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Document Title: Specification of Chamfering Kit			

भारत सरकार
Government of India
 रेल मंत्रालय
Ministry of Railways



Specification of Chamfering Kit
 No. TM/SM/53
 (Third Revision of 2022)

Track Machines & Monitoring Directorate
Research Designs and Standards Organization
Manak Nagar, Lucknow-226011



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1.0 Scope: This specification covers essential material and functional characteristics with testing criteria of chamfering kit. Chamfering kit is a tool set used for chamfering and work hardening the sharp edges of the periphery of a fish bolt hole. This tool is used in a pair on both sides of the rail web on the drilled fish bolt hole to be chamfered.

2.0 Reference Documents: This specification refers to following Indian standards of the BIS and IRS. These shall be available at the manufacturer's works premise for reference.

SN	IS code	TITLE
1.	1363: Part 1:2019 Part 3:2018	Specification for Hexagon head bolts screws & nuts.
2.	1367: Part 2: 2002 (Reaffirmed: 2018) 1367: Part 3: 2017 1367: Part 6:2018	Specification for fasteners- Threaded Steel
3.	7291: 1981 (Reaffirmed: 2019) & Amd.1:2019	Specification for high speed tool steels.
4.	432: Part 1: 1982 (Reaffirmed: 2020)	Specification for Mild Steel and Medium tensile steel bars and hard drawn steel wires.
5.	IS 16906: 2018	Assembly Tools for Screws and Nuts — Hand Torque Tools — Requirements and Test Methods for Design Conformance Testing, Quality Conformance Testing and Recalibration Procedure
6.	6129: 1971 (Reaffirmed: 2019)	Specification of square box wrenches
7.	7381:1986 (Reaffirmed: 2019)	Specification for Hand Operated Square Drive Socket Wrenches
8.	IRS: T-28	Specification for hand operated square drive socket wrench
9.	Drawing No TM/ 0512	Drawing of Special Tools for Chamfering Rail Holes by Nut & Bolts

3.0 Technical Features: The chamfering kit shall comprise of following items:

(i)	High tensile fish bolt 130 x 20mm with nut as per drg.no. TM/ 0512 (Alternately high tensile hexagon head bolt M20x130 with nut as per IS-1367)	1 set
(ii)	Set of 2 High Speed steel chamfering bits (For 32 mm dia holes)	1 set
(iii)	Set of 2 High Speed steel chamfering bits (For 28 mm dia holes)	1 set
(iv)	19 mm square drive sockets size 32 mm	2 Nos.
(v)	Set of two packing pieces (sleeves)	1 set
(vi)	T-400 torque -wrench with ratchet mechanism 1.25m length	1 No
(vii)	Square box wrench of nominal size 19 (If hexagon head bolt is used)	1 No

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4.0 Materials:

- 4.1** High tensile steel bolts of square head as per RDSO drg. No. TM/ 0512 and conforming to IRS specification No. T-28 shall be used. Alternatively, high tensile steel hexagon head bolt of size M20 x 130 conforming to IS 1363 (Pt-1): 2019 and properties conforming to IS: 1367 (Pt-3):2017 & 1367(Pt-2): 2002 (Reaffirmed- 2018) may be used.
- 4.2** Chamfering bit shall be of high speed tool steel conforming to IS:7291:1981 and shall be of any one of the seven grades as mentioned in the clause 5 (Table -1) of the specification. Chemical composition and Heat treatment of the chamfering tool shall be as per IS: 7291 : 1981 and hardness achieved after heat treatment shall be R.C 62 (Minimum) .
- 4.3** The high tensile steel nut shall be of M 20 conforming to IS: 1363 (Part-3):2018 and properties shall conform to IS: 1367(Part-6) 2018.
- 4.4** The square drive socket wrench shall be of size 32 X 19 S and shall confirm to IS: 7381:1986 (Reaffirmed Year: 2019).
- 4.5** The packing pieces (sleeves) shall be of mild steel conforming to any of the two grades of IS 432 (Pt-1): 1982.
- 4.6** T-400 torque wrench shall conform to nominal size 5 of IS: IS 16906: 2018 of length 1.25M.
- 4.7** Box wrench shall be of 32 mm size having 19 mm square head conforming to IS 6129:1979.

5.0 Functional Requirement:

- 5.1** The torque wrench shall be able to provide minimum torque of 52 Kg-m.
- 5.2** The chamfering bits and packing pieces (sleeves) shall have good machine finished surface, free from any surface irregularities.
- 5.3** The chamfering tool shall be able to remove minor projections of the edges of the hole as a result of drilling.

6.0 Tests:

- 6.1 Visual & Dimensional check:** Dimensions of each of the items of the Kit shall be checked and shall confirm the drawing No.TM/0512.
- 6.2 Test of Mechanical Properties:** Following mechanical properties for these samples shall be checked.

(a)	Hardness of bolt	As per IS: 1367(Pt-3) : 2017
(b)	Hardness of chamfering Tool	As per IS: 7291: 1981 (Table-4) (Reaffirmed 2019)
(c)	Tensile strength of bolt	As per IS: 1367 (Part-3) : 2017

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(d)	Proof Load of nut	As per IS: 1367 (Part-6) : 2018
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6.3 Field test for chamfering operation: This test shall be carried out on 60 Kg or 52 Kg 90 UTS rail pieces on minimum three newly drilled holes. The equipment shall be able to achieve proper chamfering of the edges of the bolt holes.

7.0. Tests at the time of supply (Acceptance Test): Acceptance tests are meant to be conducted on randomly picked up samples which are taken from supplies under inspection against zonal railways/purchaser's purchase order.

7.1. Every chamfering kit in the consignment shall be subjected to following acceptance tests:

- (a) Visual & Dimensional check - as per clause 6.1
- (b) Hardness test of chamfering tool & bolt - desired certificate for every equipment should be submitted by firm - as per clause 6.2
- (c) Field test for chamfering operation - as per clause 6.3.

7.2. The acceptance tests, mentioned in para 6.1 and para 6.2 a, b, c & d shall be conducted by the manufacturer for all the instruments in the consignment before dispatch. For this purpose each instrument should be duly numbered. Manufacturer shall issue certificate in respect of each instrument that the same confirms to the stipulated dimensions and hardness. The results of hardness test for each instrument of the consignment shall also be furnished in the respective certificate. Any deviation in the test result from the requirement in the specification shall be the cause of rejection of the instrument.

7.3. Whenever the consignee considered if necessary, the hardness test shall be carried out under witnessing of the consignee /inspecting official. If desired by the consignee/inspecting official, the manufacture shall also produce all relevant documents as proof for conformity of the quality of the raw materials used in the instrument and their procurement source.

8.0 Inspection:

The inspection during procurement of Chamfering Kit against zonal railways P.O. shall be carried out at the premises of manufacturer by the consignee or his authorized representative. Minimum level of the inspecting official shall be SSE (Senior Section Engineer).

8.1 Compliance of the specification shall be verified at the time of inspection.

9.0 Warranty & AMC:

9.1 All parts of the instrument shall be warrantied for satisfactory and trouble free service for a period of twelve months from the date of acceptance of the instrument. In case of any part of the instrument is not able to give satisfactory performance due to defective design, material or workmanship within 12 months from the date of supply, the same shall be replaced by the manufacturer at his own expenses. Further, should any replacement of a part or whole of the instrument, design modification be made in any part of the instrument offered, the period of twelve months would commence from the date of replacement/ modification in the instrument. The manufacture/ supplier shall also provide prompt after sale service.

9.2 During procurement of the device railways should go post-warranty AMC with the supplier for a pre-determined period as decided by the purchaser railway. This shall be incorporated in

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the tender document as a condition of contract/Tender/Supply. For procurement of Chamfering Kit with AMC, Comprehensive Guideline on Procurement, Operation, Maintenance and Repair of Small Track Machines (report No.TM-227) may be referred.

10.0 Marking and Packing:

10.1 Each Chamfering Kit shall be legibly and indelibly marked with the following details:

- i. Name and trade mark/brand of the manufacturer.
- ii. Capacity.
- iii. Month & year of supply
- iv. Serial no. of the Chamfering Kit

10.2 The instrument shall be supplied in due packaging in good quality wooden/plastic box as per best trade practice.

11.0 Supplier is fully responsible to maintain the quality of product supply to Indian Railways.

12.0 Preference to Make in India: Compliance of the instructions contained in Public procurement (Preference to Make in India) order-2017 or latest instructions issued on subject shall be ensured.

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