OPERATING INSTRUCTIONS AND PARTS LIST

MUBEA Hydraulic plate, bar and section shear with coper-notcher and punch

Size: 550

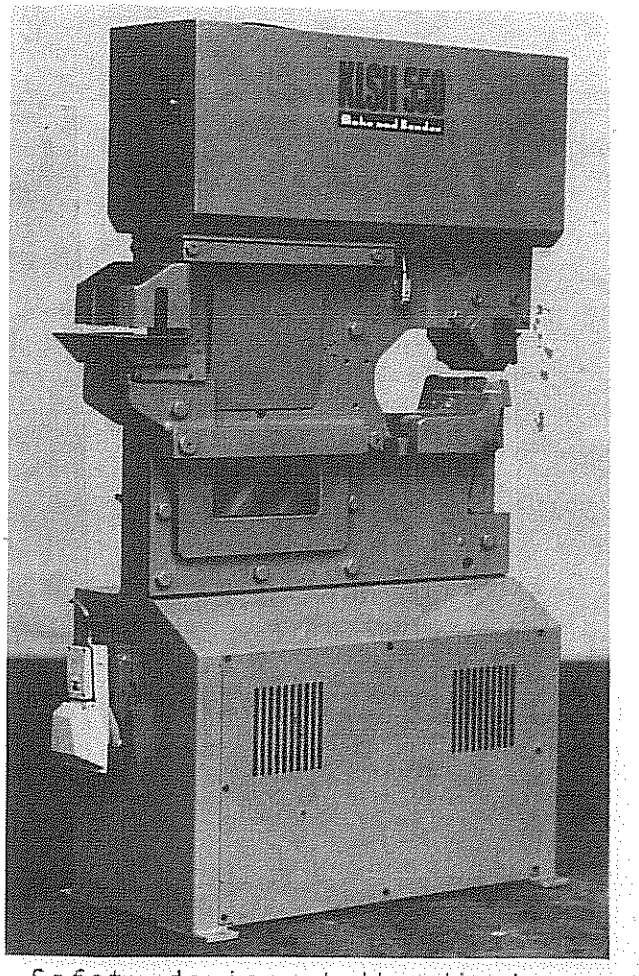
Serial No. :
Motor type :
Motor rating :
Operating voltage:

Your MUBEA machine corresponds with machine protection law and the valid rules for the prevention of accidents.

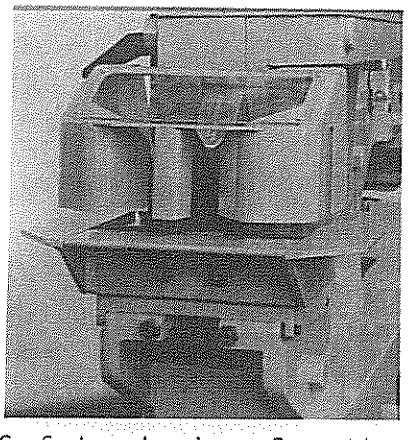
To ensure safe operation, all working stations are equipped with the safety devices required.

To enable a more visible presentation of working functions, the detailed figures in these operating instructions show the working stations and tools with their safety devices having been previously removed.

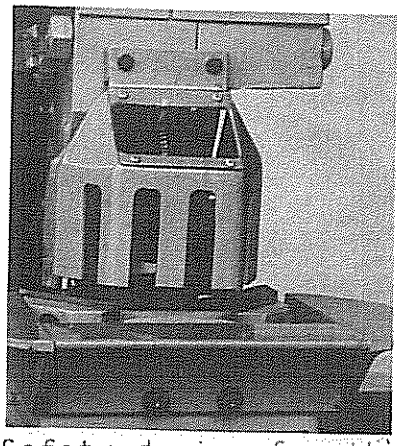
Only punching devices and tools, that are equipped with sufficient safety devices for the prevention of finger injuries, must be used, i.e., solely the very cutting range should be accessible.



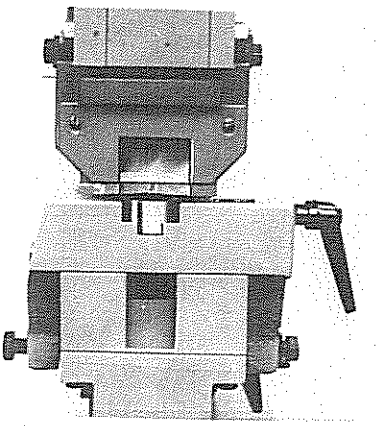
Safety device at the dischare side of the section and the flat steel shear



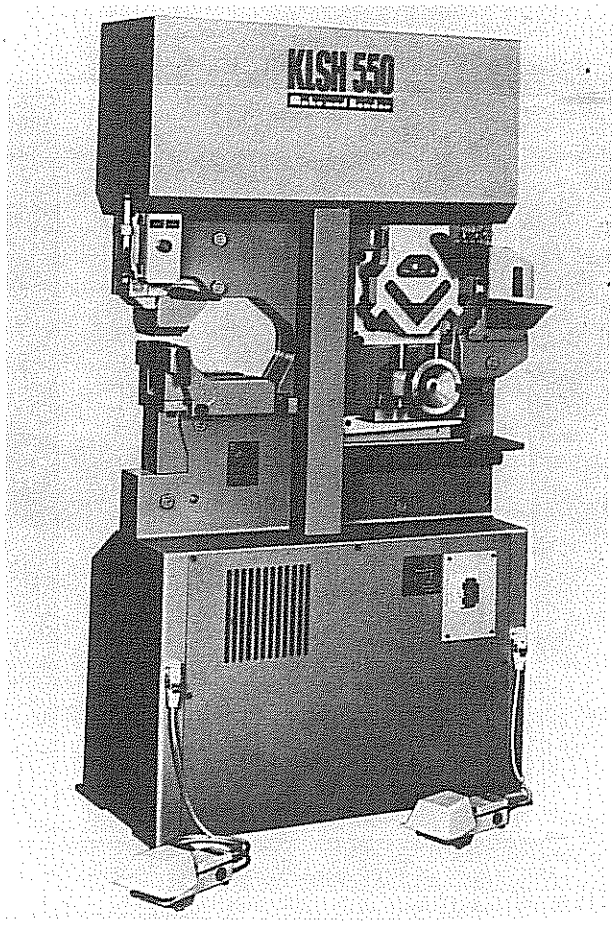
Safety device for the rectangular notching tool



Safety device for the triangular notching tool



Safety device for the punching tool



You will soon realize and confirm, that you made the best choice, for this MUBEA machine is the outstanding product of both comprehensive experience of decades and latest findings in the field of punch and shear construction. It is just the daily handling of this machine, that points out its superiority.
Many pleased customers have been confirming this.

To enable you to make optimum use of this machine, please read and mind the following instructions carefully.

Previous experience has shown, that this machine stands out for an extremely long service life. Components subjected to normal wear and tear can easily be replaced at any time. It is important that you then ask for original MUBEA spare parts. Only use of the latter ones guarantee both the wanted service life and the steady quality of the working results. This should be considered, too, when you plan to extend the application range of your machine by adding further tools.

Practice will soon convince you, that MUBEA machines can be completed effectively. Thus they are very versatile and at the same time economical.

To give you an outline of the several components of the machine and their interactions, you will find an itemized parts list with respective article numbers, at the end of these operating instructions.

In case of any question, please contact us. Our Service Department will always be at your disposal. On request, you may conclude a maintenance contract on easy terms.

By the way ,keep the machine in a condition according to its value. Hints and some good advise on this matter are given in these operating instructions.

TRANSPORT

For transport by truck, screw the machine to solid planks.

For transport by crane, hook the machine to the eyebolt provided.

The weight of the machine is given in the leaflet enclosed.

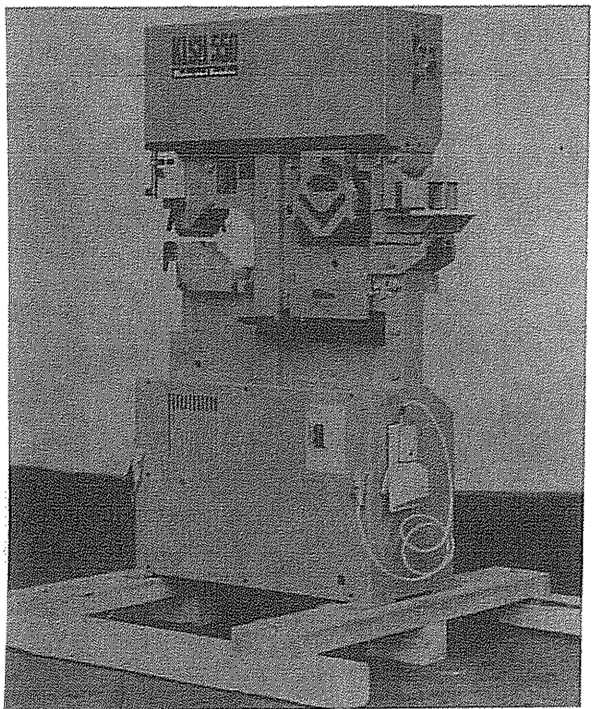


Fig. 1: Transport of the machine by truck

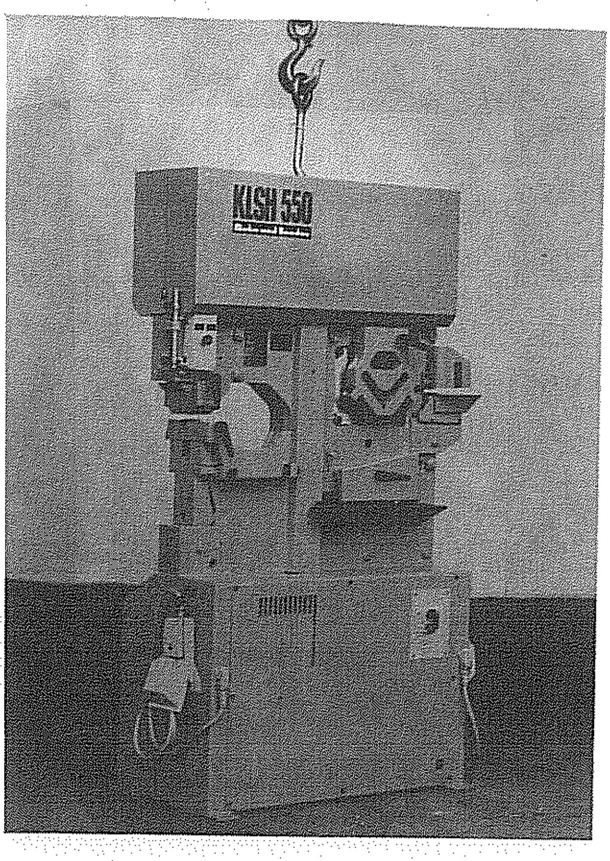


Fig. 2: Transport of the machine by crane

ASSEMBLING

The working stations of this machine are at normal working height, and need no further adjustment by platforms or foundation plates. All necessary instructions, referring to the provision of at-ground-level foundations for stationary installation, are given in the foundation plan enclosed.

Tighten the foundation bolts, after the filling compound has set.
Instead of bolts, dowels may be used.
Check whether the machine is positioned vertically.

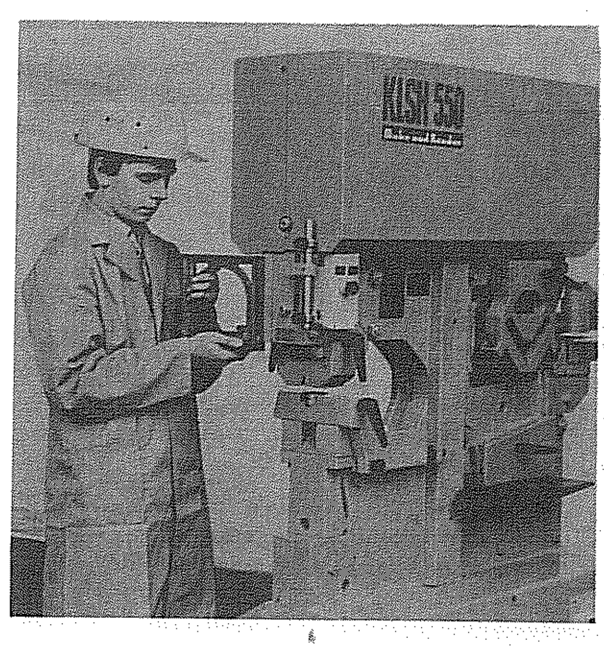


Fig. 3: Checking of the vertical position of the machine

CONNECTION AND START-UP

The drive and the appertaining oil reservoir are located in the machine base.
Check by way of the filter inlet, whether the reservoir is filled up to approx. 3 cm below its cover.

When refilling oil, mind the maintenance instructions.

The machine is supplied ready for operation. Its main switch is located at the machine base, within the housing of the front panel. This must be connected to the mains. Connection should be done by an electrician in accordance with the attached wiring diagram. (Check voltages.)

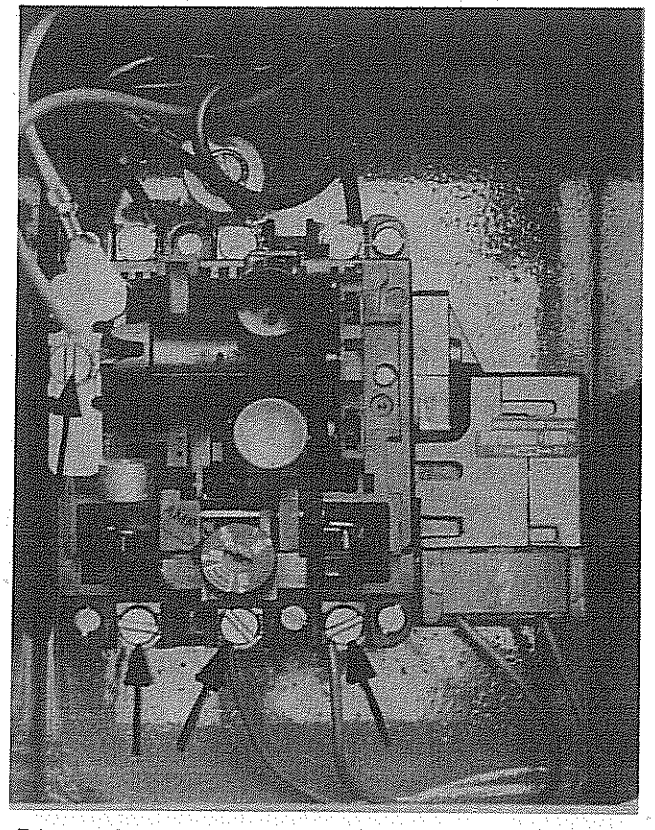


Fig. 4: Connection to the electric mains

Turn on the motor briefly:
if the motor does not rotate in the direction indicated by the arrow, 2 phases have to be interchanged. For checking purpose, start the machine only for a moment, by tipping.

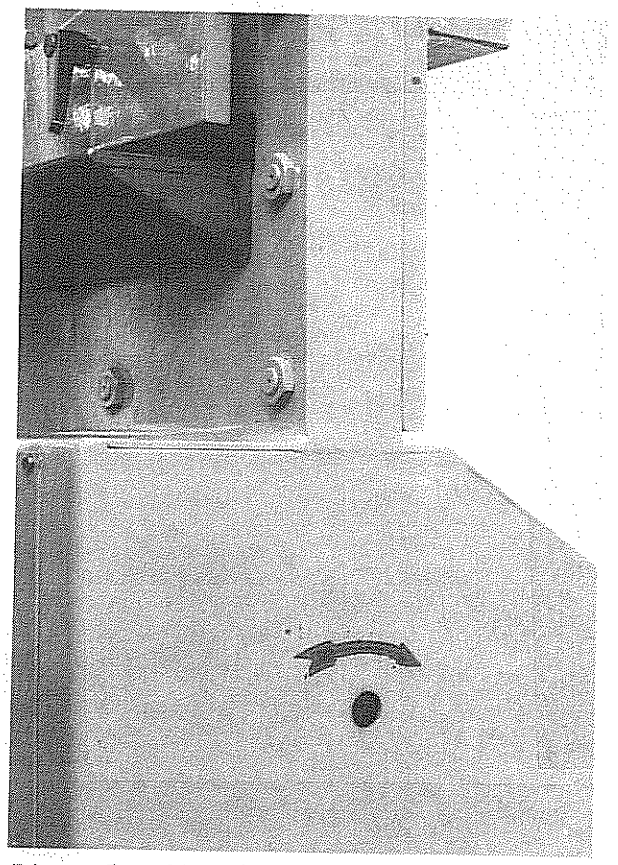


Fig. 5: Check of direction of rotation of the motor

Prior to start-up of the machine, check whether the slides run perfectly, and whether the tools are correctly adjusted. For that purpose, turn the selector switch to "INCHING", and move the slides by steps to their lowest "dead" positions. (Cf. section of "Electric foot engagement for the punch", resp. "Electric foot engagement for the shear")

LUBRICATING THE MACHINE

Lubricants

The machine must be lubricated with oil.
The same type of oil should be used at all lubrication points.

The following brands of oil may be used alternatively:

ARAL DEGANIT B 220
Viscosity 130 mm^2/s at 50^0 C.

SHELL TONNA Oel T 220
Viscosity 128 mm^2/s at 50^0 C.

MOBIL OIL AG VACTRA OIL No. 4
Viscosity 125 mm^2/s at 50^0 C.

ESSO AG MILLCOT K 220
Viscosity 120 mm^2/s at 50^0 C.

BP ENERGOL HP - C 220
Viscosity 127 mm^2/s at 60^0 C.

Grease the machine thoroughly.
(Cf. lubrication chart.)

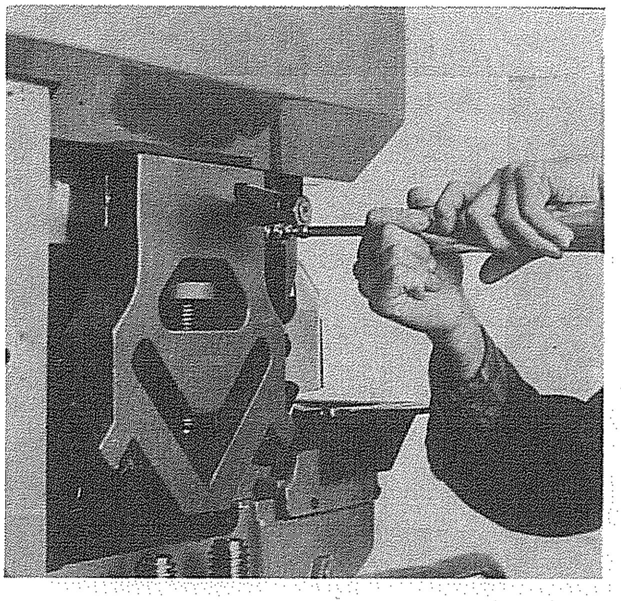


Fig. 6: Lubrication

Lubricate the machine by means of the grease gun supplied in the tool kit.
Mind the lubrication chart enclosed, and see that the specified quantities of oil are injected regularly.

ELECTRIC FOOT ENGAGEMENT WITH STROKE ADJUSTMENT FOR THE PUNCH

1. Adjusting and operating switch

The selector switch for the functions of tool set-up and operation is located on the twin limit switch, screwed to the body of the machine. In "INCHING" position, the working slide can be moved stepwise to its working position, by actuating the foot switch.

With the slide being in that position, the tools can be adjusted, mounted, or removed.

When you turn the selector switch to "FULL STROKE", the slide automatically returns to its starting position.

2. Functions of the foot switch

In "FULL STROKE" position, the following three functions can be controlled via foot switch:

a) When actuating the foot switch beyond first pressure: the slide executes its working stroke.

b) When releasing the foot switch just beyond first pressure: the slide stands still.

c) When releasing the foot switch completely: the slide returns to its starting position.

3. Stroke adjustment

With certain operations the execution of full stroke length is not necessary and desirable. Thus both length and position of stroke can be adjusted at the body of the machine. To save time, only the working stroke required should be executed.

Position or length of stroke are adjusted by means of variable control rings fixed to the control rod.

The lower ring controls the upper stroke limit, the upper ring the lower stroke limit.

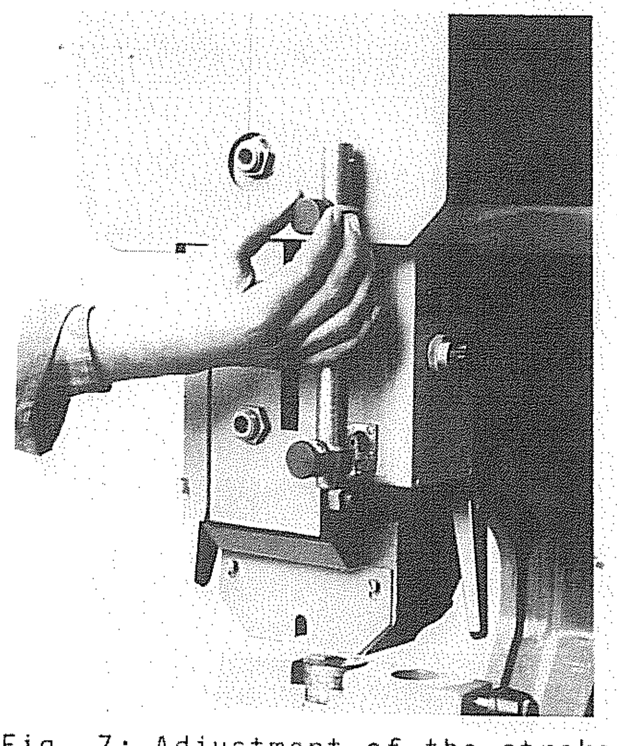


Fig. 7: Adjustment of the stroke of the punch

ELECTRIC FOOT ENGAGEMENT WITH STROKE ADJUSTMENT FOR THE SHEAR

1. Adjusting and operating switch

The selector switch for the functions of tools set-up and operation is located on the front of the safety hood, just above the notching station. In "INCHING" position, the slide can be moved stepwise to its working position, by actuating the foot switch.

With the slide being in that position, the tools can be adjusted, mounted, or removed.

When you turn the selector switch to "FULL STROKE", the slide automatically returns to its starting position.

2. Functions of the foot switch

In "FULL STROKE" position, the following three functions can be controlled via foot switch:

a) When actuating the foot switch beyond first pressure: the slide executes its working stroke.
b) When releasing the foot switch just beyond first pressure: the slide stands still.
c) When releasing the foot switch completely: the slide returns to its starting position.

3. Adjusting the stroke

With certain operations the execution of full stroke length is not necessary. Thus both length and position of stroke can be adjusted at the front of the safety hood.

To save time, only the working stroke required should be executed.

Position or length of stroke is adjusted by means of variable control rings, fixed to the control rod. The lower ring controls the upper stroke limit, the upper ring the lower stroke limit.

The shear side of the machine is additionally equipped with a socket enabling connection of a contact length stop.

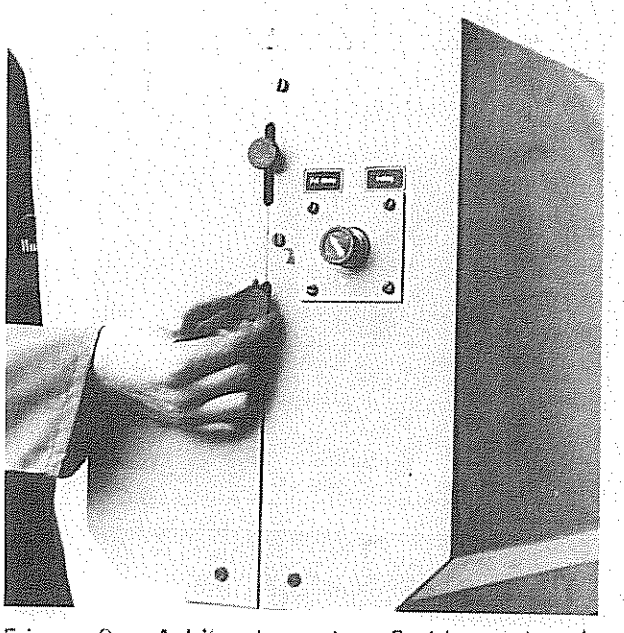


Fig. 8: Adjustment of the stroke of the shear

When the contact is actuated by fed-in material, the stroke of the shear is automatically started. This means a considerable support for the operator, and improves the efficiency of the machine.

FLAT STEEL SHEAR

1. Blades

Upper and lower blades are interchangeable, and can be used on four sides.

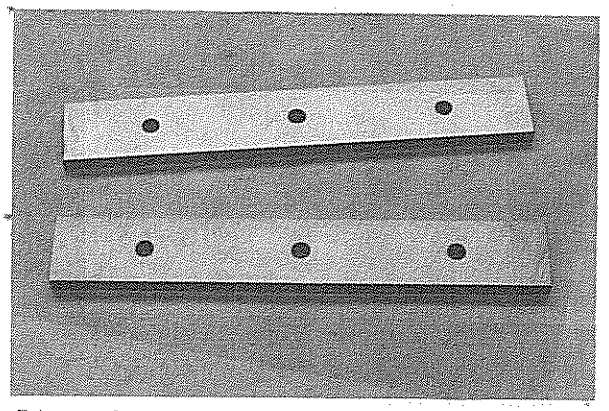


Fig. 9: Flat steel blade with four cutting edges

2. Re-sharpening

Regrind the blades in time. (The longer front sides only.) Sharpening must be done at exactly right angles, and the faces must be straight to warrant close fitting to both slide and body of the shear. Pay special attention to that grinding is performed evenly, so that the setting angles of the blades are not changed. Worn-out blades must immediately be replaced by new MUBEA ones.

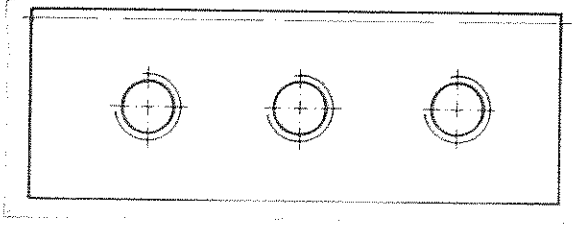


Fig. 10: Regrinding of the flat steel blades

3. Shearing gap

Set the shearing gap between the blades to 0.2 to 0.3 mm. Caliper the gap by means of a feeler, with the slide having been previously lowered.

The blades are properly adjusted for cutting all materials within the capacity range of the machine. When cutting extremely thin material, reduce the gap by adding card board or metal shims.

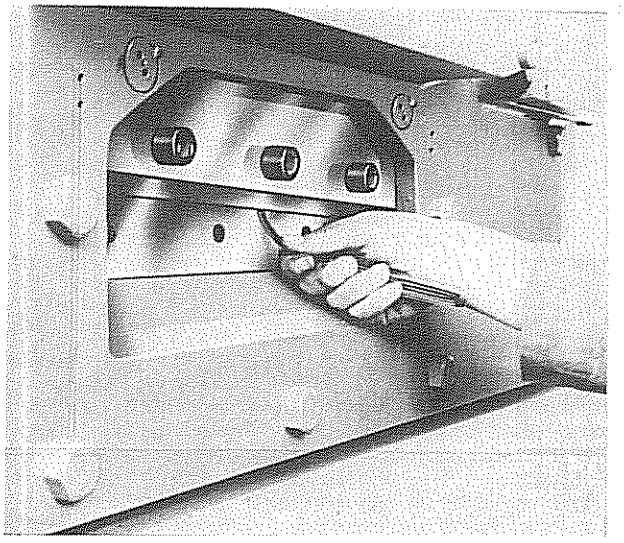


Fig. 11: Check of the shearing gap

4. Adjusting the hold-down

The material to be cut must be clamped reliably in horizontal position. Incorrect adjustment of the hold-down causes notching of the blades or seperation of the shear by force.

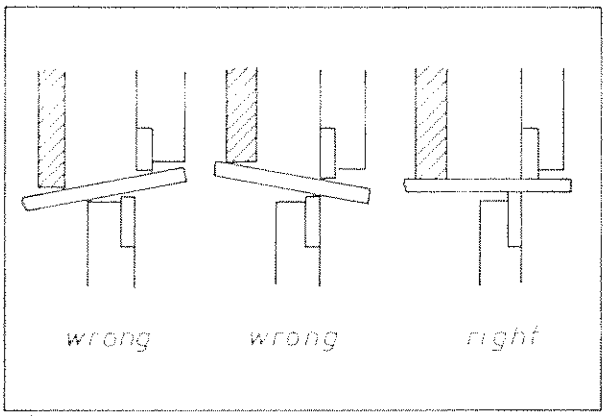


Fig. 12: Correct or wrong adjustment of the hold-down

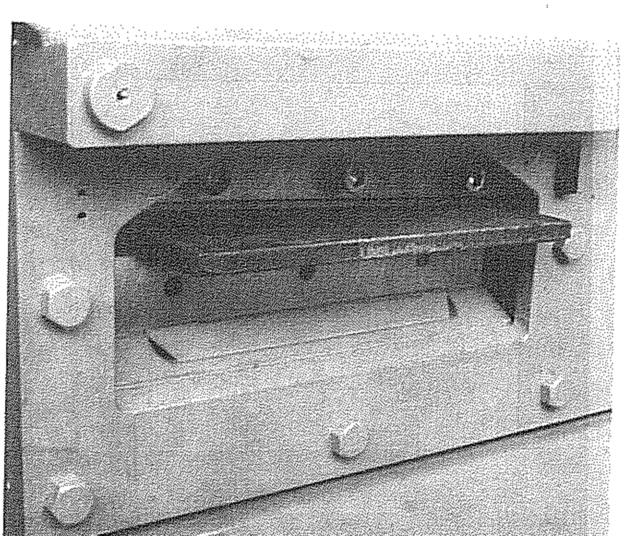


Fig. 13: Cutting of flat steel

5. Exchanging the blades

Loosen the fastening screws A, and remove them together with the supporting table from the machine. Take the lower blade out of the machine, from discharge side. Loosen the fastening screws B, and remove the upper blade. (Cf. fig. 14 and 15.)

Mounting is done in reverse order.

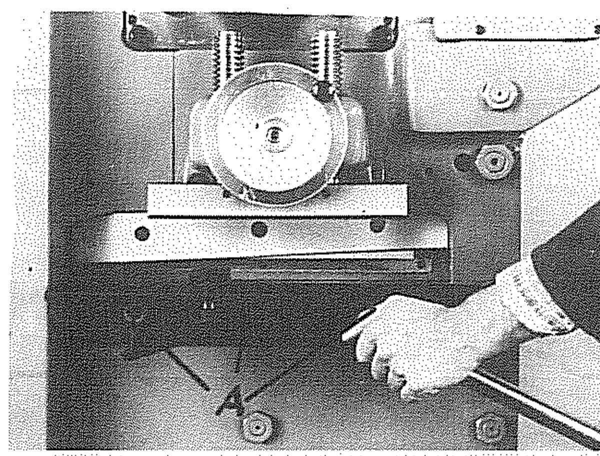


Fig. 14: Exchange of the lower flat steel blades

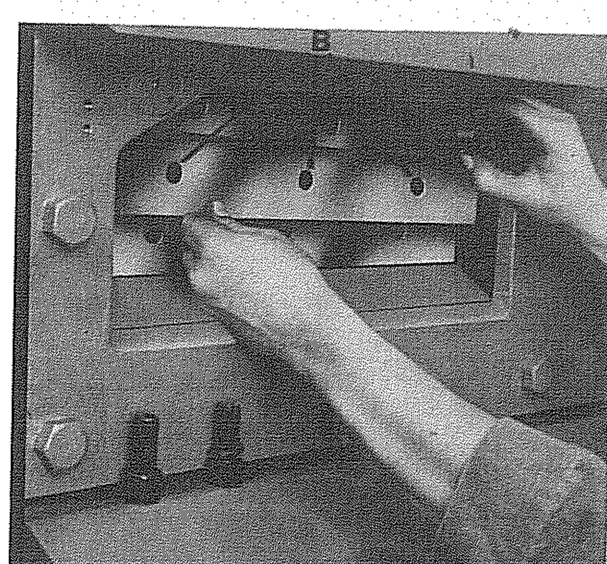


Fig. 15: Exchange of the upper flat steel blades

6. Re-adjusting the guides of the slide

If the width of the shearing gap, at the flat steel blade, should be altered after long use, or if the slide should show too much clearance, re-adjust the lateral guides of the slide.

Prior to re-adjusting, the sectional and flat steel blades, as well as the notching tools, have to be dismounted.

To adjust the guides, loosen the securing screws A, and re-adjust the guide disk B. Tighten the guiding disks B for the moment, and loosen them again by 1/16 counterclockwise rotation. This must be done to provide a correct run of the slide. Adjust all the other six guiding disks in the same way. (Cf. fig. 16 and 17.)

With the guiding disks B being adjusted, they are pinned by a drill of 4.5 mm dia., and locked by the securing screws A.

Then mount the flat steel blades, and measure the shearing gap, with the slide having been lowered. (Cf. section "Flat steel shear".) Should there be a too small or wide clearance, add shims, or grind them off.

Having mounted and inspected the flat steel blades, mount the sectional steel blades and the notching device.

As a matter of course, their shearing gap has to be checked carefully.

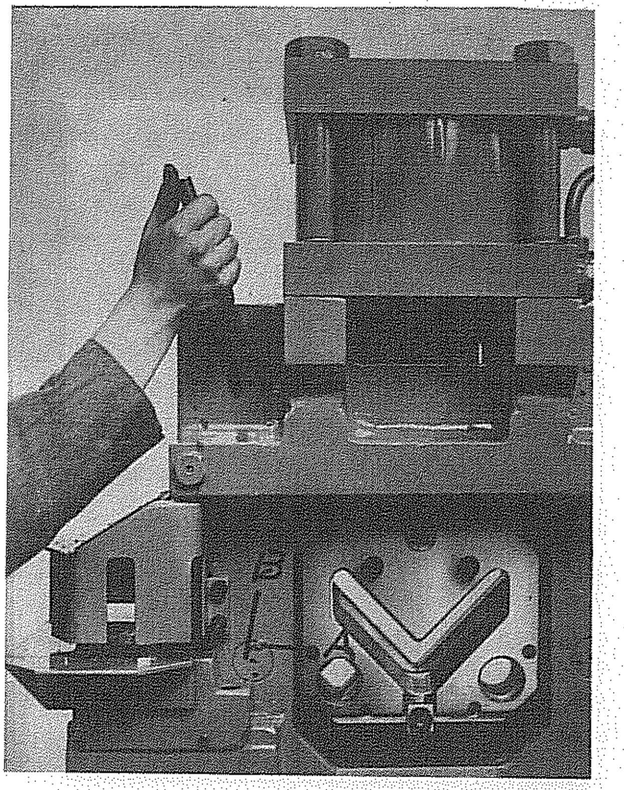


Fig. 16: Re-adjustment of the upper guides of the slide

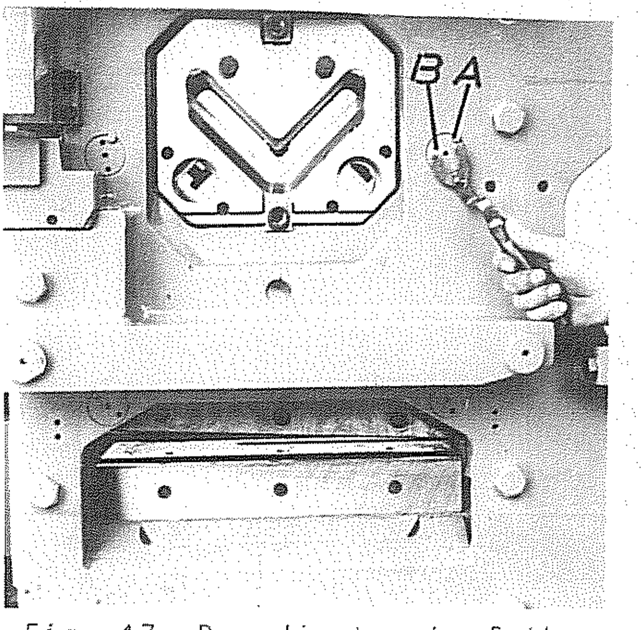


Fig. 17: Re-adjustment of the middle guides of the slide

NOTCHER

1. General

According to order, you received a machine equipped either with a triangular or rectangular notcher. Each of the two tools is easily to be interchanged, and can naturally be ordered afterwards.

2. Triangular notcher

Especially suitable for the efficient production of frames made of L and T steel sections. To avoid any upsetting at the root of the sections, the nose of the triangular notcher is flattened. Thus the steel section processed can be b ent to a frame.

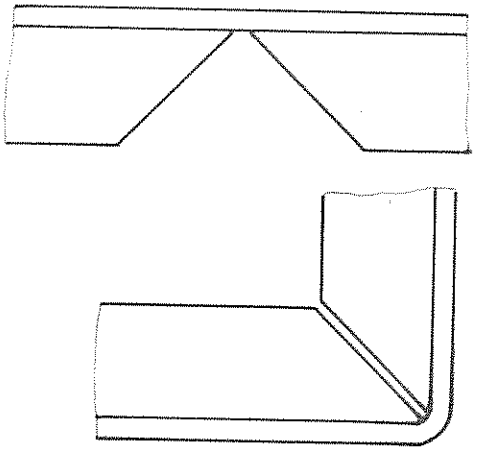


Fig. 18: Triangular notching for bending frames

To get rectangular notchings at the ends of L steel sections, insert the material to be processed at an angle of 45°. By appropriate further feeding, notchings of any lengths can be obtained.

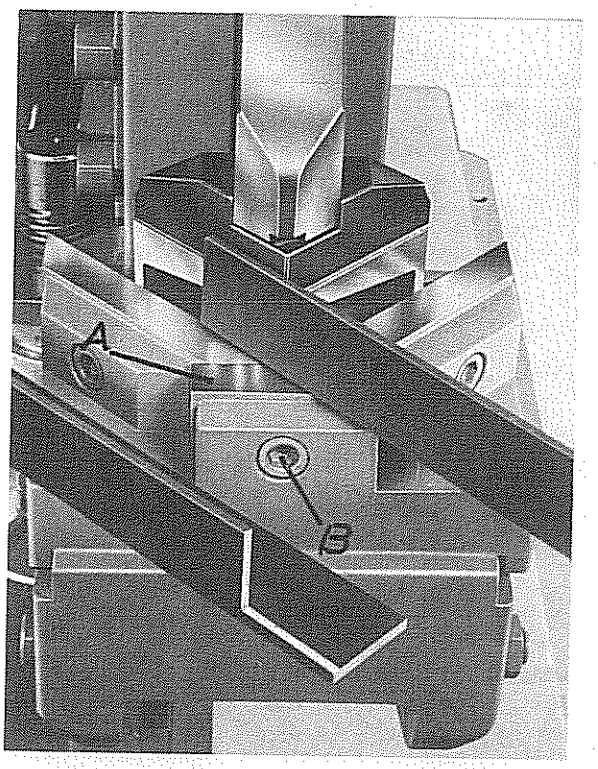


Fig. 19: Rectangular notching by means of the triangular notcher

For notching T steel sections in the web, remove the front diagonal blade A by loosening screw B, so that the flange of the T section can be inserted.

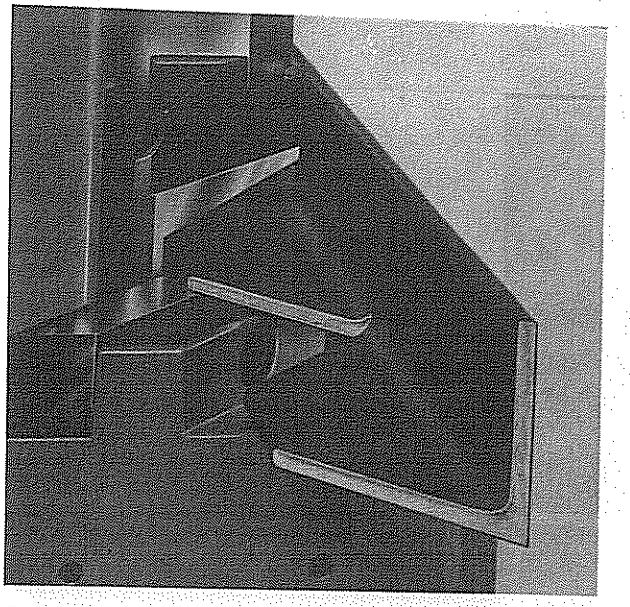


Fig. 20: Notching of the web of T steel sections

3. Rectangular notcher

Especially suitable for notching and coping flanges and webs. Wider and deeper notchings can be obtained by further feeding. To get triangular notchings, insert the material at 45^{o}. Because of the resulting sharp points, this procedure is not suitable for the production of frames.

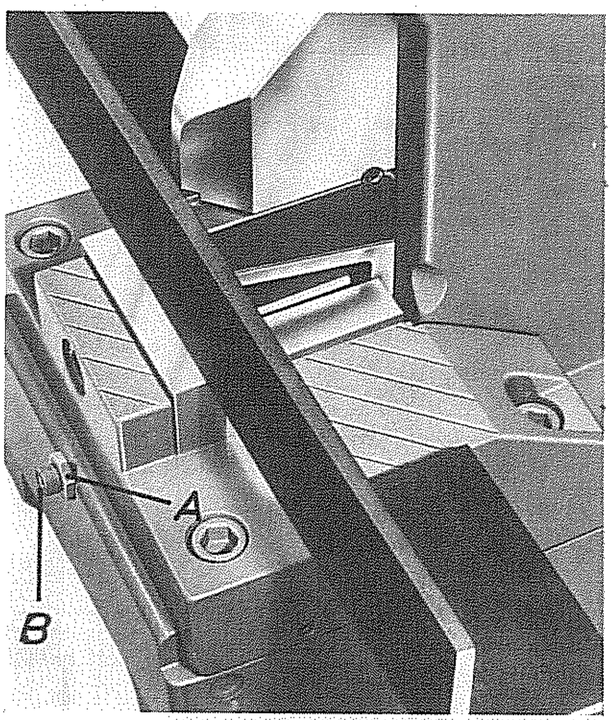


Fig. 21: Wide rectangular notchings

4. Adjusting the coping tools

The coping saddle is universally variable, so that the tool base can easily be adjusted to the upper blade.

Pay attention to whether the shearing gap is even.

The gap is adjusted for maximum performance. To process very thin material, reduce the gap. Lower the slide of the blades till the upper blade moves into the lower part of the tool, and check width of the gap by a feeler.

For adjusting purpose, (Cf. fig. 23) loosen the saddle screws A of the rectangular and triangular notcher, and adjust the saddle screws of the latter by means of the adjusting screws B. Fasten the saddle screws and pressure screw A (Cf. fig. 21), and secure it by nut B.

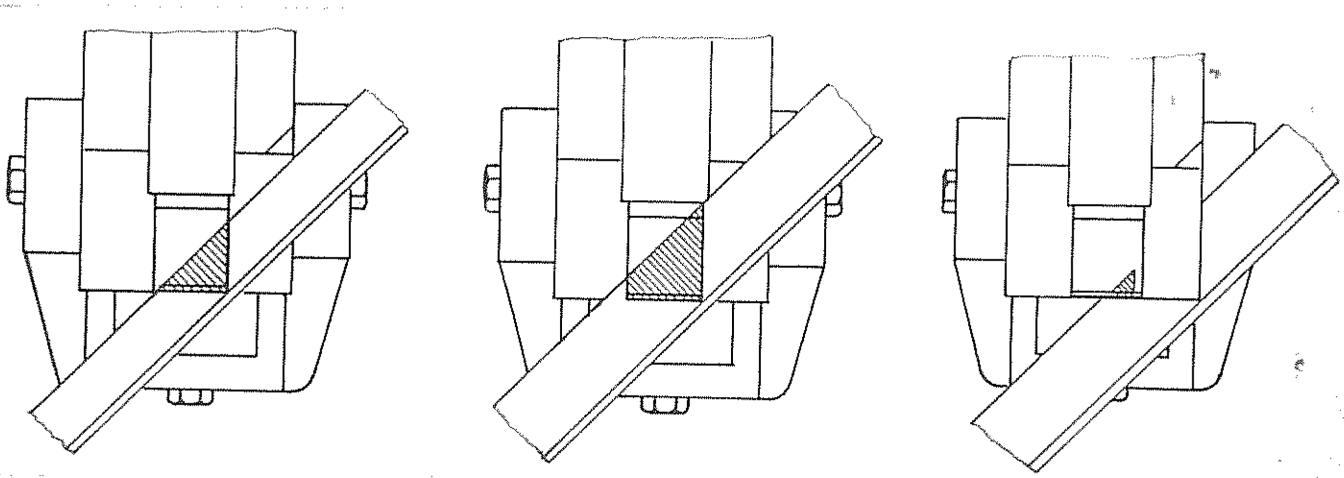


Fig. 22: Improvised triangular notching by means of the rectangular notcher

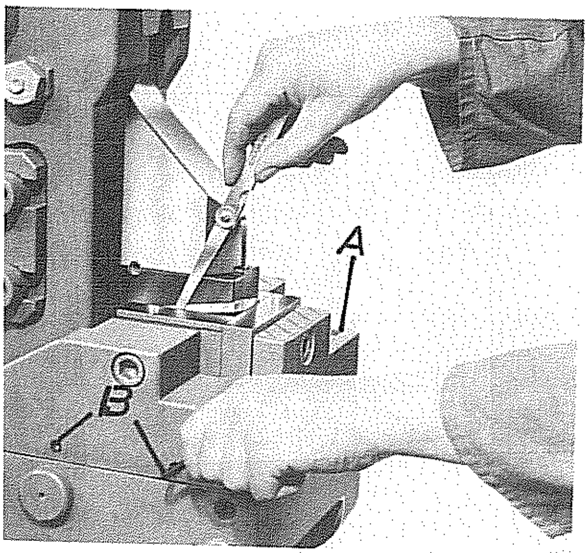


Fig. 23: Check of the cutting gap

5. Sharpening the rectangular and triangular notchers

Regrind the upper blades only at their lower, and the lower blades at their upper faces. (When mounting the blades, take care that the cutting gap is correctly adjusted. Grease the cutting edges with oil, at regular intervals.)

6. Special tools

Instead of "normal" triangular and rectangular coping and notching tools, various special tools can be used, such as coping tools for rounding fish plates, or for coping flat steel to be welded to round rods or pipes.

7. Special accessories

If you want to notch or cope without previous marking, we can supply special supporting tables, index rails etc.

Please advise us your inquiries. We will elaborate and offer you the most efficient solution.

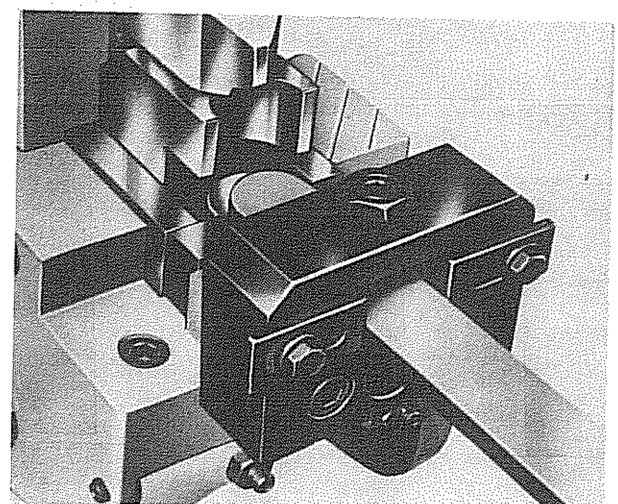


Fig. 24: Rounding-off of flat steel

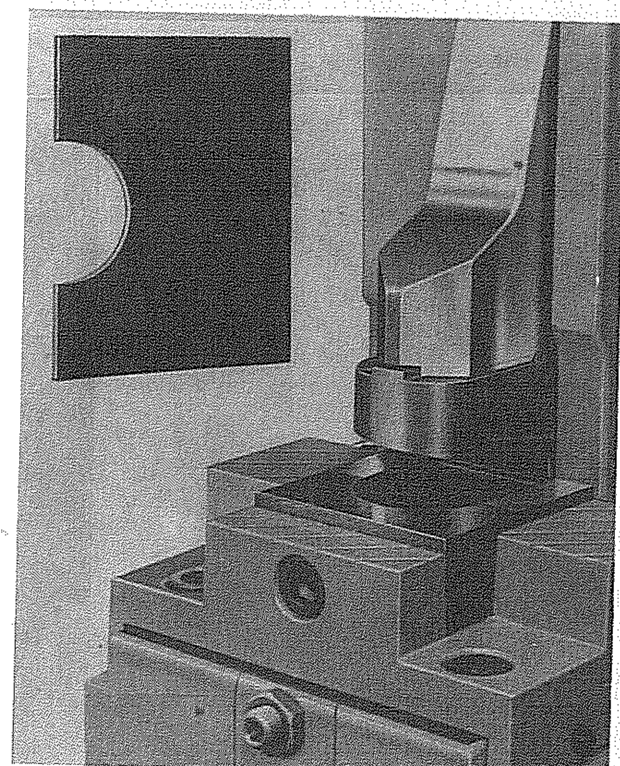


Fig. 25: Round notchings in flat steel

PLEASE NOTE!

A safety hood is mounted at the coper-notcher.
We strongly advise you not to remove this absolutely indispensable safety device!

SECTIONA STEEL SHEAR

1. General

The special advantage of the sectional steel shear is its extremely long and rigid slide. The movable sectional steel blade is firmly installed in the slide, i.e., the blade itself is fixed. Thus seizure is avoided.

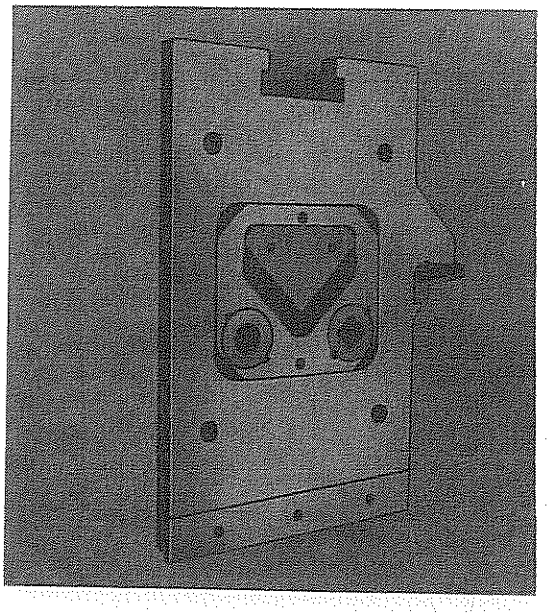


Fig. 26: Fixed mounting of the movable sectional steel blade in the section slide

2. Re-adjusting the guides of the slide

The guides of the slide, distinguished by their special gliding quality, can be adjusted. So clearance-free guiding, even after long service, is ensured. Moreover, this means an important safety provision, considering the enormous loads occuring at the sectional steel shear.

Re-adjustment of the slide should be executed as described under "Flat steel shear", point 6

3. Removing scales

Channels of adequate widths to let dry scales pass are provided between the machine plates and the slide of the shear. Should any accumulation of scales yet occur, rinse the channels with petroleum thoroughly.

4. Hodl-down

The hold-down must be adjusted in a way ensuring the exact angularity of cutting required. See that the root of the angle to be processed fits closely to the coned point of the pressing screw.

5. Types of blades

A) Standard design

The machines are basically equipped with blades for cutting L, round, and square steel sections. Detailed description, as well as maintenance and operation instructions for the blades supplied, are given below.

1. Dismounting the sectional steel blades

(Cf. fig. 29 and 30.)

a) Loosen the clamping lever, and push the hold-down to the right. (The clamping lever can be disengaged by depressing or pulling out its head. Thus the lever can be moved to any position.)

b) Unscrew the 4 cylinder head screws A.

c) Remove the fixed sectional steel blade B from the machine.

d) Loosen the fastening screws C at the movable blade.

e) Loosen the threaded bolt E slightly.

f) Take the movable sectional steel blade D out of the machine. (For mere cleaning purpose, the movable blade may be left within the machine.)

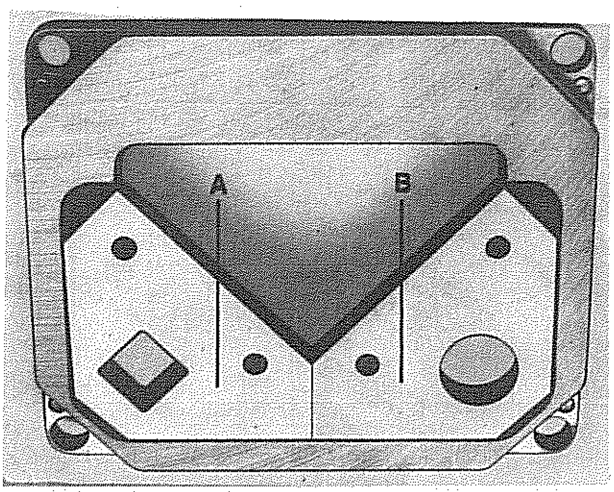


Fig. 27: Fixed sectional steel blade

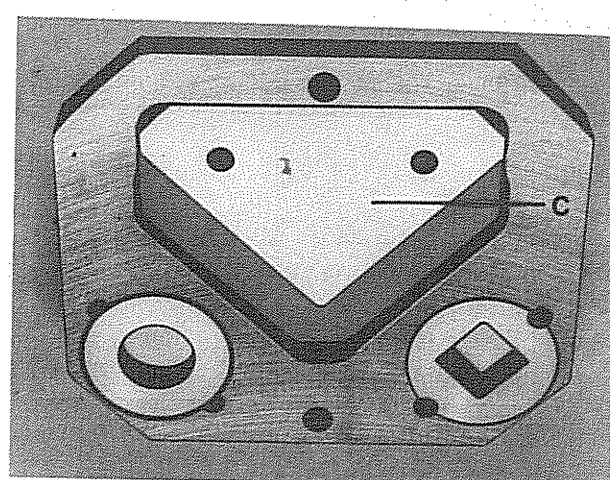


Fig. 28: Movable sectional steel blade

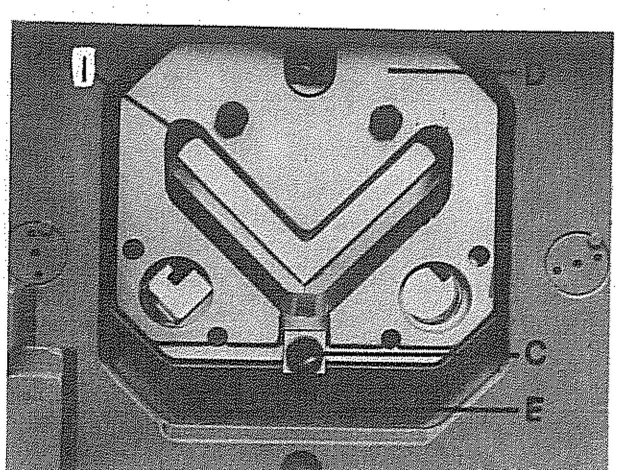


Fig. 29: Sectional steel blade, seen from body's side

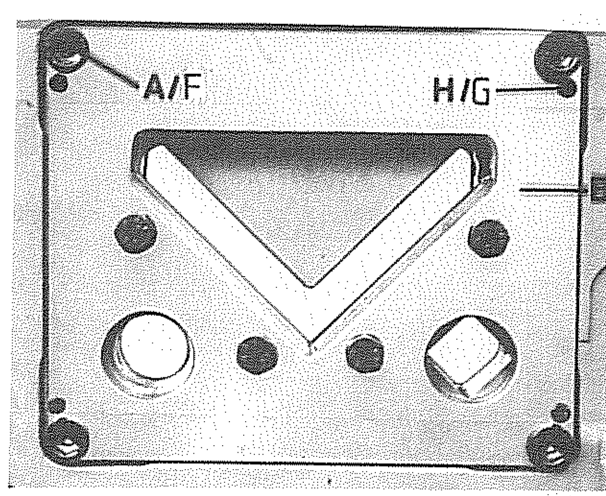


Fig. 30: Sectional steel blade, seen from the cover plates' side

2. Mounting the sectional steel blades

(Cf. fig. 29 and 30.)

a) Insert the movable sectional steel blade D into the slide E, and press it backwards, till it fits closely.

b) Tighten the fastening screws C together with the washers.

c) Tighten setscrew I.

d) Insert the fixed sectional steel blade B into the body.

e) Insert and tighten the cylinder head screws A together with the disk springs F.

f) Tighten setscrews G.

g) Loosen the cylinder head screws A by a complete turn, and tighten up the 4 setscrews G by 1/8 clockwise rotation. This is necessary to provide a cutting gap, and avoid that the blades are drawn one on top of the other.

h) Tighten the cylinder head screws A by means of an extended wrench (of approx. 300 mm), and secure the setscrews G by means of the locking caps H.

i) Mount the hold-down, and tighten it by the clamping lever.

3. Cleaning the sectional steel blades

The sectional steel blades need very little maintenance, because there are no trouble-prone parts. Depending on the amount of scales produced, they should be dismounted and cleaned now and then.

a) Dismount the sectional steel blades according to the instructions given under point 1.

b) Dismount the inserted blades A, B, and C (Cf. fig. 27 and 28.).

c) Clean both the sectional steel blade and the inserted blade thoroughly.

d) Assembling is done in reverse order.

e) Mount the sectional steel blades according to the instructions given under point 2.

NOTICE! To keep the falling-in scales dry, see that the sectional steel blades are free from grease.

4. Regrinding the sectional steel blades

Regrind the blades only at their faces. In case of incorrect sharpening, that is, if the cutting edges will not meet at only one point, the quality of cutting is no longer satisfactory.

Regrind the inserted blades in a way that the blades will completely and evenly cover up the cutting edges, with the slide being at its lowest position. Otherwise, replace the blades by new ones. The article number, being identical with the order number, is indicated on the blades. Please order only original MUBEA blades.

The blade inserted in the movable blade is designed pointed. Thus all kinds of sections-even shar-edged ones- can be cut. For processing steel angles of given dimensions of root radii, the blades can be provided with adequate radii. Thus there will be no distortions at the roots of sectional steel.

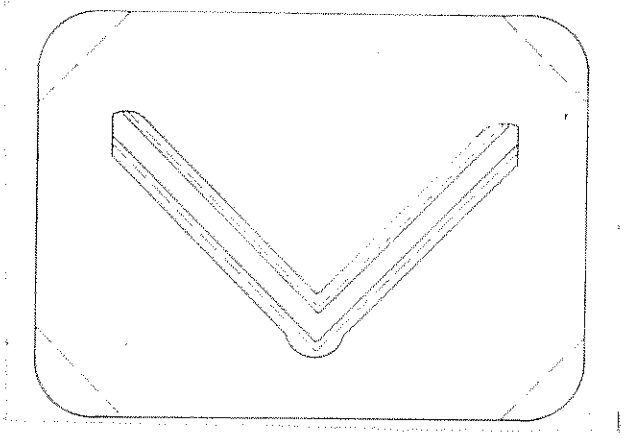


Fig. 31: Even regrinding of the blades

B) SPECIAL DESIGN

a) Quick-change blades

If you often process alternating U, I, or other steel sections, you are recommended to use our MUBEA quick-change blades. They comprise the blade frame and the inserted blade. So you need merely purchase the considerably less expensive inserted blades for processing the steel sections wanted.

Exchange of the blades is done in virtually no time. Without application of any tools, the clamping lever can easily be loosened, the inserted blades be removed, and new ones be mounted.

An additional advantage of using quick-change blades is, that the working height remains the same, even when alternating steel sections are processed.

This is very important, when the machine is equipped with an added roller conveyor.

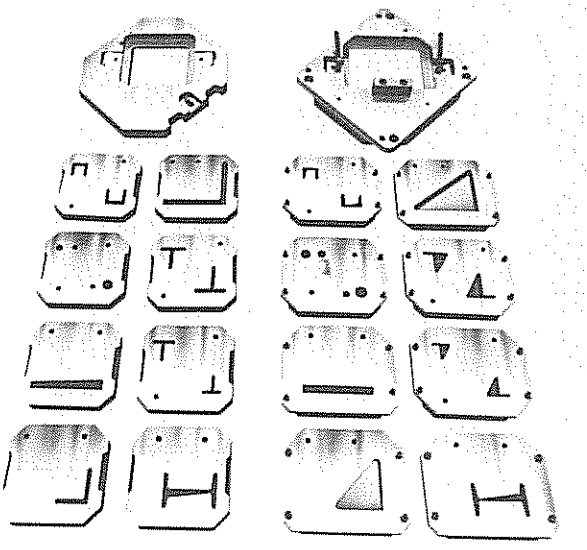


Fig. 32: Quick-change blade for the sectional steel shear

b) Sectional steel blades for special steel sections

To cut U, I, Z, or other steel sections, we supply sectional steel blades with fixed cutting insertions. According to size of the steel sections to be processed, differing openings can be worked into one pair of blades.

For cutting U and I steel sections of DIN standard we supply standardized sectional steel blades.
With equal dimensions, combined blades for processing U and I steel sections are available.

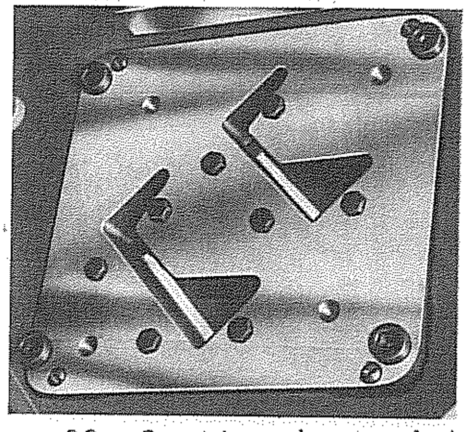


Fig. 33: Sectional steel blade for U steel sections, type PMF

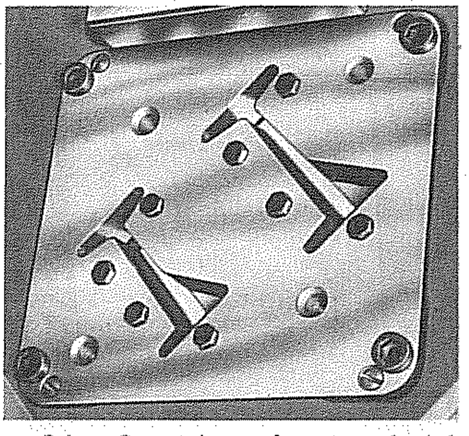


Fig. 34: Sectional steel blade for I steel sections, type PMF

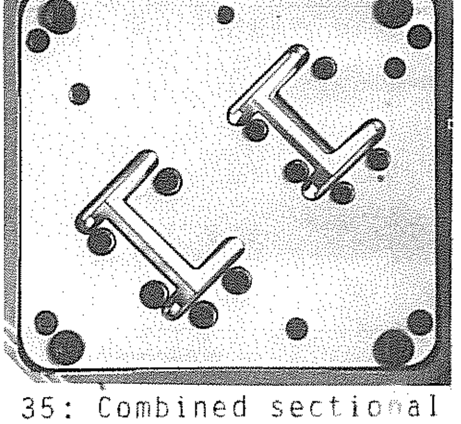


Fig. 35: Combined sectional steel blade of PME type for U steel sections

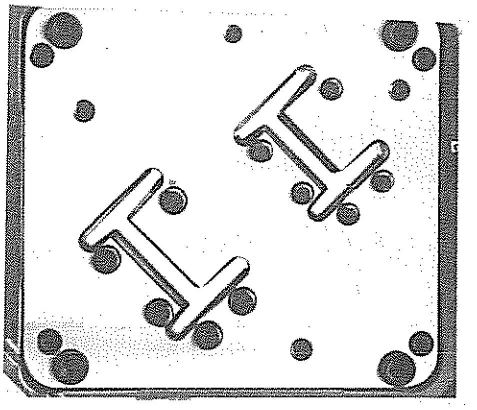


Fig. 36: Combined sectional steel blade of PME type for I steel sections

c) Pipe coping device

The pipe coping device, available for the sectional steel shear, is especially advantageous and worth the money.
Pipes of up to 60 mm outside dia. and up to 6 mm thickness can be processed.
For processing pipes of different diameters, you only need the two cutting insertions for both the movable and the fixed blade.

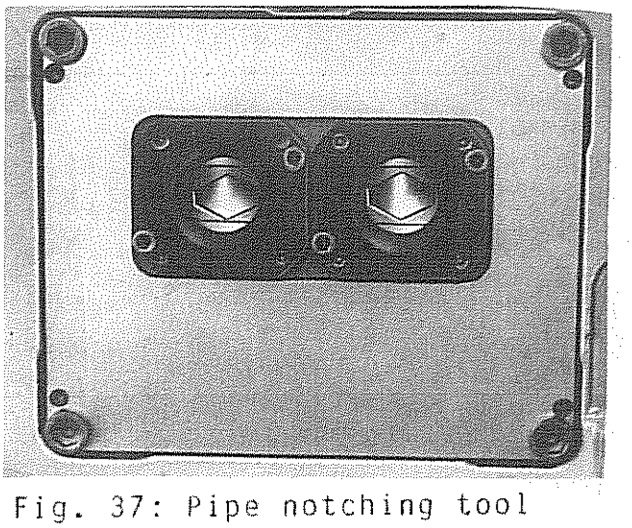


Fig. 37: Pipe notching tool

P U N C H

ONLY PUNCHING DEVICES AND TOOLS THAT ARE EQUIPPED WITH SUFFICIENT SAFETY DEVICES FOR THE PREVENTION OF FINGER INJURIES MUST BE USED, I.E., SOLELY THE VERY CUTTING RANGE SHOULD BE ACCESSIBLE.

In case of application of "open" tools for inlaid works, please mind the corresponding safety rules regarding bending operations at powered press brakes (folding presses), published in ZH 1/387, 4th edition, 1981.

1. General

The MUßEA punch is of outstanding advantage, and surpasses the application range of a normal punch considerably. Thus you can perform many operations, which formerly could only be done at eccentric presses.

The mounting area of the extremely long slide is of large and almost square cross section. This enables trouble-free mounting of even large and overhanging tools. Additionally, thanks to its length, the tilting forces are easily absorbed.

Even most complicated punching and coping operations can be performed by means of the various MUBEA-made tools, such as multi-punch and follow-on tools, or tools for executing guide cuts.

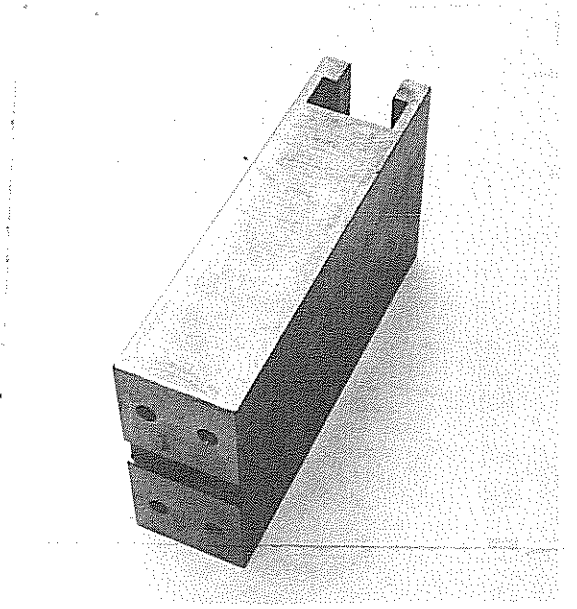


Fig. 38: Slide of the punch

2. Re-adjusting the guides of the slide

The guides of the slide, distinguished by their special gliding quality, can be re-adjusted universally. Thus clearance-free guiding is ensured even after long service.

Re-adjusting is done as follows:
(Cf. fig. 39 and 40.)

First, loosen the locking nuts A by counterclockwise rotation. Tighten the pressure screws B up to first pressure by means of a screw driver. Then loosen the pressure screws again by 1/16 rotation, and tighten the locking nuts A again. Thus the slide runs correctly.

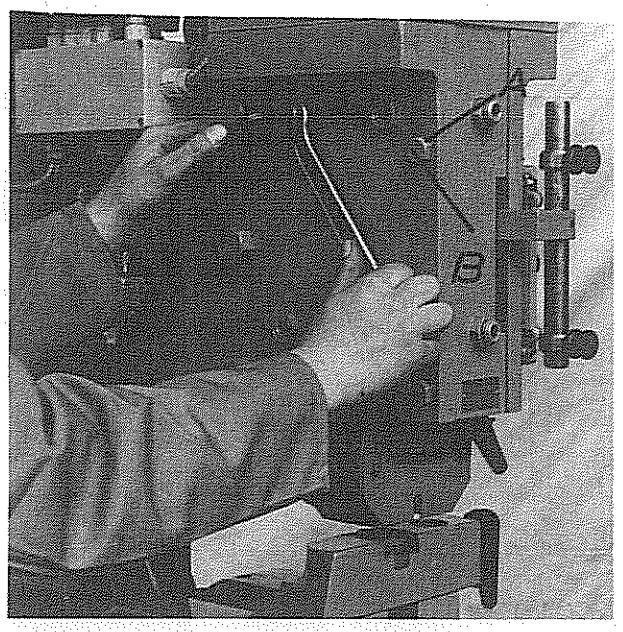


Fig. 39: Re-adjustment of the lateral guides of the slide

3. Saddle and saddle support

The punch saddle A of MUBEA punching devices is deliberately propped by a special saddle support B/C. It prevents the saddle from being resilient or tiltable, and on the other hand diverts the punching pressure vertically into the body of the machine.

The saddle support may remain mounted for all punching operations, and must only be removed in case of punching flanges of U and I steel sections.

This design is especially advantageous for the mounting of large and projecting tools, for they can easily be supported on all sides, and are thus protected in the best possible way.

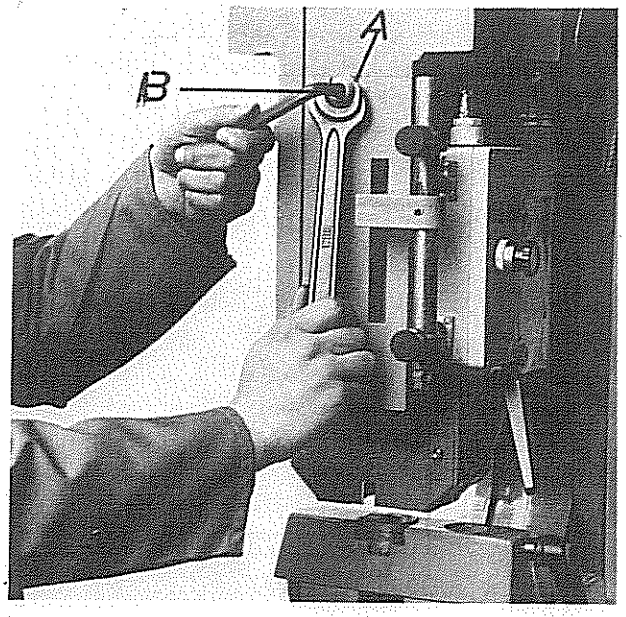


Fig. 40: Re-adjustment of the front guides of the slide

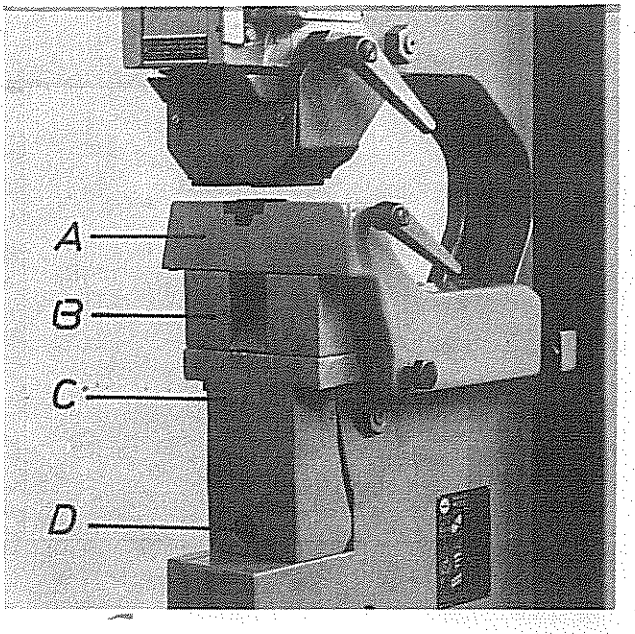


Fig. 41: Saddle and saddle support

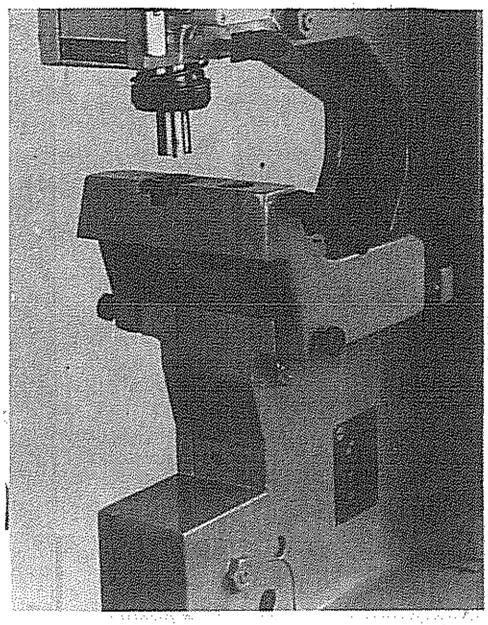


Fig. 42: Saddle without support

4. MUBEA standard punches and dies

MUBEA punches and dies are available in 4 standardized sizes, and can be used on all machines:

size 1 up to 15 mm dia.
size 2 from 15 to 30 mm dia.
size 3 from 30 to 40 mm dia.
size 4 from 40 to 50 mm dia.

Standard machine equipment allows use of punches and dies up to size 2.
For use of punches and dies surpassing this standard range, confer section 10 on special tools.

For punching flanges of U and I steel sections, flange dies with inclined faces can be supplied, according to the inclination of flanges. To be able to punch small L, T, U and I steel sections according to gauge line near the web, flange, or leg, eccentric dies with off-centre holes must be used. When mounting eccentric dies, push the punch saddle backwards till punch and die form one axis.

Please ask for the detailed catalogue of MUBEA standard punches and dies.

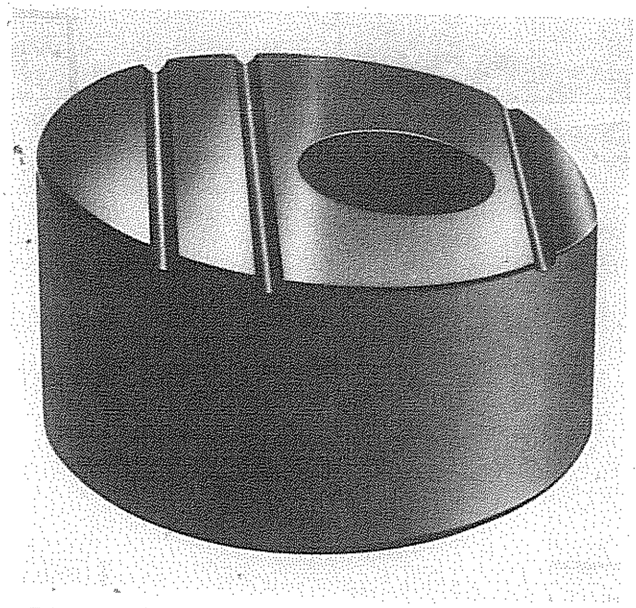


Fig. 43: Flange die for I steel sections

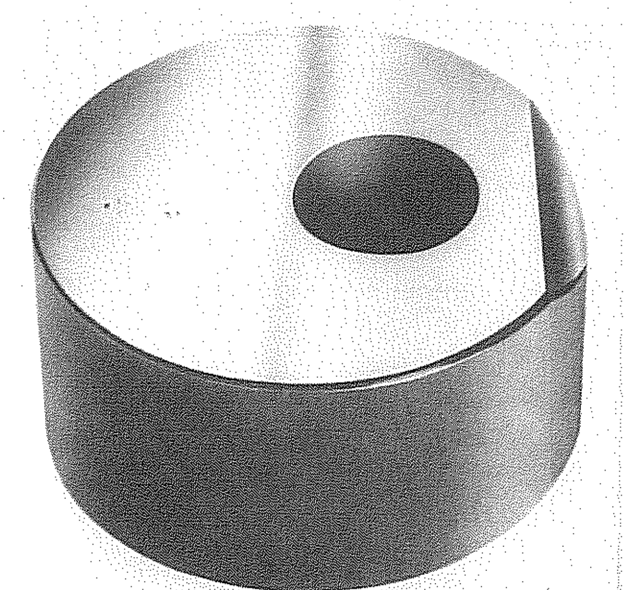


Fig. 44: Eccentric die for small L steel sections

5. Adjusting punches and dies

Punches and dies must always be in centric position. The cutting gap should be approx. 5% of the thickness of the material to be processed. (For punching material

of 10 mm thickness, the diameter of the bore hole of the die is thus 1 mm wider than the diameter of the punch, while the cutting gap is 0.5 mm) When ordering, please specify the thickness of the material to be processed.

After loosening of the fastening screws A and the adjusting screws B, the saddle can be pushed forward or backward. The adjusting screws C fix it laterally. With the punches and dies being correctly adjusted, tighten the adjusting screws C and B, as well as the fastening screws A of the saddle.

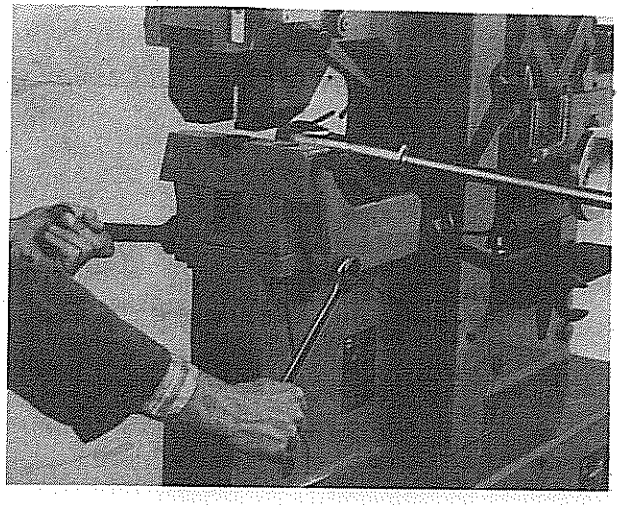


Fig. 45: Adjustment of punches and dies

When punching, check the position of the tools regularly. For this purpose, move the punch stepwise by tip operation on and into the die. Repeat that procedure whenever exchanging tools.

Centred material can exactly be approached in inching mode, by means of the built-in machine control. Thus erroneous punching is avoided.

6. Safety device against twisting of shaped punches

Square, oblong, or other shaped punches must be protected against twisting. For this purpose there is a channel on both punch holder (at the fitting side) and each punch.

To lock the punch, insert a centering pin of.4.7 mm dia. into that channel.

7. Stripper

The rigid and inflexible stripper is directly joined to the body of the machine, by means of the two clamping levers A. Differences in elevation between die and stripper level should be compensated by fixing the shims provided.

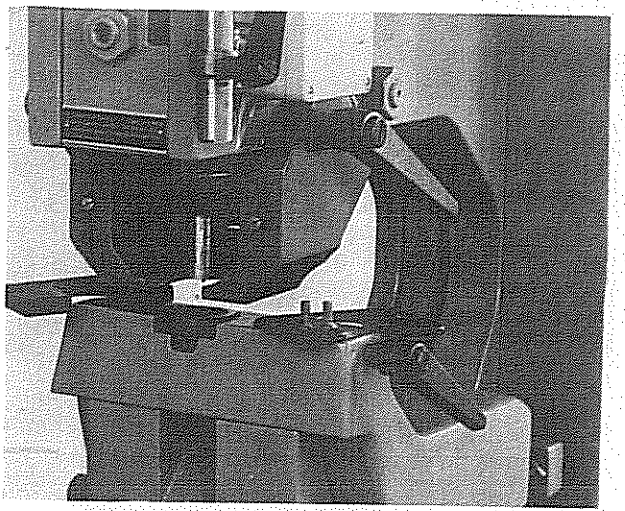


Fig. 46: Stripper

8. Re-sharpening the punching tools

Re-sharpen the punching tools at their face only, for otherwise the clearance between punch and die is altered. To lengthen the service life of the tools, brush the edges with oil, from time to time.
Often, it is simpler to order new tools. This will be more economic, and guarantees accurate cut.

9. Quick-change device for punches and dies

The machine is basically equipped with a quick-change device for round punches and dies. Both tools can be reset quickly and reliably.
This device is particularly efficient for small-lot production, which requires frequent tool change.

Shaped punches and dies, too, can be used with this device, but you should check the cutting gap when you exchange.
Often, the saddle needs to be re-adjusted. Additionally, the outer rings for the punch and the coupling nut must be refastened after the first punching stroke, since the centering pin is pressed into the setting channel not before the first stroke is completed.

In case of processing larger series, it is advisable to use the more rigid punch fastening, i.e. fastening by means of coupling nuts.

Resetting of the quick-change device is done by loosening the threaded bolt A. (Cj. fig. 47.) Thus the centering ring gets free, and can be unscrewed. After that few manipulations, the punching device is ready for being fixed by coupling nuts. Mount the quick-change device in reverse order.

If, for any reason, a punch cannot be clamped in securely, correct the basic position of the centering ring.

To do this, loosen setscrew A, adjust the centering ring, and lock it again by the setscrew.

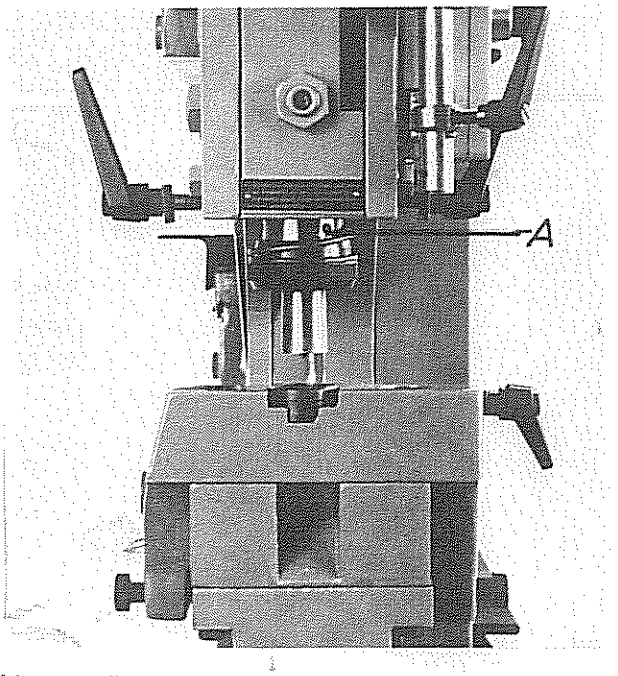


Fig. 47: Quick-change device for punches and dies

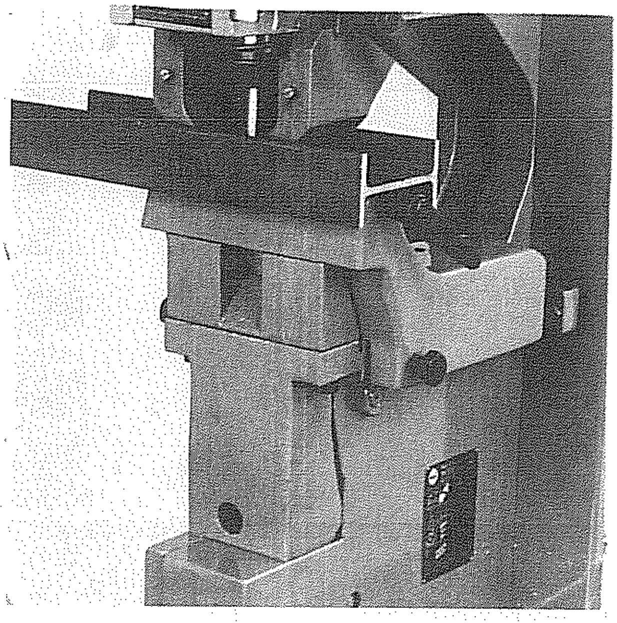


Fig. 48: Web-punching of I steel sections

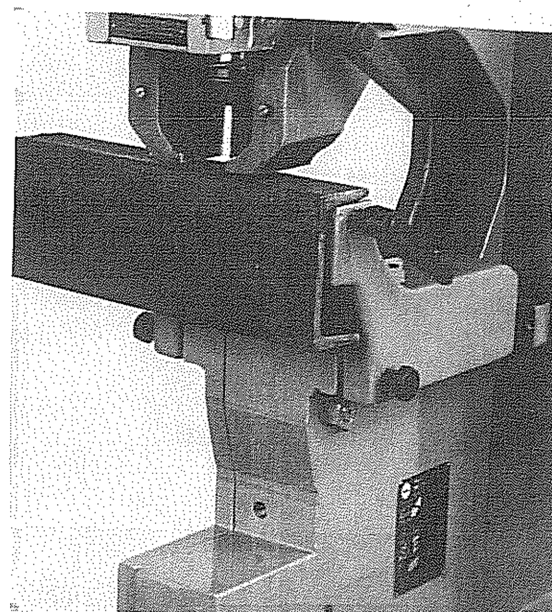
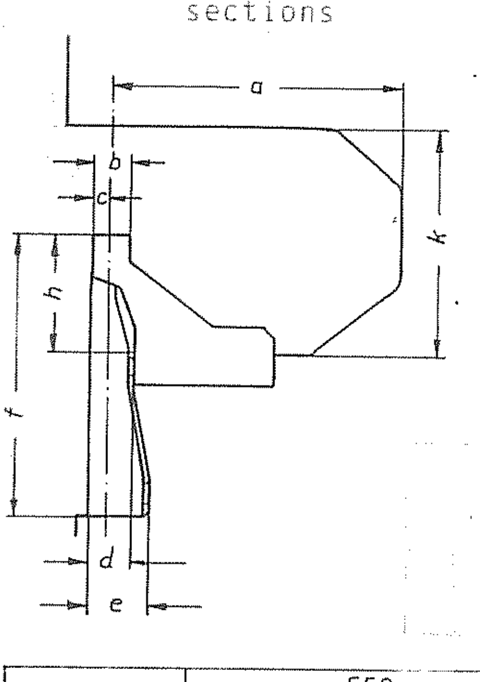
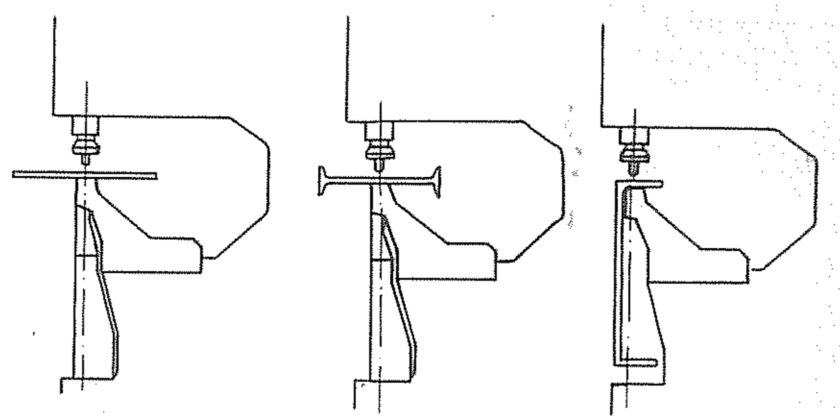


Fig. 49: Flange-punching of U steel sections





Punching of flat bars, angles and tees always with saddle support.

Punching in web of channels and I-beams always with saddle support

Punching in flange of channels and I-beams without saddle support.

KLSH	550		900		1100	
	mm	inch	mm	inch	mm	inch
a	320	12 19/32"	500	19 11/16"	500	19 11/16"
b	47,5	1 7/8"	68	2 11/16"	68	2 11/16"
c	22,5	.57/64"	30	1 3/16"	30	1 3/16"
d	55,5	2 3/16"	70	2 3/4"	70	2 3/4"
e	74,5	2 15/16"	125	4 59/64"	142	5 19/32"
f	305	12"	605	23 13/16"	640	25 13/64"
h	130	5 7/64"	205	8 5/64"	210	8 17/64"
k	240	9 29/64"	375	14 49/64"	410	16 1/8"

Fig. 50: Punch saddle with dimensions reg. type KLSH

10. Special tools

The wide range of MUBEA standard tools guarantees prompt delivery of all current special tools.The special design of MUBEA punching devices additionally offers a great variety of application of special tools, which cannot be subsumptioned.

a) Stationary three-punch tool

If holes of differing diameters are to be punched in short alternation, the application of a three-punch tool is advisable. Thus holes of three different diameters can be punched in one passage, without dismounting a tool. The punch required is set in working position by merely pulling a slider.

b) Variable two-punch tool

This tool offers the possibility to punch two holes of equal or different diameters, simultaneously and at different distances. The distance wanted can be learned from a scale, and is set by one movement of the hand. This is done simultaneously for both punches and dies, so that there is no need of further adjusting operations.

c) Special punching equipment for mounting punches and dies of up to 50 mm cutting diameter

All punching tools, as for example round, square, rectangular, and oblong punching, can be mounted to the tool fixture.

The complete appliance comprises: M 64 punch holder, M64 coupling nut with an opening of 50 mm dia., reducing bush with an opening of 40 mm dia., stripper, saddle with an opening of 80 mm dia., 80/60 die holder, and saddle support.

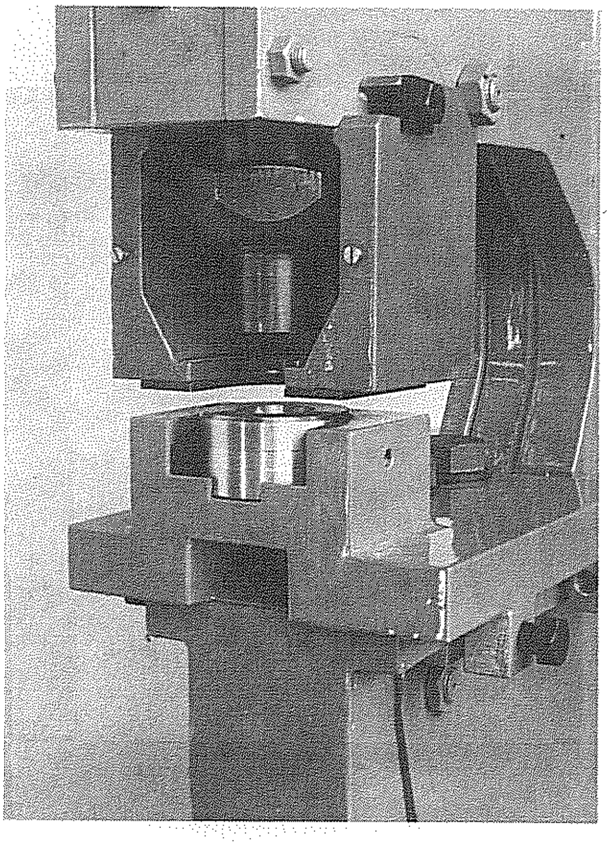


Fig. 51: Special punching equipment for accommodating punches and dies with diameters of up to 50 mm

The punches are chucked by means of a coupling nut. All shaped punches are basically supplied with a channel, allowing the tools to be mounted lengthwise and at right angles to the machine. When ordering tools, please specify both thickness and tensile strength of the material to be processed.

d) Special punching equipment for mounting punches and dies of diameters in the range of 50.5 to 100 mm

All punching tools, as for example tools for round, square, rectangular, and oblong punching, can be mounted to the tool holding fixture. The latter comprises: punch holder, stripper, saddle, die holder, and saddle support.

When ordering shaped punches, (oblong and rectangular), please state whether they will be mounted lengthwise or at right angles to the machine. Furthermore, specify both thickness and tensile strength of the material to be processed. Fix the punches by a wedge.

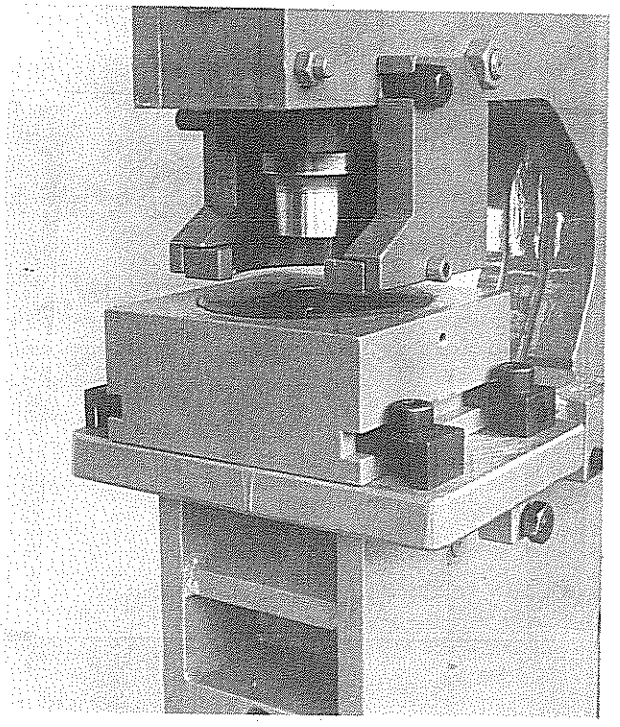


Fig. 52: Special punching equipment for accommodating punches and dies from 50.5 to 100 mm dia.

e) Tool for notching pipes

Pipe notching tools serve to notch pipes in a way, that they can be welded together at right angles, without any finishing. This tool enables notching of pipes of an outside diameter of up to 60 mm, at a maximum material thickness of 6 mm. For processing pipes of different diameters, you only need the two cutting inserts of the movable and the fixed blades.

When inquiring, please specify the following:

a) the dimensions of the pipe to be processed

b) the outside diameter of the pipe to which the processed pipe should fit

c) the material of the pipe to be notched.