

No. 101

## Box joint



A

### Description

The box joint is a classic solid wood corner joint. It is suitable for joining wider slats, boards and solid wood panels.

Box joints are cut parallel. They are open visible joints. They are more modern and simple compared to the open dovetail joints.

### Tools/Accessories



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The tooth spacing is determined by the routing template. Therefore, Festool offers two different routing templates for the jointing system VS 600. The choice of the routing template depends on the thickness of the wood used:

Routing template designation and use

- FZ 6 can be used for wood thickness of 6 - 10 mm (Fig. 101/1).
- FZ 10 can be used for wood thickness of 10 - 20 mm (Fig. 101/2).

Thus wood with a thickness from 6 - 20 mm can be processed.



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Areas of application

Anywhere where open, visible teeth are desired and where importance is attached to a classic joint with a linear emphasis.

- Drawers (with or without double panels).
- Carcass furniture with visible wood joints.
- Frame designs (box frame).

Advantages of this joint

- High stability.
- Can be created relatively quickly (good for small series production).
- Pieces of wood with different thickness can be joined together.

Disadvantages of this joint

- Is not attractive when gluing. (compared to dovetail joints) Advantageous for gluing is a carcass press or carcass clamps.

Information on design

- It is possible to join woods with different thickness. For example, the front piece can be thicker than the sides and the rear piece for drawers.
- To create half a tooth at both corners, the board width should be divisible by 10 or 6.



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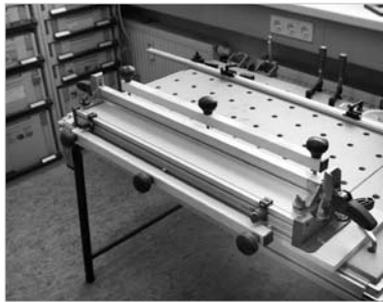
**B**

Basic equipment:

Designation	Order No.
Router (Festool OF 900 E, OF 1000 EB, OF 1010 EB)	*
Jointing system VS 600 GE	488876

\*Please obtain the order no. from the Festool main catalogue or from the Festool website.

Useful accessories (not included in scope of delivery)



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Designation	Order No.
Centering mandrel, the cone shape allows precise centring of the copying ring, can only be used for FZ 10	486035
Extraction hood: It makes possible effective chip extraction directly where the chippings are produced.	484453



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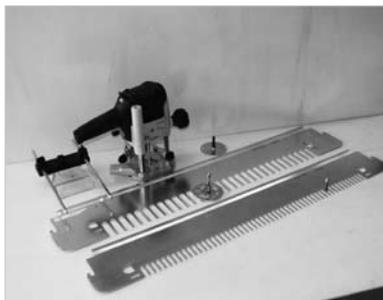
Dust extractor with extractor hose D 27

Equipment for wood thickness 6 - 10 mm:

- 1 box joint FZ 6 (Order No. 488879)
- 1 copying ring KR D 8.5 (included in the scope of delivery for FZ 6).
- 1 spiral groove cutter HS 6/16/60 (Order No. 490944) for softwood or HW 6/16/60 (Order No. 490978) for harder wood.

Equipment for wood thickness 10 - 20 mm:

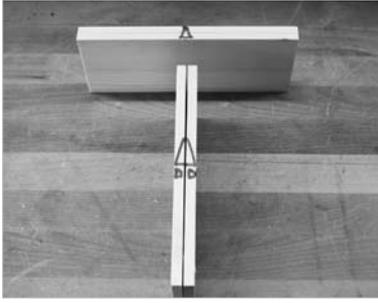
- 1 box joint FZ 10 (Order No. 488880)
- 1 copying ring KR D 13.8 (included in the scope of delivery for FZ 10).
- 1 spiral groove cutter HS 10/30/60 (Order No. 490946) for softwood or HW (Order No. 490980) for harder wood.
- Splinter-free backing: It prevents splinters on the front edges of the wood when the cutter is emerging rearward. It must be approx. 5 mm thicker and approx. 20 mm wider than the workpiece.



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Tip:

- HW cutters are suitable for all wood types and have a longer service life.
- Compared to traditional groove cutters with a straight blade, spiral groove cutters produce almost splinter-free edges with less feed force.



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**C**

## Preparation/Set-up

Wood selection: There should be no branches in the front area!

Cut: Board length = Workpiece length

Marking (carpenter triangle) .

- For drawers make markings on the top narrow areas.
- For carcass parts make markings on the front narrow areas.

Note: In general, for drawers the top visible narrow areas of the workpieces should touch the stops and for the carcass parts the narrow areas of the workpieces visible at the front should touch the stops.

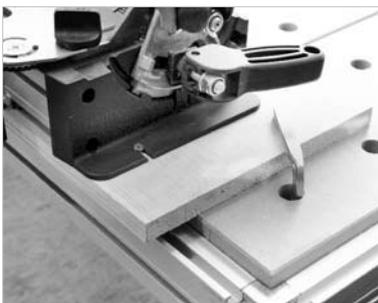
Mark the continuous parts with a "D".



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Preparation of router

- Mounting of copying ring (centring!).
- Mounting of intended cutter.



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Preparation of VS 600

Clamp basic unit to workbench using fastening clamps



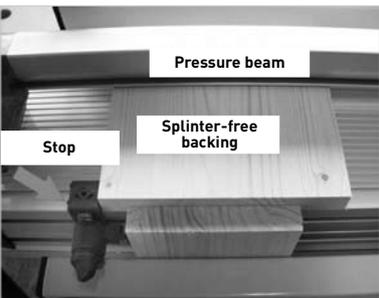
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- Insert the template into the countersunk holder. (The holder is centred. The swivelling mechanism is only used for plugging.)
- As the template may be slightly bent, ensure that it is inserted fully into the holder.
- The bent rear edge of the template must point upwards.



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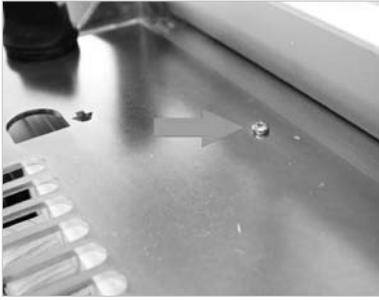
- Position the adjustable stops on the front of the base frame into the slots on the template marked with a double arrow (arrow A) so that the two upper arrow marks on these stops touch the even edges of the left and right slots.
- Depending on the template used position the rotary stops to "FZ 6" or "FZ 10". The stops are facing the centre of the basic unit (arrow B).



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#### Fitting of splinter-free backing

- Position splinter-free backing under the template, lie against the left stop and align flush at the front edge of the VS 600. Clamp a board for this as an aid. Clamp splinter-free backing to rear pressure beam. It remains in this position until the end of this cutting work.
- As the workpieces are inserted upright from below at the template, the template should be screwed to the splinter-free backing so that it does not move upwards. (screw 3 x 15)



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## E Procedure

### Clamping workpieces

Use test pieces of wood to determine the exact routing depth. (Test pieces of wood always have the same thickness as the intended workpieces!)

General information for clamping workpieces:

- FZ 6

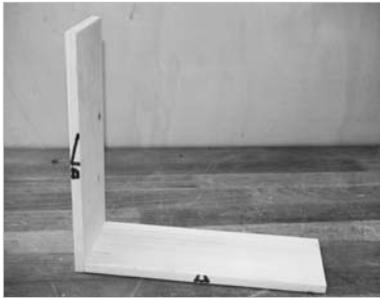
Both workpieces to be processed can be clamped at the same time.

- FZ 10:

For wood thickness up to 18 mm the two workpieces to be joined can be clamped at the same time.

Thicker wood is cut separately.

- Take the two relevant workpieces and hold them at an angle so that they belong together as per the markings.



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- Position the wood areas planar to each other so that the front faces to be joined are pointing upwards. The continuous workpiece "D" is at the front!
- The markings point to the left stop (arrow). Both workpieces are positioned upright at the front area of the VS 600 at the same time. The front faces are flush and touch at the top on the template. The left edges are misaligned and touch at the stop.

Clamp the workpieces using the front pressure beam.

Tip:

- For the box joint all routing work can be effected at the left stop. It is crucial that the front faces or visible narrow areas always touch the stop.



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#### Adjusting the routing depth

- Position the router on the template and set the routing depth to the wood thickness.

#### Tip:

Use an original workpiece for this (arrow).

- If woods with different thickness are joined, the wood with the smaller routing depth is processed first.

#### Tip:

To facilitate gluing the teeth should not protrude over the outer areas. Here it can be more advantageous when the teeth are short 1/10. Additional layers can thus be positioned directly on the areas when gluing. The requirement here is a clean-cut front face.

The additional layers must be short for protruding teeth. The woods may be bent as a result of the forced pressure.

#### Fitting of the extraction hood

- Fully insert the router into the template. The pistol handle of the router is pointing right. Fit the extraction hood on the router. Ensure a distance of approx. 10 mm to the workpiece.

#### Tip:

Spiral groove cutters  $D = 10$  produce long-grained chips. These can cause the vacuum connection D 27 to clog.



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#### Routing

- Work one corner joint after the other.
- Always orientate the arrangement of the workpieces to the markings.
- The routing direction can be effected from left to right or vice versa as here cutting work is only effected horizontally and in a forwards motion.



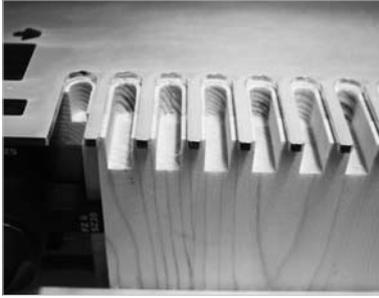
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The router is guided by the copying ring. This is "invisible" during routing. You have to guide the router so that the copying ring always has contact with the teeth on the template.

- "Blind" trace the contour of the template.
- Routing path is from left to right

#### Important:

Under no circumstances lift the router during routing. As soon as the copying ring is removed from the template guide, the router damages the template.



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- Always hold the router planar on the template. Lifting or tilting the router results in deviations in the accuracy of fit.
- Immediately after cutting check whether the teeth have the same depth. Cut again if necessary. (Fig. 101/19)  
Later clamping for subsequent cutting is inaccurate.
- Always leave the cutter in the lower position. Do not slacken the locking screws of the height adjustment at the router. The routing depth may vary.

**Caution:** Risk of injury in the case of protruding cutter!

Check and adjust the accuracy to fit.

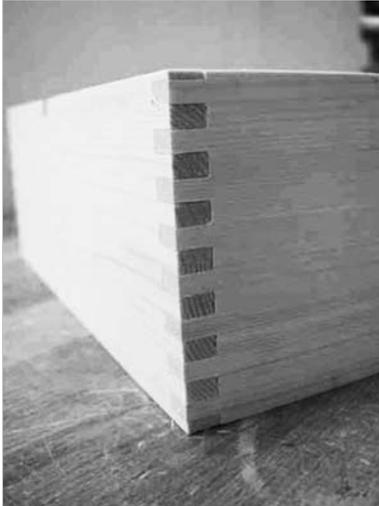
After routing remove the workpieces and connect the parts. If the joint fits, then you can start work immediately.

- The distance between the teeth of the routing template must be slightly larger than the diameter of the copying ring or else the copying ring will not be able to be inserted into the box joint template. For this reason, small tolerances in the accuracy of fit may result.
- If the joint is too loose: During routing only move the copying ring back and forth in a line on one side of the template teeth.
- If the joint is too tight: During routing allow the copying ring to touch the left edge of the template teeth. When removing guide the copying ring at the right edge.

Tip:

Only use the cutters with a precise cut recommended by Festool! Deviations in the cutter diameter may result in joints being too loose or too tight as the teeth width and the spacing between the joints are defined by the cutter diameter.

- If the teeth are too short: Enlarge routing depth using precise adjustment at the router. The cutter must be inserted further.
- If the teeth are too long: Reduce routing depth using precise adjustment at the router. The cutter does not have to be inserted as deep.



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Completed workpieces

Tip:

Keep a custom-fit corner sample as a setting gauge. If you have worked with another template in the meantime, clamp the test pieces of wood to set the routing depth. You should, however, perform a test cut.



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