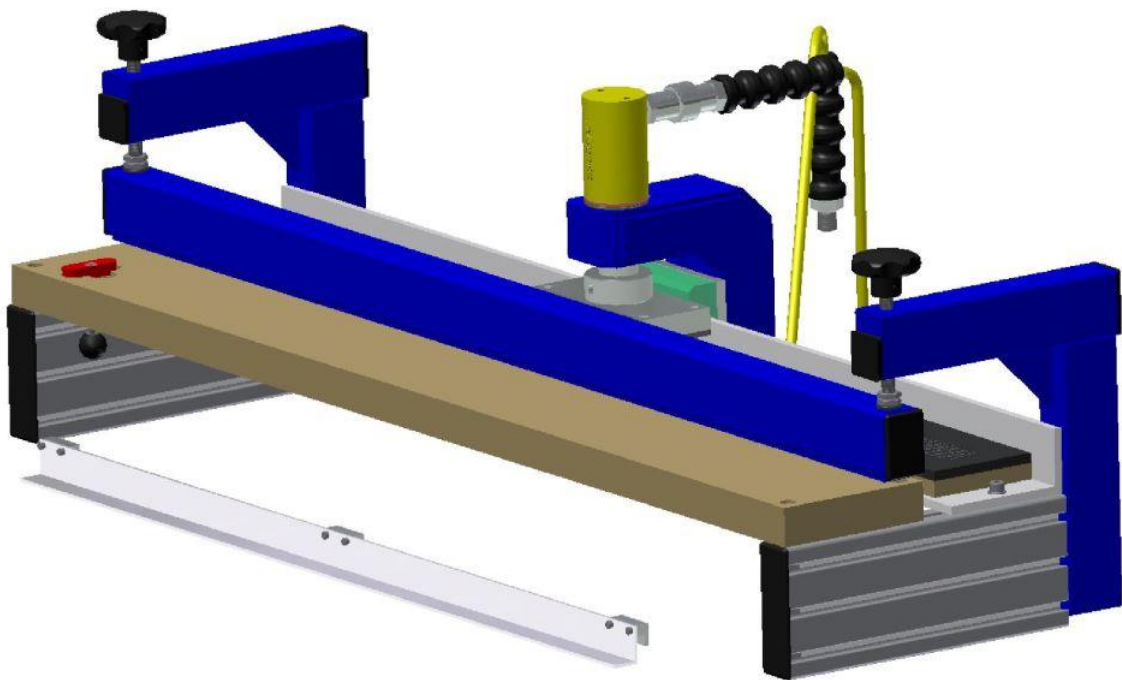




Operating Instructions

Punching Press for Z-Splices and Z-Stepped Overlap Splices PZ 1000 H



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CONVEYOR TECHNIQUE
SPECIALMACHINES
BELTINGTOOLS
COMPONENTS

by



engineering fabrication servicing

Introduction

We would like to congratulate you for having purchased the Müssel-Belting Tools made by Müssel Maschinenbau GmbH and to thank you for the confidence you placed in us.

This operating instruction provides you with important information for the proper and safe use of the punching press, **PZ 1000 H**.

Owing to our experience over decades in the development and the fabrication of finishing tools for conveyor belts and driving belts, these devices have been designed according to the latest state of technique and in compliance with this application. Please find further information on splicing types and finishing parameters in the detailed splicing instructions or in the belt specific technical data sheets of the belt manufacturer.

Please note that the future usage conditions of the conveyor belt have to be considered for the choice and the finishing of splices.

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1 General Information

1.1 Name and address of the manufacturer

Müssel Maschinenbau GmbH
Reichelsweiherstraße 8
95615 Marktrechwitz
GERMANY

1.2 Identification of the device

Product designation:	Punching press for Z-splices and Z-stepped overlap splices
Serial/Type designation:	PZ 1000 H
Serial number:	see type label
Year of construction:	see type label

1.3 CE-Declaration

see fixed label



2 **General Safety Instructions**

The following document contains important information on serious risks when operating the tool described or important technical information on the tool or processes used. Symbols are used to highlight this important information and indicate as follows:



This symbol is always to be found in connection with an endangerment and its respective signal word.

Signal words hierarchy:

Danger: This signal word is indicating a person endangerment with a high risk level which causes death or serious injury, in case it cannot be avoided.

Warning: This signal word is indicating a person endangerment with a medium risk level, which can cause death or serious injury, in case it cannot be avoided.

Caution: This signal word is indicating an endangerment with a low risk level which can cause a minor or moderate injury, in case it cannot be avoided.

Attention: This signal word is indicating a warning of material and environmental damages.

2.1 Basics

This device has been built as state of the art and according to the fundamental health and safety requirement of the EC machinery directive. However, its usage may result in risks to the body or life of users or third parties, or adverse effects to devices and other property.

The device may only be used in proper technical condition as intended, in a safety- and hazard conscious manner and observing the operating instructions!

Observing the operating instructions and adhering to the inspection and maintenance conditions are also parts of the intended use.

2.2 Organisational Measures

The operating instructions must always be at hand at the place of use of the device!

In addition to the operating instructions, observe and instruct the user in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection!

The operating instructions must be supplemented by instructions covering the duties involved in supervising and notifying special organizational features, such as job organization, working sequences or the personnel entrusted with the work.

Please only assign trained personnel familiar with the operating instructions on the device.

Check at regular intervals whether the personnel are carrying out the work in compliance with the operating instructions and paying attention to risks and safety factors!

In order to minimize the risk of injury, garments must be close-fitting. Furthermore long hair must be tied back and jewellery -including rings- have to be removed before beginning work.

Observe all safety instructions and warnings attached to the device and see to it that they are always complete and perfectly legible!

If the operating behaviour changes immediately stop the device and report the error to the responsible department/person!



Never make any modifications, additions or conversions which might affect safety without the supplier's approval.

Additional mountings or modifications have as consequence that the responsibility for the accordance with the EU-directive has to be assured by the person who carries out the mountings and the modifications.

Spare parts, only, from the original equipment comply with the technical requirements specified by the manufacturer and guarantee the failure-free operation of the device.

2.3 Personnel selection and qualification

The device can only be operated by staff accordingly skilled and instructed.

2.4 Safety Instructions for specific operating phases

The device can only be operated in a safe and absolutely reliable state. Make sure in particular that all protective and safety-oriented devices are in place and fully functional.

Loosened screws and hose connections must be tightened upon completion of the maintenance and repair work.

2.5 Mobile devices

Always use hoisting and slinging equipment with sufficient weight bearing capacity for loading!

Position hoisting devices or slinging means only on the load lifting appliances of the device that are provided for this purpose.

Please take the necessary and appropriate measures for making sure that during the transportation no device part may fall in or loosen.

2.6 Safety instructions

The removing of covers or parts of safety-oriented components may increase the risk of accident.

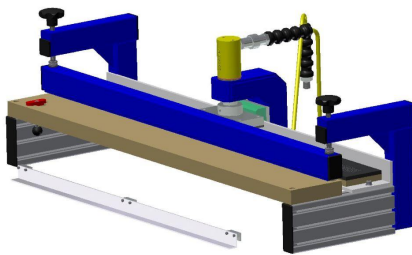
Conversions, maintenance and repair work must be performed by trained, competent and skilled persons.

3 Product Description

3.1 Components and proper usage

The purpose of punching presses of the PZ 1000 H type is to prepare Z-splices and Z-stepped overlap splices (35 x 11,5 mm und 70 x 11,5 mm and 2 x 35 x 11,5 mm staggered over one another) to a working width of 1000 mm. By staggering the belt material, wider belts can be punched. The maximum splice length is 70 mm.

The punching press consists of the following components and functional groups:



Functional group	Component
Punching frame	Hold-down bar
	Side stop
	Blade rail (exchangeable)
Punching head	Hydraulic drive with foot pump (or Manual pressure pump, not shown here)
	Pressure punching plate and guidance element

3.2 Mode of operation

To make a punch, once the belting material has been cut, it is fixed to the punching table with the hold-down bar. The punching procedure is carried out progressively; the punching head is shifted gradually by hand over the table with the inserted belting material. The blade rail used for punching is underneath the belting material. The hydraulic drive on the punching head can be operated either with a foot pump or a manual pressure pump.

Blade rail, foot pump or manual pressure pump are not included with the punching press and must be ordered separately!

You can find more information on how the shears work in the chapter „5 Handling“.

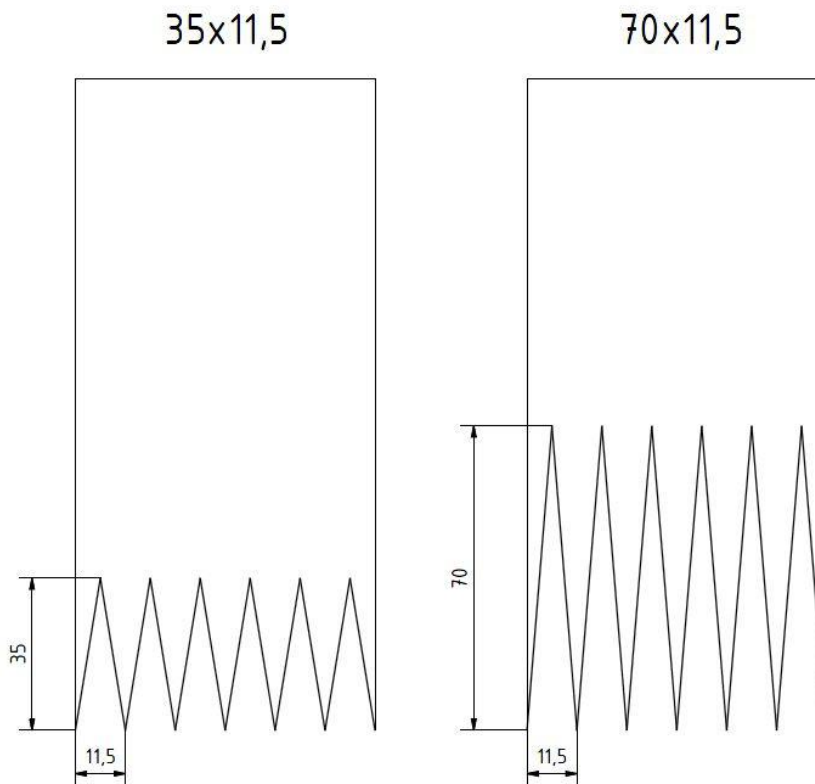
3.3 Technical Data

Belt width max. (only 90°)	mm	1000*
Length	mm	380
Width	mm	1200
Height	mm	380
Weight (net)	kg	73,0
Air consumption	l/min	255
Air pressure	bar	2,7 – 6,9
Splicing angle	°	90
Type of splice		Z 35 x 11,5 (also Z-overlap) Z 70 x 11,5
*Larger belt widths possible by shifting belt material		

Material number	Designation
7872882	PP-ZP-V/V-H
Further sizes on request!	

3.4 Possible Z-Splices

Following Z-splices can be prepared with the punching press:



Note:

Z-Stepped overlap splice 35 x 11,5 mm is also possible, but not shown in the figure!

3.5 Accessories

Accessories are not included in the scope of delivery and must be ordered separately!

Material number	Designation
7872424	Blade rail 35 x11,5 mm
7872425	Blade rail 70 x 11,5 mm
7872589	Foot pump
7872846	Manual pressure pump



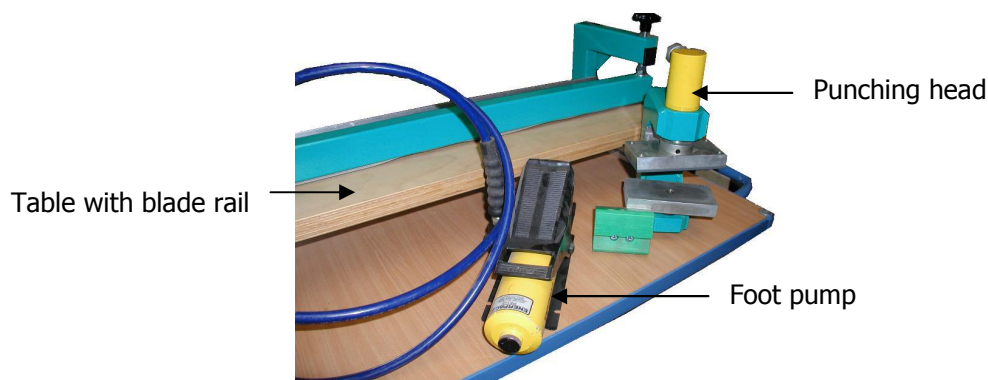
4 Preparing the product for usage

Before operating the tool, the following steps must be carried out each time to ensure that the tool works properly. Check the following points:

4.1 Transport

Punching presses should only be transported when all general safety regulations have been met and by using adequate equipment (vehicles, fork-lift trucks, trolleys). Ensure that punching presses are only transported or stored when they have been properly secured.

The press can be removed by reasons of weight!



Attention



Risk of injury! If weight is distributed unevenly, there is a greater risk of it tipping over. Always use suitable accessories to lift up and move the punch press! Manual handling should be carried out by at least two persons.

4.2 Positioning

Punching presses may only be placed on an even, suitable surface.

4.3 Blade rail

The blade rail must be firmly affixed to the punching frame. Ensure the blades are not damaged or have broken off.

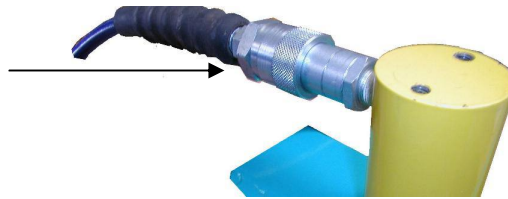
4.4 Punching depth

The punching depth on the blade rail cannot be adjusted and is defined according to the height the hydraulic piston is lifted.



4.5 Hydraulic connector

Place the foot pump onto the floor and plug the hydraulic line to the punching cylinder.



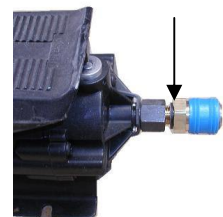
4.6 Compressed air connector

The foot pump is equipped with a joining flange for the compressed air plug.

Nominal size: Hose nozzle \varnothing 7 mm

Air pressure: min. 2,7 bar and max. 6,9 bar

For opening the hold-down bar, turn the two star-grip screws upside.





5 Handling

When making Z-splices and Z-stepped overlap splices, always observe the splicing instructions for the belt type to be spliced. Always use the appropriate blade rail for the splice to be made.

Warning



Risk of injury! The operator risks bruising and injury from very sharp blades and heavy components. Start punching, as instructed, by operating the foot valve and in doing so do not put your hands or fingers underneath the pressure punching plate.

5.1 Side stop

The side stop serves of equalizing the mismatch of the Z-contour when punching the two belt ends.

In its basic position, the side stop is subsided in the wooden table plate.

The operating button is situated underneath the wooden table plate.

For adjusting push the spring-tensioned pressure button up-ward by one hand and turn it by the second hand.



5.2 Foot pump / Manual pressure pump

The hydraulic foot pump is operated using a tilt device, where:

the **front** position (**away from the operator**) **pushes out** the hydraulic cylinder.

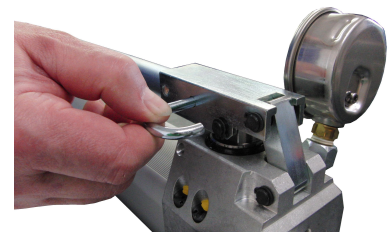


the **back** position (**towards the operator**) **retracts** the hydraulic cylinder again.



Instead of the foot pump you can operate the punching press by using a manual pressure pump.

- Loosen lock by pulling out the locking pin.
- Attach the connecting hose to the cylinder.
- Close the valve (hand valve).
- Generation pressure by up- and down movements with the hand lever.



5.3 Cutting the belt to the length to be prepared

1. Refer to the conveyor manuals to establish the prepared belt length required:

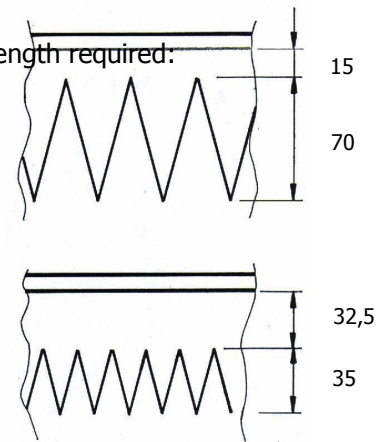
$$\begin{array}{r} \text{Finished belt length} \\ + \text{Splicing allowance} * \\ = \text{Length to be prepared} \end{array}$$

*Splicing allowance in case of a blade rail 70 mm: 2 x 15

+ 70 = 100 mm

*Splicing allowance in case of a blade rail 35 mm: 2 x 32,5

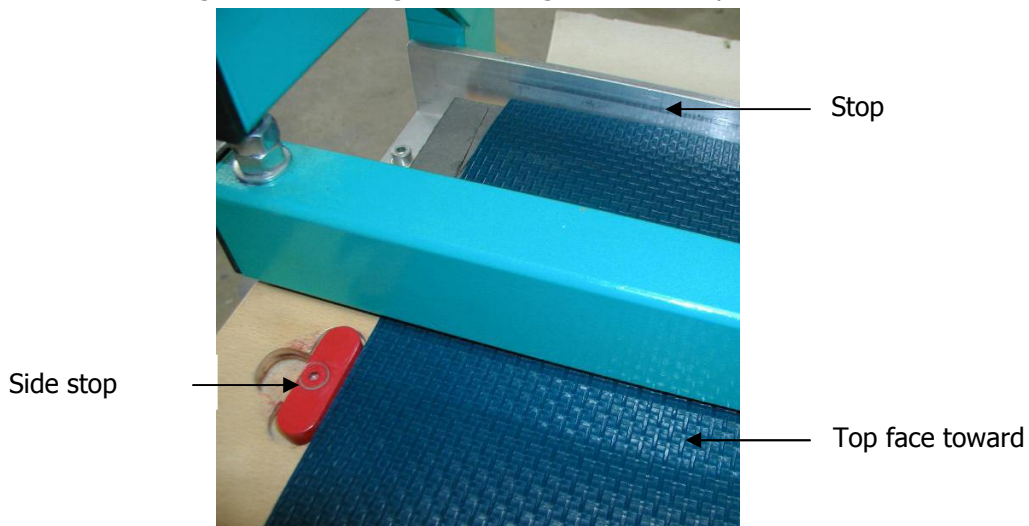
+ 35 = 100 mm



2. Cut off the belting material at right angles, according to the length to be prepared you have calculated.

5.4 Punching the first end of the belt

1. Push the punching head by hand till it stops at the right-hand side of the frame and then align the belt at the side stop.
2. Open the hold-down bar by loosening the star grip screws.
3. Bring the side stop in the correct position for the first end of the belt (Screw head left).
4. Place the first end of the belt with the top face toward the top into the punching press.
5. Push the belt underneath the hold-down bar till it lies on the belt stop on the back. In doing so, the left-hand edge of the belt is guided through the side stop.



6. Align the belt so it is not creased and lies flat.
7. Close the hold-down bar by tightening the star grip screws.
8. Push the punching head by hand till it stops at the left-hand side of the frame.
9. Make the first punch, by putting the hydraulic foot pump (see chapter „7.2. Foot pump“) in the front position.



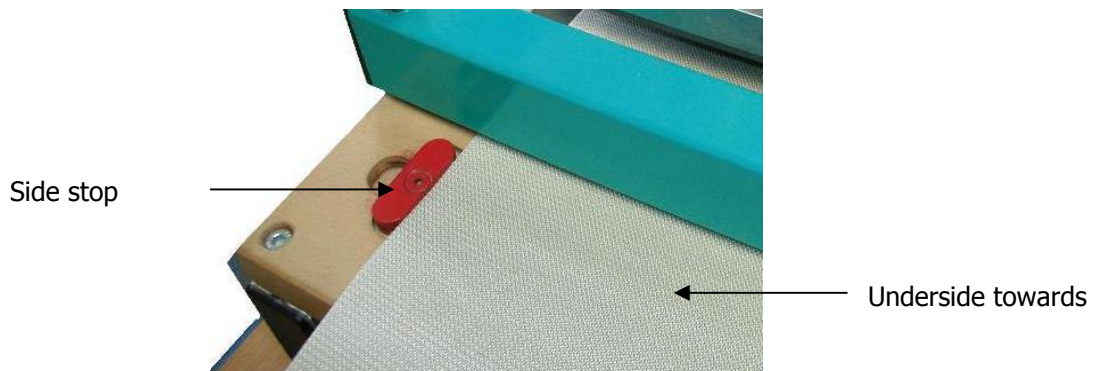
Note:

To achieve a good punch, we recommend maintaining the punching pressure for a short period of time.

10. Put the hydraulic foot pump to the back position, so the punching cylinder returns to an idle position.
11. Push the punching head one punch head width on towards the belting material that has not yet been punched. In doing so make sure that at least one whole tooth is covered over, so that in effect punching is repeated.
12. Repeat the punch process till the belt has been punched over the whole width.
13. Open the hold-down bars by loosening the star grip screws and take out the *first* punched end of the belt.

5.5 Punching the second end of the belt

1. Bring the side stop in the correct position for the second end of the belt by turning it by 180°.
(Screw head right)
2. Place the second end of the belt with the underside towards the top into the punching press.
3. Aligning, clamping and punching how in chapter „5.4 Punching the first end of the belt“.



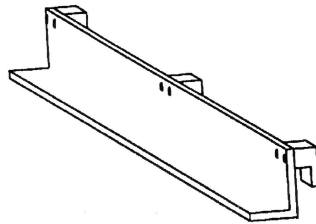
4. Repeat the punching process till the belt has been punched over the whole width.
5. Open the hold-down bars by loosening the star grip screws and take out the *second* punched end of the belt.

5.6 Preparing a Z-stepped overlap splice

To prepare a Z-stepped overlap splice, **two punches per end of belt** must be carried out successively.

It is also possible to prepare Z-stepped overlap splices over 1.000 mm in width. To do this read the section "5.7 Punching material with over width".

To make an exact Z-step you will require a special **stop bar** as shown in following figure.



Only use the 35 x 11,5 mm blade rails for punching. Müssel Maschinenbau GmbH has not approved punches with other blade rails.

Note:

Insert the 35 x 11,5 mm blade rails as outlined in the section „6.3. Changing the blade rail“!

In order to create the displacement needed for the Z-stepped overlap splices, you will require a special **stop bar**, which is inserted into the punching frame.

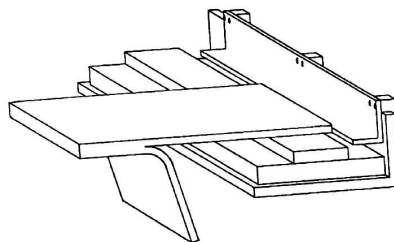
The **stop bar** is basically an angle bar, where the depth of its horizontal sides equals the amount of displacement required for Z-overlap splices.

Please also note that the belting material must be split to a length of about 120 mm.

Punching the belt (first „top“ end of the belt)

The top face of the belt must be facing towards the top.

1. Push the punching head by hand till it stops at the right-hand side of the frame.
2. Place the **stop bar** from the top on the angle guide (see following figure).

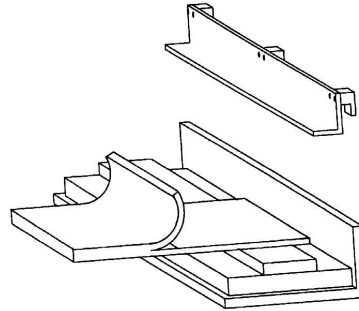


3. Open the hold-down bar by loosening the star grip screws.
4. Place the first (top) split end of the belt in the punching press.
5. Push the belt through and underneath the hold-down bar till it lies on the **stop bar**. In doing so, the left-hand edge of the belt is guided through the side stop. Make sure that the second split (bottom) end of the belt is guided downwards past the insertion point for the blade rail.
6. Align the belt so it is not creased and lies flat.
7. Close the hold-down bar by tightening the star grip screws.
8. Remove the **stop bar** and punch the belting material as described in the section „5.4 Punching the first end of the belt“

Punching the belt (first „bottom" end of the belt)

The top face of the belt must be facing towards the top.

1. Push the punching head by hand till it stops at the right-hand side of the frame.
2. Open the hold-down bar by loosening the star grip screws.
3. Place the first (bottom) split end of the belt into the punching press so that it covers the blade rail completely (see following figure).



4. To do this, push the belt underneath and through the hold-down bar till it lies on the **stop bar**. In doing so, the left-hand edge of the belt is guided through the side stop (see figure above). Make sure that the first (top) punched end of the belt is guided upwards past the punching head.
5. Align the belt so it is not creased and lies flat.
6. Close the hold-down bar by tightening the star grip screws.
7. Punch the belting material as described in the section on „5.4 Punching the first end of the belt“.

Punching the belt (second „top" end of the belt)

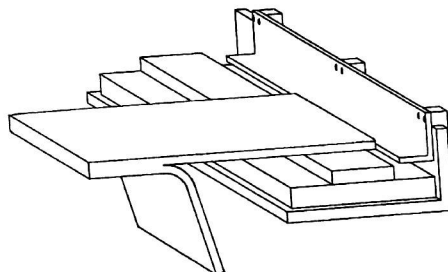
The underside of the belt must be facing towards the top.

Attention



Risk of wastage. Turn the belt over so that the underside always upwards.

1. Push the punching head by hand till it stops at the right-hand side of the frame.
2. Place the **stop bar** from the top on the angle guide (see following figure).



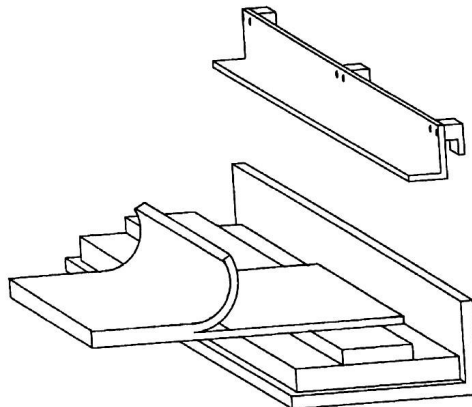
3. Open the hold-down bar by loosening the star grip screws.
4. Place the second (top) split end of the belt in the punching press.

5. Push the belt through and underneath the hold-down bar till it lies on the **stop bar**. In doing so, the left-hand edge of the belt is guided through the side stop (see figure above). Make sure that the second split (bottom) end of the belt is guided downwards past the insertion point for the blade rail.
6. Align the belt so it is not creased and lies flat.
7. Close the hold-down bar by tightening the star grip screws.
8. Remove the **stop bar** and punch the belting material as described in the section „5.4 Punching the first end of the belt“.

Punching the belt (*second „bottom“ end of the belt*)

The top face of the belt must be facing upwards.

1. Push the punching head by hand till it stops at the right-hand side of the frame.
2. Open the hold-down bar by loosening the star grip screws.
3. Place the second (bottom) split end of the belt into the punching press so that it covers the blade rail completely (see following figure).



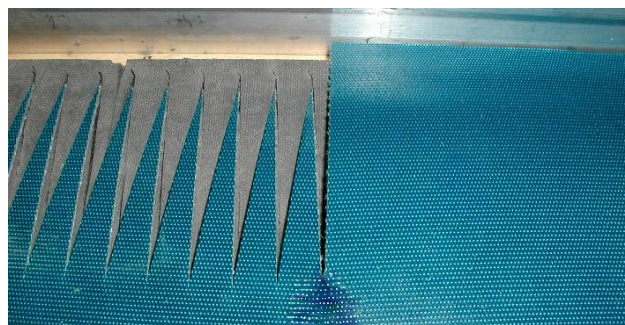
4. To do this push the belt underneath the hold-down bar till it lies on the **guidance bar**. In doing so, the left-hand edge of the belt is guided through the side stop (see figure above). Make sure that the second (top) punched end of the belt is guided upwards and past the punching head.
5. Align the belt so it is not creased and lies flat
6. Close the hold-down bar by tightening the star grip screws.
7. Punch the belting material as described in the section „5.4 Punching the first end of the belt“.



5.7 Punching material with over width

This punching press is able to punch widths of belts that are wider than the nominal width. The arms for the holder are U-shaped and therefore allow pushing through the belt material.

1. First the nominal width of the end of the belt is punched (both belt ends, see chapter „5.4 Punching the first end of the belt and 5.5 Punching the second end of the belt“).
2. The material waste of the finished punched section has to be cut off.
3. Put the side stop in its basic position (sunk).
4. Now you can push the belting material to the sides and punch the rest of the width.



Note:

Look at the fingers already punched and place 4 to 6 fingers absolutely accurately into the blade rail.

6 Maintenance work

Before operating the tool, the following maintenance work must be carried out each time to ensure that the tool works properly. If damage is established during maintenance that cannot be put right on site, the tool must no longer be used and must be sent for repair to the manufacturer.

Check the following each time before use:

- Regularly check to make sure screws and bolts sit tightly
- Occasionally grease moveable parts (bolts, runners etc)
- Pressure punching plate for wear and tear
The plate can no longer be used, if the blade rail leaves clear imprints.
- Appearance of the punches
- Punching depth
- Sharpness of the blades
- That there are no leaks in the hydraulics

Check after using several times:

- Cutting tools
Cutting edges on the blades must not be damaged or blunt.
- Punching head runners for wear and tear

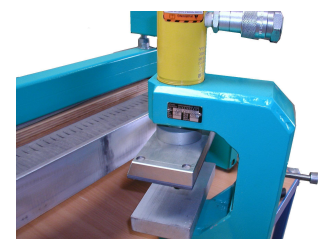
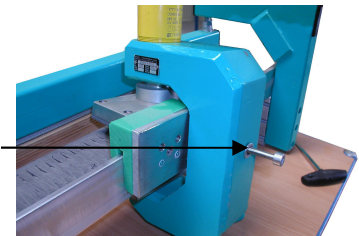
Note:

If the ends of the splice can no longer be cut sharply, you must change the pressure punching plate.

6.1 Removing the punching head

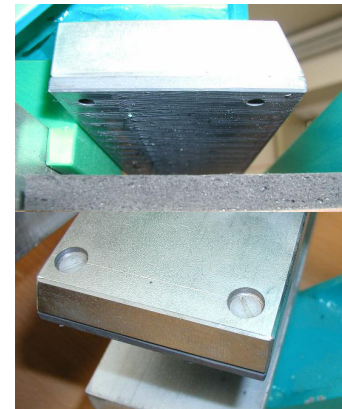
1. Loosen the compressed air feed from the hydraulic pump.
2. Remove the hydraulic lead from the punching head.
3. Remove the mount screws on the punching head guiding element with a hexagon screwdriver and push the guiding element out at the sides.
4. Remove the punching head together with the frame towards the back.

Mount
screw



6.2 Changing the pressure punching plate

1. Loosen the compressed air feed from the hydraulic pump.
2. Remove the hydraulic lead from the punching head.
3. Loosen the plastic screws by means of a screwdriver and take off the pressure punching plate downwards.
4. Fix the new pressure punching plate with new plastic screws.
5. Reconnect first the punching head and then the foot pump to the hydraulics and the compressed air supply.



Note:

To achieve good punches, we recommend using separate pressure punching plates for different punching dimensions.

6.3 Changing the blade rail

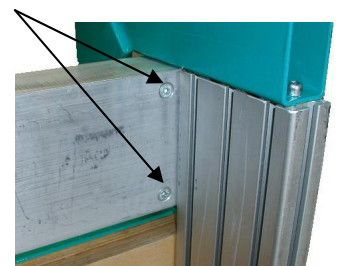
Warning



When changing the blade rail, apply protection (for example belting material) over the cutting edges.

1. Loosen the compressed air feed from the hydraulic pump.
2. Remove the hydraulic lead from the punching head.
3. Removing the punching head (see chapter "6.1 Removing the punching head")
4. Loosen the 6 mount screws for the blade rail, which are underneath the punching table, with a hexagon screwdriver.
5. Pull the blade rail from the sides out of the insertion point.
6. Insert the new blade rail from the sides into insertion point and fix it by tightening up the mount screws again.
7. Place the punching head back in its guiding element and affix it.
8. Reconnect first the punching head and then the foot pump to the hydraulics and the compressed air supply.

Mount screws



6.4 Spare parts

Material number	Designation
7872590	Hydraulic hose
787129114	Hydraulic cylinder

7 Disassembling and Disposal

The disassembling in individual components can only be effected by competent staff with a good knowledge of machine building.

Please sort out the device according to the respective materials (metal, plastics and so on) and recycle them.