



HYDERABAD

PRODUCT STANDARD

INDUSTRIAL TURBINES & COMPRESSORS

TC 5 4301

Rev. no: 08

CENTRIFUGAL EXHAUST FAN WITH ELECTRIC MOTOR

1.0 Scope:

This standard specifies the requirements of the radial centrifugal exhaust fan with electric motor (flange mounted) used in lube oil system of high speed Industrial Turbo Generator sets

2.0 Technical Requirements:

2.1 General:

The general arrangement of the fan and the dimensions should be as per sketch in sheet no.4 The exhaust fan is direct type. The impeller shall be dynamically balanced and mounted on carbon steel shaft of a mole size running in ball bearings with a provision for lubrication. The whole unit shall be of rugged design and in spark proof construction. The casing shall be fabricated from mild steel sheets of ample thickness.

The motor shall be preferably of flange mounted type, however if the motor is of foot mounted type proper sealing of motor shaft at fan casing shall be provided to prevent any leakage of oil vapor fumes from casing.



2.2 SPECIFICATIONS:

2.21 Quantity of oil vapour mixed with air to be handled : 0.11 Cu. Mtr / Sec

2.2.2 Head : 100 mm of water column

2.2.3 Specific weight of vapour : 1.2 Kg/m²

2.2.4 Temperature of oil vapour : Approx. 60⁰C

2.2.5 Suction branch : As per dimensional sketch

2.2.6 Delivery branch : As per dimensional sketch

2.2.7 Material of fan : Non sparking(Aluminum preferably)

2.2.8 Suction/Discharge flanges : Dia. 3" ANSI 150 class RF

2.2.9 MOTOR DETAILS:

- Power : To be recommended by supplier should not be more than 0.5 HP

- Speed : 3000 rpm (Synchronous speed)

- Voltage : V ±10% , V shall be as per variant table (sheet 4)

- Frequency : 50 Hz ±5%

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- Combined voltage and frequency variation : ±10%
- Enclosure : Flame proof(As per gas group I, II A, IIB)
- Ambient Temperature : 50°C (or mentioned in the enquiry)

2.3 OTHER DETAILS:

Location of assembly is out door and shall be suitable for continuous service in tropical humid climate. Motor should be supplied as per IS: 2148(Latest) Insulation class “B”, Enclosure: IP55 with canopy. CMRS certificate required for motor. The performance certificate of motor should be as per IS: 325(Latest). Motor should be suitable for an ambient specified in the indent. Refer BHEL spec TC54368 for IE2 efficiency class efficiency and TC54173 for IE3 efficiency class.(R07)

3.0 SCOPE OF SUPPLY:

Motor fan unit with suitable cable glands and Foundation bolts.

4.0 INSPECTION:

Fan is to be tested at supplier’s work for its satisfactory performance in presence of BHEL representative, if not otherwise indicated.

5.0 TEST AND GUARANTEE CERTIFICATE:

5.1 TEST CERTIFICATE:

3-Copies of performance test certificate of motor fan unit and CMRS certificate for Flame proof motor shall be supplied for each item of the consignment quoting BHEL standard number, Purchase order number & Manufacturer’s identification serial number.

5.2 GUARANTEE CERTIFICATE:

A guarantee certificate for 24 months of trouble free performance from the date of shipment or 18 months(including motor) from the date of commissioning whichever is earlier shall be supplied.



6.0 DOCUMENTS:

6.1 The supplier shall supply the following documents along with offer.

- a) Dimensional drawing of the fan in triplicate
- b) Performance curve
- c) Complete technical literature
- d) Cross sectional drawing of the fan showing details
- e) List of previous customers
- f) Motor Data sheets(Preliminary)

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- 6.2 The supplier shall supply the following documents within 2-weeks after placement of order.
- a) Operating and maintenance instructions 20-copies and reproducible
 - b) Final dimensional drawing of the fan in triplicate
 - c) Cross sectional drawing of the fan in triplicate
 - d) Performance curve(as tested)
 - e) Final Motor Data sheets

7.0 **PACKING:**

The material should be properly packed against mechanical damage and rust during transits

8.0 NAME PLATE DETAILS:

8.1 The name plate details of motor fan unit shall contain the following information.

- a) Manufacturer's identification serial number.
- b) Type / Model number
- c) Quantity of oil vapour
- d) Head
- e) Input power
- f) Motor HP
- g) Speed
- h) Voltage and Frequency

8.2 A tag bearing 12 digit material codes shall be attached for each consignment.

8.3 The following details shall be marked on the packing case.

- a) Manufacturer's name
- b) BHEL purchase order number
- c) BHEL standard number: TC54301
- d) BHEL material code number

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9.0

VARIANT TABLE:

Sl.No.	Description	Voltage	Material code	Variant No.
1	Oil vapour fan assy	415 V AC	TC9754301018	01
2	Oil vapour fan assy	440 V AC	TC9754301026	02
4	Oil vapour fan assy	400 V AC	TC9754301042	04
5	Spare motor	415 V AC	TC9754301050	05
6	Spare bearing for oil vapour Ext. Fan		TC9754301069	06
7	CN EXH FAN+ACMTR,0.11M3/S,380V AC,2900RPM	380V	TC9754301077	07
9	SET OF IMPELLERS FOR CEN EXH FAN		TC9754301093	09
10	CEF-EX-'D'AC MTR,0.11M3/S,415V,2900RPM	415 A AC	TC9754301107	10
11	Oil vapour fan with IE2 motor Motor spec TC54368-R01 to be referred along with TC54301	415 V	TC9754301115	11
12	IE3 MOTOR FOR EXHAUST FAN		TC9754301123	12
13	BEARNG IE3 MOTR OF EXHAUST FAN		TC9754301131	13
14	SPACE HEATER IE3 MOTR OF EXHAUST FAN		TC9754301140	14
15	COOLING FAN IE3 MOTR EXHAUST FAN		TC9754301158	15
16	CENT EXHAUST FAN WITH IE3 MOTOR		TC9754301166	16
17	SPARE FOR .37 KW IE2 MTR AS PER TABLE 1		TC9754301174	17
18	SPARE IE2 .37KW MTR FOR EXHAUST FAN		TC9754301182	18
19	SPARE IMPELLER FOR OIL VAPOR EXH. FAN		TC9754301190	19
20	SPARES EXH FAN MOTOR AS PER TABLE 2		TC9754301204	20
21	SPARE EXHAUST FAN 0.11 M3/S		TC9754301212	21
22	SP.COOLING FAN FOR EXHAUST FAN		TC9754301220	22
23	CEN EXH FAN AC0.11M3/S,415V-15%,2900RPM (Voltage variation -15% to +10%)		TC9754301239	23
24	BEARINGS DE & NDE EXHAUST FAN MTR		TC9754301247	24
25	COOLING FAN FOR EXHAUST FAN MTR		TC9754301255	25
26	TERMINAL BLOCK FOR EXHAUST FAN MOTOR		TC9754301263	26

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27	DE & NDE BEARING EXHAUST FAN IE3 MOTOR		TC9754301280	28
28	COOLING FAN FOR EXHAUST FAN IE3 MOTOR		TC9754301298	29
29	TERMINAL BLOCK EXHAUST FAN IE3 MOTOR		TC9754301301	30

Table No 1

S.No	Material description	Quantity
1	Bearings	1
2	Cooling fan	1
3	Motor terminal block plates	1
4	Complete set of couplings	1

Table No 2

S.No	Material description	Quantity
1	Bearings	4
2	Motor terminal block plates	10

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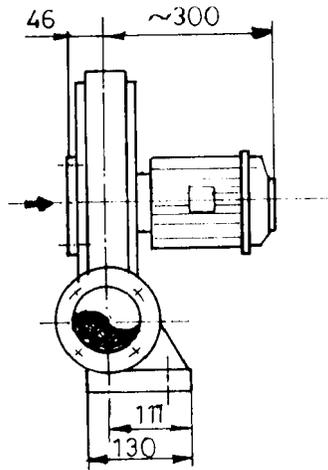
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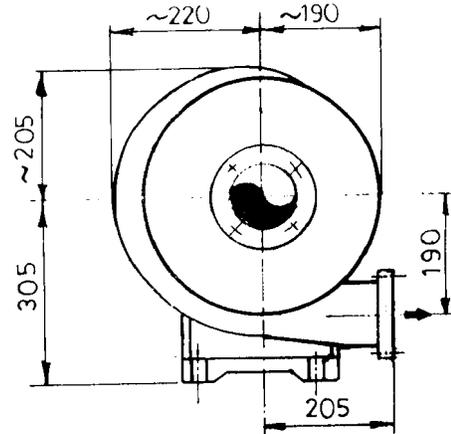
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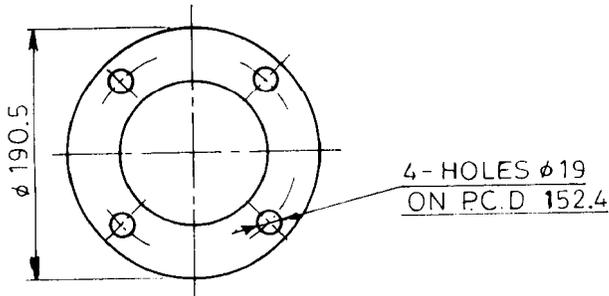
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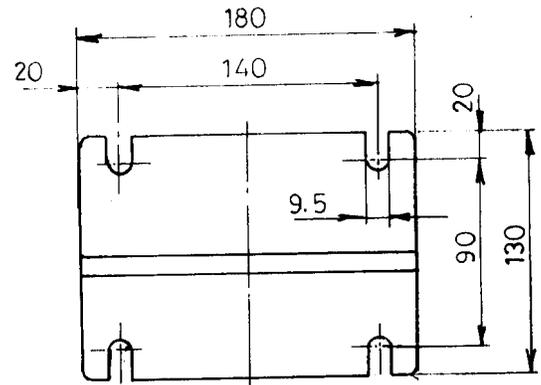
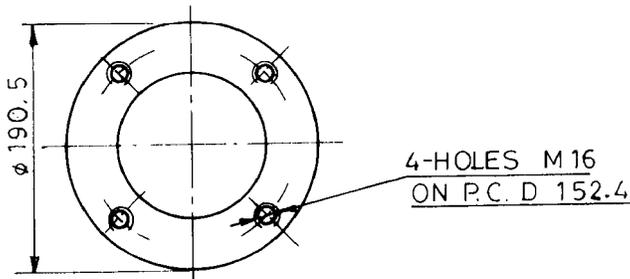
DELIVERY FLANGE DETAIL



BASE PLATE HOLE DETAIL



SUCTION FLANGE DETAIL



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