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Document Title : ELECTRIC POINT MACHINE NON TRAILABLE TYPE		



SPECIFICATION FOR ELECTRIC POINT MACHINE NON TRAILABLE TYPE

IRS: S: 24-2024

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Pages: 22

**Research Designs & Standards Organisation
Lucknow – 226 011**

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DOCUMENT DATA SHEET			
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Abstract This document defines SPECIFICATION FOR Electric Point Machine Non Trailable Type.			

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AMENDMENTS

Version	Chapter/ Annexure	Amendment	Effective date
IRS: S-24/63	-	FIRST ISSUE	1963
IRS: S-24/90	-	Revision 1	1990
IRS: S-24/2002	-	Revision 2	2002
IRS: S-24/2002	-	Amendment 1	2005
IRS: S-24/2024		Revision 3	2024

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Amendment 1 (Details)

Sl.	Clause	Amendment	status	Remarks
1.	0.2	1	Modified	To clarify the foreword
2.	11.2	1	Modified	Test load of 450 kg made common for both EPM.
3.	11.4	1	Modified	Test load of 580kg made common for both EPM
4.	11.6	1	Modified	Table modified as per new parameters
5.	15.10.2	1	Modified	Test load of 450 kg made common for both EPM.
6.	20.1	1	Modified	Tools added for maintenance.

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

**INDIAN RAILWAYS
STANDARD SPECIFICATION**

FOR
**ELECTRIC POINT MACHINE
NON TRAILABLE TYPE**
Serial No. S 24-2024

0 FOREWORD

0.1 This specification is issued under the fixed serial no. S 24, the final number indicates the year of original adoption as standard, or in case of revision the year of last revision.

0.2 This specification requires reference to the following Indian Railway Standard (IRS) and Indian Standard (IS) Specifications:

- | | | |
|-------|-----------|---------------------------------------------------------------|
| (i) | IRS: S 23 | Electrical Signalling and Interlocking Equipment. |
| (ii) | IRS: S 37 | Motors for Electric Point Machine. |
| (iii) | IS: 7381 | Hand operated square drive socket wrenches. |
| (iv) | IS : 7991 | Attachments for hand operated square drive socket wrenches. |
| (v) | IS : 7975 | Driving parts for hand operated square drive socket wrenches. |
| (vi) | IS : 2028 | Open jaw wrenches (spanners) |

Reason: Amendment No. 1 has been incorporated

0.3 Whenever reference to any of the above mentioned specifications appears in the specification, it shall be taken as a reference to the latest issue of that specification.

0.4 This specification is intended chiefly to cover the technical provisions and the provisions relating to supply of the materials and does not include all the necessary provisions of a

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contract.

1 SCOPE

1.1 This specification covers the requirements of Non-Trailable Electric Point Machines 143-mm throw with internal locking and non-trailable electric point machines 220 mm.Throw with internal locking for operation of points in Railway yard.

1.2 This specification also covers Electric point machine having IP 67 protection.

Reason: This requirement has been included for IP 67 Protection.

1.3 Vendor has to specify the weather Electrical point machine is IP 67 compliant while applying for registration.

Reason: This requirement has been included for IP 67 Protection.

2 TERMINOLOGY

2.1 The terminology used in this specification is covered by the definitions given in IRS: S 23.

2.2 The terms referred to in this specification but not covered in IRS: S 23, are defined below :

2.2.1 **‘Electric Point Machine’**- It is an electrically driven machine used for operation of points in railway yards.

2.2.2 **Electric Point Machine with IP67 Protection:** - These machines shall be so constructed to provide IP67 features as per IS/IEC 60034-5: 2000 protocol as to prevent any entry of dust and moisture ingress. Protocol shall be maintained as per international standards which define the level of protection from water and dust.

Reason: This requirement has been included for IP 67 Protection.

2.2.3 **‘Throw-Bar’**- That part of the point mechanism, which provides the thrust for operation of points and to which the points driving rod is connected.

2.2.4 **‘Lock Slide’**-That part of the point machine which has suitable notches in it for locking segment to effect locking of the points.

2.2.5 **‘Detector’**- A device to prove the correct setting of points or correct setting and locking of points.

2.2.6 **‘Detector Slide’**- That part of the point machine which controls the detector contacts and to which the detector rod is connected.

2.2.7 **‘Time of Operation’**- The time required for one complete sequence of operation as specified in clause 3.1.

2.2.8 **‘Right-hand Mounting’**- A point machine which is fixed to the right of the track as seen while facing the points.

2.2.9 **‘Left-hand Mounting’**- A point machine which is fixed to the left of the track as seen while facing the points.

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2.2.10 ‘**Stalling Load**’- The load applied to the throw-bar which, when the clutch of the point machine is deliberately prevented from slipping, would just prevent the driving movement of the machine.

2.2.11 ‘**Crank Handle**’- An appliance by which electrically driven point machines may be manually operated at the site.

2.2.12 ‘**Slipping Load**’ – The load on throw-bar at which friction clutch of the point machine is adjusted in the factory to slip.

2.2.13 ‘**Slipping Current**’ - The current corresponding to “slipping load” at which friction clutch of the point machine is adjusted to slip.

3 SEQUENCE OF OPERATIONS

3.1 The machine shall operate in the following sequence:-

- a) Open the detection contacts
- b) Unlock the points
- c) Move the points
- d) Lock the points
- e) Close the detection contacts.

3.2 Operation (c) shall be completed to the full normal or full reverse position of the points, and operation (d) shall be completed before closing of detection contacts for respective position can take place. Unlocking of point shall start only after opening of detection contacts.

4 RATED VOLTAGE

4.1 The rated voltage of the machine shall be 110V DC.

5 GENERAL REQUIRIEMENTS

5.1 The machine shall be of robust construction, securely fixed and protected from unauthorized interference.

The Electric Point Machine with IP67 Protection shall be capable of functioning normally even after remaining in submerged condition.

Reason: This requirement has been included for IP 67 Protection.

5.2 The machine shall be so designed that it can be stopped, reversed or obstructed at any point during operation without any damage.

5.3 The machine shall be so constructed that no movement of the mechanism shall result from vibration or external force applied to the mechanical connection.

5.4 The machine shall be suitable for either right-hand or left-hand mounting, and shall be so

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constructed that it can readily be converted at site from right-hand to left-hand mounting and vice-versa.

- 5.5 The motor cut-off contacts shall be housed in the mechanism case and so designed that they follow the movement of the mechanism and do not complete their operation until the locking mechanism has completed its function.
- 5.6 The locking of the points shall be achieved by means of a locking segment engaging in the locking slot of the lock slide.
- 5.7 The locking segment and the notch in the lock slide shall be of substantial size and shall have a substantial bearing surface between them in the locked position.
- 5.8 The entrance edges of the locking slot in the lock slide and the end face of the locking segments shall have square edges. Notches shall be cut to correct size and locking segments shall be made of hardened steel.
- 5.9 The detector unit shall have sufficient number of contacts for proving the full normal and reverse positions of the detector slides and the corresponding locked position of the lock slide. It shall also prove the complete operation of the point machine and the complete movement of locking process.
For Electric Point Machine with IP67 Protection, necessary sealing arrangements is to be provided for detector slides , lock slides and drive rod to be prevented from water or dust ingress in the machine.
Reason: This requirement has been included for IP 67 Protection.
- 5.10 Detection and motor cut-off contacts shall be housed in a transparent cover made of UV stabilized polycarbonate material. The sealing arrangement should be provided on the transparent cover and it should be dust proof and water proof. The position of the detection and motor cut off contacts shall be such as to avoid dropping of grease, oil during maintenance work.
- 5.11 Electrical contacts shall be of low resistance, quick acting, self-aligning and wiping type and shall conform to IRS: S 23.
For Electric Point Machine with IP67 Protection, Finger contacts of Electric point machine to be properly insulated by epoxy or some water resistant material till silver contact so even if water enters in machine it shall protected against failure due to water.
Reason: This requirement has been included for IP 67 Protection.
- 5.12 Provision shall be made for proper and convenient lubrication of the moving parts of the machine, wherever necessary..
- 5.13 Exposed oil holes, cups and grease nipples shall be provided with weather-proof spring loaded covers.

For Electric Point Machine with IP67 Protection, Necessary sealing is provided for lubrication/ grease nipples to prevent water or dust ingress in the machine.

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Reason: This requirement has been included for IP 67 Protection.

- 5.14 The design shall be such as to minimize condensation in the machine.
- 5.15 Clearance of not less than 12 mm shall be provided between any exposed current carrying parts and other metallic parts insulated therefrom.
- 5.16 With the exception of motor commutator, a surface leakage distance of not less than **6** mm shall be provided between any exposed current carrying parts and other metallic parts insulated therefrom.
- 5.17 The insulating materials used shall conform to IRS: S 23 and shall not be injuriously affected by atmospheric conditions.
- 5.18 Dimensions of fixing arrangement of point machine shall be as per drawing No. RDSO / S 10800 for 143 mm stroke and RDSO / S 11000 for 220 mm stroke IRS point machine.

6 MACHINE CASE

- 6.1 'The machine shall be enclosed in a strong metallic weather-proof machine case, designed for mounting on two sleepers. Each machine case shall be provided with removable cover/covers. The main cover/covers shall be equipped with suitable fastenings to enable the covers to be secured and locked. Suitable hole or holes with removable metal plugs shall be provided, at the base or the machine case, for draining off of the accumulated oil or water.

For Electric Point Machine with IP67 Protection, Drain holes with removable metal plugs for draining off of the accumulated oil or water shall be prevented from ingress of water and dust. Machine case shall be so designed to accommodate all the rods with necessary sealing arrangements/gaskets for IP 67.

For Electric Point Machine with IP67 Protection, all the holes at base for fixing Electric point machine shall be required to be protected against water and dust ingress.

Reason: This requirement has been included for IP 67 Protection.

- 6.2 The machine case shall be provided with cable entries of ample size, conveniently located for access to terminals, equipped with suitable means for connecting flexible conduit and arranged to protect the cable from mechanical injury. The cable entries shall be suitable for either right-hand or left-hand mounting of the machine, and shall be so designed that the machine case will be weather-proof

For Electric Point Machine with IP67 Protection, The machine shall be provided with IP67 gland at both sides right-left for cable entry to ensure protection against dust and water.

Reason: This requirement has been included for IP 67 Protection.

- 6.3 The machine case shall be provided with an opening, for application of crank handle protected by an external metal weather-proof cover equipped with suitable fastenings for locking. **IP67 arrangement to be provided at the entry point of crank handle hole for**

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Electric Point Machine with IP67 Protection,

Reason: This requirement has been included for IP 67 Protection.

- 6.4 The machine shall be so designed that it is capable of being mounted at a raised level on extended sleepers in flood prone areas.

For Electric Point Machine with IP67 Protection, The arrangements adopted for making the Electric point machine water proof shall be such that opening of cover for maintenance should not affect IP-67 protection after fixing the cover.

Reason: This requirement has been included for IP 67 Protection.

- 6.5 The height of the machine shall be such that there is no infringement with the schedule of dimensions when the machine is mounted on two sleepers.

7 MOTOR

- 7.1 Motor shall comply with the requirements of IRS: S 37 'Motor for Electric Point Machine'. IP67 motor should be used with Electric Point Machine with IP67 Protection, for better results as per IRS: S 37-2022, Version 2.0

Reason: This requirement has been included for IP 67 Protection.

- 7.2 Motor shall form an integral part of the machine and shall be removable therefrom.

- 7.3 Motor terminal blocks shall be made of unbreakable material like PBT.

8 CRANK HANDLE OPERATION

- 8.1 The machine shall be so designed as to permit manual operation by use of a crank handle.

- 8.2 The machine shall be provided with a crank handle cutout contact such that the crank handle cannot be inserted in the machine without isolating the motor circuit. This circuit shall not be capable of being reconnected until the crank handle has been withdrawn from the machine.

- 8.3 The crank handles shall be provided with different ward combinations with matching sockets on the machine, so that the crank handle having a particular ward combination can only operate point machines having matching sockets. Instead of crank handle, a key may also be provided with different ward combinations with matching sockets on the machine so that insertion of key of the particular ward only is possible in the point machine socket which will enable a common crank handle to be inserted in the machine.

For Electric Point Machine with IP67 Protection, Crank handle contact cut off Key insertion hole to be protected from entry of water and dust inside the point machine.

Reason: This requirement has been included for IP 67 Protection.

- 8.3.1 Crank handle/key sockets on the machine shall be provided with detachable arrangements so that when the machine is taken out for maintenance purposes, the same crank handle/key ward can be used in the new machine, thus enabling the use of the same crank handle/key ward combination for that point.

For Electric Point Machine with IP67 Protection, crank handle arrangements shall be such that the crank handle operation should be possible without water entering inside the

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machine even the machine is completely emerged in water during monsoon.

Reason: This requirement has been included for IP 67 Protection.

9 TERMINALS

- 9.1 Terminals shall be M6 of nut type or as specified by the purchaser and shall conform to IRS: S 23.
- 9.2 Terminals shall be spaced not less than 20 mm and so located as to be easily accessible.
- 9.3 Terminals for external connections shall, as far as practicable, be located near the cable entry. Terminals of cable entry shall be of standard type.
- 9.4 Terminal shall be marked for identification purposes in accordance with the diagram of connections.

10. WIRING

- 10.1 Internal wiring shall be neatly arranged and shall conform to IRS: S 23. Color code and numbering of internal wiring shall be as per Figure 1.
- 10.2 The conductors for the internal wiring shall be insulated and shall be of tinned copper, stranded, having a cross-sectional area of not less than 2 sq. mm and not less than 3 strands. Both ends of each conductor shall be labeled and provided with an eyelet of a suitable type. These eyelets shall be crimped and soldered.
- 10.3 Where wire connections are provided at a common terminal, the same shall be capable of being disconnected readily for test purposes.
- 10.4 Wiring diagram with explanation, if any, in English, engraved on an anodized metallic sheet, shall be securely attached to the inner face of the cover of the machine and protected from the effects of lubricants and moisture.

11. OPERATING CHARACTERISTICS

- 11.1 The machine shall comply with the appropriate operating data given in clause 11.6 of this specification.
- 11.2 The machine shall be capable of operating between the limits of 75 percent and 125 percent of the rated voltage at 450 kg. test load.
Reason: Amendment No. 1 has been incorporated
- 11.3 The machine in locked position, shall be capable of withstanding a thrust of 9000 Kg. through the connections, so that in the event of trail through, the damage is confined to the connections between the machine and points.
- 11.4 The friction clutch of the machine shall be factory adjusted to slip at not exceeding 580 kg. load on throw bar. The clutch adjustment shall be sealed in the factory. The slipping load and slipping current shall be indicated on the name plate.

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Reason: Amendment No. 1 has been incorporated

11.5 The point machine shall have a min. AC immunity level of 160 V or 400V (r. m. s.), 50 Hz.

11.6 Operating Data

Throw of point machine	Time of operation (Max.)	Current consumption	Test voltage	Test load on throw bar	Slipping load	Stalling load (Min.)
143 mm ±2	4.0 sec.	≤ 4.5 Amp.	110 VDC	450 Kg.	≤ 580 kg	1000 kg.
220 mm +4/-1	5.5 sec.	≤ 5.5 Amp.	110 VDC	550 Kg.	≤ 580 kg	1000 kg.

Reason: Amendment No. 1 has been incorporated

12 MANUFACTURE

- The manufacturer shall ensure that in addition to all the provisions of this specification, the requirements of any drawings, and / or specifications referred to by the purchaser are fully complied with.
- Workmanship, limits and fits, interchangeability and other general requirements shall be in accordance with IRS:S 23 wherever applicable.

13 MARKING & IDENTIFICATION

13.1 Marking and identification shall be done in accordance with IRS: S 23.

13.2 The nameplate of the electric point machine shall have the following details, engraved on a metallic plate, affixed at a convenient place on the internal portion of the point machine.

- Designed by RDSO
- Manufacturer's name or trade mark
- Serial No.
- Rated Voltage (110V, DC)
- Throw
- Slipping Current
- Slipping Load
- Year of manufacture
- Enclosure Type

Reason: This requirement has been included for IP 67 Protection.

14. FINISH

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- 14.1 The finish of various parts of the machine shall conform to IRS: S 23.
- 14.2 Suitable protective coating shall be provided on detector contacts, crank handle contacts and motor.
- 14.3 The external portion of electric point machine shall be painted with anti-corrosive paints. The color shall be as specified in the Indian Railway Signal Engineering Manual (1984 issue) as per Annexure 'A', Para 1102.

15. INSPECTION & TESTING

- 15.1 Inspection and tests shall be carried out to ensure that all the requirements of this specification and that of IRS: S 23 are complied with.

15.2 Type Test

The following shall constitute type test and shall be conducted in the sequence given below: -

- (a) Visual check (clause 15.12.1)
- (b) Operating voltage test (clause 11.2)
- (c) Applied high voltage test (clause 15.5)
- (d) Insulation resistance test (clause 15.6)
- (e) AC immunity test (clause 11.5)
- (f) Obstruction test (clause 15.11)
- (g) Performance test (clause 15.7)
- (h) Life test (clause 15.10)
- (i) Dimensional check – Size of notches of lock and detector slides.
- (j) **IP67 Complaint EPM Dust Ingress Test:** - This test shall be performed as per IS/IEC 60034-5: 2000 to comply IP-67, before water immersion test. Ingress of dust shall be totally prevented. The protection is satisfactory if there is no ingress of dust or water.
Reason: This requirement has been included for IP 67 compliance.
- (k) **IP67 Complaint EPM Water Immersion Test:** - This test shall be performed as per IS/IEC 60034-5: 2000 to comply IP-67 protection. The Machine shall be kept submerged under water at a depth of 1 meter for 24 hours, no water should ingress. It shall be taken out and operated after recovery period of 10 minutes with thoroughly wiping externally using cotton cloth, verify its functionality. Measurement of operating parameters and insulation resistance test shall be done as per Clause 11.5 and Clause 15.6. The values of operating current and insulation resistance shall be within specified limits. This Clause shall be applicable for IP-67 complaint EPM
Reason: This requirement has been included for IP 67 Protection.

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15.2.1 **Only one point machine shall be tested** for this purpose. The point machine shall **pass all the type tests** for proving conformity with this specification. If the point machine fails in any of the tests, the inspecting authority, at his discretion, may call for another point machine of the same type and rating and subject the same to all the type tests. No failure shall be permitted in the repeat test.

15.3 Acceptance Test:

The following test constitutes the acceptance test and shall be conducted in the sequence given below: -

- (a) Visual check (clause 15.12.2)
- (b) Operating voltage test (clause 11.2)
- (c) Applied high voltage test (clause 15.5)
- (d) Insulation resistance test (clause 15.6)
- (e) AC immunity test (clause 11.5)
- (f) Performance test * (clause 15.7)
- (g) Dimensional check – Size of notches of lock and detector slides.
- (h) **Water immersion test as per clause 15.2 (k) for submerged duration of 04 hours instead of 24 hours with 10 minutes recovery shall be conducted in addition to Clause no. 15.3. (This test shall be applicable for IP-67 compliant EPM only)**
Reason: This requirement has been included for IP 67 Protection.

Note: * Stalling load test shall be conducted on only one sampled point machine of lot.

15.3.1 The samples for acceptance test shall be selected as per Appendix 'B'.

15.3.2 For acceptance of the lot, no sample shall fail in the acceptance test.

15.4 Routine Test:

The following shall constitute routine test and it shall be conducted by the manufacturer on every point machine offered and the test result shall be submitted to the inspecting authority during inspection.

- (a) Insulation resistance test (clause 15.6)
- (b) Performance test (clause 15.7)
- (c) AC immunity test (clause 11.5)

15.5 Applied High Voltage Test:

15.5.1 The insulation of an assembled point machine after snubbing diode, if any, is disconnected, shall withstand for one minute test voltage of 2000 V r. m. s. between all parts of electric circuits and other metallic parts insulated therefrom.

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15.6 Insulation Resistance Test:

15.6.1 This test shall be made immediately after the applied high voltage test specified in clause 15.5, at a potential of not less than 500 V DC.

15.6.2 The insulation resistance shall be measured between individual insulated circuits and earth. The minimum value for each individual insulated circuit shall be not less than 10 Meg. Ohms.

15.7 Performance test:

Test shall be conducted to verify the following:

- (i) Operating characteristics (clause 11.6)
- (ii) Contact resistance (clause 15.8)
- (iii) Contact pressure (clause 15.9)

These tests shall be conducted on a layout approved by the purchaser or his nominee.

15.8 Contact Resistance Test:

The initial contact resistance of electrical contacts shall not exceed 0.03 ohm. The resistance shall be measured when the contact is carrying a direct current of 100 mA. At the end of the life test, the contact resistance shall not exceed 0.06 ohm.

15.9 Contact Pressure Test:

The initial contact pressure of electrical contacts in closed position when measured very near the point of contact shall not be less than 275 gm. At the end of the lifetest, the loss in contact pressure shall not exceed 10 percent of the initial contact pressure.

15.10 Life Test:

15.10.1 The point machine shall be installed on an approved layout and it shall be **operated continuously for one million operations at the rate of 4 operations per minute**. After every 20,000 operations, maintenance and lubrication of the point machine shall be carried out.

15.10.2 No damage to the point machine shall occur at the end of the test, and it shall be capable of hauling 450 kg test load on throw bar.

Reason: Amendment No. 1 has been incorporated

15.11 Obstruction Test:

The point machine shall be tested for obstruction test as per para 136 of SEM (1984 issue). With the test piece in,

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- 1) the point machine shall not be able to complete its full operation.
- 2) the locking of the points shall not be effective.
- 3) the detection contacts shall not make.

15.12 Visual Check

15.12.1 Visual Check for Type Test :

The visual checks shall be carried out as laid down in IRS: S23. In addition, the detailed dimensional check and surface finish of all the parts, in reference to the drawings approved by the purchaser, shall be conducted. For such check the manufacturer shall submit three sets of the drawings of all the parts including their assembly drawings.

15.12.2 Visual check for Acceptance Test:

The visual checks shall be carried out as laid down in IRS:S23. In addition, the detailed dimensional check and surface finish of some important parts, such as lock and detector slide, rack & pinion, detection contacts etc. as considered necessary by inspecting official, shall be conducted. It shall be ensured that material of all components of the point machine is as per approved drawings. Chemical test report and relevant documents in support of it shall be verified by the Inspecting officer and recorded in Acceptance Test Report.

16. REJECTION

- 16.1 The machine or any part thereof that does not comply with any of the requirements of this specification and / or of any other specification and / or of drawings as approved by the purchaser may be rejected.

17. PACKING

- 17.1 The packing shall be done in accordance with IRS: S 23. Each electric point machine shall be packed in a suitable wooden crate to protect it from any damage during transit etc.

18. WARRANTY

- 18.1 The warranty of the point machine shall be in accordance with the IRS specification No. IRS: S 23.

- 18.2 **IP67 Complaint EPM: -** The manufacturer shall submit an undertaking that they have tested the each electric point machine for IP-67 protection compliance. In case of failure of any machine within 30 months from date of supply, the machine shall be replaced by the firm or repaired & installed again free of cost.

Reason: This requirement has been included for IP 67 Protection.

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The sealing arrangement used in the Electric point machine for IP-67 protection shall be long lasting and shall not lose the effectiveness during codal life of EPM.

Reason: This requirement has been included for IP 67 Protection.

19. INSTALLATION AND MAINTENANCE MANUAL

19.1 A copy of installation and maintenance manual shall be supplied along with each point machine.

19.2 The manual shall include the following information:

- 1) General information about the point machine such as overall dimensions and weight of point machine, stroke of throw bar, and dimensions of fixing centers of throw bar, lock rods and detector rods, etc.
- 2) Installation procedure.
- 3) Testing and adjustment procedure for friction clutch, detector slide etc.
- 4) Maintenance and lubrication procedures and their periodicity. Grade of oil and grease to be used.
- 5) Procedure for replacement of parts and periodicity of routine replacement of parts.
- 6) Tools required.

20. TOOLS & ACCESSORIES:

20.1 The following set of tools in a suitable tool box shall be supplied along with every set of eight point machines or less.

- i). Hand operated square drive socket wrenches of 12.5 mm driving square (short type) as per IS: 7381 for M8, M10, M12 & M18 threads.
(One 250 mm long 12.5 mm square extension bar as per IS: 7991 along with compatible Tee handle Square drive as per IS: 7975 suitable for above socket wrenches shall also be provided.
- ii) Open jaw wrenches (spanners) for M10, M12, M20, M24 & M33 threads as per IS: 2028.
- iii) Adjustable Wrench.
- iv) Screw driver 300 mm long.

Reason: Amendment No. 1 has been incorporated

Tools for maintenance and installation including IP 67 Protection may be added as per requirement.

Reason: This requirement has been included for IP 67 Protection.

20.2 Junction box and two numbers of telescopic pipes of approved type shall be supplied as an integral part of the point machine.

20.3 Ground connections and clamp lock shall be supplied along with the point machine on

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requirement from the purchaser as per drawing given below or as per their requirement-

- i) RDSO / S 3361 – 62 (60 kg., 52 kg. on PSC sleepers)
- ii) RDSO / S 3262 – 63 (52 kg., 90 R on wooden sleepers)
- iii) RDSO / S 3454 (60 kg. TWS with clamp point lock)
- iv) RDSO / S 3495 (60 kg. swing nose crossing with clamp point lock)

APPENDIX ‘A’

INFORMATION TO BE SUPPLIED BY THE PURCHASER

- (i) Type of Point Machine (Clause 1.1)
- (ii) Type of ground connection / clamp lock (Clause 20.2)

APPENDIX ‘B’

(Clause 15.3.1)

SAMPLING PLAN

1. Lot :

All the point machines of the same type manufactured by the same factory during the same period shall constitute a lot.

2. Sample Size:

The number of point machines selected at random for acceptance test shall constitute sample size.

3. The lot size and sample size shall be as per the following table:

TABLE

S.No.	Lot Size	Sample Size
1	1-4	50 % (min 1)
2.	5-20	25 % (min 2)
3.	21-50	20 % (min 5)
4.	51-100	16 % (min 10)

Note: If a lot consists of more than 100 point machines, the lot shall be divided into smaller lots consisting of the above lot sizes.

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Annexure-1

Note: Following are drawing of existing Electric Point Machine. Zonal Railways, Vendors and stakeholders are requested to identify drawings where modifications will be required for IP-67 protection. Please also attach modified drawings of any changes require in existing drawing for meeting the requirement of IP-67 protection.

Reason: This requirement has been included for IP 67 Protection

SN	Drg. No	SN	Drg. No	Remark if any
1.	RDSO S10806-07(Alt-6)	51.	S10910	Drg 1-77 for 143mm
2.	RDSO-S 3541-43	52.	S10911	
3.	S3264-65-66 Model	53.	S10912	
4.	S3271-74	54.	S10913-14-15	
5.	S10800	55.	S10916-17-18-19	
6.	S10801	56.	S10920	
7.	S10803	57.	S10921-22-23	
8.	S10803	58.	S10924A-24B	
9.	S10805	59.	S10925-26	
10.	S10808-09-09A-09B	60.	S10927	
11.	S10810-11	61.	S10928	
12.	S10812-13-14	62.	S10929-30	
13.	S10815-16	63.	S10931-32	
14.	S10817-18-18A-19	64.	S10933-34-35-36	
15.	S10820	65.	S10937-38-39-40	
16.	S10821-22-23-24	66.	S10941-42-43-44	
17.	S10825-26-27-28	67.	S10945-46-47-48	
18.	S10830-32	68.	S10949-50-51-52 alt-2	
19.	S10833-34	69.	S10953-54-55-55A alt-2	
20.	S10835	70.	S10956	
21.	S10836-37	71.	S10957-58-59-60	
22.	S10838-39-40	72.	S10961-62-63-64	
23.	S10841-42-43-44	73.	S10965-66-67- 68	
24.	S10845-46-47	74.	S10969-70-71	
25.	S10848A-48B	75.	S10973A-E-74-75	
26.	S10848A-48B-48C-48D	76.	S10976-77-78-79	
27.	S10849A-49B	77.	S10980A-E-81	
28.	S10850	1.	S11000	Drg. 1-14 for 220 mm
29.	S10851	2.	S11001	
30.	S10852	3.	S11003	
31.	S10853-54-55-56	4.	S11004	
32.	S10857-58-59-60	5.	S11005	
33.	S10861-62-63-64	6.	S11006-07	
34.	S10865	7.	S11008	
35.	S10866	8.	S11009	
36.	S10867-68	9.	S11010-11	

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37.	S10869	10.	S11012 13-14	
38.	S10870	11.	S11015	
39.	S10871-72-73-74	12.	S11016	
40.	S10875-76-77-78	13.	S11017	
41.	S10880	14.	S11018	Drg 1-8 for clamp lock
42.	S10881-82	1.	S3396	
43.	S10883-84-85-86	2.	S3397	
44.	S10887-88-89-90	3.	S3398	
45.	S10891-92-93-94	4.	S3402-03	
46.	S10895-96-97-98	5.	S3436A-36B-37A-37B	
47.	S10899-900-01-02	6.	S3454	
48.	S10903-04-05-06	7.	S3456-57-58-59	
49.	S10907-7A-7B-7C	8.	S3460-61-62-63	
50.	S10908-09			

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