Advanced Air

Electric Duct Heaters

WELCOME TO THE IDEAL TEMPERATURE PROVIDED BY VEAB & ADVANCED AIR!

Temperatures suited to business operations and people are crucial for health, comfort, products and processes.

VEAB are the leading developer of heating equipment for ventilation in Sweden. The company's duct heaters and heat exchangers are renowned throughout Europe for excellent technological performance, maximum efficiency and the highest standards of electrical safety.

Advanced Air now offer you VEAB's unique technology - in the UK!

VEAB

Electrical Circular Duct Heaters CV

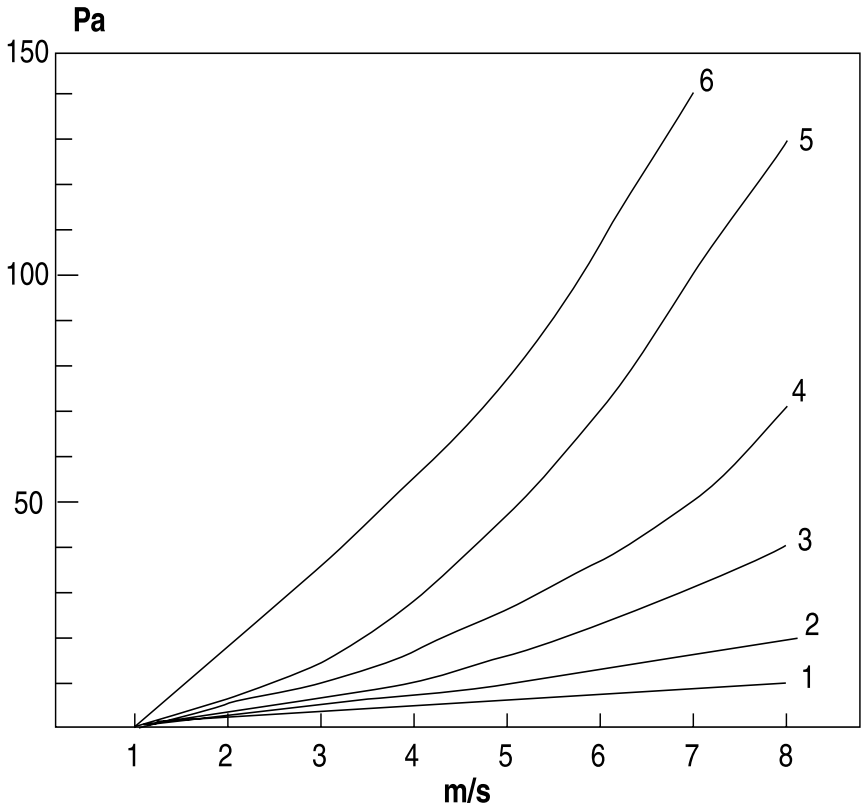
Electrical Rectangular Duct Heaters With or Without Integral Control

Applications

VEAB type CV duct heaters are used extensively whenever heating is required in ventilation systems utilising circular ducting.

- As a re-heater for a ventilation heat exchanger with heat recycling.
- As a re-heater for rooms requiring a higher than normal inlet air temperature
- As a re-heater for single rooms that require individual temperature control
- CV duct heaters can also be designed to cover transmission losses in a room/house and can therefore supply the whole heating energy required, assuming the ventilation system is correctly dimensioned.
- On the input side of a heatpump or heat exchanger recycling unit, a CV duct heater is sometimes required to ensure satisfactory operation when the outdoor air temperature is low.
- A CV duct heater can also be designed to raise the air temperature from the outdoor level to a suitable air inlet temperature. In this case the CV heater simply functions as an input air heater unit together with a duct fan.

Air Pressure Drop - CV



Type	Power W	Curve Number
CV 100-02	200W	2
CV 100-04	400W	2
CV 125-03	300W	1
CV 125-06	600W	3
CV125-09	900W	4
CV 125-12	1200W	4
CV 150-03	300W	2
CV 150-06	600W	2
CV 150-09	900W	3
CV 150-12	1200W	3
CV 150-15	1500W	4
CV 150-18	1800W	4
CV 150-21	2100W	4
CV 200-03	300W	2
CV 200-06	600W	2
CV 200-09	900W	2
CV 200-12	1200W	2
CV 200-15	1500W	3
CV 200-18	1800W	3
CV 200-21	2100W	3
CV 250-06	600W	1
CV 250-09	900W	1
CV 250-12	1200W	1
CV 250-15	1500W	1
CV 250-18	1800W	1
CV 250-21	2100W	2
CV 315-06	600W	1
CV 315-09	900W	1
CV 315-12	1200W	1
CV 315-15	1500W	1
CV 315-18	1800W	1
CV 315-21	2100W	2
CV 150-50	5000W	6
CV 200-50	5000W	5
CV 250-60	6000W	5
CV 315-60	6000W	4

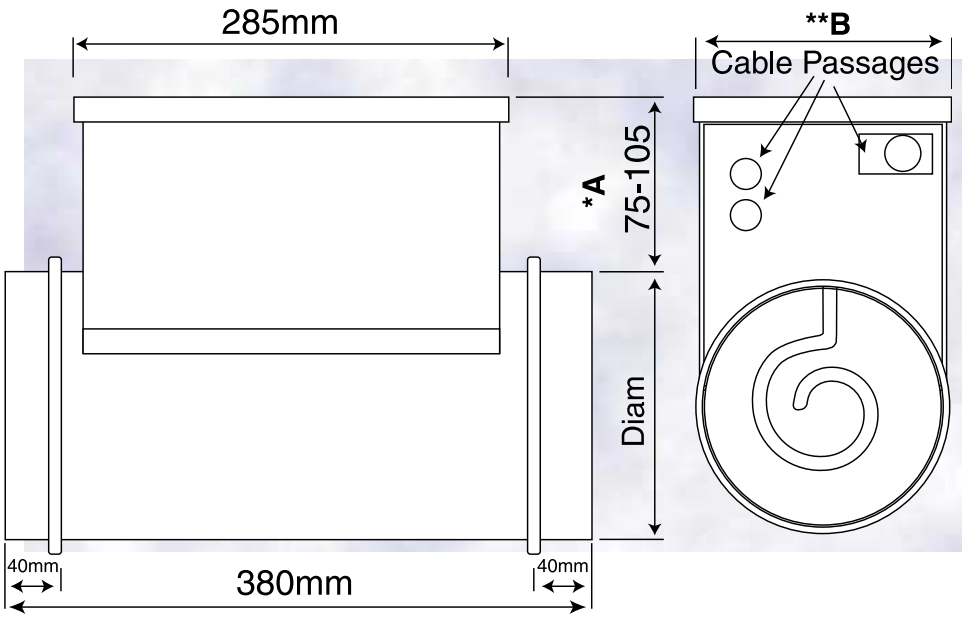
Air Speed

The air speed through the heater must not be less than 1.5 m/s. Fan Run-on, to cool the heater element after it is switched off, is not normally needed.

Dimensions CV

*A Height	
1 phase	105mm
2 and 3 phase	75mm
**B Width	
CV1 phase	
CV100	98mm
CV125	105mm
CV150	135mm
CV200	165mm
CV250	195mm
CV315	230mm

CV 2 & 3 phase are 2mm wider than the diameter



Controls Options

All heater in the CV range have two overheat protectors, one with automatic reset and one manual reset. These are both connected in series with the heater element when the heater is delivered from the factory and no external relays are therefore needed. This increases safety and reduces installation costs (applies also to 2-phase and 3-phase models).

M: This model is fitted with a manual high-temperature cut-out reset button mounted in the control box cover
This model does not have any integral temperature control
This model requires external temperature controller, and air temperature sensor

MPE: This model is fitted with a manual high-temperature cut-out reset button mounted in the control box cover
This model is fitted with integral temperature control
This model requires an air temperature sensor and an external temperature setting

MP1 This model is fitted with a manual high temperature cut-out reset button mounted in the control box cover
This model is fitted with integral temperature control and temperature setting on the control box cover
This model requires and air temperature sensor

R: This model does not have a manual high temperature cut-out reset button mounted in the control box cover
300W - 2100 This model requires external temperature controller with built-in reset button type Pulser 220R
3000W - 6000 This model requires external temperature controller with built-in reset button type Pulser 380R
9000W This model requires an external reset button type RSI/RSU and also an external temperature controller, for example a TTC with a 'TG-' sensor

Controller

Pulser - Triac Controller for Proportional Control of Electric Heating

Pulser is a complete proportional controller for electric heating, it has automatic voltage adjustment and can be used with either in-built or any type "TG" external temp. sensor.
Pulser pulses the whole load On - Off. The ratio between On - time and Off - time is varied 0-100% to suit the prevailing heat demand. The current is always switched at zero phase angle to prevent RFI.
Pulser cannot be used to control 3-phase loads

TTC - Triac Controller for Proportional Control of 3-Phase Electric Heating

TTC is a complete proportional controller of 3-phase electric heater batteries, it has an in-built controller with inputs for external temp. sensors.
TTC pulses the whole load On - Off. The ratio between On - time and Off - time is varied 0 - 100% to suit the prevailing heat demand. The current is always switched at zero phase angle to prevent RFI.
For heating loads in excess of 25A the TTC can be equipped with a TT-SLAV, an On-Off one stage controller.
The total load should be divided such that the TTC controls at least 55% of total, and the TT-SLAV controls 45% of total

Temperature Sensors

TG-R530 - Room mounted air temperature sensor
TG-K330 - Duct mounted air temperature sensor
TG-R430 - Room mounted temperature adjuster, with built in temperature sensor (can be used only as a temperature adjuster together with TG-K 330)

Note 1) Electrical duct heaters must always be installed so that power can be supplied to the heater elements only when the fan/airflow is turned on. This function can be connected into the incoming power supply to the duct heater.

Note 2) CV circular duct heaters are sized for a maximum leaving air temp. of 40°C. If higher temperatures are required, please contact our sales office.

Note 3) 6000W, 400W, 2-phase, cannot be supplied with an integral temperature regulator. In these circumstances use an external Pulser or alternatively select 400v, 3-phase with integral temperature regulator.


Pulser

TTC


TG-R530


TG-R430


TG-K330

Product Range - Cylindrical Duct Heaters

Diam. mm	Airflow l/s	Airflow m3/h	Pwr. W	Vtge. v	Ph.	Product Code	Reset mode of High Limit Cut-Out				Control	Room mounted temp. sensor 0-30 C	Duct mounted temp. sensor 0-30 C
							Manual	Manual	Manual	Remote			
								Built in Controller					
								External setting	Internal setting				
100	11	40	400	240	1	CV 100-04-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
125	19	70	300	240	1	CV 125-03-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
125	19	70	600	240	1	CV 125-06-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
125	19	70	900	240	1	CV 125-09-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
125	19	70	1200	240	1	CV 125-12-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	300	240	1	CV 150-03-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	600	240	1	CV 150-06-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	900	240	1	CV 150-09-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	1200	240	1	CV 150-12-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	1500	240	1	CV 150-15-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	1800	240	1	CV 150-18-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	2100	240	1	CV 150-21-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	3300	400	2	CV 150-33-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	5000	400	2	CV 150-50-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
150	31	110	5000	400	2	CV 150-50-3-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	300	240	1	CV 200-03-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	600	240	1	CV 200-06-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	900	240	1	CV 200-09-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	1200	240	1	CV 200-12-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	1500	240	1	CV 200-15-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	1800	240	1	CV 200-18-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	2100	240	1	CV 200-21-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	3000	400	2	CV 200-30-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	5000	400	2	CV 200-50-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
200	47	170	6000	400	2	CV 200-60-2-	M	N/A	N/A	R	Pulser	TG-R530	TG-K330
200	47	170	6000	400	3	CV 200-60-3-	M	MPE	MP1	R	TTC	TG-R530	TG-K330
250	75	270	600	240	1	CV 250-06-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	900	240	1	CV 250-09-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	1200	240	1	CV 250-12-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	1500	240	1	CV 250-15-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	1800	240	1	CV 250-18-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	2100	240	1	CV 250-21-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	3000	400	2	CV 250-30-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	5000	400	2	CV 250-50-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	6000	400	2	CV 250-60-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
250	75	270	9000	400	3	CV 250-90-3-	M	MPE	MP1	R	TTC	TG-R530	TG-K330
315	115	415	600	240	1	CV 315-06-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	900	240	1	CV 315-09-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	1200	240	1	CV 315-12-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	1500	240	1	CV 315-15-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	1800	240	1	CV 315-18-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	2100	240	1	CV 315-21-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	3000	400	2	CV 315-30-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	5000	400	2	CV 315-50-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
315	115	415	6000	400	2	CV 315-60-2-	M	N/A	N/A	R	Pulser	TG-R530	TG-K330
315	115	415	6000	400	3	CV315-60-3-	M	MPE	MP1	R	TTC	TG-R530	TG-K330
315	115	415	9000	400	3	CV 315-90-3-	M	MPE	MP1	R	TTC	TG-R530	TG-K330
400	192	690	3000	400	2	CV 400-30-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
400	192	690	5000	400	2	CV 400-50-2-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
400	192	690	6000	400	2	CV 400-60-2-	M	N/A	N/A	R	Pulser	TG-R530	TG-K330
400	192	690	6000	400	3	CV 400-60-3-	M	MPE	MP1	R	Pulser	TG-R530	TG-K330
400	192	690	9000	400	3	CV-400-90-3-	M	MPE	MP1	R	TTC	TG-R530	TG-K330

Designations

CV - 160 - 50 - 2 MPE

Duct diameter in mm

Power in 100's of watts

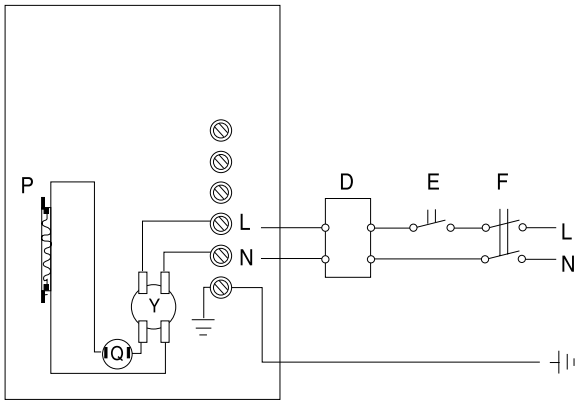
2 = 2 phase, 400 V
3 = 3 phase, 400 V

M = No regulator
MPE = With integral regulator for external set point adjustment
MPI = With integral regulator and set point adjustment on the heater cover

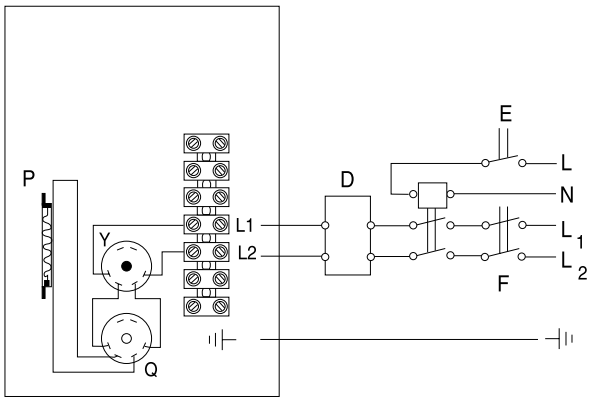
Electrical Wiring Diagrams

CV with external temperature regulator

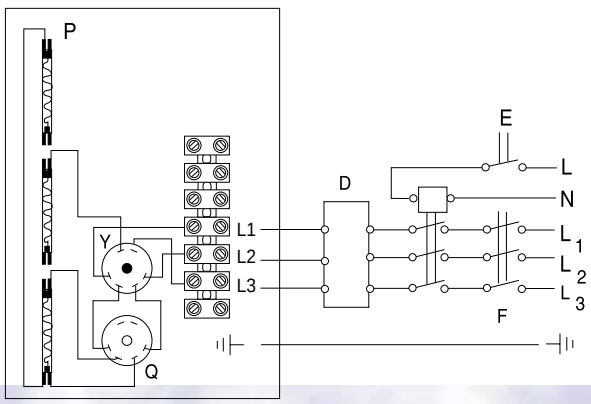
Type M



Type 2M

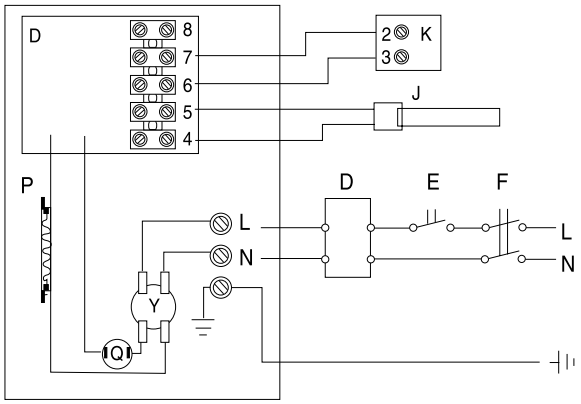


Type 3M

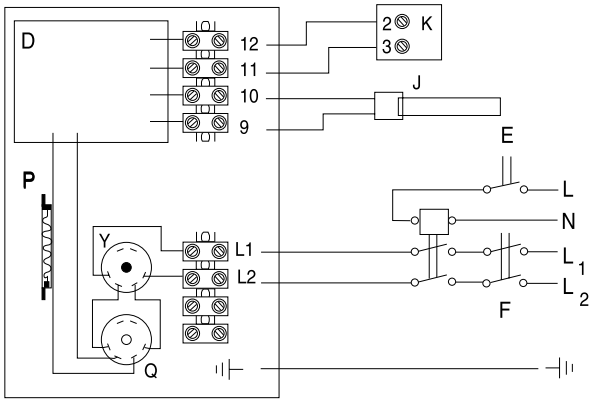


CV with integral temperature regulator

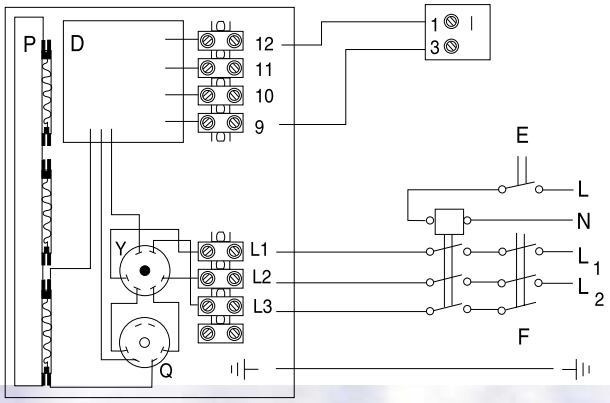
Type MPE



Type 2MPE



Type 3MPE

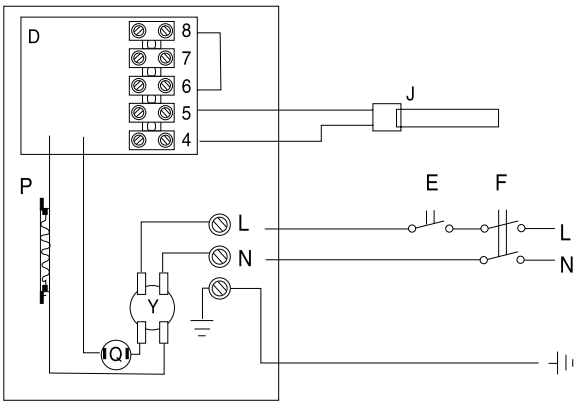


D = Regulator alt. thermostat
E = Interlock
F = All-pole breaker
J = Sensor
K = Temperature adjuster
M = Interlock via Airflow Sensor (no flow = closed contact)
P = Element
Q = Overheat protector with automatic reset
Y = Overheat with manual reset

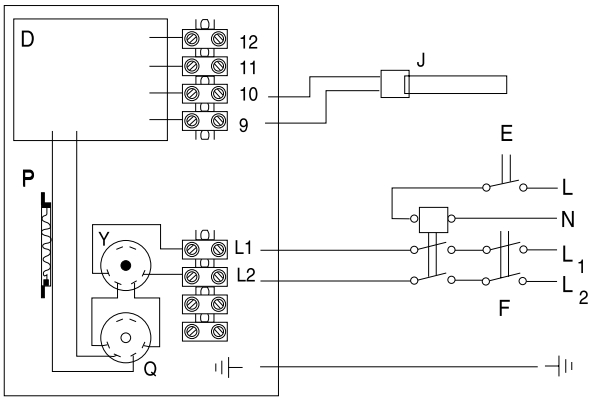
Electrical Wiring Diagrams

CV - MPI With Integral Regulator

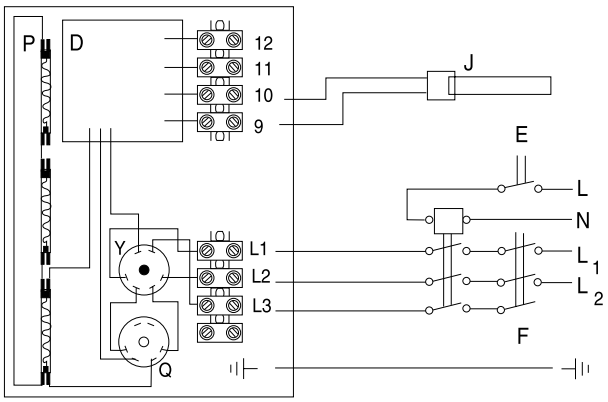
Type MPI



Type 2MPI



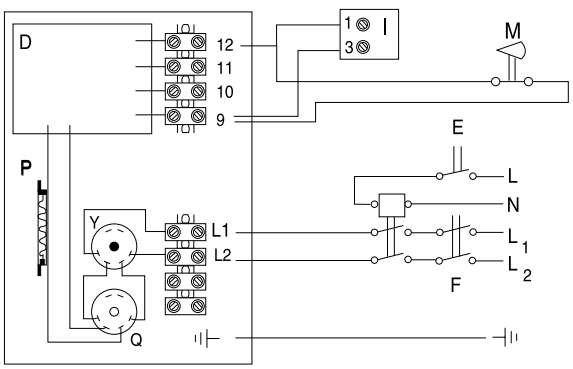
Type 3MPI



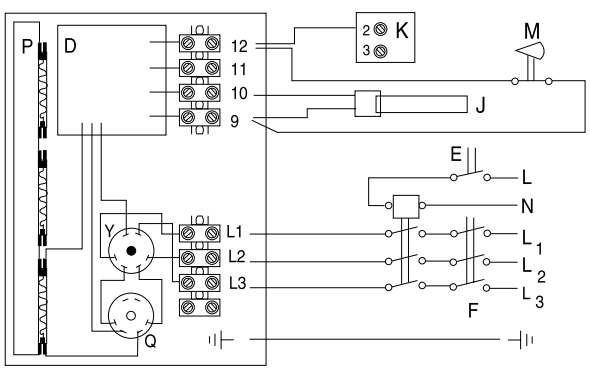
CV - MPE With Alternative Interlocking Method

The CV heater with integral regulator can easily be interlocked with the fan/airflow in the ducting by using a flow sensor to short circuit the regulator input when the airflow is reduced. This makes installation much simpler. See the examples in the wiring diagram below.

Type 2MPE



Type 3MPE



VEAB

Construction

The outer casing is manufactured of hot-dipped galvanised steel sheet and the heater element of stainless steel SS 2337. The heater is connected electrically via terminals housed in an electric connection box. The heater is connected to the circular ducting by inserting the ducts into the heater in accordance with standard SS 827206. The electrical protection class is IP43.

Approval

The CV range complies with the requirements in the low voltage directive LVD 72/73/EEC and fulfils the requirements for the applicable European EMC standards EN 50081-1 and EN 50082-1. The CV range is also CE marked. All the CV duct heaters described in this brochure are tested and approved by SEMKO in accordance with SEMKO 111 FA-1982 Nordic testing.

Installation

The CV heaters can be installed in both horizontal and vertical ducting. Heaters with power ratings up to 2.1 kW can be installed with the electrical connection box upwards, sideways, or downwards. Heaters with power rating from 3.0 to 9.0 kW can be installed with the connection box upwards, or within 90^{o} sideways, but not downwards.

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