

TD -106 -1 Rev. No. 5 Form No.	<b>PRODUCT STANDARD</b>  <b>HYDERABAD</b>	Prod. Std. No. TC56446
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### **AIR COMPRESSOR INTAKE FILTER + SILENCER**

1. **GENERAL:** This purchase specification covers the requirement of “Air Compressor Intake Filter House” Which is to be installed in the suction side of Air Compressor unit manufactured by BHEL. The ambient air will have sand and dust. The air filter is meant for cleaning the air entering and protecting the compressor.

2. **SCOPE OF WORK:** The scope of work includes Design, Fabrication, Inspection, Testing, of complete house with support structure The filter house shall be complete in all respects for installing on compressor base frame.

3. **Technical Requirements:**

**A) Layout and filter house arrangement:**

The filter house will be installed vertically on the base frame. The actual dimensions of the filter house shall be furnished by the vendor. Preference will be given for compact size models.

**B) Housing Requirements:**

The filter house shall consist of Bird screen/louvers, The filter house shall be provided with suitable supports for mounting on supporting structures arranged by the client. The filter house shall be terminated flanged connections The housing material shall be **GI** sheet. It shall be provided with 1/2” sw stub for pressure instrument and M33X2 mm stub for Temperature instrument

A metal screen or other suitable device shall be provided to avoid machine sucking some material in the event of accidental breakage of the filtering elements. The design shall be such that inside air velocity is limited to 5 Km/hr. The filter house shall be designed for wind velocity and data given under para (site conditions).

**PAINTING:** Painting of the silencer externals shall be as below:

Finish coat of painting suitable for 80-400 °C. Heat resistant Aluminum paint on insulated portion.

Type: Single pack silicon resin based with leafing aluminum paste.

Volume of solids: 40% min

Theoretical Spreading rate: 9-10 Sq m/lit @20microns.

DFT: 20 Microns/coat (min)

No. of coats: Two

Surface preparation: Power tools cleaning conforming to ST 3 of Swedish Standard SIS-05-5900

**PERMISSIBLE FACE VELOCITY:** The air face velocity for SQ feet of net effective area shall not exceed 350FPM.

**INTERCHANGEABILITY:** The filter panels shall be interchangeable.

**SILENCER:** The silencer in the air compressor intake filter house shall be in position to reduce the sound level at various octave band frequencies. (Drawing enclosed in 5<sup>th</sup> sheet) to 85dbA.

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**TECHNICAL REQUIREMENT:** Vendor shall submit process design calculations for sizing of the equipment together with all supporting documents/catalogues /monographs etc.

All acoustic insulation (internal or external) required for design / operating shall be providing. Generally, the internal acoustic insulation shall be long stand glass fiber or mineral wool. Acoustic insulation shall be provided with first layer of protection of glass cloth over with SS screen/mesh and perforated SS sheet shall be provided. Requirements of OSHA for noise shall be strictly complied with.

**INSPECTION & TESTING:** The Silencer filter shall be tested for a period of minimum 20 minutes module for performance evaluation under maximum operating conditions at vendors work. Any defects/defective parts shall be rectified/replaced by vendor free of cost to the purchaser. Equipment shall be deemed to be accepted by purchaser only after successful performance testing as per conditions in the data sheet.

**C) Site conditions:**

Refer variant table

**D) Instrument provisions: -**

One M33X2 mm stub for Temperature instrument

1/2" half coupling

**3. DOCUMENTS ALONG WITH QUOTATION:**

General arrangement drg of intake filter house showing supporting arrangement , total wt of assembly and overall dimension of unit.

Efficiency curve for filter system ( particle size Vs percentage)

Detailed Catalogues

Guaranteed pr. drop values in filtering system.

Detail cleaning procure for filter panels.

Recommended spares for 2 years trouble free operation along with prices.

**Documents after order.**

10 copies of O & M manuals along with G.A drgs.

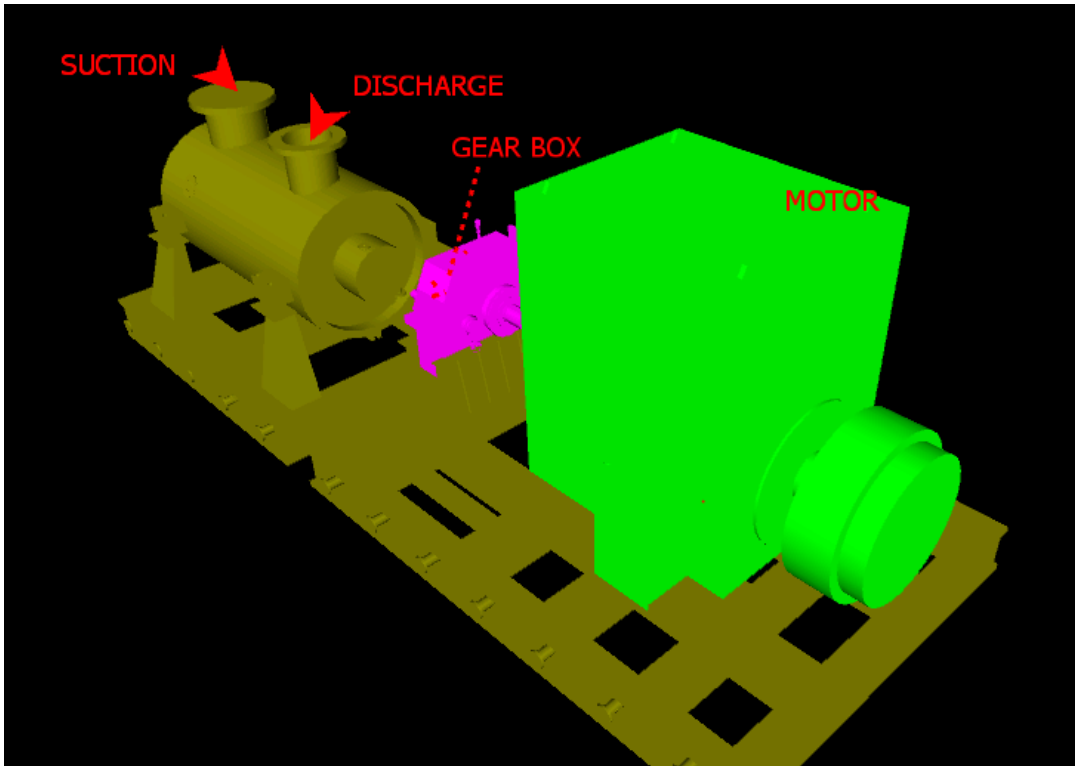
5 copies of spare filter panel drgs with complete dimensions and models nos, if any

**4. INSPECTION & GAURANTEE:**

The unit will be inspected at vendors work and after installation at site by BHEL. The guarantee period must not be less than 12 months from the date of machine goes into service or 25 months from the date of supply which ever is later.

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**Typical arrangement of compressor train**



**Variant Table**

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Variant	Description	Applicable site and design data	Material code
01	Suction air filter silencer 16" #150RF	Annexure-1	

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## Annexure-1

### Design parameters:

**End connection termination:** 16" -150RF flanged

**Flow Capacity at suction (Free Air Delivery):** 11771.30 Am<sup>3</sup>/hr

**Maximum allowed pressure drop:**0.001 Kg/Cm<sup>2</sup>

**Maximum Particle Size passing through the filter :** 20 Microns

### Noise spectrum at compressor suction

Frequency (in Hz)	63	125	250	500	1k	2k	4k	8k
SWL (in db) @ Suction Nozzle	89.7	91.7	95.7	97.7	99.7	100.7	95.7	89.7

### Site conditions:

Seismic zone classification: Zone III as per IS:1893

Ambient temperature: max 48.25°C and min 18°C

Wind Speed 0 to 39 Kmph

Relative Humidity:60% @ 27°C

**Orientation:** Vertical