

Bachmann GWR '57xx' Class Pannier conversion

SHEET 1
Issue 1
04.08

This Manual sheet has been produced following the conversion of an older edition of the Bachmann Pannier. The model is the type with split axle pick up and has 6mm diameter bearing bushes for the axles. The Alan Gibson all brass wheels, for which the EMGS insulated bushes were designed, are no longer available so it is necessary to use plastic centred wheels in conjunction with 'shorting wires'.

Conversion of Bachmann 5700 Class Pannier Tank Model No. 31-902A

1. Introduction

Tools Required

- Small cross point screwdriver.
- Small flat blade watchmaker's screwdriver.
- Round and flat needle files.
- 0.8mm drill.
- 1.0mm drill.
- Countersink drill or 2.0mm diameter drill.
- Piercing saw.
- Craft knife, Swann Morton or similar.

New parts

- 6 wheels - 4' 7" diameter x 14 spoke for fitting to 1/8" axles
(Alan Gibson Part No. G4855W)
- 1 set - 3 Stub axle/ 6 insulated bushes 6mm diameter.
(EMGS Part No. 59A3B)
- 6 Flanged pin point bearings.
(EMGS Part No. 3572 if re-using the Bachmann coupling rods)
- 6 Shorting wires from fret.
(EMGS Part No. 4910)
- 6 Crank pins and nuts.
Standard Alan Gibson type.
(EMGS Part No. 4720)
- Cyanoacrylate adhesive.
- Loctite "Nut Lock" or similar.
- 1 set Coupling rods 7"3' x 8"3'.
(EMGS Part No. 4744, alternative to Bachmann rods)

Parts to be discarded

- Bachmann wheels, axles and crank pins

Parts to be retained

- Gear wheel moulding
- Coupling rods
- Loco-body
- Chassis with motor and keeper plate

2. Dismantling the locomotive

Remove the mechanism by undoing the round head screws holding the couplings.

The keeper plate can next be removed by undoing the two counter sunk head screws which are locked with a spot of red paint. This enables the wheels, gearwheel and coupling rods to be removed. Small hexagon head screws are used to hold the coupling rods onto the coupling rod pins and are quite easily undone. The gear wheel will be reused as will the coupling rods unless new ones are to be fitted.

The centre wheels have a square axle and thus the wheels should not be twisted to remove them but pulled straight off otherwise the gearwheel could be damaged.

3. Preliminary Work

Chassis modification

All three of the chassis wheel slots have a small raised rim which needs to be filed flush with the side of the casting.

Wheel preparation

The new wheels need to be prepared by filing off the boss on the back of the wheel by rubbing on a fine flat file to get the back flush. Further work has then to be done to make a shallow recess to the area around the axle hole of about 0.2mm deep. This will allow space for a shorting strip to fit between the wheel and the EMGS insulated bush. Any flash should also be removed from the wheels, this is usually found around the spokes.

The crank pin holes need to be drilled 0.8mm diameter from the front face of the wheels, preferably with a vertical drilling machine, and the back countersunk so that the crank pin head can be screwed in flush with the back of the wheel. It is suggested that a 2mm diameter drill could be used but a small sharp countersink would work just as well. A steel screw can be used as a tap and can be turned with a small screwdriver. Drill a 1.05mm hole in a piece of brass about 25mm x 12mm x 3mm or 4mm thick to make a guide which can then be held across the back of the wheel to hold the "tap" vertical.

4. Assembly of the wheelsets

Two wheel sets can be assembled from the insulated bushes, axle, shorting strips and wheels, checking that the back to back dimension is 16.5mm and that the inner faces of bush flanges are at least 12.85mm apart to allow the wheel set to turn freely in the chassis. See Fig. 1 which shows the 'general arrangement' of the insulated bush in relation to the stub axle and shorting wire fret. When assembling the stub axle and obtaining the correct back to back do not exert undue pressure as this could cause damage to the insulated bush. Under no circumstances should the modeller attempt to remove

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the insulation. A certain amount of flash may be seen on the outer face of the bush. This does not have to be removed. The ends of the shorting strip should be cut to reach no further than the middle of the wheel rim. These should then be soldered to the rim with 145 degree solder making sure that the joint is small and will not catch in the check rail clearance. File off any surplus solder. See Fig. 2.

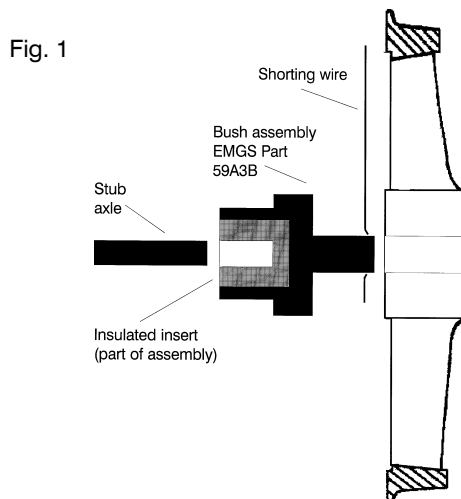
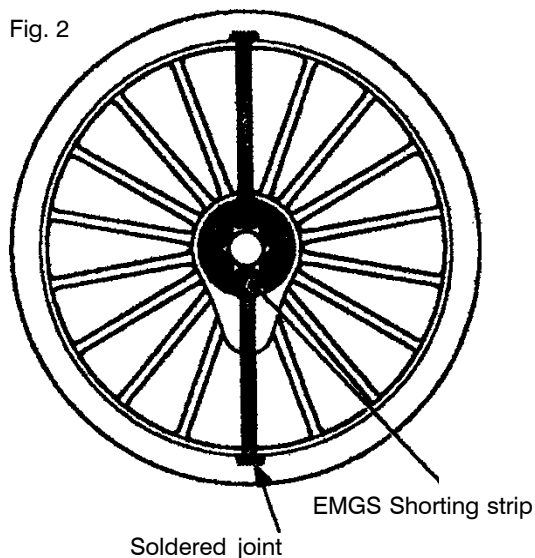


Fig. 2



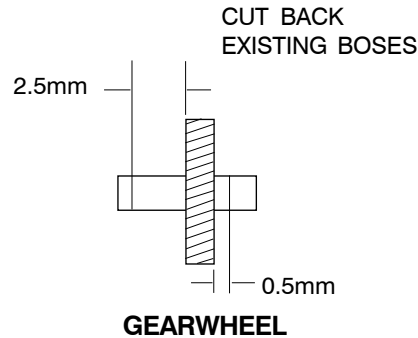
BACK OF WHEEL SHOWING SHORTING STRIP

5. Fitting the gearwheel

The centre wheel set requires the Bachmann gearwheel to be fitted offset from the middle of the axle to line up with the smaller gear on the intermediate gear shaft. (The other gear with teeth slightly skewed is actually the worm wheel). It is necessary to remove most of both the bosses from the existing gear leaving one 0.5mm long and the other 2.5mm. Also the insulated bearing bush, adjacent to the gear, needs to be shortened so the inner end is flush with the inner face of the chassis. The small diameter of the bush will need to be approximately 2.75mm long after

being shortened. See Fig. 3 for the altered gearwheel and photo No. 1 for the assembled wheel set.

Fig. 3



Whilst the EMGS axle is a close fit in the square axle hole in the gearwheel it will need to be secured with cyanoacrylate when finally assembling the wheel set. *Note that the EMGS axle is a special and not 2mm diameter so if mislaid or damaged a replacement will be required and these can be obtained from EMGS stores as a special order.*

In order to allow some side clearance on this set of wheels it is not necessary to use the EMGS shorting strips even though the wheel backs would have been recessed in the earlier operation. This allows the wheels to be pressed further onto the brass stub axles than normal making the inner faces of the insulated bushes further apart than on the other axles so giving about 0.4mm side clearance. The end of the axle protruding from the wheel face needs to be filed away flush with the wheel face to avoid catching on the coupling rods.

In place of the shorting strip it is recommended that a piece of shim brass is soldered between the wheel rim and the outside diameter of the flanged bearing bush. One end should be turned through a right angle to aid fixing to the flange. Again make sure that a small as possible joint is made on the wheel rim.

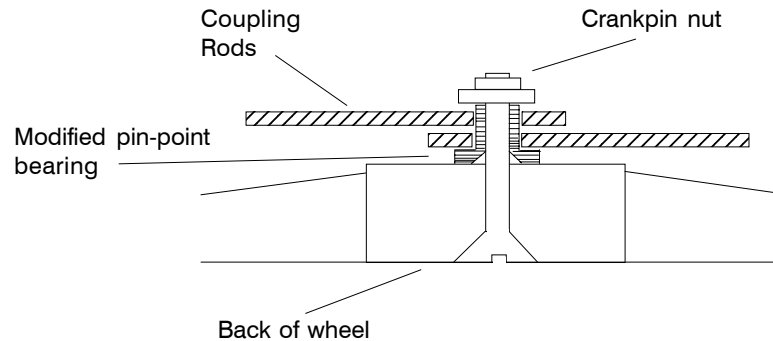
6. Fitting coupling rods

There are two options for coupling rods, either new Alan Gibson rods or adapt the Bachmann ones. This set of notes opts for using the originals even though they are made for 2.0mm diameter crank pins. This is not a problem as flanged pin point bearings can be modified. When drilled right through 1.0mm and then filed down the coupling rods are an easy fit when held between the fixing nut and the flange. The bushes are held, for filing, by using a spare coupling rod left over from a previous conversion. However, if the modeller does not have such spare rods, then any scrap piece of metal with a 2mm drilled hole to hold the bearing will suffice. Do not forget to make longer bushes for the centre wheels as the two coupling rod parts are fitted on these pins. The bearing flange goes against the wheel face and provides clearance between the coupling rods and the wheels. See Fig. 4.

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Fig. 4



If new rods are to be used these will need to be assembled and fitted in accordance with the manufacturers instructions.

To give clearance for the increased width overall of the wheels it is necessary to scrape some material from the inside of the plastic brake rigging and the inside of the rear steps and the adjacent drain pipe may also need to be trimmed in order to clear the connecting rod pin on the rear wheels. The underside of the keeper plate may need to be filed flush as it has been found that parts of it can foul the track. This is probably due to the scale wheels being slightly smaller than the originals or may also be due to slight wear in the axle bearings.

7. Re-assembly

The centre axle should be assembled first with the gear wheel on the left when viewed from the top and with the crank pin on the right hand wheel leading by 90 degrees. The front set of wheels should then be coupled up and the quartering checked to give smooth running, any adjustment being made by twisting the front set of wheels. When satisfactory, remove the coupling rods. The rear set of wheels should then be coupled up to the centre wheels and the quartering checked again. When this rear pair run satisfactorily fit the front wheels and coupling rods, making sure that the rods are the correct way up with the lubricators on top. Then secure the nuts with Loctite and file the coupling pin flush. The keeper plate can then be fitted so that a trial run can be made.

8. Detailing and other work

It may be awkward to fit three link couplings couplings as the fixing screws for the keeper plate are just where the coupling would normally be inserted through the buffer beam.

Other work on the body is a matter of individual choice as to how detailed you want the locomotive. Wire handrails and an etched number plate are not too difficult to add.

Photo 1.

