

KANAL VARMELEGEMER



CIRCULAR

CV - CIRCULAR ELECTRIC DUCT HEATERS

VEAB's circular electric duct heaters are used to heat the ventilation air for various rooms and areas with individually controlled temperatures. When the system is appropriately sized, they can even heat up the entire building. Circular electric duct heaters are also used for pre-heating or post-heating in air handling units. The duct heaters are available with an integrated electronic regulator or for external feedback control. An electronic flow switch can also be integrated.

- 7 sizes □ 100 - 400 mm
- Output range 200 W – 15,000 W
- Air tightness class C as per EN 15727
- Integrated electronic flow switch is included in several models
- Integrated regulator or external feedback control
- Two integrated overheating protection devices
- Enclosed stainless tubular heating elements



STANDARD DESIGN

The casing is made of aluzinc-coated sheet steel and the heating elements of stainless steel, EN 1.4301. The junction box contains all the terminals required for electrical connection.

The duct connection is suitable for push-in assembly in round ducts. CV duct heaters are manufactured with an IP44 degree of protection, but are also available with IP55 (except -MQU, -MTU, and -PTU).

OVERHEATING PROTECTION

All models in the CV series come with two overheating protection devices, one with an automatic reset and the other with a manual reset. These are connected in series with the heating elements upon delivery and therefore do not need to be connected to any external relay (except model -E, see p. 13). This provides increased security and lower installation costs. All duct heaters feature a reset button for the overheating protection on the heater cover.

AIR VELOCITY

The duct heaters are manufactured for a minimum air velocity of 1.5 m/s. However, some models are suitable for air velocities down to 0.5 m/s, see pp. 14-15.

AIR TIGHTNESS CLASS C

CV duct heaters meet air tightness class C, which ensures that the heated air reaches its destination and does not leak out of the ventilation system—that saves both energy and money.

APPROVALS

Our duct heaters are tested and approved by Intertek Semko AB in accordance with the following directives:

LVD directive: EN 60355-1 and EN 60335-2-30

EMC directives: EN 61000-6-3 and EN 61000-6-1

EMF directive: EN 62233

ELECTRONIC FLOW SWITCH

All models with an integrated control unit and for air velocities down to 1.5 m/s, there also is an option for adding an integrated electronic flow switch.

The flow switch continuously monitors the airflow and switches off the heater if the air velocity drops below 1.5 m/s and thus prevents overheating. When the air velocity rises above 1.5 m/s again, the heater is automatically switched back on. This implies that CV duct heaters with an integrated flow switch meet the requirement for interlocking with the fan/air flow and can be installed without any external.

ALARM RELAY, ADDITION -L

All models can be equipped with an integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped. The alarm relay is included as standard in models -MQXL, -MTXL, and -PTXL.

CONTROL UNIT

INTEGRATED REGULATOR

The integrated regulator provides for a simple installation, among others, because it requires less cabling, which reduces both the installation cost and the risk of misconnections.

The regulator is electronic and regulates the output using a triac with so-called time-proportional control (pulse/pause technology). This results in very accurate temperature control. Since feedback control is performed electronically, its operation is completely noiseless and involves minimal wear. The following models are available with an integrated regulator:

-MQU(L) AND -MTU(L), FOR ONE SENSOR

Duct heaters with integrated temperature regulator, for room or duct sensors. The setpoint is adjusted on the duct heater's cover or externally.

-MQEM(L) AND -MTEM(L), FOR TWO SENSORS

Duct heaters with integrated temperature regulator for external room sensor with setpoint adjuster. The min./max. inlet air temperature is adjusted on the duct heater's circuit board.

-MQXL AND -MTXL, FOR 0...10 V CONTROL SIGNAL

Duct heaters with integrated regulator for external 0...10 V control signal.

-MQCL / -MTCL, FOR 4...20 MA CONTROL SIGNAL

Contact Newtronic for further information.

EXTERNAL REGULATOR

There also are duct heaters without integrated regulator that can instead be complemented with an external one. The following models are available for an external regulator:

-M(L) AND -E(L)

The duct heater is complemented with an external temperature regulator and sensor.

ADDITIONAL OPTIONS

There are several options beyond the standard design that can be adapted to your application.

OTHER TYPES OF MATERIALS

The casing can be made of stainless steel, EN 1.4301, or of acid-resistant stainless steel, EN 1.4404.

ANTI-CONDENSATION INSULATION (EXCEPT CV Ø100, Ø250, Ø315 AND Ø400)

To reduce the risk of condensation in the junction box when the duct heater is installed in a warm and humid area, at the same time as the air in the duct is cold, a 4 mm thick insulation is added to the inside of the junction box.

IP55 DEGREE OF PROTECTION

Our duct heaters can be manufactured with an IP55 degree of protection instead of the standard IP44.

MODBUS

The duct heaters may be equipped with Modbus communication. Contact Newtronic for further information.

DUCT HEATERS WITH OUTLET TEMPERATURES HIGHER THAN 50 °C

Only available in a rectangular design with circular connections.

DIMENSIONS ABOVE 400 MM IN DIAMETER

Only available in a rectangular design with circular connections.

OUTPUT ABOVE 15 KW

Only available in a rectangular design with circular connections.

REINFORCED ELECTRICAL INSULATION

To avoid leakage currents to earth, the heating elements are mounted in electrically insulating material. Suitable for marine use, for example.

PRODUCT RANGE OVERVIEW

Size designation		CV 10	CV 12	CV 16	CV 20	CV 25	CV 31	CV 40
Diameter (Ø mm)		100	125	160*	200	250	315	400**
Minimum air volume m ³ /h		43	70	110	170	270	415	690
Output	Voltage							
300 W	230 VAC 1-ph.		X ³	X ²				
400 W	230 VAC 1-ph.	X ³						
600 W	230 VAC 1-ph.	X ³	X ⁵	X ³	X ²	X ¹		
900 W	230 VAC 1-ph.		X ⁷	X ⁴	X ²	X ²	X ¹	
1200 W	230 VAC 1-ph.		X ⁸	X ⁵	X ³	X ²	X ¹	
1500 W	230 VAC 1-ph.		X ⁹	X ⁶	X ³	X ³	X ²	
1800 W	230 VAC 1-ph.		X ¹⁰	X ⁶	X ⁴	X ³	X ²	
2100 W	230 VAC 1-ph.			X ⁷	X ⁴	X ³	X ²	
2700 W	230 VAC 1-ph.			X ⁸				
3000 W	230 VAC 1-ph.				X ⁶	X ⁴	X ³	X ²
3000 W	400 VAC 2-ph.				X ⁶	X ⁴	X ³	X ²
3300 W	400 VAC 2-ph.			X ⁹				
5000 W	400 VAC 2-ph.			X ¹²	X ⁸	X ⁶	X ⁴	X ³
6000 W	400 VAC 2-ph.				X ⁹	X ⁷	X ⁴	X ³
5000 W	400 VAC 3-ph.			X ¹²				
6000 W	400 VAC 3-ph.				X ⁹	X ⁷	X ⁴	X ³
9000 W	400 VAC 3-ph.					X ⁹	X ⁶	X ⁴
12000 W	400 VAC 3-ph.					X ¹⁰	X ⁷	X ⁵
15000 W	400 VAC 3-ph.							X ⁵

*= Also available with a 150 mm diameter.

**= Also available with a 355 mm diameter.

¹= See pressure drop curve 1

²= See pressure drop curve 2

³= See pressure drop curve 3

⁴= See pressure drop curve 4

⁵= See pressure drop curve 5

⁶= See pressure drop curve 6

⁷= See pressure drop curve 7

⁸= See pressure drop curve 8

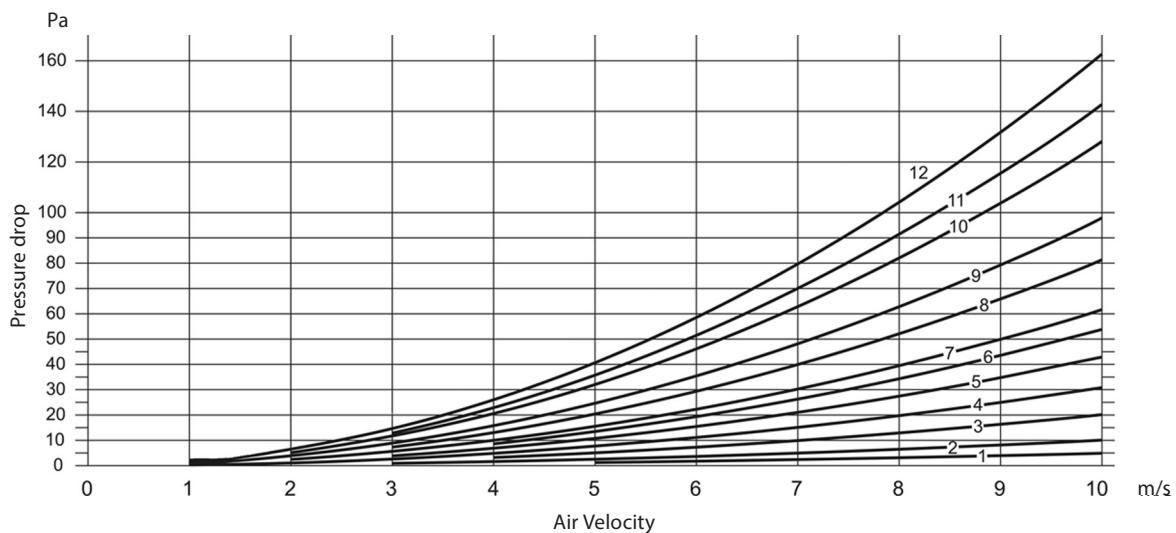
⁹= See pressure drop curve 9

¹⁰= See pressure drop curve 10

¹¹= See pressure drop curve 11

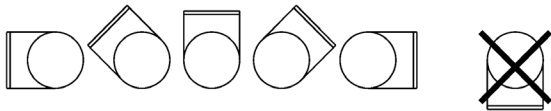
¹²= See pressure drop curve 12

Pressure Drop Chart



INSTALLATION

These duct heaters can be mounted in horizontal or vertical ducts. The air flow through the duct heater must follow the air direction arrow on the duct heater. In horizontal ducts, the junction box must be installed pointing up or rotated to the sides by up to 90°. Installation with the junction box pointing down is not allowed. The distance to or from a duct bend, fan, damper, etc. must be at least equal to twice the connection diameter.



INTERLOCKING WITH FAN/AIR FLOW

Electric duct heaters must always be installed in such a way that they are interlocked with the fan that blows air into the duct or with the air flow streaming through the heater. The power fed to the duct heater must be cut off, should the fan be shut off or if the air flow ceases.

Models -MQU, -MQEM and -MQXL with an integrated electronic flow switch meet the requirement for interlocking with the fan/air flow and can be installed without any external interlock.

For all other models, this function must be connected to the input voltage fed to the duct heater or directly connected to the integrated regulator, if any.

MINIMUM AIR VELOCITY AND OUTPUT TEMPERATURE

The duct heaters are dimensioned for a minimum air velocity of 1.5 m/s and an operating outlet air temperature of 50 °C max. (for higher temperatures, see "Rectangular Electric Duct Heaters").

Ambient temperature during operation:

Without integrated control device = 40 °C max.

With integrated control device = 30 °C max.

The air velocity can be calculated using the following formula:

$$V = \frac{Q}{3600 \times A}$$

V = air velocity, m/s

Q = air flow, m³/h

A = sectional area of duct heater, m²

$$A = \frac{\pi \times D^2}{4}$$

D = duct heater diameter, Ø m

POWER REQUIREMENTS

The volume of air that goes through the duct heater is heated according to the following formula:

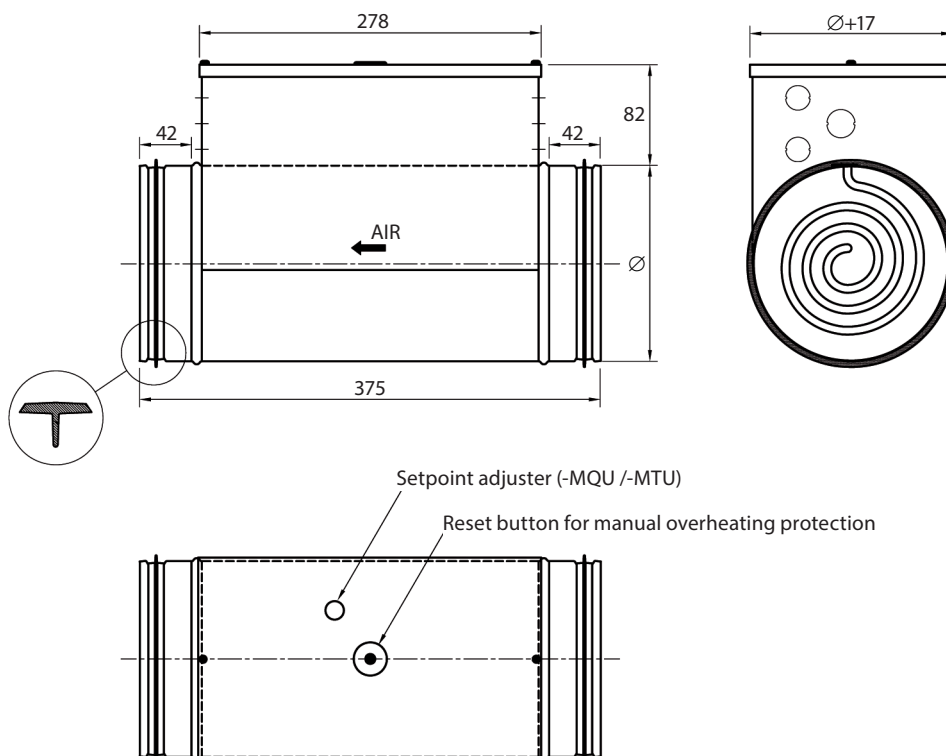
$$P = Q \times 0.36 \times \Delta t$$

P = output in W

Q = air flow in m³/h

Δt = temperature increase in °C

DIMENSIONAL DRAWING



CV - CIRCULAR ELECTRIC DUCT HEATERS WITH INTEGRATED CONTROL DEVICE FOR ROOM OR DUCT SENSORS

The integrated controller provides for a simple installation among others due to less cabling. This in turn reduces both the installation cost and the risk of misconnections. The duct heater operates with an external room or duct sensor. The temperature is adjusted on the heater cover or on an external setpoint adjuster.

- MQU

Duct heater with integrated control device for room or duct sensors. The heater can be set up for external setpoint adjustment or for setpoint adjustment on the heater cover. The -MQU model also has an integrated electronic flow switch that further simplifies installation as it can be installed as a “standalone” unit. Sensors and a possible external setpoint adjuster are available as separate accessories.

- MTU

Same model as above, but without integrated electronic flow switch.

- MQUL and -MTUL

Same models as above, but with an additional integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped.



PROJECT DESIGN/ORDERS

DESCRIPTION - MQU

Duct heater, VEAB type CV -MQU, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Integrated electronic flow switch. Feedback control is achieved by means of the integrated temperature regulator for room or duct sensors. Setpoint adjustment is performed externally or on the heater cover. Sensors and a possible setpoint adjuster must be ordered separately.

DESCRIPTION - MTU

Duct heater, VEAB type CV -MTU, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Feedback control is achieved by means of the integrated temperature regulator for room or duct sensors. Setpoint adjustment is performed externally or on the heater cover. Sensors and a possible setpoint adjuster must be ordered separately.

Type designation

(example)

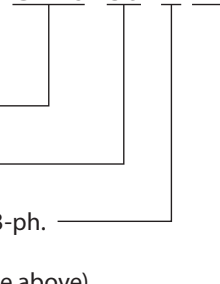
Size designation, see page 4

Output in hundreds of watts

Voltage 1=230 VAC 1-ph. 2=400 VAC 2-ph. 3=400 VAC 3-ph.

Type of feedback control (-MQU/-MQUL/-MTU/ MTUL, see above)

CV 16 - 50 - 2 MQUL



CV - CIRCULAR ELECTRIC DUCT HEATERS WITH INTEGRATED CONTROL DEVICE FOR TWO SENSORS, ONE AMBIENT SENSOR, AND ONE MIN./MAX. INLET AIR SENSOR

The integrated controller provides for a simple installation among others due to less cabling. This in turn reduces both the installation cost and the risk of misconnections. The duct heater operates with an external room or duct sensor. The temperature is adjusted on an external setpoint adjuster.

- MQEM

Duct heaters with integrated control equipment for room sensors with TG-R430 setpoint adjusters and TG-K360 inlet air sensors. The desired room temperature is adjusted on the TG-R430. The min. and max. inlet air temperature is adjusted on the duct heater's circuit board.

The -MQEM model also has an integrated electronic flow switch that further simplifies installation as it can be installed as a "standalone" unit.

Sensors and setpoint adjusters are available as separate accessories.

- MTEM

Same model as above, but without integrated electronic flow switch. protection device has tripped.

- MQEML and -MTEML

Same models as above, but with an additional integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped.



PROJECT DESIGN/ORDERS

DESCRIPTION - MQEM

Duct heater, VEAB type CV -MQEM, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Integrated electronic flow switch. Feedback control is achieved by means of an integrated temperature regulator for room sensors with setpoint adjusters and a separate inlet air sensor. Sensors and a external setpoint adjusters must be ordered separately.

DESCRIPTION - MTEM

Duct heater, VEAB type CV -MTEM, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Feedback control is achieved by means of an integrated temperature regulator for room sensors with setpoint adjusters and a separate inlet air sensor. Sensors and a external setpoint adjusters must be ordered separately.

Type designation

(example)

CV 16 - 50 - 2 MQEML

Size designation, see page 4

Output in hundreds of watts

Voltage 1=230 VAC 1-ph. 2=400 VAC 2-ph. 3=400 VAC 3-ph.

Type of feedback control (-MQEM/-MQEML/-MTEM/ MTEML, see above)

CV - CIRCULAR ELECTRIC DUCT HEATERS WITH INTEGRATED CONTROL DEVICE FOR EXTERNAL CONTROL SIGNAL 0...10 V

The integrated controller provides for a simple installation among others due to less cabling. This in turn reduces both the installation cost and the risk of misconnections.

- MQXL

Duct heaters with integrated control equipment for external 0...10 V control signal.

The -MQXL model also has an integrated electronic flow switch that further simplifies installation as it can be installed as a "standalone" unit.

The heater comes with an integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped.

- MTXL

Same model as above, but without integrated electronic flow switch.



PROJECT DESIGN/ORDERS

DESCRIPTION - MQXL

Duct heater, VEAB type CV -MQXL, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Integrated electronic flow switch with potential-free alarm con-tact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped. Feedback control is achieved by means of an integrated regulator for external 0...10 V control signal.

DESCRIPTION - MTXL

Duct heater, VEAB type CV -MTXL, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped. Feedback control is achieved by means of an integrated regulator for external 0...10 V control signal.

Type designation

(example)

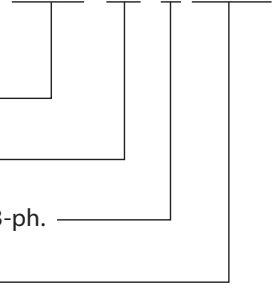
Size designation, see page 4

Output in hundreds of watts

Voltage 1=230 VAC 1-ph. 2=400 VAC 2-ph. 3=400 VAC 3-ph.

Type of feedback control (-MQXL/-MTXL, see above)

CV 16 - 50 - 2 MQXL



CIRCULAR ELECTRIC DUCT HEATERS FOR EXTERNAL CONTROL DEVICE

VEAB electric duct heaters for external control are complemented with an external temperature regulator. They can be installed on walls or in control cabinets. Regulators and sensors must be ordered separately,

- M

A PULSER or TTC regulator is most suitable for its feedback control. The overheating protection is reset manually on the duct heater cover. Output up to 9000 W.

- ML

Same model as above, but with an additional integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped.



PROJECT DESIGN/ORDERS

DESCRIPTION - M

Duct heater, VEAB type CV -M, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Feedback control is achieved by means of an external regulator to be ordered separately.

DESCRIPTION - ML

Duct heater, VEAB type CV -ML, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped. Feedback control is achieved by means of an external regulator to be ordered separately.

Type designation

(example)

CV 16 - 50 - 2 ML

Size designation, see page 4

Output in hundreds of watts

Voltage 1=230 VAC 1-ph. 2=400 VAC 2-ph. 3=400 VAC 3-ph.

Type of feedback control (-M/-ML, see above)

CV - CIRCULAR ELECTRIC DUCT HEATERS FOR EXTERNAL CONTROL DEVICE

VEAB electric duct heaters for external control are complemented with an external temperature regulator. They can be installed on walls or in control cabinets. Regulators and sensors must be ordered separately,

- E

A PULSER or TTC regulator is most suitable for its feedback control.

The integrated manual overheating protection device is reset on the duct heater cover. The overheating protection devices are single pole and must be connected to the external control circuit.

Output 12,000 W.



PROJECT DESIGN/ORDERS

DESCRIPTIVE TEXT -E

Duct heater, VEAB type CV -E, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727. Feedback control is achieved by means of an external regulator to be ordered separately..

Type designation

(example)

CV 16 - 50 - 2 E

Size designation, see page 4

Output in hundreds of watts

Voltage 1=230 VAC 1-ph. 2=400 VAC 2-ph. 3=400 VAC 3-ph.

Type of regulation

CV - CIRCULAR ELECTRIC DUCT HEATERS FOR AIR VELOCITIES DOWN TO 0.5 M/S

- PTU

Duct heater with integrated control device for room or duct sensors. The heater can be set up for external setpoint adjustment or for setpoint adjustment on the heater cover. For suggestions on combinations of sensors and possible external setpoint adjusters, Sensors and setpoint adjusters are available as separate accessories

- PTEM

Duct heaters with integrated control equipment for room sensors with TG-R430 setpoint adjusters and TG-K360 inlet air sensors. The desired room temperature is adjusted on the TG-R430. The min. and max. inlet air temperature is adjusted on the duct heater's circuit board. For suggestions on combinations of sensors and possible external setpoint adjusters. Sensors and setpoint adjusters are available as separate accessories.

- PTXL

Duct heaters with integrated control equipment for external 0...10 V control signal. The heater comes with an integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped.

- P

The duct heater is complemented with an external temperature regulator and sensor. PULSER regulators are most suitable for its feedback control for an output greater than 230 W. Below 230 W, we recommend a model with integrated control unit. The overheating protection is reset manually on the duct heater cover. Regulators, sensors and setpoint adjusters are available as separate accessories,

- PTUL, -PTEML, -PL

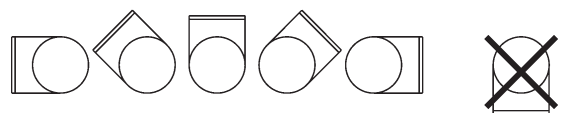
Same models as -PTU/-PTEM/-P, but with an additional integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped.



INSTALLATION

These duct heaters can be mounted in horizontal or vertical ducts. The air flow through the duct heater must follow the air direction arrow on the duct heater.

In horizontal ducts, the junction box must be installed pointing up or rotated to the sides by up to 90°. Installation with the junction box pointing down is not allowed. The distance to or from a duct bend, fan, damper, etc. must be at least equal to twice the connection diameter.



Interlocking with Fan/Air Flow

Electric duct heaters must always be installed in such a way that they are interlocked with the fan that blows air into the duct or with the air flow streaming through the heater. The power fed to the duct heater must be cut off, should the fan be shut off or if the air flow ceases.

DEGREE OF PROTECTION

CV-P... duct heaters are manufactured with an IP44 degree of protection, but are also available with IP55 (except model -PTU).

TEMPERATURE

The duct heaters are dimensioned for an air velocity down to 0.5 m/s and an operating outlet air temperature of 50 °C max. For a formula to calculate the air velocity,

PRODUCT RANGE OVERVIEW

Size designation		CV 08	CV 10	CV 12	CV 16
Diameter (Ø mm)		80	100	125	160*
Minimum air volume m ³ /h		9	15	24	37
Output	Voltage				
200 W	230 VAC 1-ph.	X ⁵	X ³	X ³	
400 W	230 VAC 1-ph.		X ³	X ⁵	
600 W	230 VAC 1-ph.			X ⁷	X ⁴
800 W	230 VAC 1-ph.			X ⁸	
1000 W	230 VAC 1-ph.			X ⁹	
1200 W	230 VAC 1-ph.			X ¹⁰	X ⁶
1800 W	230 VAC 1-ph.				X ⁸

*= Also available with a 150 mm diameter.

3= See pressure drop curve 3, on page 4
 4= See pressure drop curve 4, on page 4
 5= See pressure drop curve 5, on page 4
 6= See pressure drop curve 6, on page 4

7= See pressure drop curve 7, on page 4
 8= See pressure drop curve 8, on page 4
 9= See pressure drop curve 9, on page 4
 10= See pressure drop curve 10, on page 4

PROJECT DESIGN/ORDERS

DESCRIPTION - PTU

Duct heater, VEAB type CV -PTU, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727 and is manufactured for air velocities down to 0.5 m/s. Feedback control is achieved by means of the integrated temperature regulator for room or duct sensors. Setpoint adjustment is performed externally or on the heater cover. Sensors and a possible setpoint adjuster must be ordered separately.

DESCRIPTION - PTXL

Duct heater, VEAB type CV -PTXL, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727 and is manufactured for air velocities down to 0.5 m/s. Integrated relay with potential-free alarm contact, which indicates loss of voltage or whether the manually resettable overheating protection device has tripped. Feedback control is achieved by means of an integrated regulator for external 0...10 V control

DESCRIPTION - PTEM

Duct heater, VEAB type CV -PTEM, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727 and is manufactured for air velocities down to 0.5 m/s. Feedback control is achieved by means of an integrated temperature regulator for room sensors with setpoint adjusters and a separate inlet air sensor. Sensors and a external setpoint adjusters must be ordered separately.

DESCRIPTION - P

Duct heater, VEAB type CV -P, with casing made of aluzinc-coated sheet steel and heating elements made of stainless steel, EN 1.4301 The duct heater meets air tightness class C as per EN 15727 and is manufactured for air velocities down to 0.5 m/s. Feedback control is achieved by means of an external regulator to be ordered separately.



ELVARME



VORES PRODUKTSORTIMENT INKLUDERER:



RECTANGULAR



KANALVARMELEGEMER KUNDEDES.



CERAMIC ELEMENTS



ROBUST - DEMANDING EVIROMENTS



KX 2 - SMALL AND PORTABLE



KANALVARMELEGEMER

VI FØRER PRODUKTER INDENFOR KATEGORIERNE:



AUTOMATIK



**HVAC & BYGNINGS-
AUTOMATIK**



KØLEPROFILER



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