

Turnout Operating Unit Mk 2

Brooksmith award winning design 1983

Please Note : The instructions were obviously written many decades ago and through decades of photocopying all that survives is a copy with some omissions in the text (especially in the sketches) and poor quality images.

The diagrams/sketches have been redrawn and where possible any missing text has been guessed!

The package contains :

- A brass etching of the essential ground connection components necessary to make up a number of turnout operating units.
- Brass wire for detector rods and a drive rod.
- Copper laminate for insulating the stretcher bar which is part of A on the etching.
- A piece of Teflon sheeting etched on one side (brown) for glueing with contact adhesive to a point sleeper.

Concepts

Some of you have already experienced the music wire and Teflon turnout operating units that have been available since 1980.

As a result when the Scaleforum News No. 36 of March 1983 asked for entries for an award on ground connections, some earlier ideas were brought to fruition, leading to the development of the Mark 2 TOU. This issue of the News also contains a good drawing of a ground connection and is a useful reference for nomenclature and is included in these instructions.

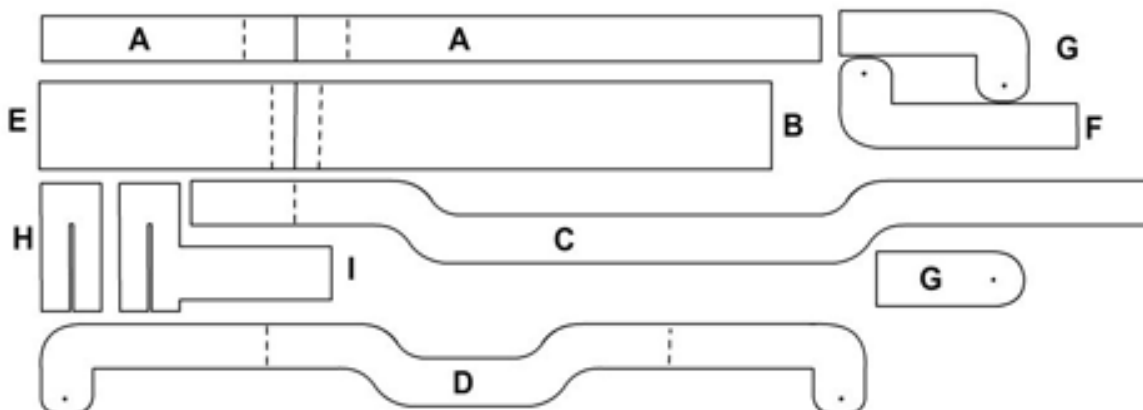
The parts allow you to

- install and operate on top of the table
- construct various versions and configurations
- operate in a prototype fashion including the possibility of interlocking and detection.

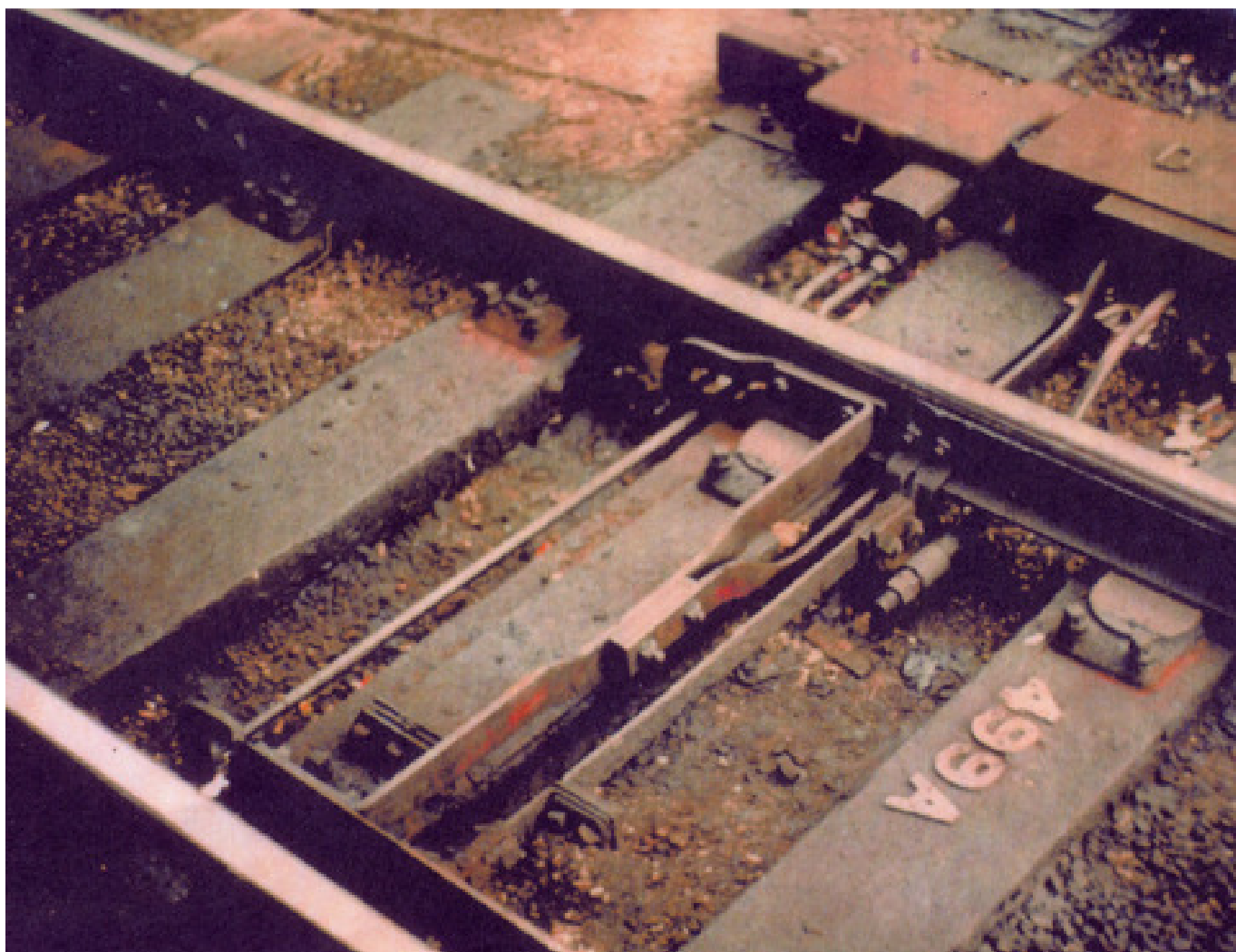
The Key component that made the concept possible was the insulating copper laminate. The core of this laminate is a high tech adhesive that can stand the high temperatures of soldering and is mechanically strong. Indeed this laminate is that magic material, a solderable insulator. This laminate allows the stretcher bar to operate scale points without short circuiting the rails. Other components are electrically isolated by space (base plate – part B) or by a thick application of glue (lock stretcher – part C).

Practice

The outline of the brass etching is shown below as an aid to the identification of the parts by letter.



There follows, on a separate page, sketches of the main components and how they are to be individually assembled. The photograph below (apologies for the quality) will give you an idea of one version which seems to be common in the North Eastern Region.



More southerly regions like to put some curvature in the stretcher bar at the location where the two parts are bolted together.

If the lock plate is to be placed on the same side of the sleeper as the detector rods then the reversed version is used. See the notes on the sketches for details on how to do this.

The Teflon is cut by hand to act as sliders/pads on the base plate. Alan Gibson slide chairs may be used on the base plate (and elsewhere of course) but they have not yet been tested with these components.

Assembly

Starting from a turn out of your choice, remove material from the road bed on either side of the sleeper on which the tips of the point blades rest. Depth to clear components. Re-gunge with black paint. Remove that sleeper if already installed.

Base Plate.

This is assembled in advance as one unit on a wide sleeper. The length of the sleeper will be determined by the application and can extend over to the driving mechanism. This sleeper replaces the one under the

blade tips. Again, observation of the prototype will give you some ideas. The sleepers on either side to this one may also be extended. These sleepers may be pinned or glued to the track base.

Stretcher Bar.

Cut the copper laminate slightly oversize and tin both sides. Place the longer piece of part **A** into a small vice and sweat the laminate to the upturned end.

Holding the shorter piece of part **A** in some pliers or equivalent, present it to the other side of the laminate and solder. Small tweezers can then be used for final alignment once the initial soldering of both parts is completed by heating the assembly at the laminate. Once the parts are aligned to your satisfaction the laminate may be trimmed and filed to size. Again, check for burrs and solder that may short circuit the two parts of **A**.

Lugs **I** and **H** are bent and soldered in place with the spacing appropriate for the blade separation. These are then soldered to the inside of the blade tips. Different melting point solder would be helpful here.

For connecting the drive, bend the side piece of driving lug **I** around a piece of the brass wire provided.

The brass wire can be installed as a loose fit if you want some sliding motion as in the prototype.

Blobs of solder or scraps of brass wire can be wrapped about this drive to act as thrusting or pulling plates.

The same procedure may be followed for the alternate version using the laminate as a driving lug. See Note 1 on the sketch for detailed instruction.

Lock Stretcher with Extension Pieces.

Decide, first of all, whether you will use the usual form or what was described as the reversed or shortened version. Then also decide which side of the track the drive mechanism will be attached as this decides the direction of the locking bar itself, the direction of its end fold and the way that the end pieces of **D** are bent (or attached when reversed). As the sketch indicates, the longer extensions of **D** are on the side away from the drive mechanism.

Note that **G** may replace **C**. **C** (or **G**) is soldered to **D** and the two detectors made from the brass wire are soldered in place.

Then the short side of **D** is soldered to the inside of the point blade. The longer extension piece is attached to the opposite point blade with contact adhesive, preferably one that has a heavy consistency, as this piece must not touch the blade itself. It need only be held in place with the adhesive.

Check with a test meter that there is no electrical shorting between the blades because of these connections.

Drive Mechanisms

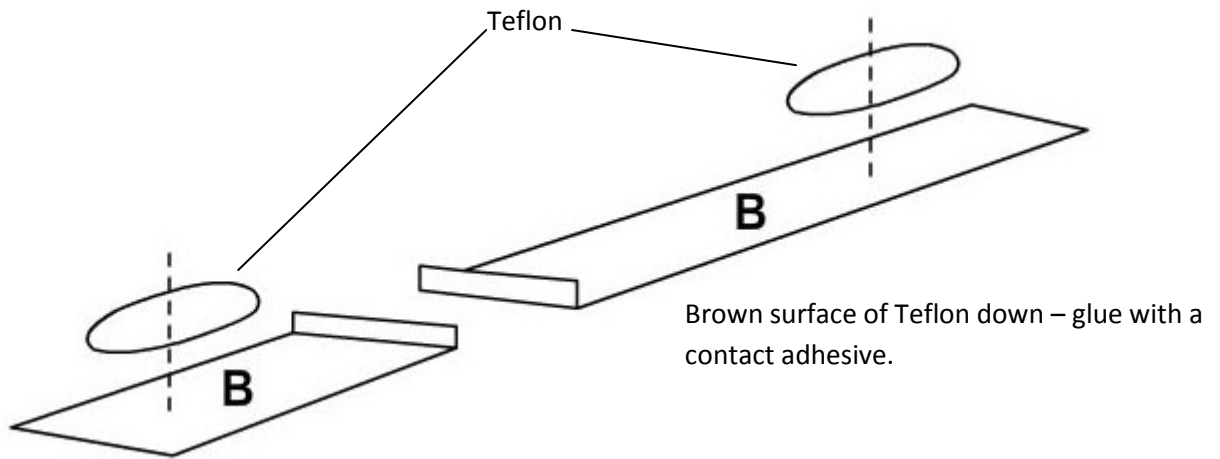
Other than the older direct mechanical point drives, there is nothing in scale on the market available to move the points. I would therefore recommend mocking up the drive unit and various detectors and interlocks out of wood, scrap brass or nickel silver and use this to cover a wire-in-cable drive or the solenoid operating mechanism of your choice.

I hope you enjoy using these ground connections as much as I enjoyed designing and developing them.

Roger Eaton

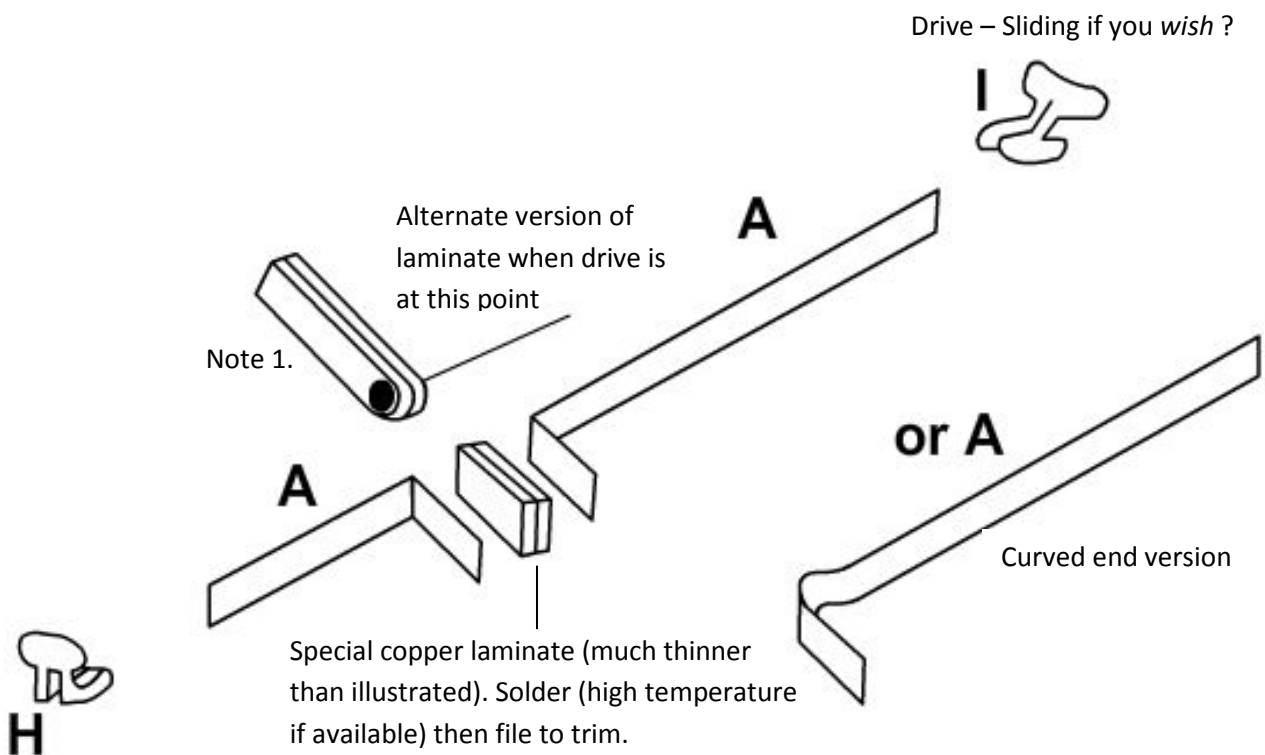
Sketches of Main Components

Base Plate



The base plate is to be glued onto an un-riveted wide sleeper. Teflon pads as shown. Do not allow the two sections of **B** to touch in order to avoid the possibility of shorting although the Teflon does help.

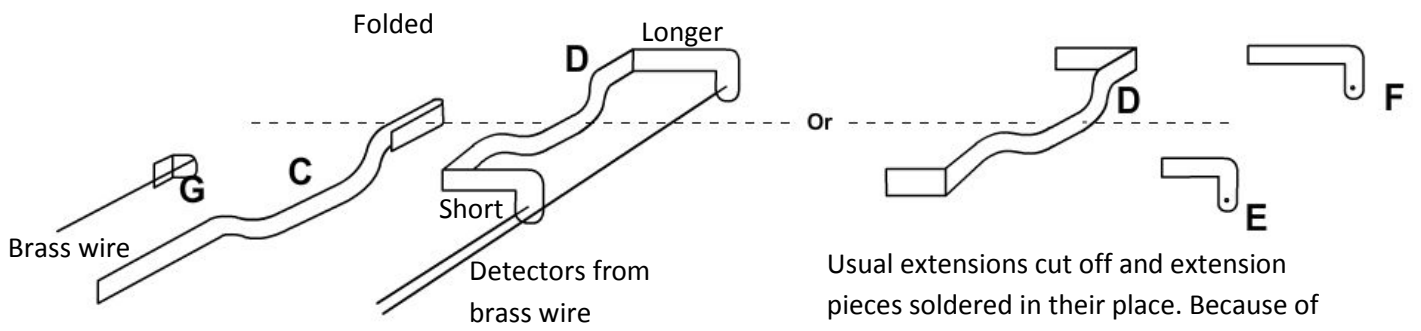
Stretchers Bars



Be careful that laminate is not bridged .
Use a magnifying glass and a scraper to clear burrs. Check with a test meter for electrical isolation.

Note 1. If laminate is used in extended form, ensure that driving rod does not short two sides of laminate by clearing the hole on one side and only soldered on the other.

Lock Stretcher with Extension Pieces



Usual extensions cut off and extension pieces soldered in their place. Because of the additional thickness of the extension pieces it may be necessary to decrease the separation of the ends of D

Nomenclature

