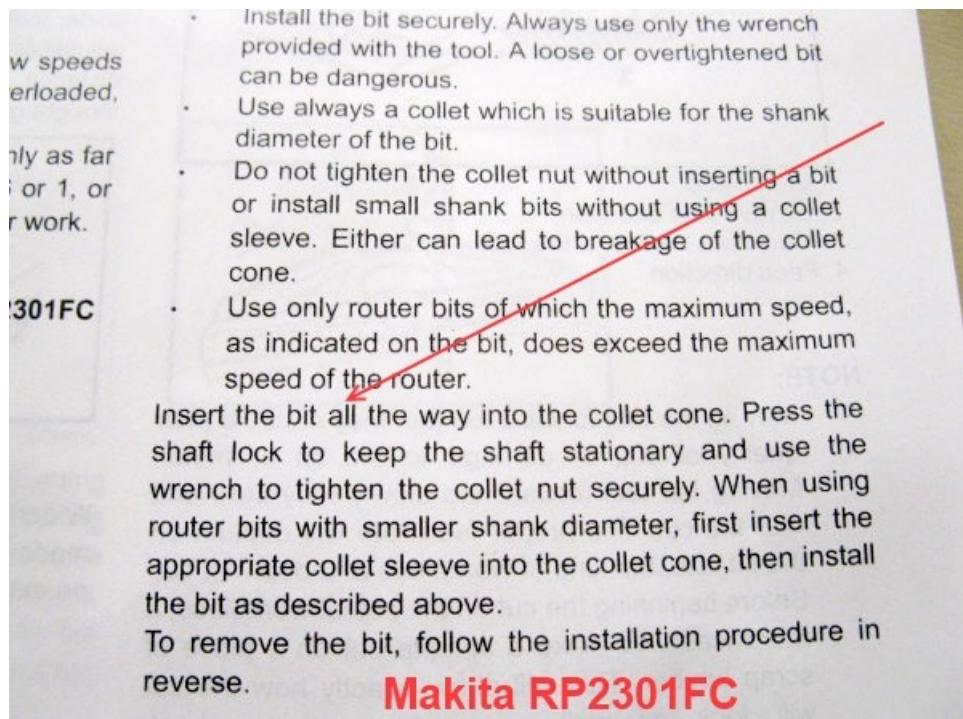


**A question that is often asked by members is
"how far should a router bit be inserted into the
collet?"**

**I contacted several manufactures asking for an
explanation for the confusing instructions in
their manuals. This thread is quite long so if you
simply want the definitive answer, just scroll to
the end.**



spinning then plunge the router to its maximum depth using the free plunge or winder handle plunge mode. **Fig. 11 . Note:** ensure the depth stop (k) is released (see Fig. 13 below). The collet should now protrude through the base (and the Triton Router Table if fitted), allowing easy spanner access.

3. Use the spanner (j) supplied to turn the collet slightly, allowing the collet lock to engage. Once engaged, turn the spanner anti-clockwise to release, or clockwise to tighten the cutter. **Fig. 12. Triton TRA001**

Note: When fitting cutters, ensure the shank is inserted fully into the collet.

4. Return the router to a normal operating depth. This will disengage the collet lock and release the switch shutter, enabling access to the power switch.

DEPTH STOP & TU

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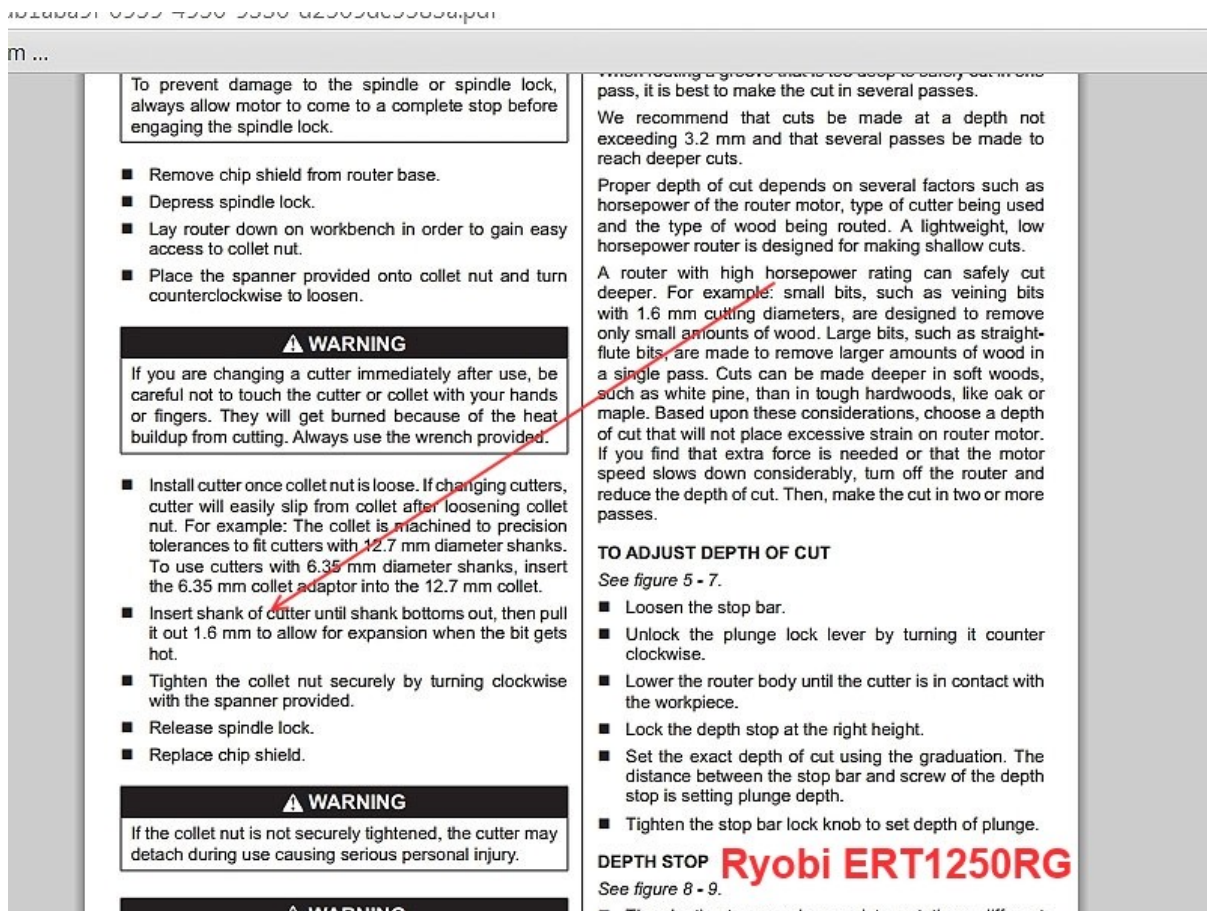
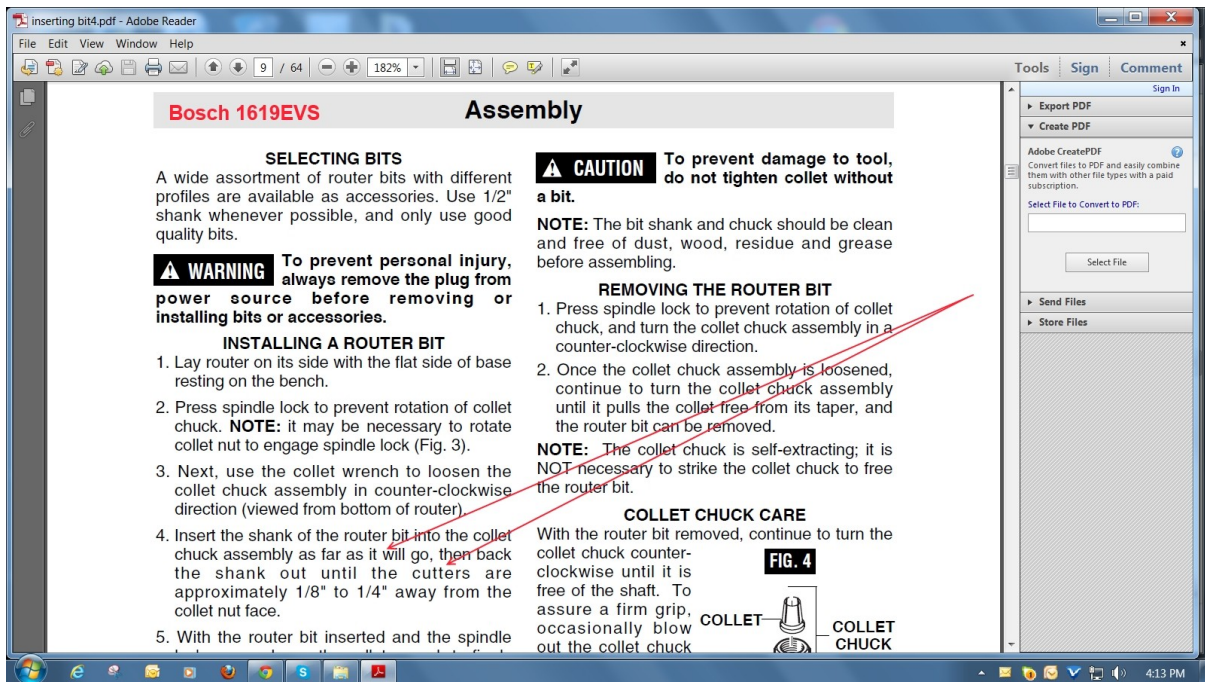
301FC

- Install the bit securely. Always use only the wrench provided with the tool. A loose or overtightened bit can be dangerous.
- Use always a collet which is suitable for the shank diameter of the bit.
- Do not tighten the collet nut without inserting a bit or install small shank bits without using a collet sleeve. Either can lead to breakage of the collet cone.
- Use only router bits of which the maximum speed, as indicated on the bit, does exceed the maximum speed of the router.

Insert the bit all the way into the collet cone. Press the shaft lock to keep the shaft stationary and use the wrench to tighten the collet nut securely. When using router bits with smaller shank diameter, first insert the appropriate collet sleeve into the collet cone, then install the bit as described above.

To remove the bit, follow the installation procedure in reverse.

Makita 3612C



Fitting a Router Bit **Ozito PRR-850**

Caution: Please **DEPRESS** spindle lock lever.
Pulling the spindle lock lever may break the lever.



Note: When changing accessories on the router it is advisable to lay the router on a flat surface.

1. Depress the spindle lock lever (8) and use the spanner (14) provided to loosen the collet nut (9) in an anti clockwise direction. Keep the spring (21) and collet in the spindle (Fig. 4).
2. Insert the shank of the router bit into the collet (22). Ensuring the shaft of the router bit is inserted all the way into the collet. Raising the router bit approximately 2mm (Fig. 5).
3. Fasten the collet nut (9) using the spindle lock lever (8) and spanner (14). Depress the spindle lock lever (8) and tighten the collet nut (9) with the spanner in a clockwise direction. This will secure the collet (22) and router bit.



Caution: Do not over tighten. Ensure you remove the spanner then plug the tool in and turn it on. Check for any undue vibration or wobbling which may indicate the bit is damaged or not installed correctly.

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4. Plunge lock lever

5. Spindle lock button

9. Depth of cut scale

10. Dust extraction adaptor

Assembly

Warning! Before assembly, make sure that the tool is switched off and unplugged.

Black and Decker KW900EKA

Fitting a router bit (fig. A)

- ◆ Keep the spindle lock button (5) depressed and rotate the spindle until the spindle lock fully engages.
- ◆ Loosen the collet nut (11) using the spanner provided.
- ◆ Insert the shank of the router bit (12) into the collet (6). Make sure that the shank protrudes at least 3 mm from the collet as shown.
- ◆ Keep the spindle lock button (5) depressed and tighten the collet nut (11) using the spanner provided.

Fitting the edge guide (fig. B)

The edge guide helps to guide the tool parallel to an edge.

- ◆ Fit the bars (13) to the edge guide (14) using the two screws (15) provided.

Basic Operation Festool OF2200

Changing Router Bits

The OF 2200 EB has the unique feature of a ratcheting spindle lock. Because the spindle lock is ratcheted, you don't need to remove the wrench to make multiple turns of the collet nut; simply move the wrench back and forth.

The router also has an extremely deep spindle bore (3 1/2 inches/89 mm). Very few router bits are long enough to bottom out in the spindle, which would prevent them from tightening properly. The router bit gripping surface of the collet is approximately 1 inch deep (shown below).



WARNING! To reduce the risk of injury, unplug the router before changing the router bit.

1. Insert the router bit into the collet at least one inch. This will vary with different bits, but most of the shank should be within the collet.
2. Place the collet wrench on the collet nut.
3. Press the left-hand side of the spindle lock.
4. Tighten the collet nut firmly, but it is not necessary to over-tighten the nut.
5. Remove the wrench from the collet nut before starting the router.

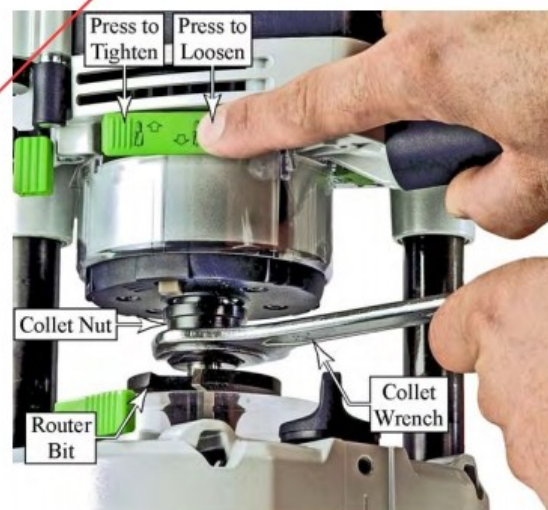


WARNING! To reduce the risk of injury, never operate the router without properly securing the router bit in the collet.

6. To remove a router bit, follow the same procedure except press the right-hand side of the spindle lock.



NOTICE: Do not tighten the collet nut without a router bit in the collet. Doing so will distort the collet.



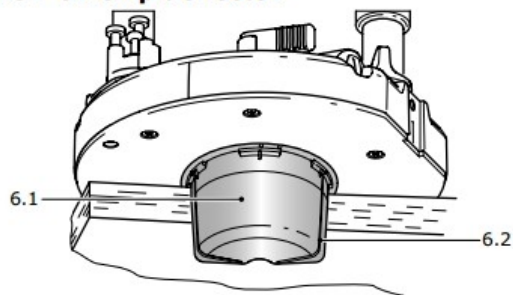
Changing Collets

The router can use a variety of router bits with different shank diameters by changing the collet. The router can use

Collet Nut

From ...

towards the handle to do this.

KSF-OF chip deflector

The chip deflector KSF-OF [6.1] indirectly increases the efficiency of the extraction system during edge routing. The maximum possible routing diameter is 78 mm.

The deflector is fitted in a similar way to the copying ring (see "Copy routing").

The hood can be cut off along the grooves [6.2] using a hacksaw and can thus be reduced in size. The chip deflector can then be used for interior radiuses up to a minimum radius of 52 mm.

Festool OF2200**Milling cutters**

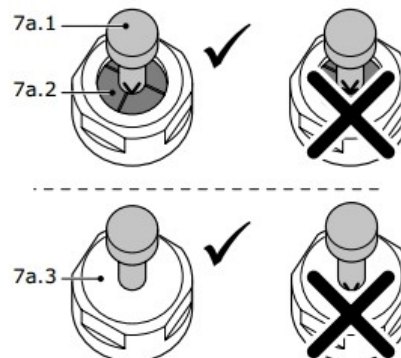
⚠ WARNING Do not exceed the maximum speed specified on the tool and for knee

engages, if necessary.

- Press the rocker [7.1] for the spindle lock to side A.
- Unscrew the locking nut [7.3] using an open-end wrench (size 24) until you are able to remove the tool.

b) Inserting the tool

- Insert the routing tool [7.4/7a.1] into the open clamping collet as far as possible, but at least up to the mark ∇ on the shank [7a.2]. If the collet is not visible because it is blocked by the union nut [7a.3], the milling tool must be inserted into the collet at least far enough that the marker ∇ no longer overlaps with the union nut.



I contacted all the above manufacturers and Festool and Ryobi were the only ones not to even acknowledge receipt of the question, and considering the price of the Festool I don't think much of their customer relations, I wonder what they're like if a customer has a problem!

Hitachi were very prompt in answering, and whilst they didn't appear to know the answer, they went to the trouble of searching the net and this is how they replied:

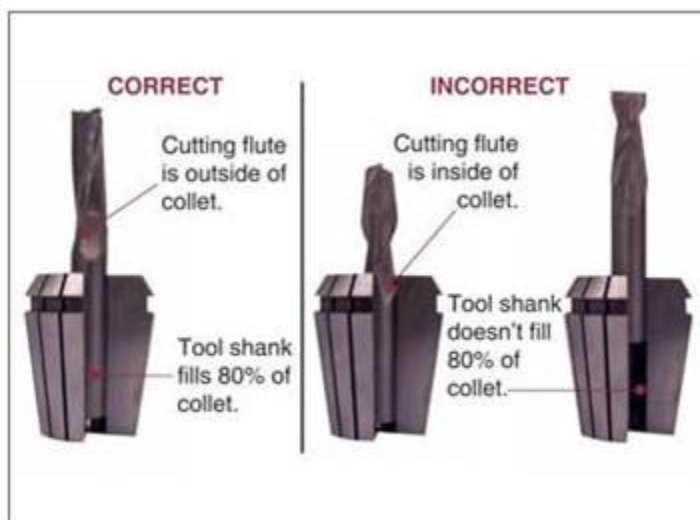
Please see below for more details regarding bit insertion into collet cone.

The actual picture is sourced from the net and illustrates how a bit should be correctly inserted into a collet cone.

- If the shank of a cutter is allowed to bottom out inside armature shaft, it can cause the top of the cone to clamp around the flute area. This can cause run out of bit, worse can cause major issues trying to remove the bit later.
- There is also generally a step between cutter and shank (on larger bits) which can be caught up by the collet cone, causing irregular vibration and can cause run out of the bit.
- It is also ideal if the full length of the cutter is to be used, the collet cone and nut should not be close enough to touch your material.

As seen in the picture below, a good practice would be to allow bit to go in to the base of the collet then back of 2 – 3 mm before tightening.

This will ensure a firm and efficient gripping of the shank and no possibility of any run out.



Regards,

Black and Decker emailed several departments in order to find someone to answer the question, finally referring me to the KW900EKA manual, the relevant sentence shown earlier and which I believe to be a correct instruction.

I included Ozito who at present only have a 1/4" router because there are forum members who have one of these plus the fact that they are retailed by Bunnings, Australia's big box stores and was pleasantly surprised by their prompt and helpful answer which was:

My apologies for the delay in responding, our customer service passed on your enquiry below to me a few days ago.

I have to say I'm perplexed as to the reason our PRR-850 manual refers to raising the bit 2mm up from full insertion. The origins go back to before the current product and engineering team at Ozito, hence we haven't been able to identify the source. That's not to say there isn't a reason it was included in the first place. My thought is that it might relate the ease of removing the bit as the machining at the bottom of the collet may allow the bit shank to bind in the collet.

In our view there are two considerations for insertion depth; safety and vibration. Both of these will be affected by the bit design and construction, for example a tongue and groove bit has a much larger diameter than a straight bit and will result in more force on the shank and the potential for vibration or "chattering". From the technical perspective this would imply that the minimum insertion depth to be safe and minimise vibration would vary with the bit type. Our general guide for customers is to insert to twice the shank diameter, so for a 12.7mm (1/2") shank the a depth of 25.4m (1") is recommended.

I would suggest that contacting a router bit manufacturer, such as Carbitool Australia who may have more specific information. I note that their product catalogue advises a minimum of 19mm.

Regards

Paul Chapman

The advice given is, in my opinion correct for a half inch bit ie: insert bit 25mm (1") but is not correct for a quarter inch bit as I'll explain at the end.

I didn't contact Triton because their maximum insertion depth is just 27mm so their instruction to fully insert the bit is correct.

Makita Australia were very helpful, and I expected no less from my favourite brand, however they decided that because I stated that their instruction for the 3612/C shown above was totally wrong they correctly sent it on to Japan who took quite a while but finally sent this very disappointing answer which I feel embarrassed the Australian people dealing with it.

Harry, I thought the reply from Makita Japan may have been a bit more in depth than what I received, given the time it took to reply to the request.

But basically they have come back and said that “ inserting the bit all the way into the collet chuck “ is to ensure that the bits are held securely and do not work loose. They have not mentioned a specific depth and have recommended my procedure of inserting the shaft all the way in and then extracting the cutter 3-5mm and ensure that the cutter is not contacting any other component of the router when rotated, prior to switching the router or trimmer on.

My conclusion is to insert any bit, be it 1/4" or 1/2" shank 25mm (1") into any router, this conclusion is based on the fact that I measured, and got a couple of forum members to measure the length of collet in most if not all brands of routers, also the total depth from end of nut to the total depth and within a few mm all the collets measured 25mm (1").

Now couple this to the fact that even in my own collection of bits there were four shank lengths on 1/2" bits, 25,32,39 and 41mm. So by inserting a bit 25mm (1") into the collet it will be the optimum position for maximum grip. I cannot disagree with Carbitool who manufacture bits in Australia who say at least 80% of the collet should be covered, but isn't 100% better?

How easy is it to fit an "O" ring on all bits, I've found that ones with an 11mm inside diameter are a nice fit and a simple way to slip these on without twisting and to exactly 25mm (1") is to drill a 1/2" and 1/4" hole in a 1" thick piece of wood, slip the "O" ring on the end then insert the shank into the hole and it slides easily and accurately into position.

"O" rings are available in quantity on EBay at very low cost.



I hope that the question has now been given a definitive answer based on facts.

My thanks to all those who replied to my inquiry, and I hope that the 107,463 members of routerforums.com will take note of those who ignored my inquiry, and as a reminder they were FESTOOL and RYOBI

Harry Sinclair (harrysin)

