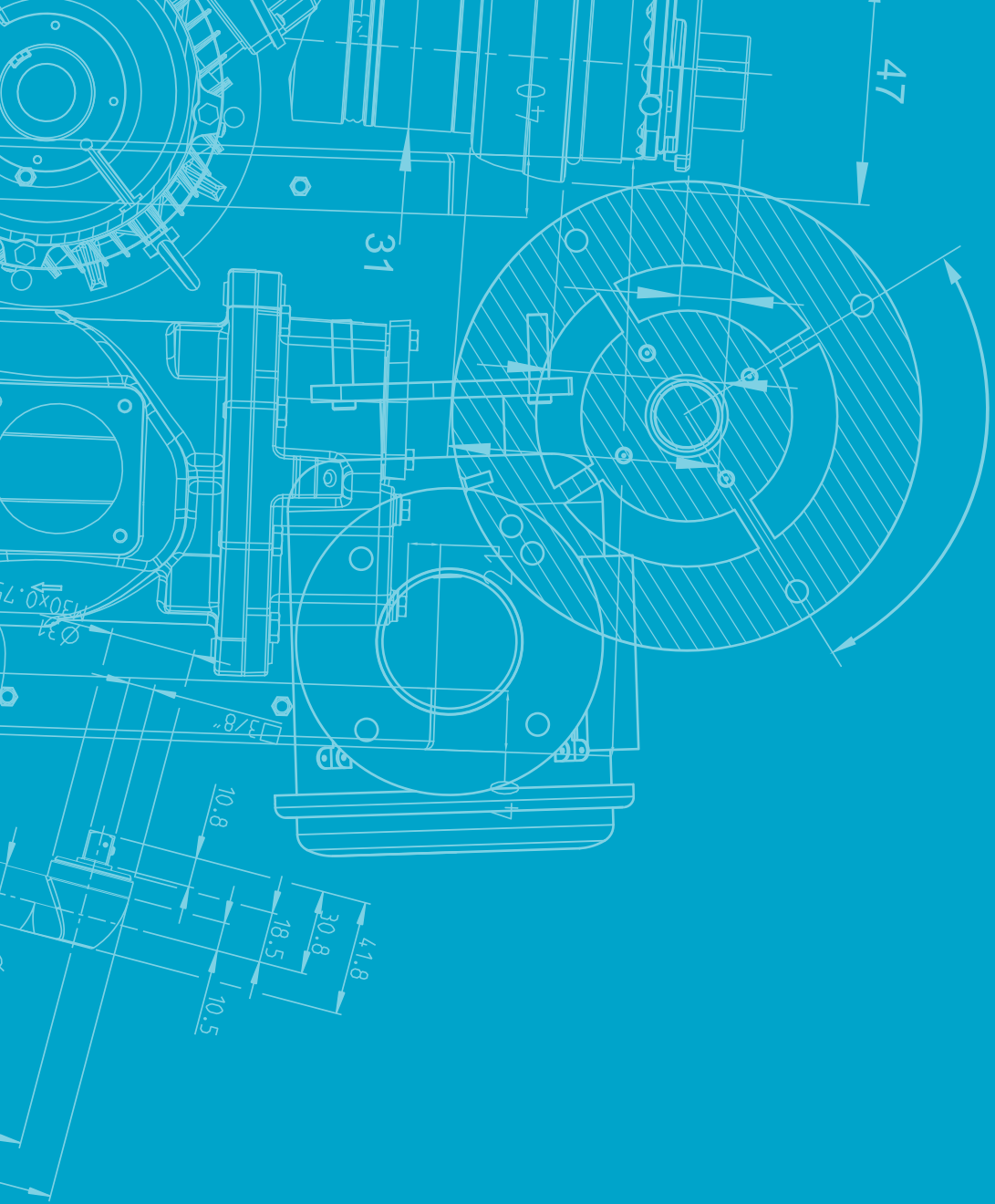

Instruction book

Refrigerant dryers

Atlas Copco

Refrigerant dryers

Instruction book

Original instructions

This instruction book is valid for CE as well as non-CE labelled machines. It meets the requirements for instructions specified by the applicable European directives as identified in the Declaration of Conformity.

December 2021

www.atlascopco.com

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1 Safety precautions

1.1 Safety icons

Explanation

	Danger to life
	Warning
	Important note

1.2 Safety precautions, general

General precautions

	All responsibility for any damage or injury resulting from neglecting these precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

1. The dryers are designed for normal indoor use.
2. The operator must employ safe working practices and observe all related work safety requirements and regulations.
3. If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.
4. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
5. The dryer is not considered capable of producing air of breathing quality. To obtain air of breathing quality, the compressed air must be adequately purified according to the applicable legislation and standards.
6. Before any maintenance, repair work, adjustment or any other non-routine checks, stop the dryer, press the emergency stop button, switch off the voltage and depressurize the dryer. In addition, the power isolating switch must be opened and locked. For plug versions, remove the plug from the wall socket and secure it.
7. Never play with compressed air. Do not apply the air to your skin or direct an air stream at people. Never use the air to clean dirt from your clothes. When using the air to clean equipment, do so with extreme caution and wear eye protection.
8. The owner is responsible for maintaining the dryer in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.
9. It is not allowed to walk or stand on the dryer or its components.

1.3 Safety precautions during installation

Precautions during installation

1. The dryer must only be lifted using suitable equipment and in accordance with the applicable safety regulations. Loose or pivoting parts must be securely fastened before lifting. It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Lifting acceleration and deceleration must be kept within safe limits. Wear a safety helmet when working in the area of overhead or lifting equipment.
2. Place the dryer where the ambient air is as cool and clean as possible. If necessary, install a suction duct. Never obstruct the air inlet. Care must be taken to minimize the entry of humidity in the inlet air.
3. Any blanking flanges, plugs, caps or desiccant bags must be removed before connecting the pipes.
4. Air hoses must be of correct size and suitable for the working pressure. Never use frayed, damaged or worn hoses. Distribution pipes and connections must be of the correct size and suitable for the working pressure.
5. The aspirated air must be free of flammable fumes, vapors and particles, e.g. paint solvents, that can lead to internal fire or explosion.
6. Arrange the air intake so that loose clothing worn by people cannot be sucked in.
7. Ensure that all piping is free to expand under heat and that it is not in contact with or close to flammable materials.
8. No external force may be exerted on the air outlet valve. The connected pipe must be free of strain.
9. If remote control is installed, the machine must bear a clear sign stating "Danger: This machine is remotely controlled and may start without warning".

   The operator has to make sure that the machine is stopped and that the isolating switch is open and locked before any maintenance or repair. As a further safeguard, persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the starting equipment.
10. Air-cooled machines must be installed in such a way that an adequate flow of cooling air is available and that the exhausted cooling air does not recirculate to the inlet.
11. The electrical connections must correspond to the applicable codes. The machines must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the equipment.
12. On machines with automatic start-stop system or if the automatic restart function after voltage failure is activated, a sign stating "This machine may start without warning" must be affixed near the instrument panel.
13. Never remove or tamper with the safety devices, guards or insulation fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure must be protected by a pressure-relieving device or devices as required.
14. Piping or other parts with a temperature in excess of 80˚C (176˚F) and which may be accidentally touched by personnel during normal operation must be guarded or insulated. Other high-temperature piping must be clearly marked.
15. For water-cooled machines, the cooling water system installed outside the machine has to be protected by a safety device with set pressure according to the maximum cooling water inlet pressure.

16. If no safety valve is present in the air net close to the desiccant dryer (e.g. safety valve of compressor), full flow safety valves must be installed on the dryer vessels.
17. If the maximum pressure of the compressor is higher than the design pressure of the dryer, a full flow safety valve must be installed between the compressor and the dryer in order to blow off the excessive pressure. This is done in case the safety valve of the dryer is out of order or blocked.
18. When unit is not permanently secured to the floor in the vertical position or mounted horizontally, access to electrical equipment is feasible through the unit base. In this case, additional barriers must be provided during installation. Tag with "Warning: High Voltage" symbol

	Also consult following safety precautions: Safety precautions during operation and Safety precautions during maintenance or repair. These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.4 Safety precautions during operation

Precautions during operation

1. Always be careful when touching any piping or components of the dryer during operation. On dryers using heat to regenerate the desiccant, some parts will become very hot.
2. Use only the correct type and size of hose end fittings and connections. When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury. Make sure that a hose is fully depressurized before disconnecting it.
3. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
4. Never operate the machine when there is a possibility of taking in flammable or toxic fumes, vapors or particles.
5. Never operate the machine below or in excess of its limit ratings.
6. Keep all bodywork closed during operation. Bodywork should be opened for short periods only, e.g. to carry out routine checks. Wear ear protectors when removing a panel.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) shall wear ear protectors.
8. Periodically check that:
    - All guards are in place and securely fastened
    - All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
    - There are no leaks
    - All fasteners are tight
    - All electrical leads are secure and in good order
    - Safety valves and other pressure relief devices are not obstructed by dirt or paint
    - Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good condition, free of wear or abuse

9. If warm cooling air from dryers is used in air heating systems, e.g. to warm up a working area, take precautions against air pollution and possible contamination of the breathing air.
10. Do not remove any of, or tamper with, the sound dampening material.
11. Never remove or tamper with the safety devices, guards or insulations fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure shall be protected by a pressure relieving device or devices as required.
12. Yearly inspect the air receiver. Minimum wall thickness as specified in the instruction book must be respected. Local regulations remain applicable if they are more strict.

	Also consult following safety precautions: Safety precautions during installation and Safety precautions during maintenance or repair. These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.5 Safety precautions during maintenance or repair

Precautions during maintenance or repair

1. Always use the correct safety equipment (such as safety glasses, gloves, safety shoes, etc.).
2. Use only the correct tools for maintenance and repair work.
3. Use only genuine spare parts.
4. All maintenance work shall only be undertaken when the machine has cooled down.
5. A warning sign bearing a legend such as "Work in progress - do not start" shall be attached to the starting equipment.
6. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote starting equipment.
7. Close the dryer air outlet valve before connecting or disconnecting a pipe.
8. Before removing any pressurized component, effectively isolate the machine from all sources of pressure and relieve the entire system of pressure.
9. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapours of cleaning liquids.
10. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.
11. Never weld on, or in any way modify, pressure vessels.
12. Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of the oil vapor when air is admitted.
13. Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
14. Make sure that no tools, loose parts or rags are left in or on the machine.
15. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.

16. Before clearing the machine for use after maintenance or overhaul, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly.
17. Protect the motor, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam-cleaning.
18. Make sure that all sound-damping material and vibration dampers, e.g. damping material on the bodywork, is in good condition. If damaged, replace it by genuine material from the manufacturer to prevent the sound pressure level from increasing.
19. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.
20. **The following safety precautions are stressed when handling refrigerant:**
    - Never inhale refrigerant vapours. Check that the working area is adequately ventilated; if required, use breathing protection.
    - Always wear special gloves. In case of refrigerant contact with the skin, rinse the skin with water. If liquid refrigerant contacts the skin through clothing, never tear off or remove the latter; flush abundantly with fresh water over the clothing until all refrigerant is flushed away; then seek medical first aid.
21. **The following safety precautions are stressed when handling desiccant:**
    - Take precautions not to inhale desiccant dust.
    - Check that the working area is adequately ventilated; if required, use breathing protection.
    - Do not overfill the dryer when replacing desiccant.

	Also consult following safety precautions: Safety precautions during installation and Safety precautions during operation. These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.6 Dismantling and disposal

Dismantling

Once the end of life of the machine is reached, please follow next steps:

1. Stop the machine.
2. Check all safety precautions mentioned in the previous chapters to secure safe handling (e.g. LOTO, cool-down, depressurize, discharge, ...).
3. Separate the harmful from the safe components (e.g. drain oil from oil containing parts).
4. Refer to the disposal topic mentioned below.

Disposal of electrical and electronic appliances (WEEE)

This equipment falls under the provisions of the European Directive 2012/19/EU on waste electrical and electronic appliances (WEEE) and may not be disposed as unsorted waste.

The equipment is labelled in accordance with the European Directive 2012/19/EU with the crossed-out wheelie bin symbol.

At the end of life-time of the electric and electronic equipment (EEE) it must be taken to separate collection.

For more information check with your local waste authority, customer center or distributor.

Disposal of other used material

Used filters or any other used material (e.g. filter bags, filter media, desiccant, lubricants, cleaning rags, machine parts, etc.) must be disposed of in an environmentally friendly and safe manner, and in line with the local recommendations and environmental legislation.

2 General description

2.1 Introduction

General views

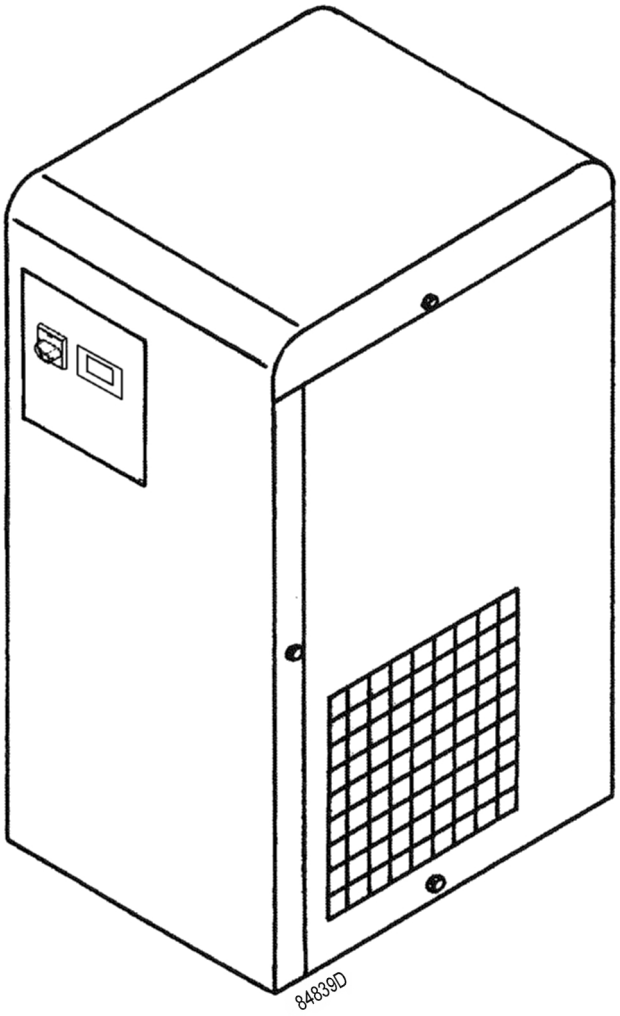


Figure 1: Closed view

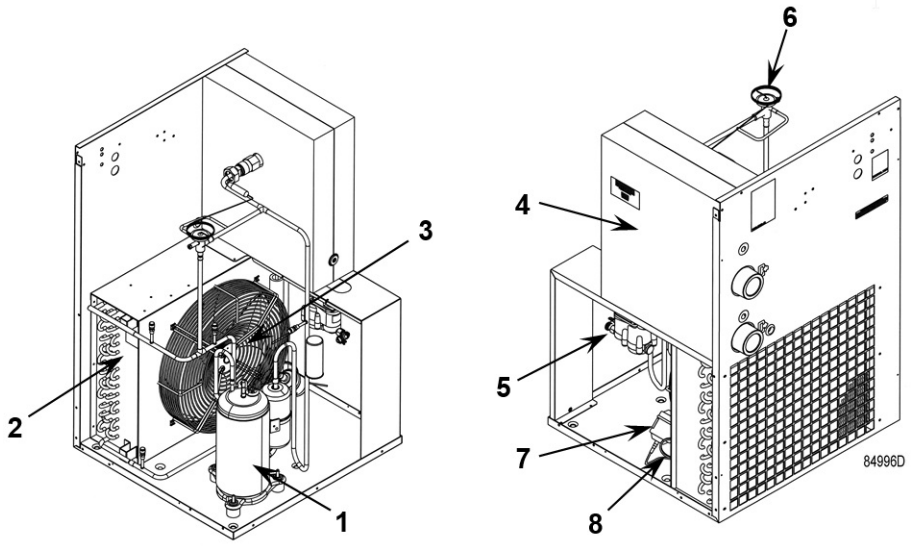


Figure 2: Open view

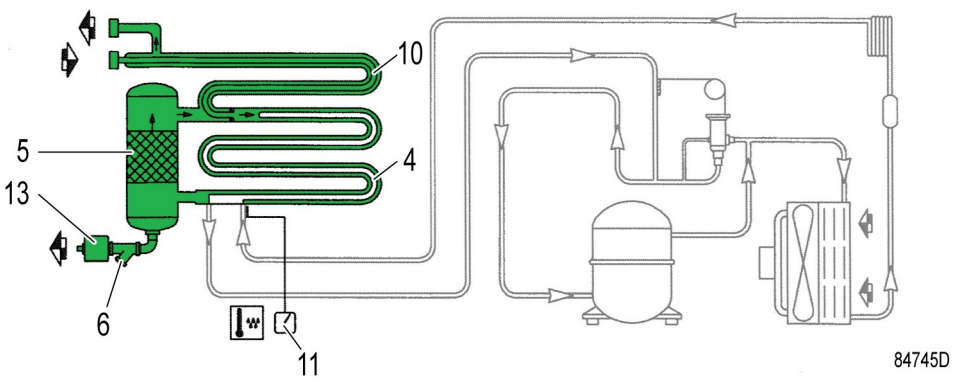
1	Refrigerant compressor
2	Condenser
3	Motor fan
4	Evaporator
5	Condensate drain
6	Hot gas bypass valve
7	Refrigerant filter
8	Expansion capillary tube

Introduction

The FX air dryers remove moisture from compressed air by cooling the air to near freezing point. This causes water to condense. The condensate is automatically drained. The air is warmed up before leaving the dryer.

2.2 Air system

Air flow diagram



Reference	Name
4	Evaporator
5	Condensate separator
6	Impurity trap
10	Heat exchanger
11	Digital controller
13	Condensate drain

Description

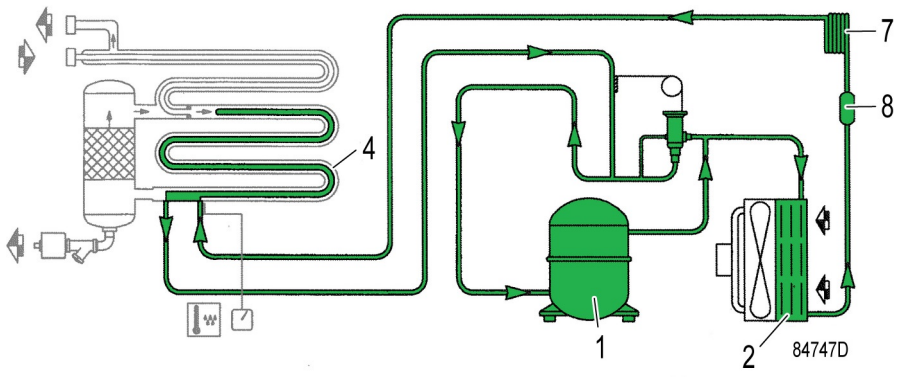
Compressed air enters heat exchanger (10) and is cooled by the outgoing cold, dried air. Water in the incoming air starts to condense. The air then flows through heat exchanger/evaporator (10 and 4) where the refrigerant evaporates, causing the air to be cooled further to close to the evaporating temperature of the refrigerant. More water in the air condenses. The cold air then flows through separator (5) where all the condensate is separated from the air. The condensate is automatically drained in the condensate drain.

The cold, dried air flows through heat exchanger (10) where it is warmed up by the incoming air to approximately 10˚C (18˚F) below the incoming air temperature.

Condensation in the air net cannot occur unless the air is cooled to below the pressure dewpoint, indicated by the digital controller (11).

2.3 Refrigeration system

Refrigerant flow diagram



Reference	Name
1	Refrigerant compressor
2	Condenser
4	Evaporator
7	Expansion capillary tube
8	Refrigerant filter

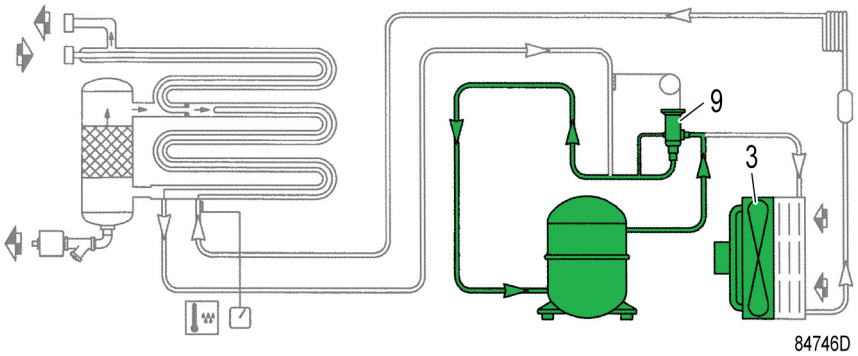
Description

Compressor (1) delivers hot, high-pressure refrigerant gas which flows through condenser (2) where most of the refrigerant condenses.

The liquid flows through the refrigerant dryer/filter (8) to capillary tube (7). The refrigerant leaves the capillary tube at evaporating pressure.

The refrigerant enters evaporator (4) where it withdraws heat from the compressed air by further evaporation at constant pressure. The heated refrigerant leaves the evaporator and flows through the liquid separator (9) back to the compressor (1).

2.4 Automatic regulation system



Reference	Name
3	Cooling fan
9	Hot gas bypass valve

Description

The condenser pressure must be kept as constant as possible to obtain stable operation. Fan control switch therefore stops and starts the cooling fan (3).

If, under partial or no load, the evaporator pressure drops below a certain level, the hot gas bypass valve opens and hot high-pressure gas is fed to the evaporator circuit to prevent the evaporator pressure from dropping any further.

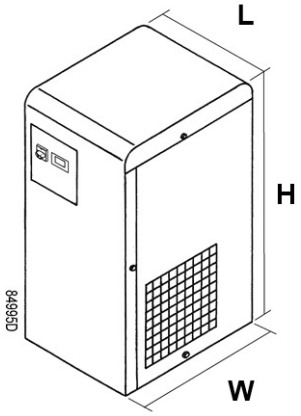
2.5 Electrical system

Description

The fan control switch starts the fan motor as soon as the condenser pressure reaches the upper set point of the switch and will stop the fan motor when the condenser pressure decreases to its lower set point.

3 Installation

3.1 Dimension drawings



Type	L (mm)	W (mm)	H (mm)	Weight (Kg)
FX 8	460	621	829	53
FX 9	460	621	829	60
FX 10	460	621	829	65
FX 11	580	651	939	80
FX 12	580	651	939	80

3.2 Installation proposal

Moving

⚠	Use a suitable tool (e.g., pallet carrier, fork lift truck) to move the dryer. Do not use metal cables for lifting. Move the dryer gently.

Example of compressor/dryer room

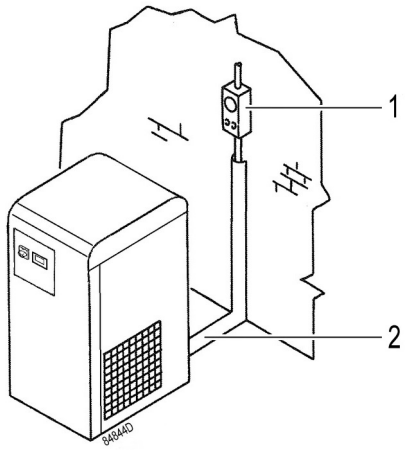


Figure 3: Installation proposal

	The disconnector switch (1) and the fuses are not supplied with the machine.

Table 1: Attention

Reference	Description
-	Install the refrigerant air dryer on a level floor, suitable for its weight.
-	Install the dryer where the ambient air is as clean as possible and where the temperature of the air will never exceed the limits. See Reference conditions and limitations. Keep the ventilation gratings of the dryer free. The recommended minimum distance between the top of the unit and the ceiling is 1.5 m (58.5 in). The minimum distance between the wall and the back of the dryer must be 1.5 m (58.5 in). Lay out the condensate drain hose via a funnel towards a drain collector to allow visual inspection. The hose must slope downwards. If the condensate drain has been fitted outside the dryer room where it may be exposed to freezing temperatures, it must be insulated.
-	The power cable must be connected by a qualified electrician. Connect the dryer to the correct voltage; if necessary, check the unit data plate. Check that the electrical installation corresponds to local codes. The dryer must be earthed and protected against short circuits using an automatic cut-out device with a differential device. An isolating switch must be installed near the dryer.
-	Connect the compressed air lines to the marked inlet and outlet pipes of the dryer (see Dimension drawings). Provide an air inlet valve and outlet valve. If a bypass pipe and valve are installed, the dryer can be serviced while it is bypassed.
1	Location of isolating switch and fuses.
2	Minimum distance 1.5 m (58.5 in).

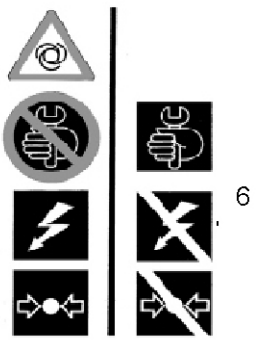
- Please keep environmental conditions stable (temperature and humidity) in order to avoid refrigerant compressor/fan overload and/or reduction of dryer performance.

  Similar failures shall affect warranty reimbursements.
- Please ensure the appropriate composition of the air within the machine room:
  - Clean with no damaging contaminants. (e.g., dust, fibres, fine sand)
  - Free of explosive or chemically unstable gases or vapors.
  - Free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulfide.

  Similar failures shall affect warranty reimbursements.
- Please remember that we do not recommend the application of duct to extract air in presence of axial fans.
- All refrigerant dryers shall be equipped with proper pre-filters as close as possible to the dryer air inlet. The filters should be replaced once a year according to the service plan or sooner in high humidity ambient conditions.

3.3 Pictographs

Pictographs



Reference	Name
1	Warning, under tension
2	Warning, air not fit for breathing
3	Warning, high pressure
4	Warning, rotating fan
5	Warning, hot surface
6	Switch off the voltage and depressurize the dryer before maintenance or repair

4 Operating instructions

4.1 Warnings

Safety precautions

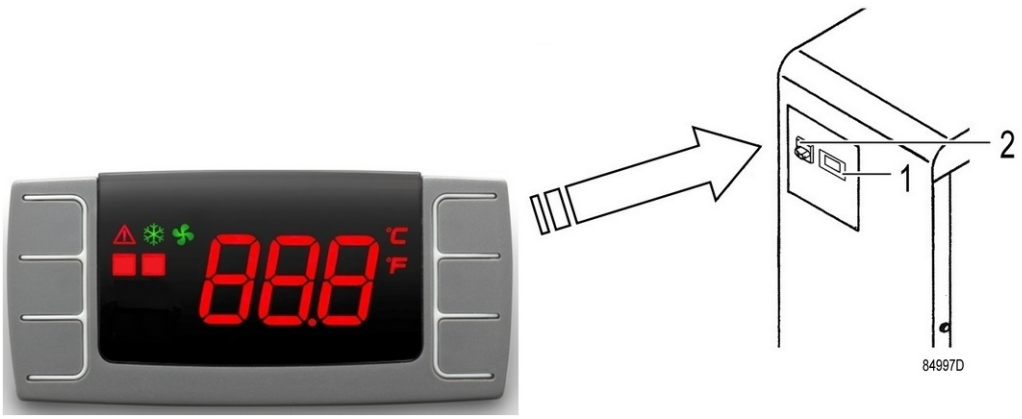
The operator must apply all relevant safety precautions, including those mentioned in this manual.

Altitude operation

Consult your supplier if operating above 3000 m (9843 ft).

4.2 Dryer control panel

Description



Reference	Name
1	Digital controller, used for: **1.** pressure dewpoint indication (main function) **2.** alarms information **3.** maintenance interval scheduling
2	Dryer on/off switch

4.3 Digital dryer controller

Identification

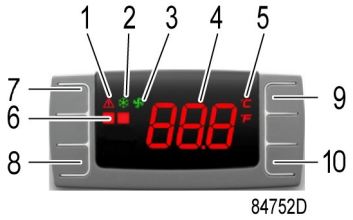


Figure 4: Front panel of the controller

Reference	Name
1	Alarm icon
2	Refrigerant compressor icon
3	Fan icon
4	PDP (dewpoint) temperature
5	Unit (°C or °F)
6	Alarm LED
7	Button to snooze or to reset the alarm (only for remote alarm function).
8	SET button
9	UP button
10	DOWN button
8+9	Back to previous screen
8+10	Menu

Icons

Icon	Name	Mode	Function
	Alarm	Off	No active alarms
		On	Probe failure alarm
			High temperature or low temperature alarm
			Service alarm
	Refrigerant compressor	Off	Dryer off
		On	Dryer on
		Flashing + SE	Maintenance warning
		Flashing + L2	Dewpoint too low Dryer is stopped
		Flashing + Countdown	Remaining time before start

Icon	Name	Mode	Function
		Flashing + H3	Too high discharge temperature of the refrigerant compressor (see further) Dryer is stopped
	Fan	Off	Fan off
		Flashing	Not applicable
		On	Fan on

Starting dryers	
	Flashing: countdown before starting the refrigerant compressor for internal pressure balancing (180 seconds).

Remote alarm function

The controller allows to remotely control a number of alarms. This is managed by means of a free NC (Normally Closed) contact.

The contact opens in case of an alarm or when the dryer is switched off.

Refer to the table below to identify the availability of the function and refer to the related picture to identify the physical location of the free contact.

Model	Fault message availability					
	P1	P2	P3	L2	H2	H3
FX 8 to FX 12	yes	yes	yes	yes	yes	yes

Table 2: Availability of the remote alarm function

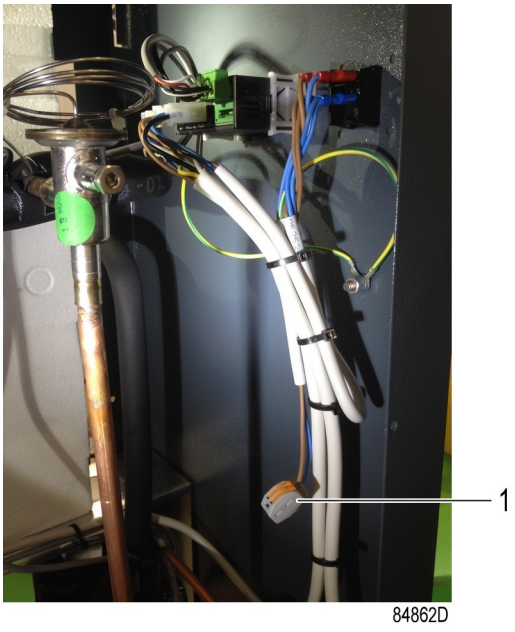


Figure 5: Location of the free contact (1)

Fault messages

Flashing fault message	Description	Remedy
 84758D	Fan control probe failure	Replace the probe.
 84759D	Dewpoint temperature probe failure	Replace the probe.
 84865D	Refrigerant compressor discharge temperature probe failure	Replace the probe.
 84762D	Pressure dewpoint too high	Refer to the fault and remedies section.
 84765D	Pressure dewpoint too low	Refer to the fault and remedies section.
 84864D	Refrigerant compressor discharge temperature too high; refrigerant compressor stopped	Refer to the fault and remedies section.
 84998D	Condenser discharge temperature too high	Refer to the fault and remedies section.
 84999D	Condenser discharge temperature too low	Refer to the fault and remedies section.

Flashing fault message	Description	Remedy
	Internal EPROM error	Reset by pressing one of the four buttons. If the problem persists, replace the controller.
	Maintenance required	Perform the maintenance and reset the alarm.

Resetting the maintenance warning

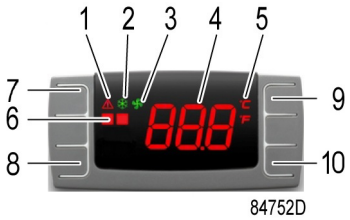


Figure 6: Front panel of the controller

To reset the maintenance warning, follow steps 1 to 12:

1. The display is flashing between standard view (dewpoint) and Maintenance required (SE) alarm.
2. Push and hold buttons SET (8) and DOWN (10) to enter the menu.
3. Message “SE” appears on display.

4. Push and release the UP button (9).
5. Message “rS” appears on display.

6. Push and release the SET button (8).
7. Message “n” appears on display.

84774D

8. Push and release the UP button (9).
9. Message “y” appears on display.

84776D

10. Push and release SET (8) to reset service alarm.
11. Message “y” blinks for 3 seconds.

84776D

12. Then “rL” is fixed and “°C” blinks on display for about 10 seconds.

84778D

The service alarm is now reset.

Setting the service interval

To set the service interval, follow steps 1 to 9:

1. PDP is showing standard view.
2. Push and hold buttons SET (8) and DOWN (10) to enter the menu.
3. Message “SE” appears on display.

84770D

4. Push and release SET (8) to enter the “SE” menu.
5. Current service interval is displayed.

   (“60” or any other value between “0” and “99”)

84781D

6. Select desired service interval using the UP or DOWN button.

   (40=4000h, 55=5500h, 80=8000h,…)
7. Push and release SET to confirm the new service interval.
8. The selected value blinks during 3 seconds.

84785D

9. Then “rS” is fixed and “°C” blinks on display for ~10 seconds.

84772D

The new service interval is now set.

Freeze protection function

Once the digital controller detects a dewpoint temperature below -2°C (28.4°F) during more than 2 minutes, (L2 Alarm), it switches off the refrigerant compressor.

Automatic cut out of refrigerant compressor

If the refrigerant temperature detected at the delivery pipe of the refrigerant compressor overcomes the limit set by the manufacturer, the controller stops the refrigerant compressor in order to avoid further possible failure.

Resetting the dryer after a refrigerant compressor stop

⚠	Before restarting the dryer it is necessary to identify the root cause. Alarms indicate possible failures so it is necessary to contact your customer center. Restarting the dryer without a deep investigation on possible root cause will affect the reliability of the dryer and overrule the warranty reimbursement.

Press button 7 to reset the alarm.

The dryer restarts when both the following conditions are true:

- The dewpoint temperature is higher than -2°C (28.4°F).
- 180 seconds are passed from the refrigerant compressor stop (minimum balancing pressure stop time). A countdown is available if the reset is made before the minimum stop time.

Silent alarm function

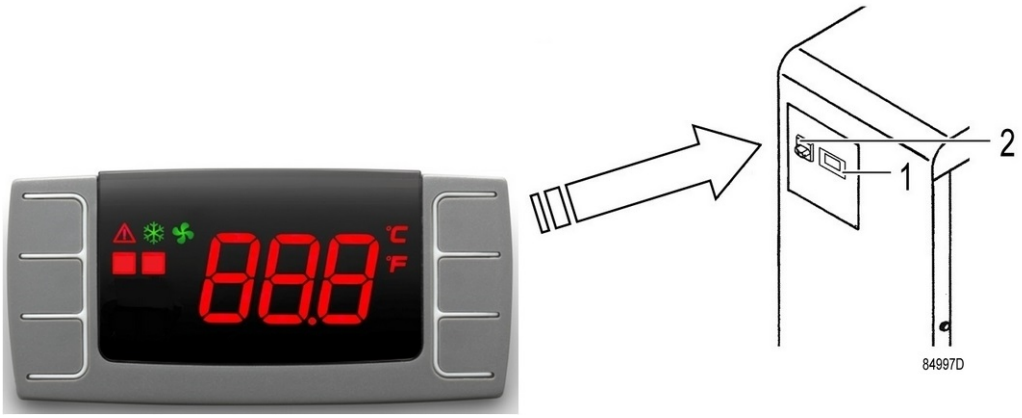
To snooze the alarm, press button 7.

4.4 Starting

Attention

	To ensure optimum operational efficiency, do not use dryer on/off switch repeatedly within a short time period. Wait at least 5 minutes to start the dryer again after stopping to allow pressure equalization.
	To keep the compressed air net free of condensate, start the dryer before starting the compressor and stop the compressor before stopping the dryer.

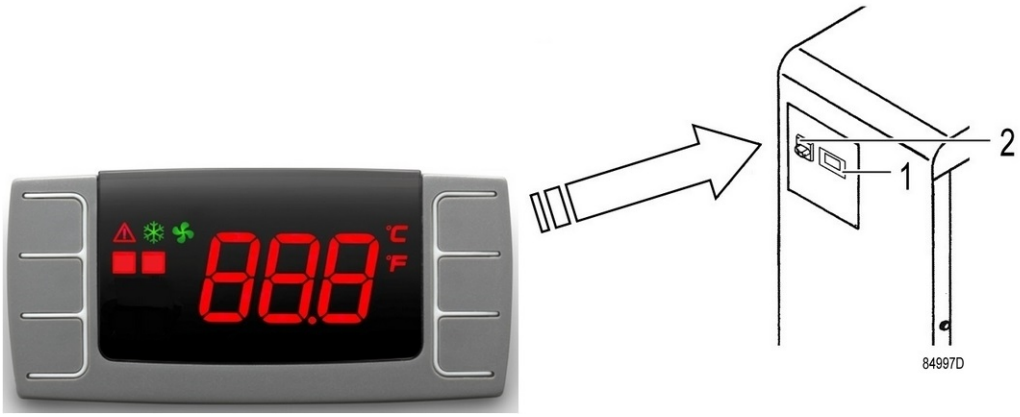
Procedure



Step	Action
1	If installed, close the dryer by-pass valve. See Installation proposal.
2	Press dryer on/off switch (2).
3	Open dryer air inlet valve (customer's installation).
4	Approx. 5 minutes later, open dryer air outlet valve (customer's installation).
5	Approx. 10 minutes later, the nominal dewpoint will be reached.

4.5 During operation

Procedure



Regularly check:

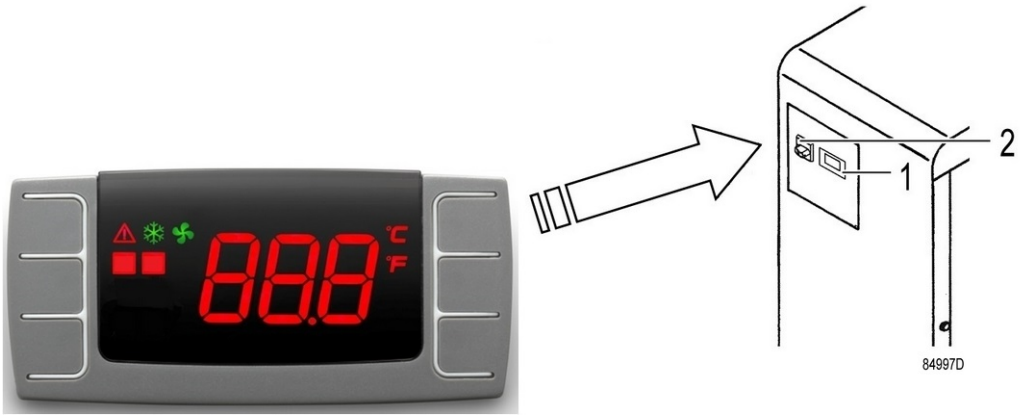
- The pressure dewpoint on the digital controller (1). The pressure dewpoint will deviate from nominal value if air inlet conditions or volume flow differ from nominal value.
- That condensate is discharged via condensate outlet. The amount depends on the operating conditions.

4.6 Stopping

Attention

	To ensure optimum operational efficiency, do not use dryer on/off switch repeatedly within a short time period. Wait at least 5 minutes to start the dryer again after stopping to allow pressure equalization.
	To keep the compressed air net free of condensate, start the dryer before starting the compressor and stop the compressor before stopping the dryer.

Procedure



Step	Action
1	Close the dryer inlet and outlet valve (customer’s installation).
2	Press dryer on/off switch (2) and the dryer will stop.
3	If provided, open the dryer by-pass valve.

5 Maintenance instructions

Safety precautions

Before starting any maintenance or repair work, close the air inlet and outlet valves and switch off the voltage.

When removing the side panels of the dryer, be aware that internal elements such as the pipes can be hot. Therefore, wait until the dryer has cooled down before removing the side panels.

Dryers contain refrigerant R–410A.

When handling refrigerant, all applicable safety precautions must be observed. Please be aware of the following points:

- Contact of refrigerant with the skin will cause freezing. Special gloves must be worn. In case of contact with the skin, the skin should be rinsed with water. On no account may clothing be removed.
- Fluid refrigerant will also cause freezing of the eyes; safety glasses must hence be worn.
- Refrigerant is hazardous. Do not inhale refrigerant vapors. Check that the working area is adequately ventilated.

Local legislation

Local legislation may stipulate that:

- Work on the refrigerant circuit of the cooling dryer or on any equipment which influences its function must be undertaken by an authorized control body.
- The installation is checked once a year by an authorized control body.

Instructions

- Keep the dryer clean.
- Inspect and clean the filter of the automatic condensate drain monthly and, in dusty environments, inspect and clean weekly:
  - Release the pressure in the dryer by pressing the TEST push button on top of the condensate drain (before switching off the supply voltage).
  - Switch off the voltage.
  - Remove the filter from the automatic drain and clean it with an air jet, working from inside to outside.
  - Reinstall the filter.
- Brush or blow off the finned surface of the condenser monthly. Do not use water or solvents.
- Apply the drain wear kit once per year (see Spare Parts List for part numbers).

	These maintenance intervals are intended for well-ventilated, non-humid, and dust-free environments. Under high-humidity ambient conditions, the intervals should be halved.

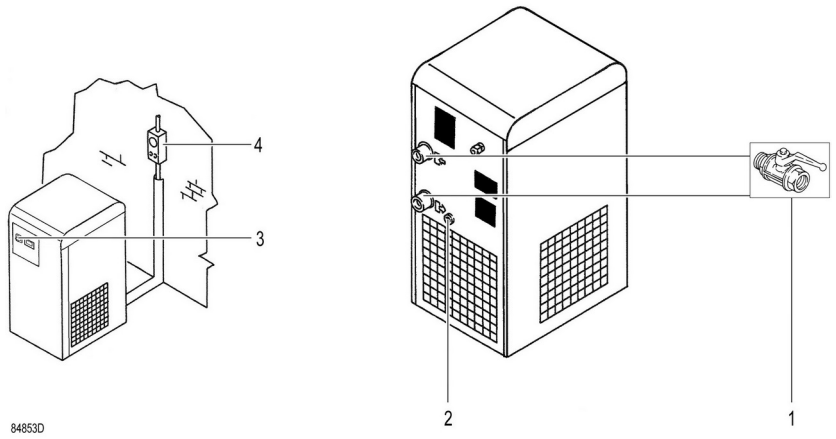
6 Device settings

Regulating and safety devices

The regulating and safety devices are factory-adjusted to obtain optimum performance of the dryer. Do not alter the setting of any of the devices.

7 Problem solving

Condensate drain and air inlet and outlet valves



Reference	Name
1	Inlet and outlet valves
2	Condensate drain
3	Dryer on/off switch
4	Isolating switch

Attention

	Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability. Apply all relevant safety precautions.
	Before carrying out any maintenance or repair work on the dryer: Close air inlet and outlet valves (1) of the dryer. Move dryer on/off switch (3) to position 0 to switch off the voltage. See section Stopping. Open the isolating switch (4) to prevent an accidental start.
	The air inlet and outlet valves (1) can be locked during maintenance or repair work as follows: • Close the valve. • Using a wrench, remove the screw fixing the handle. • Lift the handle and turn it until the slot of the handle fits over the blocking edge on the valve body. • Fit the screw.

Faults and remedies

	Condition	Fault	Remedy
1	Pressure dewpoint too high	Air inlet temperature too high	Check and correct; if necessary, install a pre-cooler.

	Condition	Fault	Remedy
		Ambient temperature too high	Check and correct; if necessary, draw cooling air via a duct from a cooler place or relocate the dryer.
		Air inlet pressure too low	Increase inlet pressure. Adjust the pressure switch.
		Dryer capacity exceeded	Reduce air flow.
		Shortage of refrigerant	Have circuit checked for leaks and recharged.
		Refrigerant compressor does not run	See 3.
		Evaporator pressure too high	See 5.
		Condenser pressure too high	See 2.
2	Condenser temperature too high or too low	Fan or fan motor out of order	Check fan/fan motor.
		Ambient temperature too high	Check and correct; if necessary, draw cooling air via a duct from a cooler room or relocate the dryer.
		Condenser externally clogged	Clean condenser.
3	Compressor stops or does not start	Electric power supply to compressor is interrupted	Check and correct as necessary.
		Thermal protection of refrigerant compressor motor has tripped	Reset the thermostatic protection.
		Restart of the dryer has been too fast, not enough time for pressure balancing	Wait a few minutes and restart.
4	The condensate drain remains inoperative	Drain system clogged	Have system inspected.
5	Evaporator pressure is too high or too low at unload	Hot gas by-pass valve incorrectly set or out of order	Have hot gas by-pass valve adjusted.
		Condenser pressure too high or too low	See 2.
		Shortage of refrigerant	Have circuit checked for leaks and recharged.
6	No compressed air passes through the dryer outlet	The pipes are frozen inside	Have hot gas by-pass valve adjusted or replaced. Check if the evaporator's piping is obstructed with ice.
7	Presence of condensate in the piping	The condensate separator does not work correctly	Clean the filter from the condensate drain. Check the condensate drain.

	Condition	Fault	Remedy
		The dryer is working outside its rating	Check the flow rate of treated air. Check the room temperature. Check the air temperature at the dryer inlet. Clean the condenser.
		The dryer is working under bad conditions of condensation	Check the good operation of the fan.
8	The compressor head is very hot	The dryer is working outside its rating	Check the flow rate of treated air. Check the room temperature. Check the air temperature at the dryer inlet. Clean the condenser.
		The dryer is working under bad conditions of condensation	Check the good operation of the fan.
		The cooling circuit is not working with the right gas charge	Check if there are leaks of refrigerant gas.
9	Motor cuts out on overload	The dryer is working outside its rating	Check the flow rate of treated air. Check the room temperature. Check the air temperature at the dryer inlet. Clean the condenser.
		The dryer is working under bad conditions of condensation	Check the good operation of the fan.
		The cooling circuit is not working with the right gas charge	Check if there are leaks of refrigerating gas. Charge it again.
10	The motor hums and does not start	The line voltage is too low	Contact the electric power company.
		The starting system of the motor is defective	Check the running capacitor.
11	The machine has stopped and does not restart even after a few minutes	The overload protection has tripped	
		The cooling circuit is not working with the right gas charge	Check if there are leaks of refrigerating gas. Charge it again.
		The dryer is working outside its rating	Check the flow rate of treated air. Check the room temperature. Check the air temperature at the dryer inlet. Clean the condenser.
		The dryer is working under bad conditions of condensation	Check the good operation of the fan.

	Condition	Fault	Remedy
12	The compressor is very noisy	Troubles with the internal mechanical parts or with the valves	

8 Technical data

8.1 Reference conditions and limitations

Reference conditions

	Unit	
Working pressure	bar(e)	7
Inlet air temperature	˚C	35
Ambient temperature	°C	25
Dewpoint	°C	5

Limits

	Unit	
Maximum working pressure	bar(e)	14
Maximum inlet air temperature	°C	55
Minimum ambient temperature	°C	5
Maximum ambient temperature	°C	43

8.2 Air dryer data

Performance data

		Unit	230V 50Hz	230V 60Hz	115V 60Hz
Total electrical power input	Ambient air temperature (25 °C/ 77 °F) Compressed air inlet temperature (35 °C/ 95 °F)	kW	0.835	0.855	0.860
Total electrical power input	Ambient air temperature (43 °C/ 109.4 °F) Compressed air inlet temperature (55 °C/ 131 °F)	kW	1.415	1.311	1.287
Fan(s) electrical power input		kW	0.126	0.100	0.105
Cooling air flow (approx.)		l/s	370	370	370
Cooling air flow (approx.)		cfm	784	784	784

		Unit	230V 50Hz	230V 60Hz	115V 60Hz
Heat dissipated by cooling medium flow (approx.)	Ambient air temperature (25 °C/ 77 °F) Compressed air inlet temperature (35 °C/ 95 °F)	kW	2.82	2.83	2.90
Heat dissipated by cooling medium flow (approx.)	Ambient air temperature (43 °C/ 109.4 °F) Compressed air inlet temperature (55 °C/ 131 °F)	kW	6.04	6.17	6.24
Volume flow		l/s	87	87	87
Volume flow		cfm	184	184	184

Table 3: FX 10

Design data

	Unit	230V 50Hz	230V 60Hz	115V 60Hz
Refrigerant type		R410A	R410A	R410A
Refrigerant amount	Kg	0.72	0.68	0.68
Refrigerant amount	lbs	1.59	1.50	1.50
GWP refrigerant		2088	2088	2088
Tonnes of CO2 equivalent		1.50	1.42	1.42
Shipping mass	Kg	73	73	73
Shipping mass	lbs	160.9	160.9	160.9
Canopy length	mm	621	621	621
Canopy length	in	24.4	24.4	24.4
Canopy width	mm	460	460	460
Canopy width	in	18.1	18.1	18.1
Canopy height	mm	829	829	829
Canopy height	in	32.6	32.6	32.6
Dimensions of inlet and outlet connections		1 1/2" GAS	1 1/2" GAS	1 1/2" GAS

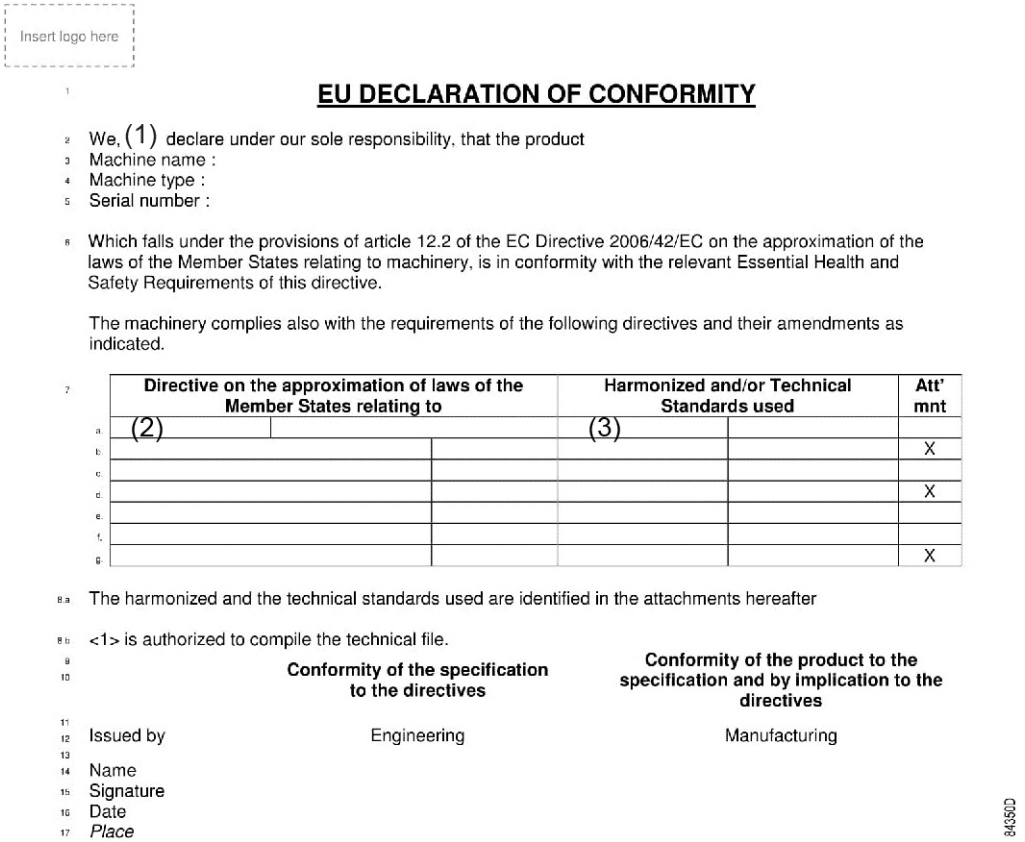
Table 4: FX 10

9 Pressure equipment directives

Components subject to Pressure Equipment Directive

All pressure bearing components are designed category I or less according to European Directive 97/23/EC (until 19/07/2016) or Directive 2014/68/EU (from 20/07/2016 onwards).

10 Declaration of conformity



Insert logo here

EU DECLARATION OF CONFORMITY

We, (1) declare under our sole responsibility, that the product
Machine name :
Machine type :
Serial number :

Which falls under the provisions of article 12.2 of the EC Directive 2006/42/EC on the approximation of the laws of the Member States relating to machinery, is in conformity with the relevant Essential Health and Safety Requirements of this directive.

The machinery complies also with the requirements of the following directives and their amendments as indicated.

Directive on the approximation of laws of the Member States relating to		Harmonized and/or Technical Standards used		Att' mnt
(2)		(3)		
				X
				X
				X

The harmonized and the technical standards used are identified in the attachments hereafter

<1> is authorized to compile the technical file.

	Conformity of the specification to the directives	Conformity of the product to the specification and by implication to the directives
Issued by	Engineering	Manufacturing
Name		
Signature		
Date		
Place		

84360D

Figure 7: Typical example of a Declaration of Conformity document

(1): Contact address:

Atlas Copco Airpower n.v.

P.O. Box 100

B-2610 Wilrijk (Antwerp)

Belgium

(2): Applicable directives

(3): Standards used

On the Declaration of Conformity / Declaration by the Manufacturer, the harmonized and/or other standards that have been used for the design are shown and/or referred to.

The Declaration of Conformity / Declaration by the Manufacturer is part of the documentation that is supplied with this device.

Atlas Copco

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