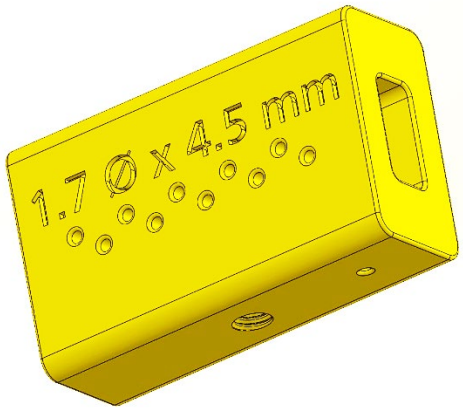
Boom Drill Guide Blocks

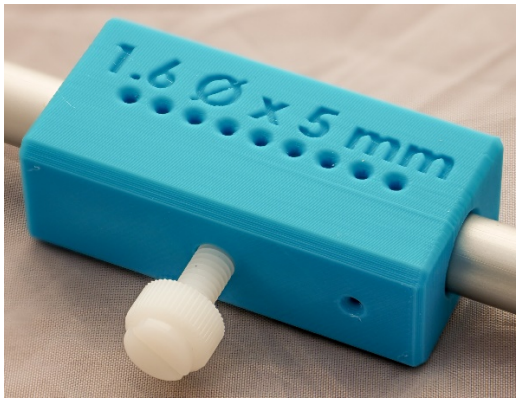
DB-SAILSetc and DB-BOOM-110

Introduction

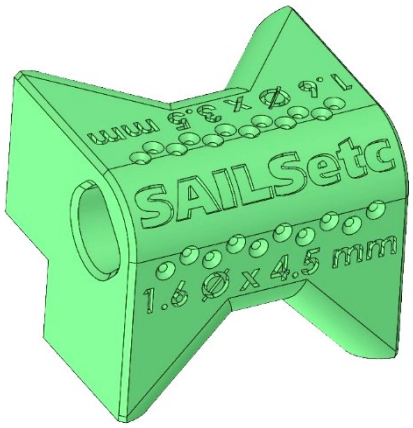
The guide block is used to drill accurately spaced Z-hook holes for the sheets on main and headsail booms. Spacing is at 5 mm or 4 mm spacing for round booms using the DB-BOOM-110 block, and at 3.5 or 4.5 mm spacing using the SAILSetc section boom block and the "UNI" block. The DB-SAILSetc block is sized for SAILSetc section booms, while the DB-BOOM-110 block is sized for 11.1 mm diameter booms, and the DB-BOOM-UNI works for booms from 8 to 14 mm diameter.



SAILSetc section boom guide block



11.1 mm boom with guide block set

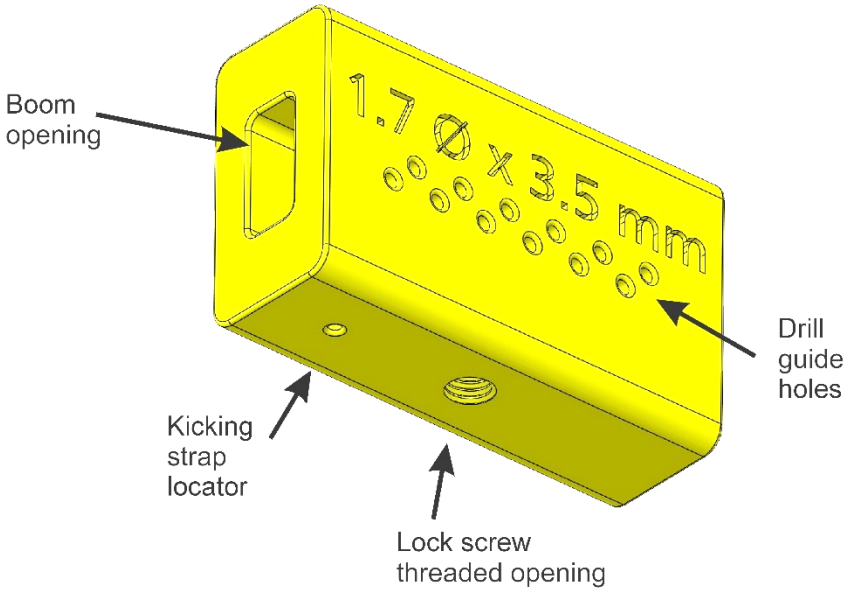


"UNI" guide block

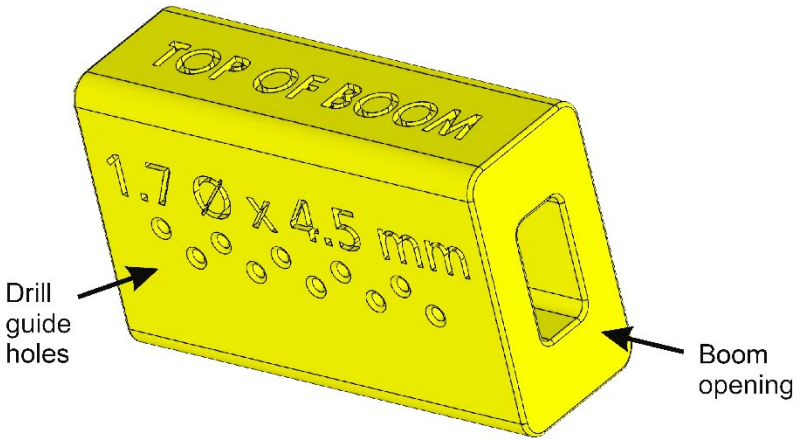
The block has guide holes that are not bushed. While the holes will wear over time, their expected life is still long if the block is used with care.

Design

The diagrams below identify the various openings, slots, and guide holes in the DB-SAILSetc block. The DB-BOOM-110 block has similar features.



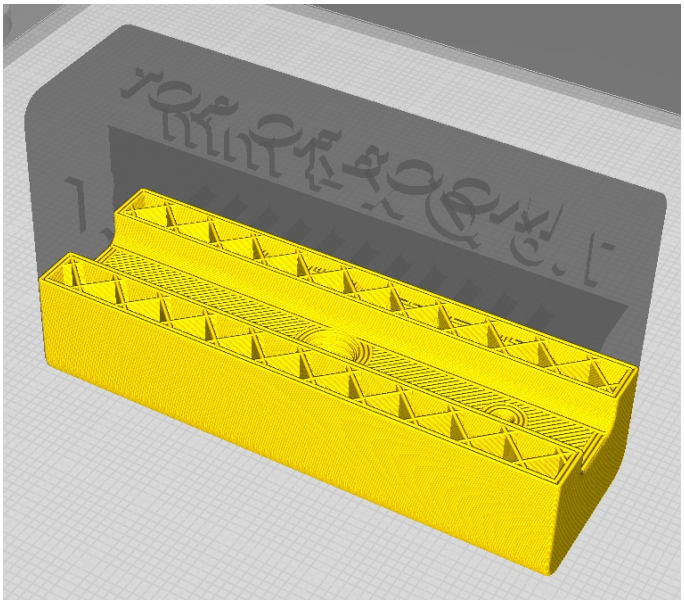
Bottom and left faces



Top and right faces

Construction

The blocks are 3D printed in eSun's "PLA Plus", a common filament with appropriate mechanical properties. Light green, yellow, or light blue were chosen as colours likely to stand out on the workbench and shelf.



Section view of a block being printed showing honeycomb-like infill

As can be seen from the illustration above, blocks are not solid plastic, but have a honeycomb-like internal structure.

Preparation

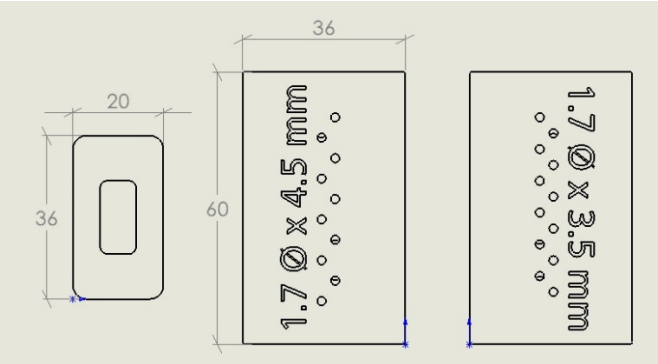
Before use, it will be an advantage to carry out some small checks as follows. To clean the guide holes of swarf or plastic over-print, run a 1.6 (or 1.7 for the SAILSetc section guide block) drill bit through using a pin chuck or pin vice (not a drill of any kind). Pass a scrap length of deburred or chamfered boom material through the central hole, the fit should be a very slight interference sliding fit, but neither a firm gripping fit nor such a loose fit that the block slides under gravity.

The guide block is best used on a boom which is new and bare. It will not slide over any fittings already attached to the spar, and may not slide over holes or over the end of the boom which have previously carried fittings.

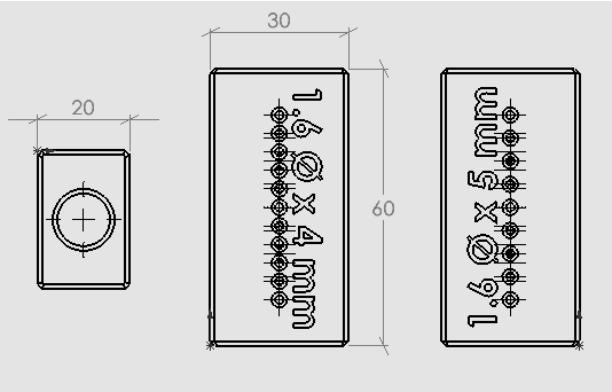
Use

The blocks are designed to be used on a work surface without the need to be clamped in position, provided the drilling direction is perpendicular to the surface. Nevertheless, a block is rigid and strong enough to be clamped using a plastic-jawed “pistol grip” or spring-loaded clamp, but can and will be crushed by an over-tightened screw-thread clamp or vice. Metal jaws should be faced with rubber or cork.

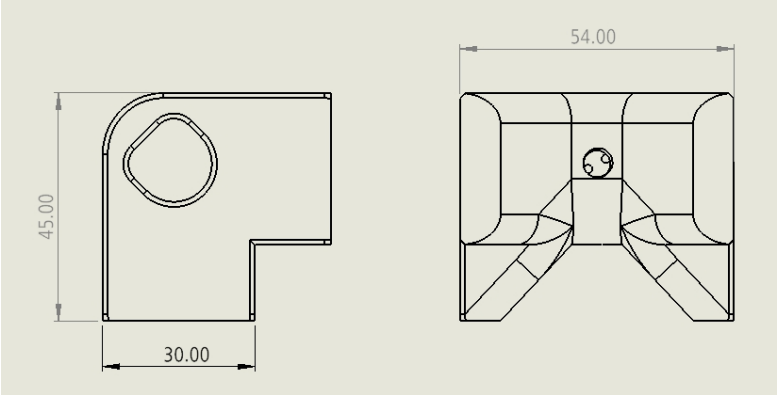
The following diagrams illustrate the relevant block dimensions.



DB-SAILSetc block dimensions



DB-BOOM-110 block dimensions



"UNI" block dimensions

If holes larger than 1.6 mm Ø (or 1.7 for the SAILSetc section guide block) are required, use the blocks to create the 1.6 (1.7) holes first and then, without using the block, enlarge the holes with the preferred size of drill bit. A 1.5 mm drill bit will work fairly well in the 1.6 guide holes (1.6 will work in the 1.7 guide holes). If a block with holes for drills smaller than 1.5 mm Ø (or 1.6 for the SAILSetc section guide block) is required, please contact the SAILSetc office.

1 Decide whether the Z-hook holes are to be spaced 5 mm or 4 mm apart.

2 Position the block as required on the boom. For a SAILSetc section, orient the top of the boom with the top of the block.

3 Where a number of main booms are to be drilled, it may be helpful to position the block relative to the kicking strap. Insert a 1.6 mm wire through the block's kicking strap hole into the previously drilled boom's kicking strap hole.

4 Lock the block in place.

5 Place the boom and block on a flat surface.

6 Prepare the drill bit with a depth stop to prevent drilling a hole through both sides of the boom.

7 Drill the required holes.
NOTE for 11.1 mm booms. Because the drill entry is onto a curved surface that angles away from the bit, especial care should be taken with a very slow feed as the drill bit encounters the boom. The drill bit, if not very sharp, will attempt to run off to one or other side with a normal feed, and the guide holes will have a shorter life. A drill press is very highly recommended.

NOTE for the "UNI" guide block. Because the drill entry is onto a curved surface that both angles away from the bit and is offset from the bit, *exceptional* care should be taken with a very slow feed as the drill bit encounters the boom. The drill bit, if not very sharp, will attempt to run off to one or other side with a normal feed, and the guide holes will have a shorter life. A drill press is very highly recommended.

8 If working with a drill press rather than a hand drill or cordless drill, the block can be placed on the drill table as required.

9 If a longer run of Z-hook holes is required, reposition the block by sliding it along the boom and dropping a 1.6 mm (1.7 for the SAILSetc section guide block) wire through the block's first drill guide hole into the previously drilled boom's last Z-hook hole and continue from step 4.

Modification

The guide holes can be opened, if desired, to a slightly larger diameter.

The guide holes only have double walls, meaning that the 1.6 (1.7) nominal diameter should not be opened beyond a maximum of 1.8 (1.9) mm Ø. When drilling out the PLA block, it is essential to place it in a drill press and hold it in position in a vice. Use a very slow feed. The plastic is very "grabby", and if an attempt is made to drill a hole out by hand while holding the block, it is highly likely that the drill bit will either seize or run through the hole uncontrollably and the attempt will fail, resulting in a ruined block.

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