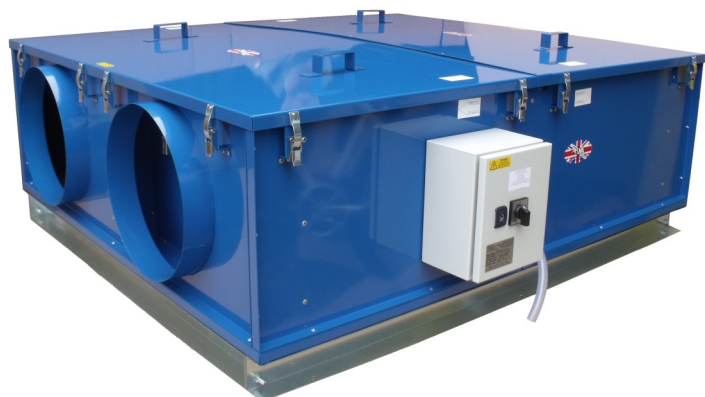


Supply Air, Permanent Extract with Heat Recovery Direct Driven Range SAPER CT or PP - DD

**Packaged Air Handling for General Ventilation Applications where
Energy Savings and Environmentally Friendly Engineering Combine**



- Channel & Tray Single Skin Construction
- Penta Post Double Skin Construction
- Top or Bottom Access Lid – CT Construction
- Weatherproof Version Available
- G4 Panel Filters (Supply & Exhaust side)
- Condensate Outlet Hose Connection
- Vertical or Ceiling Mounting Applications
- Optional Square or Circular Duct Connections
- Recycled Plastic Plate Heat Exchangers
- Up To 70% Efficient Heat Recovery*
- Face & Bypass Damper option available

The Puma SAPER Heat Recovery Unit provides tempered Fresh Air whilst recovering sensible heat from the Exhaust Air by cross-flowing both air streams through an 'Air to Air' Plate Heat Exchanger. These well-known Plate Heat Exchangers have earned an excellent reputation with regards to high thermal efficiencies, durability, with no cross contamination between air streams, cleanable and virtually maintenance free.

The Puma SAPER models are fitted with Single or Three phase, double inlet Direct Driven centrifugal fans, Plastic Plate Heat Exchanger and lined with 25mm class 'O' Pyrosorb insulation. G4 Panel Filter on Supply and Extract side (high efficiency bag filters available on request).

Fan Controls Package include:- On/Off Isolator, Electrical Termination Enclosure, Fan Fuse (1Ph) or Overload and Contactor(3Ph), Fan Start Relay and Airflow Indication Switch with Volt Free Contacts.

Heater Controls Package include:- Heater Fuse/s, Heater Relay or Contactor, Element Overheat Thermostat, and Basic Integral Thermostat control as standard (Alternative Thermostat controls available).

LPHW heating coils, **CW** or **DXHP** cooling coils available

* Thermal efficiency rating is dependent on room and ambient conditions with SAPER unit selection.

Options and Accessories

VCD	Volume Control Damper	EMT	Electronic Thermostat & Duct Sensor
PSD	Positive Shutoff Damper	THY	Thyristor Controller & Duct Sensor
FSD	Fire / Smoke Damper	WL	Weather Louvre
LPHW	Low Pressure Hot Water Coil	SC	Internal Speed Controller
HEF	High Efficiency Panel Filters EU6	WMSC	Wall Mounted Speed Controller
FPS	Filter Pressure Switch c/w tappings	SIL	Square or Circular Silencers
MT	Manometer c/w tappings	SQ	Square Spigot Connections
CM	Ceiling Mounted	CS	Circular Spigot Connections
VM	Vertically Mounted	FBD	Face and Bypass Damper & Motor

Help Save our Environment with



Performance Data

SAPER Channel & Tray, Direct Driven Range – WITHOUT Face & Bypass Damper									
Model Number	Supply & Extract Duty in m ³ /sec @ given External Static Pressure (Pa)							Plate Heat Exchanger Efficiency %	Plate Heat Exchanger Duty (kW)
	0	50	100	150	200	250	300	Figures based upon Equal Airflows with -1°C Ambient and 21°C Room Temperature	
SAPER 250/300	0.1	0.08	0.07	0.05	-	-	-	50 %	1.2 kW
SAPER 250/400	0.15	0.13	0.1	0.07	-	-	-	50 %	1.7 kW
SAPER 300/600	0.22	0.19	0.17	0.15	0.11	-	-	50 %	2.9 kW
SAPER 350/850	0.35	0.31	0.25	0.19	-	-	-	50 %	4.4 kW
SAPER 350/1200	0.43	0.42	0.39	0.31	0.25	-	-	50 %	5.2 kW
SAPER 400/1300	0.55	0.54	0.53	0.52	0.39	-	-	50 %	6.4 kW
SAPER 400/1350	0.6	0.57	0.56	0.55	0.48	0.3	-	50 %	6.9 kW
SAPER 450/1600	0.75	0.73	0.72	0.65	0.59	-	-	50 %	9.1 kW
SAPER 450/2500	0.8	0.78	0.77	0.72	0.64	-	-	50 %	10.1 kW
SAPER 550/3600	1.1	1.1	1.0	0.95	0.82	-	-	50 %	13.7 kW
SAPER Channel & Tray, Direct Driven Range – WITH Face & Bypass Damper									
SAPER 250/300 - FBD	0.08	0.07	0.05	0.04	-	-	-	50 %	1.0 kW
SAPER 300/400 - FBD	0.15	0.13	0.1	0.07	-	-	-	50 %	1.8 kW
SAPER 350/600 - FBD	0.22	0.19	0.17	0.15	0.11	-	-	50 %	2.7 kW
SAPER 400/850 - FBD	0.35	0.31	0.25	0.19	-	-	-	50 %	4.5 kW
SAPER 400/1200 - FBD	0.43	0.42	0.39	0.31	0.25	-	-	50 %	5.4 kW
SAPER 450/1300 - FBD	0.55	0.54	0.53	0.52	0.39	-	-	52 %	7.6 kW
SAPER 450/1350 - FBD	0.6	0.57	0.56	0.55	0.48	0.3	-	52 %	8.2 kW
SAPER 550/1600 - FBD	0.75	0.73	0.72	0.65	0.59	-	-	52 %	10.4 kW
SAPER 550/2500 - FBD	0.8	0.78	0.77	0.72	0.64	-	-	52 %	11.0 kW

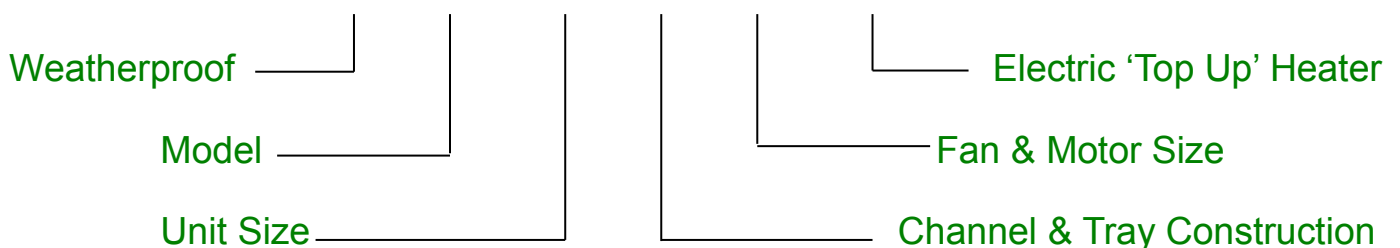
For Quieter units with Higher Efficiencies (up to 70 %) and Bottom Access panels for servicing in low ceiling void applications, please consult our sales team.

Channel & Tray (CT) Units are Single Skin (SSK) Panels lined with 25mm Pyrosorb

Penta Post (PP) Units are Double Skin (DSK) Panels filled with 60 kg/cm² Rockwool insulation

Typical Part Code:

W SAPER 300 / CT / 600 - 3kW



Electrical and Sound Data

Fan & Motor Size (Per Fan)	Motor Running Current (Amps)	Motor Starting Current (Amps)	Motor Power (Watts)	Induct Sound Power Levels dBW @ Octave Band Mid Frequency HZ								Breakout Noise Level dBA*
				63	125	250	500	1K	2K	4K	8K	SSK ONLY
300	0.8	2.0	175	66	60	68	57	57	50	44	35	47
400	0.8	2.0	190	43	47	49	55	55	53	48	44	44
600	1.2	3.0	273	71	65	64	64	62	57	50	40	51
850	1.9	4.75	184	70	72	73	72	69	65	62	57	47
1200	4.3	10.75	373	78	75	70	66	64	63	61	48	53
1300	3.5	8.75	300	84	81	76	72	70	69	67	54	58
1800	3.6	9.0	420	79	77	69	67	63	60	52	44	56
2500	6.8	17.5	550	83	81	73	71	67	64	56	48	64
3600	4.3**	21.5**	1100	90	87	85	84	82	78	70	58	67

* The dBA quoted is the mean 'A' weighted sound pressure level measured at a distance of 3m. It is included for comparative purposes only and the actual sound level experienced will depend on the acoustic characteristics of the area being served. Ductwork and Silencers also have a major influence on breakout noise and actual noise levels in the system.

** 380/415 V ac Three Phase Motor

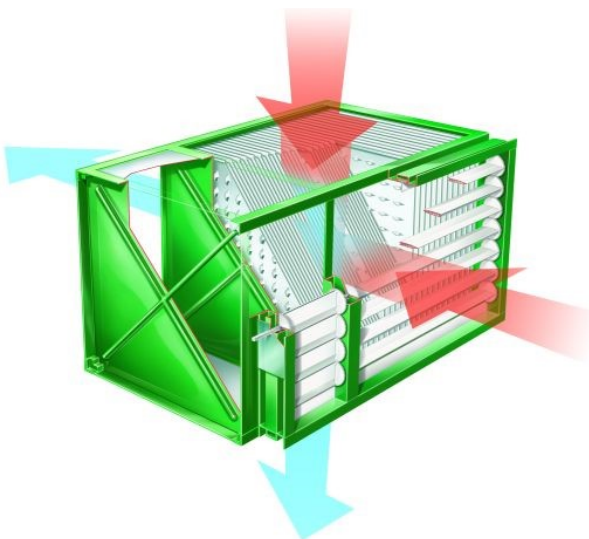
Available Electric 'Top Up' Heaters @ 220/240 V ac 1Ph & N, 50 Hz

Heater Capacity	1 kW	1.5 kW	2 kW	2.5 kW	3 kW	4 kW	5 kW	6 kW	7.5 kW
Running Current (Amps)	4.3	6.5	8.7	10.9	13	17.4	21.7	26	32.6

Available Electric 'Top Up' Heaters @ 380/415 V ac 3Ph & N, 50 Hz

Heater Capacity	9 kW			12 kW			15 kW			18 kW			21 kW		
Running Current (Amps)	R	S	T	R	S	T	R	S	T	R	S	T	R	S	T
	13	13	13	17.4	17.4	17.4	21.7	21.7	21.7	26	26	26	30.4	30.4	30.4
Heater Capacity	24 kW			27 kW			30 kW			36 kW					
Running Current (Amps)	R	S	T	R	S	T	R	S	T	R	S	T			
	34.8	34.8	34.8	39.1	39.1	39.1	43.5	43.5	43.5	52.2	52.2	52.2			

Plastic Plate Heat Exchangers

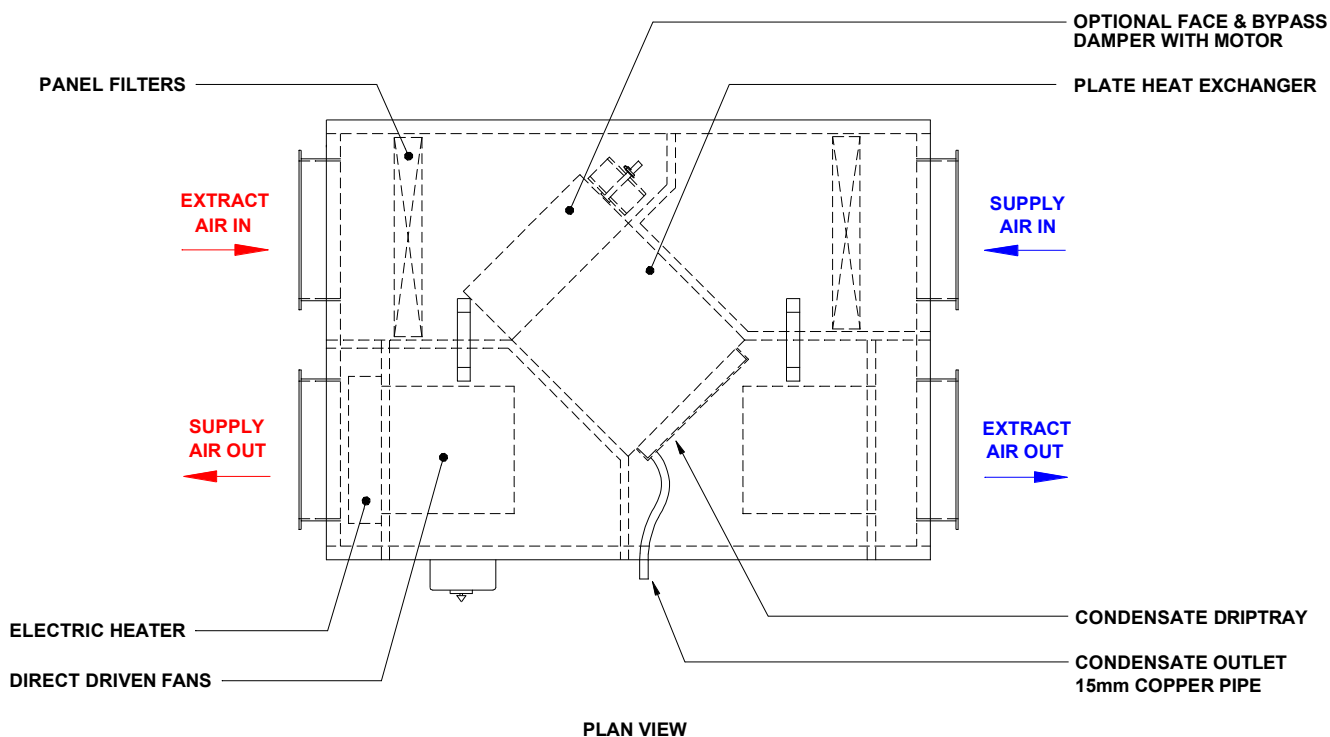
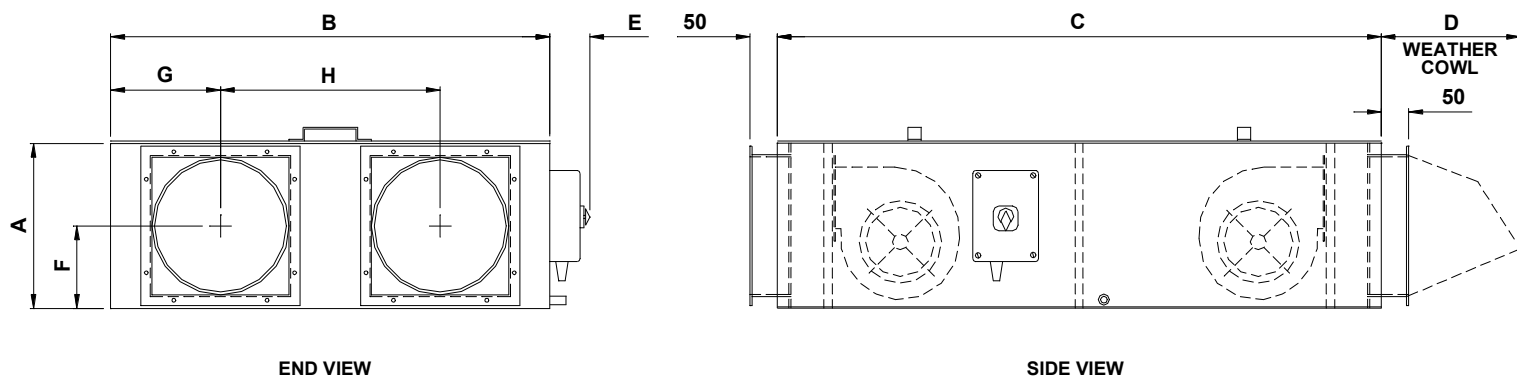


- Up to 95% recycled PVC material used
- Virtually maintenance free
- Efficiencies up to 70%
- Corrosion resistant
- No cross contamination of air streams
- Face and Bypass Damper option available

Although plastic is a poor conductor of heat, this has very little influence on the heat transfer performance due to two main factors:

1. The separating plate material is very thin.
2. The thin film of air (boundary layer) which is formed on each side of the wall during operation is far more resistant to heat transfer than the actual wall itself.

Dimensional Data Channel & Tray Range



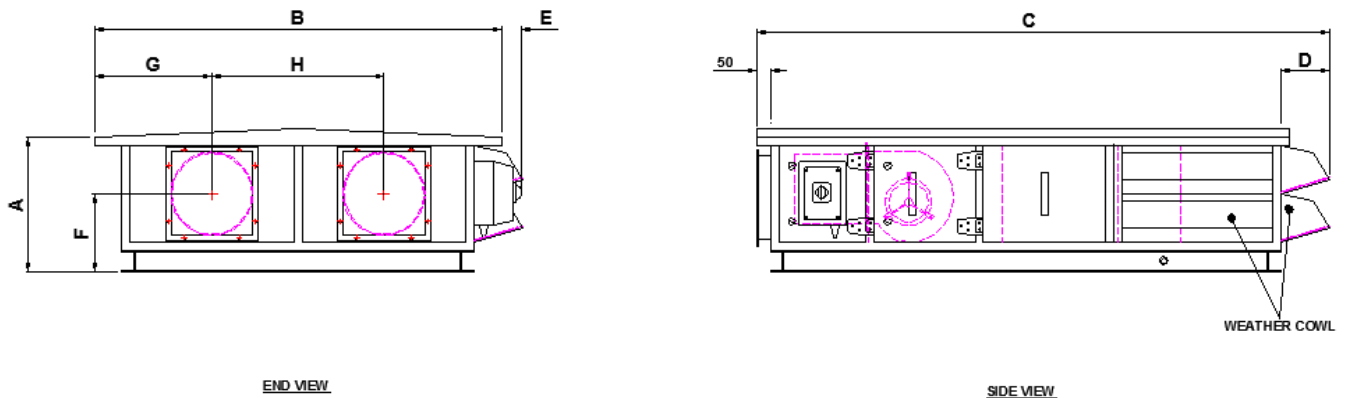
Dimensions In Millimetres											
Model Number	A	B	C	D	E	F	G	H	SQUARE SPIGOT SIZE	CIRCULAR SPIGOT SIZE Ø	WEIGHT
SAPER 250 CT	250	800	1000	-	75	125	200	400	200x200	200	60 Kg
SAPER 300 CT	300	800	1100	-	75	150	200	400	250x250	250	70 Kg
SAPER 350 CT	350	1000	1450	-	150	175	250	500	300x300	300	85 Kg
SAPER 400 CT	440	1300	1450	-	150	232.5	325	650	350x350	350	110 Kg
SAPER 450 CT	475	1400	1600	-	150	250	350	700	400x400	400	140 Kg
SAPER 550 CT	575	1600	2000	-	150	300	425	750	500x500	500	170 Kg
W SAPER 250 CT	320	800	1000	200	75	175	200	400	200x200	200	75 Kg
W SAPER 300 CT	370	800	1100	250	75	200	200	400	250x250	250	85 Kg
W SAPER 350 CT	455	1000	1450	250	150	250	250	500	300x300	300	110 Kg
W SAPER 400 CT	545	1300	1450	350	150	282.5	325	650	350x350	350	140 Kg
W SAPER 450 CT	580	1400	1600	325	150	325	350	700	400x400	400	170 Kg
W SAPER 550 CT	680	1600	2000	400	150	350	425	750	500x500	500	320 Kg

Unit 6, Viscount Court, Walworth Industrial Estate, Andover, Hampshire SP10 5NW England
Telephone: +44 (0) 1264 333305 – Facsimile: +44 (0) 1264 333310 – Email: sales@pumaproducts.co.uk

www.pumaproducts.co.uk

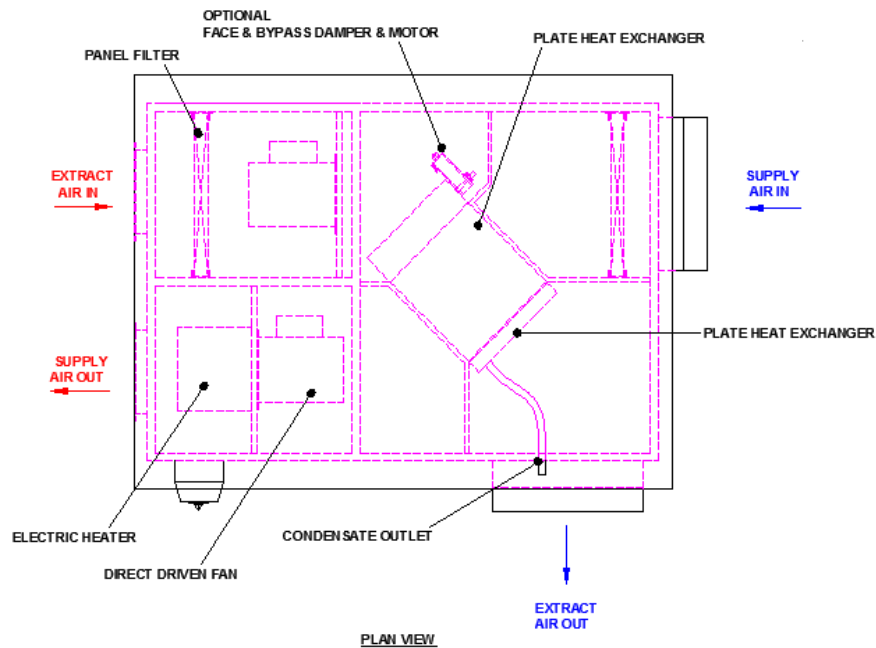
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Dimensional Data Penta Post Range



END VIEW

SIDE VIEW



PLAN VIEW

Dimensions In Millimetres

Model Number	A	B	C	D	E	F	G	H	SQUARE SPIGOT SIZE	CIRCULAR SPIGOT SIZE Ø	WEIGHT
SAPER 250 PP	385	860	1200	-	100	230	230	400	200x200	200	70 Kg
SAPER 300 PP	435	1090	1620	-	100	255	280	530	250x250	250	100 Kg
SAPER 350 PP	485	1290	1970	-	175	280	330	630	300x300	300	150 Kg
SAPER 400 PP	550	1290	2120	-	175	312.5	330	630	350x350	350	185 Kg
SAPER 450 PP	585	1490	2270	-	175	330	370	750	400x400	400	200 Kg
SAPER 550 PP	685	1690	2290	-	175	380	435	820	500x500	500	230 Kg
W SAPER 250 PP	415	1060	1300	180	80	230	330	400	200x200	200	100 Kg
W SAPER 300 PP	465	1290	1720	180	80	255	380	530	250x250	250	130 Kg
W SAPER 350 PP	515	1490	2100	180	80	280	430	630	300x300	300	180 Kg
W SAPER 400 PP	580	1490	2300	200	100	312.5	430	630	350x350	350	210 Kg
W SAPER 450 PP	615	1690	2420	200	100	330	470	750	400x400	400	230 Kg
W SAPER 550 PP	715	1890	2390	300	200	380	535	820	500x500	500	260 Kg



Unit 6, Viscount Court, Walworth Industrial Estate, Andover, Hampshire SP10 5NW England
 Telephone: +44 (0) 1264 333305 – Facsimile: +44 (0) 1264 333310 – Email: sales@pumaproducts.co.uk

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