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PRODUCT STANDARD
TURBINES AND COMPRESSORS
HYDERABAD

TC-5-2355

REV No.: **01**

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TECHNICAL SPECIFICATION FOR PROCUREMENT OF LASER ALIGNMENT KIT

1. SCOPE

BACKGROUND

In a compressor train, every casing has to be placed by proper shimming of supports, so that thermal expansions by temperature raise and shaft displacement due to journal bearing clearance put the shafts on correct alignment during running. Proper alignment is one of the vital pre-requisites for trouble free continuous operation of the entire train.

This specification gives details for procurement of laser alignment kit. The shaft alignment kit is required for accurately aligning the rotating equipment easily and quickly.

2. TECHNICAL REQUIREMENTS (Laser Shaft Alignment Kit:)

Laser Alignment Kit: Shall consist of:

2.1 Display Unit with the following features: -

- 2.1.1. Housing Material: ABS Plastic/aluminum
- 2.1.2. Display Type: Min 5" diagonal)
- 2.1.3. Battery Type: Rechargeable battery with battery charger.
- 2.1.4. Operating Time: Minimum 10 Hours Continuously
- 2.1.5. Displayed Resolution: 0.01mm/0.0004"
- 2.1.6. PC connection :USB
- 2.1.7. Laser safety class: 2

2.2 Measuring Unit with the following features:

- 2.2.1. Housing Material: ABS Plastic/ aluminum
- 2.2.2. Laser Type: as per manufacturer
- 2.2.3. Displayed error: ±1% + 1 digit
- 2.2.4. Measurement distance: 6 meter

2.3 Complete system shall have the following features:

- 2.3.1. Ability to align uncoupled shafts
- 2.3.2. Ability of enter user defined points up to 60 degrees of rotation
- 2.3.3. Environmental conditions :0 to 50°C. 10 ~ 90% relative humidity
- 2.3.4. Dust and oil proof with membrane keypad for data entry.
- 2.3.5. Suitable for Diameters : 30 ~450mm
- 2.3.6. Carrying case : Single carrying case as per manufacturer std.

2.4 Additional equipment consisting of:

- 2.4.1. Thin chain brackets (12 mm or less) suitable for short space availability on the shaft.

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01	Refer to record of revisions	YVRL	PNR	13/12/2002



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2.4.2. Connection rods and Chain Extensions (to suit the dimensions of shafts as listed in 2.3.6)

2.5 **Shall have** the following built-in features:

- 2.5.1. On screen pictorial instructions shall be easy for understanding.
- 2.5.2. Provision for feeding pre-defined alignment value for target readings.
- 2.5.3. Moveable equipment such as electric motor shall be shown in pictorial form on screen.
- 2.5.4. Auto save facility.
- 2.5.5. Should have capacity to store up to 500 files.
- 2.5.6. Capable of generating customized report and transfer to an USB/ memory stick.
- 2.5.7. Amount and where alignment is required shall also appear on the screen, to make the alignment simple.
- 2.5.8. The system should give graphical and live display of alignment results:
 - 2.5.8.1. Radial misalignment (center offset)
 - 2.5.8.2. Axial misalignment (angular)
 - 2.5.8.3. Shims corrections
 - 2.5.8.4. Soft foot
- 2.5.9. Easy to fit laser units.
- 2.5.10. Quick pre- alignment of laser beam.
- 2.5.11. Starter kit of shims shall be included.
- 2.5.12. Shall be lightweight and easy to carry. (Max 10 Kg)

3. SCOPE OF SUPPLY:

Vendor should quote for the following scope:

3.1 Variants

Var. No.	Description	Weight	BHEL Material code	scope
01	Laser Alignment Kit	5 Kg	TC9752355013	Scope of Supply is as defined in Clause 2.0

- 3.2 Calibration certificates of the equipment to be supplied with consignment.
- 3.3 2 sets of hard and 5 soft copies of O&M manuals for each equipment. If order is released for multiple numbers of laser alignment kits, each kit should be supplied with 2 sets hard copies of O&M manuals as along with consignment.
- 3.4 Demonstration and commissioning of equipment at BHEL works or at site for each supplied units.
- 3.5 Applicable software (if any) should be supplied free of cost along with equipment.
- 3.6 Service support should be available within India.



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4. OPTIONAL ITEMS

Magnetic brackets (for the positions where chain bracket cannot be placed) as an optional item. Vendor should provide separate quote for it.

5. SPARES:

Along with main offer, quotation for recommended spares for two years operation also should be given.

6. DOCUMENTS:

Along with offer, vendor should supply catalogues/ leaflets of equipment being supplied.

7. PACKING AND PRESERVATION:

Each equipment shall be properly packed with adequate cushioning material to protect it from damage due to weather, transportation, and handling at workplace. Vendor shall supply the equipment in a permanent storage box with cushioning material inside.

8. SAFETY INSTRUCTIONS

All safety instructions for storage and handling shall be clearly spelt out on external surface of the box and in O&M Instructions.

9. MARKING:

All consignments shall be identified with BHEL purchase order Number, BHEL material code number

10. WARRANTEE PERIOD:

A warrantee period of 24 months for trouble free performance from the date of commissioning should be applicable.

11. REFERNCES

the vender should have should have supplied at least 2 sets of the equipment offered during last five years. Also one of the sets should be in working conditions during last one year. References to be provided.

12. SPECIAL NOTE:

Vendor should bring out in his offer clause wise deviations if any, for the proposed supply with respect to the specification. Failure to highlight the same will be construed as acceptance on the part of the vendor to meet the requirement of this specification totally.



