

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)**



**Indian Railway Standard Specification
for
Spring Setting Device
for use with Over riding Curved Switches**

(Serial No. IRS: T-54 – 2021)

Issued by

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**INDIAN RAILWAY STANDARD SPECIFICATION FOR SPRING SETTING DEVICE
FOR USE WITH OVER RIDING CURVED SWITCHES
(IRS: T-54- 2021)**

0.0 FOREWORD:

This specification was issued as provisional-2008 for spring setting device for use with over riding curved switches. As the item has been stabilized for use on Indian Railways, the specification is being issued under the SI .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.

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 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
1	Base plate, cover stopper, Lever arm, Spring nest, Connecting rod, MS plate, SSD cover, Tongue rail bracket, Lever holder block, Stopper block, Lever mouth, Lever arm pins, Bracket over tongue rail mouth, Metal liner, Split pin	IS: 2062 -2011 (Reaffirmed 2016)
2	Lever arm bush (central & end) Gun Metal	IS: 10742-1983 (Reaffirmed 2015)
3	Spring	IS: 3195-1992 (Reaffirmed 2017).
4	Single coil spring washer	IRS: T-42
5	Nuts & bolts	IRS: T-23
6	Insulating bush, Insulating Liner and Insulating plate	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 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, Connecting rod, MS plate, SSD cover, Tongue rail bracket:

- 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, 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:

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

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

Lever arm bush (central & end) 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 and Insulating plate:

Insulating bush, Insulating Liner and Insulating plate 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) Each spring setting device shall conform to the dimensions as per RDSO's drawing RDSO/T- 6945 and its connected drawings as stipulated in the purchase order.
- ii) Each spring setting device shall be checked after assembling it on layout of over-riding curved switches 6400 mm or 10125 mm as the case may be, in firm's premises. For this purpose, One set layout of PSC sleepers for over riding switch portion for the design of SSD offered for approval to RDSO i.e. 1 in 8.5 / 1 in 12 switch along with motor operated Point Machine suitable for 115mm throw at ATS, shall be arranged by the firm in their premises. Each Spring Setting Device shall be checked on the assembled switch 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 shall be within prescribed limits, subject to other parameters of switch i.e. throw, length of stretcher bars, straightness & versines of tongue & stock rails, Gauge etc. being satisfactory as per relevant drawings.
- 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 equipments & layout shall be arranged by the firm at his works. The spring setting device should function satisfactorily for minimum 1.5 lakh cycles.

5.0 MARKING:

The spring setting device shall bear clear inscription of stamp suitably located as per RDSO drawing number RDSO/T- 6945, 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.