



नाम

Name : _____

अनुक्रमांक

Roll No : _____

पाठ्यक्रम

Course : _____

दिनांक

Date : _____

प्राप्तांक

Marks Awarded : _____

अनुदेशक के आदयक्षर

Instructor Initial : _____

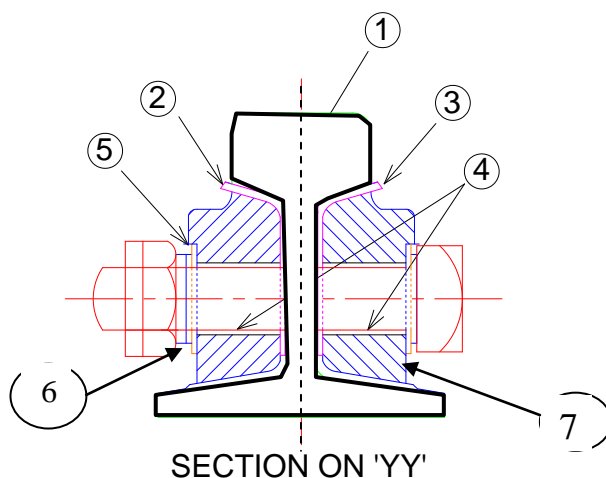
STUDY OF RAIL INSULATION JOINTS

Insulation joints are manufactured and supplied as per IRS Specification S-40/84 for Railway Signaling Insulation joints are provided for rails to isolate electrically adjoining rails so as to block the track circuit current at each end of the track circuit. In point track circuit zone in which additional rail connection such as turn outs are available more block joints are needed to avoid shorting track circuit rails. These type of joints also to be provided in all types of track circuits, including coded track circuits are called block joints. Some more insulations are available like gauge tie plate insulations, stretcher bar insulations switch insulations rod insulations and wire rope insulations for staggering of polarity and to traction return current, etc.

Rail Joints: Insulated rail joints presently in use are of two types:

1. Nylon insulated rail joints (block joints).
2. Glued joints.

RDSO type Block Joint: Insulated block joints are available in three different types depending upon rail profile Viz. 90R, 52Kgs. and 60 Kgs. In this type of Insulation components are supplied by the S&T department, which have to be, inserted the rail joint in the track circuit in coordination with Engineering Department time to time. To provide a block joint in place of rail Joint normally a planed fishplate to be provided so as to accommodate insulation liners (between the rails). The fish bolts have to be of 140mm. long instead of 115mm. Fish plate holes are to be made bigger to suit nylon bushes.



Exercise 1

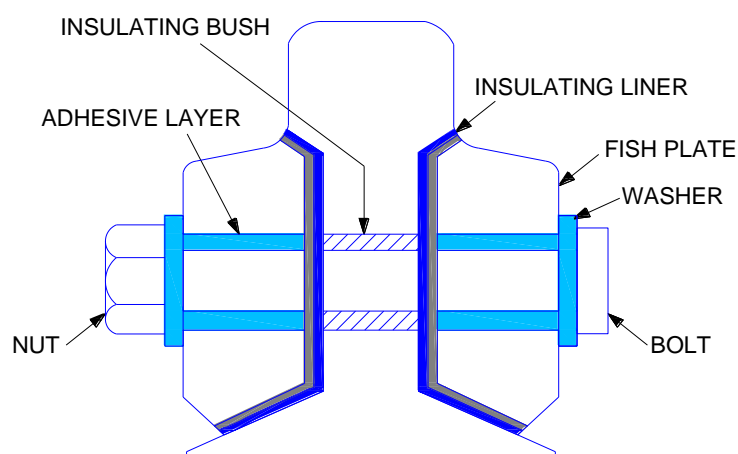
Identify the parts of RDSO type nylon insulation joints and write down which one part of block joint is insulated from other part of block joint

Components involved in the block joint for all kinds of rail profiles as follows:

1. Nylon bushes ... 8 Nos.
2. Nylon backing plate with collar ... 4 Nos.
3. MS backing plate ... 4 Nos.
4. Machined fish plates ... 2 Nos.
5. End post ... 1 No.
6. Left hand side channel ... 2 Nos.
7. Right hand side channels ... 2 Nos.

Glued Joint:

Similar to block joint, further going for glued joints are used to reduce maintenance. In this type of glued joint insulating component viz. bushes, liners and end posts are fabricated using glass cloth enforcement and epoxy of an RDSO approved quality which uses handed over by a hand laying process or pressure moulding technique.



Glued joints are available in two types:

1. G3 (L) having 6 bolts.
2. G3(S) having 4 bolts.

Sl. No	Rail Section	Drawing No. for	
		G3(L)type 6.2Mts	G3(S)type 4.2Mts
1	75R	RDSO/T-1283	RDSO/T-3008
2	90R	RDSO/T-1276	RDSO/T-1278
3	52kg	RDSO/T-671	RDSO/T-1259
4	60kg(UIC)	RDSO/T-2572	RDSO/T/2576

laying of these joints involves engineering work viz. distressing of welded rails, welding of the joints into running track, etc. Hence, these laid by the P. Way Department. As the glued joint is available in type G3(L), G3(S) means that the longer welded rail and shorter welded rail, respectively.

Testing of Glued Joints

Glue joint is tested with the help of 100V DC meggar and the readings shall be within following limits.

Insulation Resistance test in Dry condition shall not be less than 25 MΩ

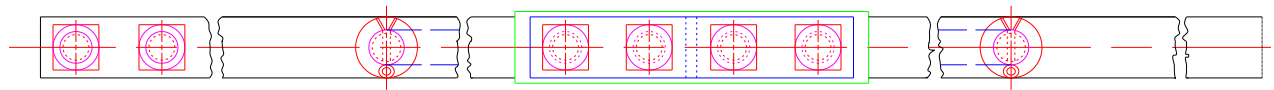
Insulation Resistance test in Wet condition shall not be less than 03 KΩ

Exercise 2

Test and write down which one part of block joint is insulated from other part of block joint, also meggar the Glued Joint.

Gauge tie plate Insulation: Gauge tie plate insulations are provided to insulate gauge tie plate if point is in track circuit zone

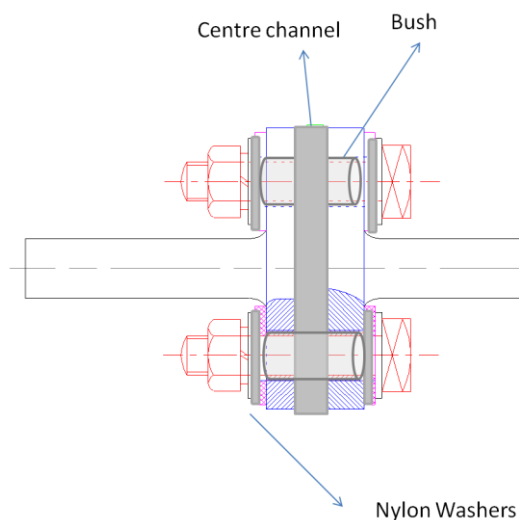
Components involved:



- Centre channel – 1 Nos.
- Bushes – 3 Nos.
- Nylon washers – 6 Nos.

32mm Rod Insulations: Rod insulations are provided in RE area to protect the operator of the lever from OHE return current in case of break down.

Components involved:



- Centre channel – 1 Nos.
- Bushes – 2 Nos.
- Nylon washers – 4 Nos.

Switch insulations or “D” Clamp insulations: Switch insulations will be provided for point switches where track circuits are provided for point zones for to stagger polarity where track circuit exists at point zones.

Components involved:

- Nylon backing plate – 1 Nos.
- Nylon Bushes – 2 Nos.
- Nylon washers – 2 Nos.

Wire rope insulations: Wire rope insulations will be provided in the wire transmission where L.C gate, signal and points operated with wire in RE area to isolate traction return current otherwise traction return current may influence human body through levers.

1. What is rail insulation joint and why it is necessary?
2. Give the list of materials required for RDSO type block joint 4 channels type insulation joint.
3. Why is the machining of the fishplates essential before being used for insulation joints?
4. What precautions would be taken while installing an insulation joints?
5. How would you test an insulation joint?

Date

Signature of the Trainee