

Double-Sided Easel Blackboard

Designed and constructed by Dick Holden

This double-sided blackboard is sturdy enough to provide many years of enjoyment for children. The double sided design enables one side to be used as a blackboard and the other as a drawing easel, and it's hinged so it can be folded up for storage.

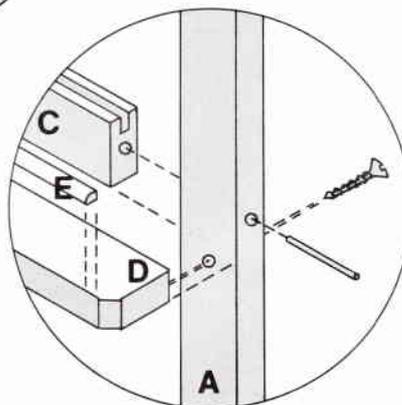
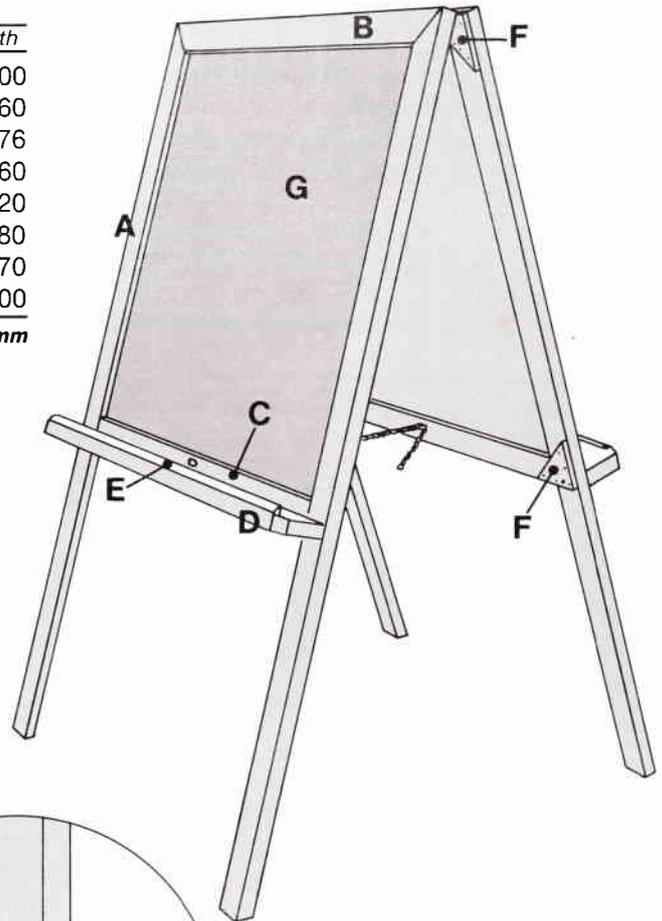
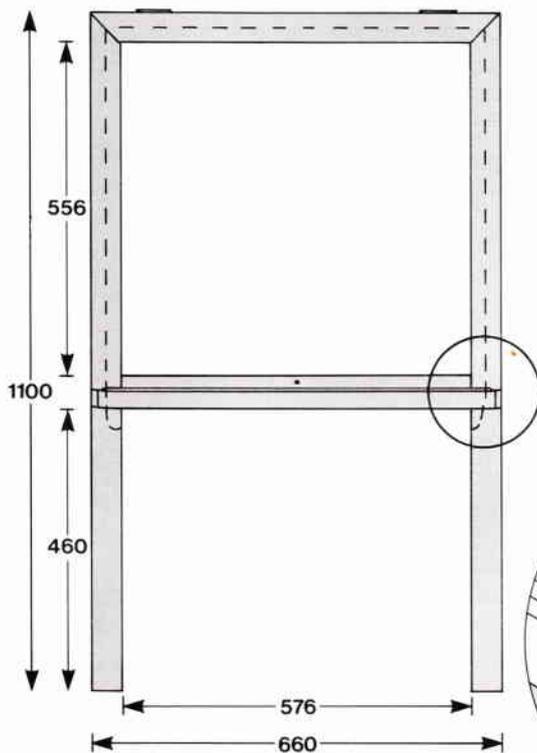
As a woodworking project, it offers a variety of interesting operations on your Triton workcentre - including trenching with your power saw and mitre cutting.



Component Specifications

Part No.	Description	Quantity	Width	Thickness	Length
A	Side frames	4	42 x 19	x	1100
B	Top frames	2	42 x 19	x	660
C	Bottom frames	2	42 x 19	x	576
D	Chalk trays	2	70 x 19	x	660
E	Tray lips	2	12 x 12	x	620
F	Gussets	8	80 x 3.2	x	80
G	Boards	2	590 x 3.2	x	570
H	Spread cord	1			600

All dimensions are in mm



Tool Requirements

- 1. ESSENTIAL** Triton workcentre and your power saw. Drill (preferably power) with 4mm bit, measuring tape, square, hammer, screwdriver, nail punch, medium and fine sandpaper, paint brush.
- 2. USEFUL** Mitre square, Triton extension table, mitre corner clamp.

Construction Details

Material Shopping List

1. WOOD Any light and strong wood will do, as long as it is reasonably straight grained and free of defects. Select radiata pine is a good choice, being both economical and easy to work.

Shop for **42 x 19mm** - 4 @ 1.2m, and 2 @ 1.5m (for the frames), **70 x 19mm** - 1 @ 1.5m (for the chalk trays), **12mm quad molding**, or similar - 1 @ 1.5m (for the chalk tray lip), **3.2mm Masonite** - 1 @ 600 x 700mm, 1 @ 600 x 600mm (for the board and gussets).

(Note: Masonite is normally sold in large sheet sizes, beginning at 1830 x 1200mm. If you don't own a Triton extension table, you may prefer to find a timber merchant willing to sell offcuts or cut to size. Make sure your masonite is cut square).

2. FASTENING

- * PVA or equivalent wood glue
- * Self tapping screws - 2 @ 8G x 1½" 4 @ 8G x 1¼"
- * Nails - 8 @ 75mm x 3.75mm (3") bullet head, 4 @ 20mm panel pins.

3. OTHER One pair of 50mm butt hinges with screws (6G x ⅝"). Approx. 600mm of strong cord for the "spread cord".

4. PAINTING AND FINISHING Blackboard (or chalkboard) paint. High gloss polyurethane or similar, wood putty.

General Points

1. Remember that you are cutting material for two separate sides which are subsequently hinged together as a double-sided board.
2. Do not cut the masonite to final size until the frames have been cut ready for the masonite boards to be fitted.
3. If you plan to lacquer or paint the frames of your finished board, it is advisable to do this along the inside (slotted) edges of the frames before assembling, rather than risk fouling the actual board areas with your brush.

The first step is to cut the 3mm slots for the masonite boards. This is done with your saw in the table saw mode. Set your saw blade height to 9mm, and set your rip fence at 8mm.

Safety Note

The cutting procedure that follows prevents use of your safety guard. Keep your hands well clear of the saw blade. **Don't trail your fingers behind your workpiece. Use a push stick when completing the cut.**

Take a short piece of 19mm scrap and cut a test slot. Turn the material over onto its opposite edge (other face against the fence) and make a second cut. If necessary, adjust the fence setting so that the two cuts coincide.

2 Take the two 1.5m lengths of the 42 x 19mm material and cut a slot down the centre for the full length of one 19mm side of each. A good quality tungsten-tipped saw blade usually has a 3mm wide kerf, which provides the required width with one cut. If your blade cuts less than 3mm, you will need to reset your fence slightly outwards and make two cuts from opposite faces of your workpiece. (Check first on an off-cut).

3 The side frames (**A**) are cut from the four 1.2m (42 x 19mm) lengths, and require a similar trenching cut.

It is easiest to make a full length cut in these side frames, but it is more visually pleasing to stop the cut at 680mm from the top (That is, don't cut an unnecessary trench in the leg sections of the blackboard).

This can be done in two ways. Firstly, you can add a long extension to the rip fence, and fix a stop block to stop your cut at the 680mm point, or you can make appropriate reference marks on your table top and your workpiece. Whatever procedure you follow, don't lift your workpiece off a still-spinning blade. Stop your saw, wait till the blade coasts to a halt, and then remove your workpiece.

4 Remove the rip fence and fit your protractor, set at 45 degrees. Replace your riving knife and guard. You can check to see if your protractor is set correctly by making a test cut on scrap, placing the offcut against the main piece and seeing if they form a perfect right angle. Adjust if necessary. Mitre cut the very top ends of your side frames (**A**).

5 From one of the two 1.5m slotted lengths, cut the two top frames (**B**). The inside measurement of each is 576mm (slotted edge). Mitres are required on both ends, so cut one mitre, measure carefully and then cut the other.

6 Return your protractor to 90 degrees for normal right-angled crosscutting to cut the two bottom frames (**C**) to length from the remaining 1.5 metre length. These frames need to be the same length as the inside edge of your mitred top frames (**B**). They should be 576mm if your top frames were cut accurately.

7 The four side frames (**A**) should now be cut to length. Their outside dimension is 1100mm. You can do this in the table saw mode using the protractor, measuring and marking each carefully. You may prefer to use the saw in the crosscut mode, where you can tape or clamp your four workpieces together, and after checking that the mitred ends are all exactly lined up, you can be sure of identical components.

8 Now cut the eight triangular pieces of masonite for the gussets (**F**). This is best done in the tablesaw mode, with the saw lowered so that the blade height is just sufficient to cut through the 3mm masonite. Set the rip fence at 80mm and cut a strip 80mm wide and 600mm long from the 600 x 700mm piece. Using the protractor, set alternately at 45 degrees and then at 90 degrees, cut the triangles one by one (**Figures 1 & 2**). To prevent the masonite from slipping under the front edge of the protractor, place a piece of parallel-sided, square-edged, offcut along the front edge of the protractor. Take extra care to hold the material firmly when cutting.

9 Lay out each set of four frame members (**A,A,B,C**) and check the measurement for the masonite board (**B**), including the slot depth. If your cutting has been accurate, the width – including slot depth – should be 594mm, which allows 2mm each side of the 590mm masonite.

10 If okay, cut the masonite to size (590 x 570mm), (Adjust your masonite size if your cutting has caused a variation). If you have a Triton extension table, this is achieved simply by using the rip fence and the scales on the extension table as usual. (Make a test nick into your material to check that your extension table scale is accurate to your saw blade setting). To cut the board without an extension table you have two options. The first is to calculate the offcut dimension, and set your

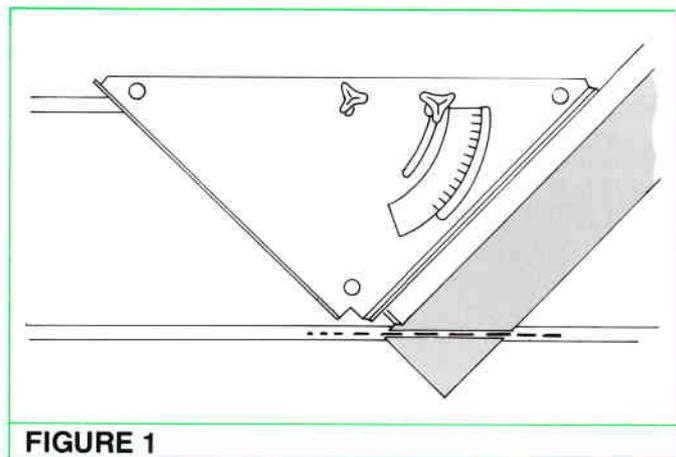


FIGURE 1

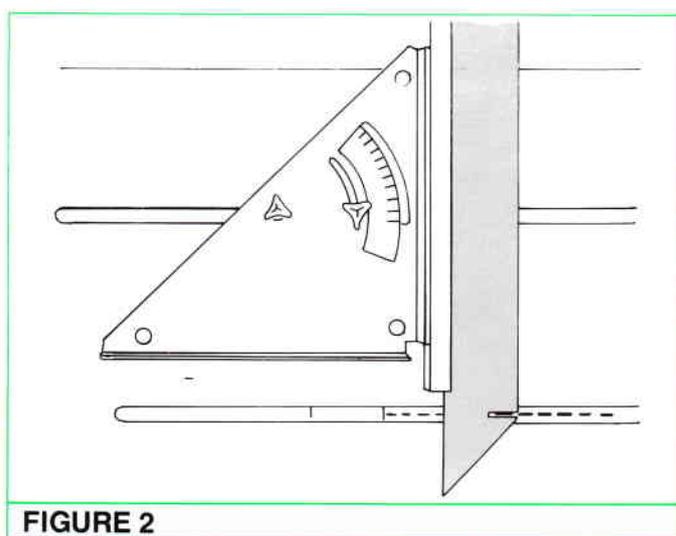


FIGURE 2

rip fence to suit. For example, assuming that your 600 x 700 board becomes 600 x 617 after cutting the strip for the gussets (80mm plus 3mm kerf) you will need to set your rip fence at 27mm ($600 - 27 - 3 = 570$) and 24mm ($617 - 24 - 3 = 590$).

Because the workpiece is narrow in this case it is essential to use a push stick to control it. Apply sideways pressure on your workpiece against the rip fence in front of the blade and switch off the power with your knee as soon as the cut is completed. And, importantly, set your blade height as low as possible – 4mm should be sufficient.

The other option is to change to the crosscut mode, and plunge cut. The operating manual has a detailed explanation of the procedure. **Note** that “vertical lift” saws (as opposed to pivoting) are generally not suitable for plunge cutting.

|| As the slots have been made to the width of a tungsten tipped saw blade (3mm) it may be necessary to reduce the thickness of the edges of the masonite by 0.2mm to fit the slots. This is achieved by sanding off the back edges of the masonite boards (**G**).

Construction Details

Paint both boards with blackboard (or chalkboard) paint as per the instructions on the can and set aside to dry.

12 To assemble each side of the board, take one side frame **(A)** and a top frame **(B)**, face down, apply glue to the mitre surfaces and secure in position with a masonite gusset **(F)**, using glue and small nails (20mm). Check that the corner is square.

13 Fit the board **(G)**, face down, into the slots of the top frame **(B)** and the first side frame **(A)**, add the second side frame **(A)** and second gusset **(F)** as above.

14 Position and glue the bottom frame **(C)**, making sure that the board **(G)** is properly in the slot. Assemble the two bottom gussets **(F)**, using glue and small nails as above.

15 With your power drill and 4mm bit set to drill a depth of approx. 70mm (no more), drill through the side frames **(A)** into

both top frame **(B)** and bottom frame **(C)** on both sides. Be careful to avoid drilling into the nails which hold the gussets in place. **Figure 3.**

16 A 75 x 3.75mm bullet head nail should now fit snugly into each of these drilled holes except for approx. 5mm. Now carefully drive home each nail and punch the heads to just below the surface. Fill the nail holes with wood putty and sand smooth. The nails now serve the purpose of steel dowels, making your board quite rigid.

17 Repeat operations 12-16 for the second side of the board.

18 Cut the chalk trays **(D)** to size and cut off the front corners. Cut and fit quad strips **(E)** to form lips on the front edge of the tray. If your quad molding is hardwood, you will need to take care not to split the quad when nailing. Pre-drilling is necessary. (A nail with the head nipped off can serve as a drill bit for this).

19 Drill through the lower centre of each bottom frame **(C)** to screw into the edge of chalk trays **(D)** from behind, using 1½" x 8G self-tapping screws, and also through both side frames **(A)** from behind, using in this case 1¼ x 8G self-tapping screws. Take care not to split the chalk trays, particularly near the ends.

20 Drill through each bottom frame **(C)** near their centre to allow for attachment of the spread cord **(H)**. Two holes about 15mm apart allow the cord to be taken back through the cross frame and knotted on the rear of each side.

21 Sand where necessary, lacquer or paint as desired.

22 Add hinges at top and attach the spread cord and your blackboard is complete and ready for use.

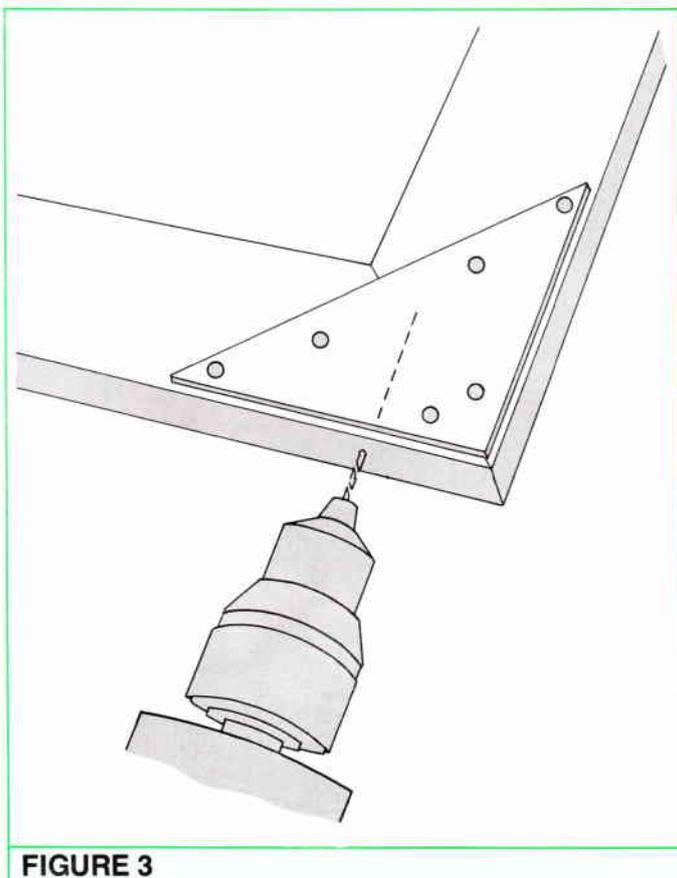


FIGURE 3