



Transformer Plant,
BHARAT HEAVY ELECTRICAL LIMITED,
 BHEL, JHANSI.

Specification cum Compliance Certificate for 548 CFM screw compressor

Note:-

1. The "Offered" Column and where applicable, the "Deviations" Column of this format shall be filled in by the Bidder/Vendor and submitted along with the offer. An adequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.

2. The offer and all documents enclosed with offer should be in English language only.

3. Vendor(OEM) must submit complete information against clause no. 20. The offer meeting this clause would only be processed.

Name & Address of the supplier:	Name & Address of the Indian Agent:
Telephone No.	Telephone No.
Fax No.	Fax No.
e-mail :	e-mail :

SCOPE: SUPPLY, ERECTION AND COMMISSIONING OF 548 CFM STATIONARY ,SCREW COMPRESSOR COMPLYING WITH SPECIFICATION AS BELOW:

S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
1.0 SCOPE	The specification governs the quality requirements of design, manufacturing, supply, erection and commissioning of 548 CFM compressor complete in all respect.	Vendor to confirm			
2.0 GENERAL FEATURES					
2.1	An independent Stationary, single stage , air cooled Screw Type Air Compressor unit capable of continuously supplying compressed air to air delivering network, powered by a 3 phase A.C. electric motor .	Vendor to confirm			
3.0 SPECIFICATION					
3.1	Pressure Relief Valve,	Vendor to confirm and furnish the details			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
3.2	Automatic Pressure Switch,	Vendor to confirm and furnish the details			
3.3	Oil Sight Glass,	Vendor to confirm and furnish the details			
3.4	Non Return Valve,	Vendor to confirm and furnish the details			
3.5	Auto Drain Valve	Vendor to confirm and furnish the details			
3.6	Starter for the motor.	Vendor to confirm and furnish the details			
3.7	High temperature shut down sensor	Vendor to confirm and furnish the details			
3.8	Heavy duty, 94.1% or better efficient Induction Motor with TEFC IP 55 enclosure of 110 KW /150 HP capacity	Vendor to confirm			
3.9	Make of motor- Siemens/ABB/Marathon/CGL/Bharat Bijlee . If make is deviated then guarantee of motor should be for 5 yrs	Vendor to confirm			
3.10	Maximum speed of screw element - 3000 RPM	Vendor to confirm			
3.11	Air delivery : 548 CFM or more at 10 bar pressure	Vendor to confirm			
3.12	Normal working pressure: 10 bar	Vendor to confirm			
3.13	Maximum working pressure:	Vendor to specify			
3.14	Duty: Continuous	Vendor to confirm			
3.15	Cylinder: deep finned cast Iron make	Vendor to confirm			
3.16	Valves : Stainless steel make	Vendor to confirm			
3.17	Noise level(1 Meter away from compressor) : 74 dB(Max)	Vendor to confirm			
4.0	Control system and panel				

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
4.1	Control panel for monitoring continuously & accurately (through microprocessor based Regulator and Electronic Controller) the data and for controlling the performance through feedback to the operator and interlocking arrangements. Built in protection systems, inclusive of the following, should be provided for safe and foolproof operation of the complete compressor system.	Vendor to confirm and furnish details			
4.1.1	Phase sequence protection relay,	Vendor to confirm and furnish details			
4.1.2	Phase failure protection relay,	Vendor to confirm and furnish details			
4.1.3	Motor overload Trip,	Vendor to confirm and furnish details			
4.1.4	High Air / Oil Discharge Temperature Trip.	Vendor to confirm and furnish details			
4.1.5	Protection against starting on load,	Vendor to confirm and furnish details			
4.1.6	Dual Hours meter for Run/Load.	Vendor to confirm and furnish details			
4.1.7	Auto ON/OFF as per requirement of air pressure	Vendor to confirm and furnish details			
4.1.8	Compressor Status Indications				
	a) Voltage ON (Digital Indication)	Vendor to confirm			
	b) Compressor ON (Stand-By, Start-Up & Shut down Mode)	Vendor to confirm			
	c) Compressor in "UN-LOAD" condition	Vendor to confirm			
	d) Compressor in "LOAD" condition	Vendor to confirm			
5.0	ELECTRICAL:				
5.1	Input Power Supply: 3 Phase, 415 ± 10% Volt, 50 ± 3% Hz	Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
5.2	Tropicalisation: All electrical / electronic equipment shall be tropicalized to suit ambient conditions	Vendor to confirm			
5.3	All electrical & electronic control cabinets & panels should be dust and rodent proof.	Vendor to confirm			
5.4	Motors shall conform to IEC or Indian Standards.	Vendor to confirm			
6.0	SAFETY ARRANGEMENTS:				
6.1	Safety feature should be incorporated for safety of operator and the compressor	Vendor to confirm			
6.2	Anti Vibration Mountings should be provided on the compressor frame for vibration isolation from Screw element, Motor and Oil Separator Tank.	Vendor to confirm			
6.3	All the pipes, cables etc. on the compressor should be well supported and protected.	Vendor to confirm			
7.0	ENVIRONMENTAL PERFORMANCE OF THE COMPRESSOR:				
7.1	The compressor shall conform to following factors related to environment : (a) If any safety / environmental protection enclosure is required it should be built in the compressor by the vendor. (b) Paint of the compressor should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to confirm Vendor to confirm			
8.0	LEVELING & ANCHORING SYSTEM				
8.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc should be supplied.	Vendor to confirm			
9.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE :				

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
9.1	Special tools and equipment required for erection and necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the compressor should be supplied. List of such tools should be submitted with offer	Vendor to confirm			
10.0	SPARES:				
10.1	Supplier should quote spares & consumables for 2 years continuous of operation (@ 24 hr / day basis) of the Compressor Unit. Complete list of spares & consumables (inclusive of the following spares & consumables) is to be provided (along with the offer itself), giving individual item's part identification no, its application, life (in hrs of use), recommended quantity and unit cost. Also supplier should supply following consumables required for 6000 hrs working.	Vendor to confirm and submit			
	a) Oil separator				
	b) Oil Filter				
	c) Oil				
	d) Air Filter				
11.0	DOCUMENTATION : Three sets of following documents (Hard copies) in English language should be supplied along with the compressor	Vendor to confirm			
11.1	Operating manuals of compressor	Vendor to confirm			
11.2	Detailed electrical circuit should be supplied along with the air compressor.	Vendor to confirm			
11.3	Detailed Maintenance manual of compressor with all drawings of compressor assemblies/sub-assemblies/parts.	Vendor to confirm			
11.4	Detailed specification of all rubber items and hydraulic/lube fittings along with details of BOIs like valves, pressure switches, sensors, solenoids etc	Vendor to confirm			

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SCOPE: SUPPLY, ERECTION AND COMMISSIONING OF 548 CFM STATIONARY, SCREW COMPRESSOR COMPLYING WITH SPECIFICATION AS BELOW:

S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
11.5	Complete Master List of parts used in the compressor shall be submitted by the vendor.	Vendor to confirm			
12.0	CIVIL WORK				
12.1	Vendor shall submit the layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI) / P.O. . The layout should consist of all requirements pertaining to complete compressor including space requirement for any accessories. BHEL shall construct complete foundation for the compressor under supervision of supplier and at supplier's responsibility. Vendor should arrange equipments required for the testing of foundation, if required by the vendor. The vendor shall also indicate detailed specifications of grouting compound and Grouting procedure etc. for foundation bolts of the compressor.	Vendor to confirm			
13.0	ERECTION & COMMISSIONING				
13.1	Supplier to take full responsibility for carrying out the erection, start up, testing of compressor, 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 in advance.	Vendor to confirm			
13.2	Tools, Tackels, Test Mandrels, instruments and other necessary equipment/gauges required to carry out all above activities should be brought by the supplier. .	Vendor to confirm			
13.3	Commissioning spares, required for commissioning of the compressor within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
13.4	Portion, if any, of the compressor, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm			
13.5	Supplier also has to supply, erect and commission all piping and fittings required for connection of both compressors to air dryer and reservoir	Vendor to confirm			
13.6	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm and submit			
13.7	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to confirm and submit			
14.0	OPERATING CONDITIONS & THERMAL STABILITY				
14.1	Compressor should work trouble free and efficiently under following operating conditions and should give specified accuracies. Power Supply: Voltage: 415 V - 10%, +10% Frequency: 50 Hz +3%, - 3% No. of phases = 3 Ambient Conditions: Temperature = 5 to 45 degree celsius Relative Humidity = 95% max. (Vendor to confirm that compressor is suitable for above and details of provisions on the compressor for the same are to be furnished by Vendor)	Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
14.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. compressor shall be kept in the normal shop floor condition. Max. temperature variation is up to 25 deg Celsius in 24 hours. (Vendor to confirm that compressor is suitable for above and details of provisions on the compressor for the same are to be furnished by Vendor)	Vendor to confirm			
14.3	Thermal Stability of the complete compressor keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the compressor should be ensured by vendor. (Confirm that compressor is suitable for above and details of provisions on the compressor for the same should be furnished)	Vendor to confirm			
15.0	COMPRESSOR ACCEPTANCE: (Tests/Activities to be Performed by Vendor)	Vendor to confirm			
15.1	Tests/Activities to be witnessed by BHEL representatives at supplier's works on the compressor before dispatch :	Vendor to confirm			
15.1.1	Test certificates, Specification compliance and performance of the complete supplied system shall be checked and verified.				
15.1.2	Demonstration of all features of the compressor, control system & accessories.	Vendor to confirm			
15.2	Tests/Activities to be carried out at BHEL works while commissioning the compressor :	Vendor to confirm			
15.2.1	Demonstration of all features of the compressor, control system & accessories to the satisfaction of BHEL for efficient and effective use of the compressor	Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
15.2.2	One weeks supervision of independent operation of compressor by BHEL after job acceptance	Vendor to confirm			
15.2.3	Training of BHEL compressor operators/maintenance personnel in operation/maintenance of complete compressor & accessories etc by the supplier's experts / engineers during their stay at BHEL works	Vendor to confirm			
15.2.4	Demonstration by actual use of all supplied attachments and accessories to their full capacity.	Vendor to confirm			
16.0	FINAL ACCEPTANCE				
16.1	Final acceptance shall be after erection and commissioning of the complete air compressor system at BHEL by the vendor to the full satisfaction of BHEL. The criteria for acceptance of the air compressor system after erection shall be "satisfying all the clauses of Technical Specifications" given above	Vendor to confirm			
17.0	PACKING:				
17.1	Sea worthy & rigid packing for all items of complete compressor, all Accessories and other supplied items to avoid any damage/loss in transit. When compressor is despatched in containers, all small loose items shall be suitably packed in boxes	Vendor to confirm			
18.0	GUARANTEE:				
18.1	24 months from the date of commissioning	Vendor to confirm			
19.0	GENERAL : The vendor should submit the following information:				
19.1	Equipment Model	Vendor to furnish			
19.2	Dimension of Compressor	Vendor to furnish			
19.3	Total weight of the system	Vendor to furnish			


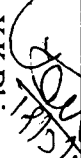



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S No.	Description - BHEL's Requirement	Specified	Offered	Deviation(Y/N)	Remarks
19.4	Detailed catalogues, sketch/ photographs of the compressor and accessories/ attachments should be submitted with the offer.	Vendor to furnish			
20.0	QUALIFYING CONDITION :				
	Only those Vendors/Dealers should quote who have supplied and commissioned at least 3 nos of same or higher capacity Compressors in the past 5 years (on the date of opening of tender) and such Compressor are presently working satisfactorily for more than one year after commissioning (on the date of opening of tender) .	Vendor to accept and confirm			
20.1	The following information should be submitted by the vendor about the companies where similar machines have been supplied. This is required from all the vendors for qualification of their offer.				
20.2	1. Name of the customer / company where similar machine is installed.	Vendor to inform			
	2. Complete postal address of the customer.	Vendor to inform			
	3. Month & Year of commissioning.	Vendor to inform			
	4. Parameters of compressor(s) supplied (CFM, Working Pressure, duty etc.) .	Vendor to inform			
	5. Name and designation of the contact person of the customer.	Vendor to inform			
	6. Phone, FAX no. and email address of the contact person of the customer.	Vendor to inform			
	7. Performance certificate from the customers regarding satisfactory performance of compressor supplied to them (original certificate or through E-mail directly from the customer). The original may be returned after verification by BHEL. If required.	Vendor to inform			

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21.0	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to accept and confirm			

<p align="center">  Arjun Singh Sr. Mgr. (WEX) </p>	<p align="center">  Y K Dhingra Sr. Engr (WEX) </p>	<p align="center">  Anil Goyal Engr (WEX) </p>
<p align="center">  S.J. Chakraborty AGM (WEX) </p>	<p align="center">  A K Sanyal DG (WEX) </p>	

- Rev-R1 due to following-
- 1) Changed guarantee clause 18.1
 - 2) Changed qualifying condition 20.1

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