



संस्थान क्रय विनिर्देश (डीप - हरिद्वार)

HW 19591

मुख पृष्ठ
PREFACE SHEET

PLANT PURCHASE SPECIFICATION
(HEEP - HARDWAR)

STEEL CASTING WITHOUT IDENTIFICATION NUMBER
(GS-45)

केवल आंतरिक प्रयोग हेतु
प्रदायक को देने से पूर्व इस मुखपृष्ठ को निकाल दें ।

FOR INTERNAL USE ONLY
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS.

समतुल्य मानक/सूची आदि
COMPARABLE STANDARDS / CATALOGUES ETC. } :NIL

सुझाए/सम्भावित प्रदायक एवं श्रेणी
SUGGESTED / PROBABLE SUPPLIERS AND GRADES. } :AS PER PMD

कोई अन्य जानकारी
ANY OTHER INFORMATIONS } : BASED ON TLV 9057 01 05 2001

01
OLD / REVISION SPEC
TSX(MTE)-02-24
PUNATHI CLAMP DATE 27-3-02

दिनांक एवं तारीख
& DATE

SUPERSEDES
INVENTORY NO.

सामग्री सूची संख्या को
अधिकृतिक करता है

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स्वाधिकार एवं गोपनीय
इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं
आवृत्त रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में अधिकारक से न किया जाए ।

हराकत एवं दिनांक
DATE

सामग्री सूची संख्या
INVENTORY NO.
P-2170

REV. NO. 02 (REFFIRMED)	REAPPRISED	निर्माण PREPARED: MTE	जारी : मानक विभाग ISSUED: STANDARDS DIVISION	दिनांक : DATE: 8-4-02
DATE- 08-03-09				

स्वीकृति : संस्थान मानक समिति
APPROVED : PLANT STANDARDS COMMITTEE

दिनांक एवं हस्ताक्षर SIGN & DATE 	संस्थान क्रय विनिर्देश (हीप - हार्डवयर) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW19591 पृष्ठ का Page 1 of 4
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STEEL CASTING WITHOUT IDENTIFICATION NUMBER (GS-45)

Based on TLV 9057 01 05/2001

सामग्री सूची संख्या
का अधिकारित करना है ।
INVENTORY NO.

स्वाधिकार एवं गोपनीय
हस्ताक्षर एवं दिनांक
SIGN & DATE

सामग्री सूची संख्या
INVENTORY NO.

1.0 SCOPE OF APPLICATION

The specification governs the quality of castings of steel grade GS-45.

2.0 APPLICABLE REFERENCE DOCUMENTS

EN 10213, SEW 110, EN 287, HW 0980830 (PA 11.60), HW 0980829 (PA 11.61), DIN 1681, DIN 1683 part 1, EN 1370, BNIF 359-01, MSS SP-55, EN 10204.

Equivalent standards with prior permission are acceptable.

3.0 CONDITION OF DELIVERY

The casting shall be supplied in the heat-treated and machined condition as per ordering drawings.

4.0 DIMENSION & TOLERANCES

4.1 Castings shall be supplied as per the drawing accompanying the order. The supplier shall guarantee before the dispatch about the compliance of dimensions and shall certify the fulfillment of this requirement in acceptance test certificate.

4.2 Tolerances: General tolerance as per DIN1683 Part-1, accuracy degree GTB19 is applicable. Any deviations are to be stated in the order documents.

5.0 GENERAL REQUIREMENTS

Before starting the production the manufacturer shall check the ordering drawing with respect to casting and inspection specific design.

Before starting the production the manufacturer shall submit the following documentation to the purchaser.

OLD
REPLACES THE OLD DRAWING SHEET SPEC
UNDER THE SAME NUMBER
CHANGE ADVICE NO. **TSX (MTE)-02-28**
NAME **P.NATH** DATE **27.3.02**

हस्ताक्षर एवं दिनांक SIGN & DATE	TSX	LB. MALHOTRA	8.4.02				
	Comm. Sub Comm (C.I)	V. B. ARORA	CPA 20/02		NAME		दिनांक एवं हस्ताक्षर SIGN. & DATE
	MEMBER PLANT STANDARD COM.	N. R. DE	20.1.02	अनुवादक TRANSLATED BY			
	GTE	A.K. SAXENA	4.1.02	निर्माणकर्ता WORKED BY	S.S.Grotra		
	Q.A.X	N.K. MANWANI	24.1.02	जांचकर्ता CHECKED BY	P. Nath		
	सहमत विभाग AGREED DEPT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	V.B. Arora		

सामग्री सूची संख्या INVENTORY NO.							
P-2170	स्वीकृति : संस्थान मानक समिति	APPROVED : PLANT STANDARDS COMMITTEE		निर्माण :	जारी : मानक विभाग	दिनांक :	
REV. NO. 02 (REFFIRMED)	REAFFIRMED	PREPARED :	MTE	ISSUED : STANDARDS DIVISION	DATE :	8.4.02	
09-03-09							

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हरिद्वार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW19591
			पृष्ठ का Page 2 of 4

सामग्री सूची संख्या को अधिष्ठापित करना है।
सुपरसेडेस
 INVENTORY NO.

स्वत्वधिकार एवं गोपनीय
 इस प्रलेख में की गई सूचना भारत की ही स्वतंत्रता के अन्तर्गत है। इसका प्रयोग इस सूचना के बिना या इस सूचना के बिना ही अन्य किसी भी प्रकार प्रयोग, जो कि कंपनी के हित में अधिकारक हो न सके।

कॉपीराइट एंड कॉन्फिडेंशियल
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- A procedure qualification reports on an appropriate welding according to SEW 110, or an equivalent standard;
- List of qualified welders according to EN 287 or other equivalent standard.

6.0 MANUFACTURING

6.1 General

Manufacturing as per EN 10213
Chaplets and inner iron chills are not allowed.

6.2 Heat Treatment

A normalizing heat treatment is to be given; holding time corresponding to the wall thickness.

After rough machining in the foundry, stress-relieving treatment is necessary before delivery of the casting. The stress relieving shall be carried out at 650°C. The cooling rate for the stress relieving should be $\leq 30^\circ\text{C/hr}$ down to $\leq 300^\circ\text{C}$.

The stress relieving after rough machining can be dropped, if production welding followed by stress relieving is carried out after rough machining.

6.3 Welding

Welding as per approved WPS and PQR shall be performed only on quenched and tempered castings. Design welds are allowed only after permission from BHEL.

The welding filler materials shall be covered electrodes E 4 2 5 B 4 2 H5 according to EN 499 or E 7018-1 H4 R according to AWS A5.1-91.

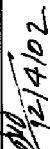
The use of other welding filler material is only allowed after prior agreement with the purchaser.



Area to be welded shall be ground down to the flawless base metal and design welds shall be prepared accordingly. This shall be checked by surface crack inspection. In this case quality level S1 according to HW 0980829 (Based on PA 11.61) shall be achieved.

The excavations ready for welding with a length ≥ 150 mm or with a depth $\geq 40\%$ of the wall thickness or ≥ 25 mm shall be documented by a sketch or a photograph noting the appropriate positions and dimensions so that their traceability is assured.

Production welds without post weld heat treatment are not acceptable.

On each casting, weld hardness shall be checked random wise and documented accordingly. Values of max. 320 HV₁₀ are allowed.

हस्ताक्षर एवं दिनांक SIGN & DATE 	7.0 PROPERTIES AND TESTS
सामग्री सूची संख्या INVENTORY NO. P-2170	7.1 Chemical Composition Heat analysis in weight % shall be as follows:

REV. NO. 02 OLD SPEC TSX(MTE)-02-28 P.NATH 9/11/02 27-3-02	निर्माणकर्ता Worked by S-GROTA 	जांचकर्ता Checked by P.NATH 	24/1/02 31/1/02
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संस्थान क्रय विनिर्देश (डीप - हरिद्वार)
PLANT PURCHASE SPECIFICATION
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हस्ताक्षर एवं दिनांक
 SIGN & DATE

सामीची सूची संख्या
 को अधिकारित करता है।
 SUPERSEDES
 INVENTORY NO.

सामग्री सूची संख्या
 को अधिकारित करता है।
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 SIGN & DATE

सामीची सूची संख्या
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C	≤ 0.23	Si	0.30 - 0.50	Mn	0.50 - 0.80
P	≤ 0.05	S	≤ 0.05		

7.2 Mechanical Properties

The mechanical properties of each casting shall be determined in the delivery condition. The following properties shall be achieved at room temperature:

- 0.2% PS ≥ 230 N/mm²
- UTS ≥ 450 N/mm²
- %El (l=5d) ≥ 22%
- %Ra ≥ 31%
- Impact ≥ 27 J *

* Average of 3 Charpy-V-notch specimens, where the smallest value shall be at least 21 J.

The mechanical properties shall be determined on one separately cast test sample or on one attached test sample for each heat and heat treatment load. The size of the test sample shall be selected as appropriate to the thickness of the actual castings and the extent of testing. After casting, heat number shall be stamped on the test sample. It must be ensured that the test sample be included with castings from the same heat during each subsequent heat treatment

7.3 Outer and inner Quality / NDT

7.3.1 General

The basis of NDT are HW 0980830 (PA 11.60), HW 0980829 (PA 11.61).

The surfaces of the castings shall be clean and allow for visual inspection as per MSS SP-55. If NDT is performed, the surfaces shall be fit for testing e.g. ground. The requirements are according to EN 1370, min. 3S1 (at blast surface) or 3S2 (at ground surface) as per the French standard BNIF 359-01.

7.3.2 Scope of Inspection

Following NDT shall be performed in delivery condition. RT can be performed before stress relieving:

- a) Visual inspection of all external and internal surfaces.
- b) MPI of all surfaces as per HW 0980829 (HW 11.61); DPT may be performed where MPI is not possible.
- c) UT of all the welded areas according to HW 0980830 (PA 11.60)

7.3.3 Criteria for Registration and Decision

- a) Visual Inspection: Criteria of standard MSS SP-55 shall be applied.
- b) MPI/DPT: Irrespective of the standard specified on the drawing accompanying the order, the criteria of HW 0980829 (PA 11.61) is valid in any case. Regarding the severity levels, the values of the respective order drawing are valid.

REV-NO-02

PRO/SHEET SPEC

CHANGE ADVISE NO. 75X(MTE)-02-28

P.NATH 4/11/02 DATE 22/3/02

निर्माणकर्ता Worked by	S. GROVER	4/11/02
जांचकर्ता Checked by	P.NATH	31/10/02

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हरिद्वार)	HW19591
		PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	पृष्ठ का Page 4 of 4

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SUPERSEDES INVENTORY NO.

c) UT: Irrespective of the standard specified on the drawing accompanying the order, the criteria of HW 0980830 (PA 11.60) is valid in any case. Regarding the severity levels, the values of the respective order drawing are valid.

8.0 MARKING

The Supplier's identification no., drawing no. and the material designation GS-45 are to be punched on the casting at the position specified in the order drawing.

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9.0 TEST CERTIFICATES

Unless otherwise specified, the supplier shall furnish 4 copies of test certificate 3.1B according to EN 10204 to BHEL prior to, but in no case later than the delivery of the casting. The test certificate shall contain the following:

- Heat no. and order no. on every page
- Material designation
- Name and drawing no. of the casting
- Heat no., heat analysis and melting method.
- Information about the size of separately cast test sample or the attached sample.
- Mechanical test result including hardness test. All individual values shall be reported.
- Complete information on all heat treatments performed in the real order
- photos or sketches with all areas prepared for welding
- Weld report with the information of the PQR, the welders and the used electrodes.
- NDT report
- Dimension report.
- Report of any other test specially agreed.

10.0 DEVIATIONS

Any deviation from this delivery specification has to be reported to BHEL immediately using Performa PU-25 supplied with the order. Any deviation is generally accepted only if this has been approved by BHEL in a written form.

11.0 CLEARANCE FOR DELIVERY

The clearance for dispatch is based on the total results of all tests performed considering the service stresses of the component. BHEL has the right to accept deviations of the specified values, if it is shown by individual judgment that the service properties are not reduced.

The clearance does not release the manufacturer from the responsibility for hidden defects that are detected at later stage of manufacturing.

हस्ताक्षर एवं दिनांक
SIGN & DATE

12.0 PACKING

The casting shall be suitably packed in a condition to withstand for an indefinite time exposure to all climatic conditions without developing any external and internal defects. The casting shall be properly protected from damage during transportation. Supplier may use anti-corrosive paint HE 1707 (produced by Central Insulation Technology, BHEL Bhopal) or Petrolatum (produced by Bharat Petroleum). The overseas supplier may use Tectyle 506 produced by M/s Volvoline, Germany).

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INVENTORY NO.



REV. NO. 02

PRO/SHEET SPEC

75X(MTE)-02-28

P.NATH 5-AUG-02

01

निर्माणकर्ता Worked by	S.GROTRA		24/1/02
जांचकर्ता Checked by	P.NATH		3/1/02