

ISO 9001:2015	Document No: TM/HM/6/536	Version No:0.0	Date effective: 19/06/2023
Specification of Tamping Arm of Unimat-4S (Part no. W37.1462)			



**RESEARCH DESIGN AND STANDARD ORGANISATION**  
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**SPECIFICATION NO.TM/HM/6/536**  
**SPECIFICATION OF TAMPING ARM OF UNIMAT-4S**  
**(Part no. W37.1462)**

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**SPECIFICATION NO.TM/HM/6/356**  
**SPECIFICATION OF TAMPING ARM OF UNIMAT-4S**  
**(Part no. W37.1462)**

- 1.0 Scope:** This specification covers the dimensional, functional and material requirements with testing criteria of Tamping Arm. This specification may be treated as provisional subject to modifications based on service performance.
- 2.0 Reference Documents:** Following Specifications have been referred to in this specification. Full sets of relevant drawings and the referred codes/ specifications, duly incorporating the up-dated corrections/amendments, shall be available for reference at manufacturer's works.
- i) BS: 970 - Part II - Direct hardening alloy steel - Specification.
  - ii) IS: 77-1976 - Linseed oil for paints - Specification.
  - iii) RDSO Drg. No. RDSO/TM /05/23 - Tamping Arm.
- 3.0 Functional Requirement:** The Tamping Arm shall be capable to withstand and transmit vibrations in the range of 35 Hz to the tamping tool, during tamping operation. It shall also be capable to transmit a high squeezing pressure (~120 bars) from squeezing cylinder to the tamping tool, fitted to the tamping arm. Fitting of tamping tools into the tamping arm shall be easy and quick. All surfaces meant for machining shall be finished as mentioned in the drawing no. RDSO/TM/05/23.
- 4.0 Dimension & Tolerance:** Dimensions and tolerances of the Tamping Arm shall be as mentioned in RDSO drawing no. RDSO/TM/05/23.
- 5.0 Material:** The Tamping Arm shall be made from Steel of Grade 709 M 40 (EN-19) conforming to BS: 970 Part-II Specification of direct hardening alloy steel.
- 6.0 Manufacturing Process:** The Tamping Arm shall be forge or cast of specified material. Sample shall be machined to get final shape.
- 7.0 Heat Treatment:** The castings shall be suitably heat treated in a properly constructed furnace, having adequate means of temperature control, which shall permit the whole of the castings to be uniformly heated to a temperature of 860° C to 890° C. All the hot castings shall be quenched in oil to achieve hardness in the range of 220 to 230 BHN and ultimate tensile strength in the range of 700 to 850 N / mm<sup>2</sup> .The quenching tank shall be equipped with required agitating system. The castings shall then be tempered at a suitable temperature between 550°C to 700°C.

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**8.0 Marking:** Month and year of manufacture and manufacturer's code / identification shall be engraved / embossed on the non-functional surface of the Tamping Arm.

## **9.0 Inspection And Acceptance Criteria:**

- i) Each components offered by manufacturer shall be checked visually for their surface finish, freedom from defects like porosity, cracks, improper edges etc. Machined surface shall be checked by any suitable pneumatic or electronic equipment.
- ii) The component found suitable after visual inspection, shall be checked for their dimensions as per relevant drawing.
- iii) Minimum one or 2% of sample randomly picked up from each lot of consignment shall be checked for their hardness as per para no.7.0.
- iv) Supplier shall produce the certificate that the raw material used for manufacturing of the Tamping Arm conforms to the Grade 709 M 40 (EN-19) of BS: 970 Part-II.
- v) Minimum one no or 2 % sample of the Tamping Arm of each lot of consignment and shall be subjected to chemical composition test. The consignee shall test the material for chemical composition at his laboratory or get the material tested in a reputed (NABL accredited or accredited by other international body like APLAC, MRA, ILAC etc) laboratory having proper facilities for testing. Before sending the samples for testing, the same shall be duly sealed and secret coding shall be done.
- vi) Any deviations in the test result from the requirement of the specification and drawing shall be the cause of rejection.

**10.0 Packing and Protection:** Each component shall be protected with one coat of boiled linseed oil conforming to IS: 77-1976 (linseed oil for paint) and shall be packed in cardboard case.

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