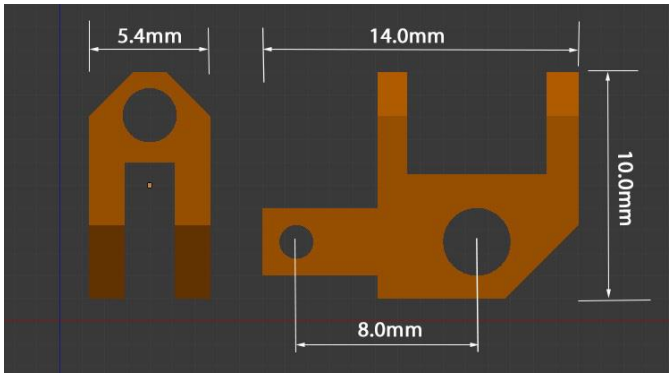
Milled Gearbox Block 30:1
Assembly Instructions

Introduction

This gearbox block is designed to give simple and consistent meshing between the worm and gear in a 30:1 100DP gearset.



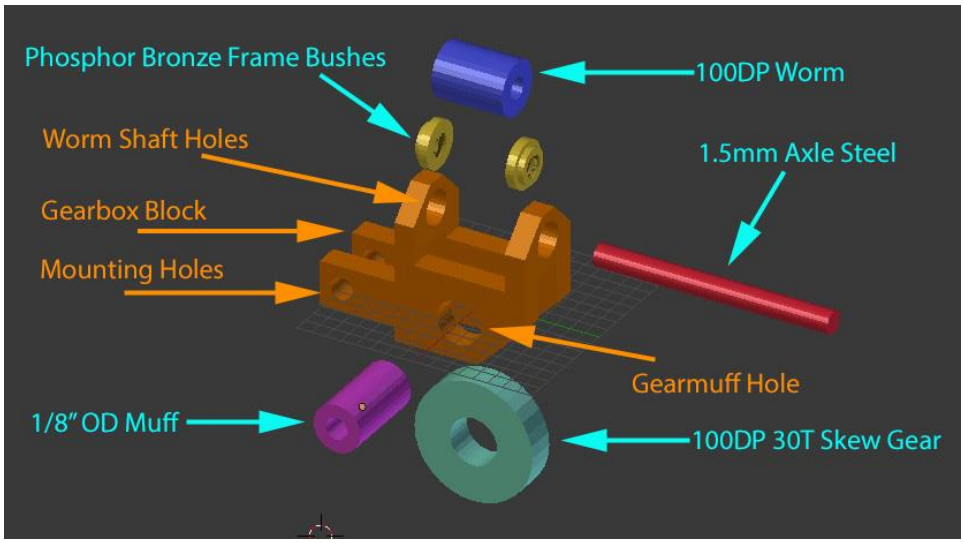
Parts

In addition to the gearbox block, you will need:

- 1pc 30T 100DP Skew Gear
- 1pc 100DP Worm with 1.5mm bore
- 1pc 1/8" OD Muff for Imperial Gears
- 2pcs Phosphor Bronze Frame Bushes

If you are mounting your motor independently of the gearbox (e.g., with a universal joint between them) you will also need:

- 1pc 1.5mm Axle Steel
- 1pc Insulated Screw Sleeve or similar

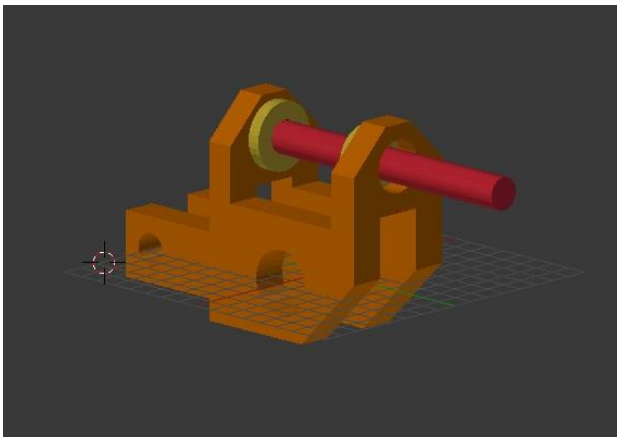


Preparation

- The gearbox block has been manufactured to give an element of future-proofing. Therefore, the holes are bored slightly undersize and will need opening out with a broach or similar tool.
- You should also deburr the block with fine files and/or abrasive paper to remove any edges that might subsequently snag.
- If you need to fix the gearbox to your locomotive frame with a pinion point, the mounting hole is at 8mm centre with the gear muff hole, so the holes in your frame will need to be at the same spacing.

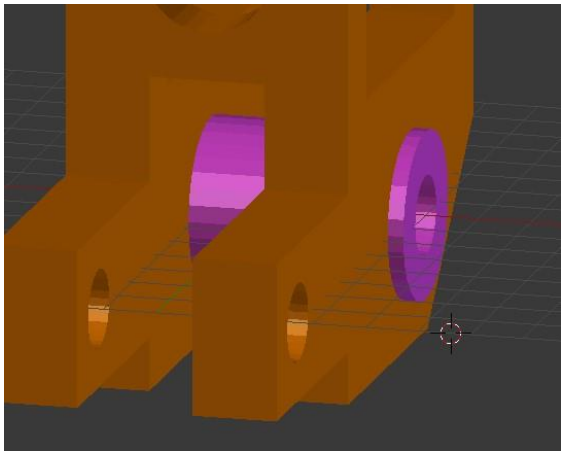
Assembly

- Open out the holes for the worm shaft until the phosphor bronze frame bushes are a snug fit. Solder the bushes onto the block. You might use a length of axle steel at this point to ensure that the bushes are accurately aligned. You will also need to open the bushes out slightly to ensure that the axle steel is free running.

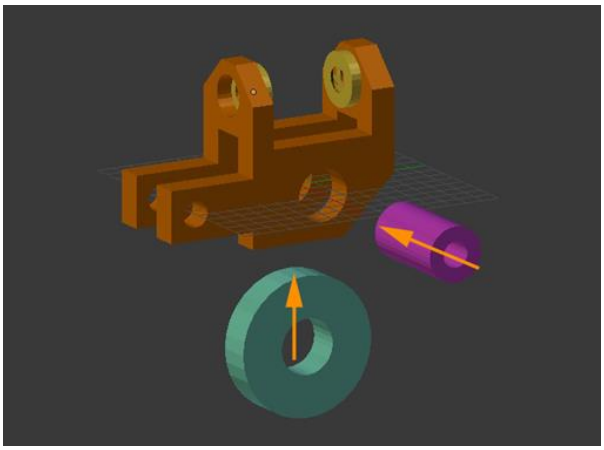


- The gear muff hole is bored to 3mm. For the current range of Imperial Gearsets, the muff is quite a bit bigger at 1/8”. Open out the gear muff hole until the muff is just a clearance fit (the muff will rotate freely but there is no slop).

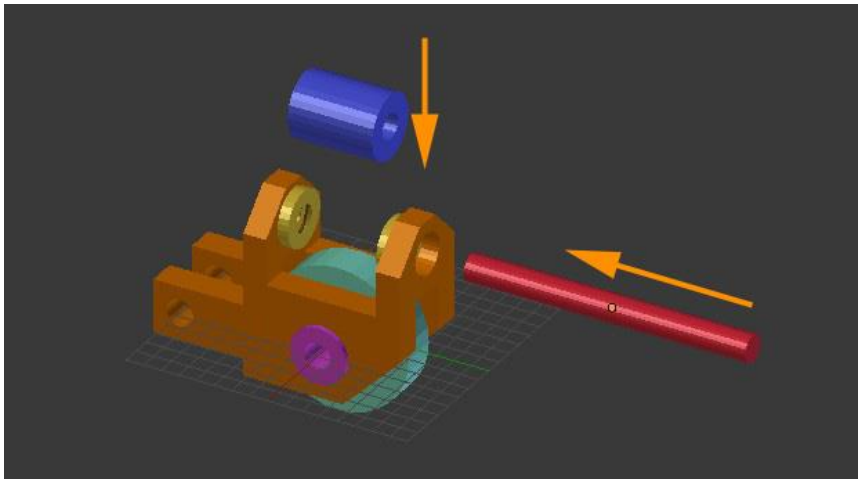
- If you are using the mounting hole open this out to accept the 14BA insulated screw sleeve or any other insulated pinion point of your choice/manufacture.



- Ensure that the skew gear is a firm fit on the muff. Slide the gear into the slot at the bottom of the block and centre it on the gear muff hole. Carefully but firmly insert the muff into the hole, through the gear and out the other side. The muff should be central to the gearbox block and will protrude slightly on each side. The gear should now rotate freely in the gearbox block.



- Cut the worm to size. It should sit between the two frame bushes with the minimum of slop. Slide the worm between the bushes and insert either your motor shaft or the axle steel. The worm should rotate freely and in turn will now be meshed with the gear.



- Your gearbox should require an absolute minimum of running in. Avoid using excess lubricant and avoid abrasive pastes. The only instance of metal bearing against metal is the axle steel/motor shaft in the bearings and these will already be free running.

Fitting the Gearbox

- Your gearbox is now complete and can be inserted into your locomotive.
- Slide the gearbox between the locomotive frames and insert the wheels. It is recommended that the Wheel Quartering Jig is used for accurate quartering and for firm but controlled insertion of the wheel axles.
- If you have mounted a motor to your gearbox, that will be your second fixing point. Screw or glue the motor to your chassis or motor mount in your preferred manner.
- If your motor is separate from your gearbox, use the mounting holes as your second fixing point, screwed, pinned, or glued to your chassis frame as you prefer.
- Very occasionally, your wheels may be large enough to block access to the mounting holes. In this instance, locate the gearbox in the locomotive frames initially with axle steel, secure your second fixing point and then replace the axle steel with your wheels.