GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

सत्यमेव जयते

Indian Railway Standard Specification for Spring Setting Device for use with Over-riding Curved Switches and Thick Web Curved Switches

Serial No. IRS: T-54 (Revised-2024)

Issued by

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INDIAN RAILWAY STANDARD SPECIFICATION FOR SPRING SETTING DEVICE FOR USE WITH OVER RIDING CURVED SWITCHES AND THICK WEB CURVED SWITCHES (IRS: T-54 - Revised-2024)

0.0 FOREWORD:

This specification was issued as provisional-2008 for Spring Setting Device for use with overriding curved switches. As the item has been stabilized for use on Indian Railways, the specification is being issued under the Serial No. IRS/T-54. This specification covers the various aspects of manufacturing of Spring Setting Device to RDSO drawing number RDSO/T- 6945 which vary from IRS T-10 Specification for fabricated switches and crossings, welded/heat treated crossing and switch expansion joints (SEJ), however, reference of IRS/T-10 with latest amendment shall be made for all other aspects not covered in this specification.

To improve the specification, corrigendum no. 01 was issued in 2016. This specification has now been revised and issued in 2021 to cover the one Corrigendum issued to this specification till date and updating the latest revision of IS codes and drawing numbers. Grade / Quality of raw material for components of Spring Setting Device has also been defined.

This specification has been revised in 2024 to incorporate the Spring Setting Device for use with Thick Web Curved switches to RDSO drawing number RDSO/T-6216 and latest version of IS/ IRS codes including some minor corrections.

1.0 SCOPE:

All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-7.1-11 dated 19.07.2016 (titled "vendor-changes in approved status") and subsequent versions/amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways.

2.0 RAW MATERIAL:

Spring Setting Device to RDSO drawing number RDSO/T-6945 and RDSO /T-6216 consists of various components. Raw material for manufacture of various components of SSD shall conform to following IS / IRS codes:

SN	Components of SSD		IS / IRS codes
	Drawing No. RDSO/T-6945	Drawing No. RDSO /T-6216	
1	Base plate, Lever holder block, Stopper block, cover stopper, Lever arm, Spring nest (Male and Female), Connecting rod, Lever mouth, MS plate, Split pin, Lever arm pins (65mm and 80mm), SSD cover, Tongue rail bracket, Bracket over tongue rail mouth and Metal liner	Base plate, Lever holder block, Stopper block, cover stopper, Lever arm, Spring nest (Male & Female), Connecting rod, Lever mouth, MS plate, Split pin, Lever arm pins (65mm & 80mm), SSD cover, Tongue mouth, Steel Washer, Rail pin, Connecting rod (Insulated), Plain Washer and MS plate (10X50X25mm)	IS: 2062 -2011 (Reaffirmed 2016)
2	Lever arm bush (central and end) Gun Metal	Lever arm bush (central & end) Gun Metal and Rail bush (Gun Metal)	IS: 10742-1983 (Reaffirmed 2015)

3	Spring	Spring	IS: 3195-1992 (Reaffirmed 2017).
4	Single coil spring washer	-	IRS: T-42
5	Nuts and bolts	Nuts and bolts	IRS: T-23
6	Insulating bush, Insulating Liner and Insulating plate	Insulating bush, Insulating plate (130X55X6mm) and Insulated washer	IRS: S-40

3.0 MANUFACTURE:

The Spring Setting Device shall be manufactured by fabrication of the above components and shall conform to the requirements of RDSO drawing number RDSO/T- 6945 and RDSO/T- 6216 and tests stipulated in this specification and IRS: T-10.

4.0 ACCEPTANCE TEST:

For this purpose, following tests shall be carried out as per IRS: T-10 except where as mentioned: -

4.1 On Base plate, cover stopper, Lever arm, Spring nest (Male & Female), Connecting rod, MS plate, SSD cover, Tongue rail bracket, Tongue mouth, Rail Pin, Connecting rod (Insulated), MS plate (10X50X25mm):

i) Chemical composition – shall conform to Gr. E250 Quality B0/BR* of IS: 2062 -2011 (Reaffirmed 2016).
ii) Mechanical testing – Tensile test, Bend test, Charpy test.

4.2 On Lever holder block, Stopper block, Lever mouth, Lever arm pins (65mm & 80mm), Bracket over tongue rail mouth:

i) Chemical composition – shall conform to Gr. E250 Quality B0/BR* of IS: 2062 -2011 (Reaffirmed 2016).
ii) Mechanical testing – Charpy test.

4.3 On Split pin, Metal liner, Steel Washer and Plain Washer:

i) Chemical composition – shall conform to Gr. E250 Quality B0/BR* of IS: 2062 -2011 (Reaffirmed 2016)
ii) Micro Examination (for Metal liner, Steel Washer and Plain Washer only) – Microstructure should reveal the normalized structure of ferrite-pearlite

4.4 On Lever arm bush (central & end) Gun Metal, Rail bush (Gun Metal):

Lever arm bush (central & end) Gun Metal, Rail bush (Gun Metal) shall conform to Grade II of IS: 10742-1983 (Reaffirmed 2015)

4.5 On Spring:

i) Chemical composition & depth of decarburization test – shall conform to IS: 3195-1992 (Reaffirmed 2017).
ii) Hardness test – shall conform to IRS: R-2.
iii) Inclusion Rating – shall conform to IS: 4163 - 2004(Reaffirmed 2017), shall not be worse than 2.5 ABCD both thick and thin series.

4.6 On Single coil spring washer:

Single coil spring washer shall conform to IRS: T-42 in respect of chemical composition, hardness and depth of decarburization.

4.7 On Nuts & Bolts:

Nuts & bolts shall conform to IRS: T-23.

4.8 On Insulating bush, Insulating Liner, Insulating plate and Insulated washer:

Insulating bush, Insulating Liner, Insulating plate and Insulated washer shall conform to IRS: S-40 (same as used for existing Tie plates and Stretcher bars).

***** BR Quality to be used, if there is no mutual agreement between manufacturer & purchaser for Charpy Impact test else B0 Quality can be used in lieu of BR Quality.

4.9 Spring setting device complying with the above requirements shall be checked as under:

i) Spring Setting Device shall conform to the dimensions as per RDSO's drawing RDSO/T-6945 / RDSO/T-6216 and its component drawings as stipulated in the purchase order. Each Spring Setting Device shall be inspected dimensionally by QC organization of manufacturer before offering of Spring Setting Device to Inspection Agency. Inspection Agency shall inspect 2% of Spring Setting Device from offer lot. In case of non-conformity, the Inspection Agency shall inspect another 4% of Spring Setting Device from offer lot and all Spring Setting Device should be pass otherwise entire lot shall be rejected.

ii) ~~Each~~ Spring Setting Device shall be checked after assembling it on layout of Over-riding Curved Switches / Thick Web Curved Switches as the case may be, in firm's premises. For this purpose, one set layout of 1 in 12 (Only switch portion) turnout with PSC sleepers for Overriding curved Switch / Thick Web Curved Switch along with motor operated Point Machine suitable for 115mm (for Over-riding Curved Switches) / 160mm (for Thick Web Curved Switches) throw at ATS, shall be arranged by the firm in their premises. Spring Setting Device (SSD) shall be checked on the assembled switch of relevant design for its functioning for minimum two to three times, operated through point machine. In the assembled condition, gap at JOH on one side and matching of tongue & stock rails on the other side shall be checked simultaneously. Gap at JOH shall be within 60+2mm & 60-3mm and matching of tongue & stock rails of switch shall be within prescribed limits, subject to other parameters of switch i.e. throw, Bracket to Bracket length of stretcher bars, straightness and versines of tongue and stock rails, Track Gauge etc. being satisfactory as per relevant drawings. Each Spring Setting Device for its functioning shall be inspected by QC organization of manufacturer before offering of Spring Setting Device to Inspection Agency. Inspection Agency shall inspect 2% of Spring Setting Device from offer lot. In case of non-conformity, the Inspection Agency shall inspect another 4% of Spring Setting Device from offer lot and all Spring Setting Device should be pass otherwise entire lot shall be rejected.

iii) Fatigue test of Spring Setting Device shall also be done at the time of initial approval of the firm. For this purpose, necessary test equipment and layout of Over-riding Curved Switches / Thick Web Curved Switches along with motor operated Point Machine suitable for 115mm (for Over-riding Curved Switches) / 160mm (for Thick Web Curved Switches) throw shall be arranged by the firm at his own works premises. The spring setting device (SSD) should function satisfactorily for minimum 1.5 lakh cycles.

5.0 MARKING:

The spring setting device (SSD) shall bear clear inscription of stamp suitably located as per RDSO drawing number RDSO/T- 6945 & RDSO/T- 6216, preferably using letters of size 6mm.

6.0 PACKING:

The Spring Setting Device shall be packed suitably so as to avoid any loss or damage during transit. Packing shall be labelled with the details of supplier, consignee, bag number etc. for proper identification of the supplier firm.

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