

TECHNICAL INSTRUCTION

TI 090
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NETWORK RAIL - SIGNAL ENGINEERING Installation of Train Operated Points

Relevant Standard: NR/GN/SIG/11772, NR/GN/SIG/11210

Purpose

This document details the method to be used for installing equipment associated with a Train Operated Point system on Network Rail infrastructure. Where only part of an existing system is being replaced, the relevant steps in this instruction can be used to supplement the information already provided in the SMTH or SIH.

Abbreviations & Definitions

BH – Bull Head
FB – Flat Bottom
TOP – Train Operated Point
SMTH – Signal Maintenance Testing Handbook
SIH – Signalling Installation Handbook

Installation Methodology

Drawing BRS-SM 696 shows the general arrangement for a Train Operated Point on 113lb FB rail. For installation on 95lb BH rail, deviations from the arrangement shown are highlighted in boxes.

The following is a logical series of steps that enables the installation to be realised efficiently. The instruction assumes that suitable timber bearers and a sole plate are in place before installation commences.

STEP 1: Switch Rail Assemblies

- 1.1 Scotch open both switch rails to allow the insertion of bolts.
- 1.2 Assemble the two guard assemblies as per **BRS-SM 697**.
- 1.3 Fit one guard assembly and other rail mounted components to the switch rail on the accumulator (normally closed) side of the point as shown in the sectional drawing entitled "Guard Assembly Mounting Detail on Accumulator Side" on standard drawing **BRS-SM 696**.
- 1.4 Fit the other guard assembly and rail mounted components to the switch rail on the hand pump (normally open) side of the point as shown in the sectional drawing entitled "Guard Assembly Mounting Detail on Hand Pump Side" on standard drawing **BRS-SM 696**.
- 1.5 Tighten the self locking $\frac{3}{4}$ " BSW Philidas Turret nuts (or equivalent – see Notice Board 81) to a torque setting of 250Nm.

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For installations on 95lb BH switch rails, the following deviations from the arrangement shown in BRS-SM 696 are required to ensure that the rail mounted components are fitted parallel to the soleplate and that the Accumulator actuator meets the guard bracket at right angles:

Part BRS-SM 325/2 (Bolt Retaining Plate) replaced with BRS-SM 325/1.

Additional component BRS-SM 324/2 (Alignment Plate) to be placed between switch rail and switch extension piece (BRS-SM 696/1or2).

The arrangement is similar to that shown for mounting FPL stretcher bars in Figure 3 of **BRS-SM 322**.

STEP 2: Stretcher Bars

Refer to **NR/GN/SIG/11772** and **TI70** for further guidance on the correct positioning and set up of stretcher bars.

- 2.1 Affix stretcher bar brackets to switch rails in the position of the first stretcher (1st sleeper bed).
- 2.2 Remove the scotch from the normally closed switch opening, move the switch rail to the closed position and clip securely to the stock rail.
- 2.3 Adjust the scotch in the open switch to achieve a gap of between **102mm and 120mm** (ideally 108mm) between the switch and stock rail at the toe of the points.
- 2.4 Offer up the first stretcher bar and clamp it in position.
- 2.5 Mark the position of the fixing holes with a scribe.
- 2.6 Drill 21mm ($\frac{53}{64}$ ") holes in the positions marked and fix the stretcher bar in place.
- 2.7 Remove all scotches and check that a point switch rail opening remains between 102mm and 120mm (as per SMS Part Z02). If the opening is outside of this range, then the stretcher bar must be removed and a new one fitted, starting again from step 2.3.
- 2.8 Scotch open both switch rails and repeat steps 2.1 to 2.7 for all other stretcher bars, ensuring that a free wheel clearance of at least **50mm** is maintained throughout the length of the open switch. Refer to **NR/GN/SIG/11772** for guidance on the number of stretcher bars required, their position and set-up tolerances.
- 2.9 Affix a drive lug for backdrive pick up to the first and last stretchers.

STEP 3: Hydraulic Units

Continuing from Step 2, with the point clipped in the "Normal" position:

- 3.1 Assemble the Retention Fixture as shown in **BRS-SM 699**, fixing the Bracket (BRS-SM 699/3) to the Accumulator (URL cat. no.: 0086/032650) housing and the Carrier (BRS-SM 699/1) to the Accumulator actuator. Wind back the M20 nut until the actuator is compressed by **20mm**.
- 3.2 Place the Accumulator Unit centrally on the soleplate such that the end of the actuator rests on the normally closed switch rail guard bracket (BRS-SM 697/1).
- 3.3 Similarly, place the Hand Pump Unit (URL cat. no.: 0086/032655) such that it's actuator rests on the normally open switch rail guard bracket. **To ensure the pump has sufficient travel to move the points fully to the reverse position, the Hand Pump Actuator should be full compressed for this step.**
- 3.4 Using a scribe, mark the positions of the fixing holes for the 10mm Spirol pins and 20mm bolts or coach screws.
- 3.5 Remove both the Hand Pump and Accumulator Units and drill the holes in the soleplate and bearer as marked in step 3.4.
- 3.6 Fix the Hand Pump and Accumulator Units to the soleplate using 20mm bolts or coach screws. Drive in Spirol pins.



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