



BHEL भारतीय विद्युत निर्माता संस्थान	संस्थान क्रय विनिर्देश (हीप - हरिद्वार)	HW19468 पृष्ठ का Page 1 of 8
PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		
TURBINE SHAFT FORGING WITH HEAT STABILITY TEST GRADE: X12CrMoWVNbN10-1-1		
1.0 GENERAL: This specification governs the quality of Turbine shaft forging of steel grade X12CrMoWVNbN10-1-1, Material No. 1.4906. 2.0 APPLICATION: For forging of Turbine shafts. 3.0 CONDITION OF DELIVERY: Heat-treated and machined condition as per the ordering drawing. 4.0 DIMENSION AND TOLERANCES: Forging shall be supplied to the dimensions and tolerances as per the ordering drawing. 5.0 MANUFACTURING: 5.1 GENERAL REQUIREMENTS: Before starting the production, the manufacturer shall submit a manufacturing plan for BHEL approval. Manufacturing plan shall contain information details as per Annexure 1. Inspection shall be as per BHEL approved quality plan. 5.2 MELTING AND FORGING: Vacuum degassed steel with low silicon content (e.g. VCD Steel) or re-melted steel (ESR) shall be used and shall be thoroughly forged. The use of any other secondary steel treatment shall be agreed upon in advance with BHEL in each individual case. 5.3 HEAT TREATMENT A vertical liquid quenching shall be carried out. In the center of the rotor a complete transformation in the martensite phase must be achieved. The hardening temperature shall lie between 1070°C and 1100°C. A two-step tempering, also in vertical condition shall be performed. The temperature of the 2 nd tempering temperature shall be higher than the temperature of 1 st tempering temperature and shall be minimum 690°C. Any change in heat treatment temperature to be agreed and approved by BHEL in each individual case. The duration of tempering as well as the controlled cooling rate are to be chosen to achieve minimum residual stresses. The residual stresses shall not exceed 60N/mm ² at any point on the surface.	TLV9258 04, July'11 COPYRIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	
TSX PSC QAX STE AGREED DEPT. NAME DATE & SIGNATURE	D. G. GUPTA G. KRISHNAN U. K. PANDA D. K. RAY NAME DATE & SIGNATURE	TRANSLATED BY WORKED BY CHECKED BY SUPERVISED BY SUBODH RANA ASHISH RANJAN GOPAL KRISHNAN NAME SIGNATURE & DATE
संस्थान मानकीकरण समिति APPROVED : PLANT STANDARDIZATION COMMITTEE		Gr. NO. 2.60
REV. NO. 07 DL 24-02-21 CHANGE ADVICE NO. TSX(MTE)-21-30	SUPERSEDES PREPARED : MTE ISSUED : TSX DATE : 14.10.2000	

Here the company SIGN & DATE		संस्थान क्रय विनिर्देश (हीप : हरिद्वार)		HW19468														
		PLANT PURCHASE SPECIFICATION (HEEP: HARIDWAR)		पृष्ठ का Page 2 of 8														
SUPERSEDES INVENTORY NO.	6.0 PROPERTIES AND TESTS:																	
	6.1 CHEMICAL COMPOSITION																	
Here the company SIGN & DATE	6.1.1 Heat analysis in weight %																	
	<table border="1"> <tr> <th>C</th> <th>Si</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Cr</th> <th>Mo</th> </tr> <tr> <td>0.11 - 0.13</td> <td>≤ 0.12</td> <td>0.40 - 0.50</td> <td>≤ 0.012</td> <td>≤ 0.005</td> <td>10.2 - 10.6</td> <td>1.00 - 1.10</td> </tr> </table>					C	Si	Mn	P	S	Cr	Mo	0.11 - 0.13	≤ 0.12	0.40 - 0.50	≤ 0.012	≤ 0.005	10.2 - 10.6
C	Si	Mn	P	S	Cr	Mo												
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Here the company SIGN & DATE	<table border="1"> <tr> <th>NI</th> <th>W</th> <th>V</th> <th>Al</th> <th>N</th> <th>Nb</th> </tr> <tr> <td>0.70 - 0.80</td> <td>0.95 - 1.05</td> <td>0.15 - 0.25</td> <td>≤ 0.010</td> <td>0.045 - 0.060</td> <td>0.04 - 0.06</td> </tr> </table>					NI	W	V	Al	N	Nb	0.70 - 0.80	0.95 - 1.05	0.15 - 0.25	≤ 0.010	0.045 - 0.060	0.04 - 0.06	
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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHEL Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	<p>The percentage of the tramp elements Cu, As, Sb and Sn shall be recorded in the test certificate for BHEL information. Slight deviation in chemical composition are permissible after agreement with BHEL, provided service properties are not affected.</p>																	
	6.1.2 Product Analysis																	
Here the company SIGN & DATE	<p>A product analysis shall be carried out in accordance with specification AA0850155 and shall be documented. The product and heat analysis have to demonstrate that material can be regarded as chemically homogenous (with the exception of small deviations).</p>																	
	6.2 MECHANICAL PROPERTIES																	
Here the company SIGN & DATE	<p>Tensile testing shall be carried out as per ISO 6892-1. Impact testing to be carried out as per ISO 148-1.</p>																	
	6.2.1 Tangential or Radial Specimens:																	
Here the company SIGN & DATE	<p>The manufacturer shall test Tangential or Radial test specimens taken from locations indicated on the drawing. The difference between the individual values of 0.2% Proof Strength and Tensile strength values from different locations as indicated in drawing shall not differ by more than 50 N/mm².</p>																	
	<p>The test rings shall not be cut free before quality heat treatment. The location of tensile and impact specimens must be at a distance of 40mm from the heat-treatment surface and shall be indicated.</p>																	
Here the company SIGN & DATE	<p>The following properties shall be achieved at room temperature:</p>																	
	<table border="1"> <tr> <th>0.2% Proof Strength (N/mm²)</th> <th>Tensile strength (N/mm²)</th> <th>% Elongation after fracture A (%)</th> <th>% Reduction of Area (%)</th> <th>Absorbed impact energy (KV₂) (J)</th> </tr> <tr> <td>700 - 800</td> <td>≤ 1000</td> <td>≥ 13</td> <td>≥ 40</td> <td>≥ 30 *</td> </tr> </table>					0.2% Proof Strength (N/mm ²)	Tensile strength (N/mm ²)	% Elongation after fracture A (%)	% Reduction of Area (%)	Absorbed impact energy (KV ₂) (J)	700 - 800	≤ 1000	≥ 13	≥ 40	≥ 30 *			
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700 - 800	≤ 1000	≥ 13	≥ 40	≥ 30 *														
Here the company SIGN & DATE	<p>* Average of 3 Charpy V-notch specimens</p>																	
	6.2.2 Axial Core:																	
Here the company SIGN & DATE	<p>An axial core of diameter ≥ 60 mm is to be taken out from the journal area of the shaft. The location of the axial core is shown in the order drawing. The position of the shaft in the forged ingot shall be such that the axial core lies on the topside of ingot.</p>																	
	<p>Position and number of specimens shall be in accordance with the AA0850155.</p>																	
Here the company SIGN & DATE	REV. NO. 07	(SUPERSEDES)	निर्माणकर्ता WORKED BY	ASHISH RANJAN	24.02.2021													
			जांचकर्ता CHECKED BY	GOPAL KRISHNAN	24.02.2021													

Date of issue SIGN & DATE		संस्थान क्रय विनिर्देश (हीप : हरिद्वार)		HW19468	
		PLANT PURCHASE SPECIFICATION (HEEP: HARIDWAR)		पृष्ठ Page 3	का of 8
SUPERSEDES INVENTORY NO.		Following properties shall be achieved in radial direction:			
		0.2% Yield Strength $\geq 700 \text{ N/mm}^2$	FATT (°C)* For information only	Absorbed impact energy (KV ₂) at 20°C (J) $\geq 30^{**}$	
अनुमोदित अधिकारी का नाम		*) FATT in accordance with SEP 1670			
		**) Value from Absorbed Impact Energy – Temperature Curve			
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.		6.2.3 Inner ring Sample:			
		The manufacturer has to test the inner ring segments (if required) from locations indicated on the order drawing.			
		Following properties have to be achieved:			
		0.2% Proof Strength (N/mm ²) ≥ 700	FATT* (°C) For information	Absorbed impact energy (KV ₂) at 20°C (J) $\geq 30^{**}$	
		*) FATT in accordance with SEP 1670			
		**) Value from Absorbed Impact Energy – Temperature Curve			
		6.2.4 Testing:			
		The axial core and the inner rings must be clearly marked, so that their original position can be allocated to the shaft easily. Traceability of the trepanned core of the forging shall be confirmed by the stamp of the manufacturer's authorized inspector in the area of the identification number. If for any reason the axial core is to be taken from input end (bottom end), the existing drawing shall not be valid. The sampling of the trepanned core will then be done according to a new drawing.			
		6.2.5 Radial Core			
		In special cases the BHEL reserves the right to take one or more radial cores instead of the axial core or in addition to it. The position of the cores will be specified individually.			
		6.2.6 Reduced Fracture Deformations			
		In case of reduced values for fracture deformations during tensile testing, the manufacturer must perform retests and must provide verification that these are caused by local impurities only.			
		6.3 Outer and Inner Quality / NDE			
		6.3.1 UT – Inspection			
		Ultrasonic examination of rotor shaft shall be carried out as TLV511500001 (latest issue). The evaluation and acceptance of ultrasonic testing of shaft shall be as per TLV3930 12 (latest issue).			
		6.3.2 Magnetic Particle Examination			
		Magnetic particle examination and evaluation shall be carried out as per TLV511500001 (latest issue). The evaluation and acceptance of magnetic particle testing of shaft shall be as per TLV3930 12 (latest issue).			
		6.4 Residual Stress Measurement:			
		The residual stresses are to be proved at every delivery according to AA0850150 by a qualified method (e.g. the KWU–Ring Core method / ASTM E837). The residual stresses shall not exceed 60N/mm ² at any point on the surface.			
		REV. NO. 07	(SUPERSEDES)	निर्माणकर्ता WORKED BY ASHISH RANJAN	अधिकर्ता CHECKED BY GOPAL KRISHNAN

अनुमोदित
अधिकारी का नाम
P-3754
10/03/24



संस्थान क्रय विनिर्देश (हीप - हरिद्वार)

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PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)

6.5 HEAT STABILITY TEST

Heat stability test shall be carried out at 30°C below tempering temperature in accordance with specification AA0850152.

The occurrence of A- and D-type deflections can be ignored if it can be proved that they are caused by surface influences. If B-type deflections occur, the shaft shall be heated up and down as long as no further stresses will release. C-type deflections ≥ 0.05 mm are not acceptable. BHEL reserves the right to repeat the heat stability test.

7.0 DIMENSIONS & TOLERANCES:

Dimensions and tolerances shall be as per purchase order / ordering drawing. The manufacturer has to carry out the following dimensional inspection in delivery condition:

- All outer diameters and outer length dimensions of the rotor and the surface roughness of the journal area with limited reference value and actual value are to be written down.
- The length, the diameter and the surface roughness of the axial bore are to be measured according to Annexure 2.

8.0 MARKING:

The supplier shall mark each shaft at location shown in the respective drawing. Following information has to be punched at reference clock position number 12 and is to be bordered with oil paint.

- BHEL Purchase order number
- BHEL order drawing number with their revision number
- BHEL specification number with their revision number
- Heat Number
- Supplier reference identification

This shall be confirmed with authorized work inspector's stamp next to the identification.

9.0 DOCUMENTATION:

The supplier shall furnish 4 copies of test certificates in accordance to EN10204 B, unless otherwise stated on the order.

The test certificates shall bear the following information:

BHEL Reference:

- Purchase Order No.
- Drawing number with their revision number
- Purchase Specification number with their revision number

Supplier's Reference:

- Name of supplier
- Material Identification
- Melt Number & melting process

REV 07

निर्माणकर्ता

WORKED BY

Ashish
Ranjan

21.08.2018

जांचकर्ता

CHECKED BY

Gopal
Krishnan

21.08.2018

दिनांक एवं हस्ताक्षर
SIGN & DATESUPERSEDES
INVENTORYसमग्री सूची संख्या को
अतिरिक्त करारा 9

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स्वतंत्रताधिकार एवं गोपनीय


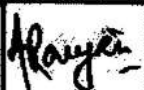
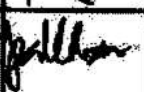
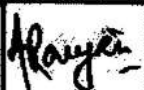
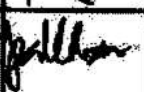
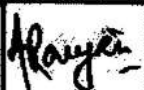
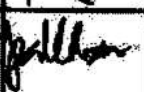
इस दस्तावेज में दी गई सूचना भारत भारती इलेक्ट्रिकल्स लि. की संपत्ति है। इसका प्रयोग एवं प्रसारण बिना लिखित अनुमति के बिना किया जाना नहीं चाहिए।


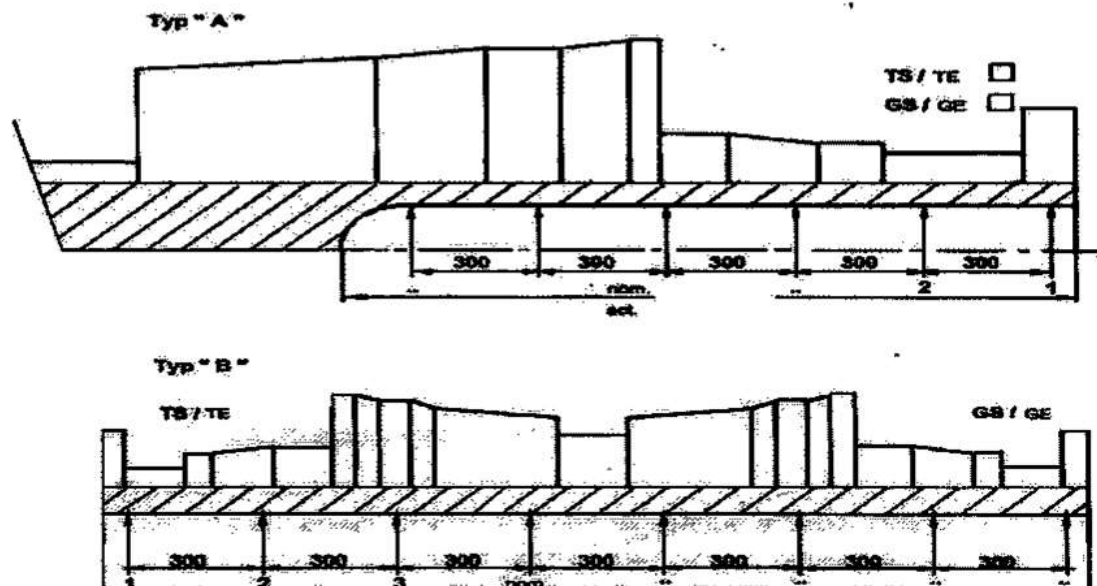
हस्ताक्षर एवं दिनांक
SIGN & DATEसमग्री सूची संख्या
INVENTORY NO.

21/08/18

P-3754

Design & Date SIGN & DATE		संस्थान क्रय विनिर्देश (हीप : हरिद्वार)		HW19468									
		PLANT PURCHASE SPECIFICATION (HEEP: HARIDWAR)		पृष्ठ Page 5	का of 8								
SUPPLIERS INVENTORY NO													
माली की सेवा INVENTORY NO													
<p>COPYRIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>													
<p>a) Details of steel ingot & forging process: Dimension, ingot weight, forging process and Forging reduction ratio (F_{max}/F_{end} at the largest diameter)</p> <p>b) Details of heat treatment, method of cooling, actual time and temperature sequence, soaking time, heating and cooling rate.</p> <p>Test Results:</p> <p>a) Melt analysis along with tramp elements.</p> <p>b) Product analysis</p> <p>c) Result of residual stress measurement</p> <p>d) Mechanical test results (all individual values & test piece locations are to be indicated).</p> <p>e) Ultrasonic examination results</p> <p>f) Results of the MPI of axial and if applicable radial bores</p> <p>c) Heat Stability test results</p> <p>d) Dimensional report</p>													
<p>10.0 CLEARANCE FOR DELIVERY:</p> <p>The entire results of test performed are deciding factors for the clearance of the delivery. BHEL shall evaluate the total results with respect to intended operational requirements for the forging and judge accordingly the permissibility of deviations, if any.</p> <p>The clearance does not relieve the manufacturer from the responsibility for hidden impermissible defects, which may be found later on.</p>													
<p>11.0 DEVIATIONS:</p> <p>Deviations from this Purchase Specification, which arise during manufacturing, shall be submitted to BHEL in writing, giving full details of the deviation. Acceptance of concession request will be at the sole discretion of BHEL. BHEL has right to reject material in case of any deviation from specified properties even if testing is not explicitly specified.</p>													
<p>12.0 PACKING & DISPATCH:</p> <p>Before dispatch, the forging shall be suitably packed to prevent corrosion and damage during transit. Support points shall be protected against corrosion and mechanical damage. Axial bore shall be sealed air tight by means of a plastic plug (polycarbonate). The details are given in Annexure-03. Prior to sealing, the whole surface of the bore shall be protected with water displacing slushing oil (dewatering fluid). BHEL must be informed about the used product.</p>													
<p>13.0 CROSS REFERRED STANDARDS:</p> <table border="0"> <tr> <td>1. AA0850150</td> <td>2. ASTM E 837</td> <td>3. AA0850155</td> <td>4. TLV511500001</td> </tr> <tr> <td>5. TLV3930 part 12</td> <td>6. EN10204</td> <td>7. ISO 6892-1</td> <td>8. ISO 148-1</td> </tr> </table>						1. AA0850150	2. ASTM E 837	3. AA0850155	4. TLV511500001	5. TLV3930 part 12	6. EN10204	7. ISO 6892-1	8. ISO 148-1
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Design & Date SIGN & DATE 10/03/21	REV. NO. 07 (SUPERSEDES)												
माली की सेवा INVENTORY NO P-3454	निर्माणकर्ता WORKED BY ASHISH RANJAN		21.02.2021										
		जांचकर्ता CHECKED BY GOPAL KRISHNAN		24.02.2021									

दिनांक एवं आवक संख्या DATE		संस्थान क्रय विनिर्देश (हीप – हरिद्वार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19468 पृष्ठ का Page 6 of 8													
SUPERSEDES INVENTORY NO. आगामी सूची संख्या को अनुसूचित करना है	Annexure 1															
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	<p>CONTENT / DETAILS OF MANUFACTURING PLAN</p> <p>To confirm that the order requirements comply with the quality-assured manufacturing process, the following information shall be given to the purchaser:</p> <ol style="list-style-type: none"> Melting, Steel Treatment, Ingot Pouring <ul style="list-style-type: none"> heat analysis, method of melting, ladle treatment, method of deoxidation, method of degassing method of ingot pouring, number and weight of melts in the ingot ingot weight and average diameter, L/D ratio Forging Process <ul style="list-style-type: none"> force of the press, forging weight portion of top scrap, portion of bottom scrap number of forgings in the ingot, final forging contour, forging sketch detailed forging sequence with sketch of forging dimensions special forging procedures are to be reported total straightening forging ratio Preliminary Heat Treatment <ul style="list-style-type: none"> heating rate holding temperatures and holding times cooling rates method of temperature measurement Internal Tests and Inspections before Quality Heat Treatment Quality Heat Treatment <ul style="list-style-type: none"> sketch of heat treatment contour including position in the ingot and position of specimens (If no heat treatment sketch is made, a UT inspection sketch and a specimen's position sketch shall be available and the heat treatment allowances shall be reported.) heat treatment: vertical heating rates holding temperatures and holding times cooling rates method of cooling, dipping or spraying method of temperature measurement Tests and Inspections after Heat Treatment <ul style="list-style-type: none"> mechanical tests with sketch of specimen position (distance to heat treatment contour) residual stress measurement, position of test spots and method of measurement surface condition after machining for NDE surface crack inspection according to TLV ultrasonic inspection dimensional check Heat Stability Test <ul style="list-style-type: none"> position of bearing and measuring areas method of heating surface anti-rust coating Final Inspections, Documentation & Dispatch 															
स्वतंत्रतापूर्वक एवं गोपनीय इस प्रलेख में दी गई सूचना आपका केवल इस्तेमाल के लिए है। इसे किसी भी प्रकार का प्रसार नहीं किया जाना चाहिए।	<table border="1"> <tr> <td data-bbox="33 2018 97 2208"> INVENTORY NO. 123354 </td> <td data-bbox="97 2018 879 2208"> REV 07 </td> <td data-bbox="879 2018 1038 2208"> निर्माता WORKED BY </td> <td data-bbox="1038 2018 1198 2208"> Ashish Ranjan </td> <td data-bbox="1198 2018 1342 2208">  </td> <td data-bbox="1342 2018 1501 2208"> 21.08.2018 </td> </tr> <tr> <td data-bbox="33 2107 97 2208"></td> <td data-bbox="97 2107 879 2208"></td> <td data-bbox="879 2107 1038 2208"> जांचकर्ता CHECKED BY </td> <td data-bbox="1038 2107 1198 2208"> Gopal Krishnan </td> <td data-bbox="1198 2107 1342 2208">  </td> <td data-bbox="1342 2107 1501 2208"> 21.08.2018 </td> </tr> </table>				INVENTORY NO. 123354	REV 07	निर्माता WORKED BY	Ashish Ranjan		21.08.2018			जांचकर्ता CHECKED BY	Gopal Krishnan		21.08.2018
INVENTORY NO. 123354	REV 07	निर्माता WORKED BY	Ashish Ranjan		21.08.2018											
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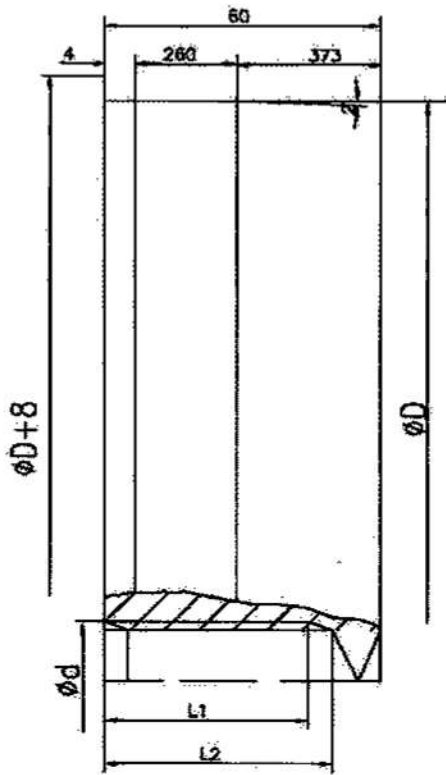
निर्माण एवं इन्वेंटरी शुनक DATE		संस्थान क्रय विनिर्देश (हीप - हरिद्वार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19468 पृष्ठ का Page 7 of 8																
SUPERSEDES INVENTORY NO. संपत्ति सूची संख्या की अधिकतम प्रमा. ६	Annexure - 02																		
IP/HP Turbine Shaft: Inspection of Axial Bore																			
Test Record:																			
Job Name:		PO No:																	
Drawing No.:		Material Spec.:																	
		Roughness: Nom./Act. Diameter : Nom.																	
																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Measuring Point</th> <th>Diameter</th> <th>Measuring Point</th> <th>Diameter</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				Measuring Point	Diameter	Measuring Point	Diameter												
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निर्माण एवं इन्वेंटरी शुनक INVENTORY NO. 22/5/18	REV : 07		निर्माणकर्ता WORKED BY Ashish Ranjan																
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स्वतंत्रता एवं गोपनीय

इस प्रतिक में की गई प्रतिलिपि केवल कंपनी के उपयोग के लिए है।

निर्माण एवं समारंभ स्क्राइप DATE		संस्थान क्रय विनिर्देश (हीप - हरिद्वार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19468 पृष्ठ का Page 8 of 8																
SUPERSEDES INVENTORY NO. आवसी सूची संख्या को अतिरिक्ति आवसी 8	Annexure - 03																		
Plugs for trepanning bores in turbine and generator rotors																			
																			
$\text{ØD (fit of plug)} = \text{bore diameter of rotor} + 0.25 \text{ tolerance} + 0.05$																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Thread dimensions</th> <th>Ød</th> <th>l₁</th> <th>l₂</th> </tr> </thead> <tbody> <tr> <td>Ød ≤ 60mm</td> <td>M16</td> <td>31</td> <td>40⁺¹</td> </tr> <tr> <td>Ød > 60 - ≤ 130MM</td> <td>M20</td> <td>31</td> <td>42⁺¹</td> </tr> <tr> <td>Ød > 130</td> <td>M27</td> <td>31</td> <td>44⁺²</td> </tr> </tbody> </table>				Thread dimensions	Ød	l ₁	l ₂	Ød ≤ 60mm	M16	31	40 ⁺¹	Ød > 60 - ≤ 130MM	M20	31	42 ⁺¹	Ød > 130	M27	31	44 ⁺²
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स्वाम्यधिकार एवं गोपनीय इस प्रवेश में की गई सुचना भारत देशी सौविधिकरण की सम्पत्ति है	COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	प्रमाणित किया 20/08/18																	
आवसी सूची संख्या INVENTORY NO. 23754	REV 07																		
निर्माणकर्ता WORKED BY Ashish Ranjan		21.08.2018																	
जांचकर्ता CHECKED BY Gopal Krishnan		21.08.2018																	

डॉक्यूमेंट जारी कर मोडिफ कर दी गई है।
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डॉक्यूमेंट जारी कर
CHANGE ADVICE FORM



हस्ताक्षर सूचना संख्या
CHANGE ADVICE NO.

जारीकर्ता विभाग
ISSUING DEPTT.

उत्पाद का प्रकार
TYPE OF PRODUCT

जोड़/घटाव/दोहरा
रकम/संशोधन सं.
GMS, 2557
/CBOM NO.

हस्ताक्षर दिनांक
APPROVED BY
DATE

TSX(MTE)-21-30

MTE

PPS

AGM(MTE)

ड्राइंग नं.
DESIGNATION
(DRAWING NO. ETC.)

संशोधन नं.
REV. NO.

संशोधन को विवरण
DETAILS OF REVISION

संशोधन नं.
REV. NO.

संशोधन नं.
REV. NO.

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CLAUSE 6.2
FOLLOWING ADDED
TENSILE TESTING SHALL
ISO 6892 PART 1
IMPACT TESTING SHALL BE
CARRIED OUT AS PER ISO 148
PART 1
CLAUSE 6.3.1 & 6.3.2
CHANGED TO TLY 511500001
CLAUSE 13.0
ISO 6892 PART 1
ISO 148 PART 1 ADDED

CLAUSE 6.3.1 & 6.3.2
CHANGED TO TLY 511500001
CLAUSE 13.0
ISO 6892 PART 1
ISO 148 PART 1 ADDED

REASON FOR CHANGES: 01- ENGINEERING ERROR INCLUDING D.O. ERRORS, 02- DESIGN UPGRADATION (INCLUDING ADDITION OF VARIANT), 03- DESIGN REVIEW INCLUDING CHANGES DUE TO CHANGE ADVICE IN OTHER DOCUMENTS, 04- TO MEET MANUFACTURING REQUIREMENTS, 05- TO MEET TECHNOLOGICAL MODIFICATIONS, 06- TO SUIT CUSTOMER DEMANDS, 07- TO SUIT STATUTORY REQUIREMENTS, 08- TO REPLACE DAMAGED/ TURN OUT ORIGINALS BY A FRESH ORIGINALS, 09- ANY OTHER

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