




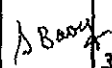



दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक		HE57057	
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SUPERSEDES INVENTORY	TECHNICAL SPECIFICATION OF GEARED H.O.T. CRANE WITH UNDER-SLUNG TROLLEY				
बायीं पृष्ठ संख्या को	1. SCOPE: This specification covers the requirement of design, manufacture, assembly, inspection, shop testing, packing, delivery at site, erection & commissioning supervision & site testing of hand operated overhead travelling crane with under slung traveling trolley, chain pulley blocks and rails for handling of condenser front water boxes, rubber expansion joints, C.W. piping etc., complete with all accessories, to meet the service requirements.				
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.	2. APPLICABLE CODES & STANDARDS: The H.O.T. crane shall be designed, manufactured & tested as per relevant Indian standards or equivalent. The applicable clauses of IS: 3832, IS: 807, IS: 3177 shall be taken care of while selecting the material, designing, manufacturing & testing of geared H.O.T. crane. However, the codes/standards referred to by bidder shall be specified by him in his offer.				
स्वतंत्रता एवं गोपनीय इस प्रस्ताव में दी गई सूचना भारत भारी इलेक्ट्रिकल्स की संपत्ति है इसका इस्तेमाल एवं आश्रय केवल इस प्रस्ताव के लिए ही किया जा सकता है, जो कि कंपनी के हित में प्रतिस्पर्धा है, न कि अन्य।	3. DESIGN & MANUFACTURE: 3.01 Both bridge and trolley shall be driven manually by pulling endless chains passing over a pulley (one for each drive). The rotation of the pulley shall be transmitted to wheels through spur gears only. Pulley shall be equipped with a winching chain guide to effectively prevent 'gagging' of the chain when being rapidly handled. 3.02 All bearings shall be of anti-friction type of adequate capacity. Due allowance shall be made for impact & side thrusts. Main trolley wheels shall be provided with roller bearings. Other bearings may be Ball-bearings. Bearings shall be made of steel.				
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HXE	N.P. MATHUR	अनुवादक TRANSLATED BY			
QAX	S.S. Chandra	निर्माणकर्ता WORKED BY			
TSX	KISHAN LAL	जांचकर्ता CHECKED BY			
सहमत विभाग AGREED DEPTT	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	परीक्षणकर्ता SUPERVISED BY		
INVENTORY NO. P-6307	स्वीकृति APPROVED : V.K.SAXENA, AGM (HXE) 3-11-2004				
REV.NO.	01	निर्माण PREPARED : HXE			
Dt.	29-12-2004	जारी ISSUED : TSX		दिनांक DATE : 03-11-2004	


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सुपरसेड INVENTORY	3.03	All gears shall conform to relevant Indian standards and also to IS: 3177. Straight spur gears shall normally be used for all motions. Worm or bevel gears shall not be used without prior consent of the purchaser. Gearboxes shall generally conform to IS: 3177.		
3.04	All chains for driving and lifting shall be of electrically welded link type, pitched and polished and shall conform to IS: 6216 / IS: 3109 and general conditions of acceptance as per IS: 5616.			
3.05	Adequate provision shall be made for proper lubrication of all gears, bearings and pulleys. Bearings shall be provided with arrangement for grease lubrication by grease gun.			
3.06	Suitable runway rails of adequate size shall be furnished by the ^{Vendor} alongwith the cranes. Bridge stops shall be provided at each end of the rails. All clamps and fittings necessary for fixing the rails shall be provided by the tenderer.			
3.07	The lifting hooks of chain pulley blocks shall be made of high tensile forged steel, which shall be able to rotate & swivel freely as per IS: 3815.			
3.08	The trolleys shall be manufactured with suitable certified materials. The material of all major components shall be indicated in the offer by the bidder. Qualified welders and fitters shall be employed for manufacturing the trolleys.			
3.09	D/Bow shackle shall be as per IS:6132.			
3.10	A BHEL drawing based upon project to project requirement shall be sent to the vendor along with enquiry having important technical information like main dimensions, capacity, lift, bottom of structure, painting scheme (If there is any customer specific requirement other then specified here) etc. The vendor shall include these requirements in his drawings to be submitted for BHEL approval after placement of purchase order.			
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SUPERSEDES INVENTORY बाकी सूची संख्या को	<p>4. SURFACE PREPARATION / PAINTING: Before despatch of the crane, the structural & mechanical parts shall be thoroughly cleaned of all dirt, grease, scale. The cleaning shall be carried out by sand / shot blasting and painting shall be carried out as below:</p> <p>a) One primer coat of epoxy based zinc rich primer paint (DFT 70 microns) b) One intermediate coat of epoxy TiO₂ pigmented polyamide cured paint (DFT 70 microns) c) Two final coats of aliphatic acrylic 2 pack polyurethane finish paint (Golden yellow RAL-1004) (DFT 60 microns) d) Total dry film thickness shall be 180 - 200 microns</p> <p>5. QUALITY ASSURANCE, INSPECTION & TESTING: The manufacturer shall conduct all the tests required to ensure that all component parts of the crane/handling arrangement offered, conform to the requirements of the specification and are in compliance with requirement of applicable codes and standards. The bidder shall submit, alongwith his offer, quality plan in the prescribed format, alongwith all the reference documents.</p> <p>5.01 The particulars of the proposed shop tests/site tests and procedure for tests shall be sent to BHEL/ its customer for approval alongwith Quality plan.</p> <p>5.02 The material shall be dispatched only after inspection and clearance of material by BHEL/ its customer and approval of test certificates by BHEL/ its customer.</p> <p>5.03 The Quality plan should include all the tests/ checks given below alongwith any other additional tests/ checks being carried out by supplier, which shall be subjected to approval of BHEL/ its customer and BHEL/ its customer reserves the right to ask for any more checks at the time of quality plan finalization.</p> <p>BHEL/ its customer shall indicate Customer Hold Points (CHP) on approved Quality Plan beyond which work shall not proceed without the approval of BHEL/ its customer. The supplier shall furnish his production plan & scheduled dates of testing at least 1 month in advance to enable BHEL/ its customer to plan for witnessing the tests identified as customer hold points.</p>				
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बाकी सूची संख्या INVENTORY NO. P-6307	निर्माणकर्ता WORKED BY S.K.HAVEJA		जांचकर्ता CHECKED BY S.BARAI		
		3.11.04		3.11.04	

रिवीजन एवं रिवरसिओन & DATE SUPERSEDES INVENTORY समीची पूर्ण संख्या को		उत्पाद मानक		HE57057	
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<p>TESTING OF MATERIALS:</p> <ol style="list-style-type: none"> The material of all major components shall be tested as per relevant specification for its chemical composition and mechanical properties. Suitable NDT to ensure freedom from internal, surface and subsurface defects shall be carried out. All the welding shall be done as per qualified procedures and by welders qualified as per ASME IX. All welds shall be subjected to DPT to ensure freedom from surface/ sub surface defects. DPT on shaft, axle shaft, gear wheels/ plain wheels, pawl and ratchet to be carried out to ensure freedom from surface defects. Hooks shall be proof load tested at manufacturer's works as per the requirements of relevant code. Hooks shall be subjected to U.T. before and after proof load test to ensure freedom from internal defects. Hooks shall be subjected to DPT to ensure freedom from surface/sub-surface defects before and after proof load test. Each chain pulley block shall be subjected to proof load test and operational test to a proof load of 1.5 times the safe working load as per the requirements of IS: 3832. Load chain shall be tested for the checks/ tests as per IS: 6216 & IS: 5616. Hand chain shall be tested for the checks/ tests as per IS: 3109 & IS: 5616. The crane shall be tested for deflection test as per IS: 807 at manufacturer's works. The crane shall be tested for all motions at manufacturer's works at safe working load and 25% over load as per IS: 807. The self-braking arrangement shall also be tested along with motion tests. Procedure and acceptance criterion for UT & DPT shall be as per Annexure-A. <p>6. OPERATION AND MAINTENANCE:</p> <p>Supplier shall send 20 copies of the Instruction Manual for the H.O.T. crane including chain pulley blocks at the time of dispatch.</p>					
स्वतंत्राधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत भारी इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं आश्रय रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में समझाया जा सके न किया जाए।	दिनांक एवं तिथि SIGN & DATE 17/11/07	REV.NO. 01	निर्माणकर्ता WORKED BY S.K.BAVEJA	जांचकर्ता CHECKED BY S.BARAI	3.11.04 3.11.04
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	SUPERSEDES INVENTORY संख्या की संख्या की	Additional four copies of the documents shall be sent to the following address with in one month from the placement of order Head of Department, Heat Exchangers Engg., BHEL, Ranipur, Haridwar, (UTTARANCHAL) Pin : 249 403		
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6.01 Instruction Manuals : The instruction manuals shall present the following basic categories of information in a comprehensive manner prepared for use by operating & maintenance personnel: i) Instruction for erection. ii) Instructions for pre-commissioning check-up operation, abnormal condition, maintenance & repair. iii) Recommended inspection points & periods of inspection. iv) Schedule of preventive maintenance. v) Ordering information for all replaceable parts. vi) Recommendation for type of lubricants, lubricating points, frequency of lubrication & lubricant changing schedule.				
6.02 The information shall be organized in a logical and orderly sequence. A general description of the equipment including significant technical characteristics shall be included to familiarize operation & maintenance personnel with the equipment.				
6.03 Necessary drawing and/ or other illustrations shall be included or copies of appropriate final drawings shall be bound in the manual. Test, adjustment & calibration information, as appropriate, shall be included & identified to the specific equipment. Safety and other warning notices & installation, maintenance & operating cautions shall be emphasized.				
6.04 Instruction manual shall be securely bound in a durable folder.				
6.05 A part list shall be included showing part nomenclature, manufacturer's part number and / or other information necessary for proper identification and ordering of replaceable parts.				
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संपत्ति सूची INVENTORY NO. P-6307	SUPERSEDES INVENTORY NO.	6.06 The Instruction manual shall include the list of spare parts that have been procured alongwith the equipment. It shall also include list of all special tools and tackles furnished, with complete drawing and instruction for use of such tools & tackles. 6.07 The instructions manual will need approval of Engineer in the same fashion as that for drawings. 7. Following information shall be submitted by each bidder with his offer: <ul style="list-style-type: none"> i) Arrangement drawing & sectional drawing showing details of all components and bill of material with applicable standards. i) Manual effort required to operate the main trolley and the chain pulley blocks. iii) A sketch/ drawing showing the movement of trolleys. iv) Overall dimensions and points of lifting of the trolleys along with end side clearance diagrams. v) Crane loading diagram and impact load on end stoppers. vi) Size of beams (crane girder) selected by the bidder. vii) Any specific recommendation for opening and closing of water boxes. viii) Any specific erection/ testing requirements bidder wishes to specify. ix) Drawing and data of the crane runway rail, and its method of attachment to gantry girder and general arrangement of end stoppers. x) A comprehensive write-up and/ or brochure on the details of the manufacturing facilities and the test facilities in the shop of the supplier. xi) Sub-vendors for major items like hooks, forging & chain pulley block. 		
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सामग्री सूची SUPPLIES INVENTORY		<p>8. TEST CERTIFICATES:</p> <p>8.01 Vendor shall submit four copies of test certificates of all the tests/checks as per approved Quality Plan, These should including test certificates for H.O.T. crane as per IS: 807 & test certificates for chain pulley blocks as per IS: 3832.</p> <p>8.02 Vender shall also submit the test certificates of the materials used for the manufacture of the H.O.T. crane and chain pulley blocks.</p> <p>9. DISPATCH:</p> <p>The H.O.T. crane shall be dispatched to the site by the supplier with suitable packing to protect the component parts from any damage during transit.</p> <p>The supplier shall send a packing list, alongwith details of each package, in 10 copies, <u>two months</u> before the dispatch of the item for our reference. Packing lists shall also be sent alongwith the packages, at the time of dispatch.</p> <p>10. ERECTION:</p> <p>The erection supervision of the H.O.T. crane shall be in supplier's scope.</p> <p>11. GUARANTEE:</p> <p>The complete equipment shall be guaranteed for trouble free operation for a period of 18 months from the date of dispatch or for a period of 12 months after erection, which ever is earlier.</p> <p>12 List of Cross referred Standards:</p> <p>IS: 807 ; IS:3109; IS:3177 ; IS:3815 ; IS:3832 ; IS:5616 ; IS:6132; IS:6216</p>			
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हस्ताक्षर एवं दिनांक SIGN & DATE 17/11/04					
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SUPERSEDES INVENTORY	बाकरी सूची Serial no.	Annexure-A PROCEDURE AND ACCEPTANCE CRITERION FOR ULTRASONIC AND DYE PENETRANT TESTING.			
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ECHOFORM / ECHO HEIGHT					
EE + VE WITHOUT EXTENSION		EE + VE WITH EXTENSION (GA GN RZ)		BACK WALL ECHO LOSS	
RECORDABLE LIMIT (mm EFH)	ACCEPTANCE LIMIT (mm EFH)	RECORDABLE LIMIT (mm EFH)	ACCEPTANCE LIMIT (mm EFH)	ACCEPTANCE LIMIT (db)	
2	4	1	2	4	
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No. of acceptable indications per 100 sq cm. Surface area of length not exceeding 25cm.		Unacceptable linear defects.			
2 Nos. of 3mm circular indication.		Crack and hot tears.			
Note: The minimum permissible distance between any two or more acceptable individual flaws shall not be less than the major dimension of the larger flaw.					
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