

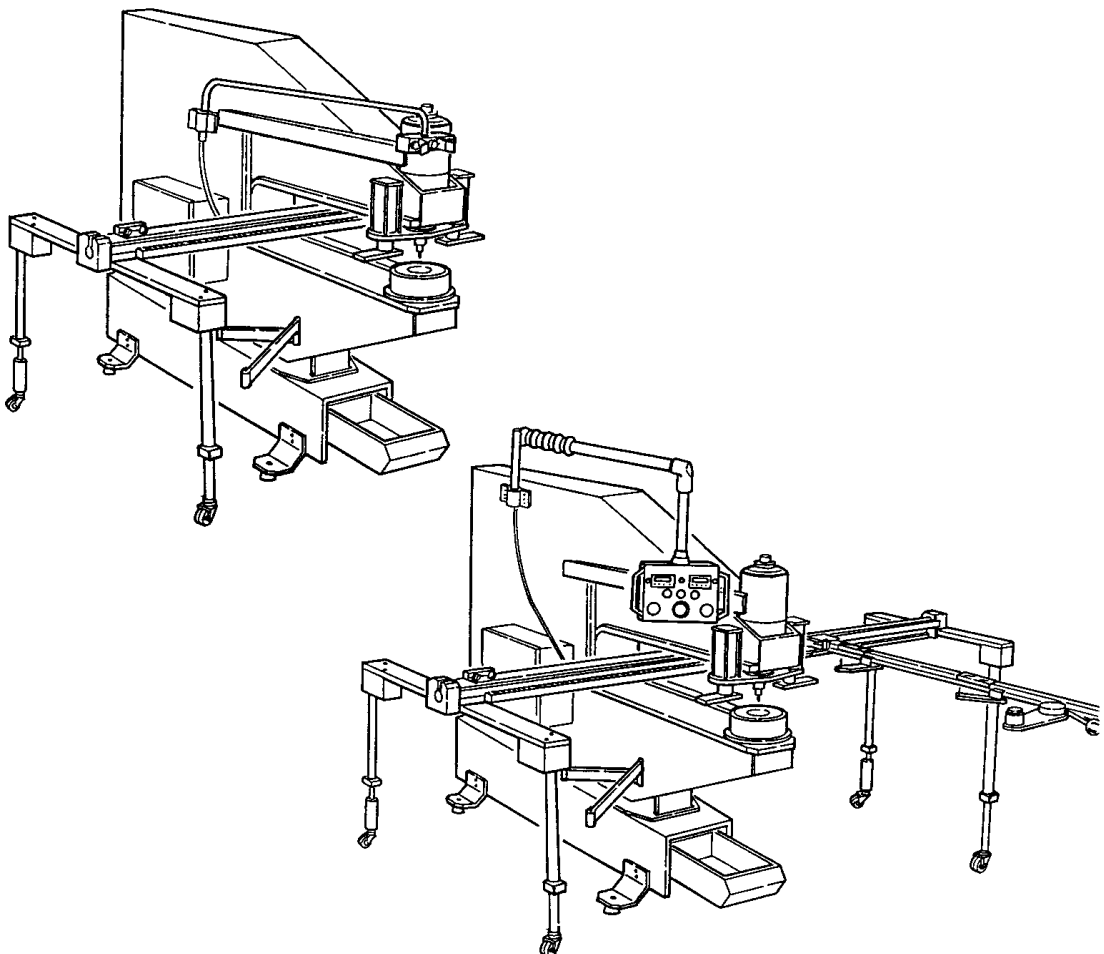
Operating Instructions

for the

NOVOpress

Punching Press

HSTL-880



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HSTL-880 Hydraulic Punching Press without Two-Hand Control

Types

HSTL-880 with AV2 stop device

HSTL-880 Hydraulic Punching Press with Two-Hand Control

Types

HSTL-880 with AV2 stop device
 HSTL-880 with AV4 stop device
 HSTL-880 with AV4 stop device and vernier adjustment
 HSTL-880 with AV4L stop device (long)
 HSTL-880 with AV4L stop device and vernier adjustment (long)

HSTL-880 D Hydraulic Punching Press with Two-Hand Control and Digital Display

Types

HSTL-880 D with AV5 stop device
 HSTL-880 D with AV5 stop device and vernier adjustment
 HSTL-880 D with AV5L stop device (long)
 HSTL-880 D with AV5L stop device and vernier adjustment (long)

Operative Range

The HSTL-880 was designed for stationary use. With this machine you can punch holes of the following shapes and sizes into straight sheets of metal and control box doors:

Round holes from \varnothing 6.6 mm (1/4")	up to	\varnothing 130 mm (5 1/8")	
Squares	up to	92 mm (3 5/8")	side length
Oblongs	up to	130 mm (5 1/8")	diagonal size

Special forms: dies for five-hole perforations and oblong perforations

Special dies on request

Sheet metal thickness up to 3 mm (1/8") with a maximum strength of 370 N/mm² (53650 psi).

Note:

With die diameters of up to 130 mm (5 1/8") and with diagonal sizes of up to \varnothing 130 mm (5 1/8") the slugs fall through the opening into the lower arm of the column. When using special tools larger than this, the slugs have to be individually removed from the lower die.

Technical specifications without the stop device

Height incl. clevis	1200 mm (47.25")	
Width incl. control box	510 mm (20")	without 440 mm (17.3")
Depth with two-hand control	2185 mm (86")	without 1750 mm (68.9")
Working height with pedestal 4123	885 mm (33.7")	without 535 mm (21")
Weight with AV 4	522 kg (1150 lb)	without 388 kg (855 lb)
Power	135 kN (13.5 tonf)	

Forward stroke is variable from 80 mm (3.1") to 40 mm (1.57")

Forward stroke speed at max. stroke length and with HA1-ES basic unit	9.5 mm /sec. (0.37"/sec).	(80 mm traverse / 8,5 sec.)
Forward stroke speed at max. stroke length and with HA2 basic unit	17 mm/sec. (0,67"/sec).	(80 mm traverse / 4,7 sec.)

Measuring range	X-axis	Y-axis
AV4/AV5	1092 mm (43 inch)	750 mm (29,5 inch)
AV4 long/AV5 long	1700 mm (67 inch)	750 mm (29, inch)

Door dimensions	AV4 / AV5	AV4 long / AV5 long
width	1000 mm (39,5 inch)	1000 mm (39,5 inch)
length	2000 mm (78,7 inch)	2200 mm (86,6 inch)

Hydraulic Punching Press

1. Setting up

- Attach supplied adjusting bases to the bases of the punching press.
- Align the punching press using the adjusting bases.
- If necessary: The column is attached to a base plate (accessory part, Order No. 7555) or to a foundation using 4 M 20 screws.

Two-hand control

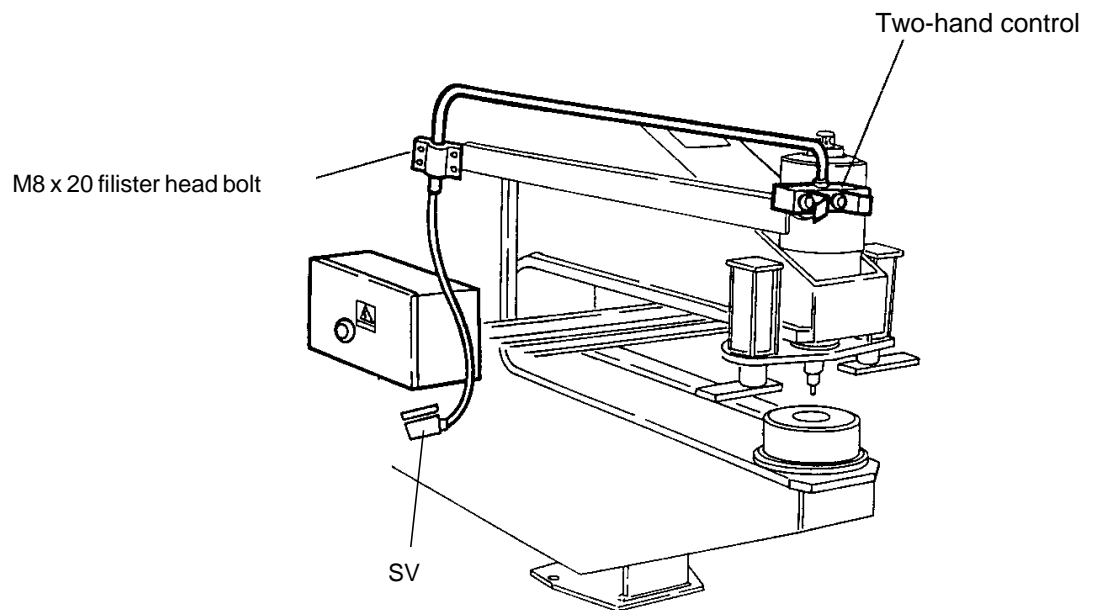
The two-hand control is to prevent accidents in the working area of the HSTL-880.

The two-hand control's control box is fastened to the left side of the column.

The swivel arm and control panel and the 10-pin plug are delivered separately, i.e. not assembled.

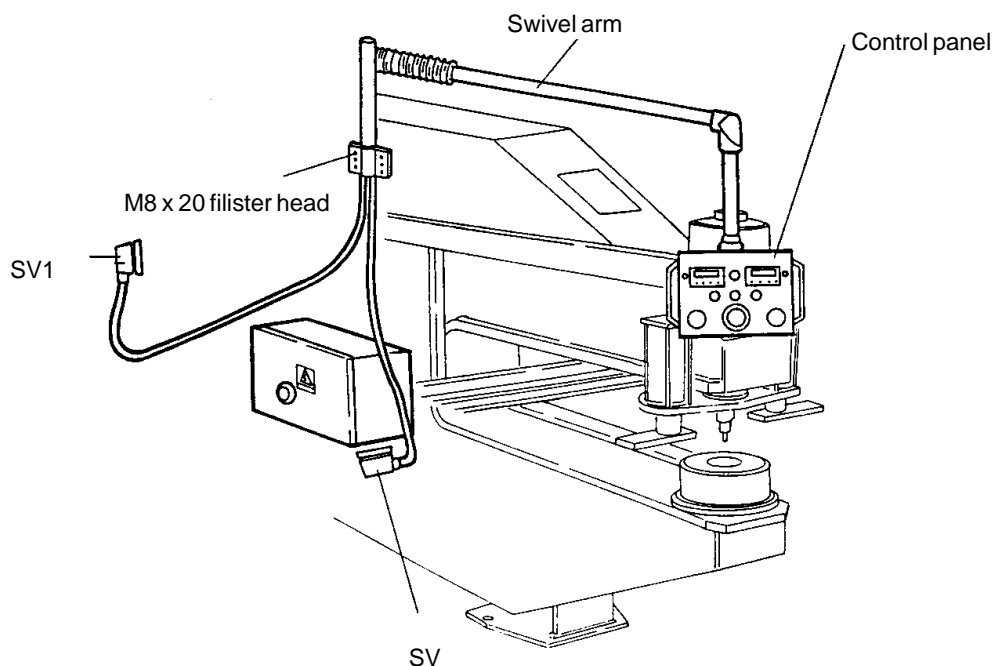
1 Two-hand control for the AV 4, Order No. 5270

The swivel arm and control panel are delivered separately, i.e. not assembled.



2 Two-hand control for the AV 5, Order No. 7380

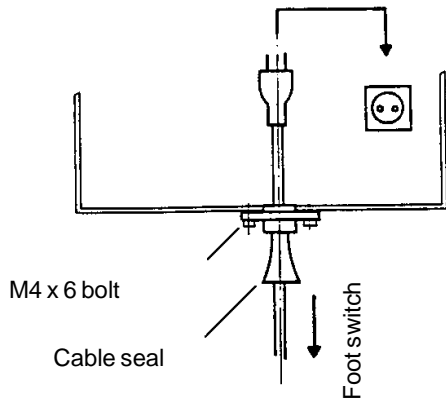
The swivel arm with control panel, 10-pin SV and 16-pin plugs SV1 are delivered separately, i.e. not assembled.



Assembly of the Two-Hand Control

1. AV4 two-hand control.

- 1.1 Fasten the swivel arm with 4 M8 x 20 filister head bolts on the left side of the column.
- 1.2 Connect the 10-pin SV plugs and secure with the ring.

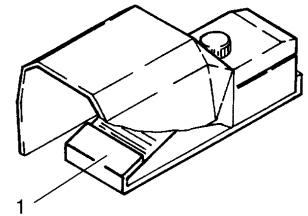


- 1.3 Remove the screwed-in cable seal and the lid from the control box. Only unscrew the M4 x 6 bolts for this.
- 1.4 If necessary:
Disconnect the mains cable from the HA basic unit's foot switch. Slide the cable seal and lid on to the cable.
- 1.5 If necessary:
Re-connect the basic unit's mains cable to the foot switch.

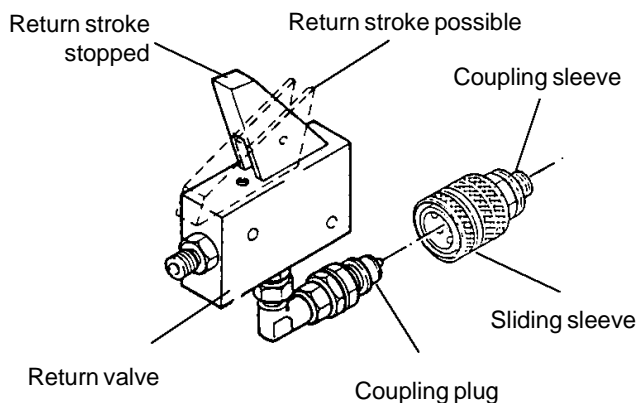
- 1.6 Push the basic unit's mains cable with the plug through the hole, sized 43 mm, in the bottom of the control box. Plug it into the socket in the control box.
- 1.7 Fasten the lid with both M4 x 6 bolts to the bottom of the control box.
- 1.8 Tighten the screws on the mains lead cleat on the screw-in cable connection.
- 1.9 If necessary: Place the basic unit's foot switch into the bracket (1).

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The HA basic unit's foot switch must always be kept in the bracket.



- 1.10 Slide the coupling sleeve of the HA basic unit on to the coupling plug on the return valve.



Coupling

Hold the coupling sleeve on to the sliding sleeve and slide it on to the coupling plug

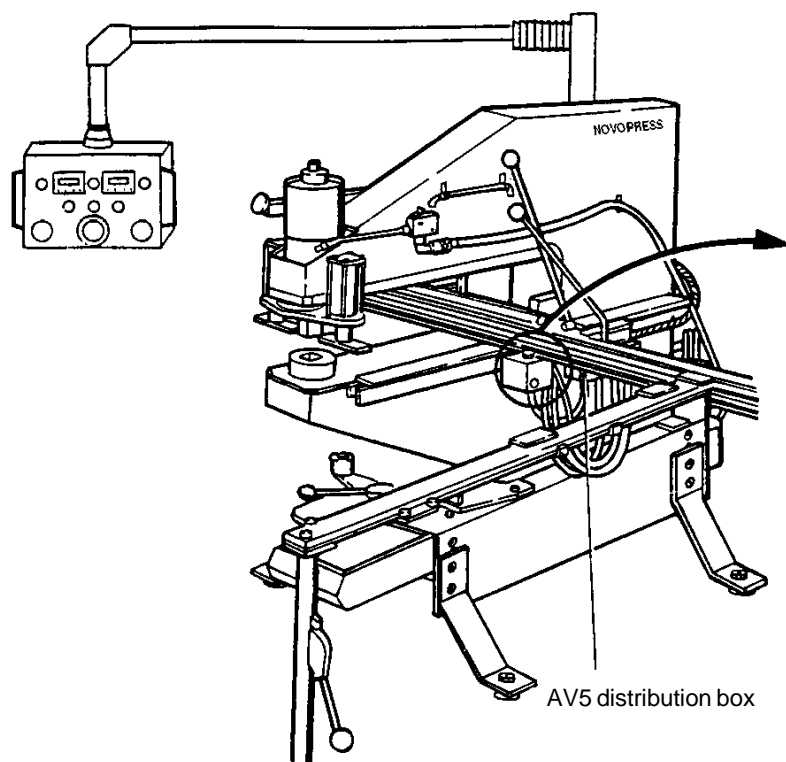
Uncoupling

Hold the coupling sleeve on to the sliding sleeve and pull away from the coupling plug

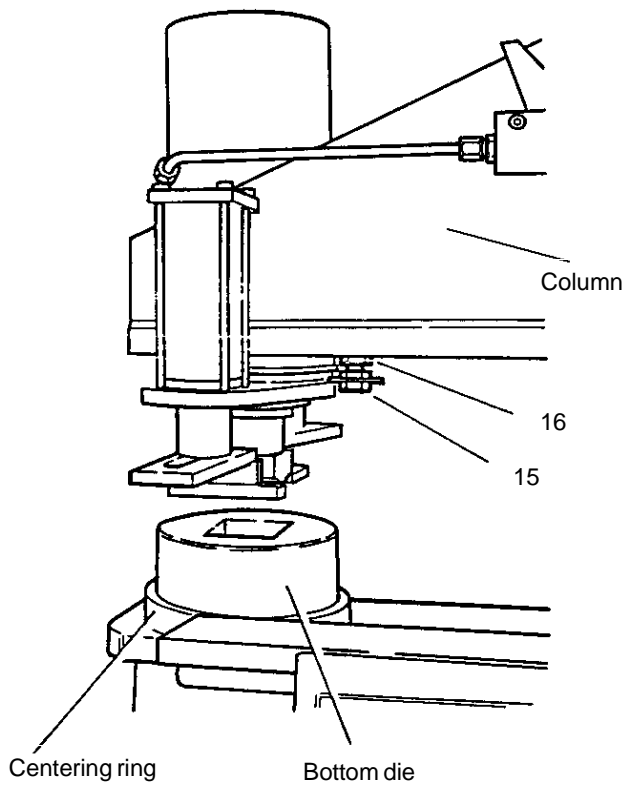
- 1.11 Connect the control box's mains cable with the Euro-plug to the mains (220 V).
- 1.12 Press both black buttons at the same time to operate the punch.

2. AV5 two-hand control

- 2.1 Proceed as described in points 1.1 to 1.12.
- 2.2 Place the 16-pin plug in the distributor box and fasten with the ring. See picture.



Further steps for setting up: See the instructions for the individual stop devices AV4, AV4L, AV5, AV5L.



2. Column / Return stroke stop

The column is a welded construction in the form of a "C".

Its working range is 880 mm (34.65").

The centering ring for the bottom die is placed on the lower arm of the column.

The length of the piston's return stroke can be limited as follows:

Unscrew the hexagonal nut (16).

To shorten the return stroke's length:
screw out the bolt (15).

To increase the return stroke's length:
screw in the bolt (15).

Secure the bolt (15) with counter nut (16).

3. Cylinder/Piston stroke setting

Fasten the cylinder with the M 8 x 35 filister head bolts to the top arm of the column.

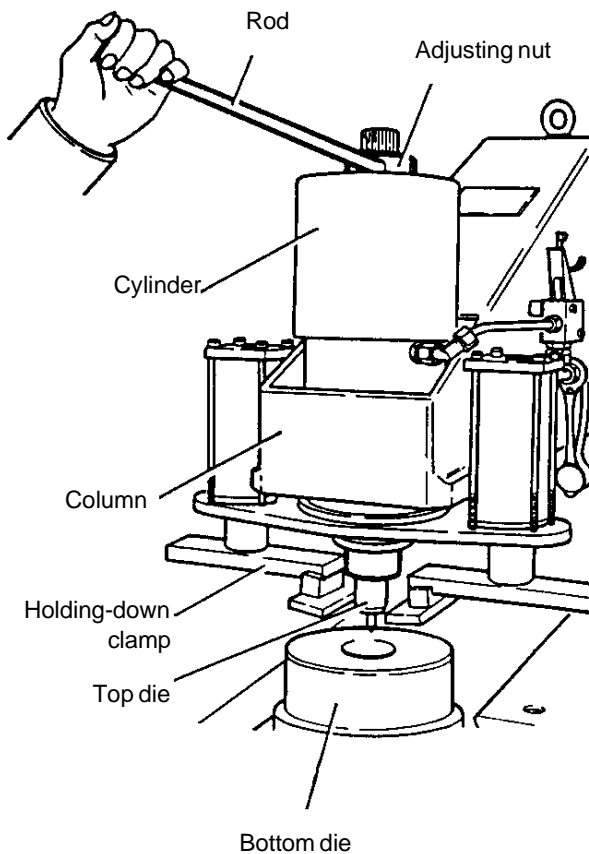
The length of the piston stroke is to be set so that the waste is just pushed out of the bottom die.

The adjusting nut sets the length of the piston stroke.

By turning the adjusting nut to the right:
the stroke is shortened

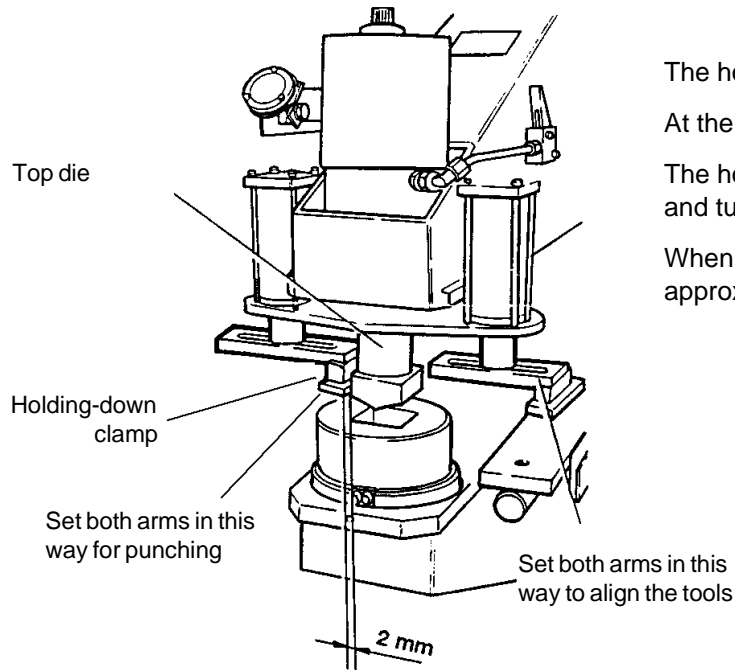
By turning the adjusting nut to the left:
the stroke is increased

The rod that is hanging on the right hand side of the column is to be used for turning the nut.



- 3 Make sure that the stroke is set so that the top die's collar does not touch the holding down clamp (see also section 4, Holding-Down Clamp).

4. Holding-Down Clamp

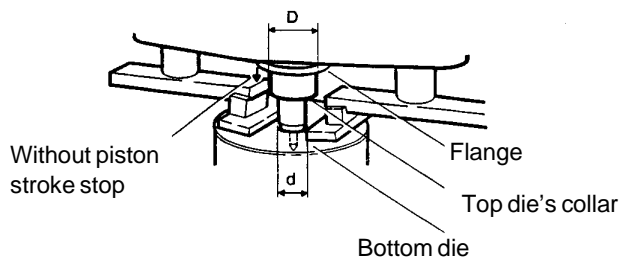


The holding-down clamp travels with the piston.

At the same time it functions as a stripper.

The holding-down clamp's arms are easily moved and turned.

When punching, both arms should be moved to approx. 2 mm from the top die.



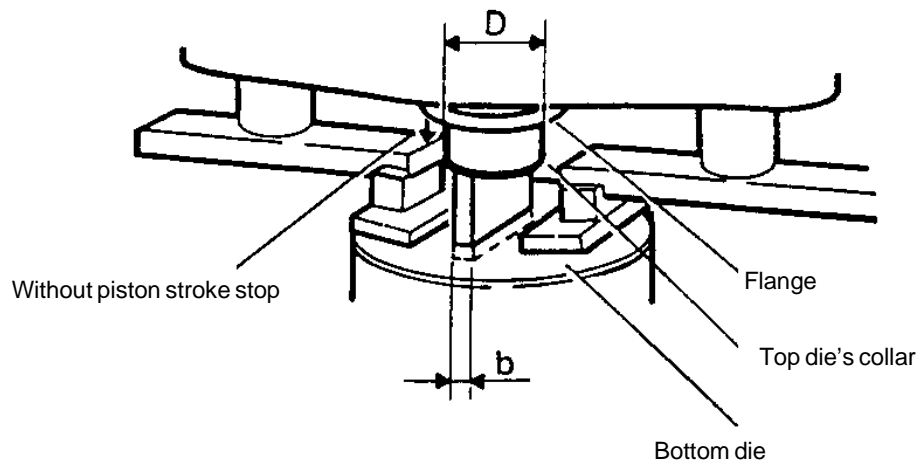
Piston stroke limitation

The lower cylinder flange or the top die's collar can run into the holding-down clamp's arms when certain tools are used.

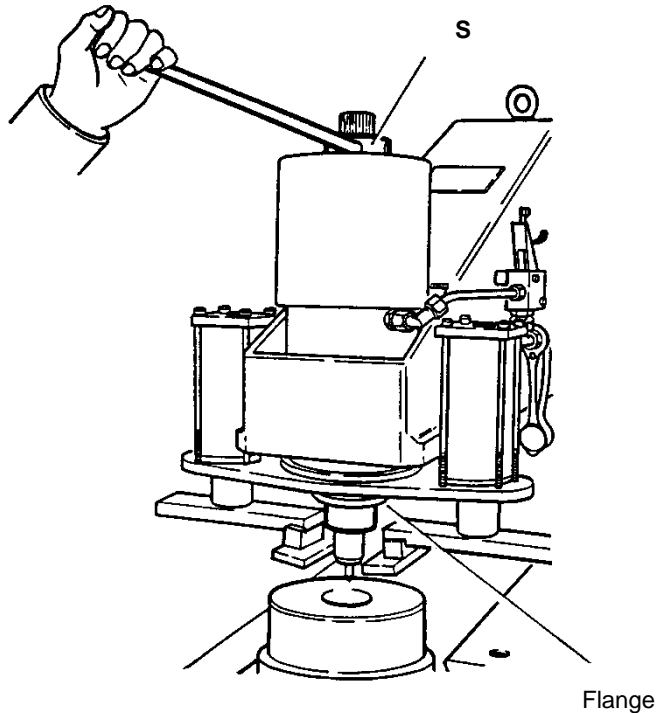
1 The length of the piston stroke must be limited for the following dies.

1. For round dies, the nominal diameter of which ("d") is smaller than the die's collar ("D").

2. For profile dies, the shorter side of which ("b") is smaller than the die's collar "D".



If this is not observed, the holding-down clamp's arms will be damaged.



Limit the piston stroke as follows:

1. Unscrew the nut ("S") anti-clockwise as far as possible.
2. Screw in the nut ("S") by approx. ten revolutions.

The piston stroke has now been stopped so that the cylinder flange or the top die's collar is not driven into the holding-down clamp's arms.

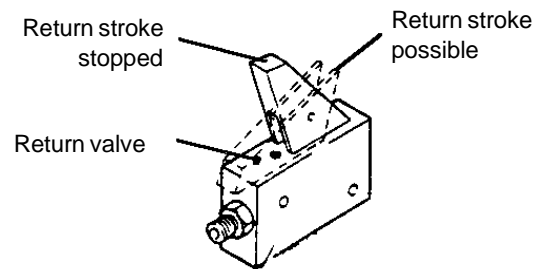
5. Return valve, Order No. 1721

The return valve is for aligning the dies and for punching without using the stop and center.

If the return valve's lever is in the upright position, then the return stroke is blocked, i.e. the piston and the top die remain in place after the electricity has been turned off.

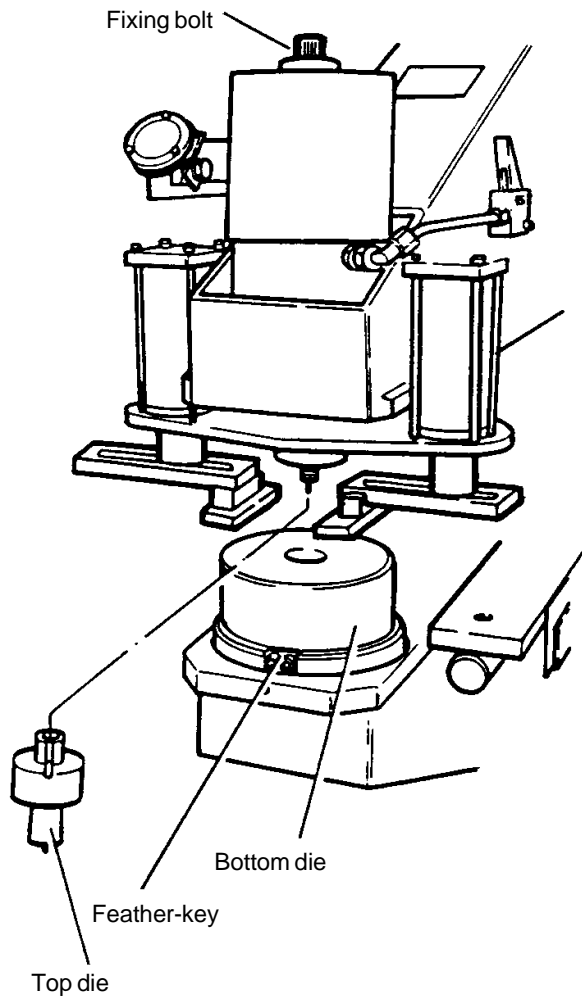
If the lever is in the horizontal position, then the piston can return, i.e. the piston returns after the electricity has been turned off.

During punching with the stop device, the lever is in the horizontal position.



6. Mounting the tools

A set of tools consists of the top die (stamp) and the lower die.



- 1 Place the top die into the centering ring on the cylinder's piston so that the fitting piece is positioned in the top die's groove.
- 2 Screw the cylinder's fixing bolt into the top die.
- 3 Turn the top die to the left as far as possible and then fasten with the rod. The rod is hanging on the right hand side of the column.
- 4 Place the lower die into the centering ring on the bottom column arm.

Note:

The receptacle for the lower die has to be free from dirt, shreds etc.

The feather key must be in position in the centering ring's groove.

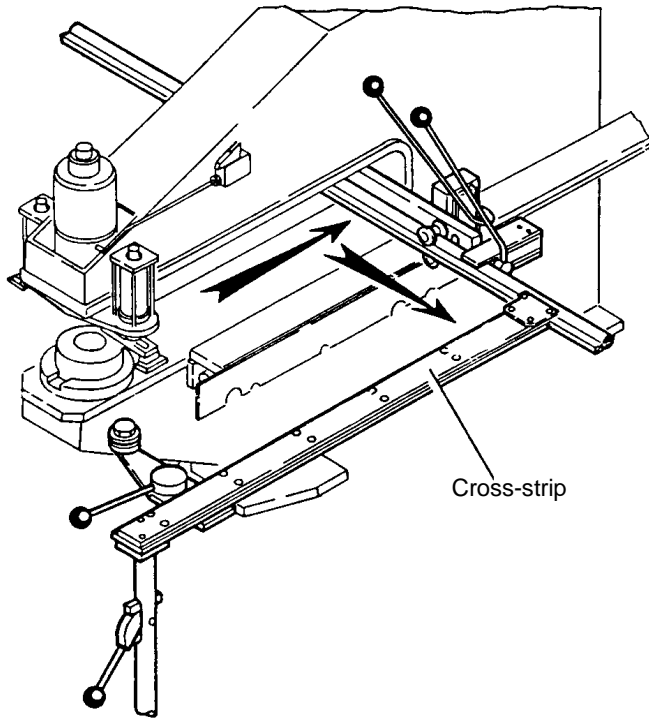
- 5 When mounting tools make sure that the dies correspond.
- 6 Follow these steps in reverse order to remove the tools.

7. Setting up profile tools

Only profile tools delivered after the machine have to be set up. Tools that have been supplied with the punch and round tools do not have to be aligned.

The dies only have to be aligned once. Once a tool has been aligned it can be mounted and removed from the machine any number of times.

After changing a tool, one can check the alignment by carrying out an idle stroke with the return valve blocked and by repeatedly tapping the switch.

AV4

- a). When using the AV 4 stop device, the device has to be pushed right to the back before the tools are aligned. The cross-strip has to be pushed to the right so that the holding-down clamp is not driven against it.

The same goes for when the machine is switched on without any tools mounted.

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If this is not observed, the stop device will be damaged.

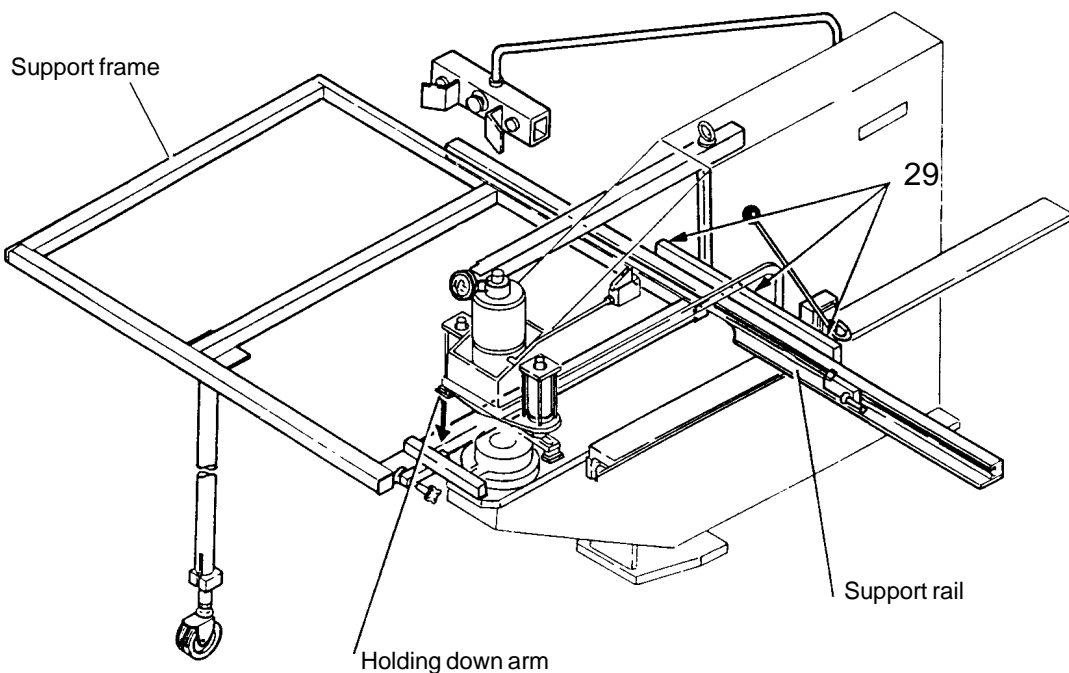
AV2

- b). When using the AV2 stop device, either the left holding-down clamp arm has to be removed or the stop rail has to be lowered, as the clamp arm can be driven into the support frame.

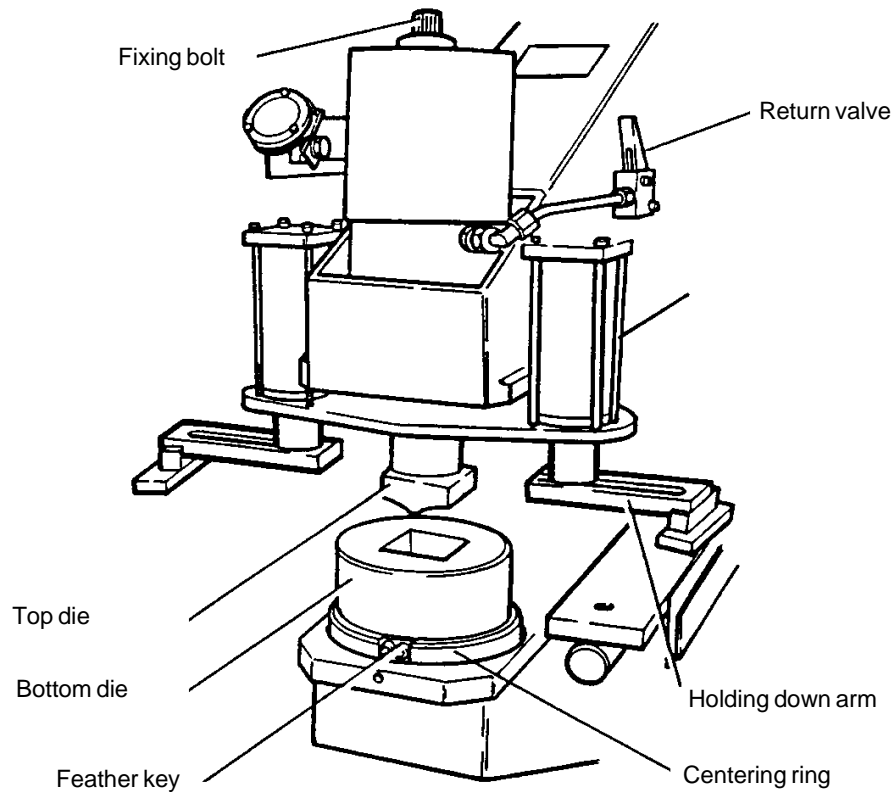
Unscrew the 3 bolts (29) to lower the stop rail. Pull the AV2 stop device out to the centering ring.

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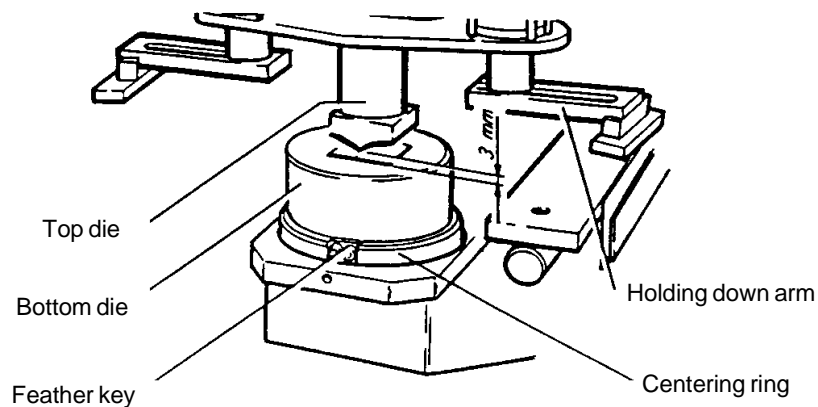
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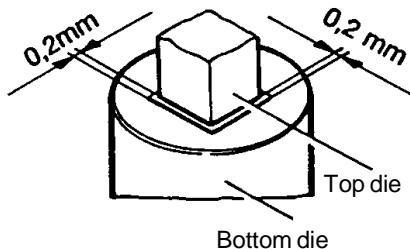
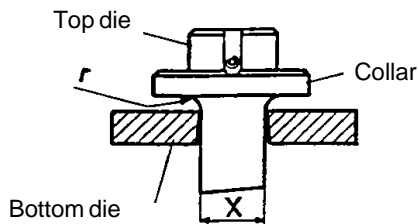
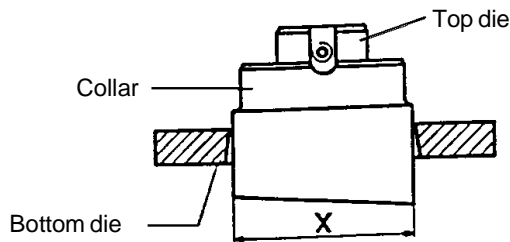
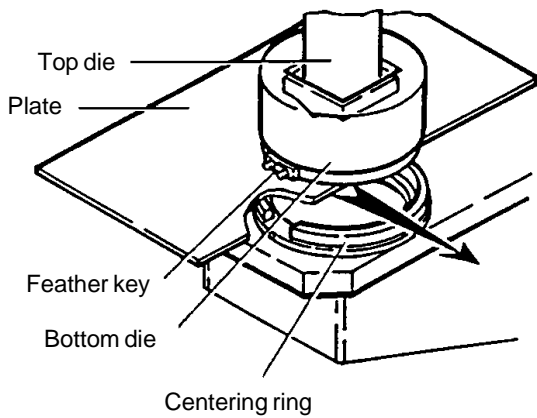


- 1 Move the stop device as described in points 7a and 7b.
- 2 Swing out the holding-down clamp's arms, so that the plastic part is facing outwards, until they reach the stop (see point 4). Limit the piston stroke, see pt.4.
- 3 Place the top die in the centering ring on the cylinder piston so that the feather key is in the groove on the top die.
- 4 Screw the cylinder's fixing bolt into the top die.



- 5 Turn the top die to the left until the feather key prevents it from going any further and tighten.
- 6 Place the bottom die with the loosened feather key into the centering ring on the lower column arm.
- 7 Block the return valve (lever in upright position) and lower the piston
 – on punching machines with two-hand control by pressing both black buttons at the same time, so that the cutting edge of the top die is approx. 3 mm (0.196") above the lower die.





- 8 Lift the bottom die out of the centering ring (the top die enters the bottom die).
- 9 Push a 1 mm thick plate between the centering ring and bottom die.
- 10 Adjust the bottom die to the 1 mm thick plate.
- 11 Lower the top die into the bottom die as follows:

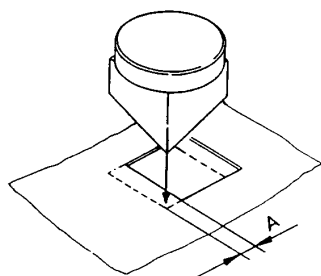
- a) top dies with nominal size "X" **exceeding** the die's collar may completely enter the bottom die.
- b) top dies with nominal size "X" **smaller** than the die's collar must only enter the bottom die up to the beginning of radii "r". (see also limitation of piston stroke, pt. 3).

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The top die's collar must not make contact with the bottom die. Otherwise the work piece and / or the bottom die will be damaged.

- 12 Pull out the 1 mm thick plate and place the bottom die into the centering ring.
- 13 Adjust the bottom and top dies so that the cutting edges of both are parallel.
- 14 Tighten the feather key of the bottom die.

- 15 Open the return valve, so that the top die leaves the bottom die, then close the valve again.
- 16 Carry out a trial stroke and if necessary, correct the bottom die's setting.
- 17 Successive operation
 - During successive operation the high edge of the die must always enter the work piece first.



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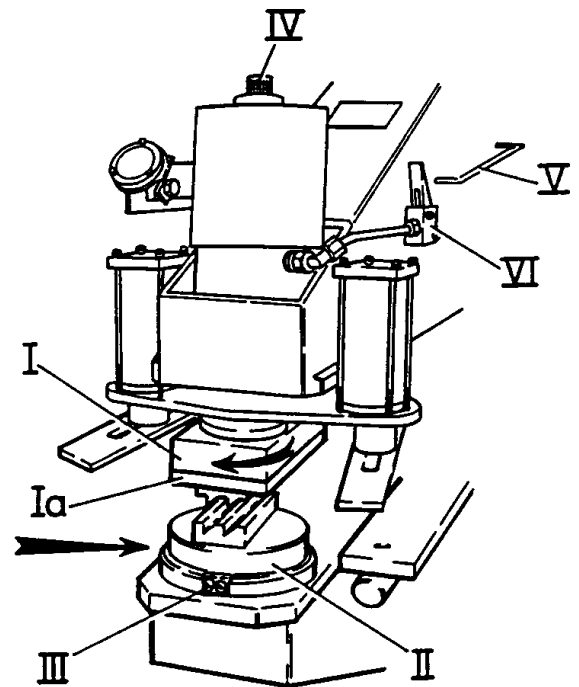
Very small multi-cycle cuts of "A" 1,5 x sheet metal thickness are to be avoided because of a very high tool wear particularly when punching VA material.

8. Dies for oblong perforations, Order No. 3130

A die for making slots, supplied after the delivery of the machine, has to be set up before use.

The top die and bottom die are pre-assembled ready for mounting.

When setting up, the bottom die's cutting edges should be aligned so that they are parallel with those of the top die.



1. Mounting the tools

- 1.1 When mounting tools make sure that the dies correspond.
- 1.2 Place the top die -I- into the centering ring on the cylinder's piston so that the fitting piece is positioned in the top die's groove.
- 1.3 Screw the fixing bolt -IV- into the top die.
- 1.4 Turn the top die I in the direction of the arrow to the limit stop, hold it and then fasten with the rod -V-. The rod -V- is hanging on the right hand side of the column.
- 1.5 Place the lower die -II- into the centering ring on the bottom column arm. The feather key -III- must be in position in the centering ring's groove.

2 Adjusting the dies

- 2.1 For adjusting the dies, use two M8x40 bolts to press the slotting dies' holding-down plate -I- against the top die. The bolts must be screwed in alternately to prevent the holding-down plate -Ia- from getting stuck. The slotting punches of top die -I- protrude approx. 8 mm from the die and are visible during adjustment.

- 2.2 Use the locking valve -VI- to block the return stroke (the lever is in vertical position).
- 2.3 Align the bottom die -II- so that the retaining bolts for the feather key -III- are in the middle of the groove.
- 2.4 Inch down the top die -I- (by shortly pressing the buttons on the control panel) until the distance between top die -I- and bottom die -II- is 12 mm (as illustrated).

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Do not lower the top die any further, otherwise the cutting edges of the slotting punches may be damaged.

- 2.5 Loosen retaining bolt -IV- five turns so that the top die -I- is lowered another 8 mm and enters the bottom die -II-. Check visually that the slotting punches of the top die -I- have entered the bottom die -II-. If not, operate the top die -I- by hand until it is lowered.

- 2.6 Inch down the top die -I- until it touches the bottom die -II-. Screw in the retaining bolt -IV- until the distance between the top die -I- and bottom die -II- is approx. 4 mm. Repeat this procedure (lowering the top die and screwing in the retaining bolt) until the retaining bolt cannot be screwed in any further. Then loosen the retaining bolt -IV- a little bit, turn the top die -I- in the direction of the arrow until it hits the stop and tighten retaining bolt -IV-.

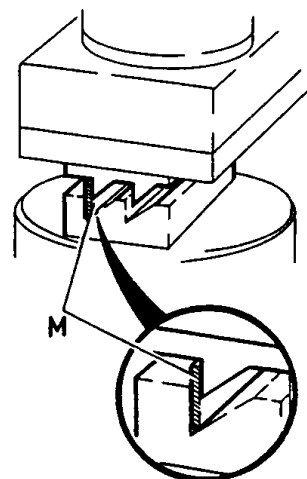
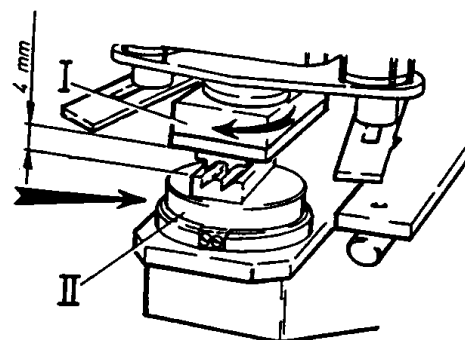
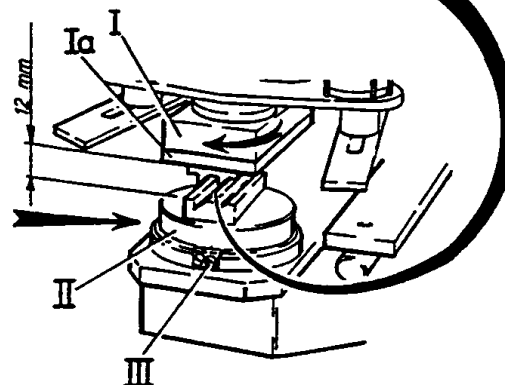
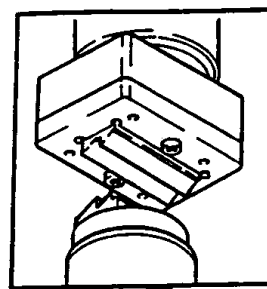
- 2.7 Introduce the measuring tape -M- supplied with the machine across the entire length of the slotting punch. If the distance between the top and bottom dies is smaller than the thickness of the measuring tape -M-, it can be increased by briefly operating the lever of locking valve -IV-.

- 2.8 Press the bottom die -II- in the direction of the arrow and tighten the two bolts of feather key -III-.

- 2.9 Remove the measuring tape -M- .

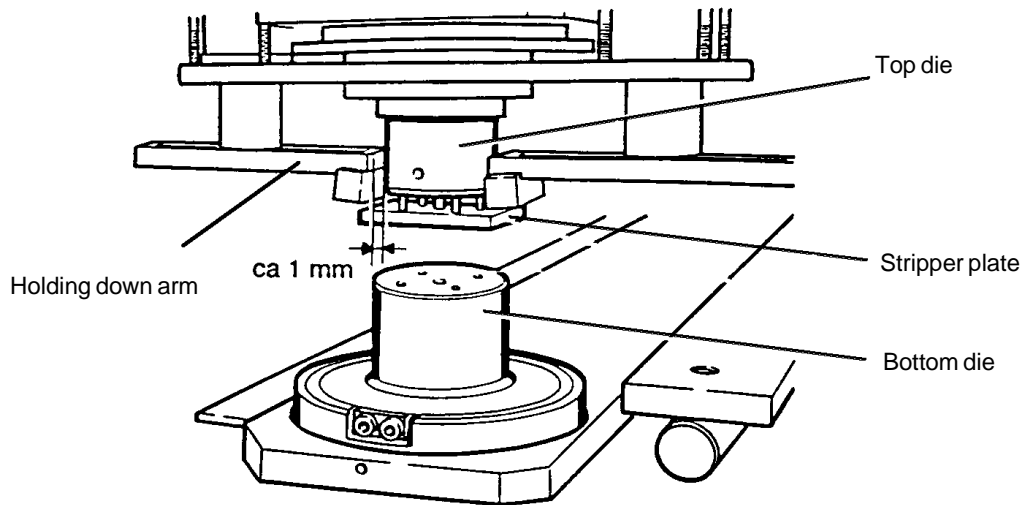
- 2.10 Raise the top die and unscrew the two M8 x 40 bolts alternately from the holding-down plate -Ia-.

- 2.11 Check the setting of the dies by performing a stroke without material.



9. Die for five-hole perforations, Order 2786

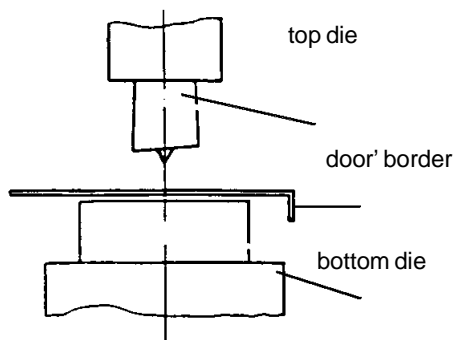
A die for punching five holes, that has been supplied after the machine has been delivered, has to be set up before use.



The top die and bottom die are pre-assembled ready for mounting.

- 1 Mount the tools as described in section 6.
- 2 Set them up as described in section 7.
- 3 Remove the plastic strips from the holding-down clamp's arms.
- 4 Push the holding-down clamp's arms to within approx. 1 mm of the top die.

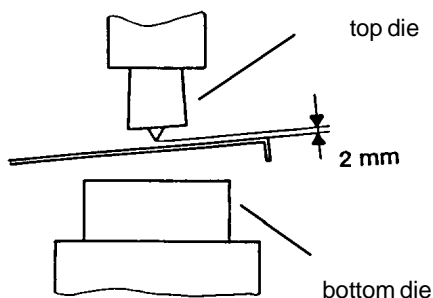
10. Changing tools with a control box door already in the machine (except AV2)



- 1 Unlock the shaft's and slide's brakes.
- 2 Push the AV4 towards the back until the door's border touches the bottom die or until the AV4 touches the column.
- 3 Lift the ball-head lever on the supporting foot so that there is a play of approx. 2 mm between the door's surface and the centering pin's point.

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If the lever is not carefully lifted (i.e no 2 mm (5/64") play), then the door's surface could be scratched by the top die.



- 4 Hold the lever in this position and move the stop as follows:
 - a) Push doors of up to 600 mm (23.6") in width to the back and lower behind the bottom die.
 - b) Push doors over 600 mm (23.6") in width to the left and lower behind the bottom die.
- 5 Change the dies (see section 7).
- 6 Pull the door back into the working area.

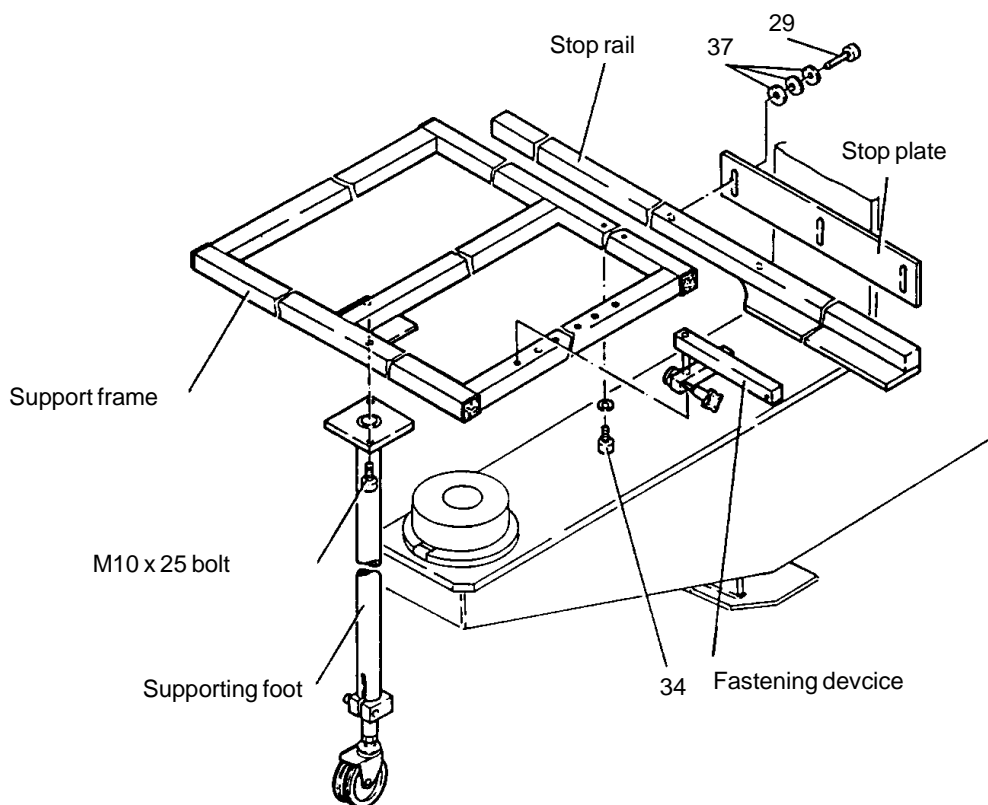
AV2 Stop Device, Order No. 2080-1**Delivery:**

Fixed to the column are:

- Support angle
- Stop plate with slide
- Slide brake
- Length measuring device (Y-axis)

Supplied loosely with the machine:

- Stop rail with support rail and side stop
- Support frame
- Clamping device
- Supporting foot

AV2 Assembly

- 1 Fasten the stop rail to the stop plate with 3 bolts (29).
Make sure that 3 spring washers (37) are put on each of the bolts.
- 2 Fasten the supporting foot to the support frame with two M 10 x 25 bolts.
- 3 Fasten the support frame to the stop rail with 3 bolts (34).
- 4 Insert the clamping device into one of the holes on the support rail as required.

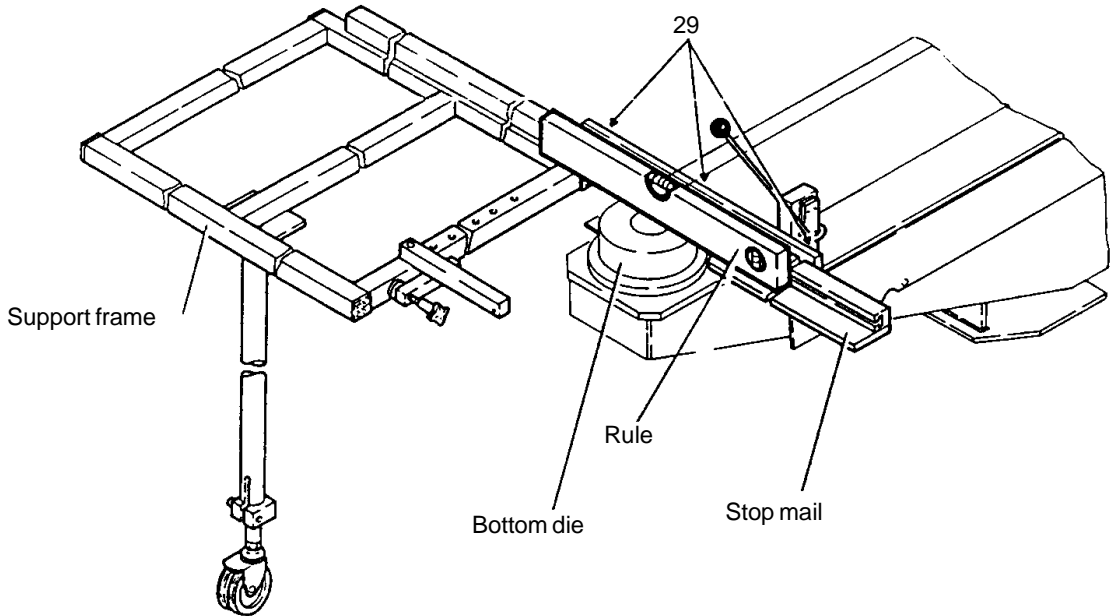
Setting the height of the supporting rail and frame

For sheets of metal and doors with the border facing upwards:

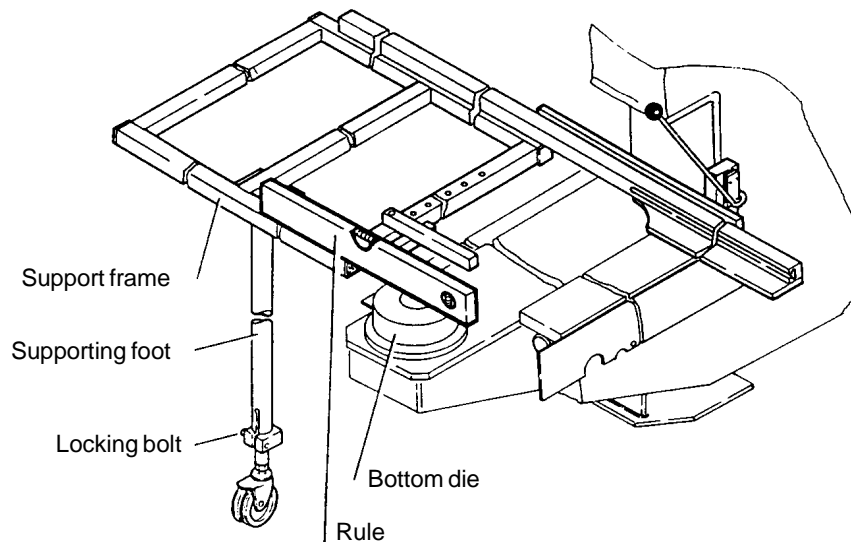
The top edges of the support rail, the support frame and the bottom die must all be on one level.

For doors with the border facing downwards:

The top edges of the support rail and the support frame must be positioned beneath the bottom die's top edge – in correspondance with the door's border.



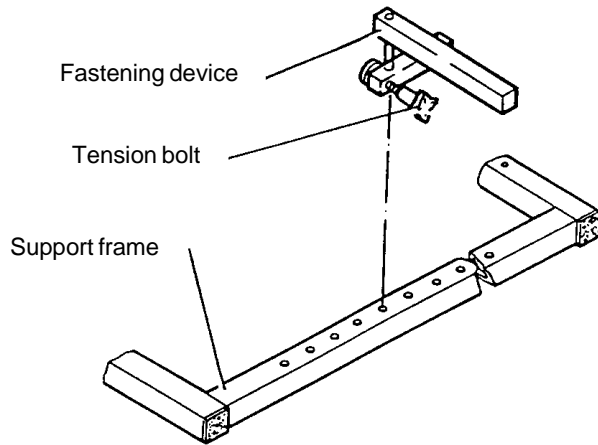
- 1 Pull out the AV2 to the bottom die.
- 2 Place a long rule on to the bottom die.
- 3 Loosen the 3 bolts (29) only so far that the tension of the 3 spring washers keeps the stop rail in position, but allows the rail to be moved about.
- 4 Align the support rail and the support frame so that they are parallel to the rule. Tighten the bolts (29).
- 5 Push the AV2 right back.
- 6 Align the height of the support frame's front edge in respect to the rule. The locking bolt for adjusting the supporting foot's height is at the lower end of the tubing.



Clamping device

The clamping device consists of the clamping arm and tension bolt.

The clamping device is inserted into the hole on the supporting frame that is nearest to the sheet of metal/door.



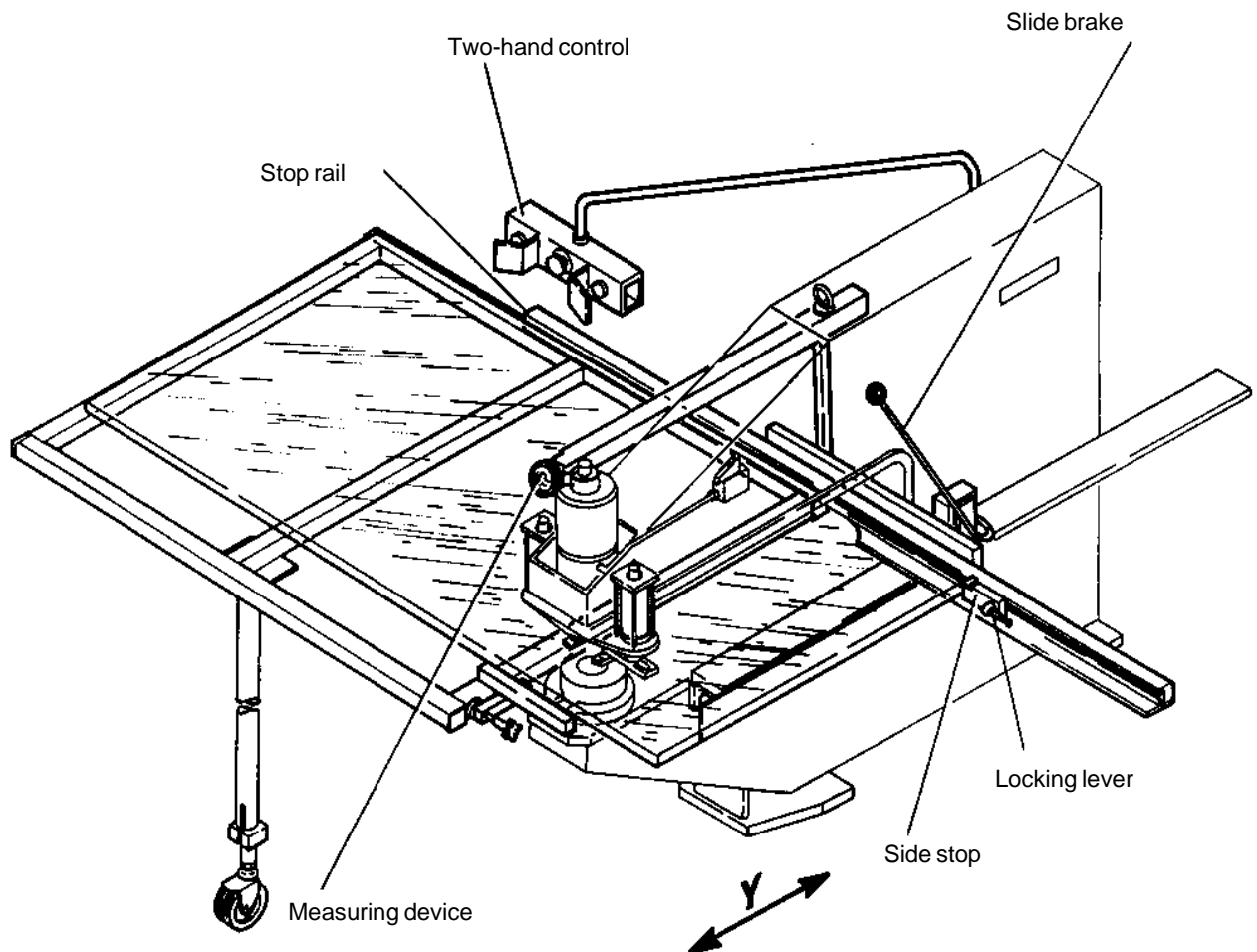
Clamping:

turn the tension bolt clockwise.

Releasing:

turn the tension bolt anti-clockwise.

Punching with the AV2



- 1 Set the side stop to the required size and lock it.
The locking lever's position can be variably set by pulling, pushing or swivelling.
- 2 Place the sheet metal/the door in the machine so that it is pushed against the stop rail and the side stop.
Fasten in this position.

When punching control box doors with the border facing downwards, the support rail and the support frame have to be lowered by the height of the door's border (see section 11).
- 3 Press the slide brake's lever down and slide the AV2 in the direction of the Y-axis until the required length has been set on the measuring device on the column's left-hand side.
- 4 The values displayed on the measuring device are always the distance from the edge of the sheet metal or the door to the center mark or hole middle.
- 5 Lock the slide.
- 6 Punching
Press both black buttons on the two-hand control simultaneously.
Keep them pressed until punching has been completed. Then release the buttons.

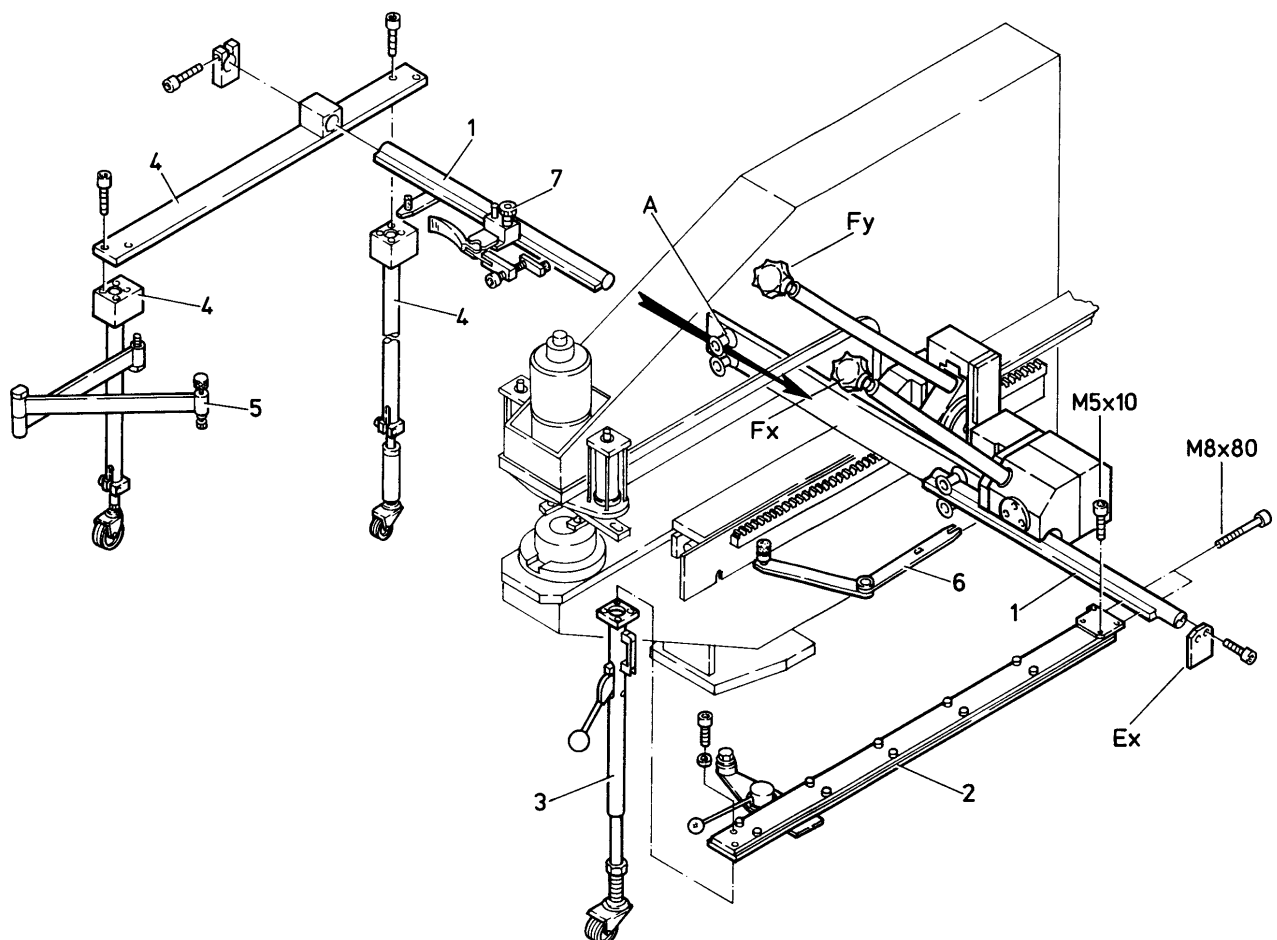
AV4 Stop Device, Order no. 4585**Delivery:**

Fixed to the column are:

- A Stop plate with support rollers, magnifying glass and slide
- By The brake for the Y – Y lengthwise direction
- Bx The brake for the X – X crosswise direction
- Measuring device for the y – axis with magnifying glass.

Supplied loosely with the machine:

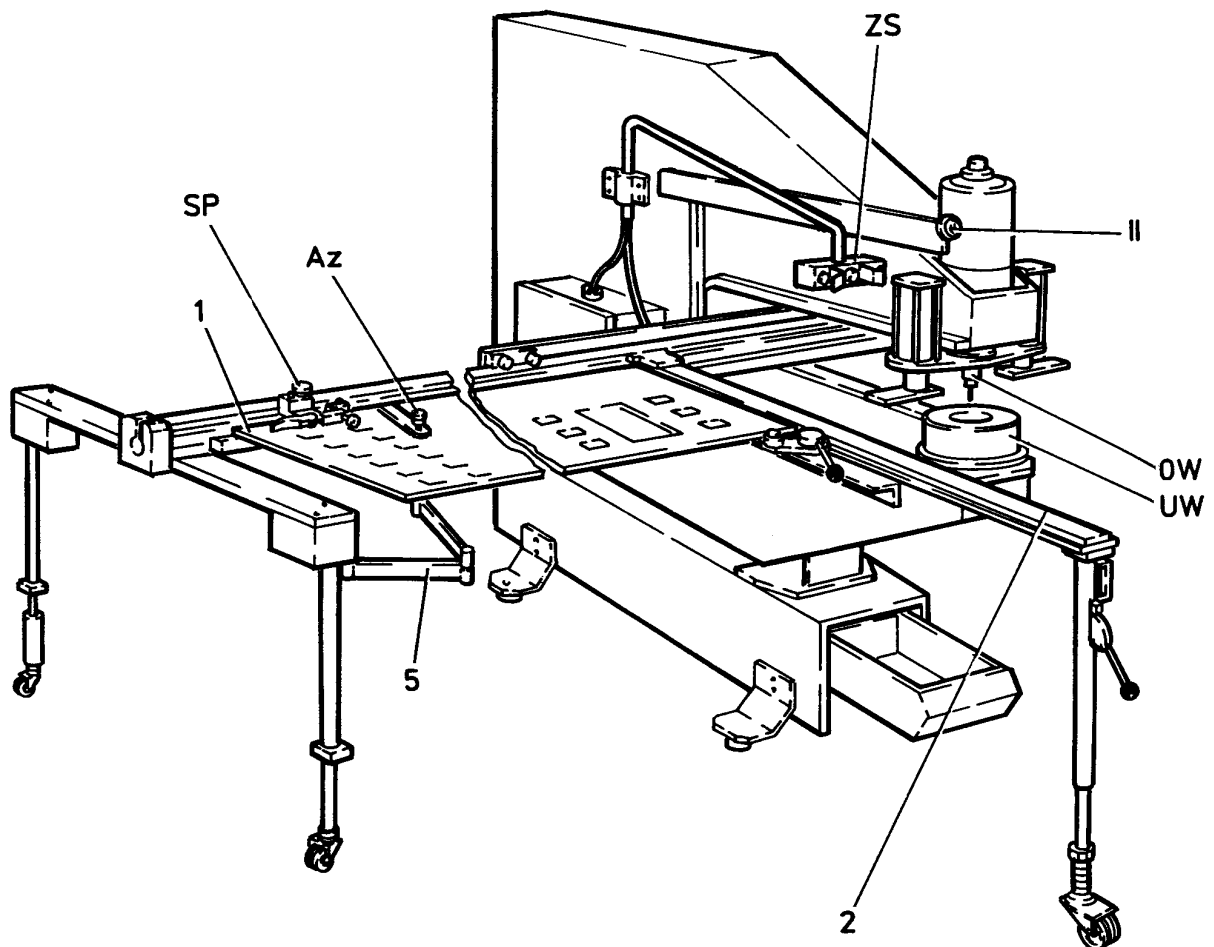
- 1 The shaft sized 40 mm (dia.) x 2300 (1.57" (dia.) x 90.55") with support gudgeon, stop rail and end stop on the shaft
- 2 Cross rail with support gudgeon and clamping device
- 3 Supporting foot for the cross rail
- 4 Left-hand support
- 5 Articulated support
- 6 Shell-type articulated support
- 7 Clamping device

AV4 Assembly

- 1 Remove the "Ex" end stop from the shaft.
- 2 Release the "Bx" brake (press the brake lever down).
- 3 Carefully slide shaft "1" horizontally from left to right between the supporting rollers on the stop plate "A".
If the shaft gets caught, the support rollers or the red pointer on the magnifying glass holder can be damaged.
- 4 Lock the shaft – lift the "Bx" brake lever. A loud click should be heard when it snaps into place.
- 5 Fasten the "Ex" end stop to the end of the shaft for AV4 only, (please see page 21).
- 6 Fasten supporting foot "3" to cross rail "2".
- 7 Fasten the cross rail with two M8 x 80 bolts to the shaft and with two M5 x 10 bolts to the stop rail.
- 8 AV4: install the left-hand support.
- 9 AV4L: install the left-hand and right-hand supports (please see page 24).

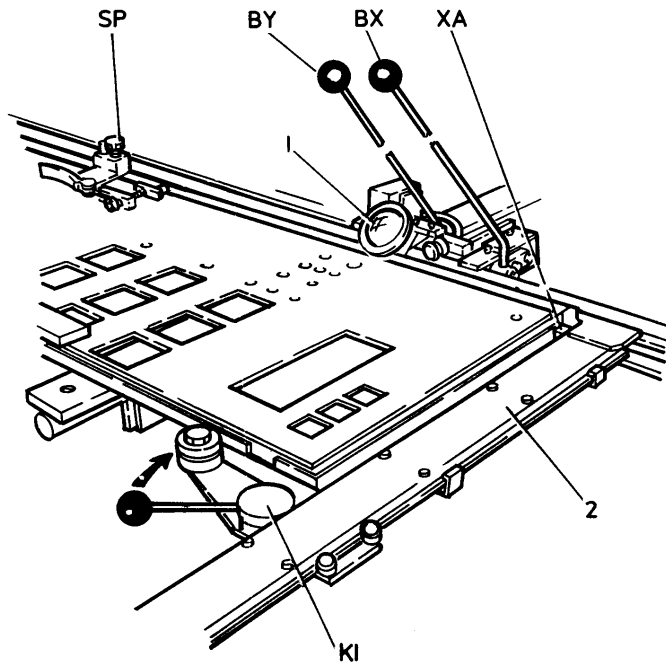
Punching with the AV4/AV4L stop devices

- 1 Before placing the control box door in the machine, slide the shaft to the left until the cross rail is positioned next to the bottom die on the left. Lock the slide and the shaft in place.



- 2 Place the sheet metal/the door on the black "Az" gudgeons on the shaft and cross rail.
- 3 Swivel articulated support "5" so that the sheet metal/door is supported near the left edge.

- 4 Press the sheet metal/the door against the shaft's stop rail and push to the right until the right edge of the sheet/door touches the black plastic part "XA" on the cross rail "2".



- 3 The sheet should only be touching the plastic part "XA" and not the cross rail "2".
- 5 Slide the cross rail's clamping device "KI" to the sheet metal/door and push the clamping device's lever in the direction of the sheet metal / door. If necessary, pull the door with the shell-type clamping device "Sp" on to the stop rail.
- 6 Release the "Bx" brake. Move the shaft until the required measurement can be seen on Point I. Lock.
- 7 Release the "By" brake and move the slide so that the required measurement can be seen on Point II (see picture for section 15) and lock.
- 8 To punch, press both black buttons of the "ZX" two-hand control simultaneously and keep pressed until punching has been completed. Release the buttons immediately after.

AV 4L Stop Device, Order no. 7440

Delivery:

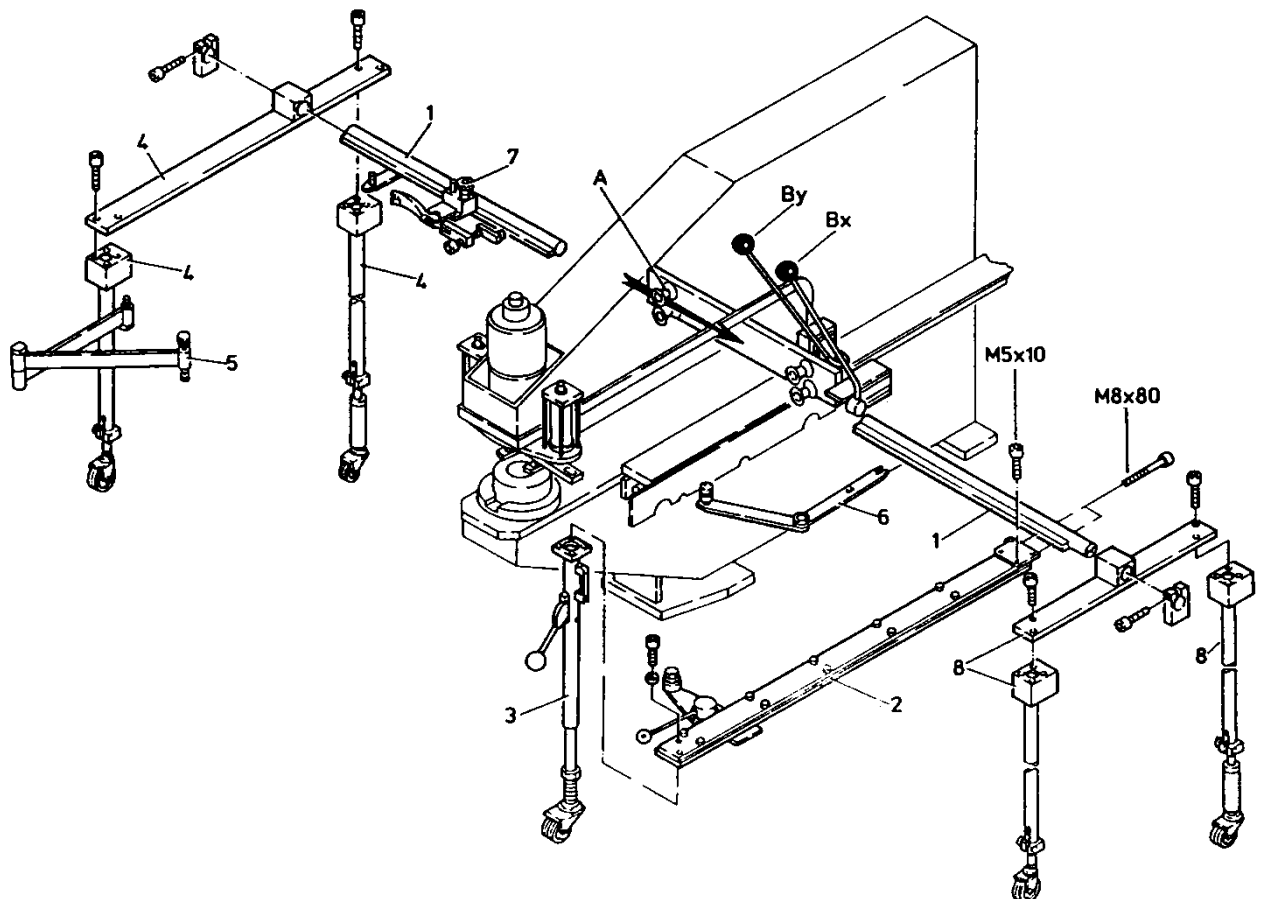
Fixed to the column are:

- A Stop plate with support rollers, magnifying glass and slide
- By The brake for the Y – Y lengthwise direction
- Bx The brake for the X – X crosswise direction
- Measuring device for the y – axis with magnifying glass

Supplied loosely with the machine:

- 1 The shaft sized 40 mm (dia) x 2300 mm (1.57" (dia) x 90.55") with support gudgeon and stop rail
- 2 Cross rail with support gudgeon and clamping device
- 3 Supporting foot for the cross rail.
- 4 Left-hand support
- 5 Articulated support
- 6 Articulated support
- 7 Clamping device
- 8 Right-hand support

AV4L Assembly (same as AV4)



AV5 Stop Device, Order no. 7380, with Digital Display and Vernier Adjustment

The AV5 can also be supplied with digital display and brake (for brakes please see AV4 and AV4L).

Delivery:

Fixed to the column are:

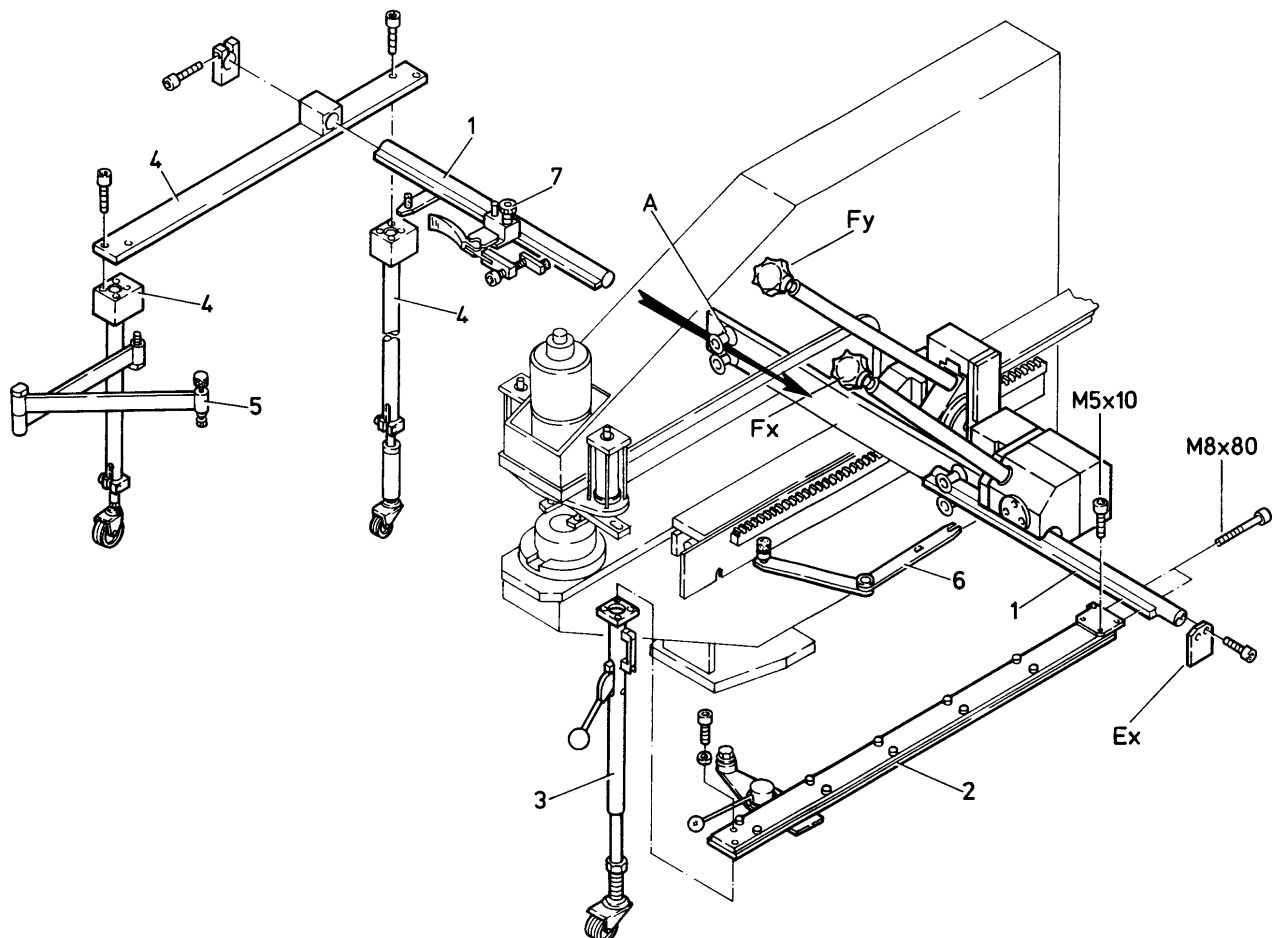
- A Stop plate with support rollers
- Fy Vernier adjustment – Y – Y lengthwise direction
- Fx Vernier adjustment – X – X crosswise direction

Supplied loosely with the machine:

- 1 The shaft sized 40 mm (dia) x 2300 mm (1.57" (dia) x 90.55") with support gudgeon and stop rail
- 2 Cross rail with support gudgeon and clamping device
- 3 Supporting foot for the cross rail.
- 4 Left-hand support
- 5 Articulated support
- 6 Articulated support
- 7 Clamping device

Assembly AV5

See "Mounting the AV5 and AV5L steel shaft – with vernier adjustment".



AV5L Stop Device, Order no. 7810, with Digital Display and Vernier Adjustment

The AV5L can also be supplied with digital display and brake (for brakes please see AV4 and AV4L).

Delivery:

Fixed to the column are:

- A Stop plate with support rollers
- Fy Vernier adjustment – Y – Y lengthwise direction
- Fx Vernier adjustment – X – X crosswise direction

Supplied loosely with the machine:

- 1 The shaft sized 40 mm (dia) x 2300 mm (1.57" (dia) x 90.55") with support gudgeon and stop rail
- 2 Cross rail with support gudgeon and clamping device
- 3 Supporting foot for the cross rail.
- 4 Left-hand support
- 5 Articulated support
- 6 Articulated support
- 7 Clamping device
- 8 Right-hand support

Assembly AV5L

See "Mounting the AV5 and AV5L steel shaft – with vernier adjustment".

