



Unit heater ATD(A,G)

Ⓞ *Installation, Operation and Maintenance Manual*

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Description – Safety instructions and warnings

General

The unit heater is used to heat air with water or steam. The water circulates in the unit heater's heat exchanger and heats with the 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 connection 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.

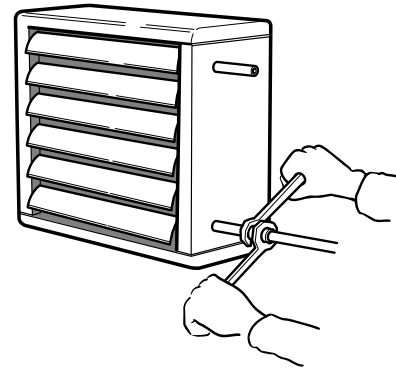


Figure 1. Counterhold couplings during pipe installation.

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 that 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 exist.

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 on the consignment note.

Installation

The unit heater should be positioned so the required air supply is obtained see fig. 4. Wall and ceiling brackets are available as accessories, dimensions as set out in tables 3 and 4. Other accessories, see the instructions for each accessory.

Pipe connections

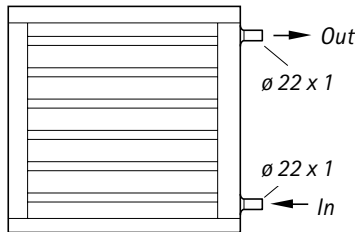


Figure 2. Unit heater ATDA, water

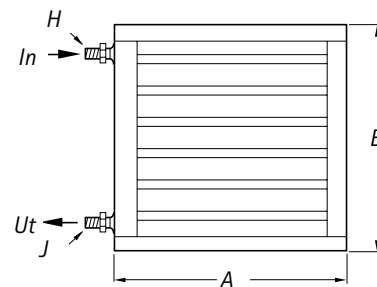


Figure 3. Unit heater ATDG, steam

Table 1. Connection dimensions

| Size | Connection number | |
|------|-------------------|-----|
| | H | J |
| ATDG | | |
| -33 | 25 | G25 |
| -44 | 32 | G25 |
| -55 | 32 | G32 |

Mechanical

The unit heater must be permanently installed.

The unit heater and accessories are fitted with holes for fastening.

Electrical

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

The safety switch must not be used to start and stop the unit.

The unit should be started/stopped using other external equipment. The motor should be preceded by a motor cut-out with a maximum setting equivalent to the motor's maximum permitted current. A motor cut-out is not necessary on motors with an integrated thermal contact if the thermal contact is connected.

The main cable is connected as illustrated in the wiring diagram presented in figures 9-11 for single phase motors and as in figures 12-16 for three phase motors.

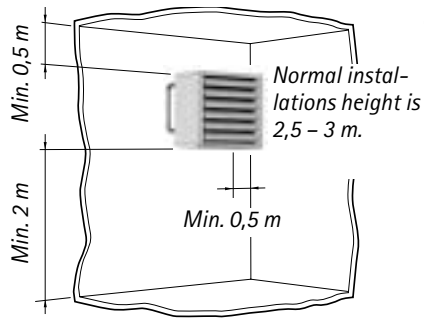
Once the fan motor is electrically connected, check that it rotates in the same direction as indicated by the rotation arrow. The arrow is located on the outside of the fan.

Dismantling

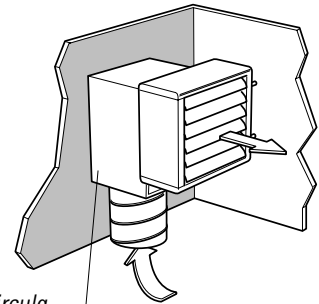
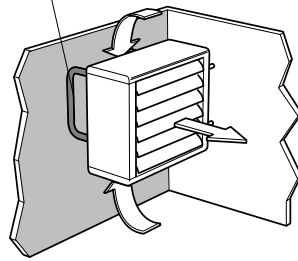
It is important to drain the unit heater of all fluid when removing it from a system.

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

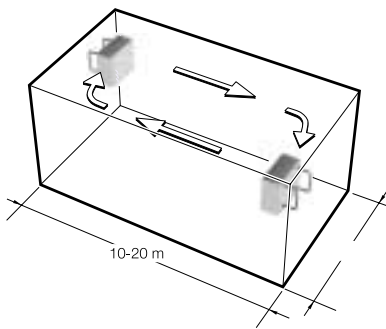
Installation option



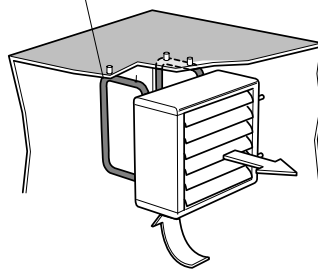
Wall bracket set



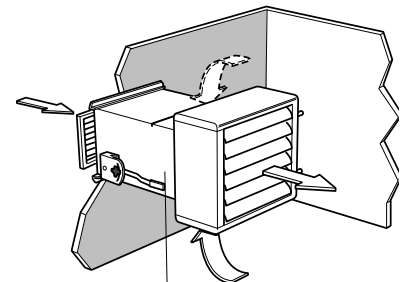
Air recirculation section



Ceiling bracket set

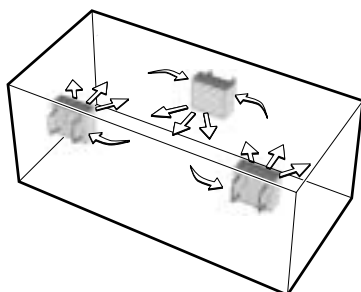


NOTE! Not for steam, ATDG

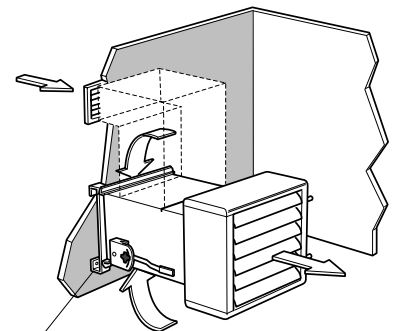
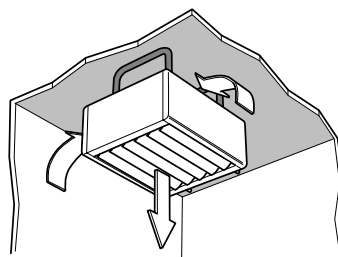


Mixing section

The size of the unit heater determines the distance.



NOTE! Not for steam, ATDG



Space bracket set

Distribute the unit heaters in the room so that good circulation is obtained.

Figure 4. Examples of installation options

Accessories

ATDZ-03

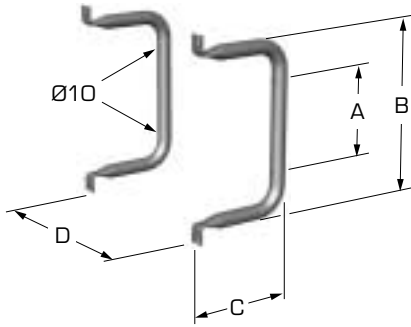


Figure 5. Wall bracket set

Table 2 Dimensions wall bracket set

| Size ATD(A;G) | Measurement, mm | | | | Weight, kg per pair |
|------------------|-----------------|-----|-----|-----|------------------------|
| | A | B | C | D | |
| -30/33 | 180 | 340 | 200 | 350 | 1 |
| -44 | 340 | 500 | 250 | 510 | 2 |
| -55 | 440 | 600 | 300 | 610 | 3 |
| -66 | 540 | 700 | 300 | 740 | 4 |

ATDZ-10

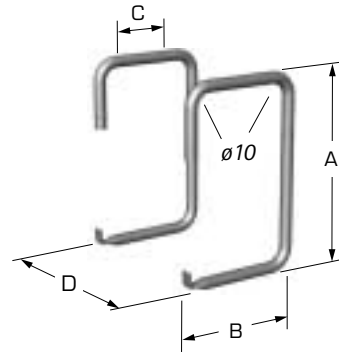


Figure 6. Ceiling bracket set

Table 3. Dimensions ceiling bracket set

| Size ATD(A;G) | Measurement, mm | | | | Weight, kg per pair |
|------------------|-----------------|-----|-----|-----|------------------------|
| | A | B | C | D | |
| -30/33 | 590 | 360 | 200 | 350 | 3 |
| -44 | 750 | 450 | 290 | 510 | 4 |
| -55 | 850 | 500 | 340 | 610 | 3 |
| -66 | - | - | - | - | - |

Maintenance and service

General

The unit heater should be checked regularly to prevent operations disturbance.

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 load carrying 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 stored indoors as you intend to install it.
2. When the unit heater is humid in a damp environment the surface finish must be checked to ensure that 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

With an outdoor air mixing section, there is a risk of damage due to freezing on installations with outdoor air mixing when the heat exchanger becomes too cold. Check that the freeze monitor functions and that the outdoor air damper closes fully.

When the system is not used during the winter, the water in the 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 any remaining water.

When water with antifreeze medium is used the unit heater does not need to be drained.

Spare parts

In installations with very high requirements for availability, we recommend that one fan unit is kept as a spare part. When an installation is subject to very high demands on availability.

Fan units are normally kept in stock at Coiltech.

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

Replacing the fan unit

Unit heater without mixing unit or air recirculation section

- 1 Switch off the mains supply to the motor.
Lock the safety switch in the OFF position.
- 2 Disconnect the mains cable from the motor.
- 3 Loosen the securing screws on the contact guard and remove the fan unit.
- 4 Follow the above instructions in the reverse order to assemble.
- 5 Before starting, check that the impeller centers in the fan ring and that the direction of rotation corresponds with the rotation direction arrow.

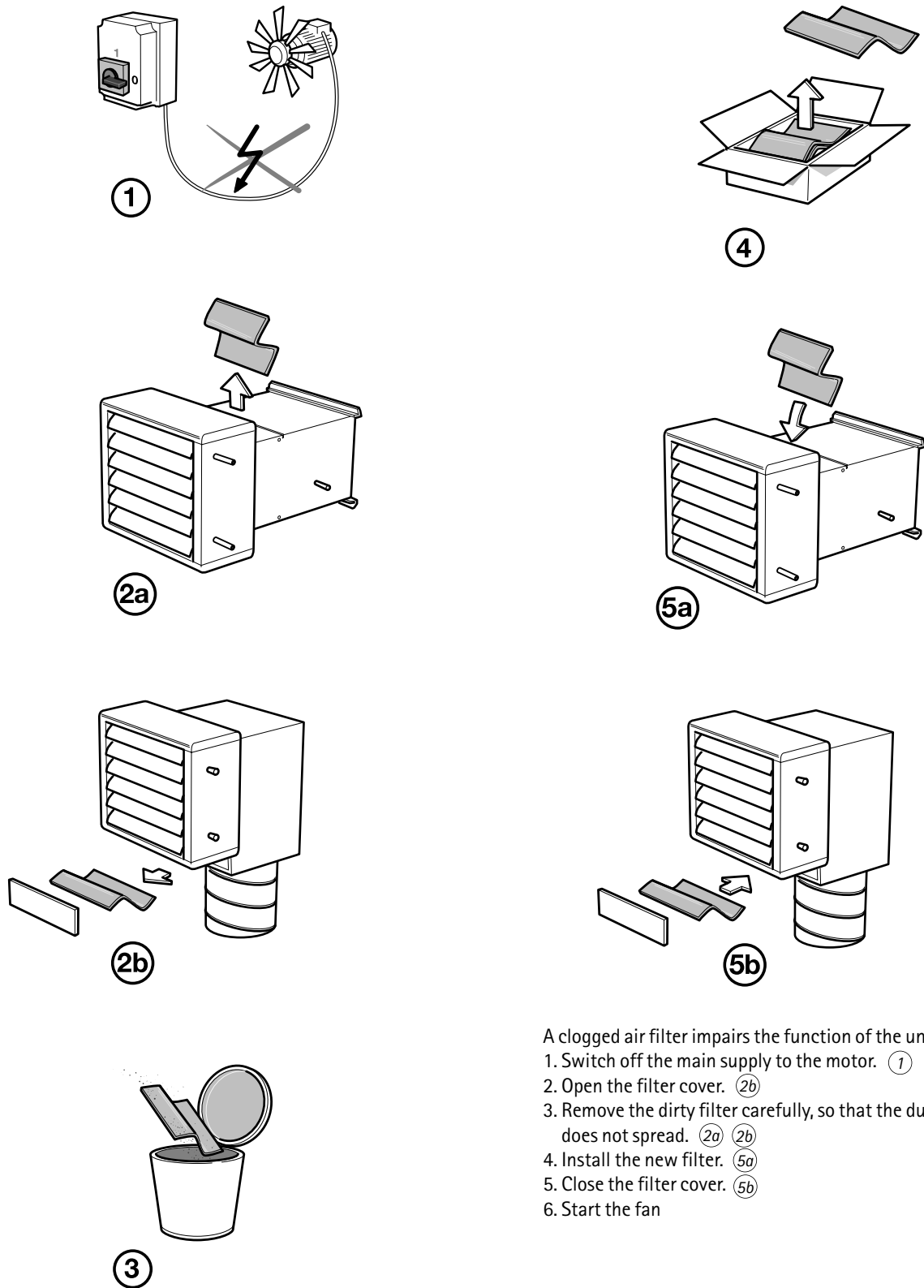
Unit heater with mixing section

- 1 Switch off the mains supply to the motor.
Lock the safety switch in the OFF position.
- 2 Dismantle the filter cover and remove the air filter.
- 3 Follow the instructions for replacing the fan unit without mixing unit, points 2 to 5.
- 4 Fit the air filter and filter cover.

Unit heater with air recirculation section

- 1 Switch off the mains supply to the motor.
Lock the safety switch in the OFF position.
- 2 Dismantle the air recirculation duct, air filter and the underside of the air recirculation unit.
- 3 Follow the instructions for replacing the fan section without recirculation section component points 2 to 5.
- 4 Fit the underside of the return section, air filter and air recirculation section.

Replacing the air filter



A clogged air filter impairs the function of the unit heater.

1. Switch off the main supply to the motor. ①
2. Open the filter cover. ②a
3. Remove the dirty filter carefully, so that the dust does not spread. ②a ②b
4. Install the new filter. ⑤a
5. Close the filter cover. ⑤b
6. Start the fan

Figure 7. Replacing the air filter.

Cleaning

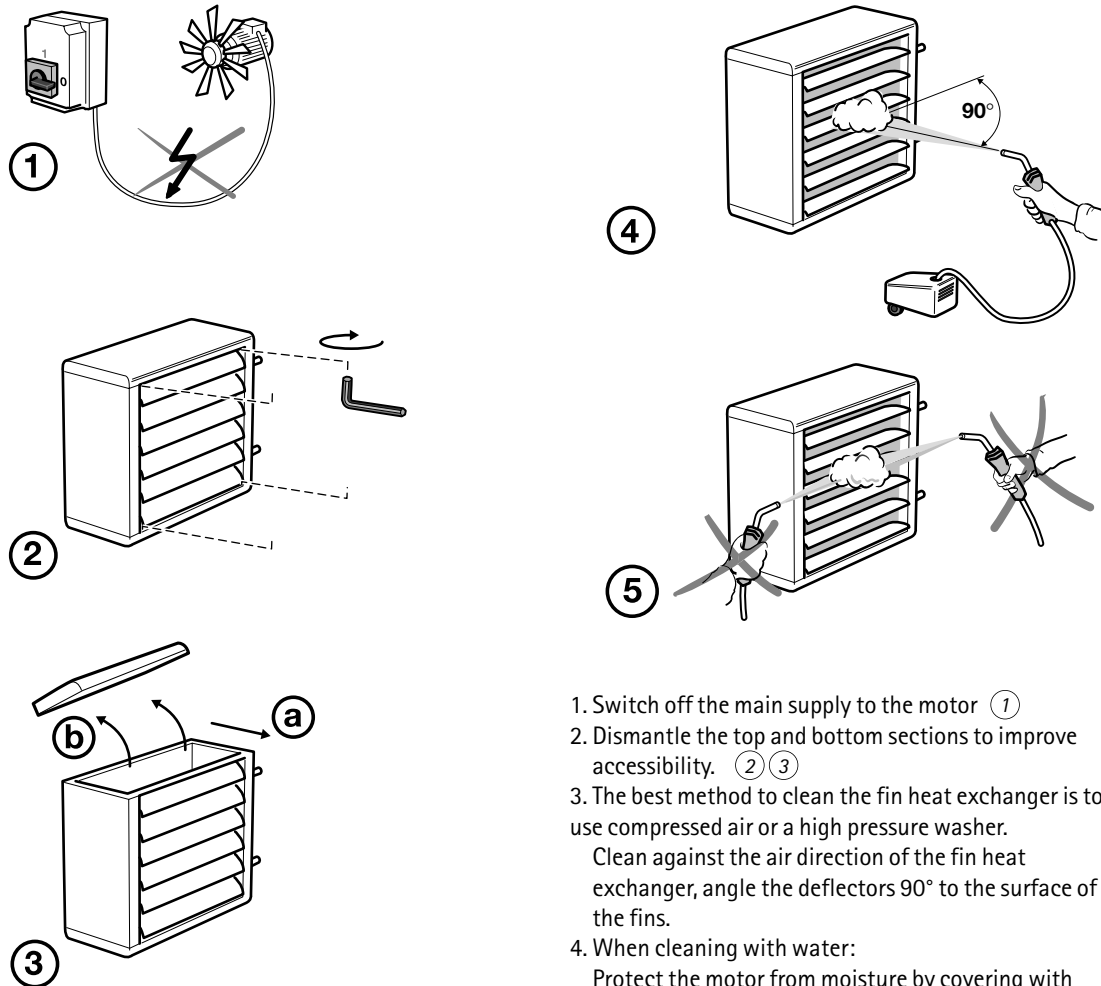


Figure 8. Cleaning the heat exchanger.

1. Switch off the main supply to the motor ①
2. Dismantle the top and bottom sections to improve accessibility. ② ③
3. The best method to clean the fin heat exchanger is to use compressed air or a high pressure washer. Clean against the air direction of the fin heat exchanger, angle the deflectors 90° to the surface of the fins.
4. When cleaning with water: Protect the motor from moisture by covering with plastic or by positioning a board in front of the fan. 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 90° square to the fin surface and no closer than 150 mm. ④ ⑤
5. The fin structure must not contain any remnants of solvent after washing as this 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 specifications

Operating data

Max air temperature around the motor: +40°C

Min air temperature around the motor: -15°C

ATDA

Max permitted operating pressure: 1,6 MPa at 100°C
1,0 MPa at 150°C

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

ATDG

Max permitted

operating pressure: 1,0 MPa vid 150°C

Test pressure: 1,3 MPa

The pH-value of the steam must not drop below 8.5 and should normally be 9.5. Oxygen content - O₂ - must not exceed 0.01 mg/l.

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 fan unit's motor is an outer rotor motor, journalled on ball-bearings and an automatically resetting thermal cut-out (not size 44-3). Fan blades are made of formed, galvanised sheet steel or aluminium. The fan unit has an enamelled black finish.

Protection classes

The degree of protection provided by the fan unit casing is shown in table 4a.

Weight and volume

The net weight and inner fluid volume of the unit heater are stated on the unit heater's data plate.

Motor data

Stated on the unit heater's data plate.

Table 4a. Technical data, fan unit

| Size ATDA | Speed output rpm | Rated 1-phase kW | Rated current (A), 50 Hz | | Thermal 400 V Y | Protection cut-out | class |
|--------------|----------------------------|------------------------|--------------------------|-----------------------|-----------------------|-----------------------|-------|
| | | | 3-phase 230 V | 3-phase 400 V Δ | | | |
| 30-1-1 | 1420 1035 ¹⁾ | 0,11 | 0,61 | - - | - - | Ja | IP44 |
| 33-1-1 | 1420 1035 ¹⁾ | 0,11 | 0,61 | - - | - - | Ja | IP44 |
| 33-1-2 | 1420 1035 ¹⁾ | 0,11 | 0,61 | - - | - - | Ja | IP44 |
| 44-1-1 | 1430 900 ¹⁾ | 0,16 | 0,81 | - - | - - | Ja | IP44 |
| 44-1-2 | 1400 | 0,16 | 0,81 | - | - | Ja | IP44 |
| 44-3-1 | 1430 | 0,15 | - | 0,64 | - | Nej | IP44 |
| 44-3-2 | 1430 | 0,15 | - | 0,64 | - | Nej | IP44 |
| 55-1-1 | 935 | 0,29 | 1,5 | - | - | | IP54 |
| 55-1-2 | 920 | 0,29 | 1,5 | - | - | Ja | IP54 |
| 55-3-1 | 1330 1035 ¹⁾ | 0,65 0,46 | - - | 1,2 - | - 0,79 | Ja | IP54 |
| 55-3-2 | 1330 1035 ¹⁾ | 0,65 0,46 | - - | - - | - - | Ja | IP54 |
| 66-1-1 | 900 | 0,37 | 1,7 | - | - | Ja | IP54 |
| 66-3-1 | 1360 | 0,84 | - | 1,65 | - | Ja | IP54 |

1) The speed is obtained through reconections in the motor, see electrical connection

Table 4b. Speed with accessories for fan control

| | ATDA-30-1 | ATDA-33-1-1 | ATDA-33-1-2 | ATDA-44-1-1 | ATDA-44-1-2 | ATDA-55-1 | ATDA-55-2 | ATDA-66-1 |
|-------|-----------|-------------|-------------|-------------|-------------|-----------|-----------|-----------|
| 230 V | 1420 | 1420 | 1360 | 1430 | 1400 | 935 | 920 | 900 |
| 150 V | 1190 | 1190 | 1160 | 1210 | 1030 | 670 | 420 | 640 |
| 130 V | 1035 | 1035 | 980 | 900 | 750 | 485 | 340 | 505 |
| 115 V | 850 | 850 | 850 | 660 | 600 | 390 | 280 | 430 |
| 100 V | 685 | 685 | 680 | 550 | 500 | 310 | 240 | 355 |
| 80 V | 500 | 500 | 500 | 410 | 380 | 240 | 190 | 270 |

 = supplied speed

Wiring diagram single phase

ATD-30, -33 – 1420 rpm
 ATD-44 – 1430 rpm

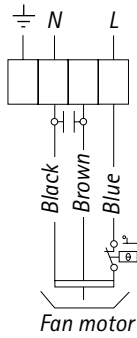


Figure 9. High speed, supplied design

ATD-30, -33 – 1035 rpm
 ATD-44 – 900 rpm

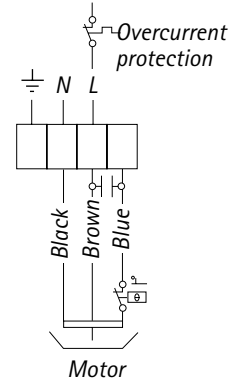


Figure 10. Reduced speed

ATD-55 – 935 rpm
 ATD-66 – 900 rpm

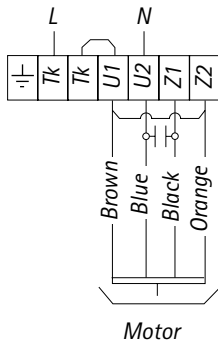


Figure 11. Supplied design

Wiring diagrams three phase

ATD-44-3 – 1430 rpm

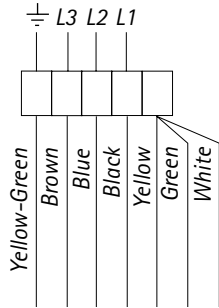


Figure 12. Supplied design

ATD-55-3 – 1330 rpm
Δ

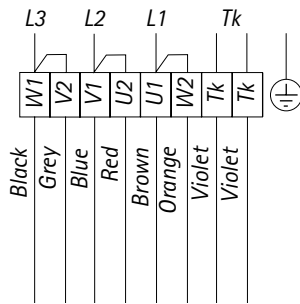


Figure 13. High speed, supplied design

ATD-55-3 – 1035 rpm
Y

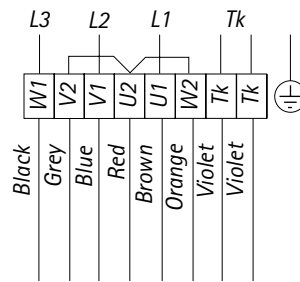


Figure 14. Reduced speed

ATD-66-3 – 1360 rpm
Δ

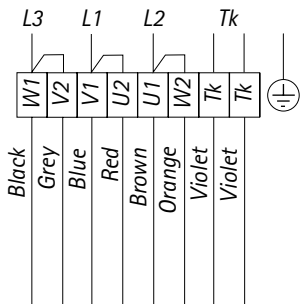


Figure 15. High speed, supplied design

ATD-66-3 – 1090 rpm
Y

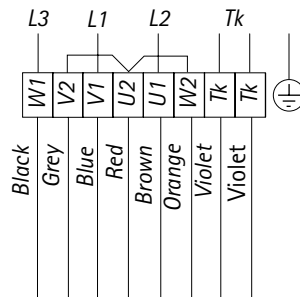
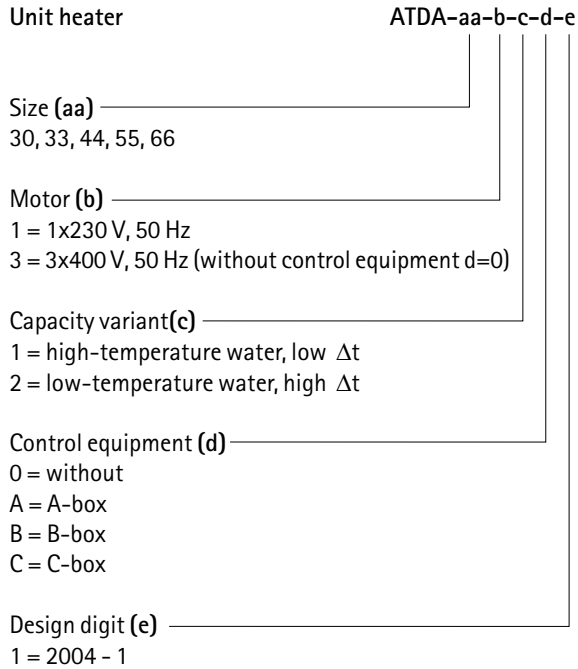


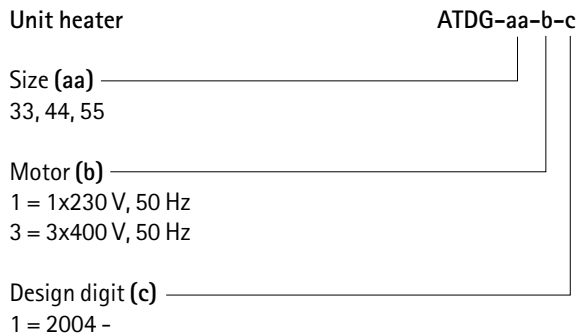
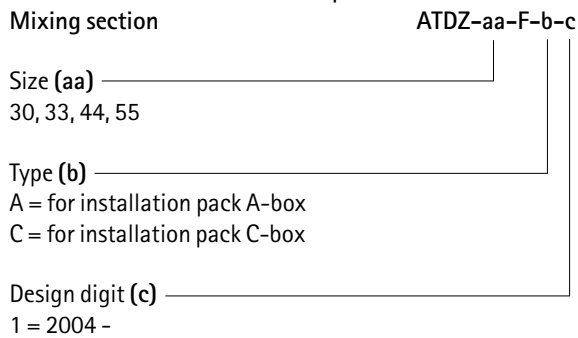
Figure 16. Reduced speed

Product code

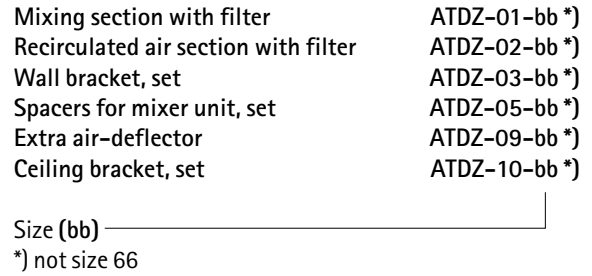
Installation pack



Accessories for installation pack

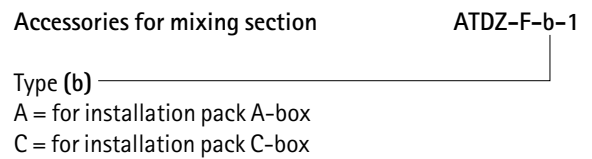


Accessories



Lever actuator for mixing section ATDZ-12-1

Control equipment





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