



Operating Instructions

Punching Press for Z-Splices PTZ 40 M



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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 tool, **PTZ 40 M**.

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 Marktredwitz
GERMANY

1.2 Identification of the device

Product designation:	Punching press for Z-splices
Serial/Type designation:	PTZ 40 M
Serial number:	see type label
Year of construction:	see type label

1.3 CE-Declaration

see fixed label

1.4 Konformitätserklärung

CONFORMITY

as defined by the requirements of the EU directive

2014/35/EU Low Voltage Directive and

2014/30/EU Electromagnetic Compatibility (EMC) Directive

The manufacturer
Müssel Maschinenbau GmbH
Reichelsweiherstraße 8
95615 Markttredwitz
GERMANY

hereby declares that the below indicated device due to its design and its construction as well as in the execution placed on the market complies with the relevant essential health and safety requirements of the EU directive.

This declaration loses its validity upon the machine becoming altered or modified without the manufacturer's approval.

Product designation:	Punching Press for Z-Splices
Serial/Type designation:	PTZ 40 M
Serial number:	see type label
Year of manufacture:	see type label

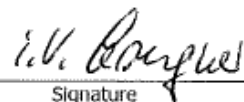
The following harmonized standards were applied:

EN 60204-1 Electrical equipment of machines

The particular operating instructions must be observed.

A CE-label is attached at the device.

Markttredwitz, 14.11.2018 Langner Reinhard (Vice President of Establishment)
Place, Date Name, first name (company function)


Signature



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

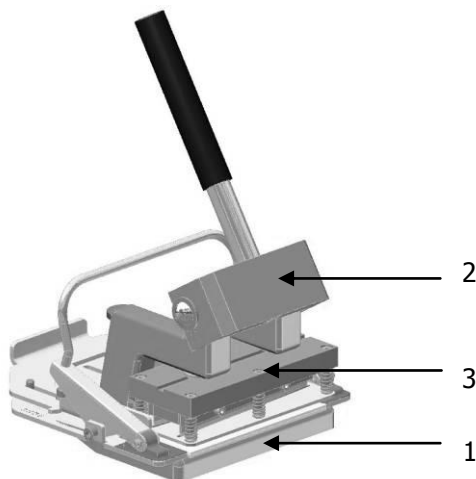
Punching presses of the PTZ 40 M type are used to prepare Z-splices for belt widths up to 40 mm. The splice can be punched symmetrically.

The following Z-splices are possible:

- 35 x 5,75 mm
- 35 x 11,5 mm
- 70 x 11,5 mm
- 110 x 11,5 mm

The punching press basically consists of the punching head with a punching set and a punching table with a mat and punching frame.

The punching press consists of the following components:



Designation	Components
1	Punching table
2	Punching head
3	Punching set

3.2 Mode of operation

To punch the belts, the cut belting material is fixed with belt clamps onto the punching table and to the inner stop lug. The punching procedure is carried out in steps during which the table is adjusted with the inserted belting material.

The PTZ 40 M lets you work without producing any remnants, as you can punch continuously from the material roll that has been cut to width. Punching from one side, the belting material required is punched in the length intended directly from the roll, with the belt end being prepared accordingly.

In doing so, the beginning of the belt is made for each new splice (this shortens set-up times.) When you use the practical PTZ 40 M, you will require little force because the leverage is good.

You can find more information on how the punch press works in the chapter „5 Handling“.

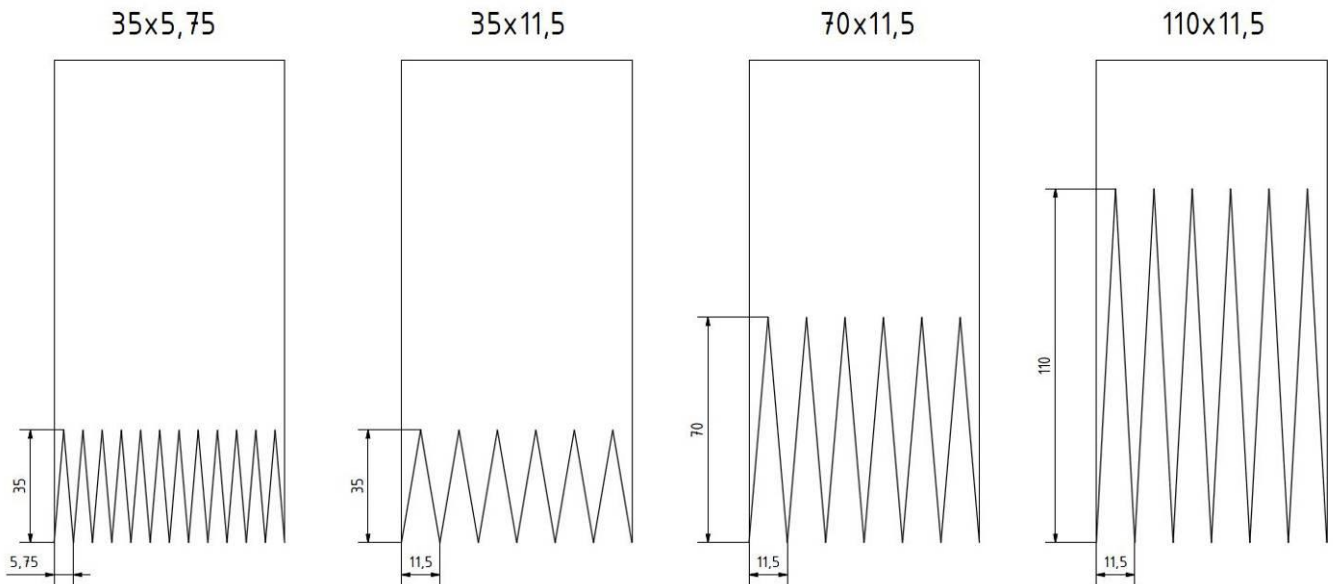
3.3 Technical data

Belt width max. (only 90°)	mm	40
Length	mm	185
Width	mm	205
Height	mm	265
Height without operating lever	mm	135
Weight (net)	mm	2,1
Splicing angle	°	90
Type of splice	mm	35 x 5,75 35 x 11,5 70 x 11,5 110 x 11,5

Material number	Designation
7872937	PTZ 40 M basic tool incl. symmetrical adjustment table

3.4 Possible Z-Splices

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



3.5 Accessories

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

Material number	Designation
7872071	Punching set 35 x 5,75 mm, pivotable
7872480	Punching set 35 x 11,5 mm, not pivotable
7872877	Punching set 70 x 11,5 mm, not pivotable
7872878	Punching set 110 x 11,5 mm, not pivotable



4 Preparing the product for usage

Before starting to operate the tool, the following steps must be carried out each time to ensure 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. When transporting, ensure the punching presses are only moved or stored when they are closed.

4.2 Positioning

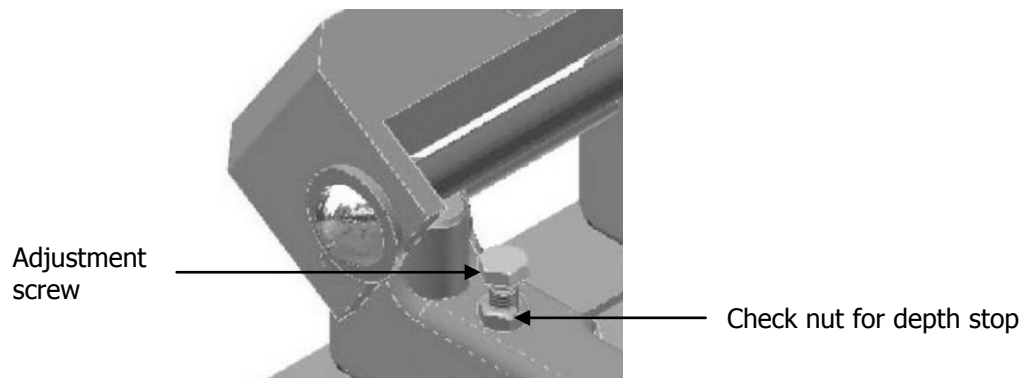
Only place the punching press on a suitable, flat, stable and non-slip surface. Turn the operating lever in the appropriate thread on the punching head.

4.3 Adjusting the punching depth

The punch cutting depth is adjusted using the depth stop. To do this, the knife must be inserted.

1. Loosen the check nuts on the depth stop.
2. Push the operating lever down.
3. Adjust the punching depth of the blades by turning the adjustment screw on the depth stop till the blades touch the punching plate.
4. Tighten the check nut again at the depth stop.
5. Put the operating lever back in its original position.
6. Check the depth by making a test punch with a sheet of paper.

The punching depth is correct if the sheet of paper has been punched all the way through



Note:

Turn the adjustment screw on the depth stop clockwise to make a deeper punch. Turning the adjustment screw anti-clockwise will make a less deep punch. The punching depth in the punching plate should be approx. 0.1 mm.

Attention



Risk of damage! To avoid damaging the blades, the knives should not penetrate the punching plate too deeply if not necessary.



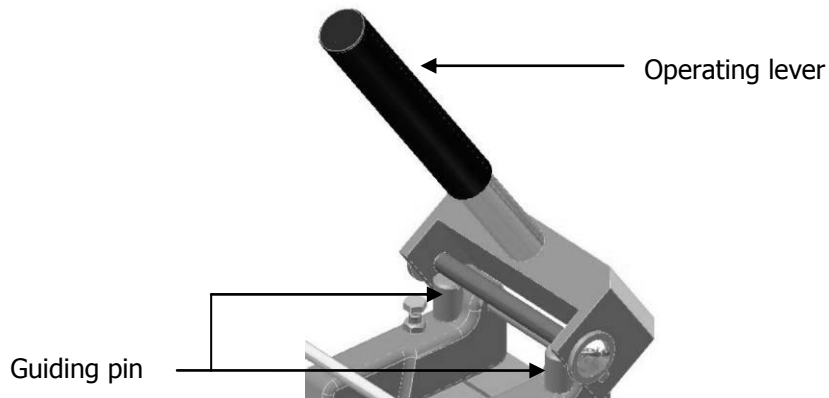
4.4 Changing the punching set

1. Put the lever back in a vertical position.
2. Loosen the guiding pins, but without completely taking them out.
3. Remove the punching set from the bottom out of the fixation point.

Attention



Risk of damage! If the guiding pins are loose, the punching set can easily fall out.



4. Place the new punching set from the bottom into the fixation point.
5. Fix the punching set by tightening the guiding pins again.
6. Put the lever back in its original position.
7. Check the punching depth is correct.

5 Handling

5.1 General

Punching presses may only be used for preparing Z-splices on conveyor belts. Usage for any other purpose would be improper and make any guarantee invalid and exclude any liability whatsoever from the manufacturer.

Handling punching presses of the PTZ 40 M type requires substantial care and attention on the part of the operator.

Please note that you:

- Never operate the tool without protective devices.
- Never reach into the tool during operation.
- Only lift the tool by the handles and holding devices provided.
- When changing the knives, place edge protection over the cutting edges.

Note:

When making Z-splices, always observe the splicing instructions for the belt type to be spliced. Before using the tool each time, make a test punch on a piece of paper and look at the result to check the punching press is working properly.

- ⇒ The punching set is working perfectly if the edges have been punched cleanly. The punching depth is correct if the sheet of paper has been punched all the way through.

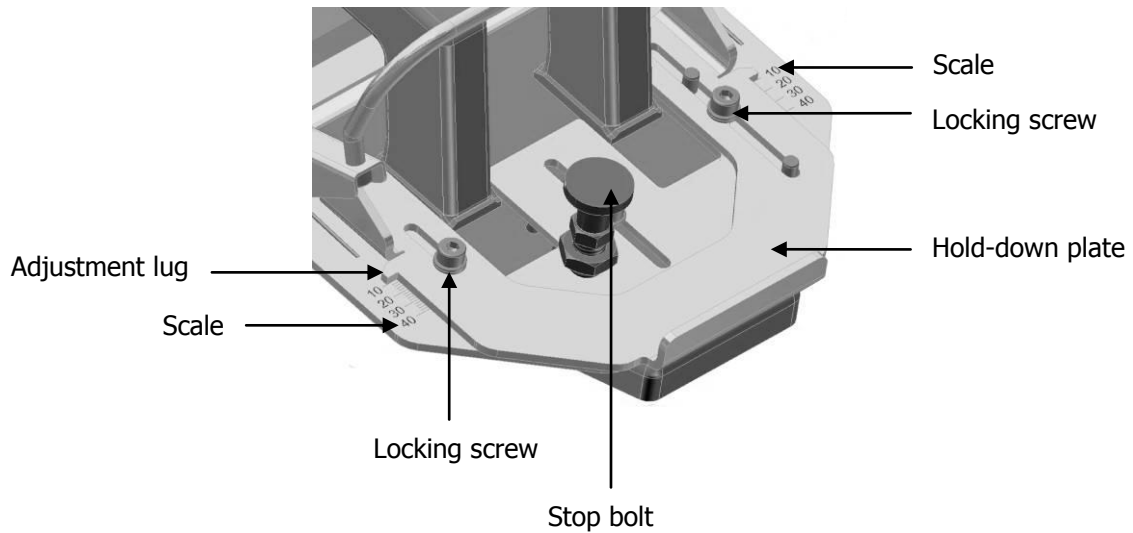
Caution



Risk of injury! The operator risks bruising and injury from open blades.

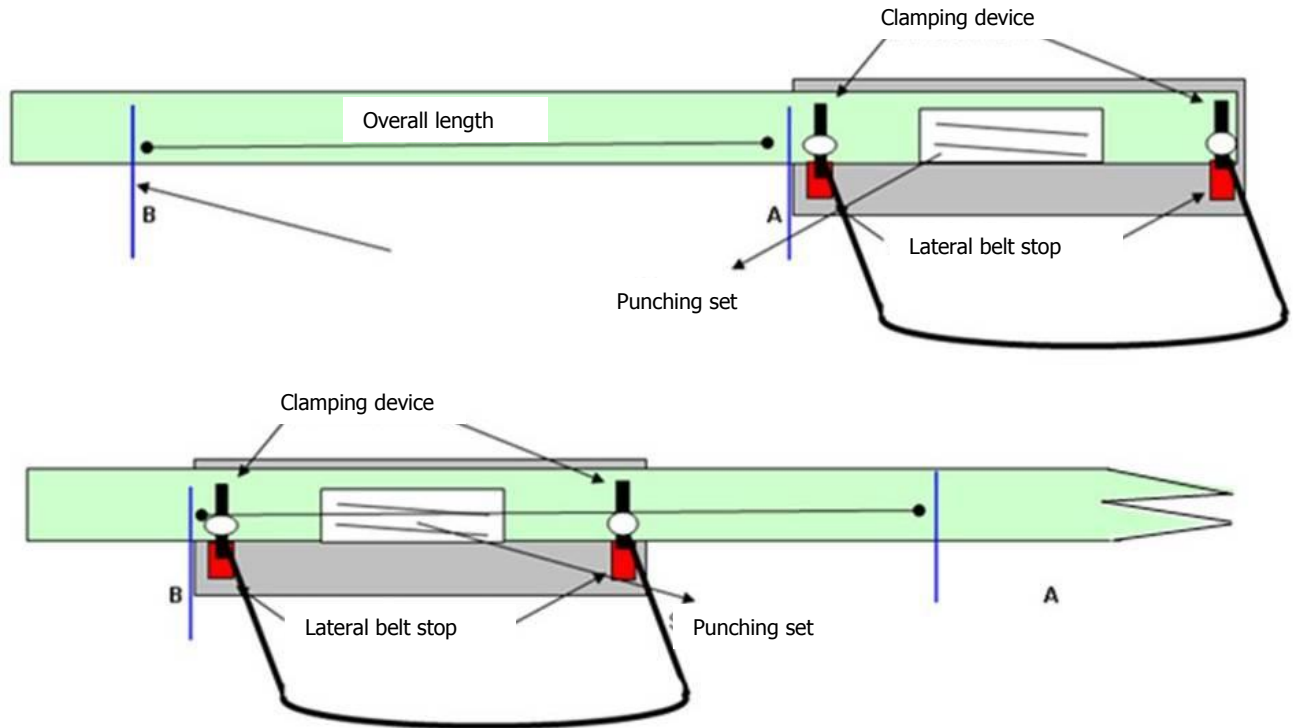
5.2 Adjusting the belt width

The punching press has a device for adjusting to the different belt widths. Adjust the tool, by pushing the hold-down plate to the belt width required.



1. Lock the stop bolt into the back drill hole in the basic frame.
2. Affix the two locking screws on the hold-down plate.
⇒ As a result, you can adjust the hold-down plate.
3. Adjust the required width of the belting material using the scale and the adjustment lug on the hold-down plate. (The scale ranges from 10 to 40 mm, in increments of 2 mm.)
4. Re-affix the two locking screws on the hold-down plate.

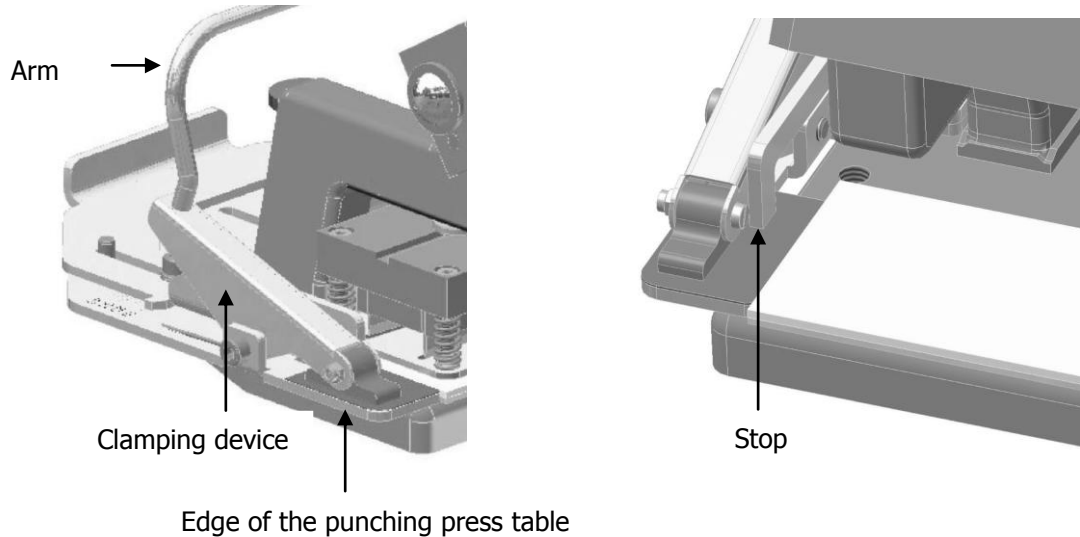
5.3 Preparing the belting material



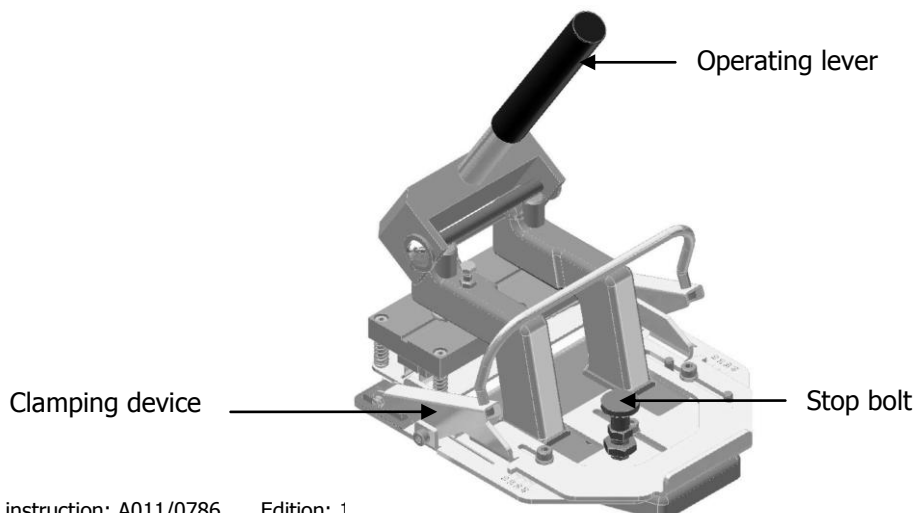
1. Establish the belt length required.
2. Calculate the thickness allowance ($\pi \times$ belt thickness), or refer to the finishing data sheet for the belt type which states the thickness allowance.
3. Belt length required + thickness allowance produce the overall length.
4. Mark the total length at right angles to the edge of the belt on the top face of the belt with a clearly visible line for the front "A" and back "B" end of the belt (see top figure).

5.4 Punching the first end of the belt

1. Put the punching press table in its basic position by fixing the stop bolt in the left drill hole in the basic frame.
2. Open the clamping device by pressing down the arm.



3. Insert the belt at the inside stop at right angles to the punching plate into the punching press and affix it with the clamping device (The marking "A" must be exactly flush with the edge of the punching press table).
4. Press the operating lever right down, so that the blades completely penetrate the belting material. In doing so, the resistance of the belt and the counterforce of the retaining springs must be overcome.
5. Put the operating lever back in its original position.
6. Pull out the stop bolt and move the punching frame one drill hole further on in the row of drill holes.
7. Engage the stop bolt again.
8. Press the operating lever right down again.
9. Repeat the procedure – engage stop bolt and press the operating lever down – till the belting material has been punched over the entire width.
10. Now remove the punched end of the belt.





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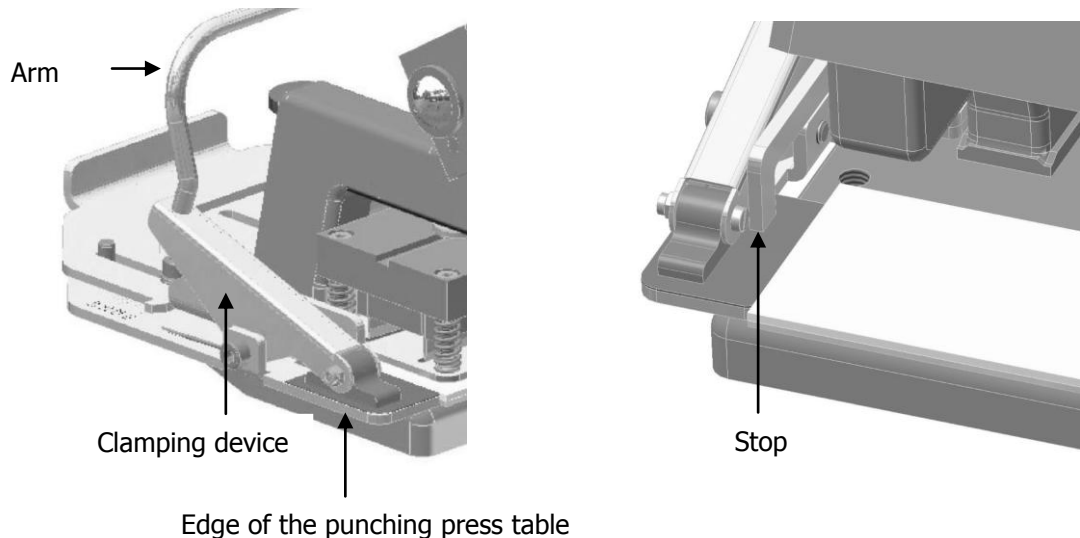
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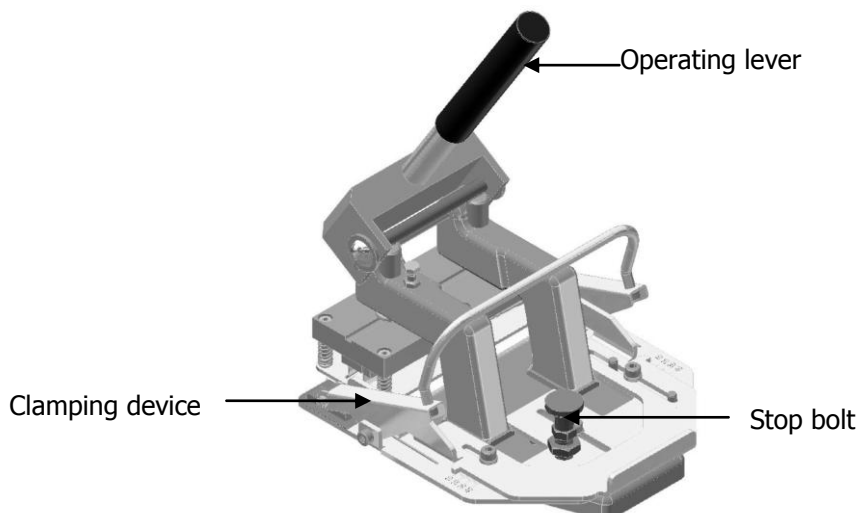
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5.5 Punching the second end of the belt

1. Put the punching press table in its basic position by fixing the stop bolt in the left drill hole in the basic frame.
2. Open the clamping device by pressing down the arm.



3. Insert the belt at the inside stop at right angles to the punching plate into the punching press and affix it with the clamping device (The marking "B" of the second belt end must be exactly flush with the edge of the punching press table).
4. Press the operating lever right down, so that the blades completely penetrate the belting material. In doing so, the resistance of the belt and the counterforce of the retaining springs must be overcome.
5. Put the operating lever back in its original position.
6. Pull out the stop bolt and move the punching frame one drill hole further on in the row of drill holes.
7. Engage the stop bolt again.
8. Press the operating lever right down again.
9. Repeat the procedure – engage stop bolt and press the operating lever down – till the belting material has been punched over the entire width.
10. Now remove the belt that has been punched on both sides.





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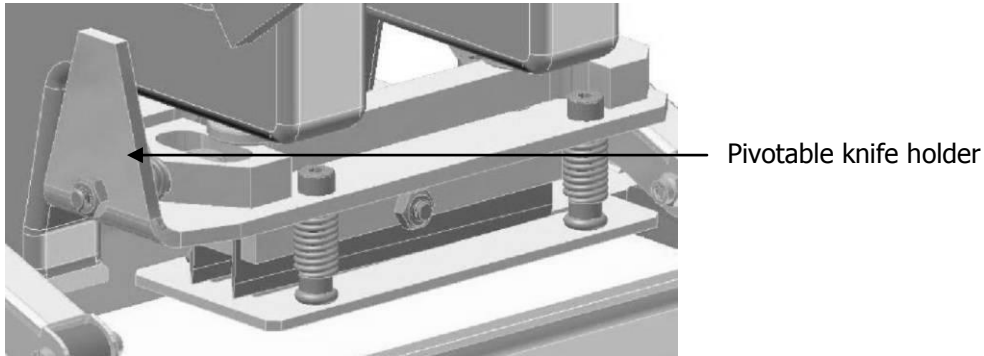
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5.6 Handling with pivotable punching set, pitch 35 x 5,75 mm

The blades in the punching set are parallel at a pitch of 5,75 mm. The length of the blades is 40 mm. You will achieve a closed Z-shaped punch by swiveling the knife holder.



Therefore **two punches are necessary at each position of the punch press table**. The knife holder has been designed so that you can open it out in two positions

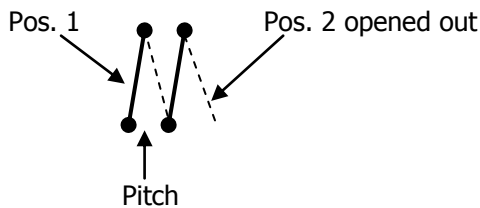


Fig. Pitch and positions when the blades are pivoted in pivotable punching set

5.7 Handling with fixed punching set, pitch 35 x 11,5 mm, 70 x 11,5 mm and 110 x 11,5 mm

The blades in the punching set are arranged in a V-shape at a pitch of 11,5 mm. The length of the blades is:

- At a pitch of 35 x 11,5 **40 mm**
- At a pitch of 70 x 11,5 **78 mm**
- At a pitch of 110 x 11,5 **118 mm**

You can obtain a Z-shaped punch by shifting the punching table on along the grid.

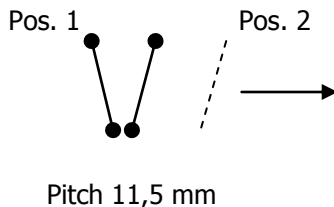


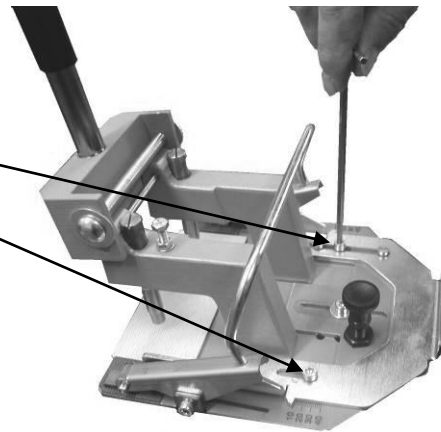
Fig. Pitch and adjustment of the blades in fixed punching sets.

5.8 Symmetrical punching

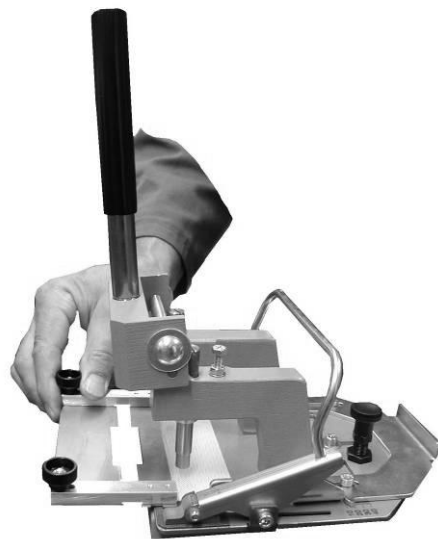
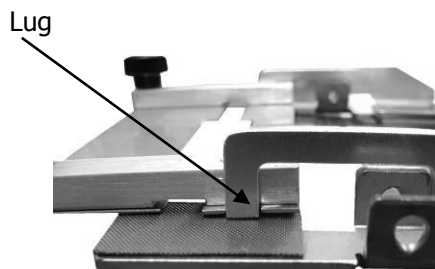
1. Please screw the mandrill gauges down.



2. Please unclench both allen head screws.

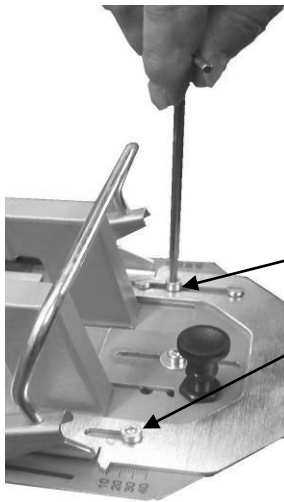
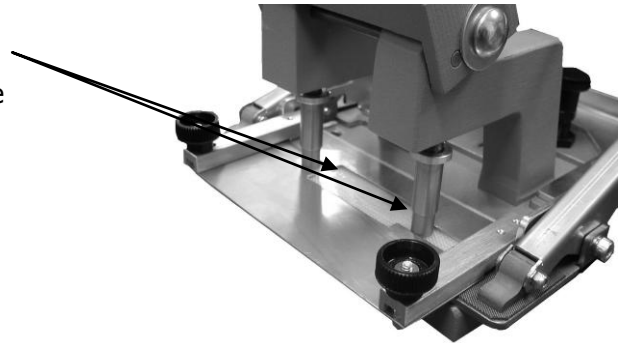


3. Please slide the accessory table on the front in the lug of the tool.



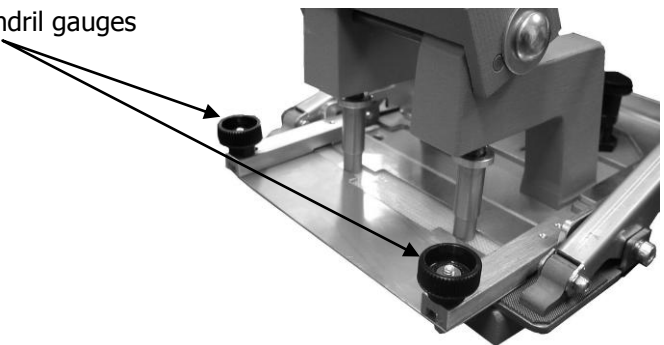


4. Please push slightly the mandril gauges on the punching plate and make sure, that the backmost stop bar is touching the mandril gauges.

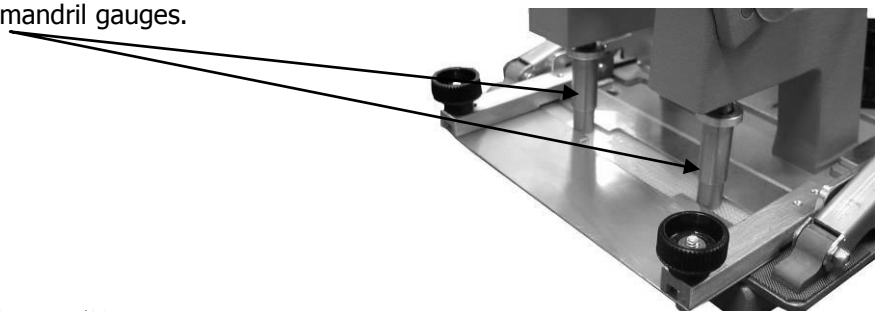


5. Please pull both allen head screws tight. Attention: latching bolt should be in middle position (3.Hole)

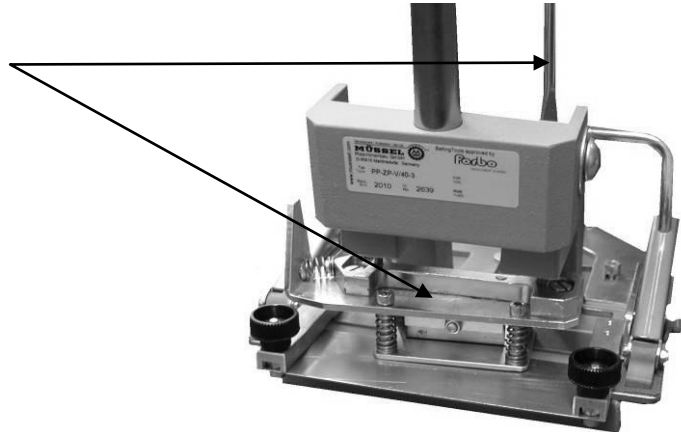
6. Please move the front plate to the mandril gauges and fasten it with the knurled screws.



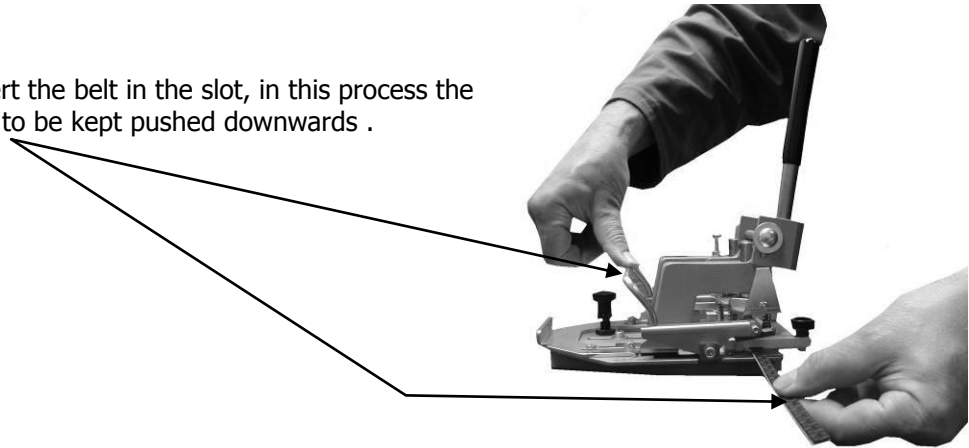
7. Please remove the mandril gauges.



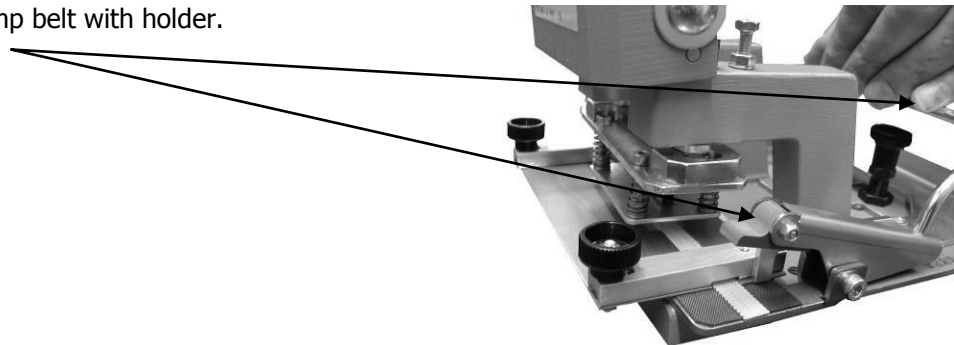
8. Please insert the punching tool set.



9. Please insert the belt in the slot, in this process the holder has to be kept pushed downwards.

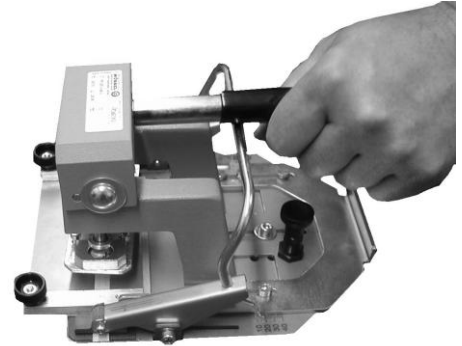


10. Please clamp belt with holder.

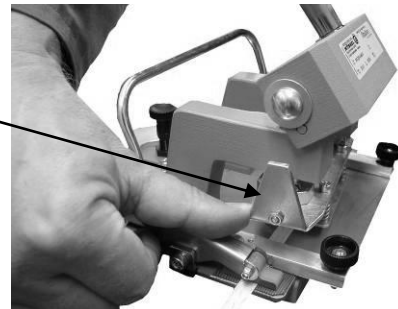




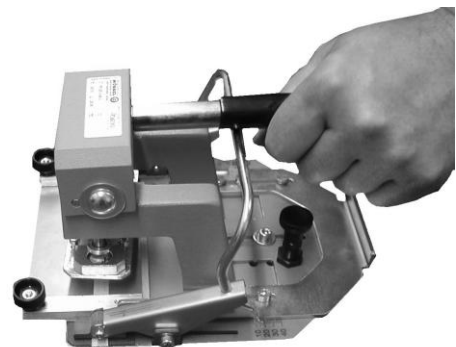
11. Carry out the first punching.



12. Please displace the blade from the back buffer position to the front buffer position.



13. Carry out the second punching.



14. Punched belt.



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 sent for repair to the manufacturer.

Check the following each time before use:

- Check the body of the tool is not damaged
- Check the levers and joints function properly and are not dirt (If necessary remove it)
- Check there is no wear and tear on the knife holder and that it works properly
- Check the punching sets are not damaged and have not been displaced
The blades must be inserted tightly to the punching set. Ensure the blades are not damaged or have broken off.
- Check there is no wear and tear on the blades and that they work properly (Make a test punch)

Warning



Risk of injury! When checking the blades, do not touch the edges!

Check after multiple usage:

- Clean the punching table
- Regularly check to make sure screws and bolts sit tightly
- Check the punching depth
When delivered, the punching depth in the punching press has been pre-set by the manufacturer. The punching depth can however change after a longer period of use, so that this will have to be re-adjusted. Make a test punch on a piece of paper.
To adjust the punch depth, see chapter "4.3 Adjusting the punching depth".

Note:

Should the PTZ 40 M no longer punch very well after a longer period of usage, this could mean that punching depth is no longer sufficient. We recommend changing the punching plate.

- Check the punching set for wear and tear
The cutting edges on the knives must not be damaged or blunt. If damaged, punching sets must be exchanged. (see chapter „4.4 Changing the punching set“)
- Punching plate
Frequent cutting can mean that the grooves in the plate can become too deep or the wrong shape. If the ends of the splice can no longer be cut cleanly and with sharp edges, the punching plate must be replaced.

Note:

Different punch cuts influences the quality of the punch.

Check every six months:

- Lubricate all the moveable parts
- Check the punching set is easy to put in the insertion point

6.1 Changing the blades in the punching set

Over time the blades in the punching set will become blunt. If you are no longer satisfied with the results, then change the blades in the punching set as follows.

Warning



Risk of injury! The punching knives have very sharp blades. Touching them with no protection can lead to cuts. Wear protective gloves.

1. Remove the punching set from the fixing plate at the punching head.
2. Remove the mount screws on the blades.
3. Remove blunt or damaged blades from the bottom from the punching set.
4. Insert the new blades from the bottom into the punching set.
5. The back of the blades has been ground to a diagonal. Insert the high side of the knife to the left and to the right, so that the blades penetrate the belting material first from the high side.



6. Tighten the nuts on the hold-down screws just gently to start with, so that the position of the blades can be adjusted.
7. Ensure that the back of the blades is sitting correctly, i.e. level, on the knife holder.
8. Tighten the nuts on the hold-down screws.
9. Fix the punching set to the fixing plate at the punching head again.
10. Carry out a test punch to ensure that the result is as required (edges cut correctly, no fraying, punch depth is correct).

Note:

Always replace a complete set of blades. The blades must always be re-sharpened to the same height. Always change the punching plate each time you change the blades

6.2 Spare parts

Material number	Designation
7872111	Blade 35 mm
7872112	Blade 70 mm
7872113	Blade 110 mm
7872485	Punching plate complete
7872785	Belt clips
78723342	Knurled screw with locking nut M10 x 1
7872929	Handle, galvanized

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.