

SECTION: 2.7

AIR MOVING APPARATUS

1.0 **Scope**

1.1 The scope of work covers supply, erection, testing and commissioning of various Air Moving Apparatus as described herein.

1.2 All manufacturers catalogues and performance data physical dimensions & weight shall be submitted and get approved before procurement.

2.0 **Centrifugal fans**

2.1 Centrifugal fans shall have backward curved preferably with hollow heavy section aerofoil blades, with non-over loading characteristic unless stated otherwise. Blades in fans for class III and above applications shall be internally reinforced. Wheel hubs shall be machined cast iron or fabricated for heavy duty operation mounted on liberally sized shaft assembly. Fan assembly including shafts shall be statically and dynamically balanced with critical speeds atleast 30% away from the operating range of speeds of the fan. Fans shall be selected for the specified outlet velocities, default maximum velocity 10m/s.

1.2 Fan bearings shall be unless otherwise specified heavy duty self-aligning, regreasable roller bearings capable of absorbing radial and/or thrust loads. All bearings shall be selected for quiet operation and long life.

1.3 Fans shall have manually operated inlet vanes and quick opening access door. Fan housing shall be constructed of heavy gauge steel completely seamwelded and shall have heavy angle or channel side and fixed discharge and inlet flanges conforming to AMCA recommendations.

1.4 Fan drives shall be through multiple vee-belts using multi-vee-grooved pullies. All drives shall have suitable belt guards. Fan and drive motor shall be mounted on a common fabricated base frame which in turn shall be isolated from the floor through specified vibration mounts. Motor rating shall exceed maximum power the fan absorbs at all operating conditions.

2.0 **Fan Sections**

- 2.1 Fan sections shall be similar to single skin Air Handling Units fabricated out of mild steel angles and galvanised sheet steel with tracing or beading for structural rigidity.
- 2.2 Fans shall be backward curve centrifugal double inlet multiple blade type, enclosed inside the unit casing as specified above and together with the drive/s, unless stated otherwise.
- 2.3 Drive motor shall be mounted on adjustable motor base capable of a minimum adjustment of 100mm. Wherever 24 hours operation with two drive motors are specified the fan shaft shall be extended on both sides with the drive pulleys. Motor ratings shall exceed the maximum power absorbed by the fan at all operating conditions.

3.0 **Axial Flow Fans**

- 3.1 Axial flow fans may be tube or vane axial type for in-line installation. Fans shall be selected for low noise levels and meet the flow and pressure requirements specified in the data sheets.
- 3.2 Drives for all axial flow fans shall be with multiple V belts whether specified or not. There shall be minimum 2 belts. All motors shall be sized at more than the maximum brake power of the fan in its operating range.

4.0 **Propeller fans**

- 4.1 Propeller fans shall be direct driven as specified with square frame and heavy deep drawn steel panel construction. Fans shall be capable of being mounted in horizontal or vertical or any angular position. Drive motor shall be single phase/3 phase with necessary starter specified. All fans shall have discharge gravity louvres and bird screen with 1.0mm dia 20 mesh galvanised steel mesh with diaphragm plate & frame, grouted into the wall.

5.0 **Sheet Metal Ducting**

- 5.1 All sheet metal ducting associated with ventilation and exhaust systems shall follow the specifications "SHEET METAL DUCTING".

6.0 **Installation**

6.1 Installation of all fans shall be done with necessary vibration isolation fittings and the minimum static deflection shall be as specified in the data sheets.

7.0 **Testing**

7.1 All fans shall be tested to establish the following ratings:

Air quantity	ℓ/s
Static pressure	Pa
Fan speed	rpm
Outlet velocity	(m/s)
Noise (On Octave wave band)	(SPL)dB
Full load current	(amps)

8.0 **Mode of measurement**

8.1 Each fan with motor, drive & guard, mounting frame, vibration mounts starter panels, cabling, earthing as per data sheet shall form one unit. In case of propeller exhaust fans, the mounting frame with bird screen and gravity louvres (back draft dampers) should also be included in the unit cost.