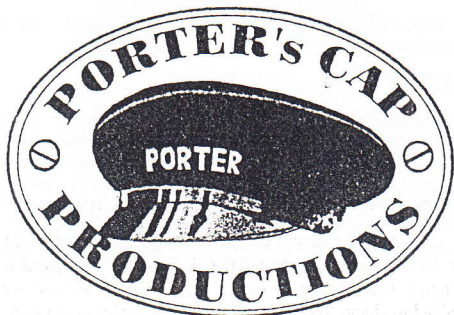




PROUDLY PRESENT CONTORTO

INTRODUCTION

THE CONTORTO gearbox offers variable reduction gearing between 54:1 and 108:1 in a compact, high quality and highly flexible unit. Its unique final drive carriage system can be pivoted through 180° plus, from a number of stations on the gearbox, offering an extremely versatile range of configurations. Its applications are simply too numerous to list.

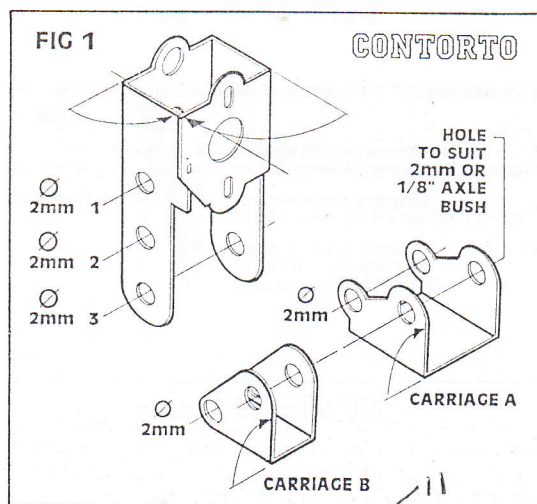
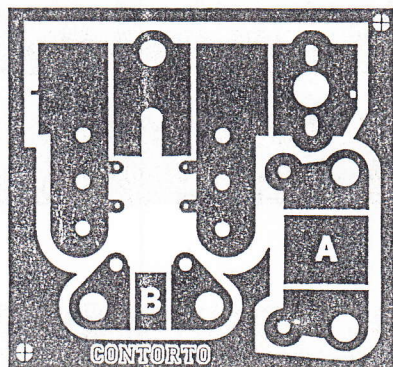
Our range of high quality drive units utilize moulded gears throughout - a fact for which we make no apologies. Advances in plastics technology have resulted in a range of components intended for far more intensive operation than will ever be encountered in most scale model railway applications. After exhaustive tests on numerous pre-production prototypes, we are convinced that beneficial qualities such as ease of installation, an ability to incorporate large reduction ratios in so compact a format, and most importantly, virtually silent operation, will be welcomed by enthusiasts seeking competitively priced, quality alternatives to the long established gearbox systems currently available.

The final drive gear diameter allows driving wheels as small as 9mm diameter to be used - tailor made for any application from the smallest of shunting locomotives up to express passenger types.

PREPARATION OF PARTS

BEFORE cutting the parts from the fret, drill or ream each of the holes to the sizes shown in Fig 1. Remove burrs by inserting the tip of a much larger drill bit and gently rotating it between your fingers.

Fold up the gearbox as indicated in Fig 1. All fold lines are on the inside. Solder the motor mounting plate to the gearbox side to form a strong box. Fold up the final drive carriages A and B. Do not solder the axle bushes in place until you have decided which carriage system - if any - you are going to use.



Wash the gearbox assembly thoroughly in warm water and household cleaner to remove all traces of flux before proceeding.

Decide upon the configuration you wish to use. This is easier to determine with the motor fitted, and if necessary, your choice of final drive carriage, pivoted using one of the gearshafts. Final drive carriage A pivots at gearshaft No. 3 (Fig. 2) whilst carriage B pivots at gearshaft No. 2 (Fig. 3). These carriages will pivot through 180° plus, and can be installed either way up, the sharper angles (in relation to the vertical gearbox) being achieved using a 'U'-shape. Carriage A may also be installed at gearshaft No. 2 (Fig. 4), using a 20 tooth single gear in place of the double gear, giving an overall reduction ratio of 54:1.

Having decided upon which configuration you plan to install, we recommend a dry run, with the gears loosely fitted, into your locomotive - just in case anything fouls the mechanism during installation.

Once you are satisfied that your chosen configuration fits into your locomotive, remove the gears and solder the axle bushes into your choice of final drive carriage. Either of the drive carriages may be soldered to the main gearbox, or they can be left free to pivot - desirable in cramped locations where the motor can be manoeuvred into position as the body and chassis are offered up. If you choose to solder the carriage in position we recommend that the pivot shaft must be in place to maintain accurate gear centres. Oil applied to the shaft will prevent it from being soldered in place. Note that for the configurations depicted in Figs. 3 and 4, surplus material must be trimmed from the bottom of the gearbox.

Remember to wash components thoroughly in warm water and household cleaner to remove all traces of flux before proceeding to fit the gears and shafts.

FIG 2

CONTORTO 108:1

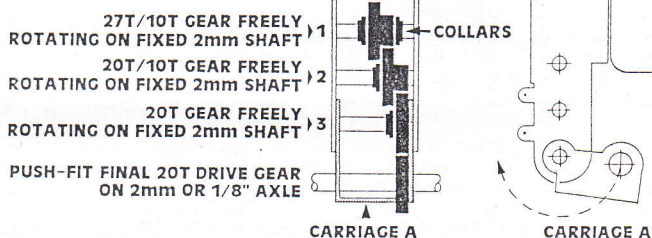


FIG 3

108:1

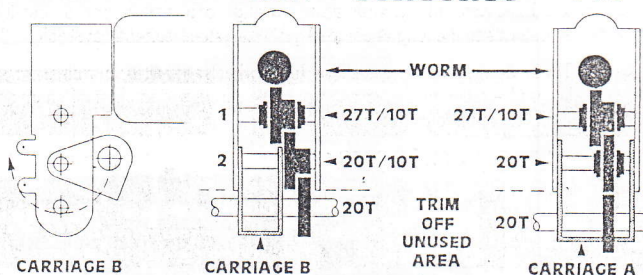
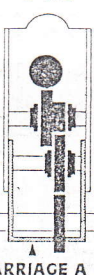


FIG 4

54:1



FINAL ASSEMBLY - Figs 2, 3 or 4, depending upon configuration

WHILST fitting the gears, test under power at every stage of assembly. Do not move on to the next step until you are satisfied everything is running smoothly. Ensure your work area is free from filings and other debris and that all the gearbox components are spotlessly clean. Note that the shafts in the gearbox are fixed while the gears are free to rotate. Only the final drive gear on the loco axle is a push fit. Do not secure the shafts in place until everything runs smoothly.

1. Push the worm onto the motor shaft so it aligns centrally above the first stage gear. Screw the motor to the mounting plate. Tighten the screws sufficiently so the motor can still be moved.
2. Fit gearshaft No. 1 plus the 27T/10T double gear. Adjust the mesh between the worm and 27T gear as necessary, then remove the shaft and gears in order to tighten the motor mounting screws fully.
3. Proceed with the gearbox internals as per the relevant configuration, using brass collars to position the gears on their shafts where applicable. These are carefully secured with the finest drop of superglue. The shafts are easily cut to length from the 2mm stock provided.

LUBRICATION

THESE gearboxes are precision components. For best results and minimal noise levels, use a Teflon-based grease such as Tri-Flow or Pronatur (available from Exactoscale). Also suitable are Labelle 102 gear lubricant or 106 grease, both available from Victor's of Islington, although the prototype gearboxes ran perfectly without any lubrication at all thanks to the virtual self-lubricating properties of the slippery moulded plastic components!

Running-in these gearboxes should prove unnecessary. However, we recommend you run them under power before installation just to satisfy yourself everything runs as intended.

INSTALLATION HINT

THESE axle-hung gearboxes can be rigidly positioned in your locomotive chassis by passing a wire crossbrace through the holes provided in the gearbox sideframes and soldering this between the loco frames.

BACKWOODS MINIATURES, NETHERTON SOUTHSIDE, NETHERTON,
MORPETH, NORTHUMBERLAND, NE65 7EZ

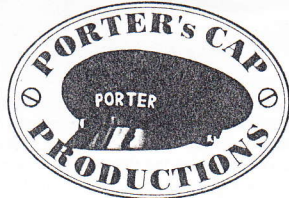
TEL: 01669 630255 FAX: 01669 630260

COMPACTO GEARBOX £12. COMPRESSO GEARBOX £15. CONTORTO GEARBOX £18. 50p P&P.

Please specify axle dia (2mm or 1/8").

Please specify gear ratio





COMPACTO & COMPRESSO

INTRODUCTION

THE COMPACTO and COMPRESSO gearboxes offer impressive reduction ratios of 108:1 and 194:1 respectively, neatly contained in a most compact format. Simple modification of the units as per the diagrams will produce ratios of 54:1 in the COMPACTO unit and 108:1 in the COMPRESSO.

Our range of high quality drive units utilize moulded gears throughout - a fact for which we make no apologies. Advances in plastics technology have resulted in a range of components intended for far more intensive operation than will ever be encountered in most scale model railway applications. After exhaustive tests on numerous pre-production prototypes, we are convinced that beneficial qualities such as ease of installation, an ability to incorporate large reduction ratios in so compact a format, and most importantly, virtually silent operation, will be welcomed by enthusiasts seeking competitively priced, quality alternatives to the long established gearbox systems currently available.

The final drive gear diameter allows driving wheels as small as 9mm diameter to be used - tailor made for any application from the smallest of shunting locomotives up to express passenger types.

PREPARATION OF PARTS

BEFORE cutting the parts from the fret, slightly ream each of the undersized holes as per the diagrams to accept their relevant bearings. Remove burrs by rubbing the gearbox on fine abrasive paper. Install the gearshaft bearings. Solder is recommended but superglue will work at a pinch. The 1.5mm bearings in the COMPRESSO unit should be dressed flush on the inside of the gearbox. Having decided upon your preferred configuration, install the final drive axle bearings. 2mm or 1/8" are provided according to your specified choice. Note that if you require a 54:1 ratio in the COMPACTO gearbox or a 108:1 ratio in the COMPRESSO gearbox, it may be necessary to trim off excess material from the gearbox sides. Thoroughly wash the etch to remove traces of flux.

Fold up the gearbox, noting that fold lines are to the inside, having decided upon which configuration you plan to install, we recommend a dry run with the gears loosely fitted into the loco you are building - just in case anything fouls the mechanism during installation.

Once you are satisfied that your chosen configuration fits into your locomotive, assembly can commence.

FINAL ASSEMBLY

WHILST fitting the gears and shafts, test at every stage of assembly. Do not move on to the next step until you are satisfied everything is running smoothly. Ensure your work area is free from filings and other debris and that all the gearbox components are spotlessly clean. Note that with the exceptions noted here the shafts in the gearbox are fixed into their bearings while the gears are free to rotate. Only the final drive gear on the loco axle in the COMPACTO gearbox is a push fit, whilst the 20T and 12T gears on gearshaft No. 3 and the final drive gear on the loco axle in the COMPRESSO gearbox are a push fit. Do not secure the fixed shafts in place until everything runs smoothly.

1. Push the worm onto the motor shaft so it aligns centrally above the first stage gear. Screw the motor to the mounting plate. Tighten the screws sufficiently so the motor can still be adjusted.

2. Fit gearshaft No. 1 plus the relevant 27T/10T or 20T/10T double gear, according to your specified reduction ratio. Adjust the mesh between the worm and wormgear as necessary, then remove the shaft and gears in order to tighten the motor mounting screws fully.

3. Proceed with the gearbox internals as per your chosen configuration, cutting the gearshafts to length from the 2mm/1.5mm stock provided. Secure the shafts with the tiniest drop of superglue. Alternatively, flood the insides of the gearbox with water to prevent heat damage to the gears then smartly solder the shafts with a dab of 70° low-melt.

LUBRICATION

THESE gearboxes are precision components. For best results and minimal noise levels, use a Teflon-based grease such as Tri-Flow or Pronatur (available from Exactoscale). Also suitable are Labelle 102 gear lubricant or 106 grease, both available from Victor's of Islington, although the prototype gearboxes ran perfectly without any lubrication at all thanks to the virtual self-lubricating properties of the slippery moulded plastic components!

Running-in these gearboxes should prove unnecessary. However, we recommend you run them under power before installation just to satisfy yourself everything runs as intended.

INSTALLATION HINT

THESE axle-hung gearboxes can be rigidly positioned in your locomotive chassis by passing a wire crossbrace through the holes provided in the gearbox sideframes and soldering this between the loco frames.

