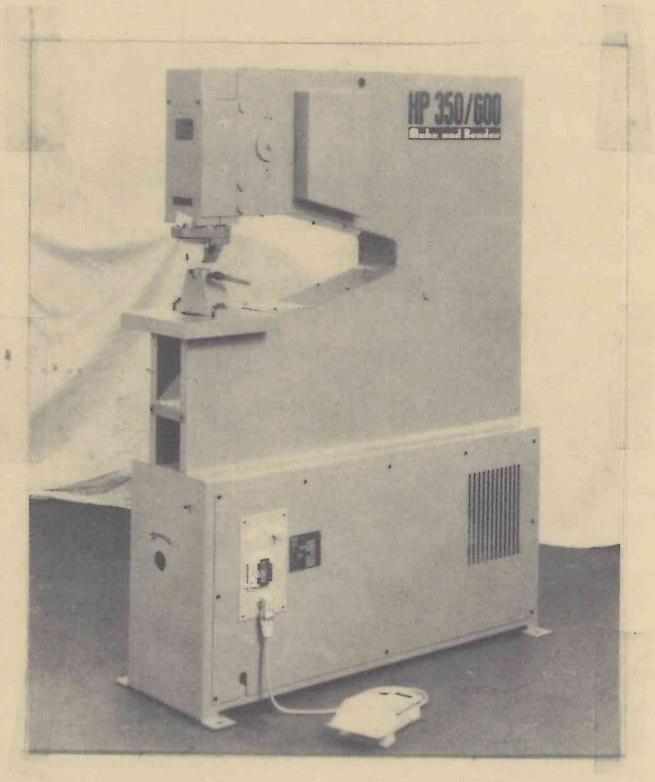
Your MUBEA Machine corresponds to the regulations for the prevention of accidents and to the machine protection law.

For safety of operation, all working stations are provided with the necessary guards.

The figures of the various working stations and tools in these operating instructions do not show these guards as otherwise the functional representation would be affected.



Guard for punching tool



General

You have made a good choice, as you will soon see for yourself. The experience of decades and the latest knowhow in the field of punch and shears construction are incorporated in this MUBEA Machine. As numerous satisfied customers have confirmed time and time again, it is just the daily routine handling of this machine that makes its advantages particularly apparent.

In order to be able to fully utilize the machine, it is urgently recommended that you read and follow these operating instructions carefully.

Experience shows that the machine has an unusually long service life. Components which are subject to normal wear and tear can be replaced at any time. It is important that you then ask for Original MUBEA Spare Parts exclusively. Only then the service life of the machine and uniform quality of the result of its work can be attained. This is also true if you wish to extent the range of application of your machine by adding further tools.

Shop practice will very soon show you that MUBEA Machines can effectively be complimented and are thus universally useable, at the same time, economical in operation

To give you a general picture of the components used in the construction machine and how these interact, you will find at the end of these operating instructions an exact outline of the parts with the corresponding article numbers.

If you should have any questions or problems of any kind, please get into touch with us or with our representation in your country, when present.

And another thing: Give the machine the care it deserves. You will find many hints on this throughout this manual.

Transport

When transporting the machine by truck, stabilize by bolting to sturdy planks.

The weight of your machine is stated in the enclosed leaflet. When handling the machine by crane, insert a rigid bolt into the bore hole of the machine for lifting.

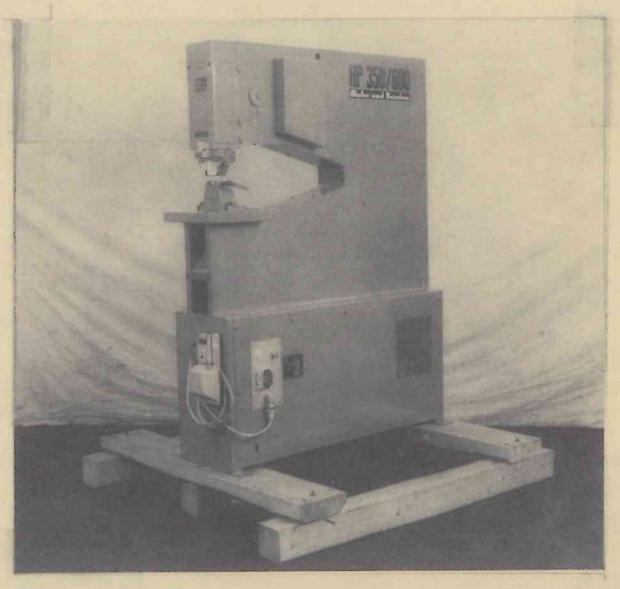


Fig. 1: Transporting the machine by truck

Erection

The working positions of the machine are at normal working levels.

Adjustment of level by platform or foundation basis is therefore unnecessary.

All the necessary data for providing a foundation level with the ground for stationary installation are given in the enclosed foundation plan. Tighten the foundation bolts securely after the grouting-in compound has set. Dowel plugs may be used instead of foundation bolts.

Check whether the machine is properly vertical.

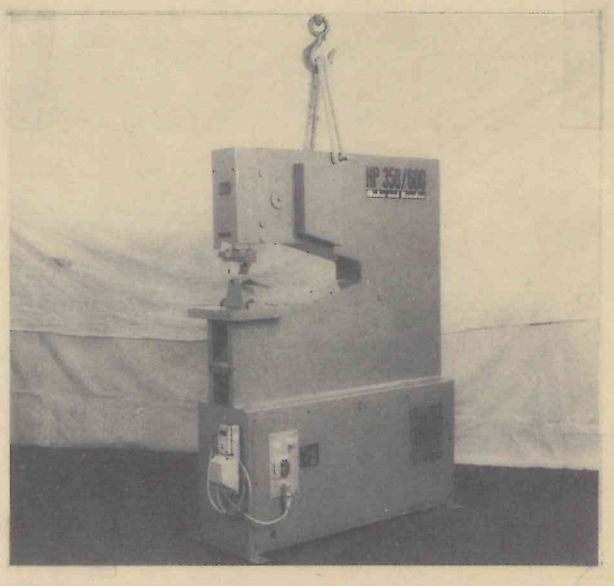


Fig. 2: Transporting the machine by crane

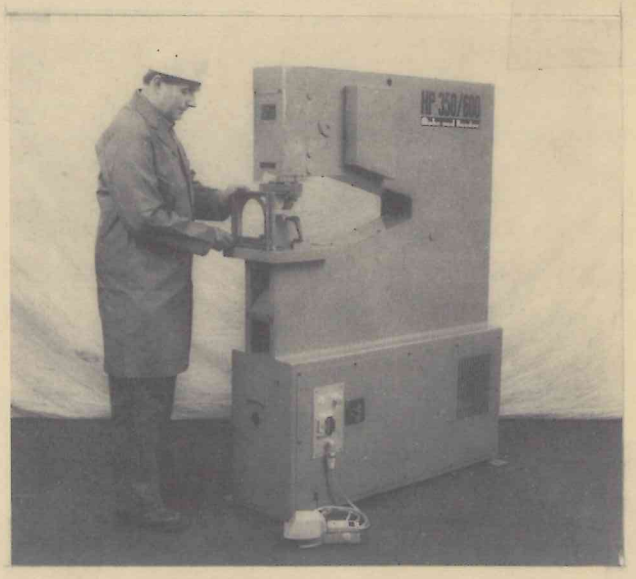


Fig. 3: Checking the upright position of the machine

Connection and Setting Going

In the base of the machine there is the drive with respective oil reservoir. Check whether the reservoir is filled up to approx. 3 cm under the reservoir cover. Checking is carried out by the filler cap.

When refilling, observe the maintenance prescriptions!

The machine is installed ready for work. In the base of the machine there is the main switch in the protective housing of the front panel to which the feeder line should be routed. Connection has to be carried out by an electrical expert as per the enclosed wiring diagram (check uniformity of tension).

Switch on the motor briefly: If the motor does not rotate in the direction of the arrow, 2 phases have to be changed over. For checking, the motor should start up briefly in inching operation only.

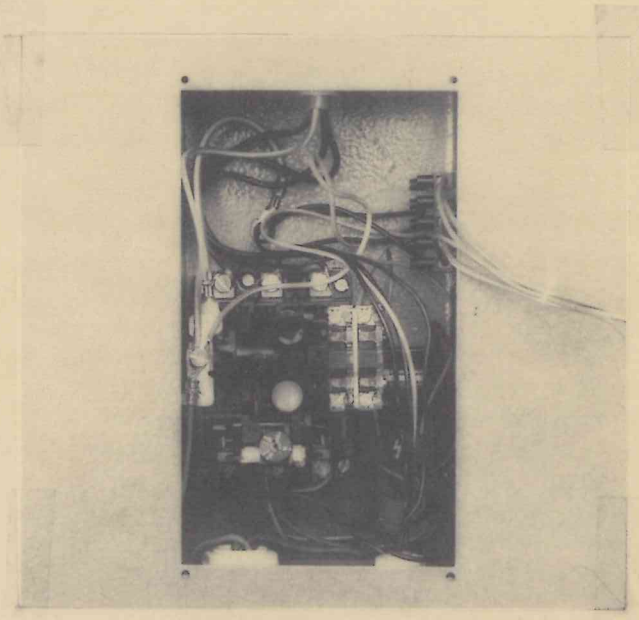


Fig. 4: Connection of the power supply

Prior to setting going of the machine, check whether the slides move properly and the tools are properly seated and set. For this purpose actuate the engagements and tipped the slides gradually into the lower dead position. (Refer to section: "Electr. foot engagement")

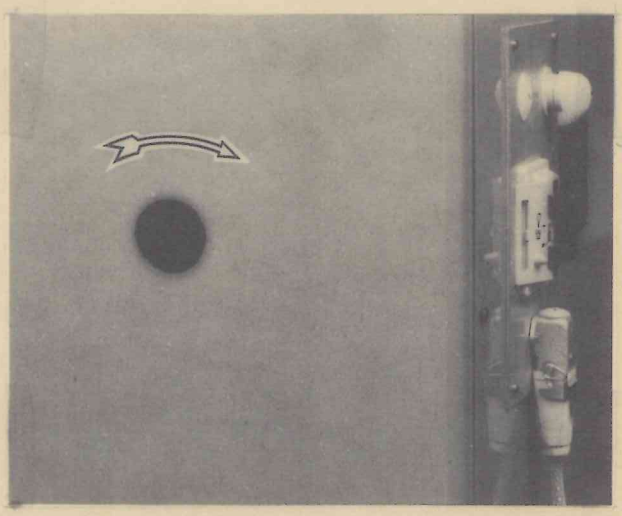


Fig. 5: Observe direction of rotation of the motor

Lubrication of the Machine

Lubricant

The machine should be exclusively l u b r i c a t e d with o i l; the same oil may be employed for all lubrication points.

Following brands of oil may be used optionally:

ARAL-Deganit B 220
Viscosity 130 mm^2/s at 50°C

SHELL-Tonna Oil T 220
Viscosity 128 mm^2/s at 50°C

MOBIL OIL AG-VACTRA Oil No. 4
Viscosity 125 mm^2 at 50° C

ESSO AG-MILLCOT K 220
Viscosity 120 mm^2/s at 50° C

BP-Energol HP-C 220
Viscosity 127 mm^2/s at 50° C

Fig. 6: Lubrication

FOR MACHINES SUPPLIED TO THE U.S.A.

Lubricate daily with oil

Lubricant:

CHEVRON VISTAC OIL 150 X

Lubricating direction acc. to Lubrication chart.

Lubricate the machine thoroughly (see lubrication chart).

Lubricating is done by means of the oil gun which is included in the supplied tool set. Follow the enclosed lubrication chart and make sure that the prescribed quantities of oil are injected regularly.

Electrical foot engagement with stroke control

1.) Setting and operating switch

The selector switch for tool setting and engagement is located on the switch panel of the main switch. With the switch positioned to "Setting" the working slide can be moved gradually into its active Position by actuating the foot-switch.

In this position the punching tools can be set respectively be installed or removed.

With the selector switch positioned to "operation", the working slide moves automatically back into its initial position.

2.) Function of the foot switch

With the switch set to "operation", a total of three functions can be controlled via the foot switch:

a) Depressing the foot switch exceeding its straining point = slide performs working stroke.

b) Foot switch again releasing over the straining point = slide stops.

c) Foot switch entively released = slide moves back into its initial position.

3.) Stroke control

The adjustibility of the stroke length or stroke position is located under the guard at the machine body. For specific fabricating work it is not necessarily required to perform the entive stroke.

For time saving reasons, only the actually required stroke should be performed.

Adjusting the stroke position or the stroke travel length is accomplished by the adjustable control rings attached to the control bar.

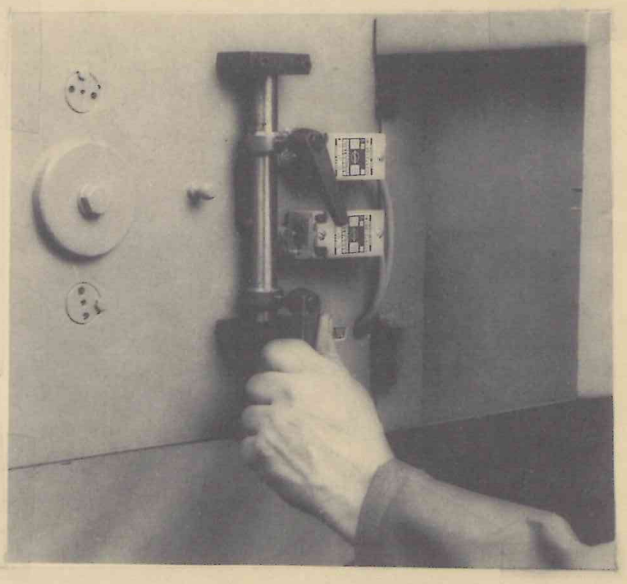


Fig. 7: Stroke adjustment

THE PUNCH

PUNCHING DEVICES AND TOOLS ARE ALLOWED ONLY IF THEY ARE SUFFICIENTLY SECURED AGAINST FINGER INJURIES!

WHEN APPLYING OPEN TOOLS FOR COMPONENTS WHICH NEED TO BE BROUGHT CLOSELY TO THE PUNCHING ZONE, THE RESPECTIVE SAFETY AND REGULATIONS FOR THE PREVENTION OF ACCIDENTS MUST STRICTLY BE OBSERVED.

1. General

As the punch operates hydraulically and due to the long stroke, the application of the punch is nearly unlimited. The large mounting table allows beside the use of smaller and bigger punching tools also the application of press brake tools.

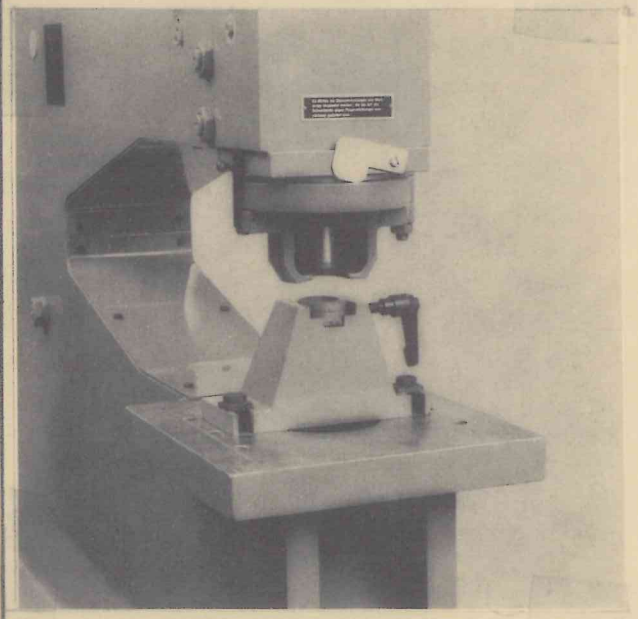


Fig. 8: Normal set-up of the punch

The machine is standard equipped with punching tool up to 1 1/4 inch hole diameter. Bigger punching tools are available on request and belong to the MUBEA Standard program.

2. Fixing of punches

The working slide is furnished with an exchangeable punch holder. Applying a coupling nut the punch holder adapts punches up to 1 1/4 inch range of diameter.

3. The punch saddle

The punch saddle with its large mounting surface ensures a secure positioning of the tooling. The standard machine accepts dies up to 1 1/4 inch hole diameter.

For removing the saddle from the machine only the two fastening screws "A" (Fig. 9) need to be loosened.

The large saddle plate ensures a nearly unlimited mounting of all special-facilities. Press brake tool receive an especially stable support.

4. Setting the tools and aligning to the hole center

The machine is being delivered with the punch and die exactly aligned. Regularly check the Position of the tools during punching by inching the punch into the die under jog operation.

For aligning the punch and die loosen the saddle screws "A" and move the saddle "B" in proper position. (Refer to Fig. 9) When punch and die have been properly set, retighten the saddle screws firmly.

Repeat this procedure whenever changing tools.

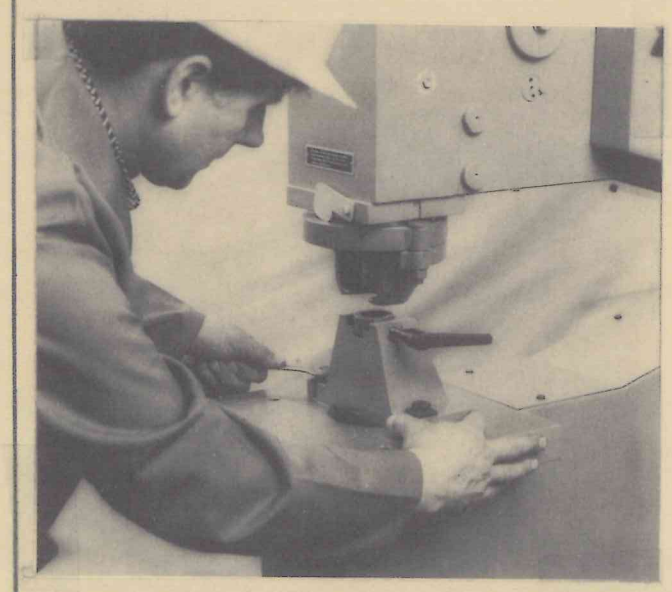


Fig. 9: Setting the punching tools

The shearing gap should be about 5 % of the thickness of the material to be punched. (When punching a thickness of 5/8 inch, the diameter of the die hole must be 1/16 inch larger than the punch dia. The shearing gap is then 1/32 inch.) Please therefore always specify the thickness of the material when ordering.

5. Anti-Twist Device for Shaped Punches

Square, rectangular or other shaped punches must be secured against twisting. For this purpose a slot is provided at the contact surface of the punch in the punch holder and on each standard punch on the head surface.

A 4,7 mm dia. pin should be introduced into this groove.

6. The Stripper

The rigid, hight adjustable and swing-away-type stripper is being held by a bracket plate which is firmly mounted to the machine body. This bracket plate simultaneously serves as a protection against dangerous movements. A spring loaded locking lever aligns the stripper in its normal position and also prevents the stripper from sagging. For hight adjustment and for tool changing the locking lever needs to be swung-out and the stripper lower part needs to be turned. The guard plate at the front side needs to be removed every time when making adjustments. For changing tools the punch slide must be moved into its lower dead center position. This will provide better access to the tool and the coupling nut.

7. MUBEA standardized Punches and Dies

MUBEA punches and dies are available in 4 standard sizes.

Size I up to 15 mm dia.

Size II Over 15 and including 30 mm dia.

Size III Over 30 and including 40 mm dia.

Size IV Over 40 and including 50 mm dia.

For punching holes in the flanges of channels or beams we supply special flange dies with a surface inclination corresponding to the slope of the section flange.

For punching holes in small angles beams, tees or channels near the web, eccentric dies are required having an off-center hole near the end of the die. When fitting eccentric dies, slide the punch saddle backwards until the punch and die hole are again co-axial.

Ask for the supply of the complete schedule of MUBEA standard punches and dies.

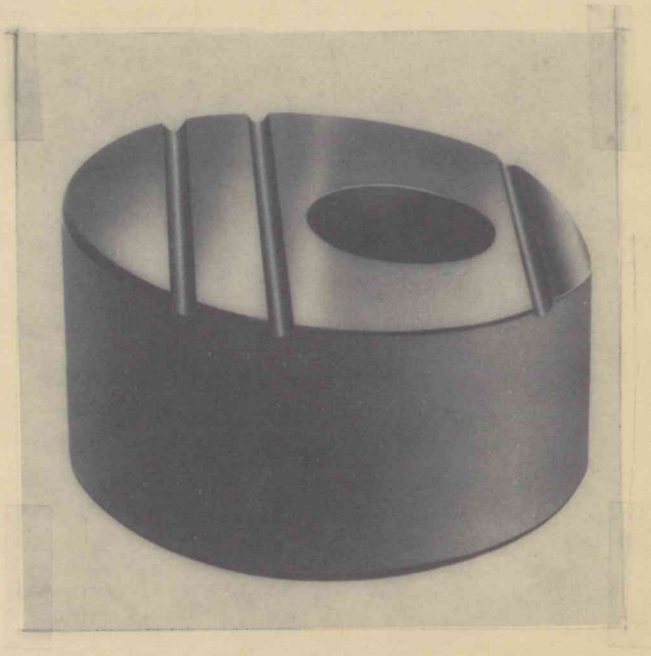


Fig. 11: Flange die for beams

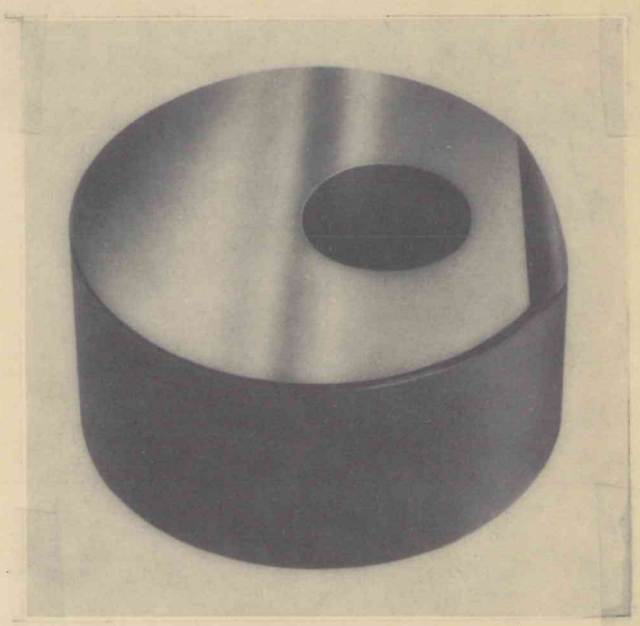
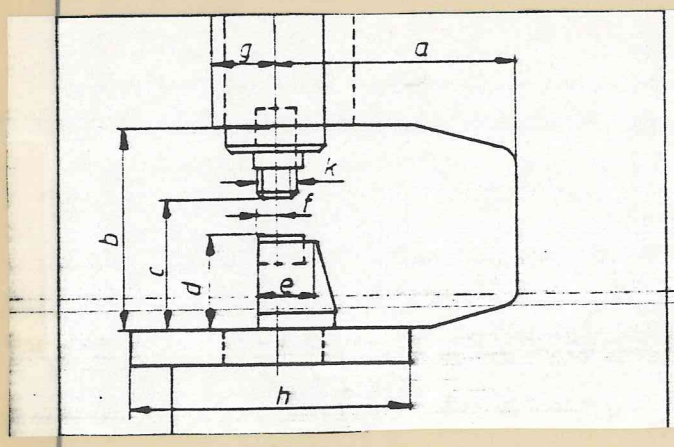


Fig. 12: Eccentric die for small angles



	HP 350 - 600		HP 450 - 760	
	mm	inch	mm	inch
a	610	24 1/64	760	29 59/64
b	255	10 3/64	255	10 3/64
c	213	8	215	8 5/64
d	115	4 17/32	115	4 17/32
e	55	2 11/64	55	2 11/64
f	22,5	57/64	22,5	57/64
g	60	2 23/64	60	2 23/64
h	300 x 300	11 13/16 x 11 13/16	300 x 300	11 13/16 x 11 13/16
k	M 42 x 2		M 42 x 2	

Fig. 13: Punch saddle dimension, Model HP. Domestically / USA

7. MUBEA standardized Punches and Dies

MUBEA punches and dies are available in 3 standard sizes.

Size H II up to 1 1/4 inch dia.
Size H III Over 1 1/4 inch and including 1 9/16 inch dia.
Size H IV Over 1 9/16 inch and including 2 inch dia.

For punching holes in the flanges of channels or beams we supply special flange dies with a surface inclination corresponding to the slope of the section flange.

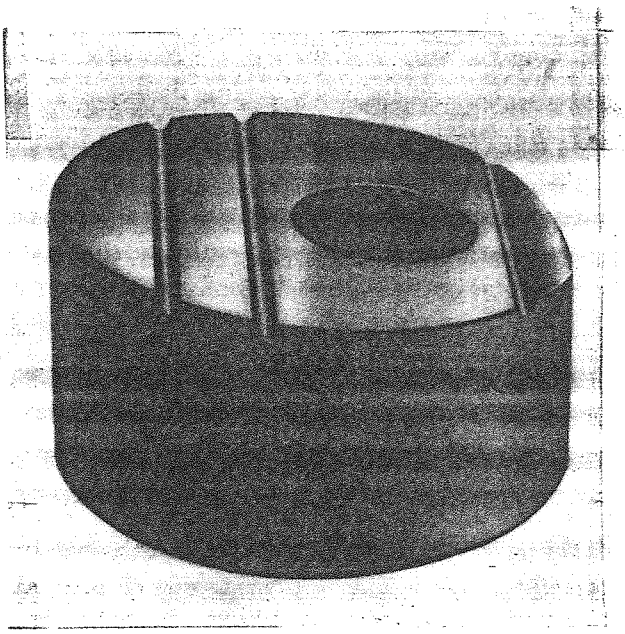


Fig. 11: Flange die for beams

For punching holes in small angles beams, tees or channels near the web, eccentric dies are required having an off-center hole near the end of the die. When fitting eccentric dies, slide the punch saddle backwards until the punch and die hole are again co-axial.

Ask for the supply of the complete schedule of MUBEA standard punches and dies.

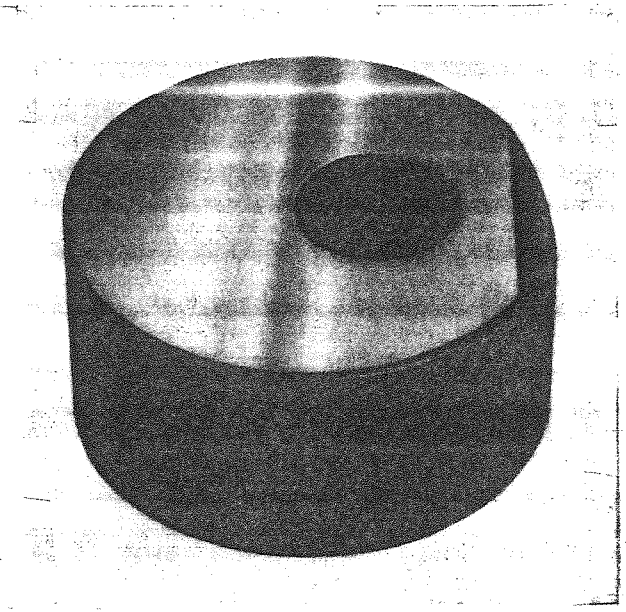
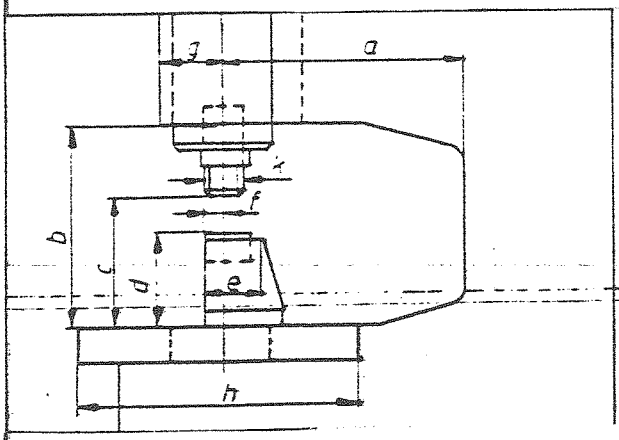


Fig. 12: Eccentric die for small angles



	HP 350 - 600		HP 450 - 760	
	mm	inch	mm	inch
a	610	24 1/64	760	29 53/64
b	255	10 3/64	255	10 3/64
c	213	8	215	8 51/64
d	115	4 17/32	115	4 17/32
e	55	2 11/64	55	2 11/64
f	22.5	57/64	22.5	57/64
g	60	2 23/64	60	2 23/64
h	300 x 300	11 13/16 x 11 13/16	300 x 300	11 13/16 x 11 13/16
k	M 42 x 2		M 42 x 2	

Fig. 13: Punch saddle dimension, Model HP. Domestically / USA

8. Regrinding the punching tools

Regrind punching tools at their faces only to prevent a change in the clearance between punch and die. To extend service life of the tools regularly wipe the cutting edges with oil.

In many cases it is more convenient to order new tools. This is more economical in the long run and the ground finish is perfect.

9. Special Tools

The large MUBEA programme of standard tools makes available all the common special tools at short notice. The special features of the MUBEA punch design further offer a wide variety of possibilities for employing special tools, though these cannot be described briefly. The illustrated MUBEA literature gives a better review of this area.

a) Special punch equipment for accomodating punches and dies with a cutting diameter of up to 2 inch

All punching tools, i.e. round, square, rectangular and elongated hole tools which are within the 2 inch cutting range can be accommodated in this equipment:

The complete equipment consists of punch holder, M 64 lock nut with a through hole of 2 inch, insert with through hole of 1 9/16 inch, stripper, die holder H IV/H III, saddle with H IV seat.

When ordering the tools the thickness of the material to be punched and the mechanical properties should be stated.

b) Special punching equipment for accommodating punches and dies exceeding 2 inch including 4 inch cutting diameter.

All punching tools i.e. round, square, rectangular and elongated hole tools, which are included in the 2 inch up to 4 inch cutting ranges can be accommodated in this device, consisting of punch holder, stripper, saddle and saddle cap.

Removal of the punch holder is accomplished with the slide in its lower dead center. The lower part of the stripper needs to be screwed off. In this position the locking and fastening screw for the punch holder can be screwed off out of the slide and the punch holder can be removed from the slide.

Now the punch holder for punching tools within the punching range of 2 inch up to 4 inch can be installed and bolted under the slide. Fixing the punches is accomplished by means of a fastening and locking screw.

In the case of shaped punches (elongated hole and rectangle) the order should state whether the tools are to be employed longitudinally or laterally in the machine. In addition the thickness of the material to be punched and the mechanical properties should be given.