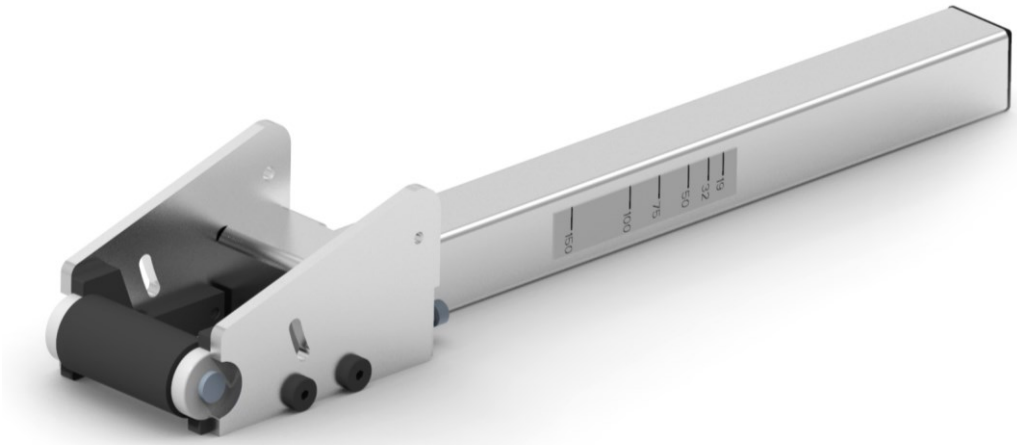
Radius Grinder

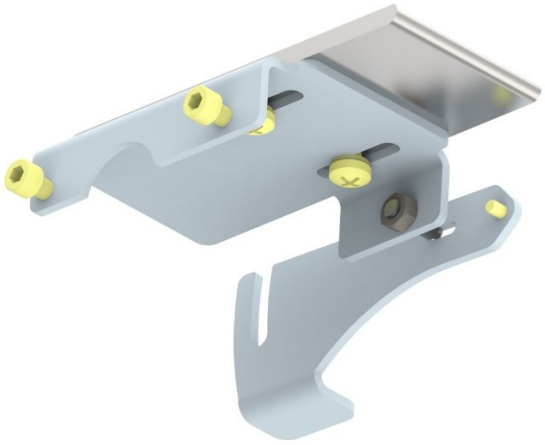
and

Ricasso and Integral Grinding Device

to belt grinder

BS-1





Operators Manual

Version 1.2 (01/2024)

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1 Safety instructions

Before using any attachments, read the operating instructions for the basic machine carefully and follow all the safety instructions given there! Keep all instructions for attachments together with the operating instructions for the basic machine!

ATTENTION: For your own safety, do not attempt to use the machine with these attachments until the machine and attachment are properly installed.

ATTENTION: When using power tools, always follow basic precautions to reduce the risk of fire, electric shock, and personal injury.

1.1 Use personal protective equipment (PPE)

When operating machines, foreign objects can get into your eyes, which can cause serious eye damage. Safety glasses or other suitable eye or face protection must be used at all times.

Use earplugs or ear protection when the machine is in operation.

Non-slip safety shoes are recommended when you operate the machine and handle large workpieces. Be aware that the floor can become wet and slippery when using coolant.

To protect against injury or burns, suitable safety gloves must be worn each time the machine is used.

Use suitable respiratory protective equipment (dust mask, etc.) if dust is generated during processing. Exposure to high concentrations of dust caused by the processing of hardwood, softwood and artificial composite panels can lead to serious damage to health! Find out about the required filter class, depending on the material to be sanded.

1.2 Residual risks

Every machine has residual risks that must be observed for safe operation.

- Risk of injury from hair, jewelry, clothing or parts of the body being trapped between the grinding belt and rollers.
- The running grinding belt can cause injuries and burns if touched!
- Risk of electric shock from touching live parts in the control cabinet!
- Risk of injury from swept away parts and flying sparks!
- Danger of hearing damage from prolonged work without hearing protection!
- Health hazard from dust emissions!
- Risk of injury from incorrectly or insufficiently assembled machine!

These risks can be minimized if all safety regulations are applied, the machine is properly maintained and cared for and the machine is operated as intended and by appropriately trained specialist personnel.

Despite all safety precautions, common sense and your technical suitability / training to operate a machine is the most important safety factor!

2 Technical specifications

Attachment type	radius grinder
Compatible with	BS-1
Supplied wheel diameters (mm)	19, 32, 50
Maximum allowed wheel diameter (mm)	150
Permissible grinding belt speed	5 – 30 m/s (see chapter 5.2)
Grinding belt size	50x2000mm
Main dimensions W x H x D (mm)	100 x 80 x 500
Mass	3 kg

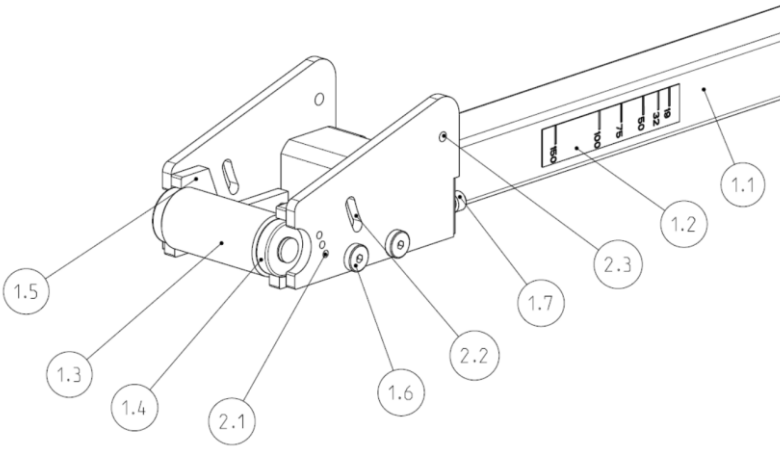
Attachment type	Ricasso and integral grinding device
Compatible with	BS-1
Compatible roll diameters (integral grinder) (mm)	19, 32, 50
Edge radii (ricasso grinder) (mm)	1, 2, 3, 4
Permissible grinding belt speed	5-10m/s
Grinding belt size	50x2000mm
Requirements on grinding belt (ricasso grinding)	Highly flexible J-Flex cloth belt, P120 or higher
Main dimensions W x H x D (mm)	100x30x100
Mass	1 kg

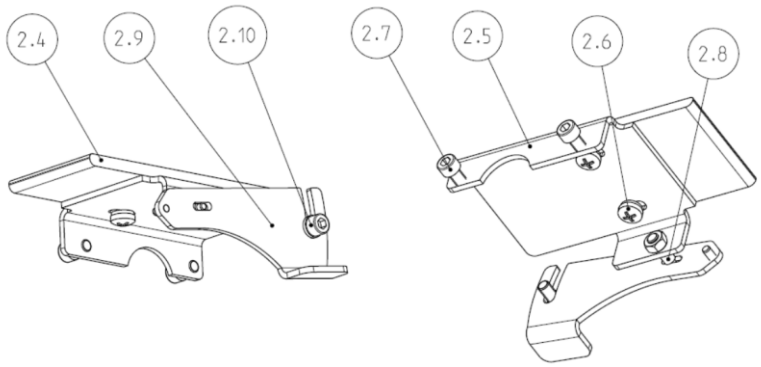
3 Description of the attachments

The radius grinder is an attachment to the BS-1 and BS-2 belt grinders. With its help, radius rolls with a diameter range of 19 to 150 mm can be used on the grinding machines mentioned. The radius grinder is compatible with the grinding table and edge support attachments, so that a guided grinding process is also possible.

The radius grinder is also used to mount the ricasso and integral grinding device, which is also available as an attachment. With the help of this attachment, transitions on blade surfaces can be ground and very effectively brought to an even finish, which reduces manual rework to a minimum.

Table 1: Parts of the attachments





radius grinder
1.1 Tool arm
1.2 Slide-in scale
1.3 Radius wheel
1.4 Ball bearings
1.5 Bearing shell
1.6 Clamping screws (2x)
1.7 Adjustment screw

Ricasso and integral grinding device
2.1 Adjustment holes
2.2 Slotted hole
2.3 Fastening in the radius grinder
2.4 Grinding platen (2x)
2.5 Mounting bracket
2.6 Screw for grinding plate (2x)
2.7 Fastening screws (2x)
2.8 Adjusting pivot
2.9 Adjustment lever
2.10 Clamp screw for fine adjustment

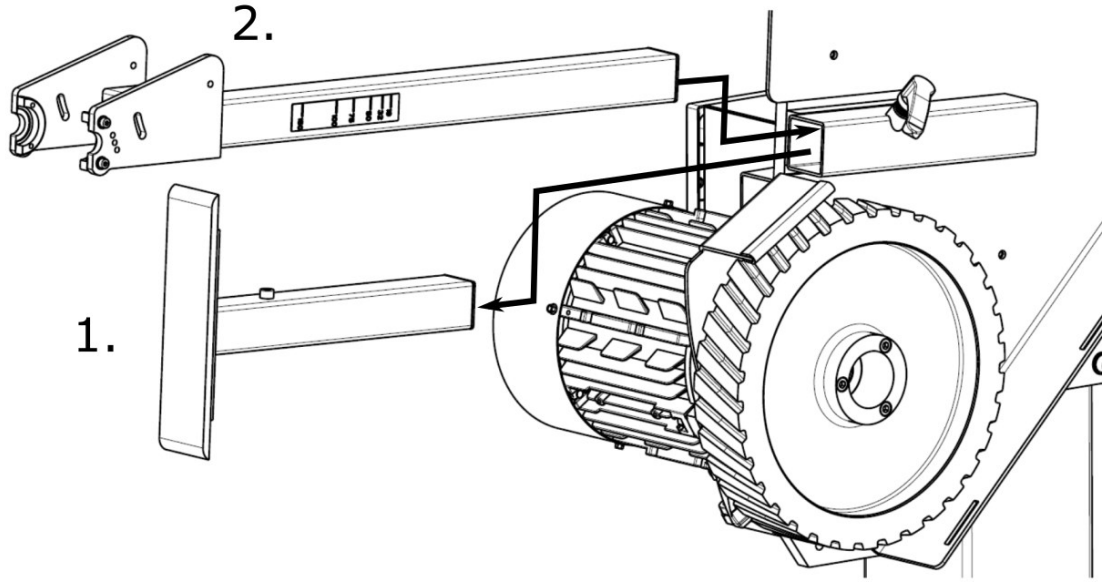
4 Radius grinder: Assembly

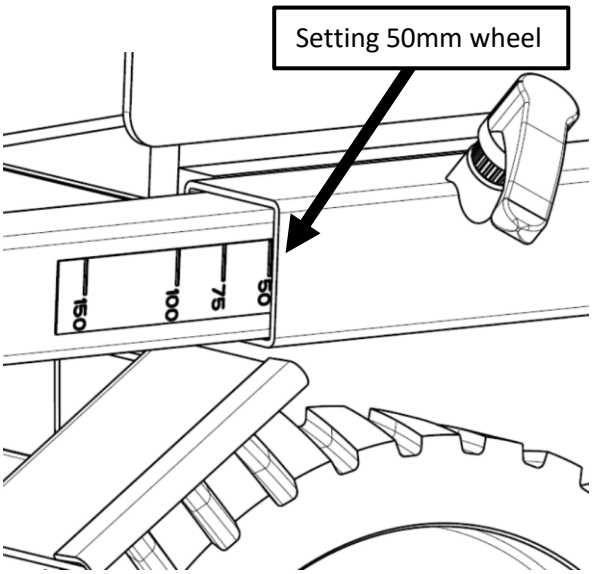
ATTENTION: Before installing the attachment, familiarize yourself with the parts of the basic machine listed in chapter 3 of the operating instructions for the basic machines BS-1 and BS-2!

CAUTION! Only make the following settings when the machine is switched off!

4.1 Mounting the radius grinder

Take off the grinding belt as described in the machine's operating instructions. Loosen the clamp of the flat grinding table and remove it (1.). Now insert the tool arm of the radius grinder into the machine as shown in the image below and clamp it according to the desired roll size. Please note the scale on the tool arm. The adjustment is correct when the front edge of the machines clamping tube points at the desired roll diameter on the scale.





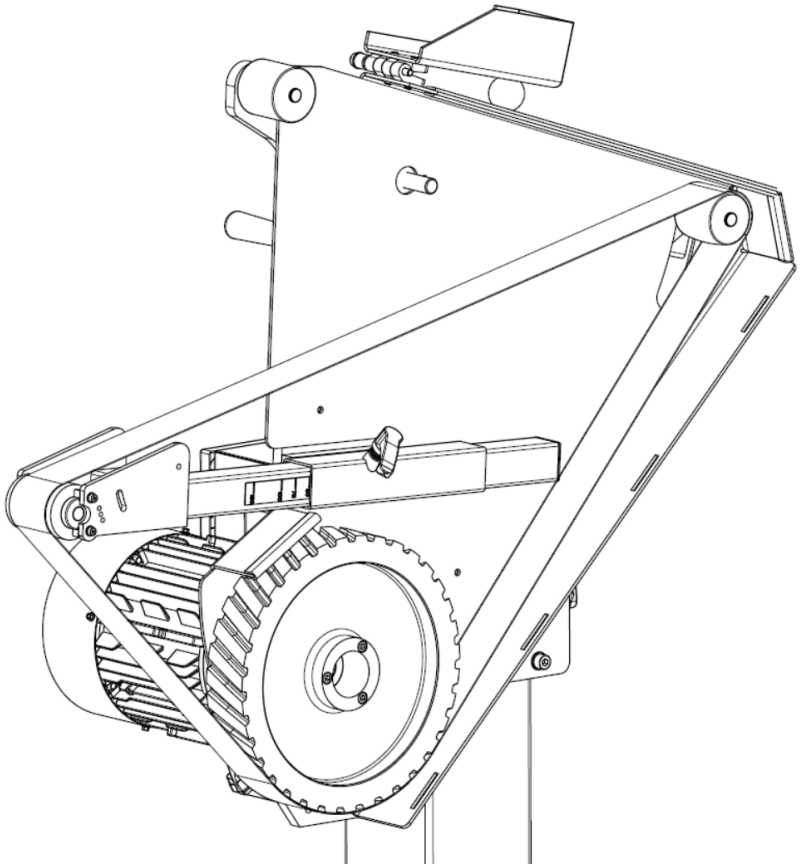
Now insert the required roller into the bearing shells of the radius grinder. The rollers are held in the bearing shells by magnets. Remove any dirt on the inner surfaces of the bearing shells to ensure that the ball bearings are seated without play.

5 Radius grinder: Commissioning and use

5.1 Putting on the grinding belt

Place the grinding belt as shown in the figure below. Note any running direction of the grinding belt. Tension the belt with the machine's tension lever. Convince yourself that the belt runs correctly by manually turning the contact wheel in the direction of travel and, if necessary, readjust using the machine's tracking screw. Then close the side door and screw it completely. Fold the splash guard down.

CAUTION! Never use the belt sander without the side door being completely closed and screwed on!



5.2 Belt speeds

Depending on the wheel diameter and the belt speed, the radius wheels run at a very high speed. For a long bearing service life, use the following maximum belt speeds:

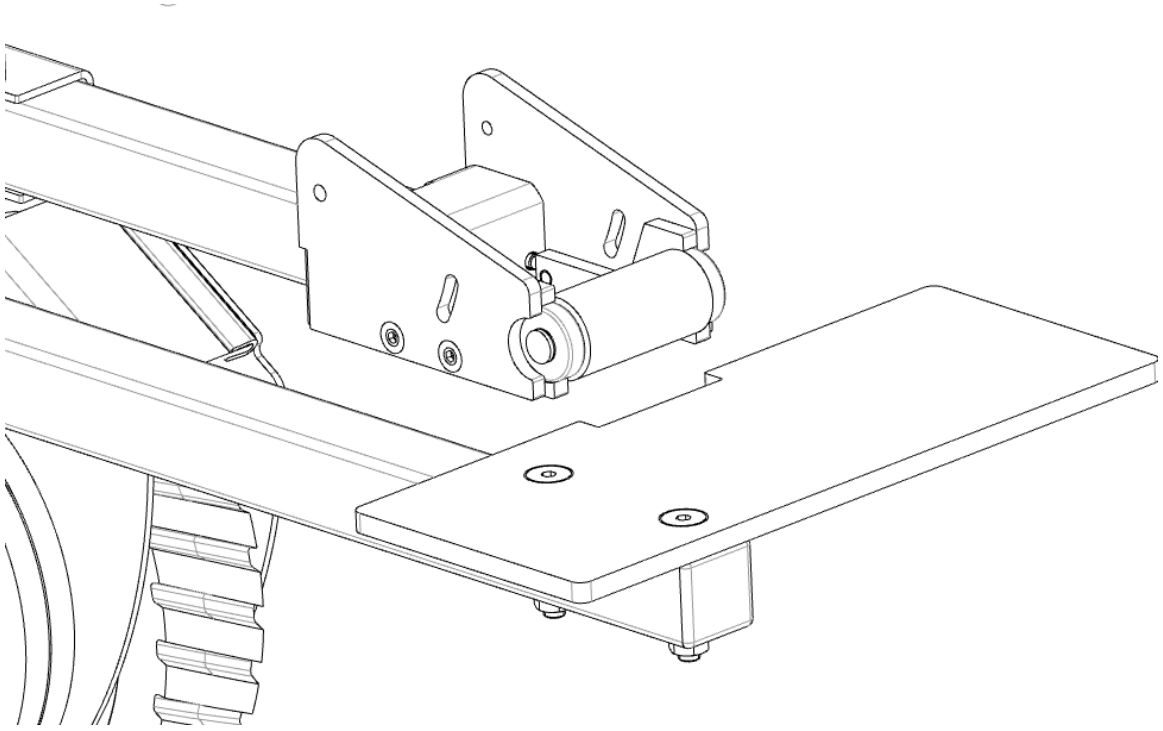
wheel diameter	Max. speed
19	19m/s
32	30m/s
50	30m/s

5.3 Height adjustment of the radius grinder

CAUTION! Only make the following settings when the machine is switched off!

You can use the angle adjustment of the grinding arm of the basic machines for ergonomic height adjustment of the radius grinder. The angle adjustment is described in the operating manual of the basic machine.

For the BS-1 machine, it is also possible to specifically combine the height adjustment with the standard grinding table. By using the angle adjustment, you can achieve any desired height of the radius roller above the table. This technique allows, for example, to grind fullers with the support of the table.



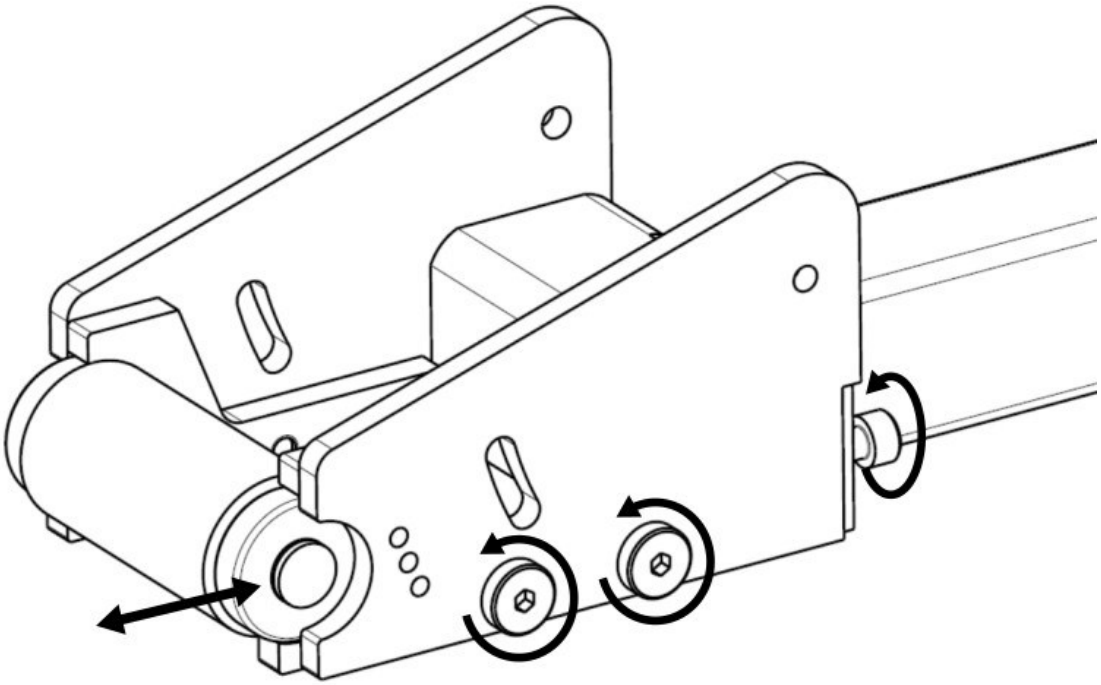
6 Radius grinder: Maintenance and adjustment work

6.1 Adjusting the bearing shells

Due to manufacturing and assembly tolerances, it can happen that the grinding belt runs off-center on the radius grinder, even when the tracking of the machine is set to neutral. To compensate for this behavior, the right bearing shell of the radius grinder is equipped with oblong holes that allow fine adjustment.

To adjust, proceed as follows:

1) Establish neutral tracking without the radius grinder installed so that the belt runs centered on the upper roller and contact wheel (see operating instructions for the basic machine)
2) Mount the radius grinder with any roller and put on a grinding belt.
3) Check the position of the belt by manually turning the contact wheel in the running direction without turning the tracking screw. Note the tendency of the grinding belt to wander left or right.
4) Un-tension the grinding belt.
5) Loosen the clamp screws of the right bearing shell (>1.6)
6) By turning the adjusting screw (>1.7), move the bearing shell forward (the belt previously moved to the right) or backwards (the band previously moved to the left). Even small shifts of less than 1mm can cause major changes, so proceed gradually. Tighten the clamping screws.
7) Repeat the procedure from step 3 until the belt runs centered on the radius grinder.



7 Ricasso and integral grinding attachment: Assembly

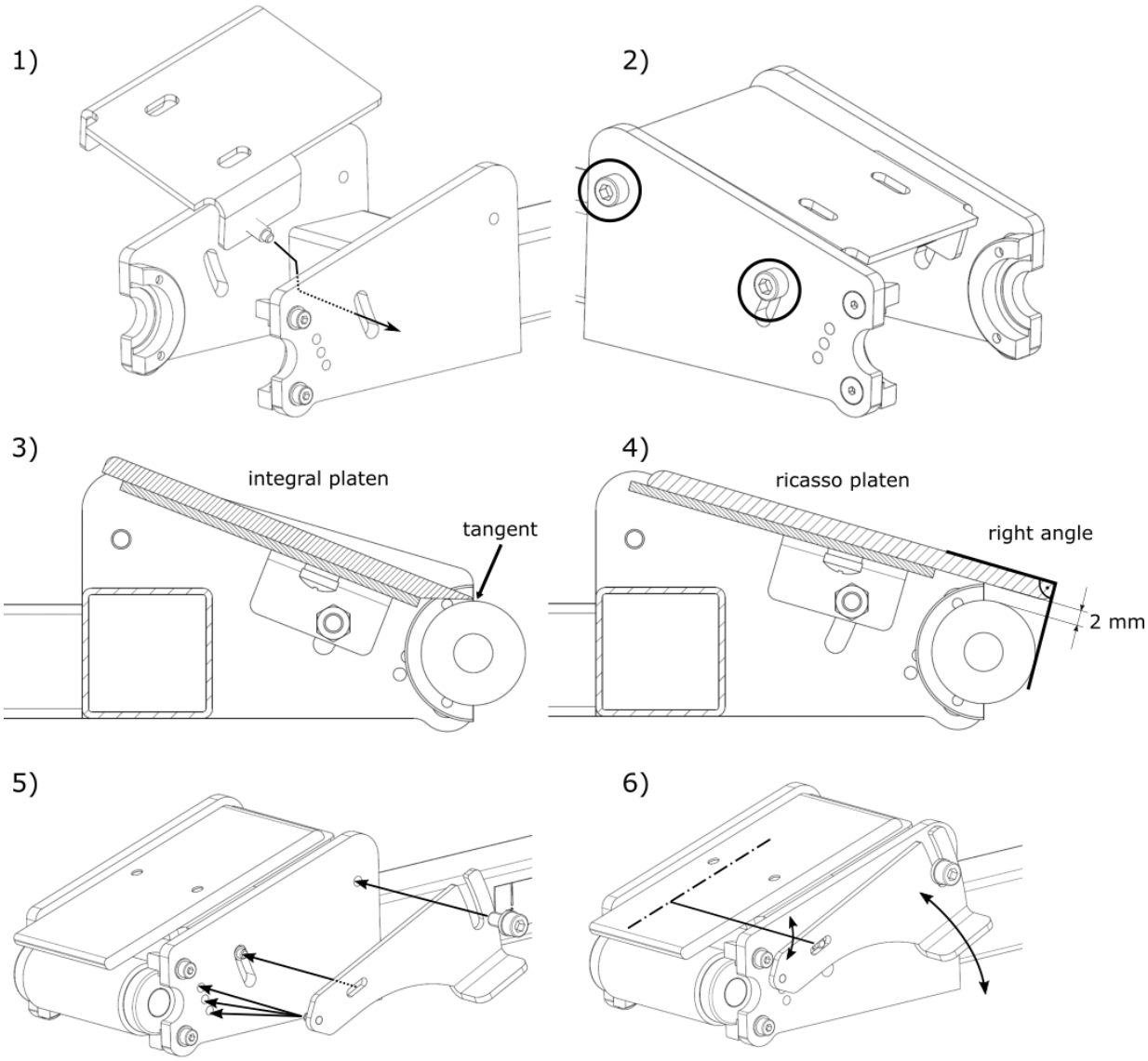
IMPORTANT: Observe the components of the device described in chapter 3 are shown.

7.1 Assembly of the device

Mount the radius grinder as shown in chapter 4.

Then proceed step by step according to the figure below.

1) Insert the mounting bracket (>2.5 in Table 1) so that the adjusting pivot (>2.8) lies in the slot of the radius grinder (>2.2).
2) Then swivel the mounting bracket completely inside the radius grinder and insert the 2 fastening screws (>2.7) without tightening them.
3) Case integral grinding device
    a. Place the integral grinding platen (>2.4) on the mounting bracket as shown and insert the phillips screws (>2.6) from the bottom without tightening them.
    b. Insert the desired radius roll. All roll sizes between 19-50 mm can be used!
    c. Adjust the mounting bracket so that the surface of the grinding platen is tangent to the roll. Then clamp the mounting bracket with the fastening screws (>2.7).
    d. Position the grinding plate so that the gap between the platen and the radius roller is minimal (1 mm). Tighten the screws (>2.6) to secure the platen.
4) Case ricasso grinder
    a. Place the ricasso grinding platen (>2.4) on the mounting bracket as shown. Depending on the desired transition radius, the platen can be turned four ways.
    b. Insert the phillips screws (>2.6) from the bottom without tightening them.
    c. Insert the 32mm radius roller. Only use the ricasso grinding device with this diameter!
    d. Now adjust the mounting bracket so that there is a gap of approx. 2 mm between the underside of the grinding platen and the radius roller. Clamp the mounting bracket with the fastening screws (>2.7). Please note: A gap that is too large or too small can mean that there is not enough freedom of movement when fine-tuning the device later.
    e. Position the grinding platen so that the angle around the edge of the grinding pad is 90°. Tighten the screws (>2.6) to secure the platen.
5) The device is already roughly adjusted, but you need the adjustment lever (>2.9) to fine-tune the geometry and the belt tracking. Place the lever on the radius grinder and the adjustment pivot (>2.8) from the right side. The pin on the adjustment lever must be placed in one of the three adjustment holes (>2.1). Choose any hole that allows you to later clamp the adjustment lever with the clamping screw (>2.10) in your chosen configuration.
6) Note that with this arrangement, a gentle pressure on the adjustment lever is able to tilt the mounting bracket together with the grinding platen slightly to the left or right. This allows fine adjustment of the mounting angle which is described in the chapters 8.2 and 9.2.



8 Integral grinding device: adjustment and commissioning

The integral grinding device supports the creation of transitions between the blade and the handle area. If these transitions are to be executed with larger radii, the radius grinder can be used. However, the grinding pattern of small radius rolls is poor and deep chatter marks easily appear in the flat part of the blade.

With the integral grinding device, the blade always rests on the platen and receives a seamless finish right down to the transition area. You can also use the device for a longitudinal finish on the remaining blade surface. However, make sure that the abrasive belt does not touch the tip of the blade. This can result in belt tears, falling workpieces, property damage and personal injury!

8.1 Belt Types and Belt Speeds

Assuming correct adjustment of the device according to chapter 7.1, the operation of the integral grinding device is identical to the normal radius grinder. This means that there are no restrictions on the types of grinding belts used. The permitted belt speeds apply as in listed in chapter 5.2.

8.2 Adjusting the integral grinding device

The integral grinding device is adjusted via the adjustment lever (>2.9). By slightly tilting the mounting bracket together with the grinding plate, you can achieve that the grinding plate is exactly tangential to the radius roller over the entire width. This allows you to achieve the highest possible quality of the transitions to be ground.

As soon as you have made a fine adjustment using the adjustment angle, you can secure it by tightening the clamping screw (>2.10).

8.3 Commissioning of the integral grinding device

The operation of the integral grinding device is identical to the radius grinder without an additional device. Follow the instructions according to chapter 5.

9 Ricasso grinding device: adjustment and commissioning

ATTENTION: The use of the radius grinder in combination with the ricasso grinding device differs in essential points from the use of the radius grinder without additional device. Therefore, observe and follow the instructions in this chapter exactly!

The ricasso grinding device enables longitudinal finishing of ricasso edges on blades. To do this, the blade with the already roughly pre-ground ricasso edge is pressed against the rounded edge of the grinding platen. The grinding belt in between transfers the transition radius of the grinding platen to the blade and creates a longitudinal finish. Depending on how the ricasso grinding platen is mounted, 4 transition radii are available.

You can also use the device for a longitudinal finish on the remaining blade surface. However, make sure that the abrasive belt does not touch the tip of the blade. This can result in belt tears, falling workpieces, property damage and personal injury!

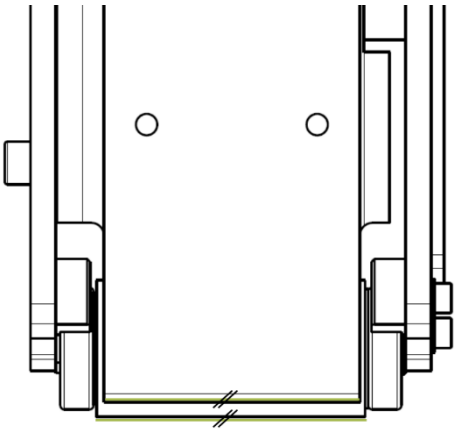
9.1 Belt Types and Belt Speeds

The function of the ricasso grinding device is based on the deflection of a grinding belt over a relatively sharp edge. Therefore, the device can only be used with thin and flexible belts (J-Flex cotton fabric). During use, a lot of friction and heat is generated due to the deflection. There is also an increased risk of belt tears, which pose a risk of injury at high belt speeds. Therefore, only the minimum belt speed of 5 m/s may be used!

9.2 Adjustment and commissioning of the ricasso grinding device

Please note that the grinding belt with the mounted ricasso grinding device has to travel a slightly longer distance than with a radius grinder without a device. Therefore clamp the radius grinder with the ricasso grinding device in the 50mm position according to the slide-in scale (>1.2).

Due to the strong deflection of the grinding belt, lateral adjustment of the grinding belt using the machine's tracking screw is no longer possible. Instead, you can fine tune using the adjustment angle (>2.9). To set the tracking, proceed as follows:



1) First check that the edge of the grinding platen runs parallel to the contour of the roller, as shown in the adjacent figure. Adjust the grinding platen if necessary.
2) Put on a grinding belt.
3) Slightly loosen the clamping screw (>2.10) so that the adjustment lever can be moved.
4) Grip the adjustment lever with your right hand and hold it under slight tension.
5) Start the machine at the lowest speed.
6) By operating the adjustment angle, you can influence any misalignment of the grinding belt. If the belt runs to the right, raise the angle slightly. If the belt runs to the left, push the angle down.
7) Clamp the position of the adjustment lever with the clamping screw
8) The device is now ready for operation. Depending on the grinding belt, the adjustment position can vary slightly and may have to be readjusted.

10 Troubleshooting

The following always applies: In the event of malfunctions that could pose an immediate danger to people, property or operational safety, stop the machine immediately using the main switch (= emergency stop) and disconnect it from the power supply. Only then try to analyze the problem and, if necessary, contact the manufacturer of the machine. Do not use the machine again until the fault has been rectified.

The following list is to be seen as an attachment-specific supplement to the fault cases in the operating instructions for the basic machine.

mechanical disturbances	reason	solution
Belt runs unstable (radius grinder)	Radius grinder clamped in the wrong position (tension is not applied)	Install the radius grinder according to the slide-in scale (>1.2).
	Radius roller does not sit properly in the bearing shell	Clean the bearing shells, check that the roller is correctly seated
Belt run sunstable (operation with ricasso grinding device)	Adjustment range of the elongated hole (>2.2) exhausted	When installing the ricasso grinding device, do not exceed the specified 2mm air gap between the roller and the grinding plate (see chapter 7.1, step 4d)
	Grinding plate mounted twisted	The front edge of the grinding plate must be parallel to the roller (see chapter 9.2, step 1). Loosen the plate and position it correctly.
	Wrong grinding belt (not flexible enough)	Choose grinding belt that meets requirements.
running noises	Radius roller does not sit properly in the bearing shell	Clean the bearing shells, check that the roller is correctly seated
	Radius roller rubs against the grinding plate	Set gap according to chapter7.1.
	Belt edges rub against machine parts	Set tracking. Perform adjustment in chapter 6.1
	bearing damage	replace bearings.
	Ricasso grinding device: speed too high	Use minimum speed.
vibrations	Imbalance / runout of the radius roller	Check roller, replace if necessary

If errors other than those described here occur, please contact the manufacturer! In the event of electrical faults, do not open the control cabinet, there is a risk of fatal injury from electric shock! Maintenance work on electrical components may only be carried out by qualified specialists!