

## 00Fremo standards for modules in 00 gauge

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*Second 00Fremo meeting in Rendsburg in 2014. Source: Felix Möhring*

<https://www.fremo-net.eu/en/modular-systems/h0-scale/00fremo/>

# **1 General**

## **1.1 Topic**

Through this set of standards the recreation of single and double track lines in Great Britain in 00 gauge is aimed at. The timeframe is set from 1923 (Grouping) until today.

## **1.2 Operations**

The operational Focus is on prototypical operation procedures, especially in freight traffic. Shunting is desired, prototypical track plans are welcome. Playing with sense is to the fore and requires Point-to-Point layouts. With the help of wagon cards and waybills realistic traffic flows from sender to destination are depicted as well as prototypical Marshalling of trains in dependence of the fitted brake equipment of the wagons. The timetable are composed having regards for the clock running faster and for the maximum of joy.

# **2 Module frames**

## **2.1 End profiles**

Due to practical reasons we use existing profiles of the H0-RE (H0 scale Regular gauge Europe) group. The following profiles are recommended:

### **2.1.1 Single Track, 500 mm width:**

H0-F96 Flat profile (30004)

### **2.1.2 Double Track, 546 mm width:**

H0-2E99 Level profile (30015) with a slight embankment

Lasered profiles can be obtained from Harald Brosch:

<http://www.modulbahner.de/numerisch/html/default.html>

The 5 digit numbers behind the profile mark is his order code.

Who likes better to saw or laser on it's own can find drawings in the H0-RE standards on the FREMO homepage after logging in.

On the outer ends of station areas in a broader sense (junctions, stations and Fiddle Yards) these profiles have to be used too, but can be greater in width. It is the builders task to

make it a good fit. Between sections of a station area being used as a single unit permanently the shape of the profile is not standardised.

The tracks must be exactly orthogonal to the module profile board.

## **2.2 Module geometry**

The module geometry (length, width) between the end profiles is open. Please mind the transportability: Modules longer than 1300 mm have proved to be unpractical with staircases.

## **2.3 Module height**

The height between floor and rail top is 1300 mm.

## **2.4 Module legs**

All modules with a length greater than 50 cm must have legs. The type is everyone's own choice. The legs may have a height alignment. At the bottom a cap made of felt or plastic is required for not to scratch hall floors. Just hex bolts are prohibited.

## **2.5 Module connectors**

The modules must be connected with wing bolts M8 x 70, wing nuts M8 and matching washers.

## **2.6 Livery of the module frame**

The sides of the module frames are to be liveried with RAL 8011 brown.

## **2.7 Numbering of modules**

Each module must be numbered with the owners name, for this the following code is to be used:

76 Module in 00 gauge

ABcd Name code of the owner, composed from the first letter of the first name and the first three letters of the surname

01 ongoing number

Examples:

Kevin Schartenhof – 76KSch01

Patrick Muenberg – 76PMue24

Tim Possard – 76TPos58

The ongoing number is only issued once because it may happen that modules change owners. E.g. if Tim hands his module 76TPos58 to Patrick, then the new module number will be 76PMue58. The numbers are issued from the module coordinator of 00Fremo.

## **3 Track**

### **3.1 Track material**

Code 75 and 83 have to be used, low profiles on which standard wheels can run. The trackage should be to a British prototype, especially the sleeper distance is to be extended if H0 gauge track is to be used for earlier eras. Attention should be paid to minimum point radii (see below).

So suitable track material is e.g.:

- Peco Streamline (Code 75, but the sleeper distance is too small),
- Tillig Elite (Code 83, the same applies, furthermore it is to an East german prototype),
- C+L Finescale or
- SMP.

Complete handbuilt track is possible too.

A 3rd rail to a Southern Region prototype can be added to the tracks. The side is not standardised because the prototype did not have a preferred side as well.

### **3.2 Minimum radii**

#### **3.2.1 Minimum requirements for Rolling Stock**

All stock has to safely negotiate an S curve with 914 mm radius being coupled to most other long wagons (Bogie Bolsters or similar) without buffer overriding. This is the radius of a Peco medium point.

Stock making trouble in operation is immediately removed from play.

### **3.2.2 Minimum requirements for Trackage**

In tracks on open line modules and in main station tracks the minimum radius must not fall below 1500 mm. This specifically applies to small curves with only a small angle too. Peco Large Radius Points are suitable for this. On curve modules their must not be a transition curve at the outer ends, but within straight sections on modules transition curves are desired.

In Fiddle Yards and on tracks that definitely are only used by short wagons no point with a radius smaller than 914 mm must be used. This is equivalent to the Peco Medium Radius Points.

Despite the requirements for rolling stock short straight sections should be placed between S curves. A minimum length of about 6 cm has proven suitable.

### **3.3 Track Separation**

On double track modules the track separation from centre to centre is 46 mm. The module centre line must be exactly in the middle between the two tracks so that modules with symmetrical end profiles can be turned if required.

### **3.4 Module Ends**

At the module ends the rails are blunt-ending, this especially means no fishplates. The track has to be at a right angle with the end profile. The rails never should extend over it, it is much better to have a gap of 0,25 mm. They need to be securely fastened either by soldering them to brass screws whose heads are adjusted to the smaller width of the rail or by screw-fishplates by Weinert (order number 74019).

On curve modules transition curves are not favoured to retain the possibility to form larger curves out of multiple small ones.

## **4 Wiring**

### **4.1 Digital System**

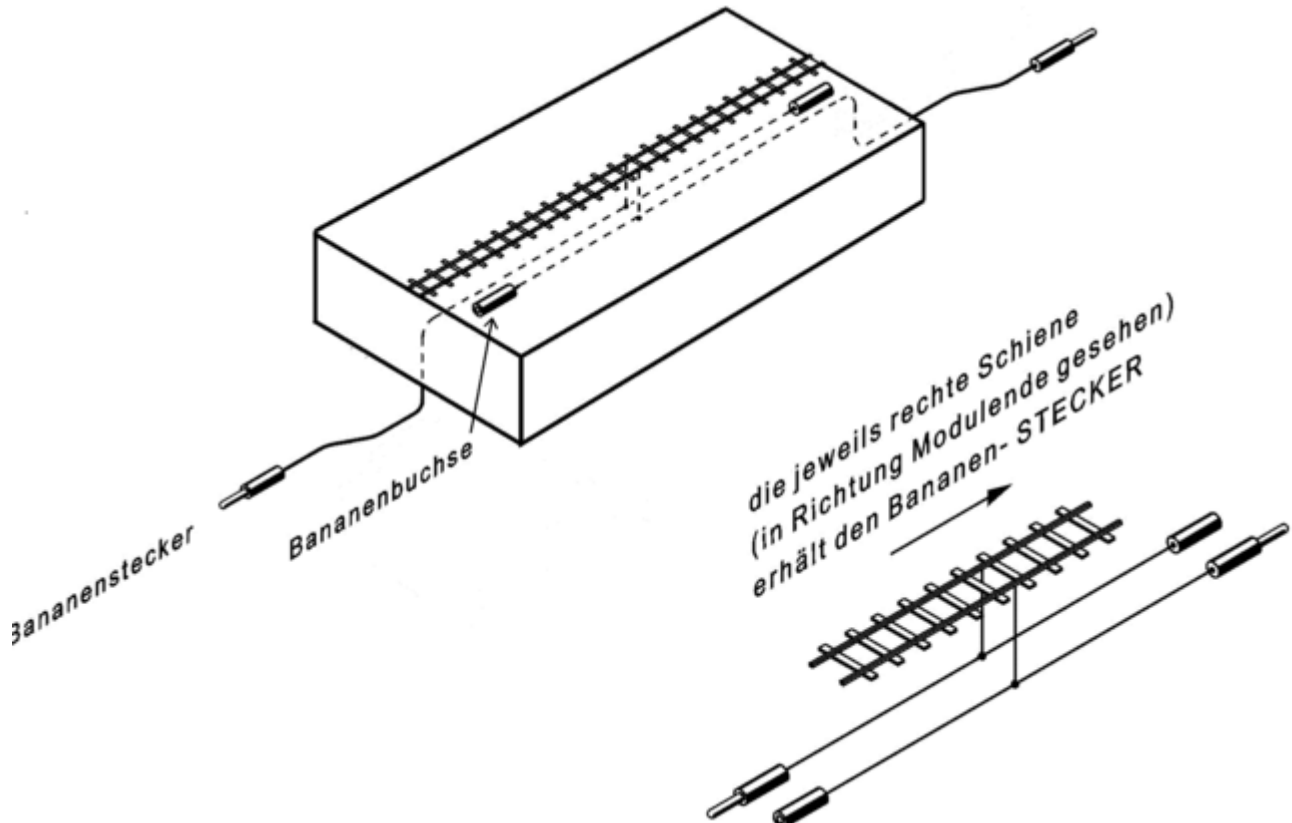
Control is via DCC with Loconet.

Four digit loco adresses have to be used. The administration of DCC addresses is centralised to avoid duplication. For FREMO-members there is a list in the fremo-net.

Each module has to have two 1,5 mm through wires, one red, the other blue. One rail is fed by the red wire, the other one by the blue one. The wire at the front has a 4 mm socket at

the left-hand end and a 4 mm banana plug at the right hand end, protruding at least 40 cm. The rear wire has the plug at the left-hand end and the socket at the right-hand end.

Other cable colours are possible too but the method of matching plugs and sockets must be maintained.



*Wiring of a single track module. From left to right: Banana plug, Banana socket, The right-hand rail always has the plug at module ends. Source: FREMO US*

On double track modules it is mandatory to wire both tracks separately. The wiring scheme is to be doubled with the additional requirement to mark both sets of wiring distinctly. This can for example be done with other colours.

To ease troubleshooting everyone should aim at the following colours:

- blue: DCC 1
- red: DCC 2
- black: Points common return
- yellow: Points left
- green: Points right
- brown: Point frog polarisation

Power installations for point motors, signals, level crossings, lightning and similar have to be by a separate transformer which must be be officially approved. No mains electricity equipment must be installed in a module frame!

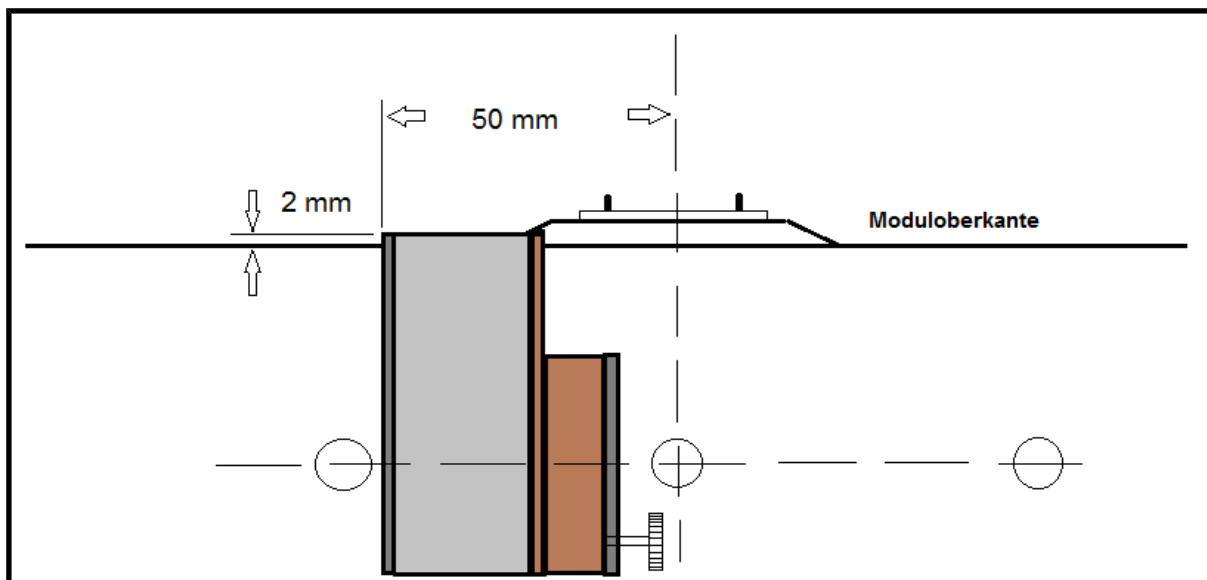
## 4.2 Signals and Signal slots

Where practicable all open line modules should be equipped with two Wattenscheid Signal Slots. Modellers who build more than one open line module is free to leave out Wattenscheid Signal Slots on every second module. Starting with the 10th module, only every third module should be equipped so. Installation of Wattenscheid Signal Slots is no must however.

For Wattenscheid Signal Slots semaphores as well as colour light signals can be constructed.

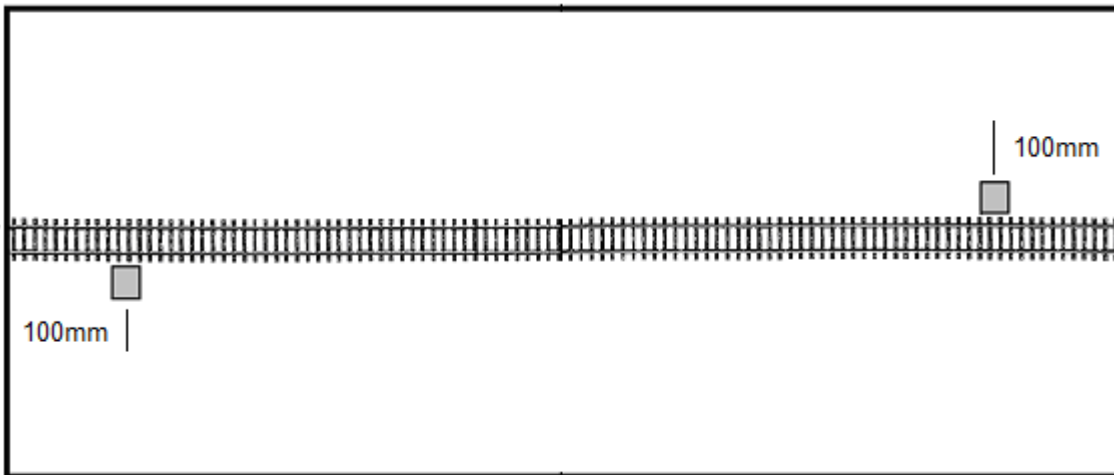
Per module two Signal Slots are to be installed, one each on each end of the module. The distance from the end profiles is 100 mm to ensure accessibility of the screw as well as minimising the danger of injury while ducking under the module. The screw must be orientated towards the track. The distance from the Signal Slot to the track centre is 50 mm. See sketch below.

While not in use, the Signal Slot has to be filled by a dummy, disguised as a concrete block, bush or similar.

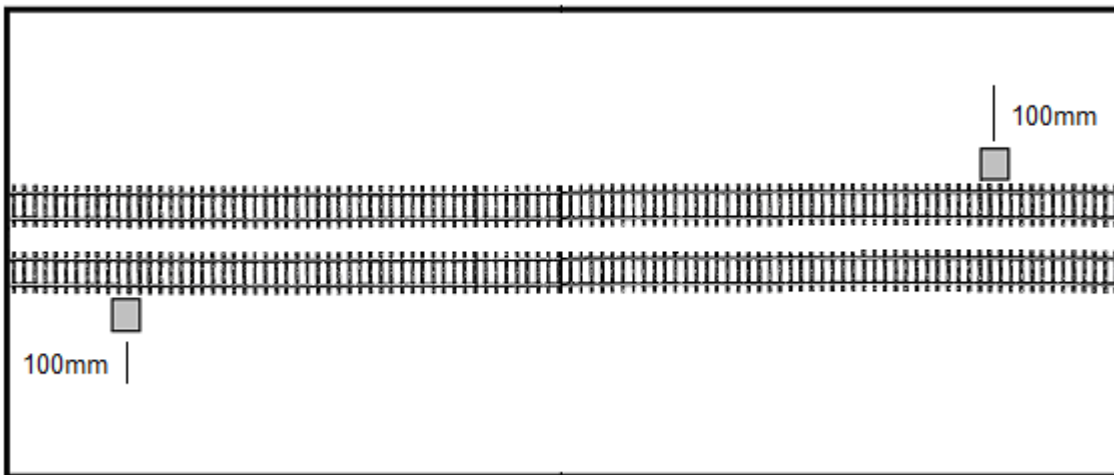


View of a Wattenscheid Signal Slot. Source: FREMO US





Topview on a single track module with Wattenscheid Signal Slot. Same source.



Topview on a double track module with Wattenscheid Signal Slot. Same source.

All signals have to be British types. It's operation may be local or remote. Prototypical interlocking and safety systems is highly recommended, this includes facing point locks. Automatic train running control is not envisaged.

More information in German language on Wattenscheid Signal Slots and the signal carriers can be found in:

<https://www.fremo-net.eu/index.php?id=339>

<http://www.nord-com.net/stefan.bormann/signal/wattenscheider/history.de.html>

<http://www.boerde.de/~horstf/bahn/pfeiftafel/signalschacht/>

### 4.3 Point control

Points may be operated electrical, mechanical or manually. In each case their operation should be possible from both module sides.

## 5 Landscape

The landscape is up to the module builder, but the season is summer/autumn. At the module ends 25 mm must be covered with Woodland T49 Green Blend Fine or something else in the same colour.

The ballast should be a fawn mixture from Woodland/NOCH.

Woodland Buff B80 #78-80

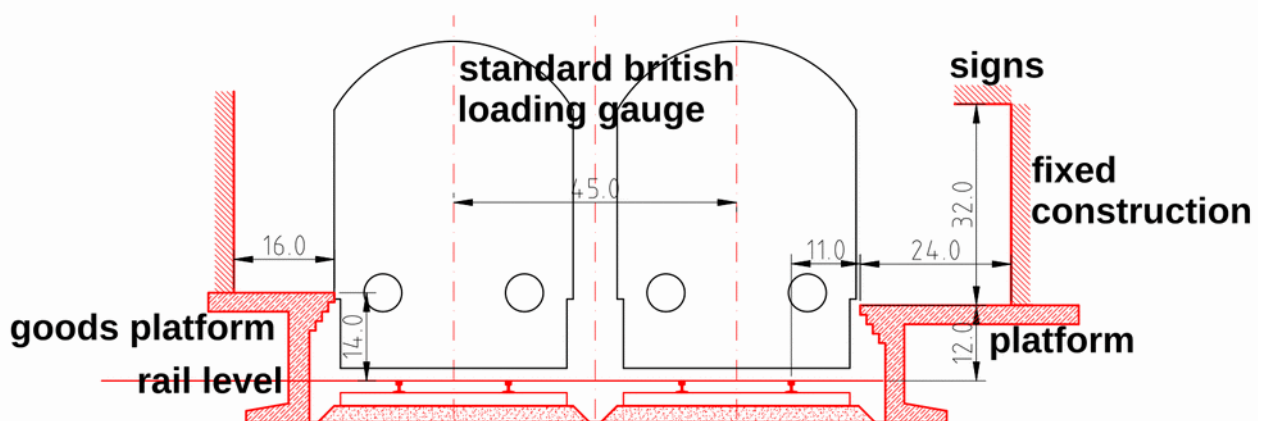
NOCH beige medium #95631

Because all railway companies in UK have the obligation to prevent trespassing, the tracks must be surrounded by fences, walls, hedges, dense bushes or similar. The distances of the fences from the track centre at the module ends is

70 mm on single track lines and

85 mm on double track lines.

The standard British Loading Gauge as specified from the British Railway Modelling Standard Bureau must be complied with.



Important measurements of the 1972 Structure Gauge. Source: Own Drawing.

## 6 Rolling stock

### 6.1 Couplings

All rolling stock for unrestricted use must have Kadee couplers which are correctly adjusted in height. Because the magnetic decoupling function will not be used, the uncoupling wire may be removed. Whoever decides not to do so must ensure that it ends above the rail tops and does not interfere with point blades.

The Kadee couplers #5 for wagons with unusable or without NEM pockets are recommended, as well as #17, #18 and #19 for wagons with usable NEM pockets.

Within a wagon rake that will not be divided in operation the coupler type is free.

Guest rolling stock may, if announced to the meeting coordinator, be operated to a certain extent.

## **6.2 Minimum radii of rolling stock**

Chapter 3.2.1 is valid: In a train an S curve with 914 mm radius has to be negotiated safely.

## **6.3 Wagon cards**

Each goods wagon must have a wagon card. This includes Brake Vans. Due to the need of wagon cards for NPCCS on certain meetings the making of a wagon card is necessary for these too.

Block trains or group of wagons never to be divided may have a single wagon card for the whole consist.

More information on wagon cards, their shape and the contained data can be found in a Supplement to this set of standards.

*Version April 21st 2017*

**00FREMO**

This document is valid for newly constructed modules. Existing modules are safeguarded, but it is desirable to update them as far as possible by retrofitting, construction of adaptor modules or even rebuilding to the current standards if the differences are too great.

Suggestions, additions and change requests are welcome!