

No. 112

Dowelling joints with VS 600



A

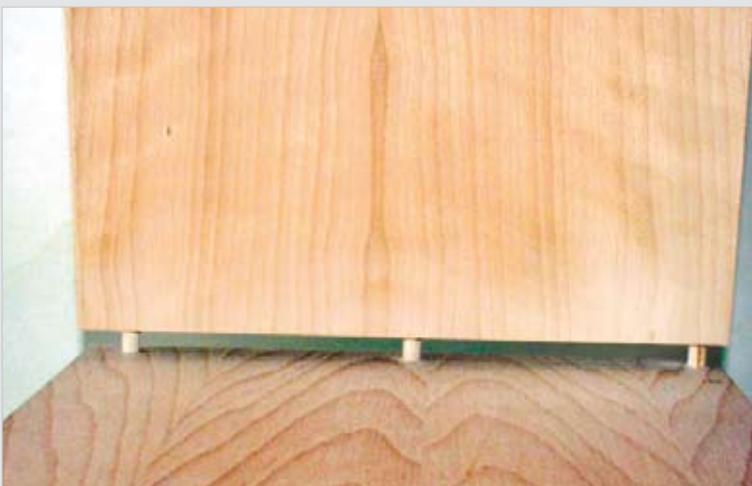
Description

Dowelling joints with round dowels (in addition to flat dowels) are part of the standard wood joints in furniture manufacture. This joint is very stable. It is suitable for joining solid wood boards, rails and chipboard. The dowelling joint is normally invisible.

Tip:

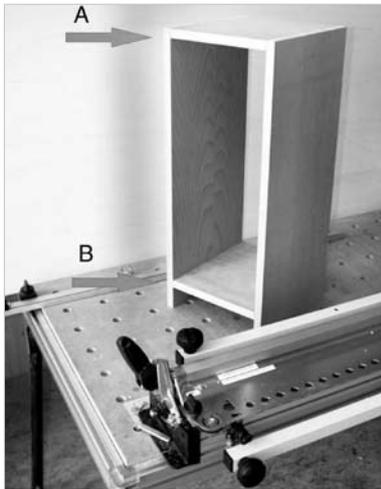
If the joint should be visible for decorative purposes the area can also be drilled through. (See image 112/35)

The centre distance of the bore holes is determined by the template and is 32 mm (system 32). The dowel diameter conforms to the thickness of the wood. Rule of thumb: Dowel diameter = 1/2 to 1/3 of wood thickness



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Using the VS 600 and the dowel template DS 32 workpieces up to 600 mm wide and with a thickness between 6 and 40 mm can be processed.



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Areas of application

- Corner joints in furniture manufacture (A)
- T-joints in furniture manufacture (B)
- Making drawers.
- Frame designs, e.g. box frames. (see images 112/24, 112/25)
- Mitre joints for rectangular rails and narrow boards. (see application no. 112 b)

Advantages of joining using round dowels

- High stability.
- Can be used for demountable furniture for additional stability.
- Workpieces do not slip during assembly (compared to flat dowels)
- Can be used for solid wood and plywood
- Saves time and costs

Disadvantages of this joint

- Bore holes must be made precisely. Corrections are time-consuming.



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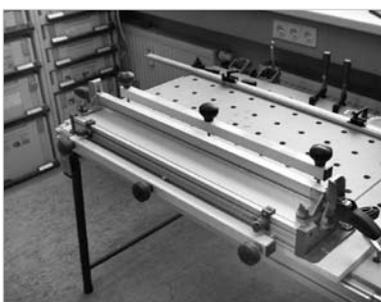
B

Tools/Accessories

Basic equipment:

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

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



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Additional equipment with the VS 600

- 1 dowel template DS 32 (Order No. 488881)
- 1 copying ring KR D 13.8 (included in the scope of delivery of DS 32).

Dowel drill depending on wood thickness:

The following dowel drills are available (all in HW version):

Diameter Order No.

3 mm	491065 (no centre point)
5 mm	491066
6 mm	491067
8 mm	491068
10 mm	491069



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Dust extractor with extractor hose D 27

C

Preparation/Set-up



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Mark workpieces (carpenter's triangle).

Note

When clamping the workpieces the narrow areas with the markings are lying against the stop (image 112/18) or the markings are facing the centre of the VS 600!

Tip:

Position the edges, which are to be flush, at the stops insofar as possible.

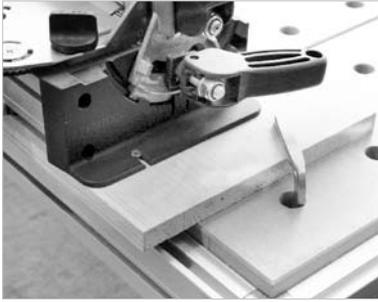


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Preparation of router

- Mounting of copying ring (centring!).
- Mounting of intended dowel drill.

Preparation of VS 600



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- Clamp basic unit to workbench using fastening clamps



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- Insert the template into the countersunk holder. (The holder is centred).



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- The black thumbwheels on the template, which can be adjusted eccentrically, are pointing downwards. These must touch the basic unit at the front. As the template may be slightly bent, ensure that it is inserted fully into the holder.



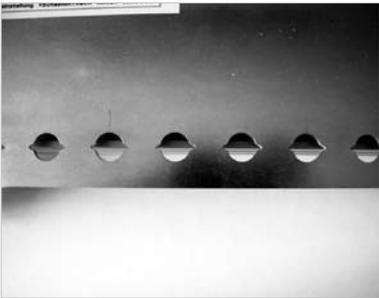
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- Position the adjustable stops on the front of the base frame into the slots on the template marked with an arrow so that the arrow marks on the stops touch the even edges of the slots on the routing template.



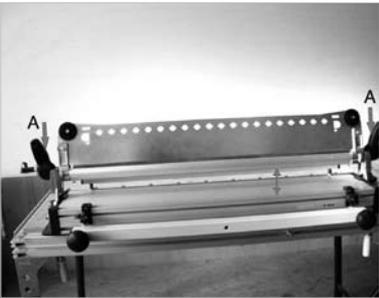
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- Turn the rotatable labelled stops out. The workpieces are positioned directly at the cylinder! (Image 112/18)



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- Check the parallel distance of the template to the front edge of the base frame. If this distance is not parallel then please align the template.



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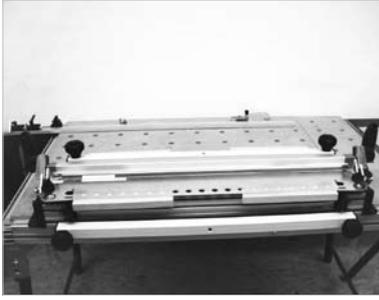
Adjusting the template to workpiece thickness (height adjustment)

- Open the two clamping levers (A) for the height adjustment. Lift the template to the uppermost position and clamp it here.



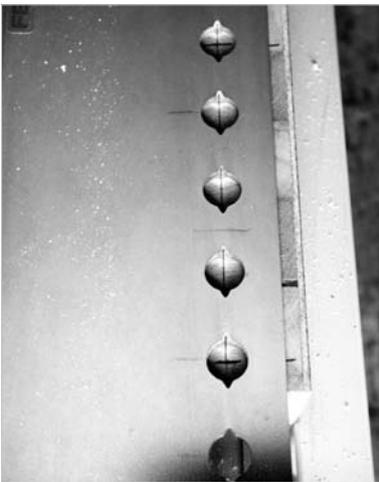
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- Open the right clamping lever (B) for the swivelling mechanism. Using two hands press the clamping lever facing upwards (A) back for the height adjustment. The template is thus moved to the rear position. Close the clamping lever again.



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- Now clamp a wide or two narrower workpieces horizontally on the base frame. Open the two clamping levers (A) for the height adjustment and lower the template to the workpiece. Ensure that this is absolutely horizontal. Close the clamping lever again.



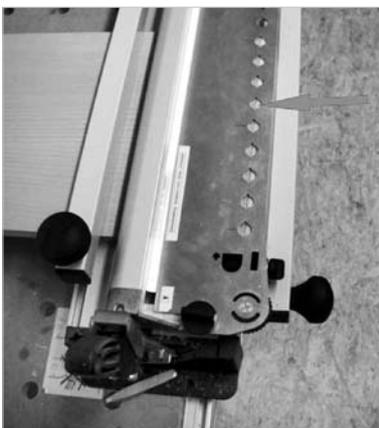
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Adjusting the template position

- Before working with the original workpiece, you should test the setting first. Use other pieces of wood for this. (whose thickness should match the original workpiece.)

Option 1:

- Before clamping draw a drill line on the inner area of the horizontal workpieces and on the front areas of the vertical workpieces using a precise marking gauge. Clamp the workpieces as described above, left and right as for a corner joint. Align the centre markings of the template holes to the marking gauge.



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Option 2:

- Position the template in the centre. The indents of the centre marking must be exactly above the butt joint of the horizontal and vertical workpiece. The practical adjustment attempts have always resulted in perfect results here.
- If you are finished with the dowel, swivel the template to the centre position and lower it to the base frame.
- Before you remove the template, turn the black eccentric thumbwheels so that the stop surface touches the base frame at the front. (Before moving remove the Phillips screws and then tighten again).
- Now the position of the dowel template should be suitable for subsequent use.

E

Procedure

Note:

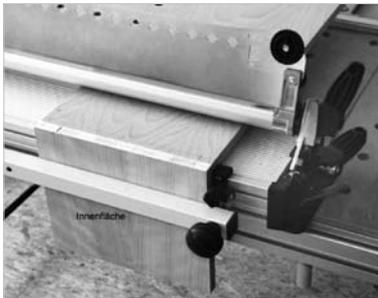
- The swivelling mechanism of the VS 600 is only used for plugging. It allows the template to be moved horizontally. This is necessary and advantageous because for corner joints both workpieces can be clamped and drilled at the same time.
- The template is moved to the back for drill holes into the surface.
- The template is moved to the front for drill holes into the front of the wood.



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Clamping the workpieces for a corner joint (in our example the markings are facing the stop)

- Take the two respective workpieces, hold them at an angle so that they belong together as per the markings (arrow). The workpiece which receives the bore hole lies horizontally on the base frame, with the inner area facing upwards. The corner to be bored is facing the front edge of the VS 600.



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- Fold down the workpiece which receives the bore hole in the front (inner area faces outwards).
- The areas to be drilled are both facing upwards and are aligned flush.
- The workpieces are lying against the stop at the side.
- Clamp the workpieces using a pressure beam.

Clamping the workpieces for a T-joint
Bore holes in the surfaces

Preparation: Drill lines must be marked on the surfaces before clamping.



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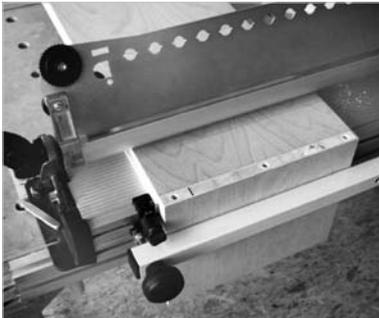


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Workpieces which receive bore holes in the surface lie horizontally on the base frame. The area to be drilled faces upwards. Reference edge is at the stop!

If it relates to sides the outer surface is always on the base frame. Centre sides can receive bore holes on both sides. Reference edge here is always at the stop!

- Position the workpiece under the template so that the drill line is exactly under the indents of the template.



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Bore holes in the front of the wood

- Workpieces which receive bore holes in the front of the wood are clamped vertically. The outer area touches the base frame. The inner area is visible.
- The template is brought to the front position.
- So that the template does not tilt, a workpiece, for example, can be placed underneath.

Note: The process is the same for corner joints (Image 112/18)



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Adjusting the drilling depth

The drilling depth in the area of the horizontal workpiece should be approx. 2/3 of the workpiece thickness. This means you have to set two different routing depths. The routing depth for bore holes in the front area must be set deeper i.a.w. the dowel length selected.

- Use the revolver-type stop of the cutter for setting the different routing depths.

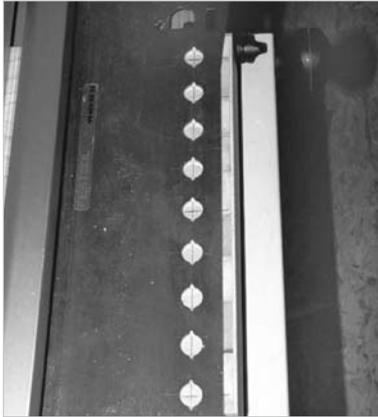
Example:

Workpiece thickness	= 19 mm	
Dowel length	= 40 mm	
Drilling depth in the surface	= Approx. 2/3 workpiece thickness	= 15 mm
Drilling depth in the front of the wood	= 25 + 2 mm Tolerance	= 27 mm

Tip:

With a wood thickness of 18 mm and use of 6 x 30 mm dowels drilling can be effected in the surface and front at a depth setting of 16 mm.

Work process

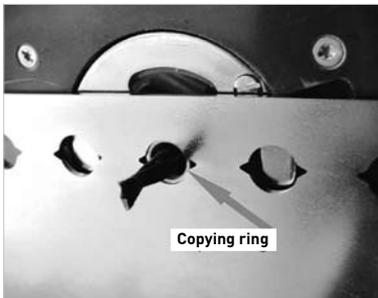


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- For bore holes into the surface (workpiece is horizontal on the base frame) the template is in the rear position.
- For bore holes into the front of the wood (workpiece is vertical at the base frame) the template is in the front position.
- The centre position is not required for plugging!

IMPORTANT:

- Note the different routing depths! Always remember when you are drilling into the horizontal workpiece with the setting for the front of the wood, you are drilling through the workpiece thus resulting in a damaged workpiece. You are also opening up the base frame by drilling.



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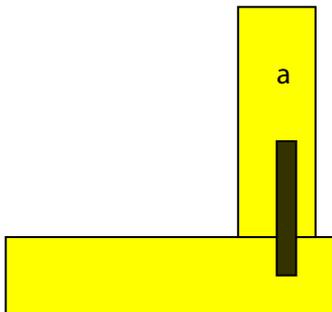
- Set the speed to level 6.
- Connect the dust extraction.
- Position the router with the copying ring into the slots on the template and drill the intended holes. Ensure correct positioning. The copying ring must sit exactly in the template holes.

Tip:

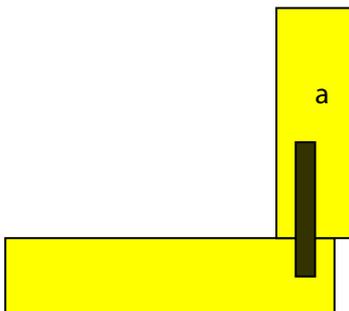
When plugging it is not necessary to have a distance of 32 mm to drill a hole. Depending on the width of the workpiece one to two holes can be skipped. Markings with a non-permanent marker are helpful.

Corrections

The workpiece (a) with the bore hole at the front of the wood is not protruding:
Move the template back.



The workpiece (a) with the bore hole at the front of the wood is protruding:
Move the template to the front.





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Application variants

Cross-members

Align the front cross-member to the front edge of the side. Align the rear cross-member to the rear edge of the side.



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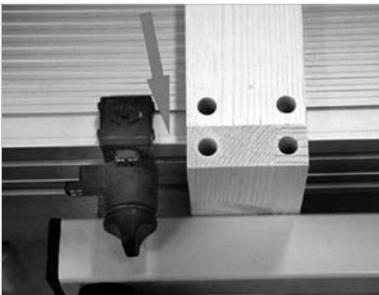
Completed carcass with two upper cross-members (corner joint) and high base (T-joint)



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Plugging frame elements

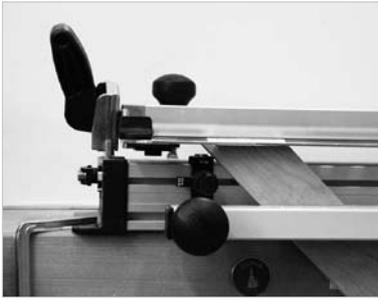
- When making frames it may transpire that the intended distance to the stop cannot be used due to the width of the rail.



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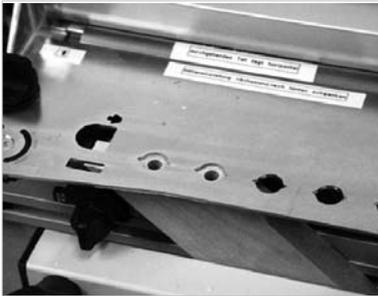
- In this case align the position of the rails to the holes of the template. The stop is then moved to the workpieces.

Mitred frame elements, plugged



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- Bring the template into the front position



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- Move the stop if necessary, depending on the width of the rail



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- Completed corner joint

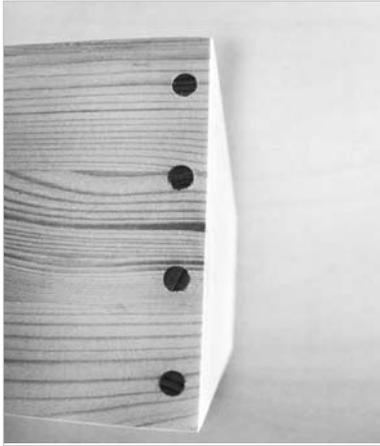


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Visible dowelling joint

There is a deviation here when clamping the workpieces:

- The horizontal workpiece is positioned over the vertical one. The inner areas are on the base frame in this case. The corners are aligned flush and match each other perfectly, also if the template is not adjusted exactly to 1/2 wood thickness as the workpieces do not have to be turned over.
- Bring the template into the front position, adjust the drilling depth and drill.



- Visible dowels can be a design feature.

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