



## Unit heater LVD

Ⓒ GB User's Guide for installation, operation and maintenance of the unit heater

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# Description – Safety instructions and warnings

## General

The unit heater is used to heat air with water. Water circulates in the unit heater's heat exchanger and heats with help of the fan circulated air. The unit heater can be equipped with various accessories to control the supply of heat.

## Marking

The rating plate is located on the side of the unit heater and provides information about:

Manufacturer	Maximum working pressure
Test pressure	Motor data
Order number	Year of manufacture
Net weight	Inner fluid volume

## Quality system

Coiltech is accredited according to the quality system ISO 9001 and the environment management system ISO 14001.

## Operation and maintenance

Read through the entire User's Guide before using the product. The unit heater must be installed so that it is not accessible to the general public. All work on the unit heater must be carried out by qualified personnel with knowledge of the product and applicable safety instructions.

## Installation

The unit heater must be permanently installed. Fasteners and brackets are to be sufficiently stable to support the net weight of the unit heater, and the weight of the fluid that the unit heater is filled with.

## Operating pressure

The unit heater may only be used in a system designed for the maximum working pressure MWP (MPa) and the maximum temperature MWT (°C) as stated on the unit heater's rating plate.

## Connections

Pipe connections on the unit heater must not be subjected to the weight of the connecting pipe system, or the expansion forces of the pipe system.

**NOTE!** Loads and impact can damage the unit heater.

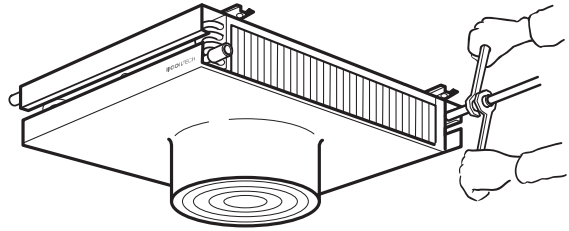


Figure 1. Counterhold couplings during pipe installation.

Do not load the unit heater's connection pipes during installation.

Counterhold couplings to prevent pipes from rotating when tightening the connection couplings.

## Cleaning

Only use environmentally friendly cleaning agent, which will not damage the unit heater.

## High temperatures

Component parts, such as, connection pipes and the outer casing can become hot when the unit heater is running. The outlet air may also be hot.

## Explosive environments

The unit heater is not designed for use in environments where a risk of explosions exists.

# Installation

## Transport

Check that no damage has occurred in connection with transport or unloading. It is important to check the heat exchanger's fins and the outer casing and connection pipes on the unit heater.

The unit heater is designed to withstand normal loads during transport. Any transport damage should be reported immediately to the carrier and to Coiltech. Also make notes of the consignment note.

## Installation

The unit heater must be permanently installed and positioned to obtain the necessary air supply.

The unit heater and accessories are fitted with holes for fastening and are intended to be secured on the ceiling or by using drop-rods (accessory LVDZ-03) see figure 2 and 3. Fluid connections can be made on optional pipe connections.

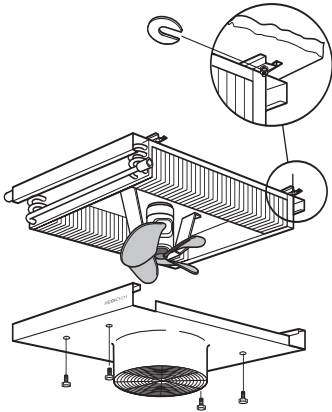


Figure 2. Installing the unit heater, on the ceiling

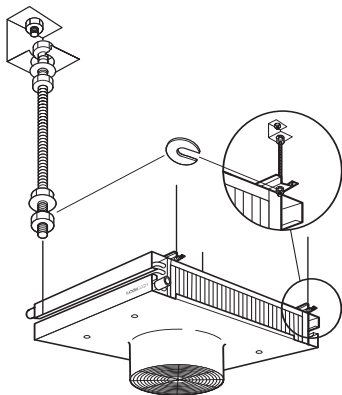


Figure 3. Installing the unit heater, drop rods LVDZ-03

## Dismantling

It is important to drain the unit heater of all fluid when removing it from a system.

**NOTE!** Environment hazardous liquids should be collected in a container and left for disposal or recycling.

## Electrical connection

The fan motor must be connected to a lockable safety switch.

The safety switch must not be used for starting and stopping. Start/stop should be carried out using other external equipment. The motor should be preceded by a motor cutout with a maximum setting equivalent to the motor's maximum permitted current. A motor cutout is not necessary on motors with an integrated thermal cutout when the thermal cutout is connected.

The fan motor is connected to a junction box placed on the side of the unit.

The electrical power cord is connected according to the wiring diagram, figure 4 for three-phase-motors and figure 5-7 for single phase motors.

Once the fan motor is electrically connected, check that it rotates in the same direction as indicated by the rotation arrow. The arrow is located on the outside of the fan.

## Wiring diagram three-phase

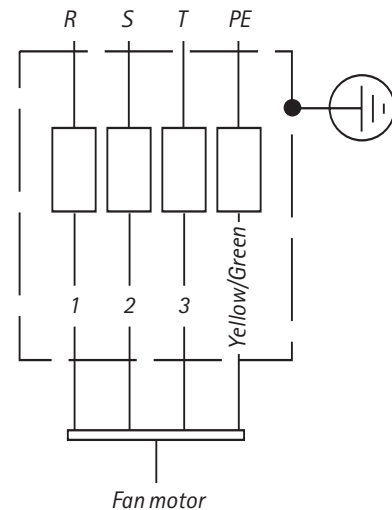


Figure 4. Supplied design.

# Installation - Accessories

Wiring diagram single phase with thermal cutout

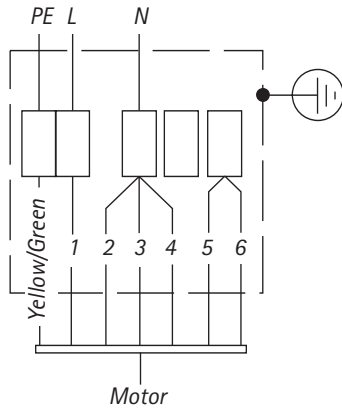


Figure 5. High speed, supplied design

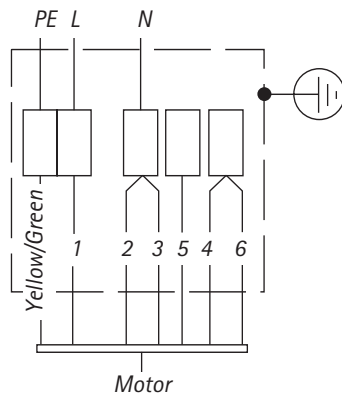


Figure 6. Intermediate speed

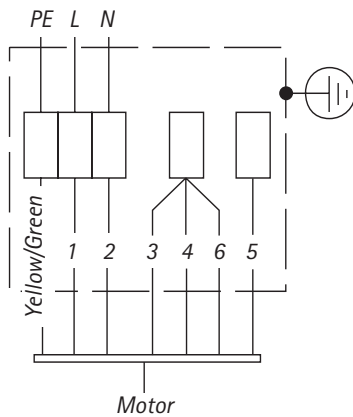


Figure 7. Low speed

Accessories



Figure 8. Drop rods, set LVDZ-03



Figure 9. Air discharge sleeve LVDZ-04-bb

Assembling the outlet sleeve

The contact protector is fitted on the outlet sleeve. The outlet sleeve is fitted on the unit heater's fan outlet.

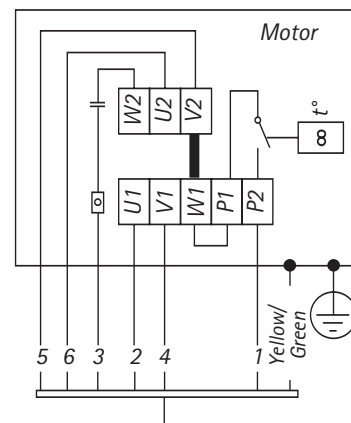


Figure 10. Motor connection (connected at delivery)

# Maintenance and service

## General

The unit heater should be checked regularly to prevent downtime.

Check the following:

1. Abnormal sounds or vibrations may be caused by a damaged motor bearing or a damaged impeller.
2. Fastening devices – Check that no supporting bolted joints are defective.
3. Electrical installation – Check that no damage has arisen, and the safety switch functions correctly.
4. Fin structure – Check that it is clean and undamaged.
5. Impeller – Check that it is clean and undamaged.

## Fan unit

The fan motors feature permanently lubricated bearings and do not require regular maintenance.

## Repair

Parts and materials proposed by Coiltech are to be used in order for the warranty to be valid.

## Long-term storage

When the unit heater is to be kept in long-term storage (normally longer than one month of storage in the Nordic climate) the following applies for the unit heater:

1. The unit heater should be kept indoors.
2. When the unit heater is kept in a damp environment the surface finish must be checked to ensure damage does not occur. Touch-up any damage.
3. The unit heater should be covered with reinforced plastic or other mechanical protection to prevent contamination and water from penetrating and soiling or damaging the fin structure and fan unit.
4. The unit heater's pipe connections should be sealed.

## Risk of freezing

There is a risk of damage due to freezing on installations with an ambient air temperature below 0, if the heat exchanger becomes too cold. When the system is not used during the winter, the water in unit heater should be drained to prevent freezing. When the heat exchanger cannot be fully drained we recommend the use of compressed air to blow out the remaining water. When water with antifreeze is used the unit heater does not need to be drained.

## Spare parts

We recommend that one motor is kept as a spare part when an installation is subjected to very high demands on availability.

Motors are normally kept in stock at Coiltech.

Motors kept as spare parts should be stored indoors in dry and dust-free conditions.

# Maintenance and service

## Replacing the motor and impeller

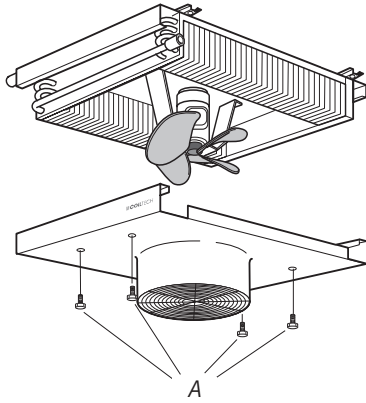


Figure 11. Replacing the motor.

- 1 Switch off the mains supply to the motor. Lock the safety switch in the OFF position.
- 2 Loosen the 4 screws A and remove the front of the unit heater as shown in figure 11.
- 3 Loosen the locking screw on the fan and dismantle the fan from the motor.
- 4 Disconnect the power cable from the motor.
- 5 Loosen the 4 screws holding the motor on the motor mounting and lift off the motor.
- 6 Follow the above instructions in the reverse order to assemble the motor.
- 7 Before starting, check that the impeller centres in the fan ring and that the direction of rotation corresponds with the rotation direction arrow.

## Cleaning

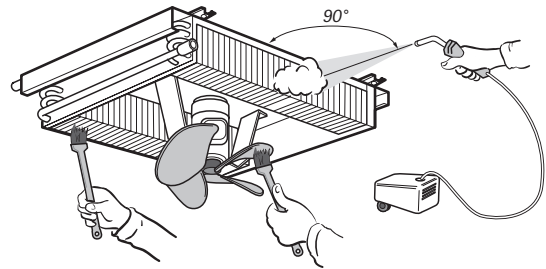


Figure 12. Cleaning the heat exchanger

1. Switch off the mains supply to the motor.
2. Loosen the 4 screws A and remove the front of the unit heater as shown in figure 11.
3. The best method to clean the fin heat exchanger is to use compressed air or a high pressure washer. Angle the nozzle 90° to the surface of the fins to prevent damaging the fins, see figure 12.
4. When cleaning with water: Protect the motor from moisture by covering it with plastic. First spray the entire heat exchanger with environmentally friendly solvent at a low pressure. High pressure wash with water after 10–12 minutes. It is important to keep the nozzle square to the fin surface and no closer than 150 mm.
5. The fin structure must not contain any solvent residue after washing as the residue will help to bind new dust. Fins deformed during cleaning can be straightened with the help of a fin comb (QLAZ-20), which can be ordered from Coiltech.

# Technical specification

## Operating data

Max air temperature around the motor: +70 °C.

Min air temperature around the motor: -15 °C.

Max permitted operating pressure: 1.6 MPa at 100°C.

All heat exchangers are leakage tested using dry air under water.

## Heat exchanger

The unit heater's heat exchanger is manufactured of tubes that are mechanically expanded onto the fins.

The fins are manufactured of whole plates without slots to avoid dust and fibres collecting on the fin structure.

## Motor/Fan

The motor in the fan unit is a ball-bearing mounted flange motor with thermal cutout (not 3-phase) with automatic reset. The impeller features a hub of painted steel and aluminium blades.

## Protection classes

The motor's degree of protection is IP54.

The junction box IP44.

## Motor data

Stated on the unit heater's data plate.

Table 1 a. Technical data, fan unit

Size LVDV	Speed rpm	Rated output, kW	Rated current (A), 50 Hz	
			1-phase 230 V	3-phase 400 VY
40-1	670	0,15	0,7	-
	900		1,0	-
	<b>1300</b>		1,50	-
40-6	<b>920</b>	0,18	-	0,7
40-4	<b>1380</b>	0,18	-	0,7
50-1	570	0,17	0,7	-
	670		1,2	-
	<b>900</b>		1,7	-
50-6	<b>920</b>	0,18	-	0,7
50-4	<b>1410</b>	0,55	-	1,5

Speeds in bold are the supplied design.

Other speeds are obtained by rewiring as set out on the wiring diagram, figure 5-7.

Table 1b. Speed with accessories for voltage control.

	LVDV-40-1	LVDV-50-1
230 V	<b>1300</b>	900
150 V	<b>980</b>	770
130 V	<b>820</b>	<b>690</b>
115 V	<b>690</b>	610
100 V	560	510
80 V	380	370

= recommended speed

# Technical specification

## Dimensions, weight and volume

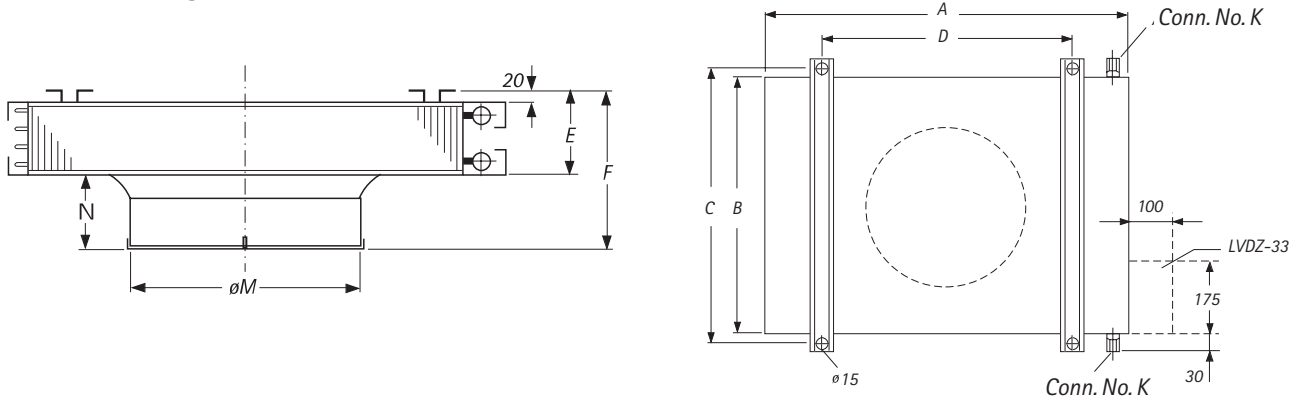


Figure 13.

Table 2. Dimensions, weight and volume, see the figure 12.

Size	A	B	C	D	E	F	M	N	Weight, kg	Volume, litres	Connection No. K
LVDV-40	930	600	635	760	155	345	406	190	31	1,6	DN 20
LVDV-50	1130	700	735	960	220	380	514	160	45	3,8	DN 25

## Product code

### Unit heater LVDV-aa-b

Size (aa) \_\_\_\_\_  
40, 50

Motor (b) \_\_\_\_\_  
1 = 1x230 V, 50 Hz  
4 = 3x400 V, 4-pol, 50 Hz  
6 = 3x400 V, 6-pol, 50 Hz

### Installation package LVDV-aa-1-b

Size (aa) \_\_\_\_\_  
40, 50

Variant (b) \_\_\_\_\_  
A = A-box  
B = B-box  
C = C-box

### Accessories LVDZ-03

Drop rods, set

Air discharge sleeve LVDZ-04-bb  
Size (bb) \_\_\_\_\_  
40, 50

### Spare parts

Impeller, for size 40 LVDV-99-01-5

Impeller, for size 50 LVDV-99-01-6

Motor, for size 40 LVDV-99-02-12  
1x230V, 3 speeds

Motor, for size 40 LVDV-99-02-14  
3x400V, 4-poles

Motor, for size 40 LVDV-99-02-16  
3x400V, 6-poles

Motor, for size 50 LVDV-99-02-13  
1x230V, 3 speeds

Motor, for size 50 LVDV-99-02-15  
3x400V, 6-poles

Motor, for size 50 LVDV-99-02-17  
3x400V, 4-poles

Contact protector, for size 40 LVDV-99-03-3

Contact protector, for size 50 LVDV-99-03-4

Heat exchanger, for size 40 LVDV-99-04-1

Heat exchanger, for size 50 LVDV-99-04-2





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