

# **NANO**

## Refrigerant dryers



**DXR15-A,DXR21-A,DXR36-A,DXR45-A,DXR60-A,DXR72-A  
DXR96-A,DXR120-A,DXR140-A,DXR170-A,DXR200-A,DXR240-A**

**nano**

Instruction book



# NANO

## Refrigerant dryers

DXR15-A,DXR21-A,DXR36-A,DXR45-A,DXR60-A  
DXR72-A,DXR96-A,DXR120-A,DXR140-A,DXR170-A  
DXR200-A,DXR240-A

### Instruction book

Original instructions

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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.

April 2024

**No. 2205 6959 19**

[www.n-psi.com](http://www.n-psi.com)

The logo for NANO, featuring the word "nano" in a stylized, blue, lowercase font. The letters are bold and modern, with a slight gap between the 'n' and 'a'.

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# 1 Safety precautions

## 1.1 Safety icons

### Explanation



**Note:** Important note



**Warning:** Warning



**Danger:** Danger to life

## 1.2 General safety precautions

### General precautions



**Warning:**

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.



**Note:**

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.  
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.

**Note:**

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.

## 1.5 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.

**Note:**

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.

## 1.6 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, etc.).
3. Separate the harmful from the safe components (e.g. drain oil from parts containing oil).
4. Refer to the disposal topic 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 wheeled 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

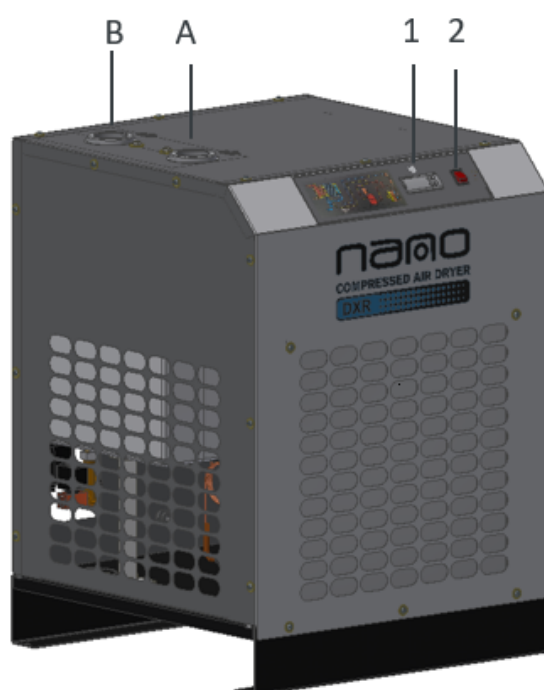
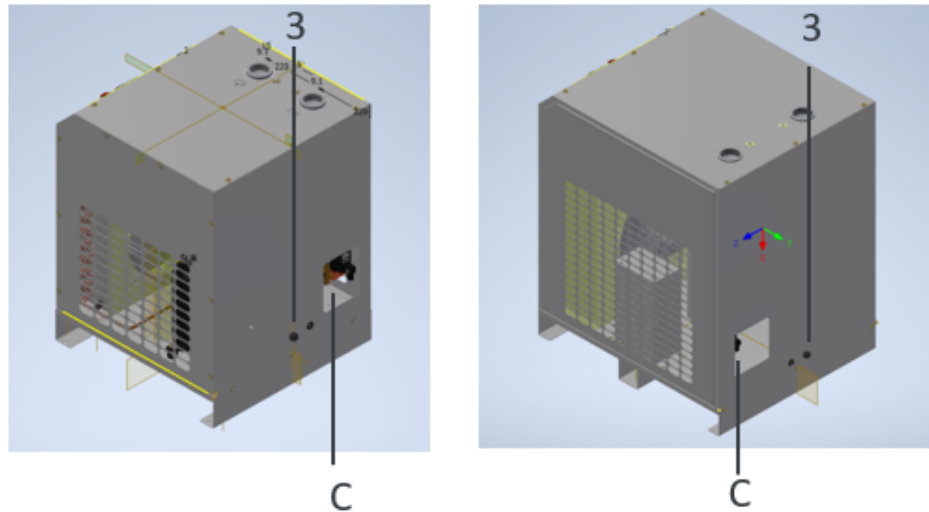


Figure 1:Front view DXR15-DXR96



Figure 2:Front view DXR120-DXR240



### Figure 3: Rear view

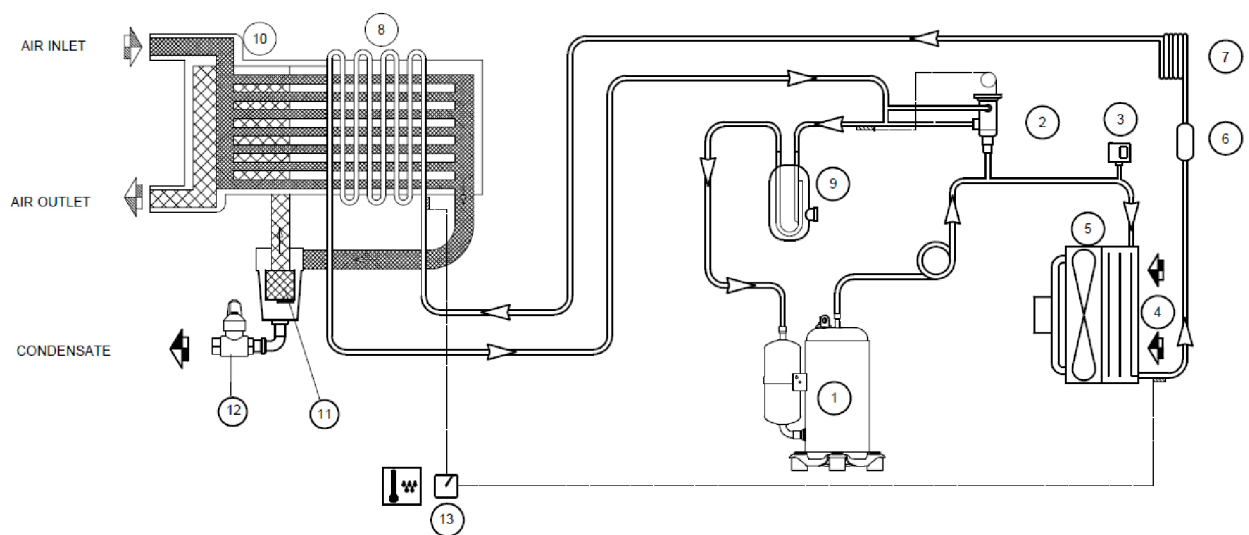
Reference	Description
A	Air outlet
B	Air inlet
C	Condensate drain outlet
1	Dewpoint indicator
2	Dryer on/off switch
3	Electrical cable outlet

## Introduction

The 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	Description
<b>A</b>	Air inlet
<b>B</b>	Air outlet
<b>1</b>	Compressor
<b>2</b>	Hot gas valve(on DXR15-240)
<b>3</b>	High pressure switch(on DXR36-240)
<b>4</b>	Air condenser
<b>5</b>	Fan motor
<b>6</b>	Filter dryer
<b>7</b>	Expansion capillary(on DXR15-240)
<b>8</b>	Evaporator
<b>9</b>	Liquid separator(on DXR120-240)
<b>10</b>	Air-air exchanger
<b>11</b>	Separator
<b>12</b>	Drain valve
<b>13</b>	Digital controller

## Description

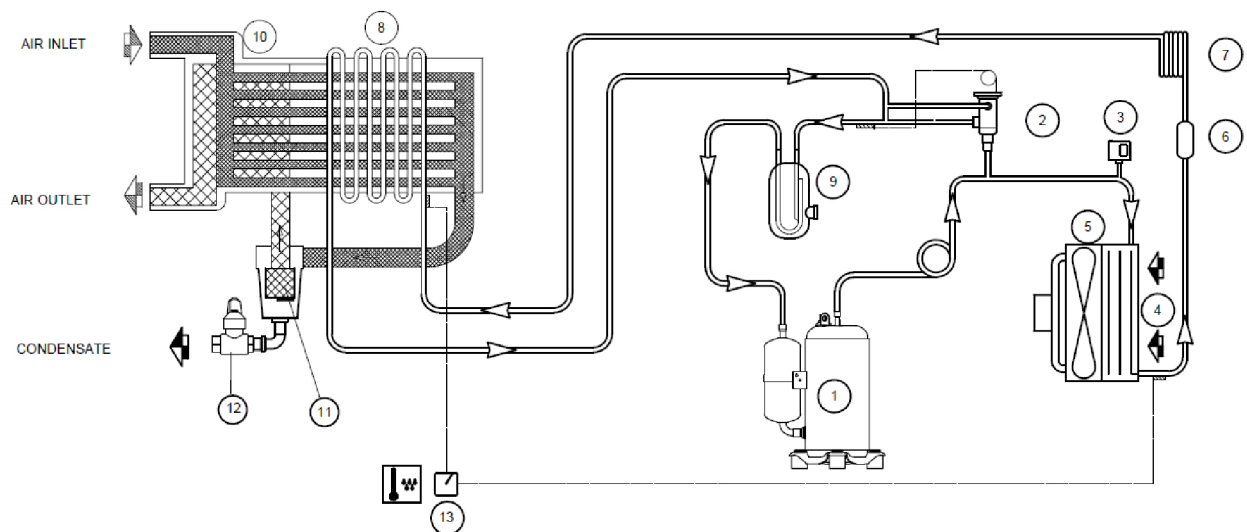
Compressed air enters heat exchanger (10) and is cooled by the outgoing cold, dried air. Water in the incoming air starts to condense. The air then flows through heat exchanger/evaporator (10 and 8) where the refrigerant evaporates, causing the air to be cooled further to close to the evaporating temperature of the refrigerant. More water in the air condenses. The cold air then flows through separator (11) 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 (13).

## 2.3 Refrigerant system

### Refrigerant flow diagram



86509

Reference	Description
<b>A</b>	Air inlet
<b>B</b>	Air outlet
<b>1</b>	Compressor
<b>2</b>	Hot gas valve(on DXR15-240)
<b>3</b>	High pressure switch(on DXR36-240)
<b>4</b>	Air condenser
<b>5</b>	Fan motor
<b>6</b>	Filter dryer
<b>7</b>	Expansion capillary(on DXR15-240)
<b>8</b>	Evaporator
<b>9</b>	Liquid separator(on DXR120-240)
<b>10</b>	Air-air exchanger
<b>11</b>	Separator
<b>12</b>	Drain valve
<b>13</b>	Digital controller

## Description

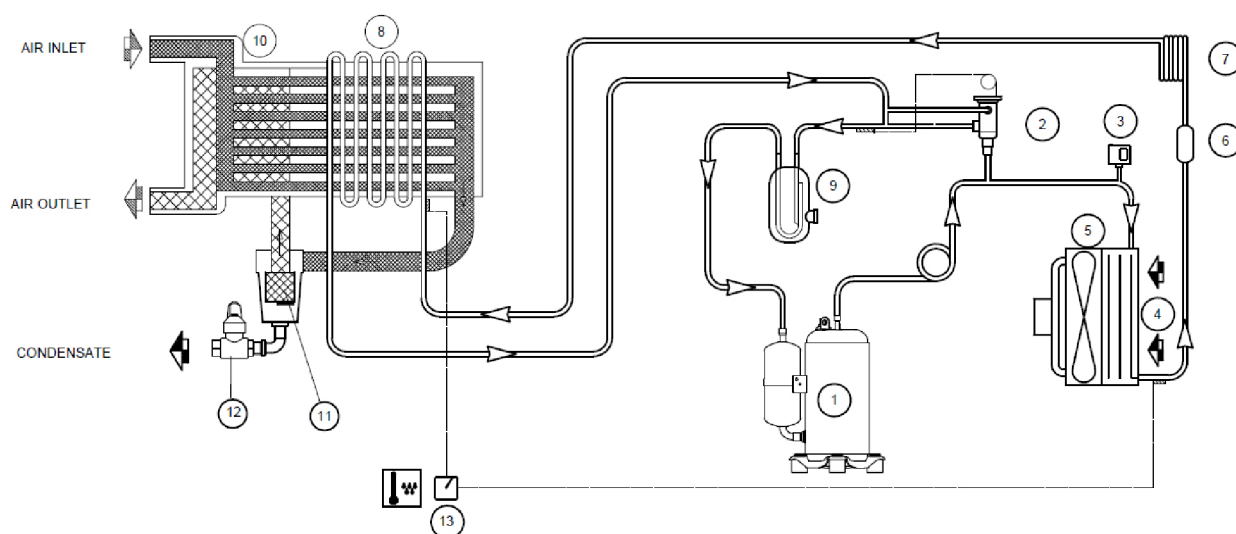
Compressor (1) delivers hot, high-pressure refrigerant gas which flows through condenser (4) where most of the refrigerant condenses.

The liquid flows through the refrigerant filter (6) to Expansion valve/capillary (7). The refrigerant leaves the capillary tube at evaporating pressure.

The refrigerant enters evaporator (8) where it withdraws heat from the compressed air by further evaporation at constant pressure. The heated refrigerant leaves the evaporator and is sucked in by the compressor (1).

## 2.4 Automatic regulation system

### Air and refrigerant flow diagram



Reference	Description
<b>A</b>	Air inlet
<b>B</b>	Air outlet

86509

Reference	Description
1	Compressor
2	Hot gas valve(on DXR15-240)
3	High pressure switch(on DXR36-240)
4	Air condenser
5	Fan motor
6	Filter dryer
7	Expansion capillary(on DXR15-240)
8	Evaporator
9	Liquid separator(on DXR120-240)
10	Air-air exchanger
11	Separator
12	Drain valve
13	Digital controller

### Description

The condenser pressure must be kept as constant as possible to obtain stable operation.

The digital controller (13) therefore stops and starts the cooling fan (5).

If, under partial or no load, the evaporator pressure drops below a certain level, the hot gas bypass valve (2) 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

The controller 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.

## 2.6 Drain system

### Description

Drain, model MIC-A which has a built in timed electronic circuit, and an assisted drive solenoid valve, which opens at pre-established intervals.

The opening time is limited to 1 second, which allows limiting compressed air waste to a minimum.  
Time



**Figure 4: Drain system**

### Time settings of time drain

Model MIC-A

1. Switch on the power.  
Note: the voltage must comply with the voltage mentioned on the coil.
2. MIC-A will start with its pre-set time setting of 1min OFF and 1 sec ON time.
3. You can change the pre-set values to anything ranging from 0.5-10 sec and 0.5-5 Min.
4. To change the ON time simply rotate the black knob, the point of the arrow is the drainage time, then the change is saved.
5. To change the OFF time simply rotate the black knob, the point of the arrow is the drainage interval, then the change is saved.
6. Part number for the drain is 1639614128. Please contact our TS engineer for order.

## 3 Installation

### 3.1 Dimension drawings

The dimension drawings can be found in the technical documentation, delivered with the dryer.

Dimension drawing	Model
9843041985	DXR15-A
9843041986	DXR21-A
9843041987	DXR36-A
9843041988	DXR45-A
9843041989	DXR60-A
9843041990	DXR72-A
9843041991	DXR96-A
9843041992	DXR120-A
9843041993	DXR140-A
9843041994	DXR170-A
9843041995	DXR200-A
9843041996	DXR240-A

Text on drawings	Translation or explanation
Air inlet	Air inlet
Air outlet	Air outlet
ON/OFF switch	ON/OFF switch
Display controller	Display controller
Female	Female connection
Male	Male connection
All dimensions: mm / inch	All dimensions are in mm or inch as indicated on the drawing.

### 3.2 Electrical connections

#### Important remark



#### Note:

To preserve the protection degree of the electric cubicle and to protect its components from dust from the environment, it is mandatory to use a proper cable gland when connecting the supply cable to the dryer.

## Instructions

1. Provide an isolating switch.

For the correct location of the isolating switch, see **Installation proposal**.

2. Check that the cables and wires inside the electric cabinet are clamped tight to their terminals.
3. Check the fuses and the setting of the upstream overload relay.
4. Check that the supply voltage is the same as the value indicated on the machine data plate.
5. 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.
6. Connect the earth conductor (PE). For location of the electrical cable outlet, see **Dimension drawings**.
7. Connect the power supply cables to their terminals.

## 3.3 Installation proposal

### Moving



**Danger:**

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.



**Danger:**

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, fibers, 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-filter at closest position to dryer air inlet (to be replaced according to service plan: once per year or even before in case of particular high humidity ambient conditions).

### Example of compressor/dryer room

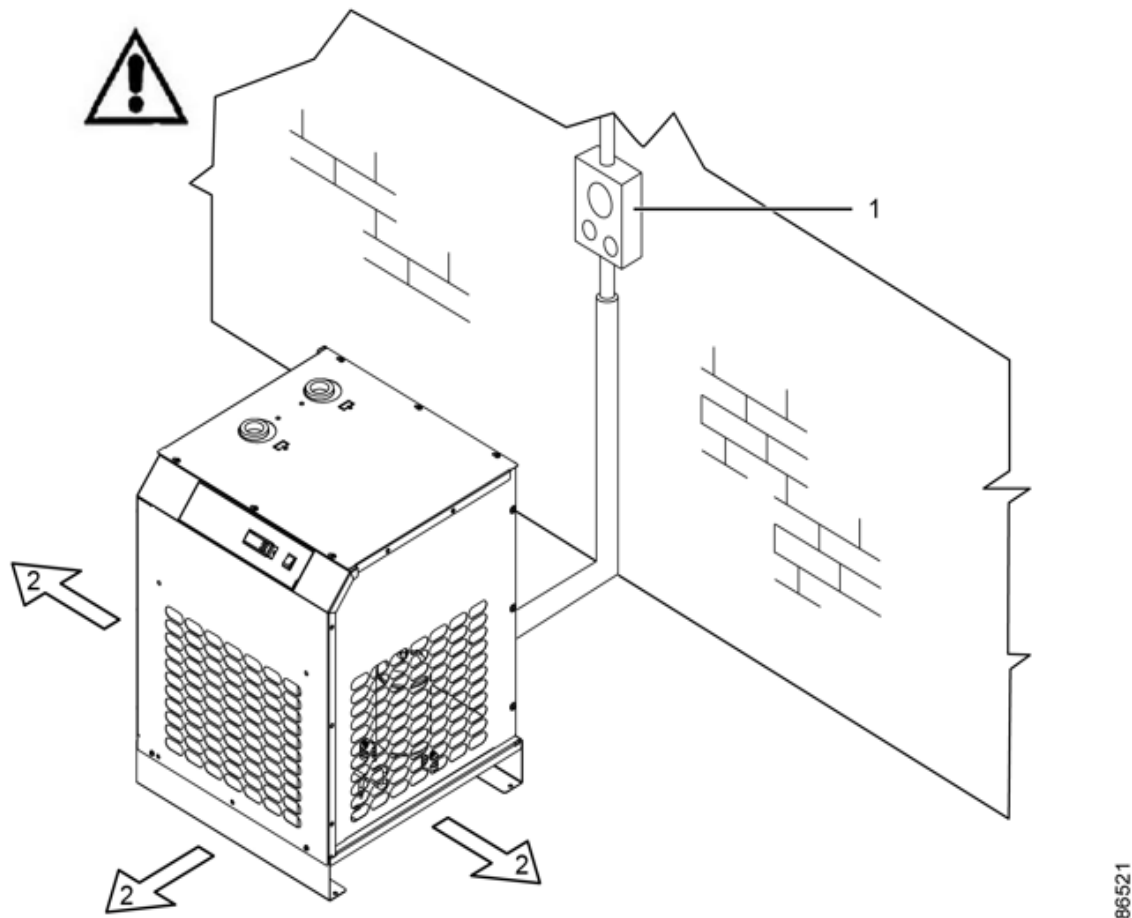


Figure 5: Installation proposal, example

#### Reference Description

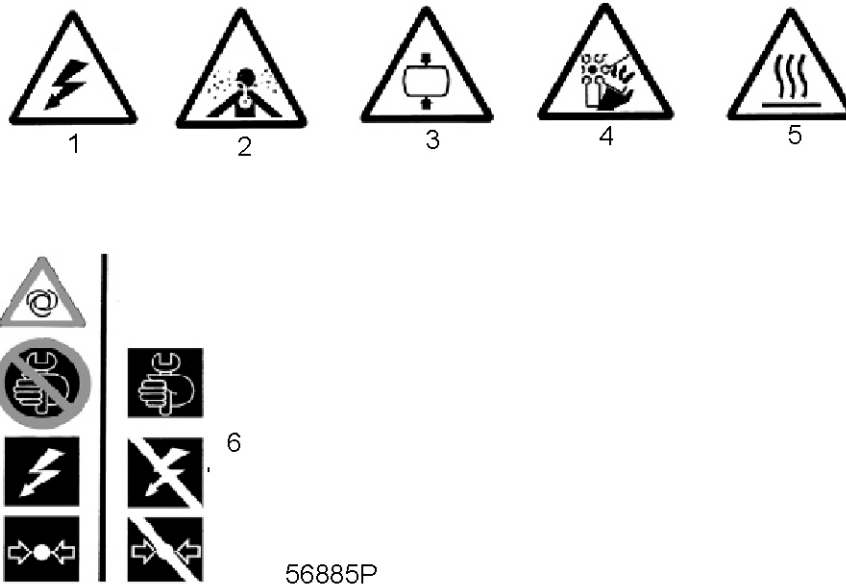
- Install the refrigerant air dryer on a level floor, suitable for its weight.
- Install the dryer where the ambient air is as clean as possible and where the temperature of the air will never exceed the limits. See **Reference conditions and limitations**. Keep the ventilation gratings of the dryer free.  
The recommended minimum distance between the top of the unit and the ceiling is 1.5 m (58.5 in).  
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**).

### Reference Description

- 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) (Front, left and right).

## 3.4 Pictographs

### Pictographs







### Reference Description

- 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 Digital controller

### Dew point indicator



No	Name	Symbol	State	Meaning
1	Run time	 86513	On	Machine running time
2	Warning symbol	 86514	Off	OK
			On	Break down
3	Fan symbol	 86515	Off	Fan stop
			Flashing	Fan delay
			On	Fan work
4	Lock symbol	 86516	Off	Unlock
			On	Lock
5	Set symbol	Set	Off	OK
			On	Set mode
6	Number			Temp/day

### Common operation

1. Long press CLR key for more than 1s.

The key lock indicator will go out, and other functions will take effect officially

2. After unlocking, display the running days of 3S through "↑", press "↓" to switch the display of the condensation sensor 3S
3. When the temperature interface is normally displayed, the 8s automatic lock button is operated without keys

## Alarm display

Normal operation	Flashing alarm	Notes	Possible causes	Observations
E0	E0 Flashing	Warning icon flashing	Data access error	Restart controller
E1	E1 Flashing	Warning icon flashing	Evaporation sensor is not connected	Connect evaporation sensor
E2	E2 Flashing	Warning icon flashing	Condensation sensor is not connected	Connect condensation sensor
E3	E3 Flashing	Warning icon flashing	Evaporation sensor short circuit	Replace evaporation sensor
E4	E4 Flashing	Warning icon flashing	Condensation sensor short circuit	Replace condensation sensor

## 5 Operating instructions

### 5.1 Warnings

#### Safety precautions

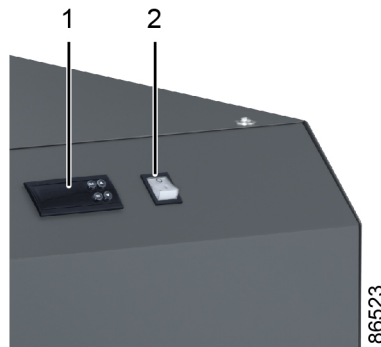
The operator must apply all relevant safety precautions, including those mentioned in this manual.

#### Altitude operation

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

### 5.2 Dryer control panel

#### Description



Reference	Description
1	Dewpoint indicator
2	Dryer on/off switch

### 5.3 Starting

#### Attention



#### Warning:

To ensure optimum operational efficiency, do not use dryer on/off switch repeatedly within a short time period.

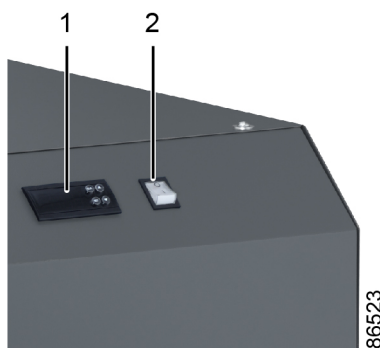
Wait at least 5 minutes to start the dryer again after stopping to allow pressure equalization.



#### Note:

To keep the compressed air net free of condensate, start the dryer before starting the compressor and stop the compressor before stopping the dryer.

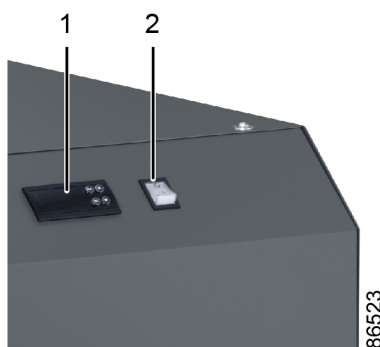
## Procedure



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.

## 5.4 During operation

### Procedure



#### Regularly check:

- The pressure dewpoint indicator (1) on the control panel. 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.

## 5.5 Stopping

### Attention



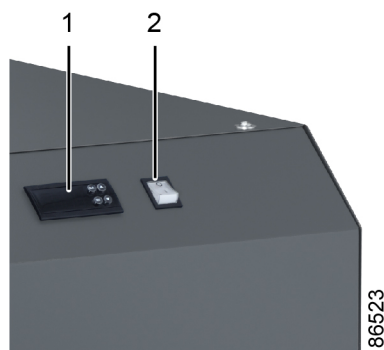
#### Warning:

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.

**Note:**

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**

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.

## 6 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 of F type contain refrigerant HFC.

**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.



**Note:**

These maintenance intervals are intended for well-ventilated, non-humid, and dust-free environments.

Under high-humidity ambient conditions, the intervals should be halved.

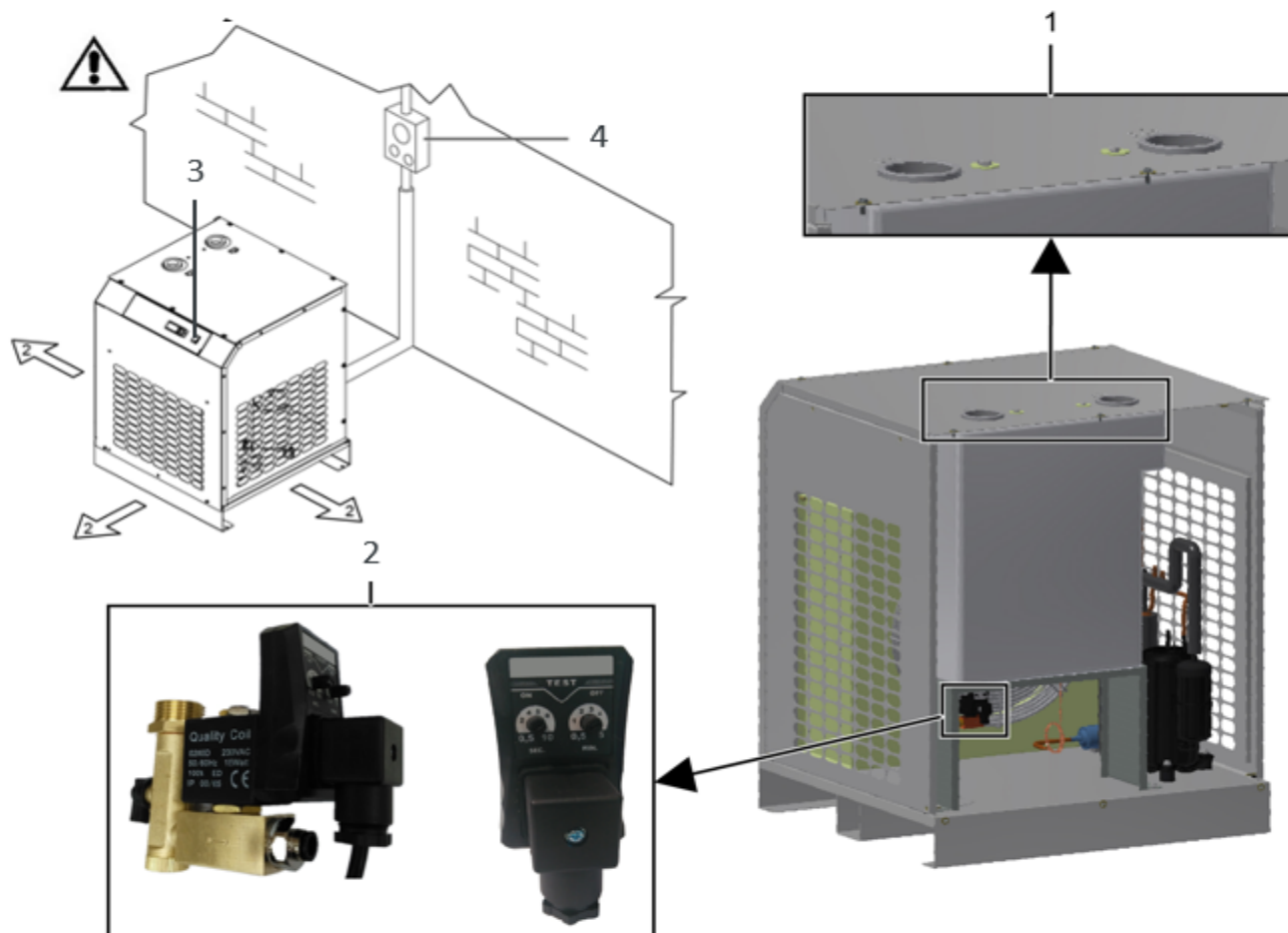
## 7 Device settings

### 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.

## 8 Problem solving

### Condensate drain and air inlet and outlet valves, example



#### Reference

1	Location dryer air inlet and air outlet
2	Condensate drain
3	Dryer on/off switch
4	Isolating switch

#### Description

#### Attention



#### Warning:

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.



#### Warning:

Before carrying out any maintenance or repair work on the dryer:

1. Close air inlet and outlet valves (1) of the dryer.
2. Press the test button (2) on the electronic condensate drain.

3. Move dryer on/off switch (3) to position 0 to switch off the voltage. See section **Stopping**.
4. Open the isolating switch (4) to prevent an accidental start.

**Warning:**

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.
		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.

	Condition	Fault	Remedy
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.

## 9 Technical data

### 9.1 Reference conditions and limitations

#### Reference conditions

	Unit	Value
Compressed air effective inlet pressure	bar	7
Ambient air temperature	°C	25
Compressed air inlet temperature	°C	35
Inlet relative humidity	%	100
Pressure dewpoint	°C	7
Atmospheric dewpoint	°C	-18

#### Limitations for operations

	Unit	Value
Maximum compressed air effective inlet pressure	bar	13 <sup>(1)</sup>
Maximum ambient temperature	°C	46
Minimum ambient temperature	°C	5
Maximum compressed air inlet temperature	°C	62

	Unit	Value
Maximum compressed air effective inlet pressure	bar	16 <sup>(1)</sup>
Maximum ambient temperature	°C	46
Minimum ambient temperature	°C	5
Maximum compressed air inlet temperature	°C	62

(1) Please check name plate for the working pressure (located at the rear side)

### 9.2 Air dryer data

#### Performance data

	Unit	DXR15-A	DXR21-A	DXR36-A	DXR45-A
Volume flow at dryer inlet	l/s	25	35	60	75
Pressure drop over dryer	bar	0.28	0.28	0.28	0.28

	Unit	DXR15-A	DXR21-A	DXR36-A	DXR45-A
Sound level	dB(A)	50	50	55	55
Refrigerant type		R134a	R134a	R410A	R410A
Total amount	gr	250	450	600	650
Net mass (approx.)	kg	36	38	56	58
Net dimensions (approx.)					
Length	mm	548	548	600	600
Width	mm	400	400	520	520
Height	mm	615	740	750	750
Packing weight (approx.)	kg	43	45	63	65
Packing dimensions (approx.)					
Length	mm	630	630	680	680
Width	mm	485	485	600	600
Height	mm	766	886	896	896

	Unit	DXR60-A	DXR72-A	DXR96-A	DXR120-A
Volume flow at dryer inlet	l/s	100	120	160	200
Pressure drop over dryer	bar	0.28	0.28	0.28	0.28
Sound level	dB(A)	55	55	55	60
Refrigerant type		R410A	R410A	R410A	R410A
Total amount	gr	650	900	900	1200
Net mass (approx.)	kg	58	75	79	104
Net dimensions (approx.)					
Length	mm	600	650	650	752
Width	mm	520	650	650	745
Height	mm	750	875	875	960
Packing weight (approx.)	kg	65	83	87	118
Packing dimensions (approx.)					
Length	mm	680	730	730	890
Width	mm	600	730	730	800
Height	mm	896	1021	1021	1106

	Unit	DXR140-A	DXR170-A	DXR200-A	DXR240-A
Volume flow at dryer inlet	l/s	230	285	335	400
Pressure drop over dryer	bar	0.28	0.28	0.28	0.28
Sound level	dB(A)	60	60	71	71
Refrigerant type		R410A	R410A	R410A	R410A

	Unit	DXR140-A	DXR170-A	DXR200-A	DXR240-A
Total amount	gr	1500	1500	2300	2400
Net mass (approx.)	kg	108	121	170	176
Net dimensions (approx.)					
Length	mm	752	752	928	928
Width	mm	800	800	800	800
Height	mm	1020	1020	1126	1126
Packing weight (approx.)	kg	122	135	184	190
Packing dimensions (approx.)					
Length	mm	890	890	1070	1070
Width	mm	850	850	850	850
Height	mm	1156	1156	1256	1256

### Electrical data

	Unit	DXR15-A	DXR21-A	DXR36-A	DXR45-A
Tension-Phases-Frequency	V/Ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power (Amb.T.45°C; Inlet T.55°C)	W	400	460	1030	1270
Maximum current	amps	2.9	3	4.8	6.1
Nominal power (Amb.T.25°C; Inlet T.35°C)	W	360	370	700	880
Nominal current	amps	2.7	2.8	3.3	4.1
Minimum cable size (max cable length 10 mt)	mm <sup>2</sup>	1	1	1	1
Fan motor protection	IP	42	42	54	54

	Unit	DXR60-A	DXR72-A	DXR96-A	DXR120-A
Tension-Phases-Frequency	V/Ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power (Amb.T.45°C; Inlet T.55°C)	W	1300	1450	1830	2100
Maximum current	amps	6.2	7	8.5	9.8

	Unit	DXR60-A	DXR72-A	DXR96-A	DXR120-A
Nominal power (Amb.T.25°C; Inlet T.35°C)	W	900	1100	1240	1400
Nominal current	amps	4.2	5	5.8	6.6
Minimum cable size (max cable length 10 mt)	mm <sup>2</sup>	1	1.5	1.5	2.5
Fan motor protection	IP	54	54	54	54

	Unit	DXR140-A	DXR170-A	DXR200-A	DXR240-A
Tension- Phases- Frequency	V/Ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power (Amb.T.45°C; Inlet T.55°C)	W	2370	2400	3800	4050
Maximum current	amps	11	11.2	18.2	19.3
Nominal power (Amb.T.25°C; Inlet T.35°C)	W	1620	1650	2650	2900
Nominal current	amps	7.5	7.7	12.5	16.6
Minimum cable size (max cable length 10 mt)	mm <sup>2</sup>	2.5	2.5	2.5	2.5
Fan motor protection	IP	54	54	54	54

## Piping Conditions

	Unit	DXR15-A	DXR21-A	DXR36-A	DXR45-A
Air connections (Male)		G3/4"	G1"	G1"	G1.5"
Condensate drain (rubber pipe)	mm	8	8	8	8

	Unit	DXR60-A	DXR72-A	DXR96-A	DXR120-A
Air connections (Male)		G1.5"	G1.5"	G2"	G2.5"
Condensate drain (rubber pipe)	mm	8	8	8	8

	Unit	DXR140-A	DXR170-A	DXR200-A	DXR240-A
Air connections (Male)		G2.5"	G2.5"	G2.5"	G2.5"
Condensate drain (rubber pipe)	mm	8	8	8	8

### 9.3 Correction factor

Correction factor  $K = A \cdot B \cdot C$

(A) Ambient temperature (°C)	Correction factor
25	1
30	0.91
35	0.81
40	0.72
46	0.61

(B) Inlet temperature (°C)	Correction factor
25	1
30	1
35	1
40	0.82
45	0.69
50	0.58
55	0.45
62	0.34

(C) Inlet pressure (barg)	Correction factor
5	0.9
6	0.97
7	1
8	1.03
9	1.06
10	1.08
11	1.1
12	1.12
13	1.13





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