

Metal Chopper Coupling Instructions

Zamzoodled
.co.uk

Finescale 7mm Narrow Gauge

CCJC (J-C)



CCSQ (Square)



CCRN (Round)



Important Notes

1. Please read these instructions fully before starting work, and especially the **Fitting Notes** below..
2. These are scale model parts not suitable for children, which require careful preparation and setting up to work reliably. It is assumed the modeller will be reasonably skilled in filing, drilling, soldering etc.
3. All parts and castings should be checked **before** starting any work. With the castings some distortion, visible parting lines and blocked holes, are to be expected and can be corrected in the preparation stage. If you feel any parts are not to an acceptable standard then please contact Zamzoodled to discuss a resolution. Zamzoodled cannot accept any responsibility if work has already been started on the parts.
4. All couplers have a chopper at one end only which means the rolling stock needs to face the same way round. This matches common prototype practice. However, choppers can be raised up out of the way and will couple with another coupler+chopper, i.e. you can have a chopper at both ends, but this will preclude the use of iron tails/electromagnetic operation on such couplings.

Contents and Materials

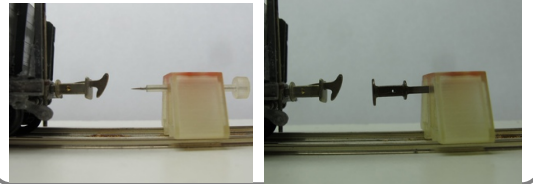
The couplers usually come in packs of 4 (i.e. enough for 4 locos, wagons etc.) with brass pins for the chopper pivot and soft iron wire to make the iron tails for electromagnetic operation. The CCJC Jones-Calthrop Couplers contain extra pins to enable representation of the drawgear tightening handle. MDPP Detailed Pivot Pins (separately available) can be used instead of the supplied pins for extra realism.

Note that fittings are supplied separately: CFLB Coupler Bases or CFFF/CFTF Flexible Fixings (see Page 3)

The following tools and materials will be required:

- Small pliers - smooth faced
- Piercing saw with fine blade, e.g. 4-0 cut
- Needle files – the best you can get
- Fine abrasive paper, e.g. wet & dry 1000 grit or finer
- Small broaches and drills (0.5mm & 0.9mm)
- Soldering Iron, Solder (220°C tin/silver recommended) and suitable Flux or silver solder and torch if you have appropriate experience
- Metal cleaner (e.g. Cillit Bang) or suchlike
- Metal Black
- Thick Glue (e.g. Bostick All Purpose)

Zamzoodled also supply Height Gauges



Further details on these chopper couplings (including DCC operation) can be found in issues 86 & 87 of the Narrow Gauge and Industrial Railway Modelling Review:

<http://www.narrowgaugeandindustrial.com/>

Videos of these couplers in operation can be seen on the O14 Group website:

<http://www.o14group.org/>

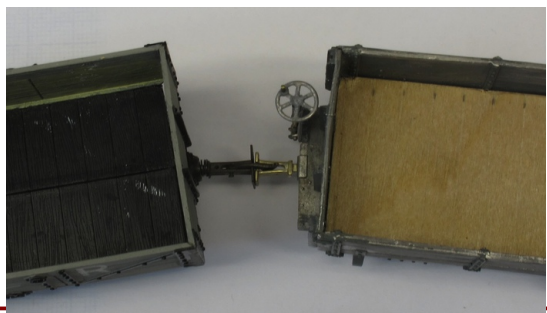


Fitting Notes

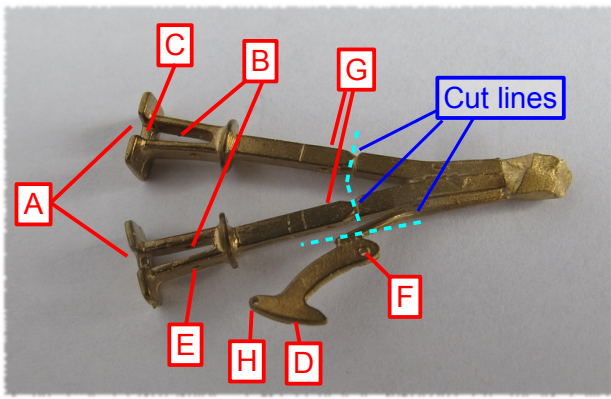
There are several different fitting methods outlined on Pages 3 and 4 and you should choose the most appropriate for each piece of rolling stock. Other variations are of course possible.

Note that reliable operation can only be achieved by:

1. Ensuring the couplings are fitted so they can easily flex sideways and, to a lesser extent, up and down. **THIS REALLY IS IMPORTANT**
2. Accurate fitting both centrally and to a common height – Note that Zamzoodled supply height gauges for this purpose.
3. Ensuring the chopper, buffer faces and slots are smooth and the chopper can rise and fall freely.
4. Planning your layout carefully. Coupling may work on gentle curves, but only if the chopper can reliably engage in the slot, whereas uncoupling will only work reliably on straight track.

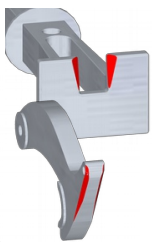
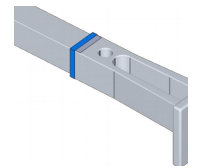


Coupling Preparation

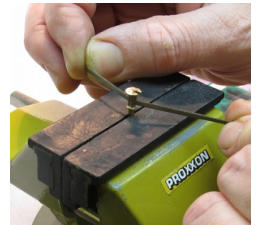


Preparation

1. Please check the castings carefully before removing them from the sprue – see **Important Notes on Page 1**
2. Carefully cut the couplers and chopper from the sprue at the places marked on the diagram using a piercing saw and fine blade.
3. Carefully correct any distortion – use smooth faced pliers.
4. Open the horizontal pivot holes (E) if required with a 0.5mm drill ensuring the hole is horizontal and at 90°, then open up using a broach a bit at a time until it will just take the pivot pin (*supplied brass pin or MDPP*).
5. Open up the pivot hole in the chopper (F) in the same manner.
6. If you intend to use springs for fitting then drill 0.9mm if required and open up the horizontal holes (G) to take the securing wire. If you are NOT using springs you may want to file off the bases as shown right
7. Carefully clean up any parting lines, flash etc. with fine needle files and polish with fine abrasive paper paying attention to the following :



- Ensure the buffer faces and upper slots (A) are polished smooth. Operation can be helped by very slightly rounding the outer facing edges and top corners of the slot (*as shown left*).
- Ensure the large vertical slots (B) are clear and polished smooth. This is best done by clamping the shaft in a vice and using a small strip (50mm x 6mm) of abrasive paper folded back on itself. Do not destroy the slight backwards facing lip that exists at the bottom of the chopper slot (C)
- Ensure the sides and edges of the chopper are polished smooth especially the front face (D). On CCJC try to preserve the cosmetic reinforcing strip under the hook. Operation can be helped by forming a slight V towards the tip (*as shown left*).



8. Temporarily fix the chopper with the pivot pin. Clean, smooth and open up the holes as required so the chopper freely rotates on the pivot, but without being sloppy. Cut the pin to length, it should protrude slightly. Note the real thing would have had a split/ cotter pin. Remove them both and keep safe.

CCJC

The chopper should be fixed to the plain coupling, i.e. the one without draw-gear.

CCSQ & CCRN

The chopper should be fixed to the coupling which has two small notches on the coupler shaft (the other has just one notch).

Optional for manual magnetic uncoupling

9. Open up the hole in the chopper tip (H) using a drill/broach and insert a tiny length of soft iron wire*. This can either be soldered in place and snipped/filed flat. Alternatively form the wire into a small loop over the back of the chopper – this is slightly more obvious but makes it easier for the magnet to grip. (* supplied)

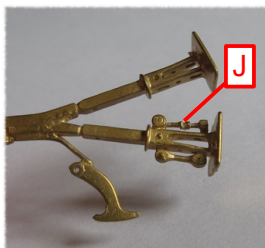


Optional for electro-magnetic uncoupling

10. Carefully clean up the small V slot in the chopper base with a piercing saw or fine file ready for soldering. An alternative approach suggested by Julian S. is to cut a fine vertical slot just ahead of the pivot hole. Solder a short length (about 11mm) of soft iron wire* onto the chopper base and form to the the shape shown (silver solder will give a stronger joint but this should only be attempted if you have appropriate experience). Clean up and polish. Ensure the pivot hole is clear and check it is still free to pivot in the coupler slot. (* supplied)



Chopper and tail shown approximately full size



CCJC only

11. Clean the hole in the coupler drawer gear (J) using a drill bit - **don't drill through**.
12. Thin the head of the brass lace pin* (best done in a drill), cut to 5mm in length and solder into the hole as shown. (* supplied)



TIP Make up a reference pair of couplers that reliably couple with each other and always use these to test all other couplers.

13. Check the pair of couplers will couple together (and preferably with a reference pair) and carefully fettle the face, slot and chopper as required.
14. Now clean all parts using your favourite cleaning potion and then blacken as required. Note painting is NOT recommended for operational couplings.

The couplings are now ready for fitting (see over)

Metal Coupler Fitting

With Zamzoodled parts

See also Page 4

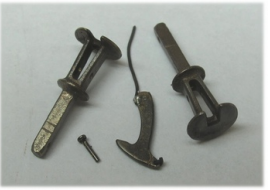
CCJC



CCSQ



CCRN

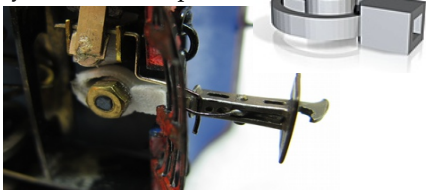


See Fitting Notes on Page 1
Please Note Fittings are not included in the coupler packs

See also Page 4

(A) Assembly with CFFF/CFTF* Flexible Fixings

This method requires a 2mm x 5mm (or wider) slot in the exact centre of the buffer beam at the correct height and an internal mounting point which can take a screw (such as often provided for US style knuckle couplers).



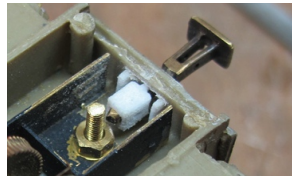
- (CFTF only) File the top&bottom of the coupler shaft so it will fit in the pocket.
- Carefully cut the fixings from the sprue and ensure the square hole is clean.
- Temporarily fit the flexible fixing with a screw or bolt and check the centre square pocket is at the correct height. A Zamzoodled height gauge can assist with this. Note the fixing boss is offset so it can be inverted to raise or lower the height. If this is not sufficient then pack or trim as required.
- Place the coupler over the fixing so the buffer face is the correct distance away from the buffer beam and mark the shaft at the edge of the square pocket closest to the fixing hole.
- Cut the shaft where marked (from 4 above) and clean up any rough edges.
- Ensuring the coupler is the right way up, push the shaft into the square pocket so the end of the shaft is at the edge of the square pocket and remains clear of the boss. It may help to insert a small screwdriver blade into the gap whilst pushing. Add a small drop of superglue to the joint if the shaft seems loose.
- Now permanently fix the fitting with a 10BA bolt/2mm self tapping screw (5-6mm long) and washer (notsupplied) ensuring it is central and 90° to the buffer beam. It should clamp the central boss tightly enough so it cannot move.
- If visible, the flexible fixings can be easily coloured with a permanent marker which is less likely to affect the mechanisms than paint.

Now go to Finishing
(*available separately)

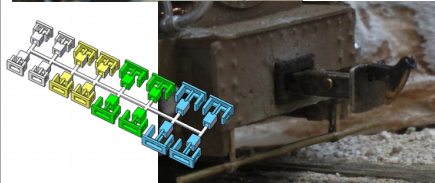
(B) Assembly with CFPA Coupler Pockets*

This method requires a slot in the exact centre of the buffer beam at the correct height. A Zamzoodled height gauge can assist with the marking out of this. Note there are four different sizes of pocket on each sprue (each with 4 items) to fit the following slot sizes (in mm):

Width	5.0	6.0	7.5	8.0
Height	3.5	3.5	3.5	3.5
Depth	6.0	6.0	7.0	9.0



Note the production versions are made in a black flexible plastic



- Carefully cut the selected fixing from the sprue and ensure the square hole for the coupler shaft is clean.
- Push the shaft into the square pocket so the end of the shaft is at the edge of the square pocket. It may help to press the end against a hard surface whilst pushing. Add a small drop of superglue to the joint if the shaft seems loose.
- Carefully offer up the pocket + coupler to the prepared slot in the buffer beam to see if:
 - it fits
 - it is the correct height +
 - it is exactly central +
(* check with height gauge)
- Carefully open up the top or bottom or sides of the slot as required.
- Note you may want to leave this stage until after painting
- Carefully fit the assembled coupler into the slot and fix in place with a tiny drop of epoxy at the sides – preferably added from the back.

Now go to Finishing
(*available separately)

(C) Assembly with CFLB Coupler Bases*

This method requires a 5.5mm diameter hole in the exact centre of the buffer beam at the correct height. A Zamzoodled height gauge can assist with the marking out of this.



*note pack contains springs and washers



- Carefully unpack and separate the springs so you don't distort or lose them (note they tend to hide inside each other)
- Carefully remove each base from the sprue and clean up with needle files, ensuring the coupler shaft can freely move in the central square hole, then blacken as required.
- Fix the coupler base in the buffer beam hole with the bolt side facing outwards with an appropriate glue. If using metal bases these can be soldered if the buffer beam is also metal.
- Ensure the coupler shaft can be inserted freely in the square hole and is able to flex from side to side. Open out with a small square file if required.
- Add a spring onto the coupler shaft and then insert into the square hole ensuring the coupler is upright.
- Add another spring on the inside of the base, followed by a washer and finally a small piece of wire (as left over from the pivot pin) to hold this in place.
- Add a small dab of general purpose glue to the wire to stop it working loose.

Now go to Finishing
(*available separately)

Coupler Fitting

Other Suggested Methods

CCJC



CCSQ



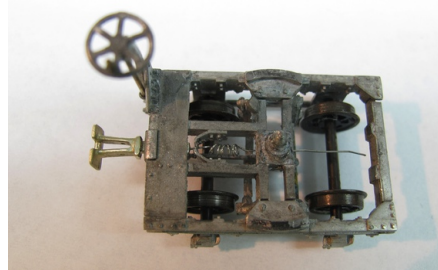
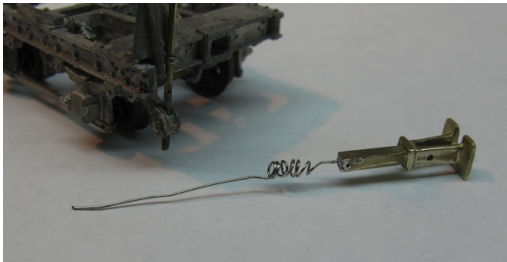
CCRN



See Fitting Notes on Page 1
Please Note Fittings are not included in the coupler packs

(D) Assembly with flexible wire*

This method is most appropriate when there is no room for a coupler base or internal fixing. It will need a slot in the buffer beam into which the coupler shaft can fit loosely and some suitable flexible wire*, e.g. 11 gauge guitar wire. This can either be left straight or a spring formed as shown below.



1. Identify a suitable internal fixing place for the wire. This should be at least 10mm in from the buffer beam.
2. Cut the coupler shaft to an appropriate length
3. Cut a fine slot about 4mm long in the end of the shaft to take the piece of wire (this is easier to do than drill a hole).
4. Solder the wire to the end of the coupler - 220°C tin/silver solder is recommended.
5. Feed the wire through the buffer slot and fix to the internal mounting point using solder or glue as appropriate.

Now go to *Finishing*
(*not supplied)

Whatever method you choose (and by all means make up your own) please do not fix them rigidly as they will not operate reliably.

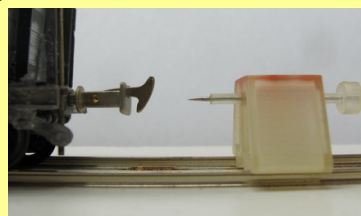
From Page 3

Finishing

1. Now permanently fit the chopper with pivot pin ensuring can still rise and fall freely and then secure with a tiny blob of glue on the outside ensuring it doesn't bung up the chopper operation.
2. Finally ensure the iron tail is aligned correctly (if using).

The couplers should now be ready for use

Assuming the couplers have been correctly prepared, polished, and fitted centrally at the correct height then they should couple and uncouple reliably at least on straight track, however if you do encounter stiction type problems then try rubbing the chopper and buffer slots with graphite such as a 6B pencil.



A height gauge will provide a common reference to ensure all your couplers are correctly centred and at the right height, which is the key to reliable operation. Zamzoodled gauges have a gauging pin and shaft but can also take a standard coupler (best prepared for the purpose).