Tool description

A router is a hand tool or power tool that routs (hollows out) an area in hard material, such as wood or plastic. Routers are mainly used in woodworking, especially cabinetry.

General tool safety

PPE
- **Always wear eye protection.**
- **Wear a dust mask where appropriate**
- **Wear hearing protection**
- **DO NOT wear gloves**

Personal Safety
- **Do not wear loose clothing.**
- **Remove Jewellery.**
- **Keep hair tied up.**

Do not overreach. Keep proper footing and balance at all times. This enables better control of the tool in unexpected situations.

Keep the power cable over your shoulder and out the way of your feet as it is a trip hazard

Consider those working around you, inform them before starting the equipment so they can use relevant PPE, ensure there are no trip hazards and reassess the area once all cables and extraction hoses are connected.

Do not use a power tool while tired or rushed. A moment of inattention and incorrect use of PPE while operating power tools may result in serious personal injury and or death.

Dust extraction, ensure this is connected and properly used. Use of dust collection can reduce dust-related hazards.

Power tool use & care

Do not force the power tool.

Correct settings will do the job better and more safely at the rate for which it is designed.

Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be brought to the attention of a technician before further use.

Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool. This will reduce the risk of starting the tool accidentally.

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Visual inspection. With the Router unplugged, inspect the bit. If the looks blunt, worn or chipped, bring this to the attention of a technician before continuing. Properly maintained tools with sharp cutting edges are less likely to catch and are easier to control.

Check material condition before cutting. Remove any foreign objects such as nails or screws from the material to prevent damaging the tool and its cutter. Do not use green or wet wood as the water and sap content can damage the tool and its cutters.

Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.

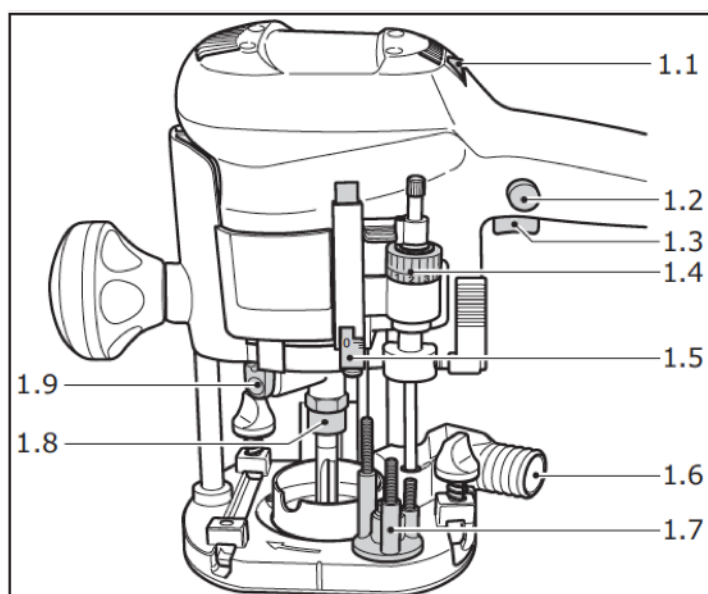## Specific Safety Rules 1010 (Small) & 1400 (Large)

Hold power tools by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its own cord. Contact with a "live" wire will make exposed metal parts of the tool "live" and shock the operator.

Use clamps or another suitable means to support and secure the workpiece to a stable platform. Holding the workpiece by hand or against your body is unstable and may lead to loss of control.

Functional Description 1010 (Small)

The large router is fitted to a routing table.

1.1   Speed controller
1.2   Locking button
1.3   On/Off switch

1.1	Speed Controller	1.6	Extraction Connection piece
1.2	Locking Button	1.7	Pivoted turret stop
1.3	On/Off Switch	1.8	Collet Nut
1.4	Depth Adjustment	1.9	Spindle stop
1.5	Scale		

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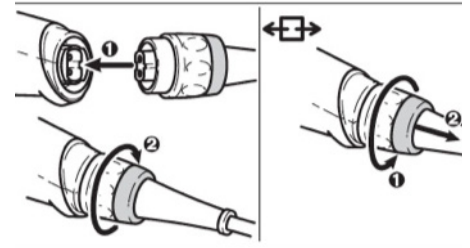## Extraction 1010 (Small) & 1400 (Large)

The Router MUST be used with a dust extraction system. The dust extractor has variable speed and sensing for when the saw is turned on. The vacuum will automatically start when the saw is turned on, and will remain running for a couple of seconds after the saw turns off to clear the remaining dust.

Plug the Festool Extraction cable into an outlet and the Router cable into the socket on the front of the extraction.

Power cord 1010 (Small) & 1400 (Large)

Always switch the machine off before connecting or disconnecting the power cable!

To install the power cord, insert the cord into the inlet on the tool with the key and keyway aligned, and twist the locking ring. Reverse the procedure to remove the cord.

Make sure to fully tighten the plug-it cord a full quarter-turn until it clicks. If the plug is not fully locked, the socket and cord can overheat and be damaged. Check the plug is secure by pulling gently before using the tool.
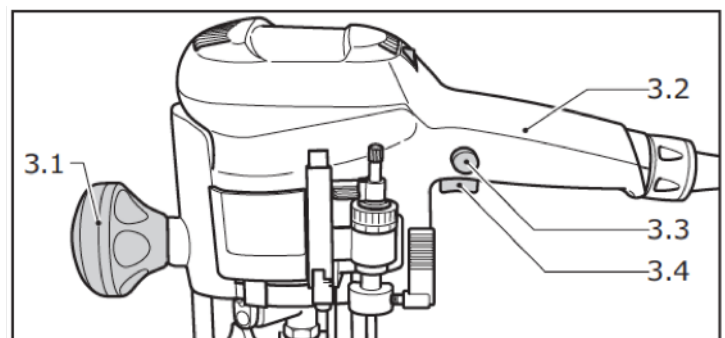
On & Off Switch 1010 (Small)

Keep the machine steady during switching and during use by holding the handle (3.2) and the additional handle (3.1) with both hands.

The switch (3.4) is used to switch the tool on and off. For continuous operation the switch can be locked by means of the button on the side (3.3).

The switch can be unlocked by pressing again.

After the machine has been switched off, the milling cutter will still rotate for a time. Take care that parts of your body (Hands) do not come into contact with the milling cutter while it is still rotating!

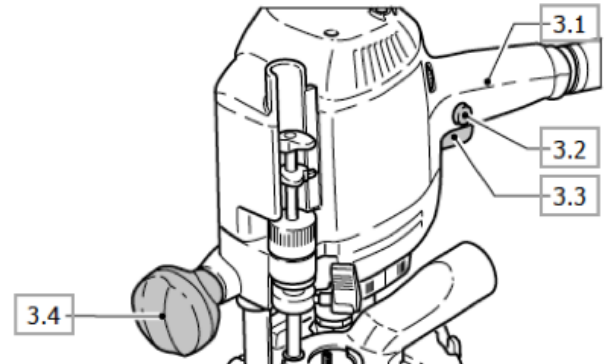**Institute** *of Making*   UCL

Switching On & Off 1400 (Large)

Keep the machine steady during switching and during use by holding the handles (3.1, 3.4) with both hands.

Switch (3.3) serves as an On/Off switch. It may be latched with the locking knob on the side (3.2) for continuous operation. Pressing the switch again releases the lock.
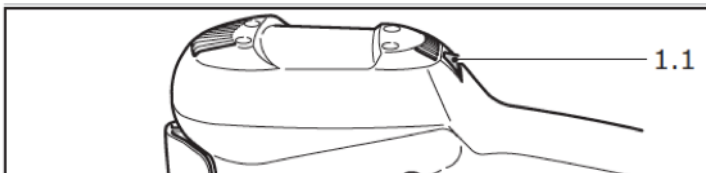
After the machine has been switched off, the milling cutter will still rotate for a time. Take care that parts of your body or material does not come in contact with the milling cutter while it is still rotating!

Speed 1010 (Small)

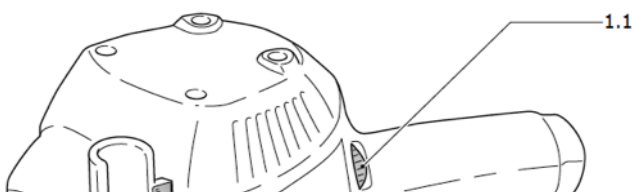The variable electronic speed controller is based on the top of the tool (1.1).

The table offers a guide to the correct electronic setting for various materials. The settings are infinitely variable.

Material	Cutter diameter [mm]			Cutter material
	3-14	15-25	26-35	
Hard wood	6-4	5-3	3-1	HW/HSS
Soft wood	6-5	6-3	4-1	HSS/HW
Panels	6-5	6-3	4-2	HW
Plastic	6-4	5-3	2-1	HW

Speed regulation 1400 (Large)

Using the electronic speed control (1.1) the motor speed can be continuously adjusted from 10000 and 22500 rpm. The table below offers a guide to the correct electronic setting for various materials. The settings are naturally infinitely variable.
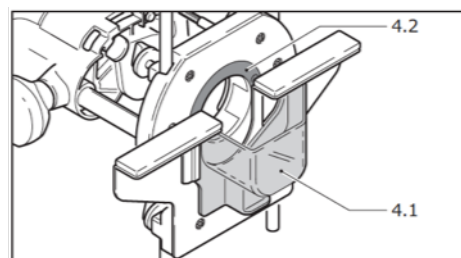
Material	Cutter diameter [mm]			Cutter material
	10-25	25-40	40-63	
Hard wood	6-4	5-3	3-1	HW/HSS
Soft wood	6-5	6-4	5-3	HSS/HW
Panels	6-5	6-4	4-2	HW
Plastic	6-4	6-3	3-1	HW

Extraction

It's important when using the router to minimize the amount of dust and chippings created. Here are two attachments that can help in the reduction.
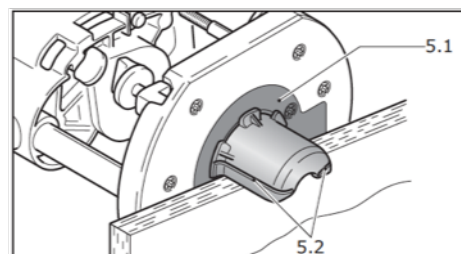
Chips extraction 1010 (Small)
A connection for extracting dust and chips (1.6) At the same time a chip guard (4.1) on the parallel guide (accessory) prevents flying chips. With edge routing, the best extraction effect is obtained with the extractor hood AH-OF (accessory).

Chip Catcher 1010 (Small)
Using the KSF-OF chip catcher can increase the efficiency of the extraction when routing edges.
Fasten the chip catcher (5.1) to the platen instead of the cover ring (4.2) from below.
The chip catcher can then be used for interior radiuses up to a minimum radius of 40 mm.

Extraction 1400 (Large)

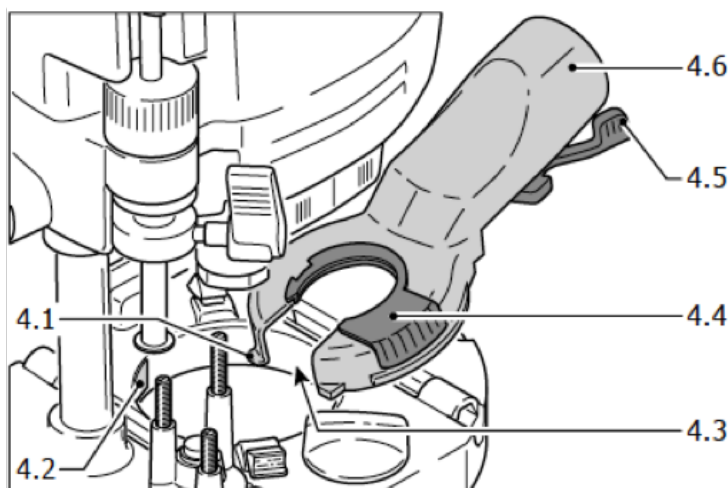Chips and dust from routing can be removed by means of a extractor hood.

You can connect a Festool extractor with the extractor hose. Remember to set the extraction to Auto so the extraction works when the router is started.

Fit the extractor hood to the router base by first inserting the two tenons (4.1) on the extractor hood into the recesses (4.2) on the router base, then place the extractor hood on the router base and close the lever (4.5).

To enable fitting and removing the extractor hood with the router attached, the recess (4.3) in the extractor hood can be opened by turning the segment (4.4).

For optimized dust extraction, the recess with the rotating segment must be closed during work.

This suction hood can be used only for cutters up to 28 mm diameter.
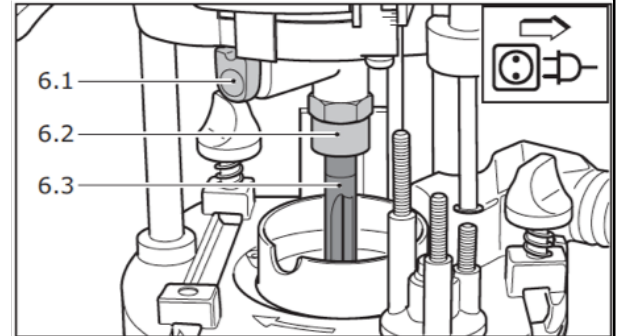
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Inserting and removing the cutters

Do not exceed the maximum speed specified on the tool and/or keep to the speed range. Cracked or distorted cutters must not be used.

Inserting the tool 1010 (Small)
1. Insert the router (6.3) into the open clamping collet as far as possible, but at least up to the mark V on the router shank.
2. Turn the spindle until the spindle stop (6.1) catches when pressed and the spindle is locked in place.
3. Tighten the collet nut (6.2) with a 19 mm open end spanner.
Milling cutters with diameters over 30 mm should not be used with this machine.

Removing the tool 1010 (Small)
1. Turn the spindle until the spindle stop (6.1) catches when pressed and the spindle is locked in place.
2. Loosen the collet nut (6.2) using a 19 mm open-ended spanner until a resistance is felt. Overcome this resistance by turning the open ended spanner even further.
3. Remove the cutter.
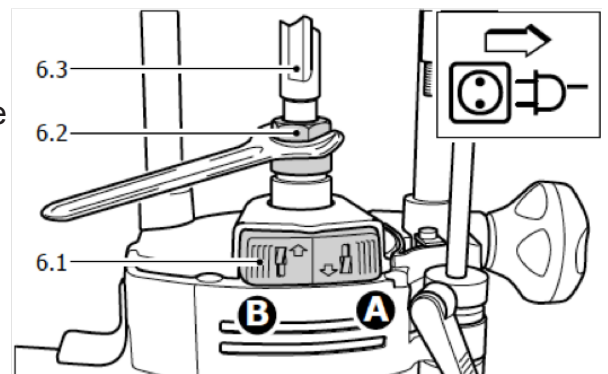
Clamping collet changing 1010 (Small)
1. Fully unscrew the collet nut (6.2) and remove from spindle together with the clamping collet.
2. Insert a new clamping collet with nut into the spindle and slightly tighten the collet nut. Do not tighten the collet nut until a milling cutter has been fitted!

Inserting the tool 1400 (Large)

You can turn the machine upside down when changing the tool.
Insert the router (6.3) into the open clamping collet as far as possible, but at least up to the mark on the router shank.

1. Press the switch (6.1) for locking the spindle on the right-hand side (A).
2. Tighten the locking nut (6.2) with a 19 mm open-end spanner.
3. Removing the tool 1400 (Large)
4. Press the switch (6.1) for locking the spindle on the left-hand side (B).
5. Undo the nut (6.2) using an open-end wrench (SW 19) until you are able to remove the tool.

Note: the spindle lock only blocks the motor spindle in one direction of rotation at any one time. Therefore when the nut is undone or tightened, the wrench does not need to be offset but can be moved back and forth like a ratchet.

Clamping collet changing 1400 (Large)

Press the switch (6.1) for locking the spindle on the left-hand side. Fully unscrew the nut (6.2) and remove from spindle together with the clamping collet.
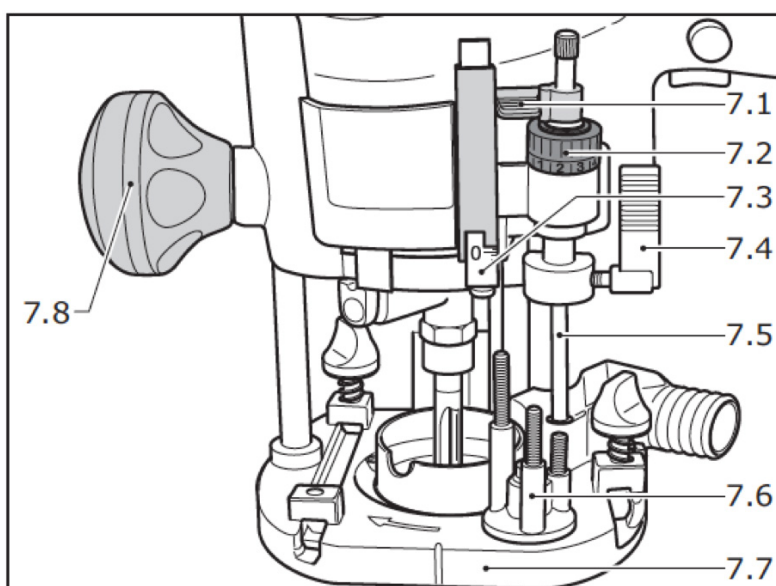
Press the switch (6.1) for locking the spindle on the right-hand side. Insert a new clamping collet nut into the spindle and slightly tighten the nut. Do not tighten the nut until a milling cutter has been fitted.

Adjusting the milling depth 1010 (Small)

The milling depth is adjusted in three stages:

a) Setting the zero point 1010 (Small)

- Open the clamping lever (7.4) so that the stop cylinder (7.5) can be moved freely.
- Place the router with router table (7.7) onto a smooth surface. Open the rotary knob (7.8) and press the machine down until the milling cutter rests on the base. Clamp the machine tight in this position with the rotary knob (7.5).
- Press the stop cylinder against one of the three sensing stops of the pivoted turret stop (7.6).
- The individual height of each sensing stop can be adjusted with a screwdriver.
- Push the pointer (7.1) down so that it shows 0 mm on the scale (7.3).

Sensing stop		min. height	max. height
	A	38 mm	44 mm
	B	44 mm	54 mm
	C	54 mm	67 mm

b) Setting the milling depth 1010 (Small)

- The desired milling depth can be set either with the quick depth adjustment or with the fine depth adjustment.
- Quick depth adjustment: Pull the stop cylinder (7.5) up until the pointer shows the desired milling depth. Clamp the stop cylinder in this position with the clamping lever (7.4).
- Fine depth adjustment: Lock the stop cylinder with the clamping lever (7.4). Set the desired milling depth by turning the adjusting wheel (7.2) in. Turn the adjusting wheel to the next mark on the scale to adjust the milling depth by 0.1 mm. One full turn adjusts the milling depth by 1 mm. The maximum adjustment range with the adjusting wheel is 8 mm.
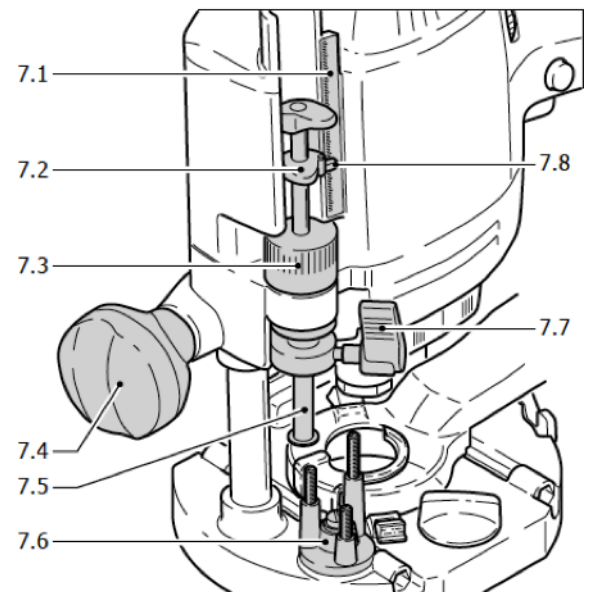
c) Increasing the milling depth 1010 (Small)

- Open the rotary knob (7.8) and press the tool down until the stop cylinder touches the sensing stops.

Adjusting the milling depth 1400 (Large)
The milling depth is adjusted in three stages.

(A)   Setting the zero point
- Open the clamping lever (7.7) so that the stop cylinder (7.5) can move freely.
- Place the router with router table onto a smooth surface. Open the rotary knob (7.4) and press the machine down until the milling cutter rests on the base. Clamp the machine tight in this position with the rotary knob (7.4).
- Press the stop cylinder against one of the three sensing stops of the pivoted turret stop (7.6).
- The individual height of each sensing stop can be adjusted with a screwdriver.
- Push the pointer (7.2) down so that it shows 0 mm on the scale (7.1).
- If the base position is incorrect, this can be adjusted with the screw (7.8) on the indicator.

Sensing stop		min. height	max. height
	A	47 mm	60 mm
	B	53 mm	74 mm
	C	60 mm	86 mm

(B) Setting the milling depth 1400 (Large)
The desired milling depth can be set either with the quick depth adjustment or with the fine depth adjustment.

- Quick depth adjustment: 1400 (Large)
- Pull the stop cylinder (7.5) up until the pointer shows the desired milling depth. Clamp the stop cylinder in this position with the clamping lever (7.7).
- Fine depth adjustment: 1400 (Large)
- Clamp the stop cylinder with the clamping lever (7.7). Set the desired milling depth by turning the adjusting wheel (7.3) in.
- Turn the adjusting wheel to the next mark on the scale to adjust the milling depth by
- 0.1 mm. One full turn adjusts the milling depth by 1 mm. The maximum adjustment range with the adjusting wheel is 8 mm.

(C) Increasing the milling depth 1400 (Large)
- Open the rotary knob (7.4) and press the tool down until the stop cylinder touches the sensing stops.
- Clamp the machine in this position by tightening the rotary knob (7.4).

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Working with the router 1010 (Small) & 1400 (Large)

Always secure the workpiece in such a manner that it cannot move while being sawed.
Ensure that your workpieces are securely fixed and cannot move during routing. Otherwise, there is an increased risk of accident.
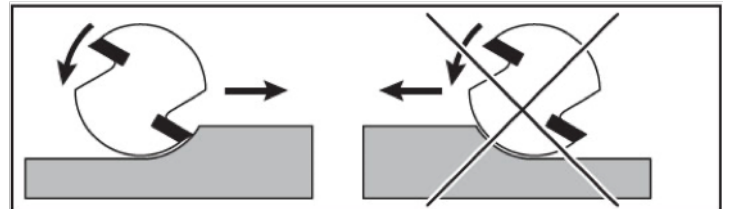Use screw clamps or some other suitable devices to fix your workpiece.

The machine must always be held with both hands by the designated handles.

Always switch the router on first before bringing the tool into contact with the workpiece!

For routing deep channels (20mm+) it is best to do it with two or more passes to aid extraction of material.

Always advance the router in the same direction as the cutting direction of the cutter (counter-routing)! There is a directional arrow on the base showing the rotation direction of the bit.

Housekeeping 1010 (Small) & 1400 (Large)

It's important that once you have finished your operation, you clean the tool sufficiently and replace all the components to the designated storage space. If you are unsure where items live, please speak with a technician. **Do Not** leave them out or place them randomly in the Makerspace cupboards.

To reduce the risk of electrocution or other personal injury, always unplug the tool from the power supply outlet before performing any maintenance or cleaning work on the tool.

Keep the tool clean.

Dust and debris from some materials can be extremely abrasive and cause components within the tool to wear prematurely. It is important to keep moving parts cleared of abrasive dusts. Wood dust can attract atmospheric moisture and corrode the cutters and its fixings.

Dust down the saw with the extraction and the brush attachment once finished. Do Not use compressed air to clean the saw as this will put fine dust particles into the atmosphere for others and yourself to breath in. You can also inject foreign objects into the motor through the ventilation openings.

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Further set up 1010 (Small) & 1400 (Large)

Other than freehand routing that is the method normally used for
lettering or shapes, and for routing edges using cutters with a guide pin or ring, which can be set up using this induction sheet, there are several other ways to use this router.
Ensure you speak with a technician once you have set up the tool.

Using the Festool Router with a guide rail

In addition to the Router you will need the guide rail attachment and the guide rail, as shown.
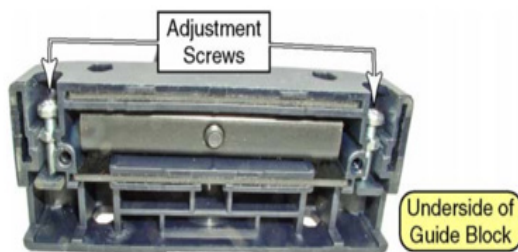
Assembling the guide rail attachment

The guide rail attachment is used to connect the router to a Festool guide rail system for making straight cuts.

Before assembling the attachment, adjust the guiderail gibs on both guide blocks.
Place the block on one of the ribs of the guide rail.
Tighten the two adjustment screws until the block fits snuggly to the rib but still moves freely.

Adjustment Screws

Underside of Guide Block

Thread the micro-adjust thumbwheel into either one of the two guide blocks then place the other guide block over the free end of the micro-adjust thumbwheel. Insert the two guide rods through both guide blocks. Make sure the rods stick out from the second block slightly.

Micro-Adjust Thumbwheel

Tighten this Knob

Make sure the rods extend past the second block.

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Install and adjust the leveling outrigger to the back of the router

Adjust the height of the outrigger so the router is level when sitting on the edge of the guide rail. Tighten the clamping thumb screw.

TIP: The router bit radius gauge is used to indicate the location of the edge of the router bit. This is helpful for making stopped cuts. Note that this gauge indicates the radius of the bit and not the diameter.

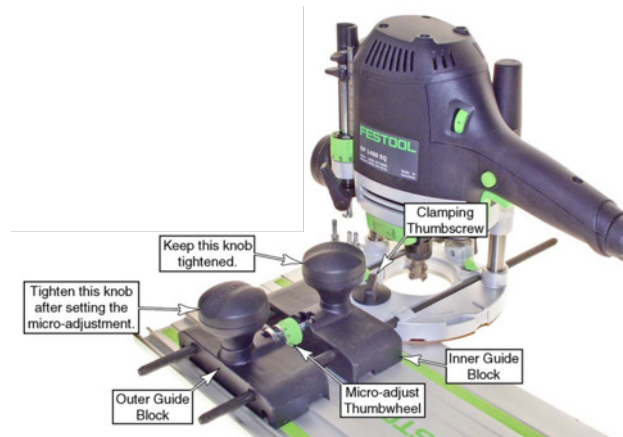Make sure to raise the outrigger out of the way when not in use.

Using the Guide Rail Attachment

Clamp the guide rail to the workpiece using the rail clamps pictured below by sliding them either side into the channel on the rail.
Note that the cutting action of the router bit may tend to move the guide rail if it is not properly clamped.

Place the router and guide rail attachment on the guide rail with the outer guide block on the first rib of the guide rail and verify that the leveling outrigger is at the proper height so the router base is level (see procedure above).

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Keep this knob tightened.

Tighten this knob after setting the micro-adjustment.

Clamping Thumbscrew

Inner Guide Block

Outer Guide Block

Micro-adjust Thumbwheel

Loosen the clamping thumbscrew on the router and slide the router in or out to its approximate final position. Retighten the thumbscrew.

With the inner guide block clamping knob tight and the outer guide block clamping knob loose, adjust the thumbwheel to set the final position of the router. The mark the red arrow is pointing at below indicates the centre point of the router.

Each number on the wheel represents 0.1mm, and a full turn of the wheel represents 1.0mm

After the micro-adjustment is complete, tighten the outer guide block clamping knob.

Use dial for fine adjustment