



OPERATING AND MAINTENANCE INSTRUCTIONS

TWIN FAN SUPPLY UNITS DIRECT DRIVEN **SERIES 200 - 550**

DESCRIPTION

All units are manufactured to a very high standard.

Twin fan fresh air units are fitted with two single or three phase, double inlet, direct drive, centrifugal fans. Heater batteries of the correct size are fitted when required. Adjustable On/Off thermostats are provided to control the heater in one, two or three stages as appropriate.

All filters are manufactured to BSEN 779:2012. G4 grade panel filters are fitted as standard. Medium grade panel filters M5 - M6, Fine grade Bag Filters F7 - F9 and HEPA filters grade H10 – H14 are available on request. (Carbon filters are also available)

The units are manufactured from 18, 16 swg zintec steel plate, constructed as Channel & Tray (CT) panels available as either single skin panels (SSK), or double skin panels (DSK) filled with 60kg/cm³ Rockwool insulation. The internally mounted units have a natural galvanised finish. Weatherproof or External Units are finished in Blue to RAL 5017.

Single skin units are insulated with Pyrosorb, class 'O' 25mm thick for anti-condensation and sound proofing purposes.

Both ends of the unit are internally flanged to match the Puma telescopic duct and external weather louvre. Intake and discharge silencers are manufactured from 18 SWG zintec steel and 20 SWG 30% free area perforated plates. Sound absorption material is Rockwool slab to a density of 60kg/cm², tissue faced to eliminate fibre shedding.

OPERATION

The twin fan units most commonly require a 220/240 V ac single phase supply, but where specified, may require a 380/415 V ac 3 phase neutral supply, (check serial plate on side of unit). This supply will normally be interlocked with the air-conditioning system in relation to power shutdown in the event of fire detection.

The incoming mains supply must be connected to the terminal block supplied in the electrical enclosure mounted on the side of the unit. The supply to the fans and heater/s (via thermostats) is from this terminal block. Where specified, heaters may be wired for remote control and mains supply for connection by others.

All heater batteries are fitted with an Element Over-heat Protection Circuit (EOPC). The circuit incorporates an Element Overheat Thermostat, (EOT), (manual reset) & Airflow Failure Switch, (AFS), together with an appropriate relay or contactor. When low or no airflow occurs the coil of the relay or contactor is de-energised.

The overheat thermostat protects the heater elements against overheating in the event of fan/airflow switch failure. The airflow switch also provides volt free contacts via a relay wired to terminals located inside the electrical enclosure.

Each unit is provided with an electrical enclosure c/w 20/25mm SWA cable gland to IP65, mains terminal block, mains isolator and control terminals.

Internal speed controllers for each fan are available to commission fan airflow duties when required, single phase only. Inverter drives are available for three phase fans.

Twin fan units with 'Duty Standby' require a Puma auto changeover panel to operate correctly. When energised, the selected fan will run as the duty fan. If the fan fails, an airflow switch automatically switches on the standby fan and illuminates a fan fail (red) light on the auto changeover panel, (see data sheet on auto changeover panels for differences in the basic and deluxe panel models). The Duty fan can be manually selected by the fan selector switch on the auto changeover panel.

All twin fan units are fitted with Airflow Failure Switches (AFS) wired in series to a terminal block marked common, normally open, normally closed. This 'volt free' device is rated at 240 V ac 5 amps.

INSTALLATION

The unit must be installed with sufficient access to the top/side of the unit. A dimension is shown on the supplied certified drawing to show the minimum space required. This is for access to the serviceable components via the flat plate lid or side panels. The clearance height is not necessary when the units are located underneath raised modular floors, as it is assumed that the appropriate floor tile/s are accessible and removable.

The mains supply to all units must be disconnected at source before removing any panels or doors.

The unit may be suspended or supported by correctly sized anti-vibration isolators if required (supplied by others).

SERVICE AND MAINTENANCE

The main panel filter in the fresh air unit must be replaced as frequently as is necessary depending on ambient conditions. This should coincide with a three monthly visit for a standard service for the main air conditioning plant or, if manometers are fitted, when the pressure difference exceeds the set point.

Failure to change the filter/s at the recommended intervals will invalidate the warranty.

The Airflow Failure Switches (AFS) should be checked for free movement and electrical conductance.

The fans fitted with direct drive motors have 'sealed for life' bearings that require no maintenance.

Refer to Puma technical sales leaflet for further information regarding dimensions, weights and unit performance and fan curves.

FAULT FINDING

FAN/MOTOR FAILS TO RUN

1. Check the unit is connected correctly, as the wiring diagram supplied.
2. Check the mains supply and mains isolator.
3. Check the control circuit fuse.
4. Is there a voltage at the fan? Yes would indicate motor failure or a neutral/phase problem. If no, follow steps 5-6 below.
5. Check the Shutdown Relay (SR) link, fitted between terminals L1 & L2 or SR1 & SR2.
6. Check the fan fuse for single phase fans. For three phase check the fuses are okay and the fan overload is on by pushing the manual reset button (red) on the fan contactor.
7. If the motor overload/fuses keep tripping/blowing check the phases are ok.

ELECTRIC HEATING NOT RUNNING

1. Is the airflow being restricted stopping the airflow switch from operating, i.e. a clogged or dirty filter.
2. Check the overheat thermostat, press the manual reset button (located next to the heater battery).
3. Check the heating supply fuses.
4. Check the heating contactor for correct operation.
5. Check the airflow switch (located on the side of the fan body) for correct operation and electrical continuity. (An audible click should be heard when operating the switch.)
6. Check the individual thermostats are set to the desired temperature/s and they are working correctly. Again an audible click should be heard when turning the dial up or down.
7. Where an electronic thermostat is used, check the supply to the thermostat and the display is on.
8. Check the sensor. A resistance of approx 10k Ω should be measured across the sensor (disconnected).
9. If a 4/8 stage electronic thermostat is fitted, check the parameters are correct. Refer to the electronic thermostat set up document.

Most faults/problems can be resolved by following the above. If the unit still fails to work correctly please contact Puma Products Limited for technical assistance.



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