

TRACTION ENGINEERING DEVELOPMENT CENTRE

PROVISIONAL PURCHASE SPECIFICATION FOR AC MOTOR
DRIVEN BLOWER UNIT FOR OIL RIG APPLICATION

PROVISIONAL SPECIFICATION NO: TME/Q28 REV. 4

1.0 Scope

This specification covers the supply of 5.5 kW (7.5 HP) flame proof, weather proof, direct drive AC motor driven centrifugal blower complete with mounting bracket in assembled and tested condition. These blowers are to be mounted on DC drilling motor/drilling generator running at 1200 rpm. Complete equipment should be suitable for application in open atmosphere and hazardous areas as specified in IS2148: 1968, Group I, IIA

The blower complete with bracket is to be made to overall dimensions shown in the drawing No. 14390206001 item 1 and shall comply with constructional features mentioned therein.

2.0 Flame proof AC Motor: (Crompton Make)

2.1 Site & Operating Condition:

The AC motor will be used in open atmosphere and in Division I hazardous area as per IS:5572 - 1970 (Group I, IIA gases, as per IS:2148, 1968). Hence it shall be suitable for operation in these conditions.

2.2 Performance: To IS325 : 1970

2.3 Type of Enclosures:

Totally enclosed, fan cooled with IP-55 construction to IS4691 with weather-proof features like sealed joints, water flinger at drive end and a canopy over the motor. Grease nipples must be provided for regreasing both the bearings. The nipples should be easily accessible.

2.4 Type of Duty:

Continuous duty (duty type S1) as defined in IS325:1970.

2.5 Frequency: 50 Hz. FOR 4903 BX, CX, BW, CW
60 Hz FOR 4903 EX

2.6 No. of Phases: Three phase.

2.7 Mechanical Output : 5.5 KW (7.5 HP)

2.8 Rated Voltage: 415 Volts.

2.9 Class of Insulation : Class 'B'.

2.10 Speed in RPM : 2880 . 50-Hz
3460 FOR 60 Hz

2.11 Rotor: Squirrel cage.

2.11A Rating plate: Appropriate DGMS & CMRS/CMRI certification to be embossed on rating plate along with other standard information. Cont'd...2.

2.12 Dimensions: As per IS1231

2.13 Frame Size: 132M Horizontal

Foot mounted to IMB3 as specified in IS2253.

2.14 Construction: Flame-proof as specified in IS2148 : 1968 (Group I, IIA gases).

2.15 Terminal box to be fitted with a flame-proof cable gland to receive 4 core unarmoured cable of 13 mm overall dia.

2.16 Earthing terminal should be provided inside the terminal box and also the power terminals should be marked for phases i.e. R Y B OR A B & C.

3.0 Blower: The blower shall be designed to deliver 2900 CFM of air at 210 mm WG at the outlet. Following constructional features shall be incorporated:

3.1 Casing: The casing should be fabricated from 3.15 tk. steel sheet suitably stiffened externally. At the air inlet opening of the casing 5 mm thick back ring a stiffener should be provided. The blower casing side wall and periphery plates should be of single piece construction. The inlet cone having 5 mm thick flanges, with drilled holes and removable metal cowl, should be provided. The other end of the cowl should have a fine wire mesh with flange. An opening with cover of 3.15 tk steel sheet is to be provided on the outlet side of the casing, as shown in the drawing, for mounting of air flow relay. All casing welds to be dye-penetration tested. The casing with inlet cone should have leak-proof welds and joints and to be tested at an air pressure of 300 mm water gauge (min).

3.2 Impeller: This impeller should be of suitable single width single inlet construction having backplate of 3.15 tk steel sheet. The impeller back plate should be spigotted on to the hub with a push fit. The hub must be machined out of mild steel bar. The steel plates used in the impeller to be of tested quality MS plate/sheets to IS2062.

All welds on the impeller should be uniform having no under cuts. All welds to be dye-penetrent tested for porosity and cracks. The fabricated impeller to be stress relieved before assembly with hub. The impeller should be statically and dynamically balanced within 15 microns. Bolts and nuts should not be used as balance weights. The balance weights (not exceeding 75 gms) should be properly welded to the inner face of the impeller back plate.

The impeller and the hub should be screwed and locked by using plate locking washer as shown in the above referred drawing. Only high tensile steel bolts are to be used in the hub. Alternatively rivetting can be adopted.

Opposite to the inlet side of the casing a circular steel plate of 5 mm thick should be used as a stiffener. A spark resisting seal, made out of brass should be provided at shaft entry to give a uniform radial gap between shaft and seal.