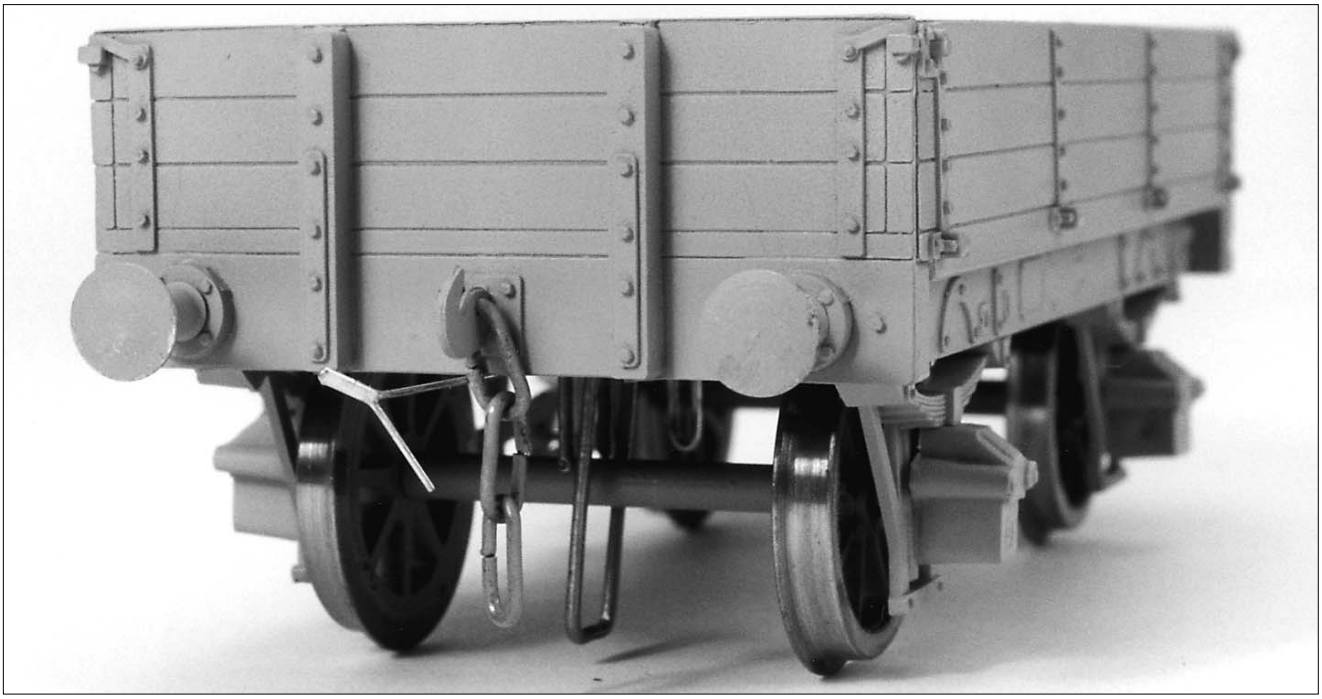
Compiled by Bob Alderman

The Alex Jackson Auto Coupler

Supplier - There is no commercial supplier for this coupling. It is a 100% do-it-yourself installation. Details can be found from the Manchester Model Railway Society or as listed below in Other Comments.



Description: A cantilevered wire hook of established geometry that interacts with an identical hook on the opposite vehicle

Method of operation: The hook geometry is such that when stock is brought together the lower part of one hook over-rides the other establishing the link between the vehicles.

Uncoupling is carried out by a vertical displacement of the hook. This disengages the hooks and on return to the nominal position the hook has relocated to the opposite side of the hook shank. Stock can then be propelled to a position remote from the uncoupler.

Uncoupling device: Early published details showed the hooks lifted by a ramp. Subsequent recent developments have allowed magnetic uncoupling. For this system electromagnets are recommended.

Modifications to stock: The modifications required to fit the coupling vary considerably from vehicle to vehicle depending on underframe detail.

Generally provision has to be made to locate the fixed end of the coupling to the vehicle and provide some lateral location of the hook shank.

Fitting common to all stock?: The hook is common to all stock. It is not necessary to have a hook capable of displacement on a locomotive.

Compatibility with scale couplings: As originally proposed for 7mm use the hook was not compatible with scale couplings. The subsequent developments with magnetic uncoupling do allow its use with basic 3 link, but screw link couplings can impair operation.

Minimum recommended operating radius: 4 feet. Smaller radii can be used but will increase the overhang of the hook from the vehicle. This will be limited to the appearance of the gap between vehicles. Buffer locking will be a limiting factor to track geometry.

Instructions: The geometry of the hook has been published in several sources. The initial references were published by Manchester Model Railway Society where it was originated by the late Alex Jackson in 1949.

It has subsequently appeared in several issues of the "Model Railway Handbook" published by Percival Marshall, and most recently in "The Model Railway Journal" issues 55 & 56 and "7mm Modelling Part One, An Introduction" by Gordan Gravett, pub. by Wild Swan.

Other Comments: NB. Different sources quote some differing dimensions. With the magnetic uncoupling developments the wire diameter has been reduced from 24SWG to 28SWG and its cantilever length amended to suit.

Alex Jackson Coupling

This coupling was invented and developed by Alex Jackson, a member of Manchester Model Railway Society, in the early 1950s. It has become widely known and used in most scales. This data sheet gives an outline of its main features and details of its manufacture for 7mm scale.

Figure 1 gives a coupling hook's dimensions and angles. The hook-bending jig, Figure 2, is an aid to correctly bending the hook. The sequence of bending is given in Figure 3. 24s.w.g.(0.022in.) spring steel wire was originally recommended, which needs a length of coupling of about 100 or 110 mm for adequate flexibility. Some modellers are now using 0.018in. diameter plain steel guitar strings, for which the cantilever spring length reduces to 85 to 90 mm.

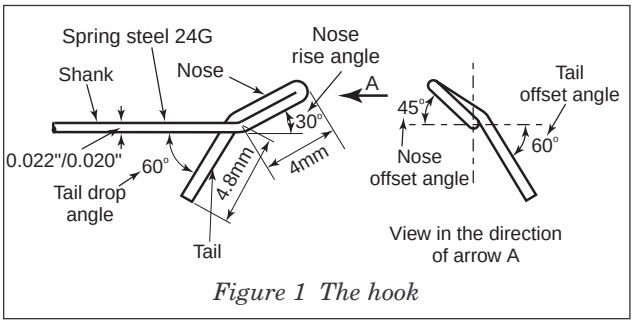


Figure 1 The hook

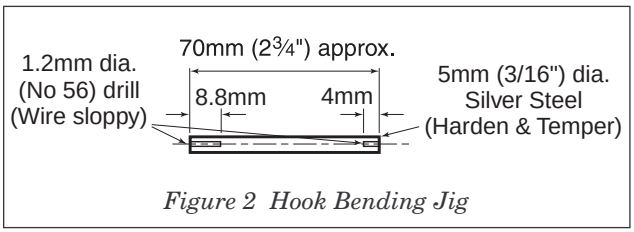


Figure 2 Hook Bending Jig

Coupling is achieved merely by pushing vehicles together until the adjacent hooks meet and interlock. Uncoupling is by drawing down one hook of a coupled pair while the vehicles are being pushed, i.e., with the coupling slack, using an electromagnet below the track. Once uncoupled, the vehicles can continue to be pushed, then separated further along the track. Figures 4 and 5 show the coupling and uncoupling action. One electromagnet will serve a fan of sidings, see Figure 6.

An armature or dropper, made from 2mm dia, soft iron and soldered to the shank of the coupling, allows the electromagnet to pull down the hook for uncoupling, as shown in Figure 7. An alternative form of dropper can be made from 0.9mm nominal diameter soft iron wire as sold by florists. These are "U" shaped, hung loosely from the coupling wire and located by the axle (Figure 8). The electromagnet (Figure 9) may be wound on a soft iron core (perhaps a cut-down large nail), with about 5000 turns of 32 or 34 SWG enamelled wire, giving about 100 ohms

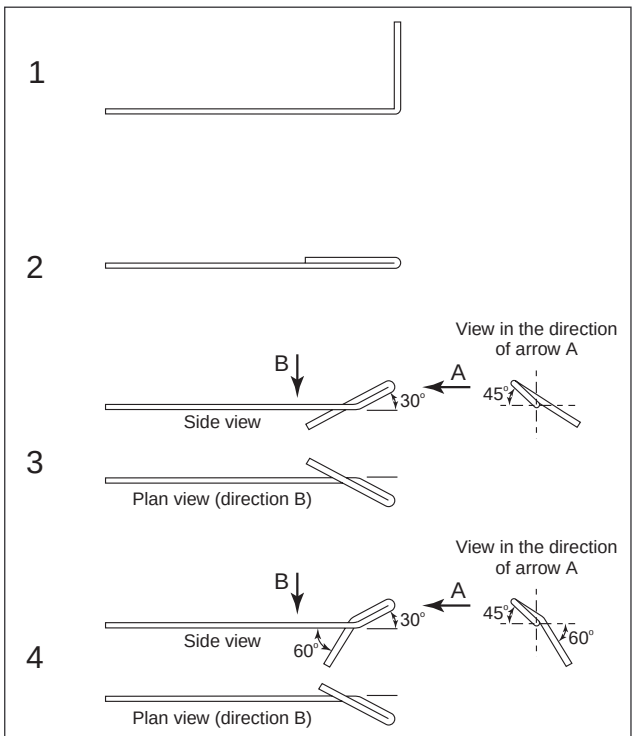


Figure 3 Bending the Hook

resistance, energised at 12 volts. The SEEP electro magnet Type EM/1 can be used successfully, either on the standard 12v DC or on 24v DC which makes the distance to the dropper less critical but may limit the life of the electro-magnet.

The coupling should be set at a shank height of 17.5mm above rail level. It is important to set hooks

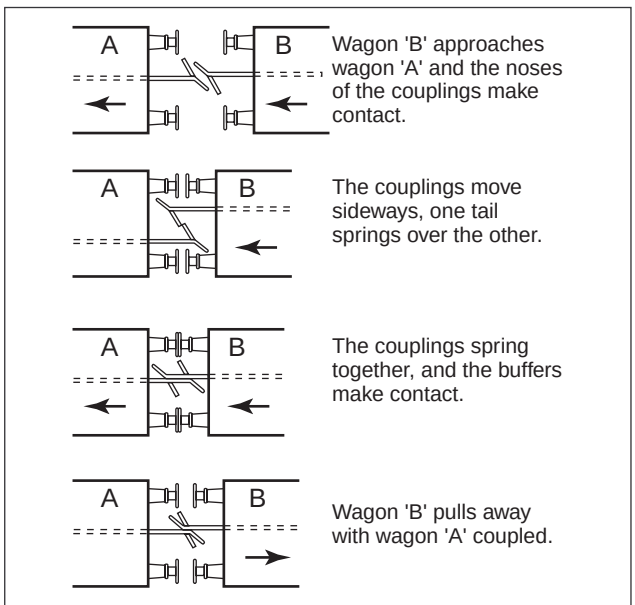


Figure 4 Coupling

Redrafted from Manchester Model Railway Society sources, whose permission to do this is gratefully acknowledged.

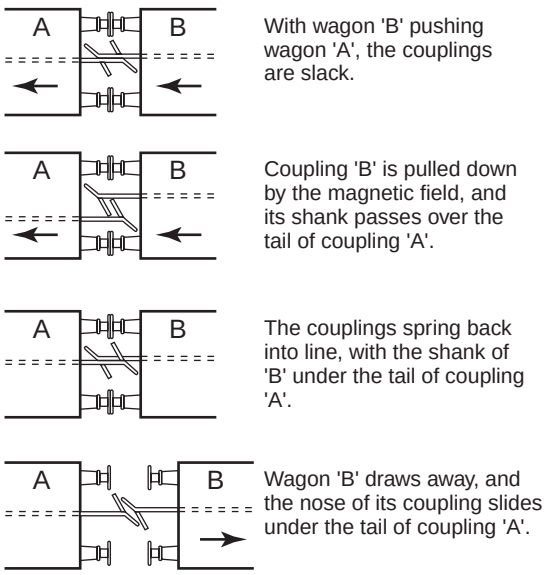


Figure 5 Uncoupling

against a master gauge at all times. To be tempted to adjust one hook against another is not wise. Couplings on locomotives may be non-operational hooks if space is limited, uncoupling then being achieved from the adjacent vehicle. However, as this gives rise to problems of uncoupling double headed locomotives, operating couplings are always to be preferred, where space permits.

Curves of very sharp radius can inhibit successful operation by preventing hooks interlocking when coupling, also by creating a turning moment about the vehicle's vertical axis on four-wheel vehicles because of the offset of the couplings. Curves of four foot radius or more are unlikely to be troublesome in this respect.

The principal advantages of this coupling are:

A. It is unobtrusive.

B. It is quiet in operation and very mysterious to the onlooker.

C. It is reliable if properly made.

D. It is extraordinarily cheap.

E. Couplings are identical at each end of the vehicle, so that turning a vehicle end to end does not affect performance.

F. No modification of headstocks or attachment to buffers is necessary.

G. The pull for uncoupling, being downwards, ensures that the vehicle is kept upon the track.

H. The electromagnet may be energised, by a push button on the control panel before a vehicle reaches it, with the certainty that it will uncouple as the vehicle passes through the magnetic field.

I. Uncoupling while moving, with the locomotive pushing and the buffers under compression with the coupling slack, is positive and the magnet will operate only one coupling at a time.

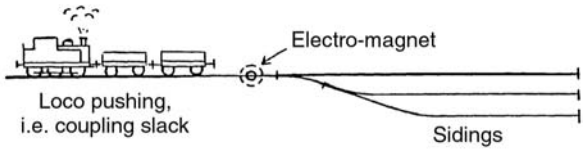


Figure 6 Position of uncoupler

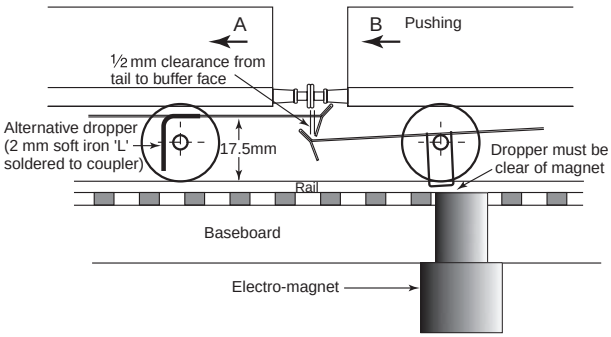


Figure 7 Uncoupling with electromagnet

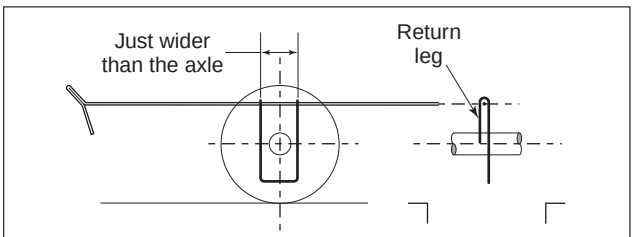


Figure 8 The alternative dropper

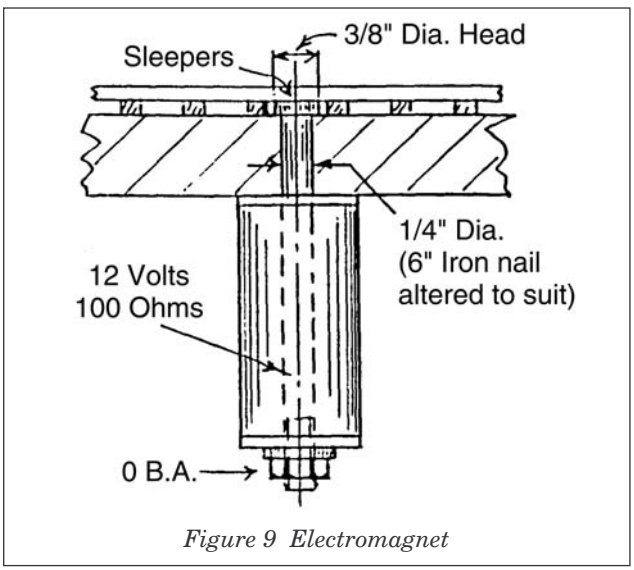


Figure 9 Electromagnet

J. Only one magnet is required per fan of sidings.

K. After being uncoupled at the magnet location, vehicles may be parted and left at any further position on the layout. This allows realistic shunting to take place.