

**TECHNICAL SPECIFICATION**



**Heavy Power Equipment Plant,  
Bharat Heavy Electricals Limited,  
Ramachandrapuram -502032, Andhra Pradesh, INDIA.**

CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEP'T.)	Date :
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Specification cum Compliance Certificate for **CRADLE TYPE POSITIONER CAPACITY 5 TONS**

**NOTE:-**

- The "Vendor's Offer" column and where applicable, "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.
- The offer and all documents enclosed with offer should be in English language only.

ADDRESS OF THE SUPPLIER :	ADDRESS OF THE INDIAN AGENTS :
TELEPHONE NOS.:	TELEPHONE NOS.:
FAX NOS.:	FAX NOS.:
E-MAIL ADDRESS :	E-MAIL ADDRESS :

Scope: Supply, Erection & Commissioning of **CRADLE TYPE POSITIONER CAPACITY 5 TONS** complying with

SL. NO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	VENDOR'S OFFER	REMARKS
<b>1.0</b>	<b>PURPOSE :</b>			
1.1	Cradle type positioner is required for reversing frame 9FA/ 9E compressor wheels at an angle of 180° before/after caulking the blades on both sides of a compressor wheels.	Vendor to note		
1.2	The positioner shall have a fixture at the center to load / unload 9E/ 9FA wheel and rotate it. The fixture shall be mounted on shafts on drive and driven side with proper bolts and nuts. The fixture shall have the PCD holes in relation with 9FA/ 9E compressor wheels to clamp it properly with bolts, nuts and washer. Details of one standard 9FA/ 9E compressor wheels showing overall dimensions, holes details etc. are attached in <b>ANNEXURE 1</b> .	Vendor to note		
<b>2.0</b>	<b>JOB DETAILS</b>			
2.1	Wheel max. Diameter - $\varnothing$ 2500 mm	Vendor to note		
2.2	Holes, PCD on 9FA wheel-15 holes of $\varnothing$ 92.1 mm on PCD 1127.8mm	Vendor to note		
2.3	Holes, PCD on 9E wheel - 16 holes of $\varnothing$ 64.4 mm on PCD 914.4mm	Vendor to note		
<b>3.0</b>	<b>SPECIFICATIONS</b>			
3.1	Type of Positioner - Cradle type	Vendor to Confirm		
3.2	Model no.	Vendor to Confirm		
3.3	Load carrying capacity 5 Ton	Vendor to Confirm		
3.4	Rated center of gravity	Vendor to specify		
3.5	Height at the centerline of the machine from floor level - 1400 mm (Minimum)	Vendor to Confirm		
3.6	Over all dimensions of the machine.	Vendor to specify		
3.7	Face plate of the machine should have T slots radially coinciding at machine center.Face plate size should be $\varnothing$ 1550 x 25 mm THK. ( $\pm$ 10% variation) with 8 nos concentric grooves.	Vendor to Confirm		
3.8	No. of T slots and size - 8 nos. x M24	Vendor to Confirm		
3.9	The fixture shall have holes at location matching with bolt face holes on PCD of the frame 9E/ 9FA compressor wheels so as to facilitate wheel mounting over it. Schematic drawing of the fixture showing overall dimension is given at <b>Annexure 2</b> . The design (material thickness or structure) should be such that it will take 5 tons load at the center of cradle positioner. ( Holes and PCD details of the Compressor wheels is given at point 2.2&2.3 and also in <b>Annexure 1</b> )	Vendor to Confirm		
3.10	Table rotation is <b>360 deg</b>	Vendor to Confirm		
3.11	AC Motor capacity and size - Motor shall be fitted with safe electromagnetic disc brake	Vendor to specify details		
3.12	Speed of Table Rotation - 1 RPM	Vendor to Confirm		
3.13	Lifting hooks shall be provided as per requirement.	Vendor to Confirm		
3.14	Foundation anchorage with nuts and Std. Tool kit.	Vendor to Confirm		
3.15	Rigid and sturdy structure , no vibration during rotation with full load	Vendor to Confirm		
3.16	<b>POWER REQUIREMENT :</b>			
3.16.1	Total power requirement (KW)	Vendor to Confirm		
3.16.2	415V $\pm$ 10%, 50HZ $\pm$ 3 Hz, 3 Phase AC (4 wire system) Power Supply will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor.	Vendor to Confirm		

<b>4.0</b>	<b>CONTROL PANEL</b>			
4.1	A dust proof electric control system shall be mounted on the side or back side of the positioner. It shall be duly wired and ferruled as per Indian standard housing the following:	Vendor to Confirm		
4.2	All cables inside & outside of control panel shall be of copper conductor of suitable rating. The colour of control cable should be red and all cables for power shall be RED/Yellow/ Blue for phases and green for neutral.	Vendor to Confirm		
4.3	Selector switches for rotation.	Vendor to Confirm		
4.4	Earting Amps. 1000 amps spring loaded copper carbon assy.	Vendor to Confirm		
4.5	Safety Controller – ON/OFF controller	Vendor to Confirm		
4.6	Main Isolator - Indicating Lamps, Various switches, Push buttons etc.	Vendor to Confirm		
4.7	Pendent with 10 m cable housed in heavy duty PVC conduit - Remote pendant control consisting of Emergency stop button	Vendor to Confirm		
4.8	Overload relays	Vendor to Confirm		
4.9	Independent fuses	Vendor to Confirm		
4.10	Ammeter	Vendor to Confirm		
4.11	Volt meter	Vendor to Confirm		
4.12	Trouble shooting indicator.	Vendor to Confirm		
4.13	Suitable safety interlocks to be provided for all electrical items.	Vendor to Confirm		
<b>5.0</b>	<b>PAINTING</b>			
5.1	Positioner shall be painted with suitable enamel paint (colour of your choice) after proper surface treatment. Control panel will be Siemens grey colour powdercoated.	Vendor to Confirm		
<b>6.0</b>	<b>PRE DESPATCH INSPECTION</b>			
6.1	During rotation with full load, Positioner should not fall down and it should stop at any position as per requirement. Vendor has to prove this at their works during pre inspection with 6 Tons (20% overload) as test load.	Vendor to Confirm		
6.2	The supplier shall test the equipment as per the std. Inspection & test procedure of the company and demonstrate the capabilities included in this specification in the presence of BHEL representatives before despatch.	Vendor to Confirm		
<b>7.0</b>	<b>Details of bought out items shall be as per the following make.:</b>			
7.1	Electrical motors: Siemens, ABB, NGEF, Cromton, Kirloskar.	Vendor to Confirm		
7.2	Fuses and MCCB : Siemens	Vendor to Confirm		
7.3	Limit switches/elements : Siemens, Kaycee.C114	Vendor to Confirm		
7.4	Reduction gear box: Radicon, Elecon & Shanti	Vendor to Confirm		
7.5	Mechanical stoppers shall be provided for all end movements in addition to limit switches	Vendor to Confirm		
<b>8.0</b>	<b>MISCELLANEOUS</b>			
8.1	Vendor to furnish details of material, hardness & constructional details of frame structure, including explanatory drawings, of various components / assemblies etc. of the equipment . Offer without complete details are liable to be rejected.	Vendor to Confirm		
8.2	Firm should give breakup prices of all major items and activities.	Vendor to Confirm		
<b>8.3</b>	<b>The following drawings and information are to be furnished along with the offer:</b>	Vendor to Confirm		
8.3.1	Details and drawing of Mechanical assemblies.	Vendor to Confirm		
8.3.2	Details of various controls (Electric/ Mechanical, Instrumentation, safety devices etc.)	Vendor to Confirm		
8.3.3	Electrical control and power schematic diagram	Vendor to Confirm		
8.3.4	Apart from the details in this specification, if anything else is required for its functioning, the same shall be specifically brought out and indicated.	Vendor to Confirm		
<b>9.0</b>	<b>SPARES -To be quoted separately</b>			
9.1	Itemized breakup of spares required for the equipment in sufficient quantity as per the recommendation of vendor for 2 years of trouble free operation on three shift continuous running basis should be offered and supplied by vendor. (Unit price of each item of spare should be indicated separately in the price bid).Vendor to submit the unpriced list with technical offer.	Vendor to Confirm		
<b>10.0</b>	<b>INSTALLATION:</b>			
10.1	The positioner is to be installed on our prepared foundation, details of which will be furnished by manufacturer.	Vendor to Confirm		

<b>11.0</b>	<b>ERECTION AND COMMISSIONING</b>			
11.1	The offer should include the charges for complete transportation, erection and commissioning of the positioner and ancillary equipments with duration. Supplier commissioning engineer's services should also be available at site for setting all controls while demonstrating the working of the equipment.	Vendor to Confirm		
11.2	Training of BHEL personal in the area of operation, Safety and maintenance of complete equipment & accessories etc by the supplier's engineers during their stay at BHEL works.	Vendor to Confirm		
11.3	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine. Full load test of the table to its rated load carrying capacity.	Vendor to Confirm		
<b>12.0</b>	<b>DOCUMENTATION</b>			
12.1	Three sets of following documents (Hard copies) in English language should be supplied along with the equipment.	Vendor to Confirm		
12.2	Operating manuals.	Vendor to Confirm		
12.3	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also. Part names on all drgs & circuit diagrams should be written in English only.	Vendor to Confirm		
12.4	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.	Vendor to Confirm		
12.5	One additional set of all the above documentation on CD ROM, wherever possible.	Vendor to Confirm		
<b>13.0</b>	<b>QUALIFYING CONDITIONS</b>			
13.1	Only those vendor, who have supplied and commissioned at least one positioner for industrial application with 5 tons or more capacity in the past ten years and such positioner is presently working satisfactorily (on the date of opening of the Tender) after commissioning should quote. The following information is to be submitted by the vendor about the companies where similar equipment have been supplied.	Vendor to Confirm		
13.2	Name of the customer / company where similar equipment is installed. (copy of purchase order to be furnished.)	Vendor to Confirm		
13.3	Complete postal address of the customer.	Vendor to Confirm		
13.4	Month & Year of commissioning	Vendor to Confirm		
13.5	Application for which cradle positioner is supplied.	Vendor to Confirm		
13.6	Name and designation of the contact person of the customer.	Vendor to Confirm		
13.7	Phone/ Fax / Email address of the contact person of the customer.	Vendor to Confirm		
13.8	Performance certificate from the customer regarding satisfactory performance of the equipment supplied to them.	Vendor to Confirm		
13.9	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.	Vendor to Confirm		
<b>14.0</b>	<b>GUARANTEE :</b>	Vendor to Confirm		
14.1	As per BHEL Terms and Conditions	Vendor to Confirm		
14.2	Service beyond guarantee period	Vendor to Specify		
14.3	Supplier shall be responsible for service after sales of the equipment.	Vendor to Confirm		
14.4	The supplier shall provide 24 months warranty from the date of commissioning.	Vendor to Confirm		