



BHARAT HEAVY ELECTRICAL LIMITED
UNIT'S ADDRESS:
UNIT'S ADDRESS:

Enquiry No. :
Due Date :
Supplier Qtn. No.:
Date :

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF WELDING MANIPULATOR, 75101

NOTE:-

1	The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along		
2	The offer and all documents enclosed with offer should be in English language only.		
3	Only those offers shall be considered which satisfy the "Qualifying conditions" as per clause 15		
NAME & ADDRESS OF THE SUPPLIER :		NAME & ADDRESS OF THE INDIAN AGENT :	
TELEPHONE NOS.:		TELEPHONE NOS.:	
FAX NOS.:		FAX NOS.:	
E-MAIL ADDRESS :		E-MAIL ADDRESS :	

SCOPE: SUPPLY, ERECTION & COMMISSIONING OF CONVENTIONAL MOTORIZED WELDING MANIPULATOR COMPLYING WITH SPECIFICATIONS AS BELOW

SNO	DESCRIPTION FOR BHEL REQUIREMENT	VENDOR TO CONFIRM / SUBMIT / SPECIFY	DEVIATION	REMARKS
1	PURPOSE Welding manipulator (Motorized) is required for indexing the stators of IM4507 machine around the horizontal axis during full welding of tension segments WORK PIECE MATERIAL/APPLICATION The stator of IM4507 is made of stack of CRGO lamination with end chambers at both ends and tension segments on the out side connecting the two end chambers. JOB DIMENSIONS- Size of laminated stator frame - 544 x 970 x 800 mm Laminated core length of the stator frame - 394 mm	Vendor to note		
2	CONSTRUCTIONAL FEATURE The proposed manipulator shall be in line with the attached drawing no 3-TDX-05-23 19 and would broadly comprise of the following sub-assemblies-	Vendor to confirm		

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3.1	Mandrel assembly on which the stator of IM4507 shall be mounted having 4 expandable jaws for holding it from the ID. The jaws of the mandrel (4 Nos) to be expanded with the help of lead screw & nut based arrangement. Wedge shaped blocks to be bolted on the nut and would travel within the slots provided in the guide barrel. Linear travel of the wedge shaped blocks would cause the expansion of jaws and thus holding the job from the ID. A PU/Bakelite liner to be provided on the outer surface of the jaws to protect the surface of the ID of the stator core and provide enough friction for clamping. An automatic centralized lubrication	Vendor to confirm		
3.2	Support arm assembly to support one end of guide barrel- It shall comprise of a column assembly, lead screw -nut based height adjustment assembly and swivelling support arm. An L.M. slide is to be provided on the support arm for linear adjustment of the supporting GM bush, which would provide support to one end of the guide barrel. GM bush bearing is to be provided for allowing the swivelling of the arm.	Vendor to confirm		
3.3	Drive arrangement for indexing the job- Indexing drive arrangement guide barrel is to be attached to the double reduction worm gear box and motor through a flexible coupling. Bush/Bearings to be provided to support the hollow shaft. As double reduction worm gear box is irreversible drive, it would provide locking at desired angle.	Vendor to confirm		
4	OPERATIONAL METHODOLOGY Stator frame would be held by the crane and moved to the mandrel jaws such that the mandrel jaws are inside the core of the stator frame. Subsequently, the support arm would be swivelled and support GM bush would be adjusted by slide to support the guide barrel. The slide is to be operated manually. After providing support to the barrel, mandrel jaws would be expanded by lead screw-nut assembly, lead screw being driven manually with the help of ratchet spanner.	Vendor to confirm		
5	SPECIFICATION OF WELDING MANIPULATOR			
5.1	MANDREL ASSEMBLY			
5.1.1	No of mandrel jaws - 4	Vendor to confirm		
5.1.2	Mandrel jaw OD in full contracted position - 420 mm (with liner)	Vendor to confirm		
5.1.3	Mandrel jaw OD in full expanded position position - 490 mm (with liner)	Vendor to confirm		
5.1.4	Length of mandrel - 600 mm (min)	Vendor to confirm		
5.1.5	ID of guide barrel - 150 mm (approx)	Vendor to confirm		
5.1.6	Dia of lead screw - 50 mm (min)	Vendor to confirm		
5.1.7	Linear traverse of nut - 75 mm (min)	Vendor to confirm		
5.1.8	Wedge angle from Horizontal - 25°	Vendor to confirm		
5.1.9	Mandrel center height - 700 mm (approx)	Vendor to confirm		
5.1.10	Drive to lead screw - Manual with the help of ratchet spanner	Vendor to confirm		
5.2	SUPPORT ARM ASSEMBLY			

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5.2.1	Column - Fabricated structure of length - 670 (approx)	Vendor to confirm		
5.2.2	Swivelling of support arm - By bush bearing arrangement	Vendor to confirm		
5.2.3	Swivel angle - 90°	Vendor to confirm		
5.2.4	Center to center distance from column to guide barrel - 750 mm (approx)	Vendor to confirm		
5.2.5	Vertical stroke of lead screw nut arrangement - 50mm (min)	Vendor to confirm		
5.2.6	LM slide stroke - 100 mm (min)	Vendor to confirm		
5.2.7	Drive to slide - Manually	Vendor to confirm		
5.2.8	Static load carrying capacity - 1000 kgs Dynamic load in additional to static load carrying capacity - 1000 kgs	Vendor to confirm		
5.3	INDEX DRIVE ARRANGEMENT			
5.3.1	Motor - 3Ø, 750 rpm, 2.0 HP (approx)	Vendor to confirm		
5.3.2	Worm gear box - Double reduction with ratio 1:350	Vendor to confirm		
5.3.3	Coupling - Flexible type	Vendor to confirm		
5.3.4	Bush/ Bearing support - 2 Nos	Vendor to confirm		
5.4	MAKES OF BO ITEMS			
5.4.1	Bearings - FAG/SKF/NSK only	Vendor to confirm		
5.4.2	Gearbox/geared motor - Bonfiglioli/Elecon/Radicon only	Vendor to confirm		
5.4.3	Motor - Bharat Bijlee/ABB/Siemens only	Vendor to confirm		
5.4.4	Electrical control elements - ABB/Siemens /BCH only	Vendor to confirm		
	CONTROLS			
5.4	All controls should be available on operator's control desk suitably located to the convenience of the operator and to be separate from the main ccontrol panel so that there is a flexibility to operate it from a convenient place by the operator. The control panel should have switches to control the various parameters of the process such as the indexing table, vertical pressing mechanism & bar insertion mechanism and emergency switch. All switches to be labeled.	Vendor to confirm		
5.5	DESIGN The system is to be generally laidd out in line with our specification and drawing. Supplier will have to take prior approval in writing before hand. However, we would welcome any suggestion for improvement in design.	Vendor to confirm		
5.6	LUBRICATION Suitable arrangement for lubrication is necessary. Provision is to be made for the above by providing nipples, etc. at strategic places wherever required.	Vendor to confirm		
	ELECTRICALS			

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5.7	Single supply point of 50 HZ 415V AC 3Ø, NO NEUTRAL, shall be made available at the location by BHEL. The system should be compatible with this. Any isolation transformer if required is to be supplied by the supplier.	Vendor to confirm		
6	SCOPE OF SUPPLY			
6.1	Motorized welding manipulator for stator frames aa per specification to meet our requirement complete with mandrel assembly, support arm assembly and indexing drive arrangement. - 1 No	Vendor to confirm		
6.2	Electrical kit comprising of bracketories, cables, clamps, limit switches, conduits, guards, louvers, cables, steel re-inforced PVC conduits, ferrules, gornets, fuses, etc.required for the E&C and operation of the system - 1 Lot	Vendor to confirm		
6.3	Mechanical kit comprising of bracketories, fasteners, leveling bolts, foundation bolts, hand tools, guards, covers, etc required for the E&C and operation of the system- 1 LOT	Vendor to confirm		
6.4	Control panel and control pendant-1 No Each	Vendor to confirm		
6.5	All spares such as bearings, hydraulic cylinders, bushes and other items for successful running of the system for the period of warranty must be supplied by the party - as required	Vendor to confirm		
6.6	Operating & Maintenance manual-4 Sets	Vendor to confirm		
6.7	Test & Guarantee certificate-2 sets	Vendor to confirm		
6.8	Erection & commissioning of the manipulator and proving of the system on 5 jobs.	Vendor to confirm		
	SPARES			
7	The vendor must recoment and quote itemwise price breakup all types of electrical, electronic, mechanical and hydraulic spares for us to use as a reference for future procurement. The cost of the spares shall not be included in the basic system for calculating the L1 offer.	Vendor to confirm & submit with the offer		
8	PAINTING: The complete system is to painted with 2 coats of polyurethane paint after 2 coats of primer.	Vendor to confirm		
9	GUARANTEE The system should be guaranteed for successful and reliable performance for a period of 12 months from the date of commissioning. Any replacement spares required during the warranty period shall be supplied by the party free of cost.	Vendor to confirm		

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	INSPECTION AND SYSTEM CHECK: Inspection of the system shall be done at the supplier's work beefore dispatch for satisfactory performance of the systemand for the accuracies mentioned in this specification. The following items shall be checked before dispatch- (a) Scope of supply. (b) Make and rating of all BO components like motors, gear box, chains, electricals, bearings, etc. (c) Workmanship. (d) Ergonomics. (e) Structural stability. (f) Maintainability (g) Controller layout (h) Dimensions. Inspection call has to be given at least 20 days in advance	Vendor to confirm		
10				
11	DOCUMENTATION : Four sets of following documents (Hard copies) in English language should be supplied along with the machine. Detailed Maintenance manual of the system which shall contain spare parts catalogue , technical literature , operatingand service manual , general arrangements drawings and cross sectional drawings , schematic electrical foundation details, Trouble shooting charts, all Assembly/ Sub Assembly Drawings..	Vendor to confirm		
12	ERECTION & COMMISSIONING:	Vendor to confirm		
12.1	Supplier to take full responsibility for carrying out the erection, start up, testing of system, it's control & all types of other supplied equipment etc. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor at least 8 weeks in advance.	Vendor to confirm		
12.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned in this specification shall form part of the commissioning activity.	Vendor to confirm		
12.3	Tools, Tackels, required to carry out all above activities should be brought by the supplier.	Vendor to confirm		
13	PACKAGING: Sea worthy & rigid packing for all items of complete	Vendor to confirm		
14	GENERAL : The vendor should submit the following information:			
14.1	Make -	Vendor to specify		
14.2	Model No.	Vendor to specify		
14.3	Total Power of the machine (KVA/HP)	Vendor to specify		
14.4	Total weight of the heaviest component of the system	Vendor to specify		

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15	QUALIFYING CONDITIONS :			
15.1	Only OEMs/Authorized agents/dealer may quote in the tender. Authorization certificate should be submitted by the dealer. 1) OEMs/Authorized agents/dealer should have supplied at least One no. Motorized Manipulator or job rotator/motorized welding fixture/motorized material handler of capacity min. 1 Ton. 2) The above supplied system should be working satisfactorily for more than one year after commissioning 3) The above supplied system should have been commissioned within last ten year from the date of opening of tender. 4) OEMs/Authorized agents/dealer have to furnish satisfactory performance certificate from their customer fulfilling above mentioned criteria. Offers of parties not meeting any of the above criteria shall not be considered.	Vendor to specify		
15.2	Name of the customer / company where similar machine is installed. (PO copy to be attached)	Vendor to specify		
15.3	Complete postal address of the customer.	Vendor to specify		
15.4	Year of commissioning.	Vendor to specify		
15.5	Name and designation of the contact person of the customer.	Vendor to specify		
15.6	Phone, FAX no. and email address of the contact person of the customer.	Vendor to specify		
15.7	Performance certificate from one customer regarding satisfactory performance of machine as per clause 15.1	Vendor to specify		
16	BHEL reserves the right to verify information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to note		

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SNO DESCRIPTION FOR BHEL REQUIREMENT

VENDOR TO CONFIRM / SUBMIT / SPECIFY

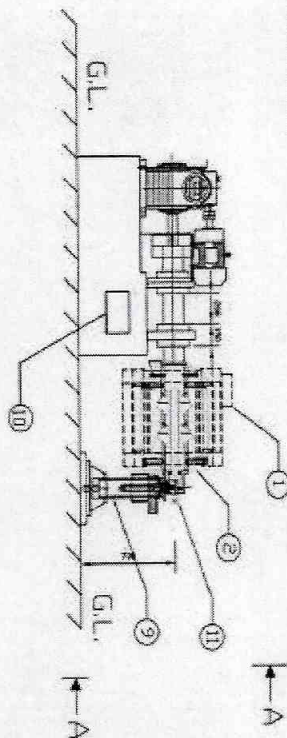
DEVIATION

REMARKS

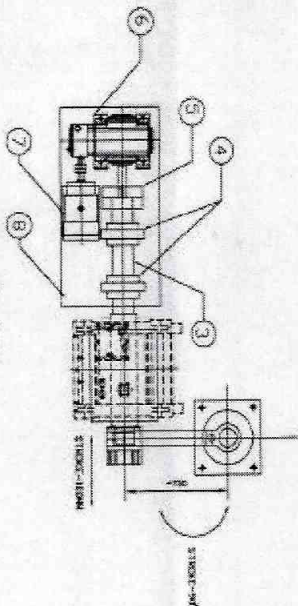
FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

6082-50-X01-E 10N 0101

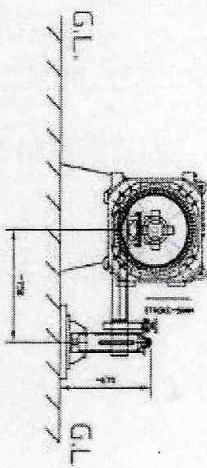


ELEVATION



PLAN

- * MANDREL JAWS O.D. IN THE FULLY CONTRACTED POSITION = 430 MM
- * MANDREL JAWS O.D. IN THE FULLY EXPANDED POSITION = 450 MM



VIEW FROM A-A
(DRIVE NOT SHOWN)

ITEM NO.	DESCRIPTION	MATL.	QTY.
1	JOB (EXISTING)		1 NO.
2	MANDREL ASSEMBLY		1 NO.
3	HOLLOW SHAFT		1 NO.
4	BUSH/BEARING SUPPORT		2 NOS.
5	FLEXIBLE COUPLING		1 NO.
6	DOUBLE REDUCTION WORMGEAR BOX (RATIO-1:350)		1 NO.
7	3 PHASE, 7500PM, 2HP AC MOTOR		1 NO.
8	SUPPORT PEDISTAL		1 NO.
9	SUPPLEMENTARY ARM ASSEMBLY		1 NO.
10	LUBRICATED ARRANGEMENT		1 NO.
11	RATCHET SPANNER		1 NO.

MANDREL JAWS O.D. IN THE FULLY CONTRACTED POSITION = 430 MM
MANDREL JAWS O.D. IN THE FULLY EXPANDED POSITION = 450 MM

REV.	DATE	BY	CHKD.	DATE	BY	CHKD.	DATE	BY	CHKD.
1	01/01/2001	01/01/2001	01/01/2001	01/01/2001	01/01/2001	01/01/2001	01/01/2001	01/01/2001	01/01/2001

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