OPERATING INSTRUCTIONS AND SPARE PARTS LISTS

Mubea Original Plate, Bar and Section Shear with Coper

MODEL MUBEA BF

Machine-No.:

Motor type:

Motor power:

Operating voltage:

Equipment of machine:

The following pages of the Operator's Manual are valid for the delivered machine:

OPERATORS MANUAL

Yes	No		Page
X		General	1– 4
X		Clutch and engagement	5– 6
X		Lubrication	7
X		Plate shear	8–10
X		Coper-Notcher	11–14
X		Section shear	15–16
X		Section shear	17–18
	X	PMA knives	19–23
X		PMG knives	25–29
X		Schema of hand lubrication	31
X		Foundation plan	33
X		Accessories	35

PARTS LIST

Yes	No		
X		Fig. 1	Frame assembly
X		Fig. 2	Flywheel assembly
X		Fig. 3	Eccentric shaft assembly
X		Fig. 4	Plate shear, slide assembly
X		Fig. 5	Section shear, slide assembly
X		Fig. 6	Engagement, assembly
X		Fig. 7	Shear blades, bar shear blades, assembly
X		Fig. 8	Coper-Notcher assembly
	X	Fig. 9	Automatical section knives assembly
X		Fig. 10	Section shear knives assembly PMG
X		Fig. 11	Plate hold-down, bar hold-down, section mitre guide assembly
X		Fig. 12	Guards assembly
X		Fig. 13	Electrical equipment
X		Fig. 14	Punch, Slide Assembly
X		Fig. 15	Foot Engagement
X		Fig. 16	Covers

OPERATORS MANUEL

You were right when choosing our machine: you will confirm this very soon. Experience of decades and the most recent knowledge in the field of punch and shear building are united in this original MUBEA machine. Many satisfied customers confirm again and again that just the daily work with this machine makes evident its outstanding advantages. So that also you can fully utilize the advantageous features of our machine, we ask you urgently to study thoroughly the present operating instructions and to follow them.

This machine having a very long life as experience has shown, it will, of course, be necessary to replace from time to time some parts worn out during normal use. As söon as this necessity becomes clear it is of importance that you buy MUBEA original spare parts. Only in this way the wanted life time and always constant quality can be ensured. The same is applicable if you wish to extend the field of application of your machine by adding further tools.

Practice will within a very short time convince you that just the MUBEA machines can be completed in a very efficient manner so that they become universally usable and at the same time are rational in operation.

In order to give you a clear idea of the component parts of which this machine has been built and of the manner, they are interacting which each other, the present operating instructions are followed by a parts list showing designation of the single parts and indication of the parts numbers. These numbers are frequently indicated in the present instructions so that you are able to find all interesting details in the following list.

If, however, there should arise questions to be answered or if there is the necessity to carry out work you cannot do on your part, please contact us. Our service is always at your disposal.

A further point of importance: maintain your machine in such a careful manner as it is adequate for the value of the machine. Some indications in this respect are contained in the instructions.

Transportation and handling

When transporting the machine by means of a crane, the crane hook should be inserted into the eyelet for which provision has been made for this purpose.

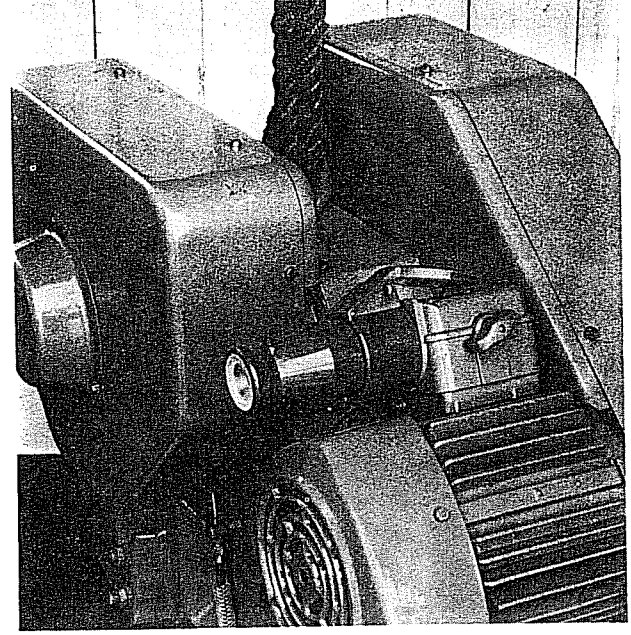


Fig. 1: Handling of machine by crane

When transporting the machine by a truck, secure the machine in a safe manner by means of bolting to heavy planks. Support the machine against tilting to the side.

The weight of your machine is indicated in the attached leaflet.

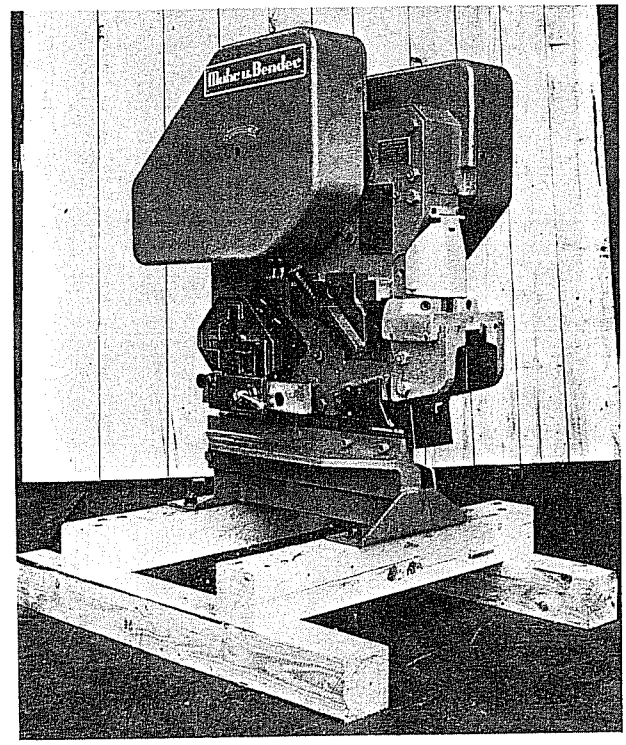


Fig. 2: Transportation of machine by truck

Mounting

Machines purchased with steel base or rotary base, can be placed on a even factory floor without further anchoring (the steel base or the rotary base can at any time be purchased from us). In this way, you can avoid a foundation as otherwise required).

For foundations to be made up of brick-work, use our foundation plan (is attached). Anchoring bolts must firmly be tightened after the grouting mass has set.

Check the vertical position of the machine.

As in the case of the steel base, also undercarriages are supplied by us at any future date. If you already dispose of such under-carriage, take care that the floor where it is placed is even and moreover that wheels are locked.

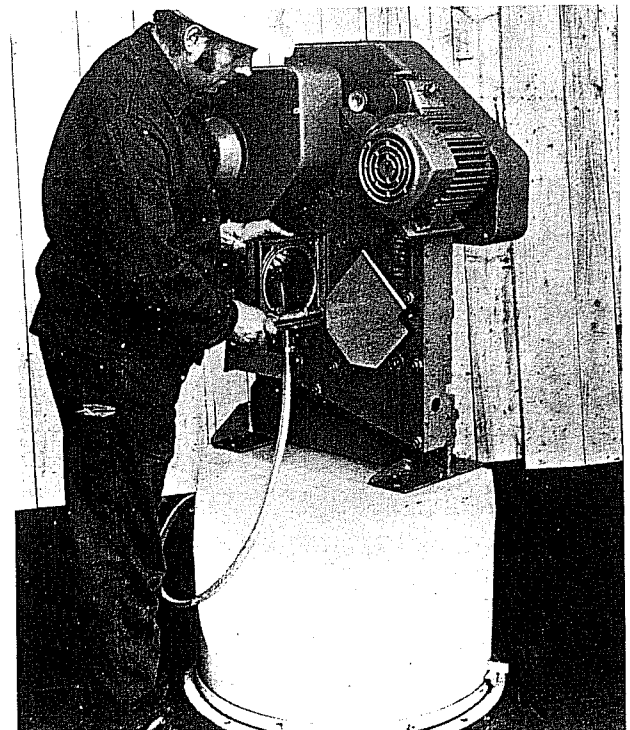


Fig.. 3: Checking of the stand of the machine

Connection and putting into operation

The machine has been supplied to you in ready-for-operation condition, as you can see from the tag on the motor. The motor has been wired for the operating voltage specified by you. The only you must do is to connect the connection cable to the plug supplied with the machine – that's all.

Before putting the machine into operation the drive gear must be turned by hand in the direction indicated by the arrow. When doing so, the engagement must be operated so that the slides can repeatedly be moved downwards and upwards. At the same time you must check the irreproachable function of the working slides, whether or not the tools are properly mounted and adjusted.

Now, the motor must be started for a moment: if the drive gear does not rotate in the arrow direction, 2 phases must be exchanged.

The machine must be lubricated thoroughly (See lubrication plan).

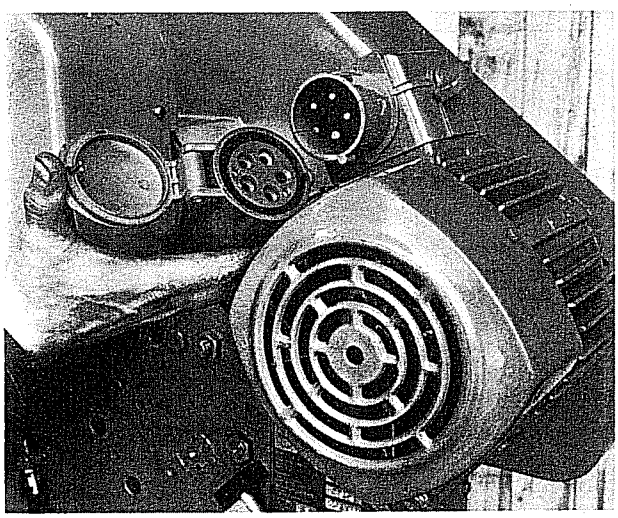


Fig. 4: Connection for power supply

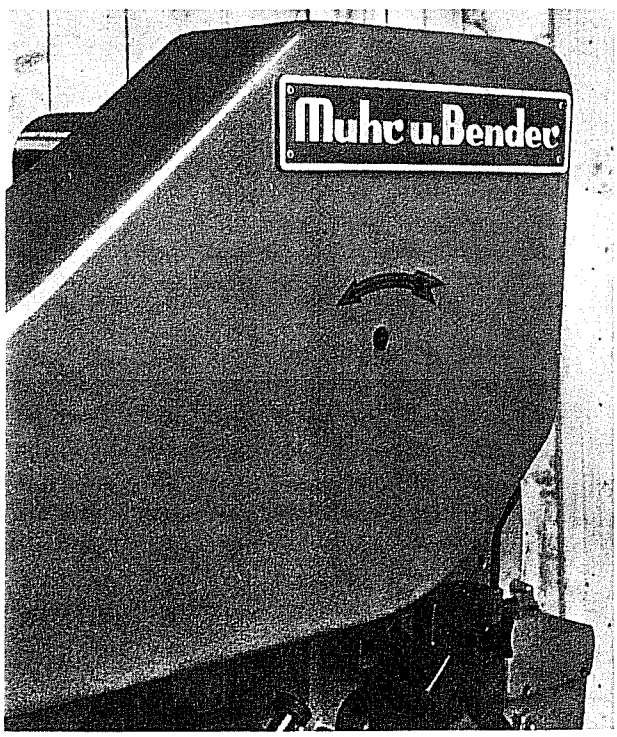


Fig. 5: Take care of the proper sense of rotation of the fly-wheel

CLUTCH AND ENGAGEMENT

1. Clutch

The machine is equipped with the well-proved rugged Mubea rolling key clutch assuring reliable work.

When the clutch is disengaged, the eccentric shaft is in rest when the slide is in its upper dead position, whereas the drive gear is rotating on its pivot.

By actuation of the engaging the trip arm 378 is swung away so that the stop rail 166 is released. By the action of tension spring 164 rolling key 165 is drawn into engaging position so that the eccentric shaft 145 is positively connected to the drive gear. Now, the rotating drive gear entrains the eccentric shaft so that the slide is moved.

After one complete revolution of the eccentric shaft the rolling key is disengaged again and the eccentric shaft remains in the upper dead position – the drive gear continues rotating.

Should after a longer time of service, you hear ticking of the rolling key the eccentric brake 248 must be readjusted by retightening the cylindrical head screw 256. (see figure 8)

Ticking can also be the consequence of too large a slide play: in such case check the slide guide and readjust it, if necessary (See "Readiustment of slide guide").

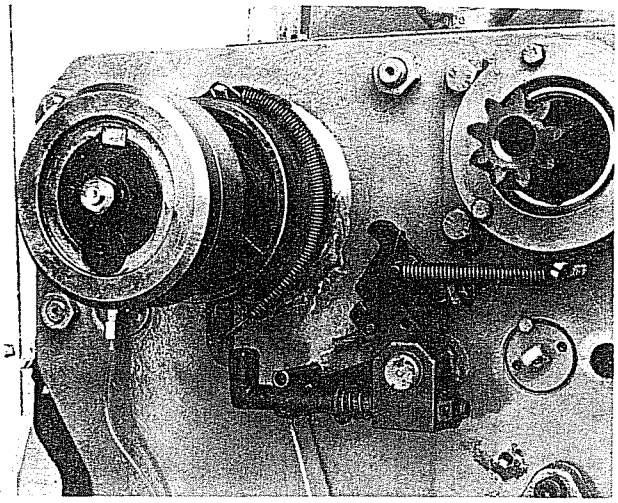


Fig. 6: Rolling key in disengaged position

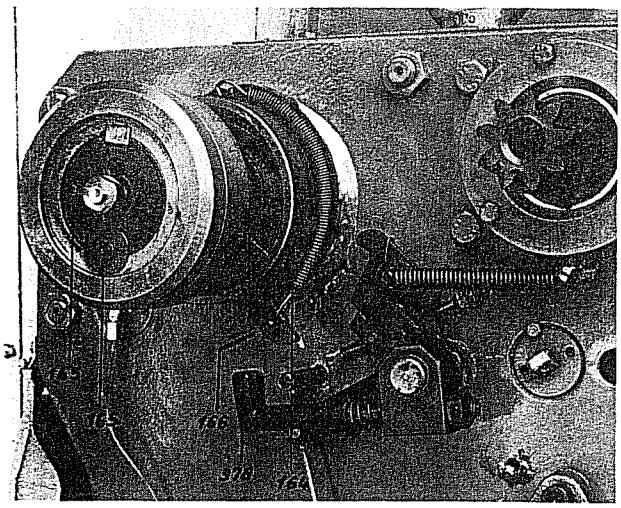


Fig. 7: Rolling key in engaged position

LUBRICATION OF MACHINE

a) Lubricants

On principle the machine must be lubricated with oil. The same oil can be used for all points of lubrication.

The following oils can be used at customers' choice:

Manufacturer: ARAL OIL BS 114
viscosity 15° Engler at 50° C

Manufacturer: DEUTSCHE SHELL
Oil: Tonna oil, viscosity 13° Engler at 50° C

Manufacturer MOBIL OIL A.G.
Oil: VACTRA oil No. ,4 viscosity 12,8° Engler at 50° C

Manufacturer: ESSO A.G.
Oil: MILICOTT K – 65, viscosity 12,5° Engler at 50° C

Manufacturer: BP A.G.
Oil: ENERGOL HP 60-C, viscosity 12° Engler at 50° C

Manufacturer: BV – ARAL
Oil: BV – oil P 20 30 A, viscosity 12° Engler at 50° C

Manufacturer: Rheinpreußen
Oil: RHP – KH 150, viscosity 15° Engler at 50° C

Manufacturer Standard Oil Company
Brand: Chevron Vistac 28 X

b) Hand lubrication

Lubrication is made by means of a compression oil pump supplied with the machine. For the purpose of lubrication the attached lubrication plan must be considered. Care must be taken that the specified oil quantities are pressed in at regular intervals.

After a certain period of operation the grease on the gears has been consumed. This can be ascertained from the increased noise of the gears. Then, the gears must be greased with a suitable gear grease (SINIT III).

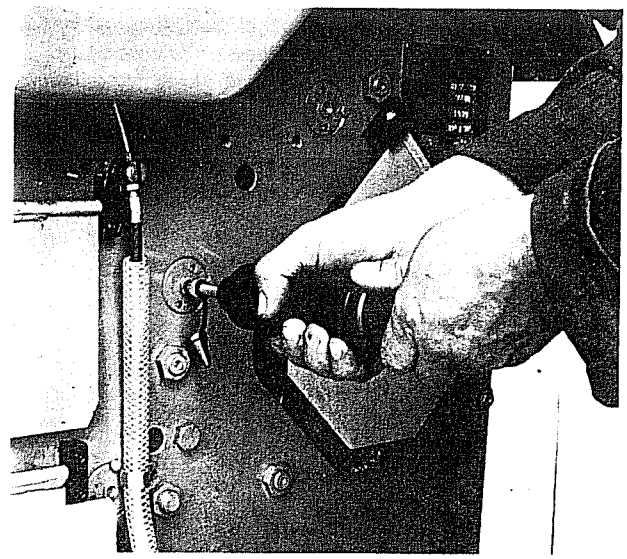


Fig. 12: Oiling by means of a hand grease gun

1. Blades

Upper and lower blades can be exchanged with each other and used on four sides

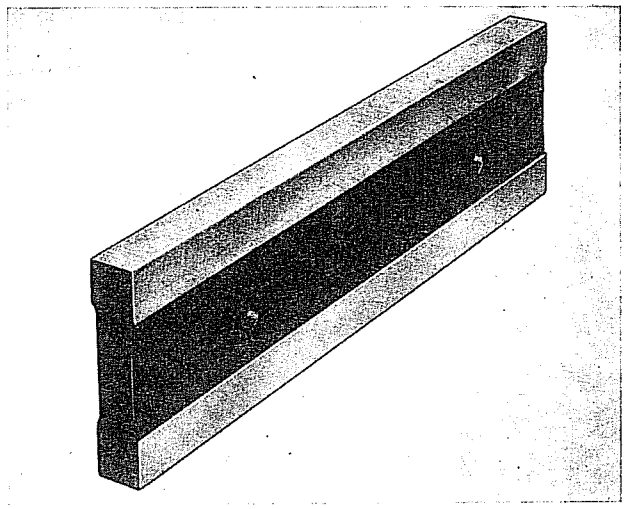


Fig. 13: Plate blade with 4 cutting edges

2. Regrinding

The blades must in due time be reground (only at the long faces). Grinding must be done in an exactly rectangular manner and the faces must always be straight so that an irreproachable fit in the slide or in the body, respectively, is ensured. Moreover, care must be taken that the cutting faces are parallel to each other so that the cutting angle is not changed. Blades, if ground down, must be replaced by new Mubea blades (order-No. MBN 50411).

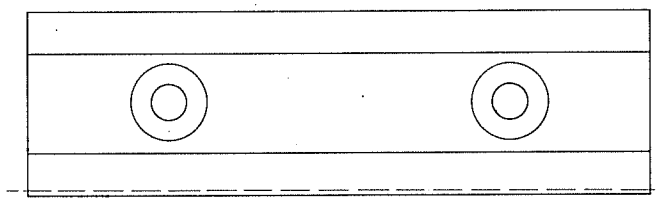


Fig. 14: Regrinding of shear blades

3. The cutting gap

The cutting gap between the blades must be adjusted for a value of 5–10% of the plate thicknesses to be handled. Measuring of the cutting gap must be done with a slip gauge whilst at the same time the slide is slowly moved downwards. At the front end the cutting gap should be narrower by about 0,1–0,2 mm than at the rear end.
The blades are adjusted for cutting all heavy plates within the range of capacity. If very thin material shall be cut, the cutting gap must be reduced by backing the blades with cardboard or metal foil.

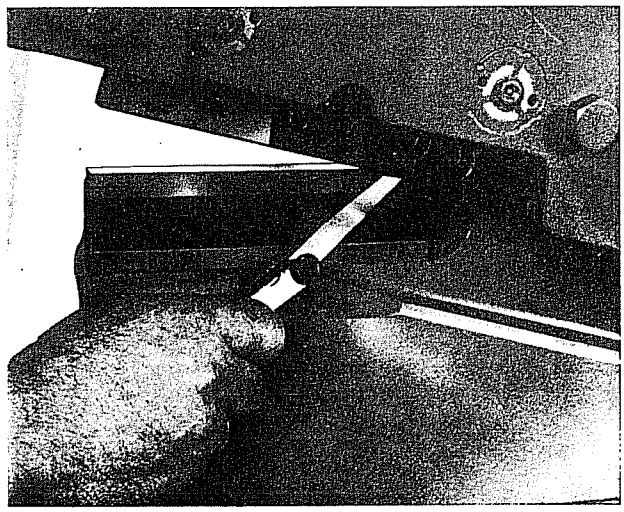


Fig. 15: Checking of cutting gap

4. Adjustment of hold-down

The stock to be cut must safely be held in horizontal position. Wrong hold-down adjustment will result in breaking out of blades or forcing apart of the shear.

5. Plate cutting

High stresses in the plate feed, as they may result in short knife pass-through shears, due to the great cutting angle, will affect passing through of the stock.

If the stress becomes too high, thus hindering passing through the following must be done: release the hold-down, lift the sheet, press it down again before the next cut and move down again the hold-down.

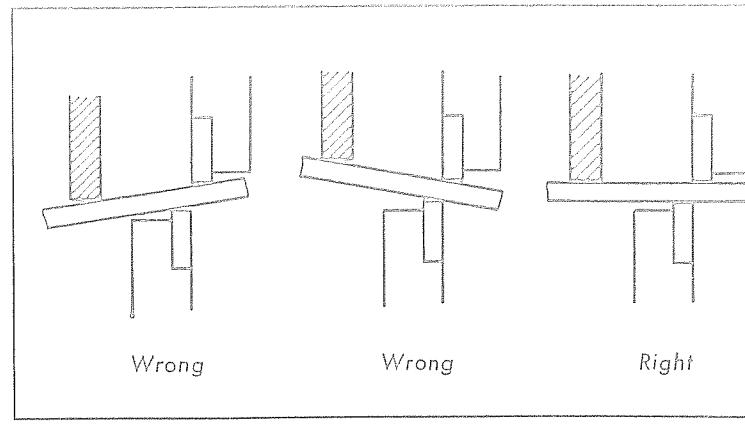


Fig. 16: Wrong and right adjustment of the hold-down

6. Flat bar cutting

For flat bar cutting without deformation we supply upon request the necessary non deform blades. These blades have a smaller rake angle: as a result of this, the capacity is changed.

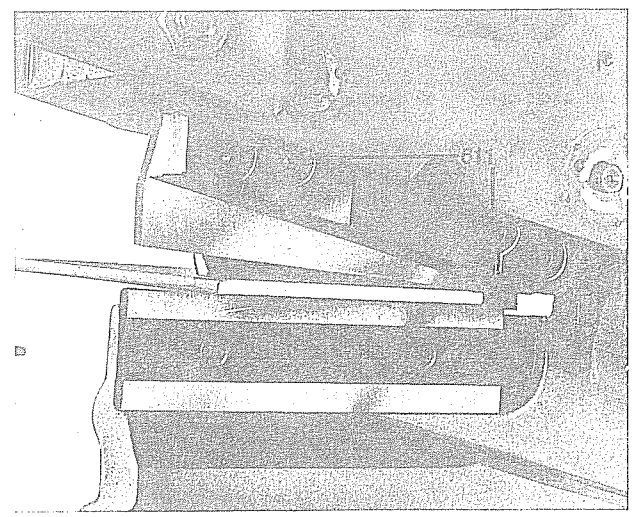


Fig. 17: Flat bar cutting without deformation

7. Replacement of blades

Remove screws 611 and 612: take away the blades. Mounting must be done in reverse order.

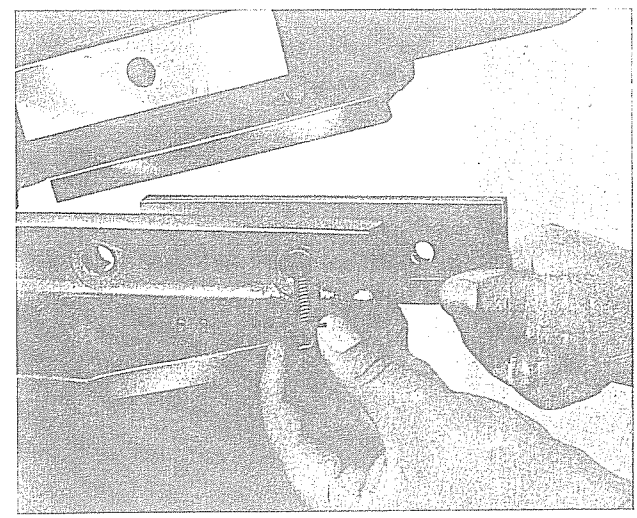


Fig. 18: Replacement of shear blades

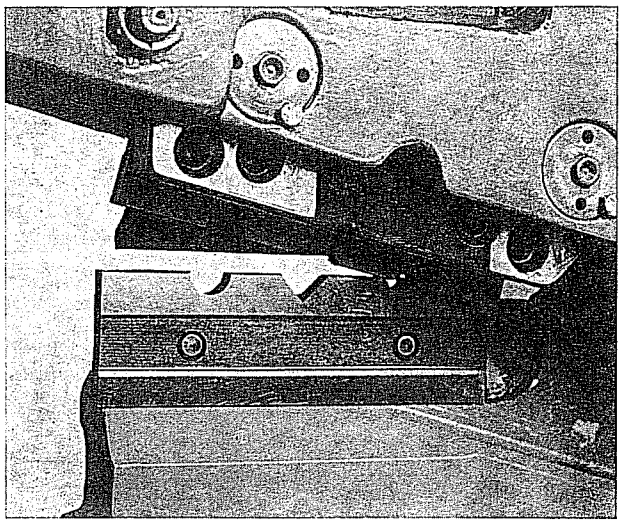


Fig. 19: Profilated blades

8. Special blades

If the plate shear shall be used for cutting round or square bars, hexagonal bars or flat sections, we supply profilated special blades.

Sometimes the blades force out the material, if the stock is too slippery or oily. Upon request we can supply grooved blades in order to eliminate such troubles.

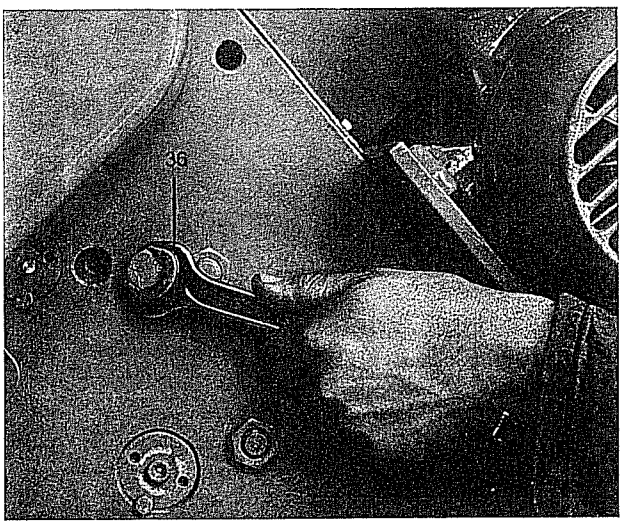


Fig. 20: Readjustment of the top slide guide (cover plate side)

9. Readjustment of the slide guide

The plate carriage can be readjusted at the front side.

Loosen the 2 hexagonal head screws 36 on the cover plate side by turning them by 3 full left-hand revolutions. Tighten the two hexagon head screws 35 at the body side, until resistance is clearly felt. Then, release the hexagon head screws 35 by 1/4 turn. Firmly tighten hexagon head screws 36.

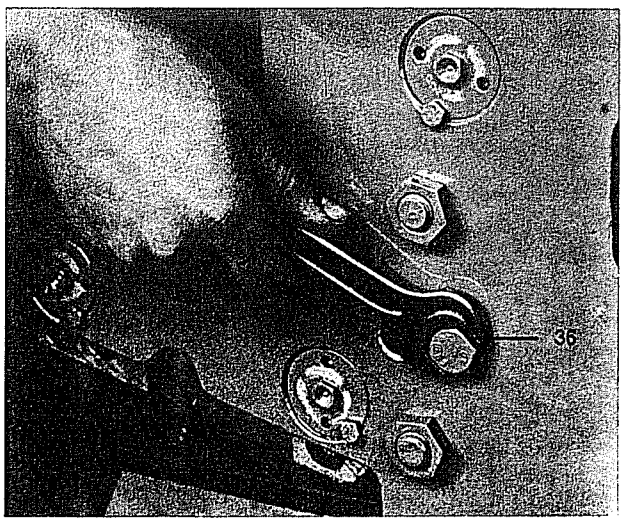


Fig. 21: Readjustment of the bottom slide guide (cover plate side)

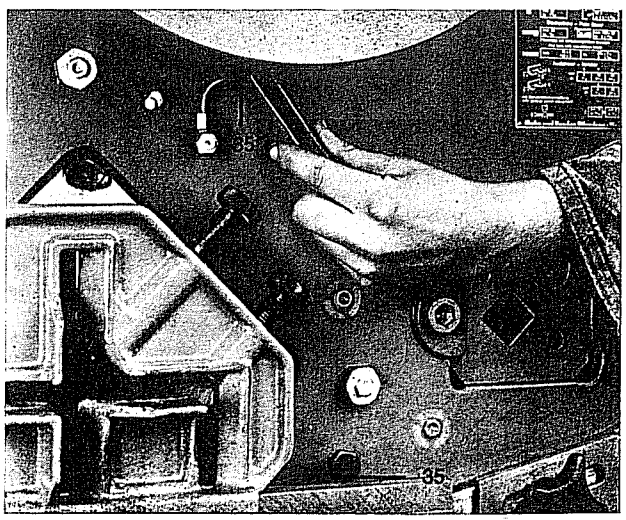


Fig. 22: Readjustment of the slide guide (body side)

1. General

In accordance with your specification the machine has been supplied to you either with triangular or with rectangular coper. Each of these two tools which can be exchanged to each other by some few manipulations is suppliable also at any future date.

2. Triangular coper

This tool is especially suitable for economical manufacture of frames of L-steel or Tees. In order to avoid upsetting in the root of the section, the point of the triangular coper has been flattened, if the section shall be bent to a frame.

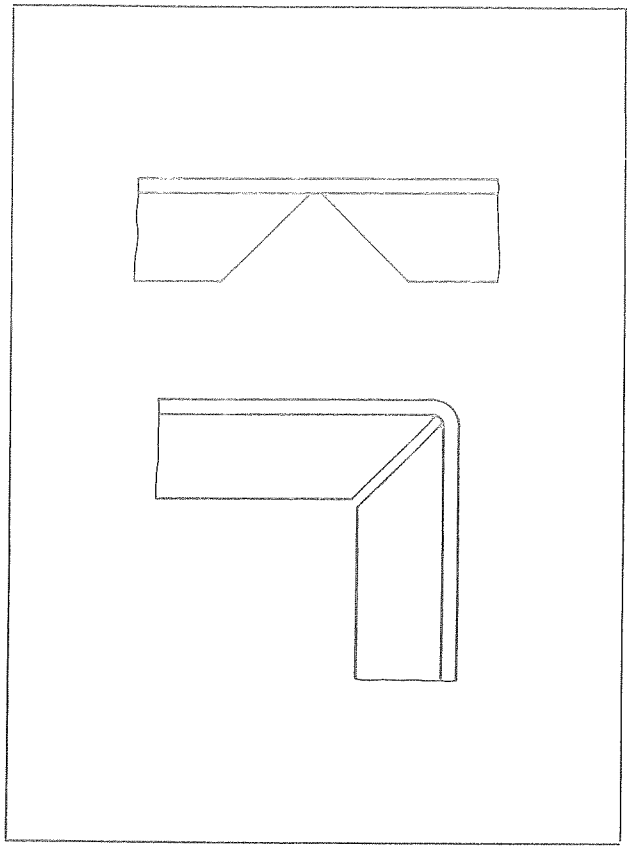


Fig. 23: Triangular coping for frame production

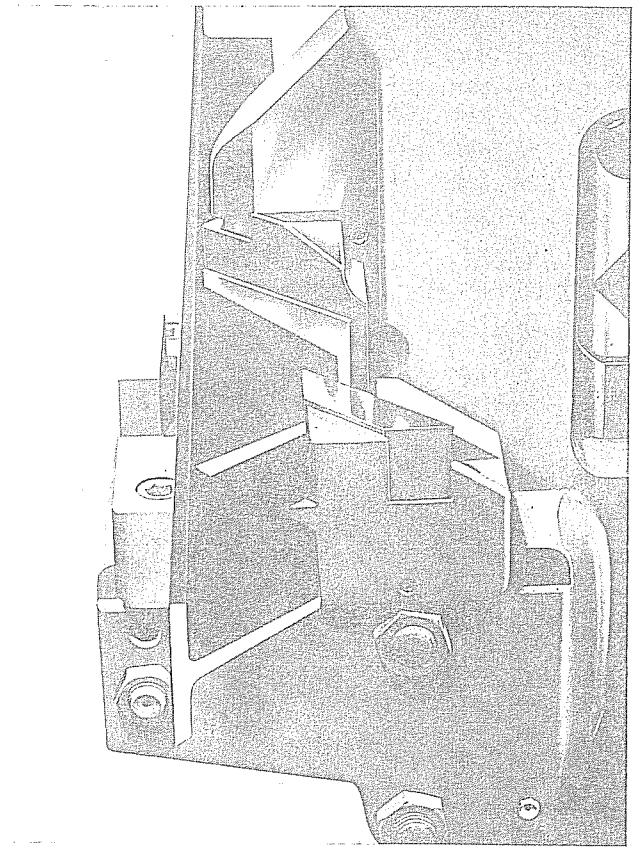


Fig. 24: Coping in web of Tee

When coping in the webs of Tees, the front transversal blade No. 657 must be removed by loosening the screw (part-No. 658) so that the flange of the Tee can be located properly.

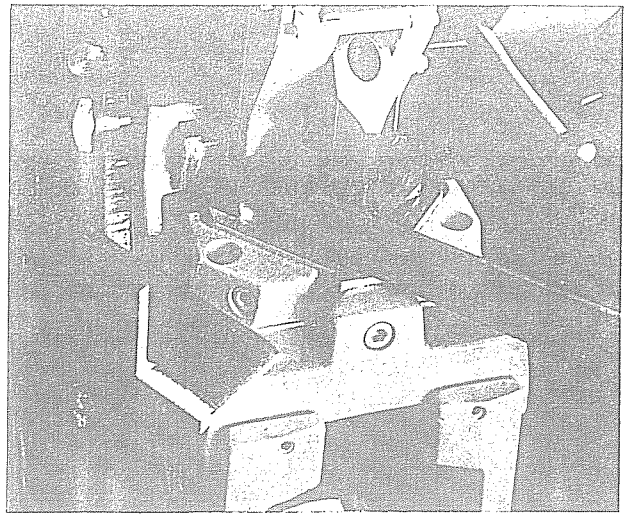


Fig. 25: Rectangular coping carried out with the triangular coping tool

Using the triangular coper, rectangular coping operations at the end of L-shaped sections can be made when the tool has been mounted with an angle of 45°. By further coping operations, coping can be done for any wanted length.

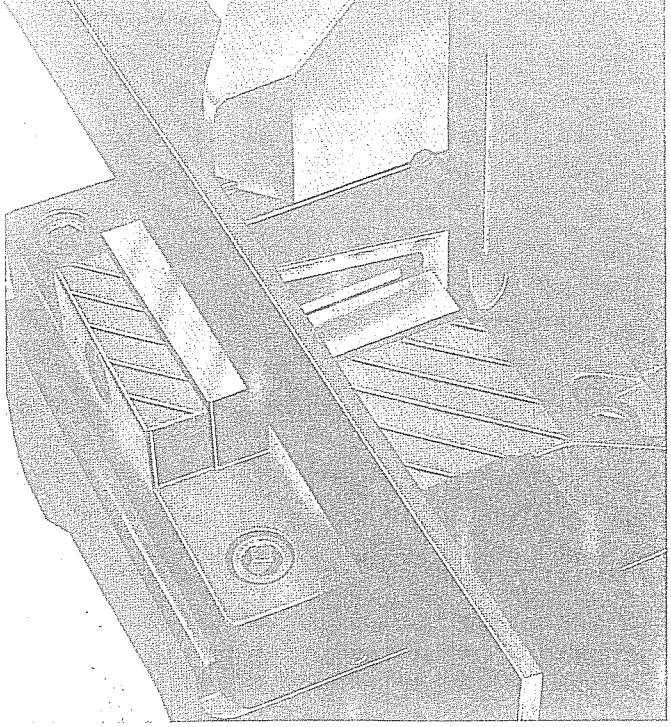


Fig. 26: Wide rectangular notching

3. Rectangular notcher

This tool is above all suitable for coping and notching in flanges and webs of sections.

Wider notches are obtained by further coping operations. The same is applicable if deeper notches are wanted.

If there are exceptional cases where triangular coping is required, the stock must be placed into the machine under a 45° angle. However, if the manufacture of frames is concerned, this procedure is unsuitable because of the sharp point.

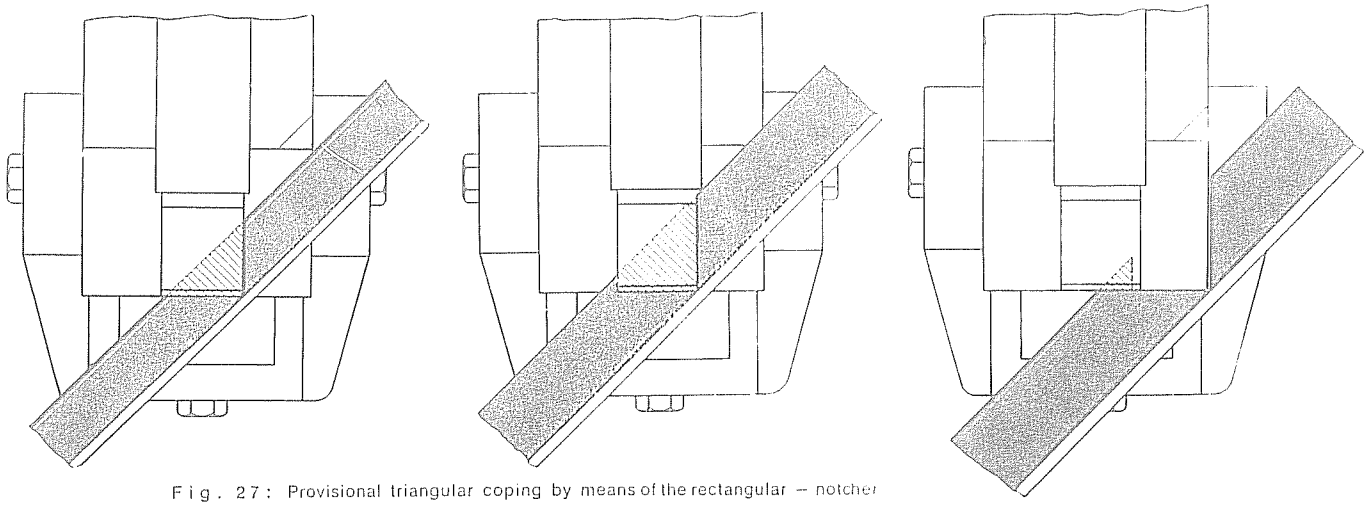
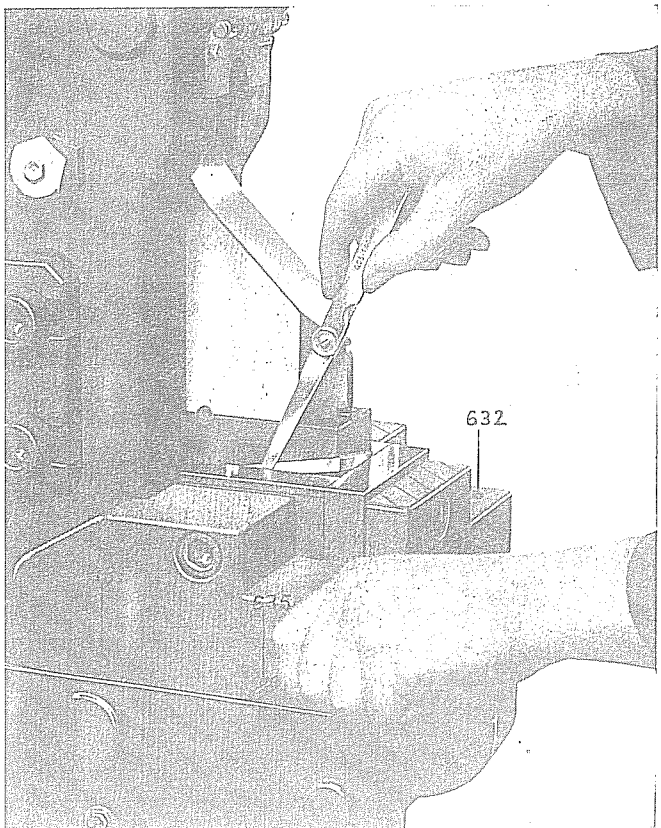


Fig. 27: Provisional triangular coping by means of the rectangular – notcher

Fig. 28: Checking of cutting gap



4. Adjustment of coping-notching tools

The coper saddle can be adjusted to all sides so that the tool lower part can easily be adjusted with respect to the upper blade. Take care that the cutting gap is regular.

The cutting gap should be about 5–10% of the material thickness to be coped. The slide must be moved down until the top notching blade immerses in the tool lower part. Measure by means of a slip gauge.

For adjustment saddle screws 632 for rectangular coper and 652 for triangular coper must be loosened. Using set screws 635 for rectangular coper and 655 for triangular coper the saddle can be brought into proper position. Firmly tighten the saddle screws.

5. Grinding of rectangular and triangular coping tools

The upper blades must be ground at their lower face only whilst the lower blades must be ground at their upper faces (Take care that the cutting gap is correct when the blades are inserted again). The cutting edges should be oiled at short intervals

6. Special tools

Also special coping tools can be mounted in the Mubea machine such as for instance coping tools for rounding-off flat bars, for coping flat steel for welding them to round bars or tubes, tube coping tools for various diameters etc.

Moreover, the coper of the MUBEA BF 30–12 (BF 10) machine can be equipped with a punching appliance (See fig. 33)

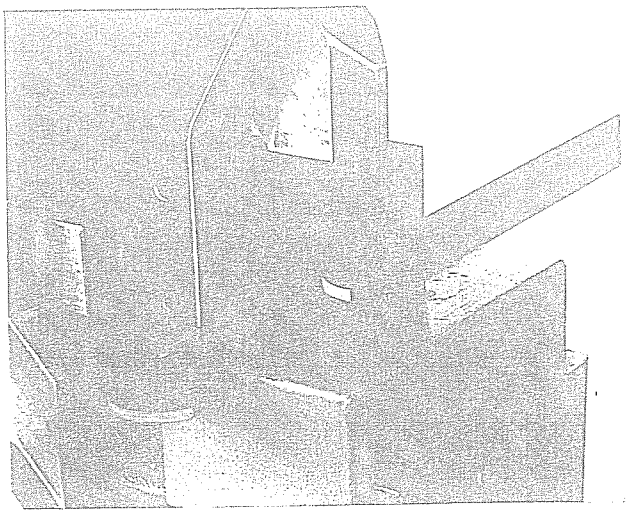


Fig. 29: Flat bar separating tool

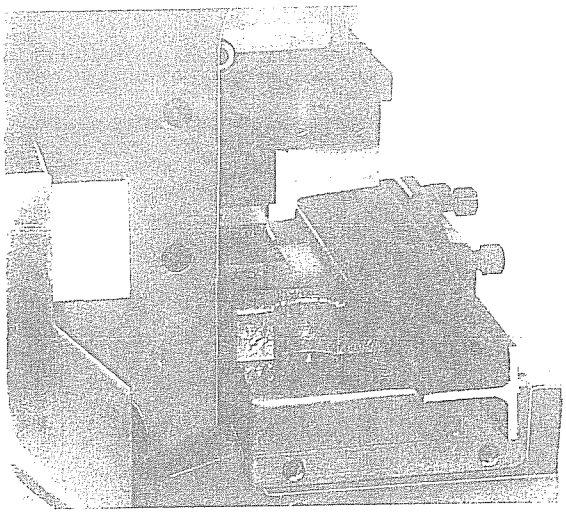


Fig. 30: Window frame tool for web coping

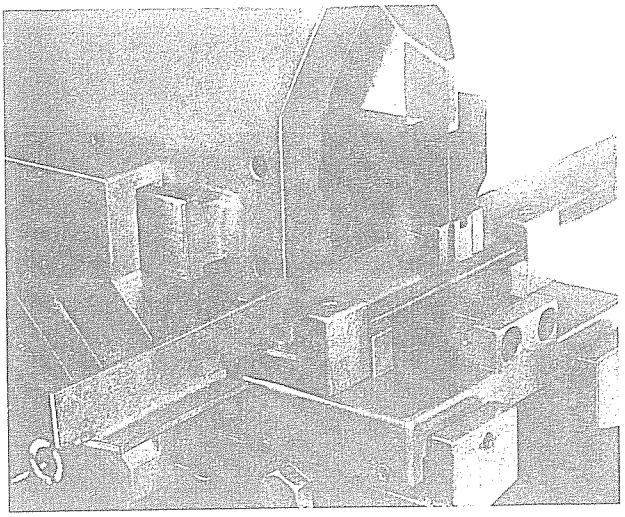


Fig. 31: Rounding-off tool

7. Special equipment

If you wish to cope without previous marking, we supply you special supporting tables, pattern rails etc.

Please, let us have your inquiries. We are well prepared to find out the working method being the most economical one for your enterprise.

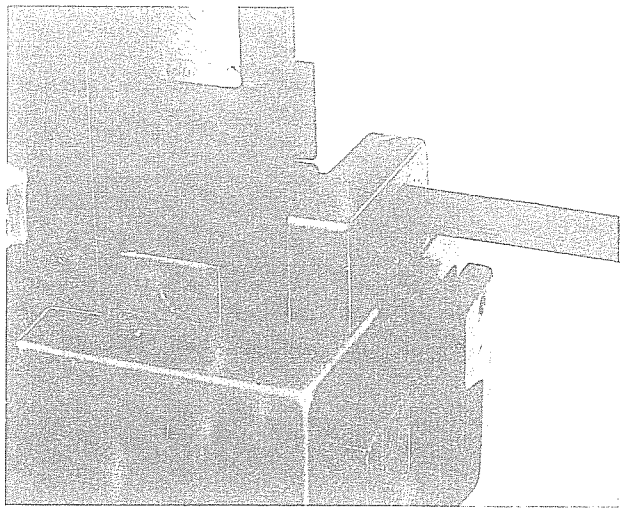


Fig. 32: Tube coping tool

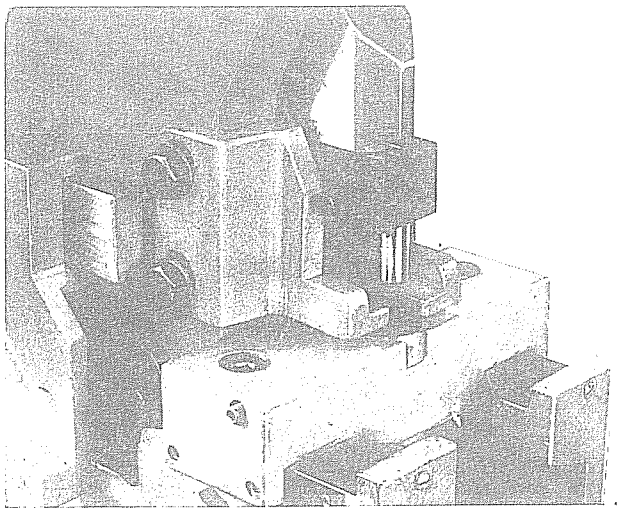


Fig. 33: Hole punching tool

When using punches other than round insert pin from operators left side.

Important note

The coper is equipped with a guard which can be swung upwards and in this position is held by means of a spring retainer. We recommend strongly to let the guard in its down position, if the coper is not in use.

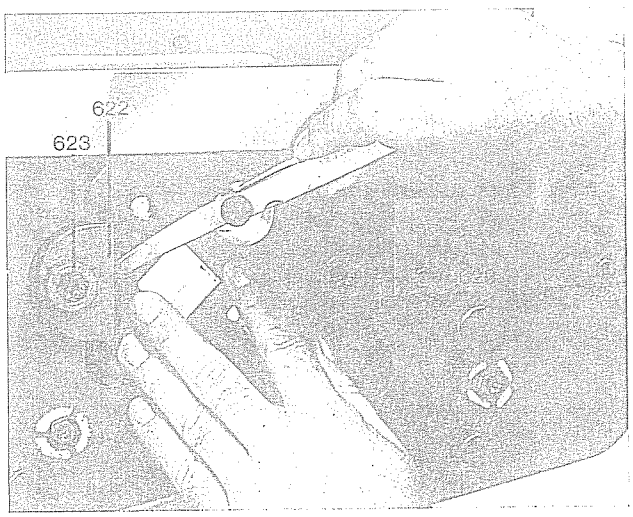


Fig. 34: Checking of cutting gap

1. Knives

The standard types of bar shear blades have cutting openings for round and square bars. The blades have square cross section and cutting edges on either side. Consequently, eight cutting edges can be used by turning and tilting the blade.

2. Regrinding

Regrinding is made on the plane side only. Since blunted blades require greater forces for cutting and, moreover, give bad cuts, care must be taken that new Mubea blades (part-No. 620 and 621) are ordered in due time.

3. Cutting gap

The bar shear blades must not be drawn firmly on each other. The cutting gap shall be between 0,3 and 0,5 mm. When supplied the machine has properly been adjusted. The clamp plates 622 must not compress the blades. If the blades have been reground, also the clamp plates 622 must be readjusted.

For checking the cutting gap the bar blades must firmly be pressed backwards. Then, the distance between clamp plate and bar blade is measured by means of a slip gauge.

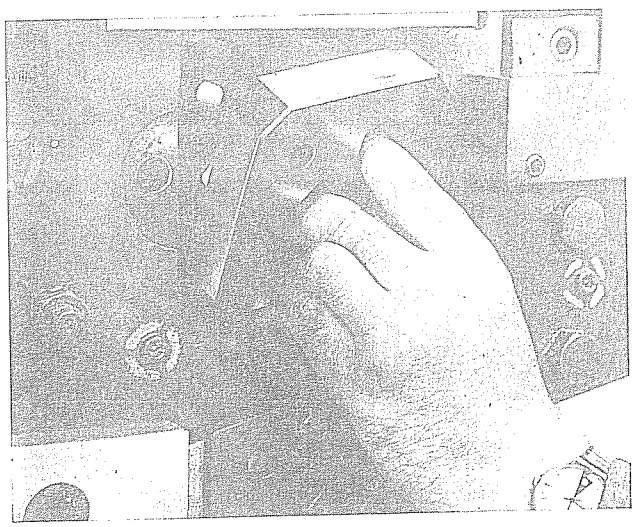


Fig. 35: Replacement of blades

4. Hold-down

The hold-down must always have such adjustment that the stock to be handled is in horizontal position, when being cut.

5. Replacement of blades

Unscrew blade screws 623 and remove clamp plate 622. Then, blade can be removed. Mounting is done in reverse order.

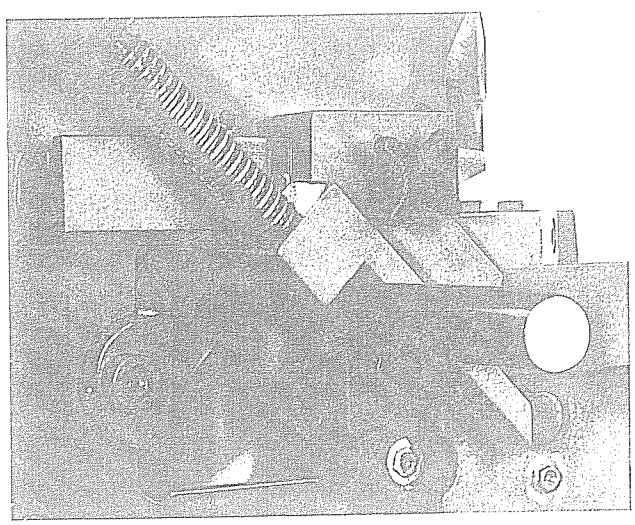


Fig. 36: Cutting of round bar

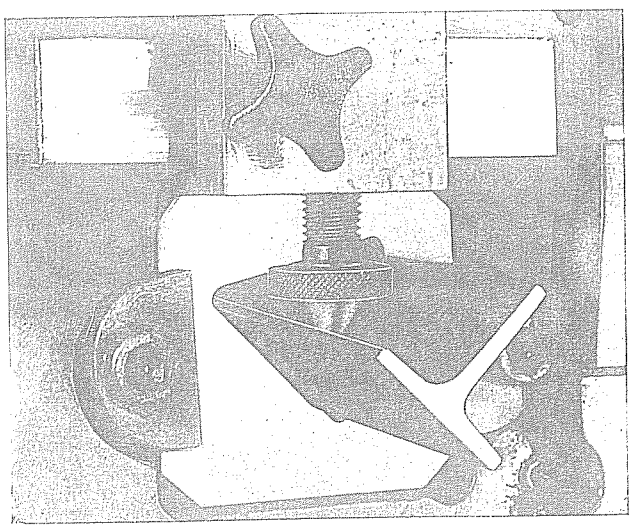


Fig. 37: Cutting of Tees with special T-knives

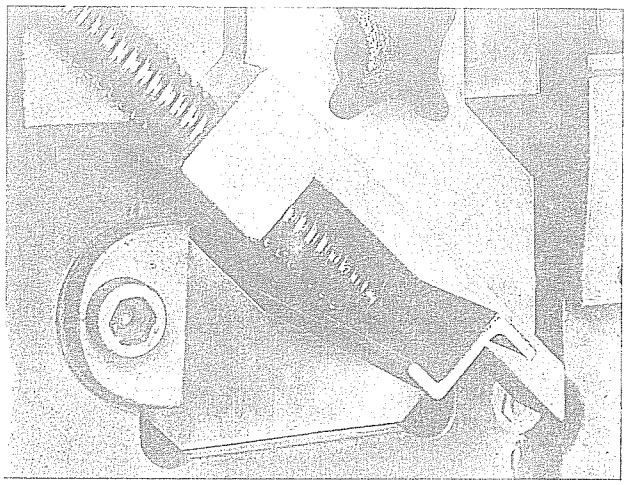


Fig. 38: Cutting of Z-shaped steel

6. Special blades

If you wish to cut exclusively round bars, we supply blades all openings of which are round. The diameters will be made in accordance with your specification. If the stock shall be fed over a roller track, you should specify this in your orders so that all cutting openings are arranged in one plane. Apart from this, we supply blades for cutting L-steel, Tees, channels or Z-steel as well as for any further sections.

The fact that sections can be cut also in the bar shear, is the reason that frequent replacement of the blades is not required. Consequently, if the section shear is equipped with standard section knives for Tees and L-steel, the bar shear is available for cutting special sections. Otherwise it is possible to crosscut Tees and L-steel in the bar shear, if the section shear is used for cutting large special profiles: this is a considerable advantage of the two-slide machine.

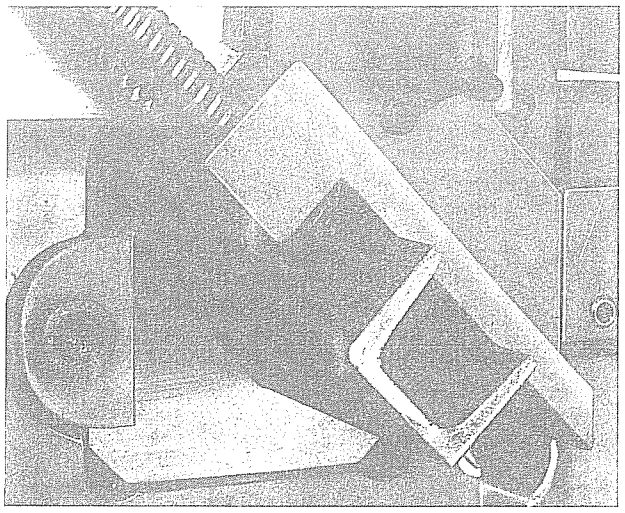


Fig. 39: Cutting of channels

A special advantage is offered by supplying a very price convenient pipe notching tool for the bar shear. This notching tool allows to notch pipes up to an outside diameter of 60 mm and with a max. material thickness of 6 mm. This notching tool consists of 1 pair of blade blocks and 1 pair of notching insertions for the different pipe diameters.

7. Scale discharge

The slides are built with scale discharge channels. These channels have been dimensioned in such a manner that dry scale falls through without difficulties. If, however, some scale should be accumulated in the channel, it must be scavenged with petroleum.

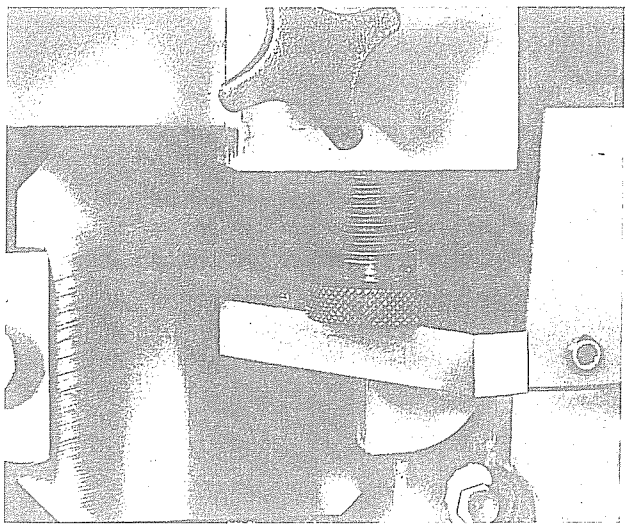


Fig. 40: Mitre cutting of square bars

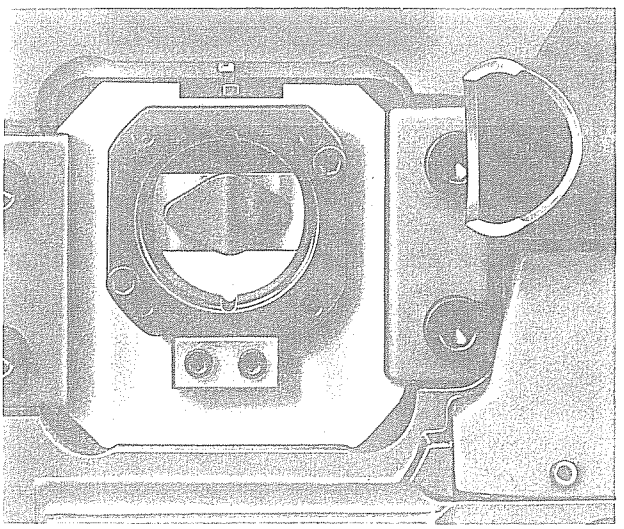


Fig. 41: Pipe notching tools

1. General

The outstanding feature of the section shear is the very long and rugged slide. The movable section knife block is fixedly mounted in a recess of the slide. Consequently the section knife does not move so that seizing cannot happen.

2. Scale discharge

The slides are built with scale discharge channels. These channels have been dimensioned in such a manner that dry scale falls through without difficulties. If however, some scale should be accumulated in the channel, it must be scavenged with petroleum.

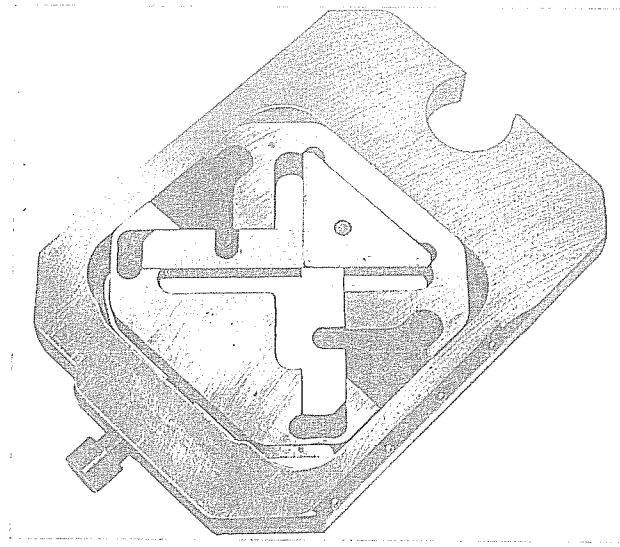


Fig. 42: Rigid mounting of the movable section knife in the special section slide.

3. Knife execution

a) Standard execution

Knives for cutting Tees and L-steel. Detailed description, maintenance and operating instructions for the supplied knives are given below.

b) Special knives

For cutting channels, beams and Z-shaped or other special sections we supply special section knives with stationary cutting insets. As per the dimensions of the sections to be cut, several cutting openings can be made in one pair of knives. For channels and beams as per DIN standardized section knives are available. If equal dimensions are concerned, combined knives can be supplied.

All sections can be cut not only at right angles, but also at mitre, in the flange as well as in the web, as far as capacity of machine allows it.

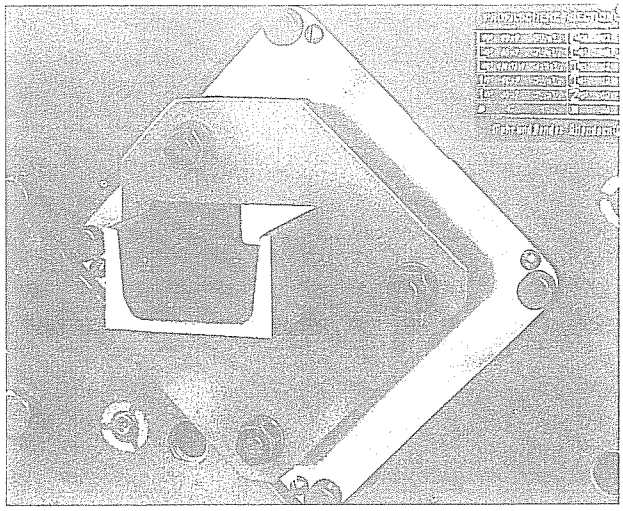


Fig. 43: Section knife for channels

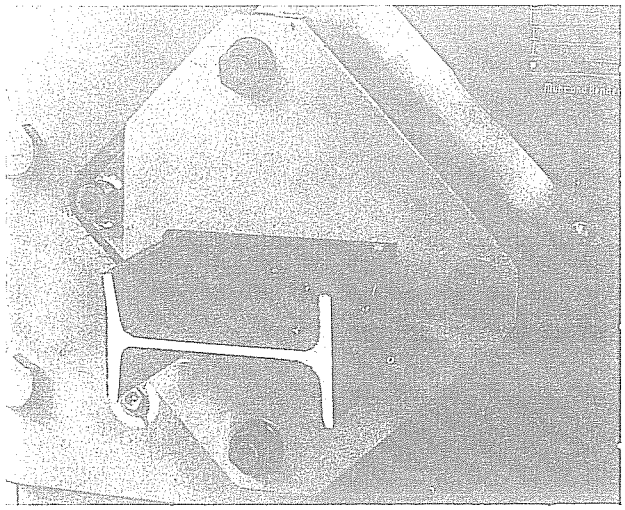


Fig. 44: Section knife for beams

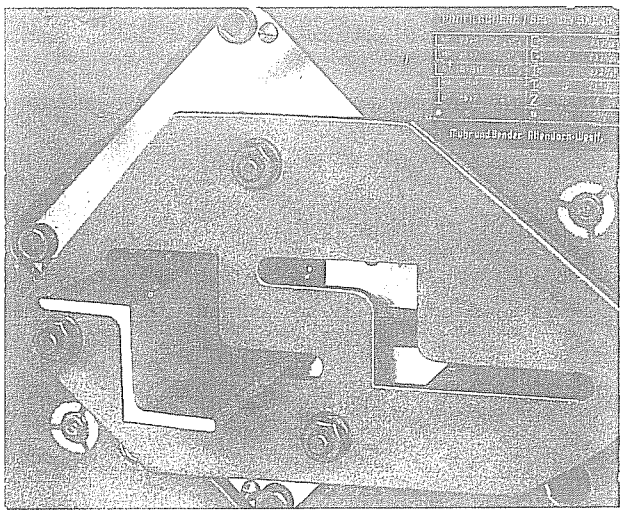


Fig. 45: Section knife for Z-shaped steel

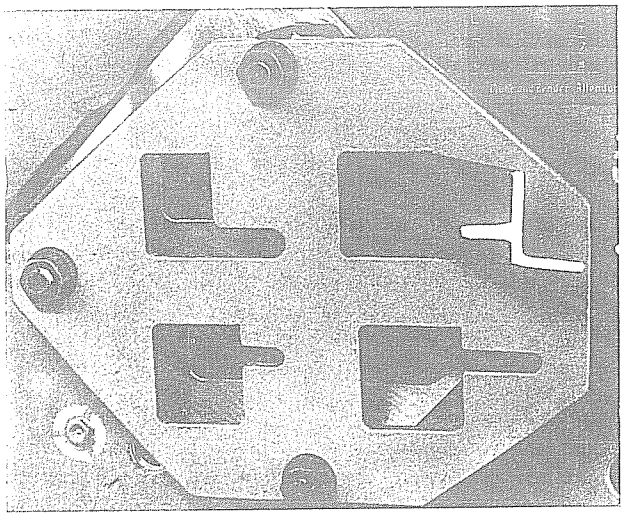


Fig. 46: Section knife for window sections

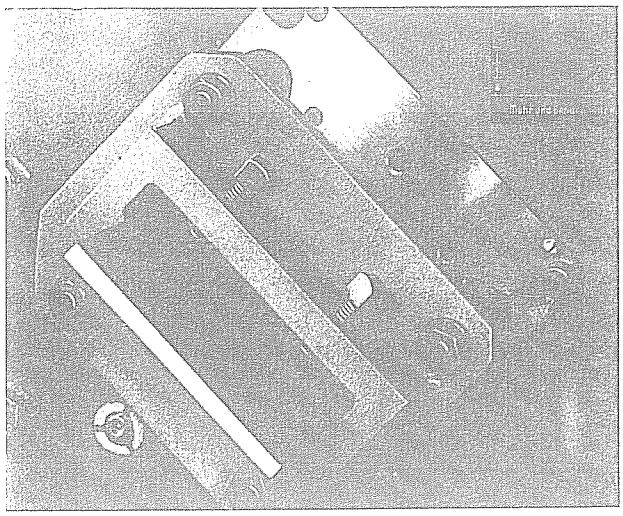


Fig. 47: Section knife for flat bar

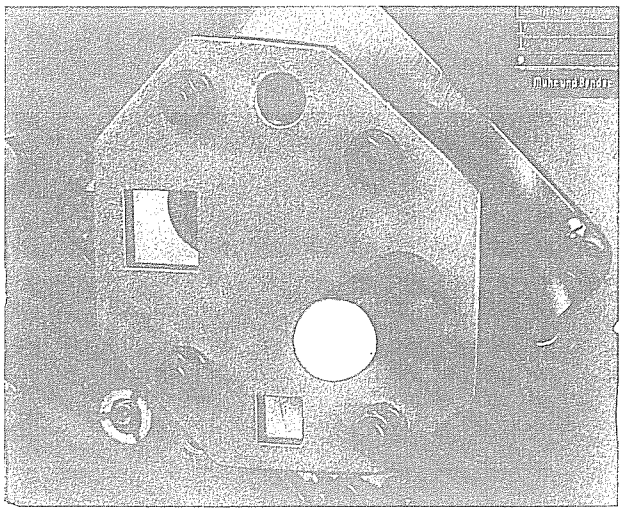


Fig. 48: Section knife for round and square bars

1. General

The PMG section knives are destined for right angle cutting of L-steels as well as for mitre cutting of same up to 45° and for right angle cutting of Tees.

When cutting L-steels no blade readjustment is required. When cutting Tees, two sliding blades only must be adjusted to the section size in question. The PMG knives are especially rugged and require practically no maintenance.

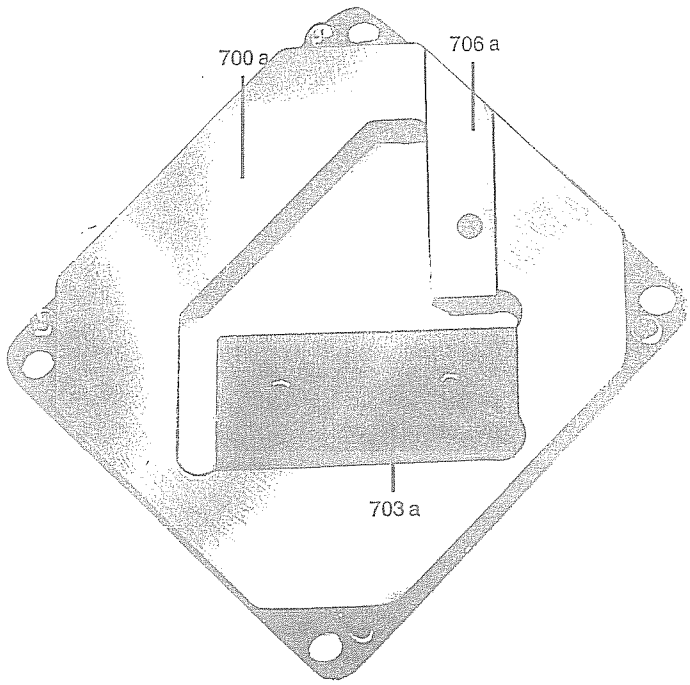


Fig. 59: Stationary PMG section knife

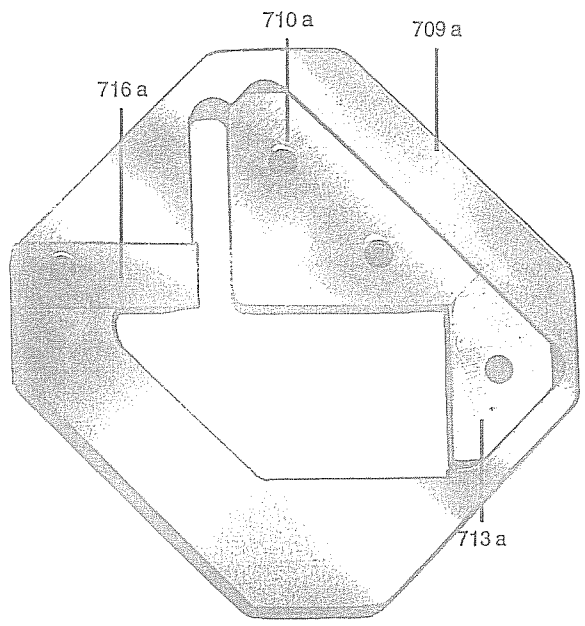


Fig. 60: Movable PMG section knife

2. Dismantling of PMG knives

a) Loosen kipp lever 823 and remove mitre guide 820 (By pulling upwards the lever knob the clamping lever can be disengaged and brought into any wanted position.)

b) Turn out the 4 hollow screws 701a.

c) Remove the stationary section knife 700a from the machine.

d) Loosen screw 326 in slide 325.

e) Remove from the machine the movable section knife 709a

(If the knives shall only be cleaned, the movable section knife 709a can remain in the machine).

Fig. 61: Section knife PMG seen from the body side

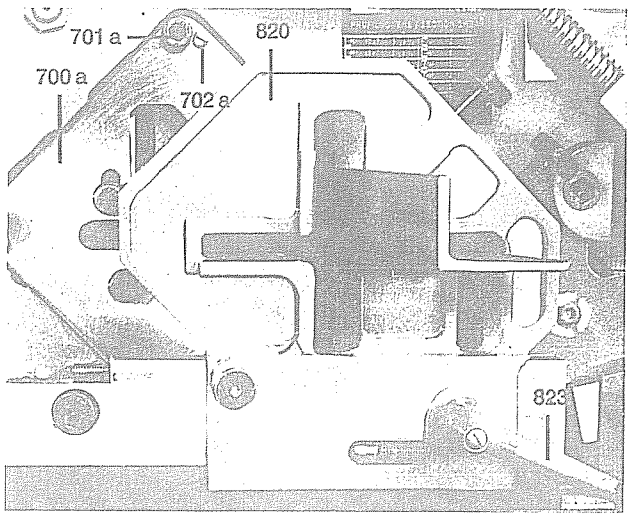
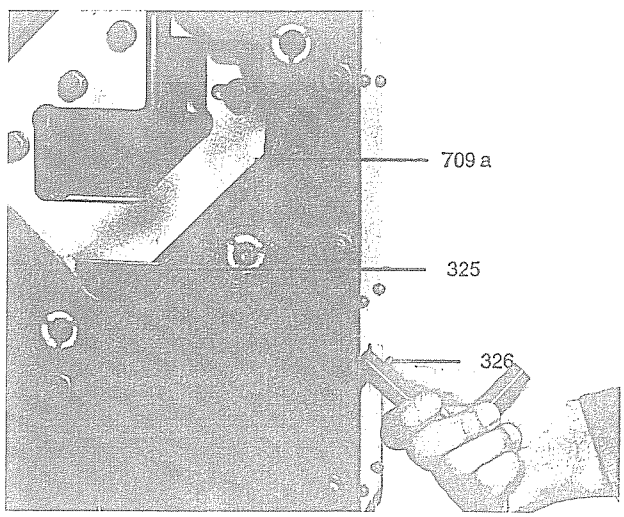


Fig. 62: Section knife PMG seen from the cover plate side



3. Mounting of PMG knives

a) Insert the movable section knife 709a into the section slide 325 and press it rearwardly until it is stopped.

b) Tighten screw 326.

c) Insert the stationary section knife 700a into the body.

d) Firmly tighten screws 701 a with securing washer 719 a.

e) Firmly tighten adjusting screw 702 a.

f) Loosen again the screws 701 a by one full revolution. Retighten all 4 threaded pins 702 a by $^1/_8$ turn towards the right. This is required so that the two knifes are not drawn apart and a cutting gap is available.

g) Firmly tighten screws 701 a and secure adjusting screw 672 with inmovable cap 719 b and screw 701 a with securing washer.

h) Mount mitre guide 820 and lock it by means of kipp lever 823.

4. Cleaning of PMG knives

The PMG knives require practically no maintenance, since they do not comprise any parts sensitive to troubles. As per the resulting scale qualities, the knives must be dismantled and cleaned from time to time.

a) Dismantling of section knives as per instructions under para 2.

b) Remove sliding blades 706a and 716a.

c) Thoroughly clean section knives and sliding blades.

d) Reassembly must be made in reverse order.

e) Mounting of section knives as per instructions under para 3.

Important note: In order to keep dry the resulting scale, the section knives must be free from grease.

5. Regrinding of section knives

The sliding and insertion blades must be ground only at the cutting front faces, but these faces must be reground in a very regular manner. If the blades are ground badly, i. e. the edges do not converge to one point, the cuts will become bad.

The sliding and insertion blades must be reground up to such extent only that the knife cross, when the slide is in its lower position, covers the cutting edges, completely and regulary. If this is not the case, the blades must be replaced by new ones (Part-No. – at the same time the order-No. – is indicated on the blades). Bear always in mind that you should order exclusively Mubea original blades. The sliding and insertion blades are sharp-pointed so that all sections – also with sharp edges – can be cut. If L-steels of certain sizes having root radii are concerned, the blades can be built with exact radii so that deformations in the root of the sections are avoided.

6. Cutting with PMG knives

a) Introduction of sections

When cutting L-steels at right angles or when making mitre cuts of any angle, the sliding blade 706 a in the stationary section knife is completely closed whilst the sliding blade 716 a in the movable section knife must be completely opened.

When cutting Tees the two sliding blades must be adjusted in such a manner that an as small as possible play between the section and the sliding blade remains. The closer the adjustment, the better the cut.

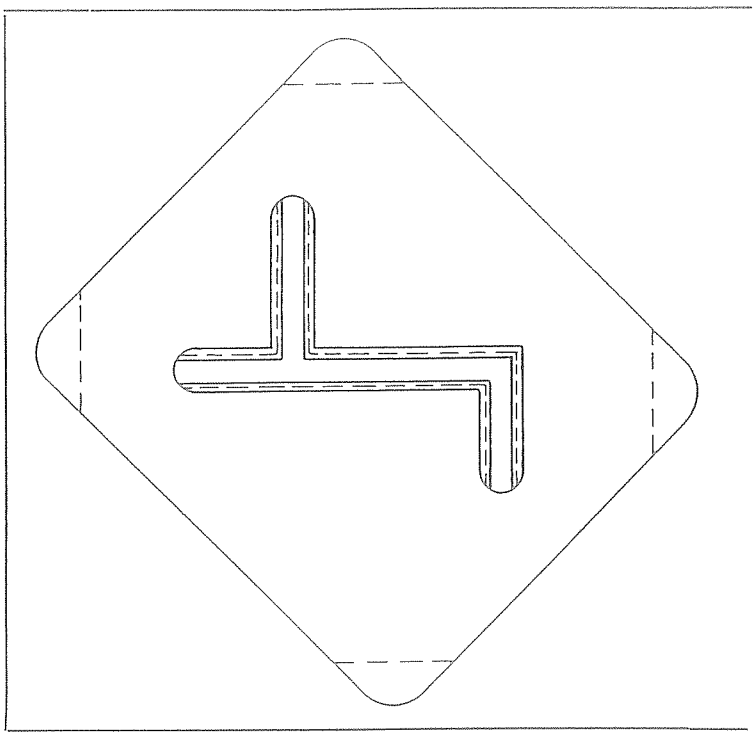


Fig. 63: Blades must be reground in a very regular manner

The following cutting instructions include the instructions for proper adjustment of the sliding blades and for proper insertion of the sections.

b) Hold-down and mitre guide

Using the corresponding mark, the mitre guide 820 can the **mitre guide rail** 829 on be adjusted for 90° (right angles) or for mitre cuts up to 45°. Using kipp lever 823, the mitre guide is fixed in the wanted position.

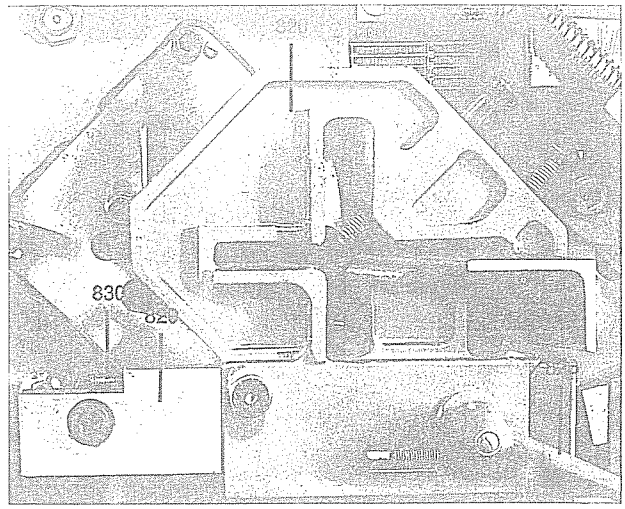


Fig. 64: Mitre guide for mitre cuts 45°

For right angle cuts the left side of the **mitre guide rail** 829 comprises a stop screw 830. Place the mitre guide against the stop screw and now you have the proper side position of the section.

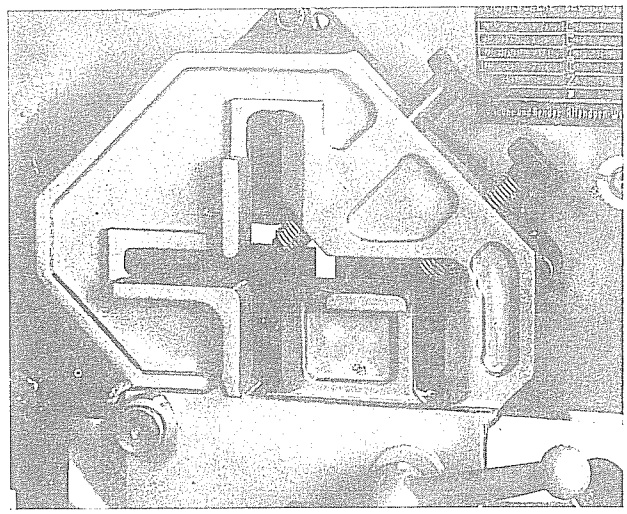


Fig. 65: Mitre guide for 90° cuts

The proper height position of the section can be adjusted by means of the hold-down screw 824.

The height adjustment is correct, if the section is in horizontal position, when being cut.

If the cut is not exactly at right angle, correction must be made for the vertical leg by means of the **mitre guide rail** 829, but for the horizontal leg by means of the mitre guide 820.

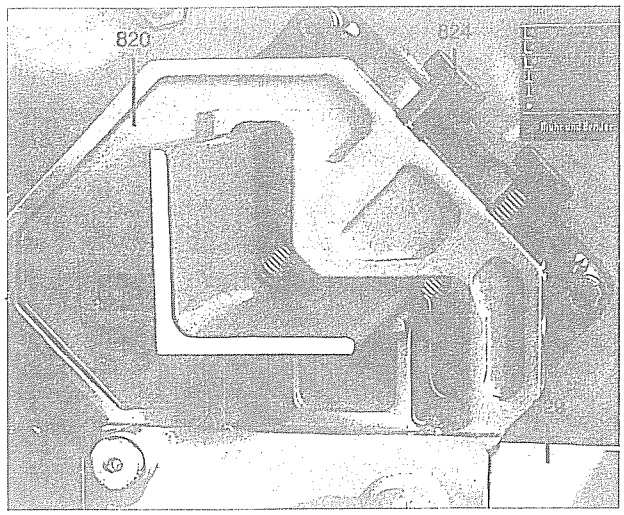
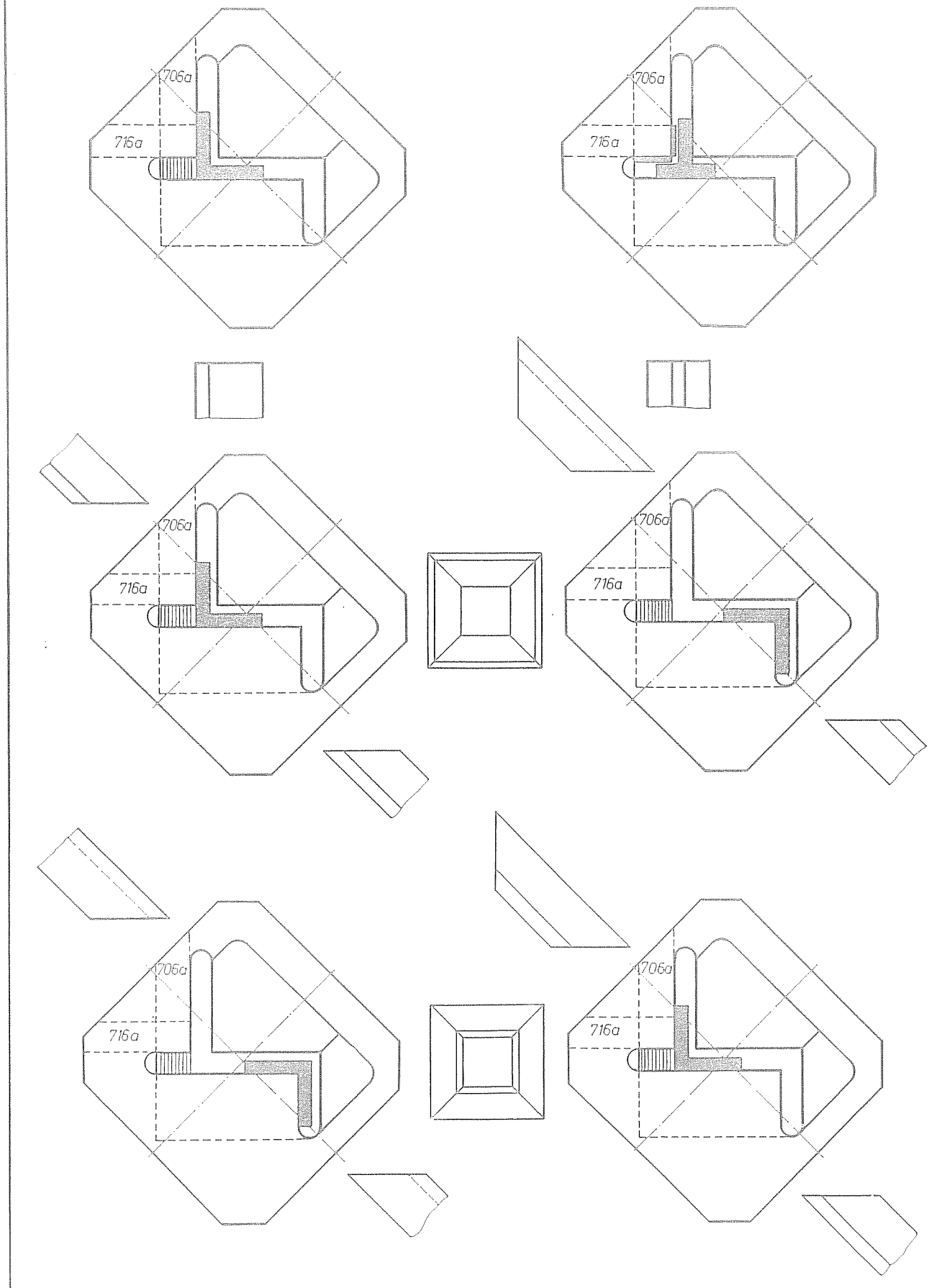


Fig. 66 Adjustment of the hold-down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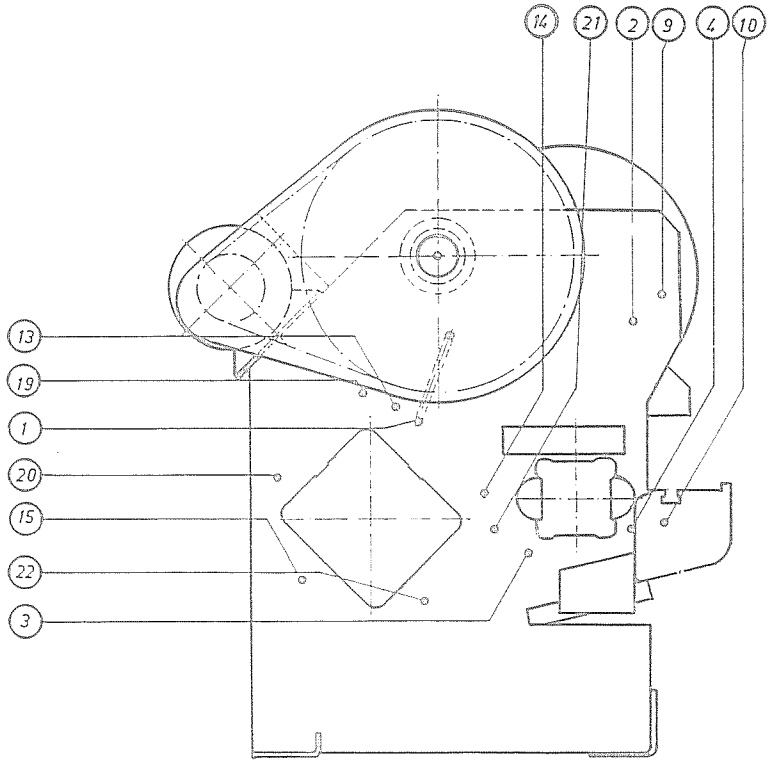
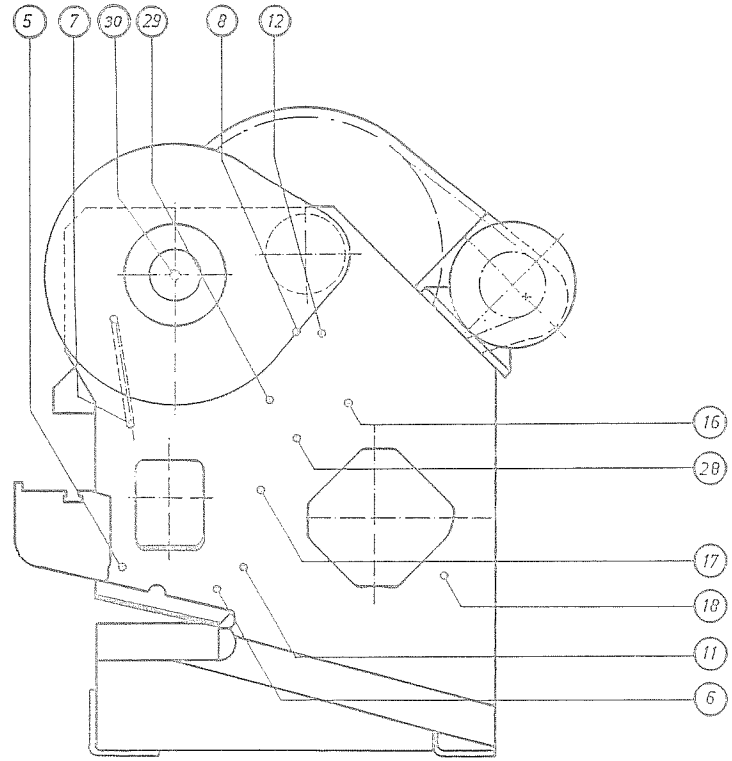
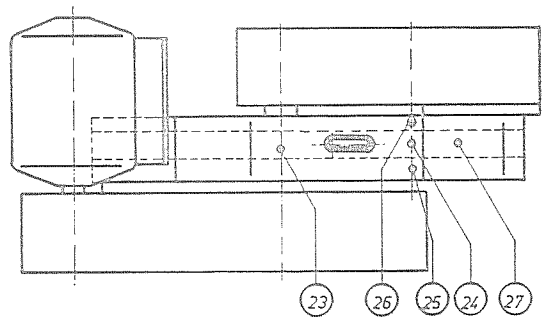






Schmierhäufigkeit

Alle 5 Stunden
Schmierstellen 9; 23÷30 je 2 Pumpenhübe
Schmierstellen 1÷8, 10÷22 je 1 Pumpenhub

Abschmierung muß bei Stillstand der Maschine erfolgen!
Verzahnungen nach Bedarf mit SINIT III abschmieren! Lieferant: BV-ARAL

Schmierstoff

ARAL ÖL BS 114
Viscosität 15 E bei 50° C
Tonna Oel 72 DEUTSCHE SHELL
Viscosität 13 E bei 50° C
VACTRA OIL Nr. 4 MOBIL OIL A.G.
Viscosität 12,8 E bei 50° C
MILLCOT K-65 ESSO A.G.
Viscosität 12,5 E bei 50° C

LUBICATING PERIOD

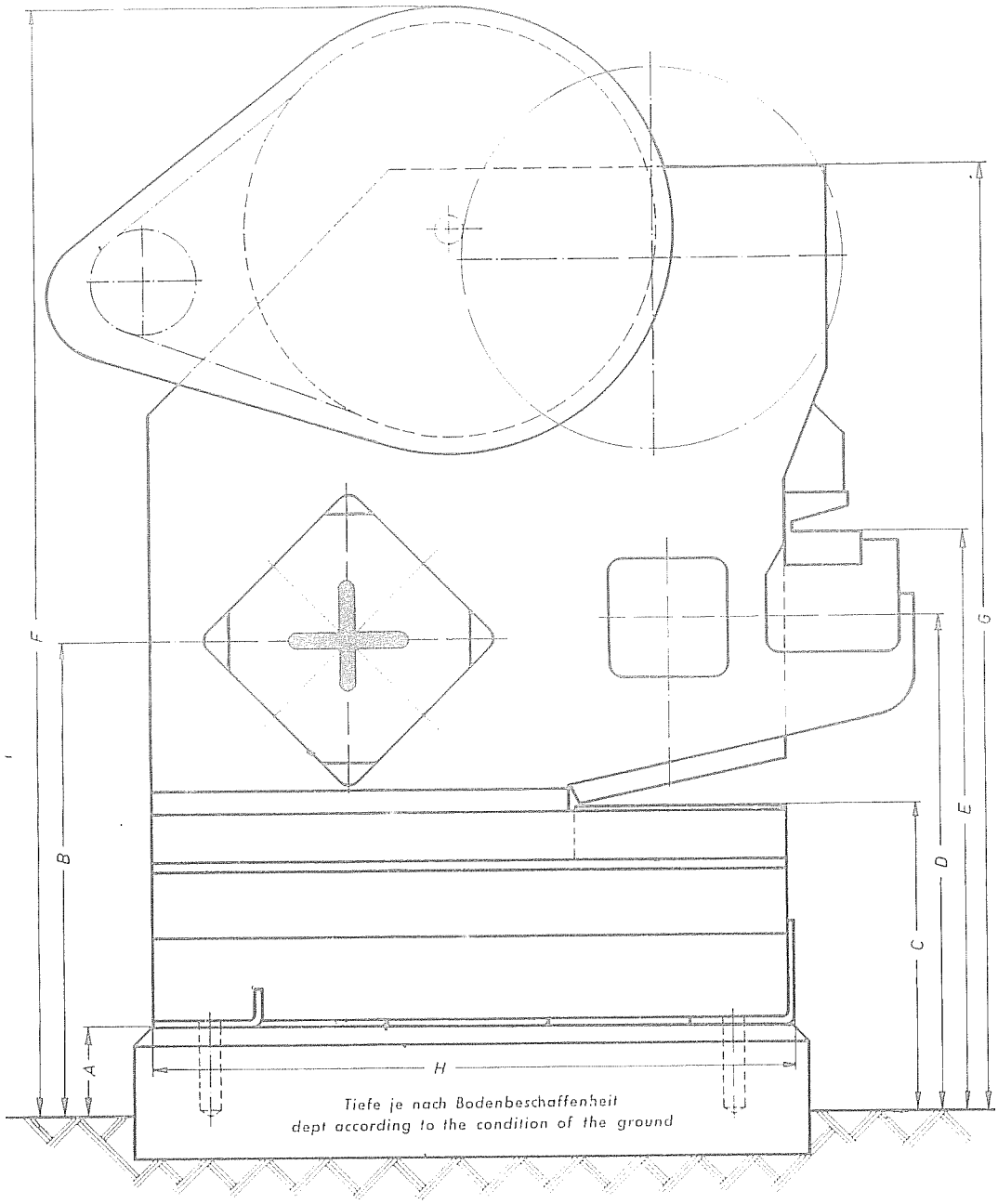
ALL 5 HOURS
LUBRICATING SPOT 9, 23÷30 2 PUMP STROKES EACH
LUBRICATING SPOT 1÷8, 10÷22 1 PUMP STROKE EACH

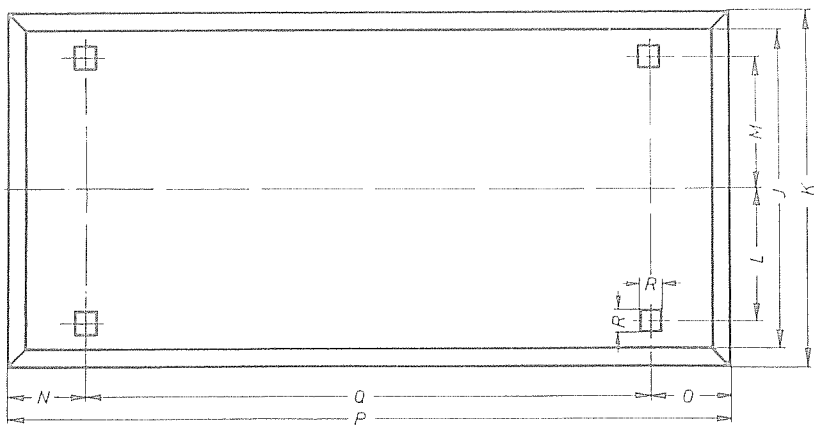
LUBRICATE ONLY WHEN CLUTCHES NOT ENGAGED
LUBRICATE TEETH OF WHEELS WITH SHELL CARDIUM COMPOUND D OR EQUIVALENT WHEN NECESSARY

LUBRICATING MATERIAL

CHEVRON VISTAG OIL 28 x OR EQUIVALENT

Handschmierung BF 30-12 (BF 10)
HAND LUBRIKATION BF





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	inch	22	35 3/4	29 1/2	36 7/8	39 13/16	59 3/16	53 3/8	23 5/16	11	15	4 1/2	4 1/2	4	3 15/16	27 5/16	19 5/16	2 3/4

Best. Nr. - Order Nr.		BF
Größe - Size	MBN	30-12 (10)
10 x 14	24 032	1
17 x 19	24 033	1
11	24004	1
13	24021	1
24	24009	1
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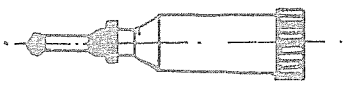		
Nr. 2	22106	1
Putzlappen Rag for cleaning		
-	24651	1
Fühlerlehre Thickness gauge		
15 x 0,3 x 140	24701	1