

# BHARAT HEAVY ELECTRICAL LIMITED



Specification No.

CRJ/9582

Item No.

SP/CRJ/9582/1-2

Location

LOCO

Quantity

02 No.

## SPECIFICATION CUM COMPLIANCE CERTIFICATE OF 1 TON JIB CRANE

**NOTE:-**

1. Vendor must submit complete information against clause no.23 (Qualifying Condition). The offer meeting this clause would only be processed.
2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.
3. The offer and all documents enclosed with offer should be in English language only.

NAME & ADDRESS OF THE SUPPLIER :

NAME OF CONCERN PERSON

TELEPHONE NOS.:

FAX NOS.:

E-MAIL ADDRESS :

### DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF "01 -TON JIB CRANE" COMPLYING WITH SPECIFICATIONS AS BELOW:

S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	OFFERED	DEVIATIONS
1.0	SCOPE :		
1.1	DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF "PILLAR TYPE JIB CRANE 1 T; SPAN 3.0 METERS" COMPLYING WITH SPECIFICATIONS AS BELOW:		
1.2	Electric hoist is to be used used for loading and unloading materials weighting upto 1000 kgs and to work indoor and outdoor cover.The electric hoist is to be hand geared ,traveling type with built in trolley,robust in construction,noiseless in operation should be easy for installation and maintenance and shoud confirm to IS.The electric hoist block to be of single motion type fitted with hand operating travelling motion trolley being constructed of m.s. plate with travell wheels mounted on roller bearings.the travel motion to be though chain and stroket wheel moving the block on the reinforced bottom flanged on the jib arm.The driven arrangement should be through m.s. chain. The lifting load is to be carried by a tested steel wire rope of suitable size wound on the hoistin g drumthrough machine cut spur or worm gearing by an electric motor.The trolley suiting 200 mm wide jib flange is to be fitted with adjustable travel wheels for correct alignment to the lower flange of the jib arm.		
2.0	CAPACITY AND LEADING DIMENSION		
2.1	Safe Working Load - Main Hoist - 1 Ton		
2.2	CLASS OF CRANE - As per I.S. 3177/807,800 &4137		
2.3	Location - indoores		
2.4	Normal Radius / Span / Jib Arm Length - 3.0 Meter		
2.5	Cross Travelling Speed - 10-12 MPM		
2.6	Cross Travel Motor min - 0.5 H.P		
2.7	Height of pillar above floor level - 5.5 MTR		
2.8	Clear Hook lift - 4.3 Mtr		
2.9	Hoist lifting -Electrically		
2.10	Hoisting Motor Min. - Min. 1.0 H.P Sq. Case		
2.11	Jib Arm Slew Motion(rotation) & travel -Manual		
2.12	Electric power supply - 415±10 Volt, 3 Phase , 50±3 % Hz A.C.		
2.13	Control Supply -24/110 V.AC Through Pendant Push Buttan Station		
2.14	Facility to change the speed(fast/slow) in hoist shall be available in the Pendant through push button		
2.15	Wire rope dia		
2.16	Ambient Temperature -50 °C		
3.0	CONSTRUCTION :		
3.1	The Jib Arm Crane rotates upto 180° on a tapered roller bearing, providing full capacity vertical and radial thrust loading.The lower section of the head revolves around the pillar on a pair of steel rollers equipped with anty friction bearing.		
3.2	The Jib Crane Pillar is fabricated from heavy structural steel pipe with wall thickness sized for min. deflection.Large diameter base plate is reinforced with heavy steel gussets for continuous alignment and rigidity.		

**DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF "01 -TON JIB CRANE" COMPLYING WITH SPECIFICATIONS AS BELOW:**

3.3	Jib Crane mast section is steel fabricated box type welded construction for min. deflection between Arm and Pilar. Jib Crane arm is rolled steel compound RSJ section with tapered flange for smooth trolley travel. End stops are provided to limit trolley travel at both end of arm.	VENDER TO CONFIRM		
3.4	For all bolted joints the holes are to be drilled and reamed and bolts are to be force fitted.	VENDER TO CONFIRM		
3.5	All Rotating parts & Overhang parts should be suitably guarded.	VENDER TO CONFIRM		
4.0	<b>LIMIT SWITCHES &amp; BRAKES</b>			
4.1	Gravity type limit switch must be provided for hoisting operation in order to provide additional safety	VENDER TO CONFIRM		
4.2	Series type limit switches with single arm spring loaded allen west type should be provided for traverse motion.	VENDER TO CONFIRM		
4.3	All limit switches should be connected only in interlock circuits.	VENDER TO CONFIRM		
4.4	Suitable interlocks and adjustable type heavy duty double limit switch for hoisting and lowering motions to prevent over traverse.	VENDER TO CONFIRM		
5.0	<b>ROPE GUIDE:</b>			
5.1	Rope guide completely encircling the drum is to be provided for holding the rope in its grooves at all times and also to prevent the rope from uncoiling even when all the weights are taking away.	VENDER TO CONFIRM		
6	<b>HOISTING HOOK</b>			
6.1	Hoisting hook is to be of forged steel mouned on frictionless ball bearing for easy swivelling even when fully loaded and tested(with test certificate).	VENDER TO CONFIRM		
7	<b>HOISTING MOTOR:</b>			
7.1	Hoisting motor to be totally enclosed, Crane Duty surface cooled squirrel cage 40% CDF suitable for 440 volts. 3 phase, 50 cycles, 4 wire A.C supply. make .Siemens / Alstom/ ABB/ Crompton only	VENDER TO CONFIRM		
8.0	<b>PENDANT CONTROL</b>			
8.1	The contactor to be operated by pendent multi way push button unit suspended at a convenient height above floor level with a stepped down voltage of 24/110 volts A/C.	VENDER TO CONFIRM		
9.0	<b>Brake :</b>			
9.1	The hoise and the traverse motors to be fitted with electromagnetic self compensating brakes of fail to safety type	VENDER TO CONFIRM		
9.2	electro magnetic shoe type brake, a/c to be provided for hoist motion	VENDER TO CONFIRM		
10.0	<b>ELECTRICAL SYSTEM :</b>			
10.1	All electrical & electronic control cabinets & panels should be dust and vermin proof.	VENDER TO CONFIRM		
10.2	All electrical components in the cabinets should be mounted firmly on Bakelite plate or on DIN Rail so that there is no break in circuitry during traversing & accidental hit by adjoining Cranes or severe jerks at rail Joints.	VENDER TO CONFIRM		
10.3	All connecting Cables should be properly dressed in cable trays/ trunking with appropriate clamps.	VENDER TO CONFIRM		
10.4	Vendor should ensure the proper earthing for the crane's electrical equipment & its peripherals.	VENDER TO CONFIRM		
11.0	<b>MAKES OF DIFFERENT COMPONENTS: Bought - Out Materials shall be of best quality, duly tested as per appropriate IS standard and of Preferred makes as below:</b>			
11.1	Ball & Roller Bearings : SKF/FAG/TIMKEN	VENDER TO CONFIRM		
11.2	Cables : Copper cables with ISI mark only. Asian / Universal/ Finolex /Torrent	VENDER TO CONFIRM		
11.3	Gravity Limit switch / Other Limit Switches: Industry syndicate/ Stromkraft / Stromag / Speed-o- Control/ BCH- Heavy duty.	VENDER TO CONFIRM		
11.4	Structural Material (Steel ) : Of reputed makes like TATA/SAIL/ Jindal as per relevant Indian Standards.	VENDER TO CONFIRM		
11.5	Gear Boxes: Shanti Gears/ New Allenbery (Elecon) / Bonfiglioli. In case Crane manufacturer intends to supply their own make / Specific make of Gear Boxes & Couplings, then performance Guarantee of atleast 5 years shall be provided for those items.	VENDER TO CONFIRM		
11.6	Wire rope : Usha Martin make only.	VENDER TO CONFIRM		
11.7	Paint Confirming IS 5: 1984; Colour Shade No. 591 of Asian / Appcolite/ Nerolac/ Berger make.	VENDER TO CONFIRM		
11.8	MCCB/SFU: EE/Siemens/ ABB / L&T make.	VENDER TO CONFIRM		
11.9	Push buttons ( Siemens/ BCH/ L&T make only )	VENDER TO CONFIRM		
12.0	<b>VENDER TO INDICATE FOLLOWING INFORMATION IN THEIR OFFER</b>			
12.1	Weight of complete assembled crane	VENDER TO SPECIFY		
12.2	No. of wheels on CT trolley, Wheel diameter and material specification.	VENDER TO SPECIFY		
12.3	Wheel Load on each wheel	VENDER TO SPECIFY		
12.4	Make Type, size of thrusters and E.M. Brakes.	VENDER TO SPECIFY		
12.5	Total connected load (KVA):	VENDER TO SPECIFY		
12.6	Weight of heaviest part of Crane.	VENDER TO SPECIFY		
13.0	<b>SPARES:</b>			

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13.1	List of Standard spares to be supplied with crane in sufficient quantity for 2 years for trouble free operation on three shifts continuous running basis should be offered by vendor.	VENDER TO SUBMIT & CONFIRM		
13.2	Vendor to submit the complete list of spares for the crane and its controls along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the Crane.(Unit Price of each item of spare should be offered)	VENDER TO SUBMIT & CONFIRM		
14.0	<b>SAFETY ARRANGEMENTS: Following safety features in addition to other standard safety features should be provided on the crane.</b>			
14.1	Crane should have adequate and reliable safety interlocks / devices to avoid damage to the crane, work piece and the operator due to the malfunctioning or mistakes. Crane functions should be continuously monitored and alarm / warning indications through lights/ alarms should be available.	VENDER TO CONFIRM		
14.2	All the pipes, cables etc. on the crane should be well supported and protected.	VENDER TO CONFIRM		
14.3	Emergency Switches should be provided at suitable locations.	VENDER TO CONFIRM		
15.0	<b>ENVIRONMENTAL PERFORMANCE OF THE MACHINE :</b>			
15.1	If any safety / environmental protection enclosure is required it should be built on the Crane by the vendor.	VENDER TO CONFIRM		
15.2	Paint of the Crane should be applied only after providing rust-preventer ( primer ) coat.	VENDER TO CONFIRM		
15.3	Oil / Grease should not dip/ fall from the Crane.	VENDER TO CONFIRM		
15.4	Noise Pollution as per section 4(i) of the noise pollution (Regulation and control) Rules 2000 as amended time to time (Latest amendment jan-2010). This will be measured as per DIN45635-16. Vendor to demonstrate compliances to this.	VENDER TO CONFIRM		
16.0	<b>ERECTION &amp; COMMISSIONING:</b>			
16.1	The crane is to be Erected at site by the supplier with their own labour, tools and tackles & all equipments like lifting arrangement, etc shall be brought by the supplier on returnable basis.	VENDER TO CONFIRM		
16.2	Schedule of Erection and Commissioning shall be submitted before starting of erection work	VENDER TO CONFIRM		
17.0	<b>TRAINING:</b>			
17.1	Vendor to impart training to BHEL personnel for operation & for maintenance at BHEL works after Erection, Commissioning and handing over of the Crane. Supplier should arrange for training of BHEL personnel free of cost	VENDER TO CONFIRM		
18.0	<b>DOCUMENTATION : Three sets of following documents (Hard copies) in English language should be supplied along with the crane.</b>	VENDER TO SUBMIT		
18.1	During participation in technical Bid.	VENDER TO SUBMIT		
18.1.1	G.A. Drawing.	VENDER TO SUBMIT		
18.1.2	Vendor to submit appropriate Q.A. Plan.	VENDER TO SUBMIT		
18.2	With the supply of crane	VENDER TO SUBMIT		
18.2.1	Operating manuals of Crane - 3 Sets.	VENDER TO SUBMIT		
18.2.2	Detailed Maintenance manual of Crane. Spares- part list / concerned drawing of the spares -3 Sets.	VENDER TO SUBMIT		
18.2.3	One Soft copy for the above requisites shall also be supplied in CD.	VENDER TO SUBMIT		
18.3.4	Load test reports of Hooks , Wire Rope, Forgings wheels, Brakes, Spring Loaded Buffers & UV test report, Weld joints X- ray Test reports of Structural material shall also be furnished.	VENDER TO SUBMIT		
19.0	<b>CRANE ACCEPTANCE: (Tests/Activities to be Performed by Vendor)</b>			
19.1	<b>At Vendor Works: Inspection And Test.</b>	VENDER TO SUBMIT		
19.1.1	Stage Inspection : BHEL Officials will stage inspect the crane for test-witness/ Physical inspection of Sub-assemblies, Gear Box, Wire Rope, Hooks, Weld test etc before closing of girder and these stage inspection shall be carried out before painting of crane girders/ components. Supplier will furnish test certificates & guarantee for performance of these components / unit. BHEL may witness the Hooks proof load test at OEM's works.	VENDER TO CONFIRM		
19.1.2	Load Test : During Final inspection before dispatch, the supplier shall assemble the complete crane and arrange for its physical inspection & checking of the camber as per IS 3177( 2005 or latest ) , the same shall be witnessed by BHEL officials. Load test at 125% & deflection at 100% load shall be measured along with running of sub assemblies shall also be witnessed. During this relevant Test, certificates by OEM of Hooks, Wire Rope, Thrusters Brakes, Limit Switches, Gear Boxes etc shall also be examined.	VENDER TO CONFIRM		
19.1.3	Important joints shall be identified and indicated in a drawing for ultra sound / x ray test. This drawings shall be submitted to us for approval before inspection .All approved critical joints will be accordingly subjected to ultrasound / x-ray test at the time of inspection. Vendor to arrange all necessary equipments for this at the time of inspection.	VENDER TO CONFIRM		
19.2	<b>At BHEL Works: Inspection And Test</b>			
19.2.1	Span, Diagonal, & other dimensions shall be examined.	VENDER TO SUBMIT		

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19.2.2	Load Test : Overload test at 125% shall be conducted . Deflection at 100 % load shall be measured. Operational Speed & braking for all motions shall be tested in line with relevant IS 3177( 2005 or latest ) . For load test the required load will be provided by BHEL. interlocking, Performance of motors with current measurement, etc shall be carried out. Test- Reports & other documents shall be examined/ verified. If found satisfactory, the crane shall be accepted and considered as Handed Over.	VENDER TO CONFIRM		
19.2.3	Load Test shall be performed at BHEL site for proving of the crane w.r.t technical, Safety Parameters etc the Crane shall then only be considered commissioned & handed over.	VENDER TO CONFIRM		
20.0	<b>PACKING:</b>			
20.1	Rigid packing for all End Carriages, Girders etc . Other parts like sub- assemblies of cranes, Panel, RRC transmitter/ Panel etc shall be suitably packed so that the material reaches BHEL without any damage/loss in transit.	VENDER TO CONFIRM		
21.0	<b>GUARANTEE :</b> Guarantee regarding workmanship, material used, design and performance should be provided by the party for a period of 24 months from the date of successful commissioning of the Crane.	VENDER TO CONFIRM		
22.0	<b>MISCELLANEOUS :</b>			
22.1	All material used should be of the best of their respective kinds and should of the appropriate I.S. Specification & all workman ship should be of best quality.	VENDER TO CONFIRM		
22.2	<b>PAINTING :</b> The structural steel work in the bridge and the crab frame should be given one coat of suitable primer with 25 micron of DFT (Dry film Thickness) and 48 hours of compulsory curing after painting. Final paint should be done with two coats of light orange synthetic enamel paint each with a DFT of 25 microns and intermittent curing of minimum 16 hours..	VENDER TO CONFIRM		
22.3	First fill oil, grease etc. for the commissioning of the crane shall be provided by the supplier.	VENDER TO CONFIRM		
22.4	Tool box with standard tools shall be supplied with the crane.	VENDER TO CONFIRM		
22.5	Supplier shall inform BHEL in advance to witness assembly and load test.	VENDER TO CONFIRM		
22.6	All motions at various steps of speed shall be checked along with current being taken by respective motion motors.	VENDER TO CONFIRM		
22.7	If anything is required for the successful functioning of the crane is required vendor must informe and specify.	VENDOR TO SPECIFY/CONFIRM		
23.0	<b>QUALIFYING CONDITIONS</b>			
23.1	Only those vendors, who have supplied and installed at least five Nos. of jib cranes with same or higher capacity in past five years should quote. P.O. COPY & INSTALLATION/COMPLETION REPORT must be submitted.	VENDER TO SUBMIT		
24	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.	VENDER TO CONFIRM.		

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