PUMA PRODUCTS LIMITED™

OPERATING AND MAINTENANCE INSTRUCTIONS

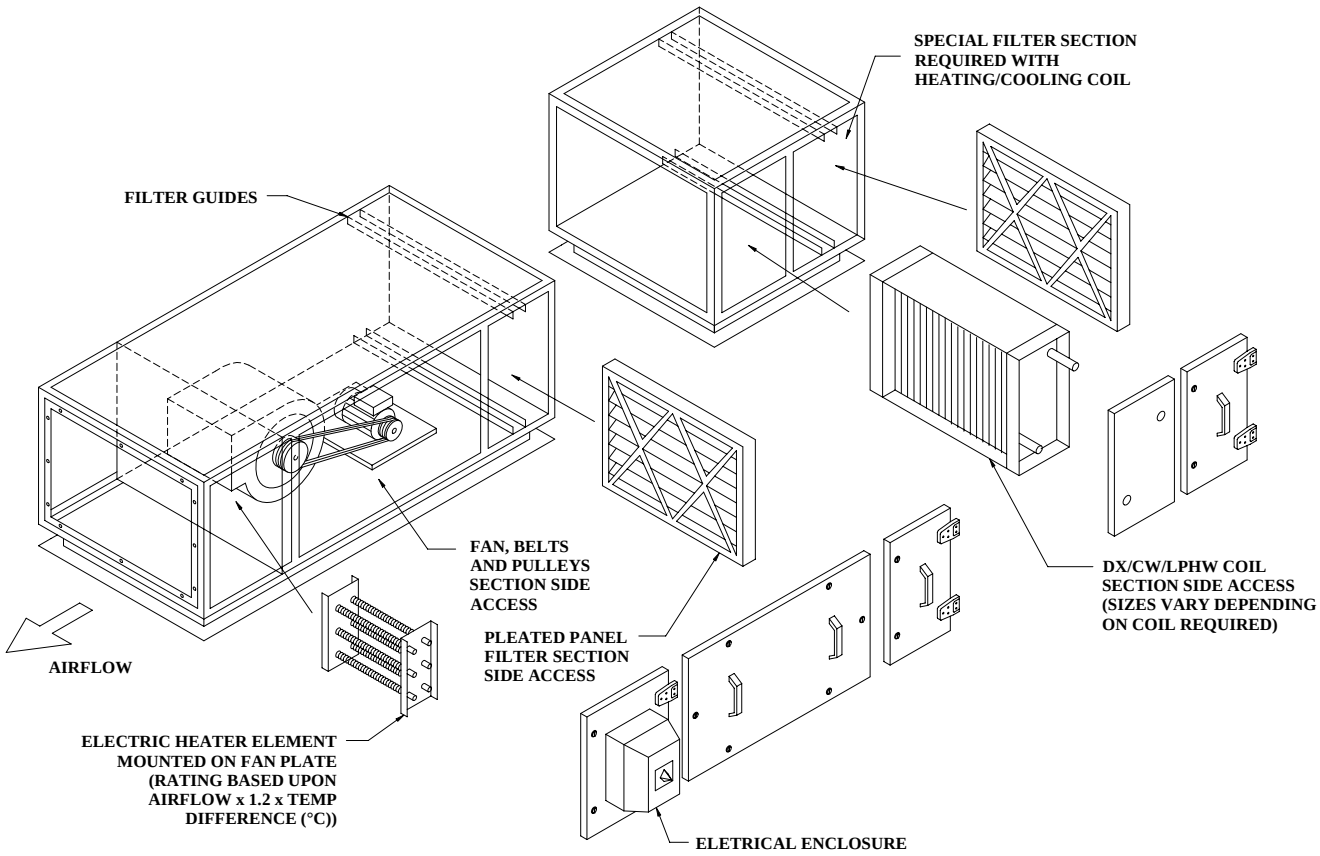
FRESH AIR INPUT UNITS – LARGE RANGE – BELT DRIVEN

DESCRIPTION

All units are manufactured to a very high standard of construction and come in three types:

Penta Post Construction - PP

The frame is pre-formed from Aluminium Extrusion and Moulded Corners forming a versatile box section frame which allows panel access and coil connections from left or right hand side as on request. Single Skin Panels (SSK) are lined with 25mm Pyrosorb insulation. Double Skin Panels (DSK) are formed from 20 Swg Galvanised Steel plate, in-filled with 60kg/m³ Rockwool insulation for additional noise reduction. Galvanised Panels for internal duct mounted units (Optional powder coat finish available on request). Mid Blue polyester powder coat to RAL 5017 for Weatherproof Roof Mounted Units as standard.



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The supply air fans are Belt Driven, double inlet, forward or backward curve centrifugal type fitted with single or three phase motors to class F insulation. They are sized to suit the duty required with allowances for internal pressure drop within the unit.

Units are internally flanged, and fitted with M6 nutserts. These are for connection to a suitable duct or optional Puma Telescopic Wall Sleeve and Duct and external Weather Louvre.

Ducted Units are available with Silencers for intake and discharge sections. These are formed from 18 SWG Mild Steel Plate and 20 SWG 30% free area Perforated Plates, all powder-coated to match the Unit. Sound absorption material is Rockwool Slab to a density of 60Kg/m^3, tissue faced to eliminate Fibre shedding.

Heater batteries of the correct size are fitted when required. Internal adjustable On/Off thermostats control these, optional thyristor controllers are available. A Panel Filter with an arrestance of 86% against EUROVENT-4/5 - G4 (BS 6540 and ASHRAE 52/76) is fitted as standard. High Efficiency Bag Filters with an efficiency of 80% @ 0.5 microns TD No. 1 BS 2831, EUROVENT-5/5 – F9 may be fitted if specified. Panel filters are available up to F6 and bag filters are available up to F9 (Carbon Filters and HEPA filters are also available).

OPERATION

The Fresh Air section of the unit generally requires a 380/415Vac 3 phase & neutral supply, where specified a 230 V ac single phase supply may be required (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 located in the Electrical Enclosure mounted on the side of the Unit. The supply to the fan 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.

Electric Heaters

All heater batteries are fitted as standard with an Element Over-heat Protection Circuit (EOPC). The circuit incorporates an Element Overheat Switch (with manual reset) & Airflow switch together with an appropriate Relay or Contactor, when low or no airflow occurs the coil of the Relay/Contactor is de-energised. The overheat switch provides protection against the heater elements overheating in the event of fan/Airflow Switch failure. The Airflow Switch also provides volt free contacts via a Relay (AFR) or (HR) wired to Terminals located inside the Electrical Enclosure.

All Puma units with heating controls will include Heater Fuses, Heater Relays or Contactor and Element Overheat Thermostat. There are three options for heating controls:

Integral Thermostats **–** One thermostat is supplied for each stage of heating required. These are located inside fan unit sensing air intake temperature. Each Thermostat switches up to 4kW per stage. Adjustable 0-30° C dial, factory set at 5° C steps per thermostat. Switching differential + or - 2° C.

Electronic Multistage Thermostat - The EMT is supplied with a Duct Sensor that is pre-wired to terminals inside the Electrical Enclosure (located on the outside of the AHU). This device turns the heating load on in 3 or 4 steps until required temperature is achieved. The Duct Sensor must be fitted into the duct air stream on the discharge side (Preferably 1 metre or more in front) in order to read the ‘Off Coil’ temperature.

Thyristor Controller **-** Close Control and Constant Temperature is achieved by Pulse switching the heating load via Triac. This device can be supplied with either a duct or room sensor. Remote 0–10V dc Signal available on request. The Duct Sensor must be fitted into the duct air stream on the discharge side (Preferably 1 metre or more in front) in order to read the 'Off Coil' temperature.

LPHW, DX and CW Coils

LPHW heating coils and DX or CW cooling coils can be added to any Penta Post Puma unit. These will be mounted on the intake of the AHU and would incorporate a separate section which would be bolted to the Fan Section (see layout diagram). With this separate section, a panel filter would be added to protect the coil.

LPHW coils are suitable for low pressure hot water at 82°C flow and 72°C return temperature. The 3 way valve and controllers for the LPHW coil are available at an extra cost.

DX and CW coils will have Eliminators fitted if the airflow is above $3m^3/s$. A drain pan will be included as standard with the coil with a condensate connection, which will require trapping at time of installation.

The coils will be fabricated from copper piping fitted around aluminium fins (unless otherwise stated) constructed within a galvanised steel case. The coil will have threaded male BSP connections, the water flow connection at the bottom, and the outlet is at the top.

Inverter Speed Controllers

Inverter Speed Controllers can be fitted to most three phase fans for commissioning purposes. It is generally accepted that great care must be taken when reducing airflow when electronic heater batteries are fitted.

A sufficient amount of air should pass across the elements to prevent overheating. This is normally 30 to 40% of maximum fan speed. Safety is provided by the Airflow Failure Switch (A.F.S.) which will drop out the Heating Relay/Contactor when the airflow is too low. The element overheat thermostat will act as a fail safe.

Damper and Motor

When a Damper and Motor is fitted to the Puma Unit, the damper motor is wired lieu with the fan controls and proceeds to open when power is supplied to the Fan Unit. The motor takes approximately 40-75 seconds to fully open and will then 'Spring Return' on power failure at approximately 20 seconds.

INSTALLATION

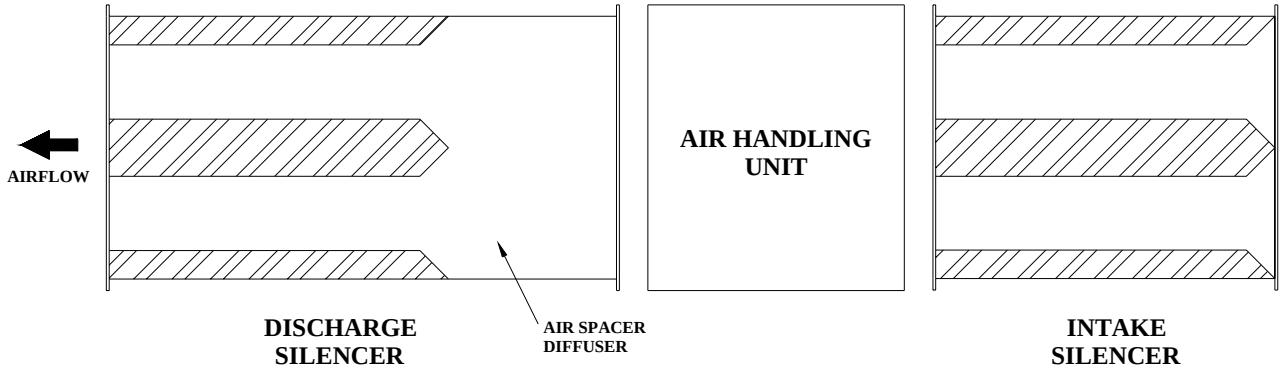
The Puma unit must be situated in a position with sufficient access to the removable panels. A given dimension on the certified drawing must be allowed, as access to all serviceable components are via the removable panels. Top/bottom access is standard on channel & tray (CT) and Monocoque (MO) units. Side Access is available on Pentapost (PP) units as standard. Fresh Air Pentapost units are available as weatherproof versions (denoted WFA). Anti-vibration isolators are recommended when installed on flat roofs. If cooling coils are fitted, the condensate tray connection may require trapping, which would be located below the coil.

Silencers

Ducted Units are available with Silencers for intake and discharge sections. These are formed from 18 SWG Mild Steel Plate and 20 SWG 30% free area Perforated Plates. Sound absorption material is Rockwool Slab to a density of $60Kg/m^3$, tissue faced to eliminate fibre shedding.

If unit is supplied with Silencers, please be aware that Discharge Silencers are different to Intake Silencers. All of our Discharge Silencers are fitted with Air Spacer Diffusers (ASD), these are

300mm sections added to the Silencer to help establish steady airflow and reduce air turbulence throughout the ductwork.



SERVICE AND MAINTENANCE

The mains supply to all units must be disconnected at source before removing access panels.

The main panel filter in the Fresh Air section 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 150 Pascals. Failure to change the filter/s at the recommended intervals will invalidate the warranty.

The airflow failure switch should be checked for free movement and electrical conductance.

These fans are fitted with belt driven motors with sealed for life bearings up to a frame size of 132 (11kW) that require no maintenance.
Motors of frame size 160 (15kW) and above have open bearings with “flush through” regreasing facilities. It is recommended these motors are checked and regreased every 3 months.

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

FAULT FINDING

See separate sheet attached.

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