

**NANO**  
Refrigerant dryer



**DXR2500W-A, DXR3000W-A, DXR3480W-A, DXR3960W-A**



# **NANO**

## **Refrigerant dryer**

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### **Instruction book**

Original instructions

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# 1 Safety Precautions and Measures

## 1.1 Safety symbols

### Description

	Hazard to life
	Warning
	Notes and explanations

## 1.2 General safety precautions

### Conventional Precautions and Measures

1. The operator must employ safe working practices and observe all related work safety requirements and regulations.
2. If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
4. The compressor is not considered capable of producing air of breathing quality. For air of breathing quality, the compressed air must be adequately purified according to the applicable legislation and standards.
5. Before any maintenance, repair work, adjustment or any other non-routine checks:
  - Stop the compressor
  - Press the emergency stop button
  - Switch the power off
  - Depressurize the compressor
  - Lock Out - Tag Out (LOTO):
    - Open the power isolating switch and lock it with a personal lock
    - Tag the power isolating switch with the name of the service technician.
  - For frequency conversion power equipment, wait 10 minutes before performing electrical maintenance.
  - Never rely on indicator lamps or electrical door locks before maintenance work, always disconnect and check with measuring device.
6. 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.
7. The owner is responsible for maintaining the unit in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.
8. It is not allowed to walk or stand on the roof of the compressor canopy.
9. Before replacing any parts of the cooling system, any coolant must be released from the high and low pressure ends. Serious harm can arise if this is not performed. System pressure can be monitored using a pressure gauge to ensure that it is in the range of atmospheric pressure.


## 1.3 Safety precautions during installation



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.

### Precautions during installation


1. The machine must only be lifted using suitable equipment 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. Install the compressor where the 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 and desiccant bags must be removed before connecting the pipes.
4. Air hoses must be of the correct size and be suitable for the working pressure. Never use frayed, damaged or worn hoses. Distribution pipes and connections must be of the correct size and be suitable for the working pressure.
5. The aspirated air must be free of flammable fumes, vapours 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 the discharge pipe from the dryer to the air net 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 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. The electrical connections must be made in accordance with 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 dryer.
11. 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.
12. 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.
13. Pipework or other parts with a temperature in excess of 80 °C (176 °F) and which may be accidentally touched by personnel in normal operation must be guarded or insulated.
14. If the ground is not levelled or can be subject to variable inclination, consult the manufacturer.
15. For water cooled dryer, safety device must be installed and settled according to the maximum cooling water inlet pressure, to protect the cooling water system.

	<p>Also consult following safety precautions: <b>Error! Reference source not found.</b> and <b>Error! Reference source not found.</b></p> <p>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.</p> <p>Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.</p>
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## 1.4 Safety precautions and measures during operation

### Precautions during operation

1. Never touch any piping or components of the compressor during operation.
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. People 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 below or in excess of its limit ratings.
5. Keep all bodywork doors shut during operation. The doors may be opened for short periods only, e.g. to carry out routine checks. Wear ear protectors when opening a door.
6. Personnel staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) must wear ear protectors.
7. 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 secured 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 repair, free of wear or abuse
8. Do not remove any of, or tamper with, the sound-dampening material.
9. 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 shall be protected by a pressure-relieving device or devices as required

	<p>Also consult the following safety precautions: <b>Error! Reference source not found.</b> and <b>Error! Reference source not found.</b></p> <p>These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions specific to the application, which are not included here.</p> <p>Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.</p>
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## 1.5 Safety precautions during maintenance and 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.



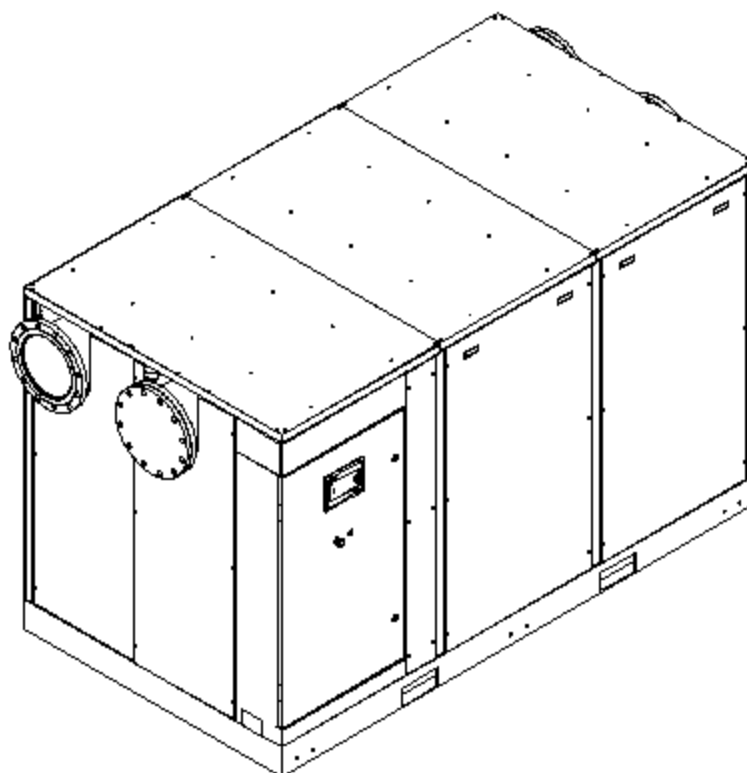
4. All maintenance work shall only be undertaken when the machine has cooled down.
5. A warning sign bearing a legend such as "work in progress; do not start" shall be attached to the starting equipment.
6. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start 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 vapors 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 or perform any operation involving heat near the oil system. Oil tanks must be completely purged; e.g. by steam-cleaning, before carrying out such operations. 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. If removed, check that the coupling guard of the dryer drive shaft has been reinstalled.
17. Protect the motor, air filter, 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.

	<p>Also consult following safety precautions: <b>Error! Reference source not found.</b> and <b>Error! Reference source not found.</b></p> <p>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.</p> <p>Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.</p>
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## 2 General instructions

### 2.1 Introduction

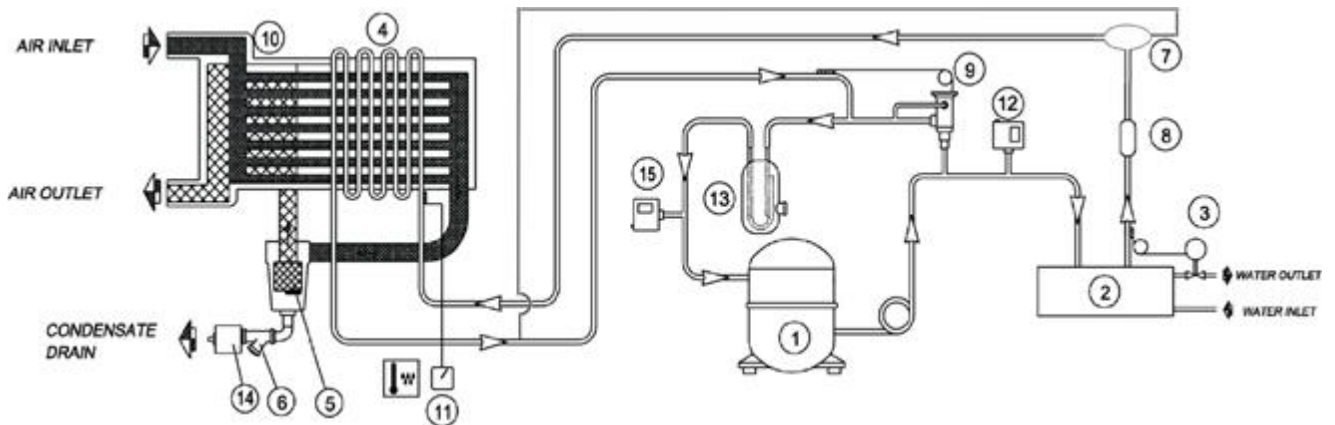
#### Machine profiles



*DXR2500W-A~~DXR3960W-A*

## 2.2 Process

### 2.2.1 Diagram of process



*Water-cooled*

Reference	Name
1	Refrigeration compressor
2	Water-cooled condenser
3	Water-flow regulating valve
4	Evaporator (air-refrigerant heat exchange core)
5	Water separator
6	Impurity collector (Y-filter)
7	Expansion valve
8	Filter dryer
9	Hot gas bypass valve
10	Evaporator (hot and cold air exchange core)
11	Dew point indicator
12	High pressure switch
13	Refrigerant gas-liquid separator
14	Drain valve
15	Minimum pressure switch

## 2.3 Air system

Compressed air enters (10) and is cooled by the discharged dry cold air. The water in the air entering begins to condense. The air then flows through the heat exchanger/evaporator (4), and the refrigerator evaporates, causing the air to be further cooled, approaching the evaporation temperature of the refrigerant. The water in the air begins to condense. The cooled air flows through the separator (5), and all condensate is separated from the air. The condensate is automatically discharged through the drain valve.

The dried cold air flows through (10) and is heated by the inlet air to a temperature of about 5-10°C lower than that of the inlet air.

Unless the air is cooled below the pressurized dew point indicated by the dew point indicator light (11), there will be no condensed water in the pipe network.

### 2.3.1 Cooling system

The refrigeration compressor (1) drives the high-temperature and high-pressure refrigerant gas, and this flows through the water-cooled condenser/air-cooled condenser (2) where there is a large amount of liquid refrigerant, and transforms into a medium-temperature, high-pressure liquid refrigerant. The liquid refrigerant passes through the dry filter (8) and expansion valve (7). The refrigerant passes through its (7) throttling device to become a low-temperature, low-pressure mixed gas-liquid refrigerant. The refrigerant enters the evaporator (4) and further evaporates. At the same time, it absorbs the heat from the compressed air. After the gas-liquid separation is carried out in the gas-liquid separator (13), the gaseous refrigerant is sucked in to the refrigeration compressor (1).

### 2.3.2 Regulation system

The condenser pressure must be kept as stable as possible so to allow stable operation.

If the evaporator pressure drops below a certain level under partial- or no-load conditions, the hot gas bypass valve (9) will open and high-pressure hot air will be sent to the evaporator circuit so as to prevent the evaporator pressure from continuing to drop.

### 2.3.3 Protection system

For air-cooled dryers, when the condenser pressure reaches the set upper limit of the switch, the fan control switch starts the fan motor; and, when the condenser pressure falls below the set lower limit, the fan motor is stopped.

After the refrigerant circuit pressure reaches the set upper limit of the high-pressure switch, the pressure is disconnected and the compressor motor is shut down.

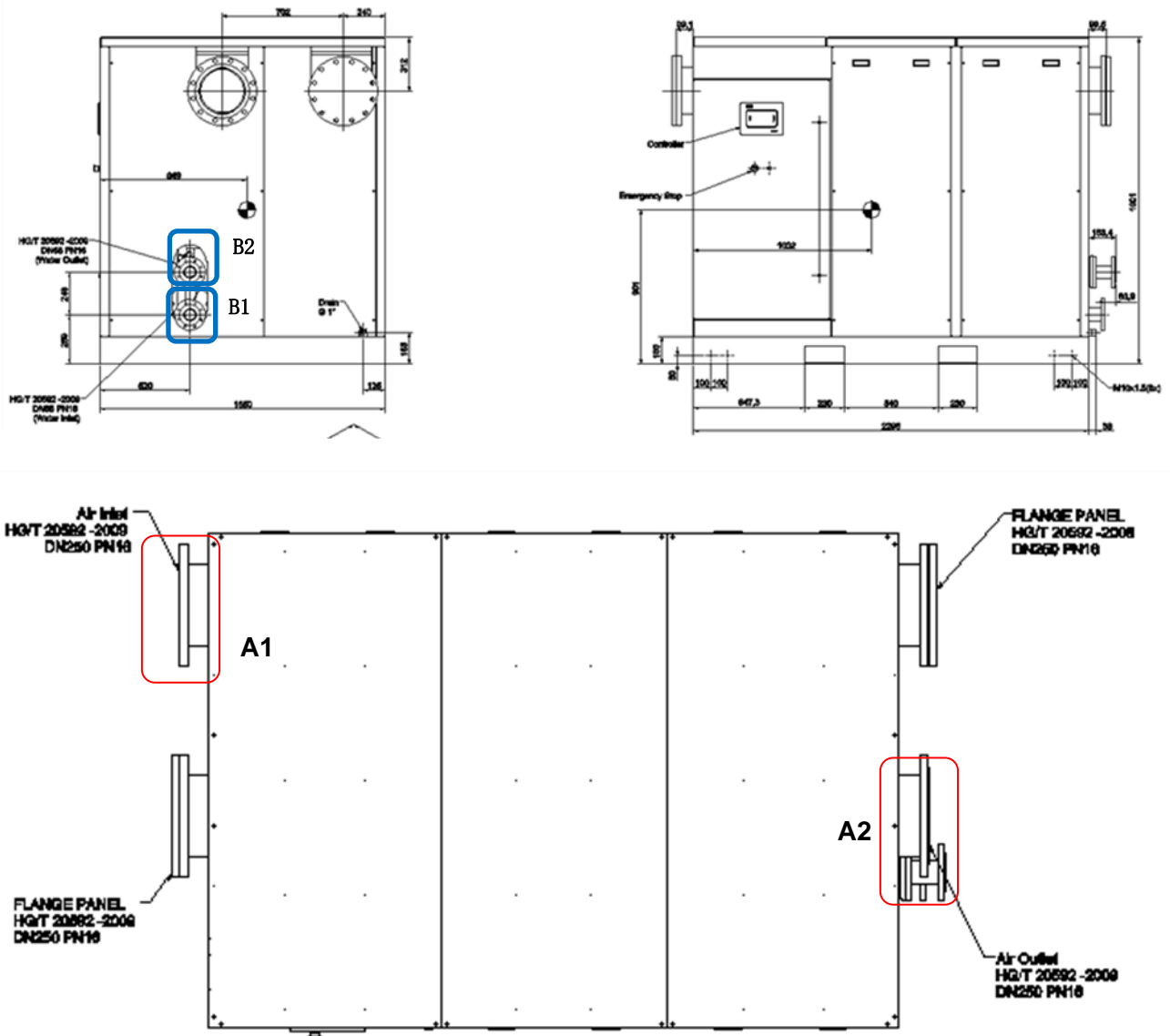
After the refrigerant circuit pressure is lower than the set point of the switch, the low- and high-pressure switches are disconnected and the compressor motor is stopped. (In some models, there is no low-pressure switch; instead the refrigeration compressor discharge temperature switch is used to realize low-pressure protection functionality; see the controller instructions for details).

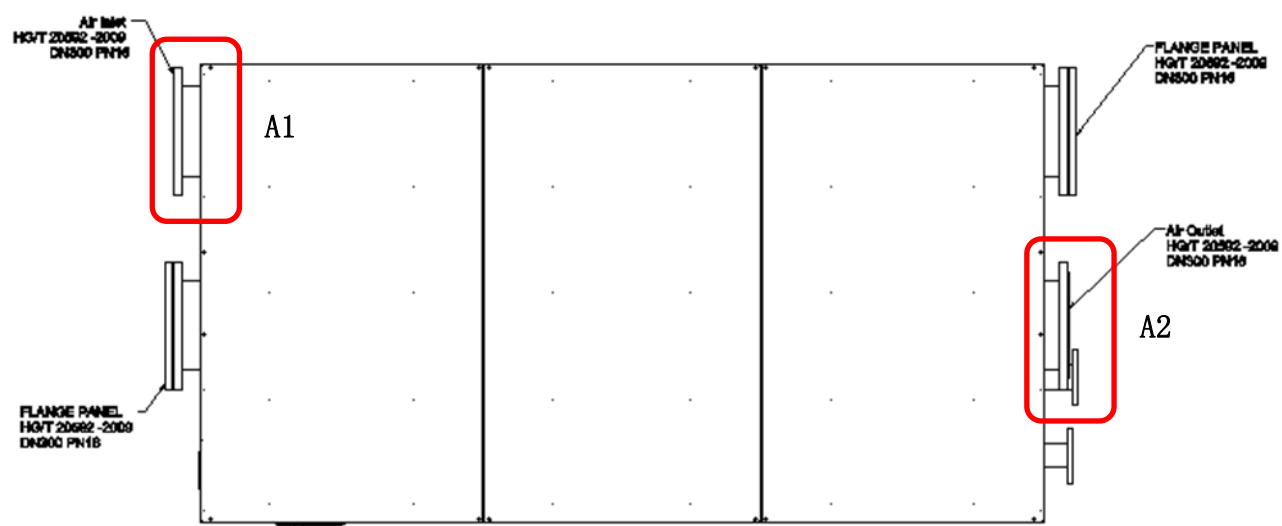
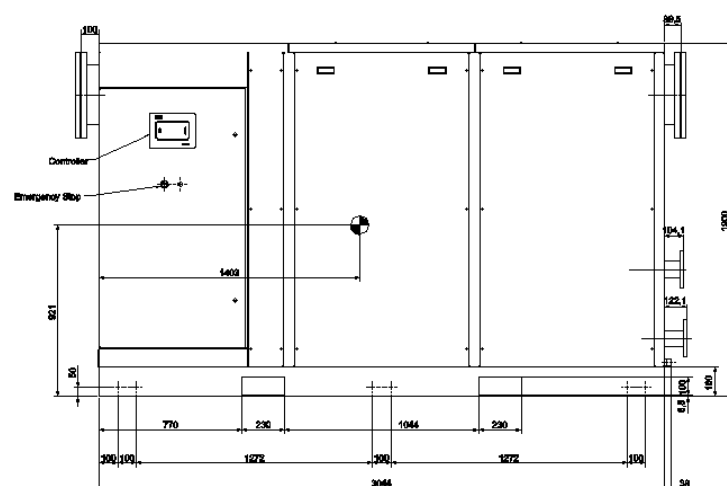
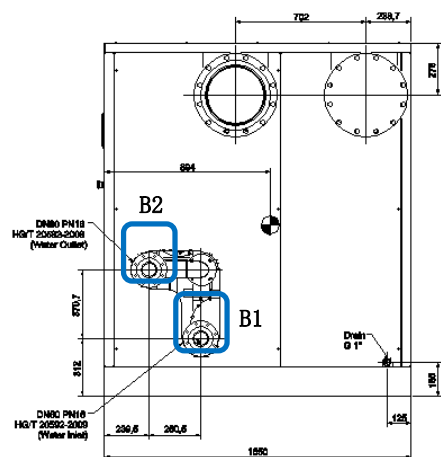
## Installation

### 3.1 Drawings showing dimensions

- A1: Compressed air inlet
- A2: Compressed air outlet
- B1: Cooling water inlet
- B2: Cooling water outlet

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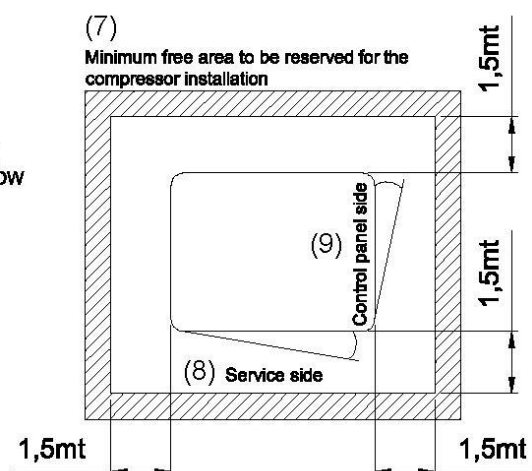
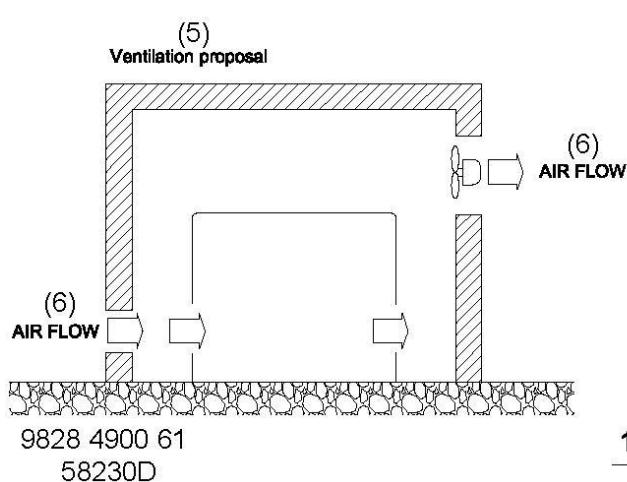
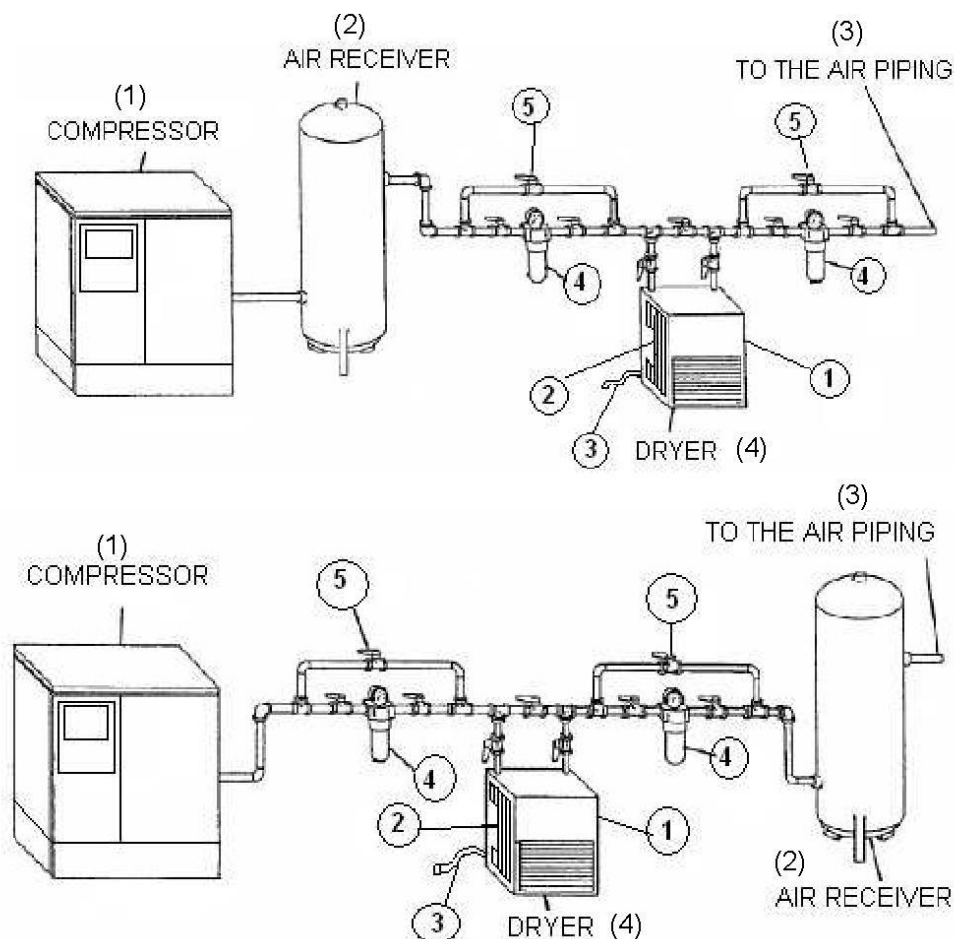


## 3.2 Installation recommendations



- To move the dryer use a fork lift truck.
- Do not use metal cables for lifting.
- Move the dryer gently.

### Example of compressor room




Reference	Designations
(1)	Compressors
(2)	Air receiver
(3)	To air line
(4)	Dryer
(5)	Ventilation proposal
(6)	Air Flow
(7)	Minimum free area to be reserved for the dryer installation
(8)	Service side
(9)	Control panel side

- **Air treatment with dryer downstream of the air receiver:** this can be used when the compressor runs constantly, and the cooling capacity of the dryer is equal to the air delivery of the compressor. Under this condition the load of the dryer is constant.
- **Air treatment with dryer upstream of the air receiver:** this can be used when the air demand is variable. For short periods the air demand is higher than the air delivery of the compressor; the air receiver must be large enough to meet the instant air demand recommended.

Reference	Designation
1	The refrigerant air dryer should be installed on a level floor suitable for taking the weight of the dryer.
2	Ventilation: the inlet grids and ventilation fan should be installed in such way that any recirculation of cooling air to the dryer is avoided. The maximum air velocity to the grids has to be limited to 5 m/s. The maximum allowable pressure drop over the cooling air ducts is 30 Pa. When 30 Pa is exceeded, a ventilation fan is needed at the outlet of the cooling air ducts. The condensate drain pipes must not dip into the condensate. Do not allow untreated condensate to enter the draining system.
3	Power supply cable to be sized and installed by a qualified electrician.
4	Optionally DD and PD filters can be provided. Filter, type DD for general purpose (optional). The filter traps solid particles down to 1 micron with a max. oil carry-over of 0.5 mg/m <sup>3</sup> . A high-efficiency filter, type PD (optional), may be installed downstream of a DD filter. This filter traps solid particles down to 0.01 micron with a max. oil carry-over of 0.01 mg/m <sup>3</sup> . If oil vapors and odors are undesirable, a QD type filter should be installed downstream of the PD filter.
5	It is recommended to install by-pass pipes over each filter and dryer together with ball valves in order to isolate the filters and/or dryer during service operations, without disturbing the compressed air delivery.

### 3.3. Electric cable size and setting of motor circuit breaker

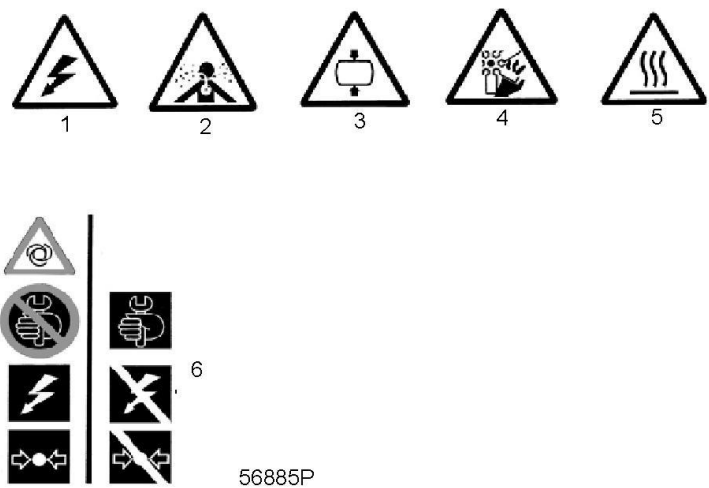
	Local regulations remain applicable if they are stricter than the values proposed. For 50 Hz dryers, the cable size is valid for cable PVC 70°C (158°F) at and ambient temperature of 40°C (104°F).
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#### Electrical data for 50-Hz dryers

Refer to section **Error! Reference source not found.** [Error! Reference source not found.](#) for details.



3.4 Symbols



Reference	Designations
1	Warning, voltage
2	Warning, air not suitable for breathing
3	Warning, high pressure
4	Warning, rotating fan
5	Warning, hot surface
6	Before beginning maintenance or repair work, disconnect the power supply and depressurize the dryer

### 3.5 Cooling water requirements

#### General

The cooling water must meet the requirements to avoid scaling, fouling, corrosion or bacterial growth. No general recommendation can cover all the effects of all combinations of different compounds, solids and gases (these substances are usually present in cooling water and will interact with different materials). Therefore, the recommendations given in our cooling water specifications are general guidelines for acceptable quality. However, where strict restrictions exist, descriptions are included.

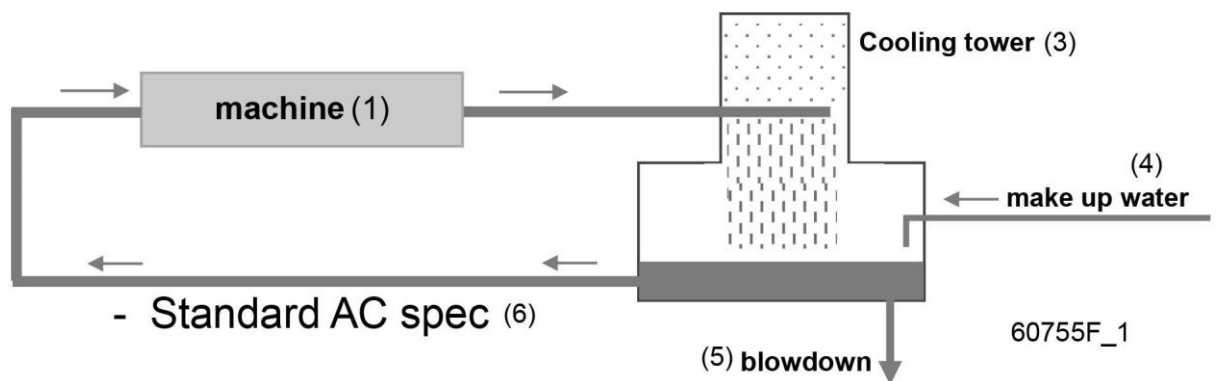
The requirements for water refers to water which has not been treated. Certain parameters change when water is treated. Water treatment should be performed by professional water treatment companies. These companies should be responsible for ensuring the performance of the treated cooling water and its compatibility with materials in the cooling circuit. This includes not only the selection of the appropriate additives, but also correct application, concentration and attribute monitoring, as well as the prevention of sludge formation and system maintenance. The above content is also applicable to treatment with any anti-icing products. When performing the above treatments, the appropriate stabilizers and inhibitors should be provided.

At the same time, the specifications are also determined by the following conditions:

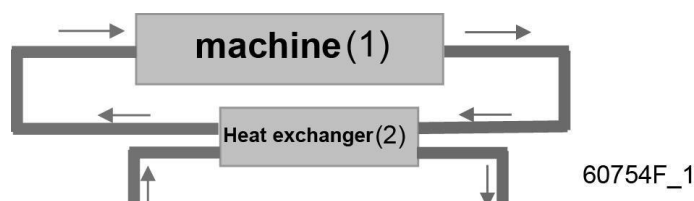
- **Cooling circuit type:**
  - **Open**
    - **Single pass**



- **Recirculating tower**



- **Closed**



Reference	Description
(1)	Machine
(2)	Heat exchanger
(3)	Cooling tower
(4)	Supplemental water
(5)	Water drain
(6)	Atlas Copco standard specification s

Atlas Copco can provide complete instructions on processing cold water data.

If the water specification does not match the recommended value or if you have any questions, please consult Atlas Copco.

### Technical specifications

	Parameter	Unit	Single pass (65°C/149°F)	Single pass (95°C/203°F)	Recirculation (65°C/149°F)	Closed system (65°C/149°F)	Closed system (95°C/203°F)
1	pH		6.8 – 9.3	6.8 – 9.3	6.8 – 9.3	7.5 – 9.3	7.5 – 9.3
2	Conductivity	µS / cm	< 1500	< 600	< 4000	< 1500	50 - 600
3	Total dissolved solids	mg/L	It is necessary to measure the total dissolved solids to calculate the RSI.				
4	Calcium hardness	ppm CaCO <sub>3</sub>	< 500	< 2	< 500	< 1000	< 50
5	Total alkalinity	ppm CaCO <sub>3</sub>	Limits are not indicated. It is necessary to measure this to calculate the RSI.				
6	Ryznar Stability Index (RSI)		5.6 - 7.5	—	5.6 - 7.5	5.6 - 7.5	5.6 - 7.5
7	Chloride	ppm	< 0.5	—	< 0.5	—	—
8	Chloride	ppm	< 500 (*)	< 100	< 500 (*)	< 500 (*)	< 100
9	Nitrate	ppm	Limits are not indicated. It is necessary to measure this to calculate the RSI.				
10	Sulphates	ppm	< 1000	< 200	< 1000	< 400	< 200
11	Chemical corrosion index		< 5	< 1	< 5	< 1	< 1
12	Iron	ppm	< 1	< 0.2	< 1	< 1	< 0.2
13	Manganese	ppm	< 0.2	< 0.05	< 0.2	< 0.2	< 0.05
14	Copper	ppm	< 1	< 0.2	< 1	< 1	< 0.2
15	Ammonia	ppm	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
16	Particulates (maximum 10µ)	ppm	< 10	< 1	< 10	< 10	< 1
17	Oil or grease	ppm	< 1	< 1	< 1	< 1	< 1
18	Biological	CFU / mL	< 10 <sub>5</sub>	< 10 <sub>3</sub>	< 10 <sub>5</sub>	< 10 <sub>3</sub>	< 10 <sub>3</sub>

Points to note regarding technical specifications

	Parameter	Points to note:
1	pH	For stainless steel systems that do not contain other materials, the pH may be as low as 6. For closed loop systems, the pH may be higher
2	Conductivity	Conductivity and total dissolved solids can be calculated by conversion factors (theoretical factors can be used, but it is recommended to perform at least one actual measurement)
6	Ryznar Stability Index (RSI)	Recommendation: refer to the RSI table
7	Chloride	Or shock treatment, daily treatment time is up to 30 minutes; the free chlorine content maximum is 2 ppm
8	Chloride	*) When RSI <5.6 or RSI > 7.5, the limit of 200 ppm is appropriate or use
10	Sulphates	Scrap when <2000 ppm. It is necessary to measure this to calculate the RSI.
11	Chemical corrosion index	Index = (chloride + sulphate + nitrate)/(M alkalinity) (units are meq/l)
15	Ammonia	For copper-free systems, this limit does not apply
16	Suspended particles (maximum 10 µ)	Particles > 10 µ are not permitted. (Do not consider particles < 0.5 µ).
18	Biological	Anaerobic organisms are absolutely never allowed in a closed system.

### Ryznar Stability Index (RSI)

The Ryznar Stability Index (RSI) is a parameter used to predict the tendency of calcium carbonate to precipitate or dissolve in water. The adhesion of scale and its effect vary with different substances, but the balance of water (scaling or corrosion) is only determined by its actual pH value and saturation pH value (pH<sub>s</sub>).

The saturation pH value is determined by the relationship between calcium hardness, total alkalinity, total solids concentration and temperature. The Ryznar Stability Index can be calculated by the following formula:

$$RSI = 2 \cdot pH_s - pH$$

Symbol	Description
pH	The measured pH of the water sample (at room temperature)
pH <sub>s</sub>	Saturated pH

pH<sub>s</sub> may be calculated with the following formula:

$$pH_s = (9.3 + A + B) - (C + D)$$

Symbol	Calculation
A	( <sub>10</sub> log (TDS) - 1) / 10
B	13.12 x <sub>10</sub> log(°C+273) + 34.55
C	<sub>10</sub> log(Ca <sub>2+</sub> ) - 0.4 (Ca <sub>2+</sub> CaCO represented in ppm)
D	<sub>10</sub> log (M alkalinity) (M-alkalinity represented as ppm CaCO)

## RSI and chloride limits

Single pass system

RSI	Chloride limit value	Water condition	Maximum temperature 65°C/ 149°F	Maximum temperature 95°C/203°F
RSI<3.9	200 ppm	Extremely severe scaling	Water cannot be used.	NA
4.0 < RSI < 5.5	200 ppm	Severe scaling	Requires regular control of scaling and scale removal Not recommended for baffle heat exchangers.	NA
5.6 < RSI < 6.2	350 ppm	Mild scaling	No water treatment required. Periodic inspections are recommended.	NA
6.3 < RSI < 6.8	500 ppm	Neutral water	No water treatment required. Periodic inspections are recommended	No water treatment required. Periodic inspections are recommended
6.9 < RSI < 7.5	350 ppm	Slightly corrosive	No water treatment required. Periodic inspections are recommended	No water treatment required. Periodic inspections are recommended
7.6 < RSI < 9.0	200 ppm	Rather corrosive	Requires regular control to avoid interruption of operation.	Requires regular control to avoid interruption of operation.
9.1 < RSI < 11	200 ppm	Extremely severely corrosive	Requires regular control to avoid interruption of operation.	Requires regular control to avoid interruption of operation.
RSI>11	200 ppm	Extremely severely corrosive	Requires regular control to avoid interruption of operation.	Requires regular control to avoid interruption of operation.

## Recirculation system, equipped with cooling tower

RSI	Chloride limit value	Water condition	Maximum temperature 65°C/149°F
RSI<3.9	200 ppm	Extremely severe scaling	Water cannot be used.
4.0 < RSI < 5.5	200 ppm	Severe scaling	Requires regular control of scaling and scale removal Not recommended for baffle heat exchangers.
5.6 < RSI < 6.2	350 ppm	Mild scaling	No water treatment required. Periodic inspections are recommended.
6.3 < RSI < 6.8	500 ppm	Neutral water	No water treatment required. Periodic inspections are recommended.
6.9 < RSI < 7.5	350 ppm	Slightly corrosive	No water treatment required. Periodic inspections are recommended.
7.6 < RSI < 9.0	200 ppm	Rather corrosive	Requires regular control Corrosion inhibitors are recommended.
9.1 < RSI < 11	200 ppm	Extremely severely corrosive	Requires regular control Corrosion inhibitors are recommended.
RSI>11	200 ppm	Extremely severely corrosive	Water cannot be used.

## 4 Maintenance

### Maintenance instructions

#### CAUTION

DXR type cooling dryers contain a Hydro-Fluorocarbon (HFC) refrigerant, R407C.

#### Safety Precautions

**When handling refrigerant R407C, 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 R407C is poisonous. Do not inhale refrigerant vapors. Check that the working area is adequately ventilated.
- When removing the side panels of the dryer, be aware that internal elements such as the pipes can reach a temperature of 110°C (230°F). Therefore, wait until the dryer has cooled down before removing the side panels.
- Before starting any maintenance or repair work, switch off the voltage and close the air inlet and outlet valves.

#### 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 should be checked once a year by an authorized control body.

#### General:

##### The following precautions must be taken:

- Keep the dryer clean.
- Inspect and clean the filter of the steam trap daily.
- Brush or blow off the finned surface of the condenser monthly

## Instructions for routine maintenance

High and Low Pressure Settings		
Refrigerant types	Low Pressure Range of Refrigerant（unit Mpa）	
R407C	0.39-0.5(Standard working condition)	
High and Low Voltage Protection Value		
Refrigerant types	Low Pressure Protection Value of Refrigerant(Automatic reset unit Mpa)	High Pressure Protection Value of Refrigerant(Manual reset unit Mpa)
R407C	0.37（Open）0.55（Close）	2.90（Air cooling）2.20（water cooling)
Contents		
Startup debugging	Make sure that all the pressures are within the set values in the table above (the cooling water inlet pressure of water-cooled units is not less than 0.3 Mpa, the temperature of outlet water is not higher than 32 ℃ and the temperature of inlet water is not higher than 5 ℃).	
Maintenance	Good maintenance of chiller is the guarantee of long-term stable operation of unit, and also reduces wear and prolongation of parts.	
	The premise of machine life, so please do the following maintenance on time:	
	Daily: Press manual test key of drainage valve to confirm normal drainage	
	Weekly: Clean drain valve filter ring	
	Monthly: Use compressed air to blow the fins from the motor direction (do not rinse with water)	
Leakage and replacement of spare parts	1. If the leakage causes the high-pressure protection of the machine or the high-temperature protection of the compressor, it is necessary to confirm whether the compressor oil stinks or deteriorates.	
	2. Any lack of refrigerant needs to check the leakage of the machine, find the leakage point and repair it. Make sure there is no pressure in the system before welding.	
	3. Replacement of spare parts (if any)	
	4. Pressure holding with refrigerant or helium after welding the leak point. Pressure holding time is not less than 4H.	
	5. Vacuum the machine after pressure holding. Vacuum time is not less than 4H for more than 20 cubic meters and 2H for less than 20 cubic meters.	
	6. Refrigerant filling (type, weight see nameplate)	
	7. Debugging machines according to high and low voltage setting table	

## 5 Controller

### 5.1. Control Panel



**Elektronik™ Touch Controller** 85199D

#### Introduction

The Elektronik™ controller has the following functions:

- Controlling the dryer
- Protecting the dryer
- Monitoring the components under maintenance conditions
- Automatic Restart After Voltage Failure (ARAVF)

#### Automatically controlling the dryer

The controller can automatically load and unload the compressor (for compressors running at constant speeds)

#### Protecting the compressor Shut-down

The dryer is equipped with multiple sensors. If one of the measured signals exceeds the pre-set shut-down criteria, the dryer will shut-down.

For example: if the outlet temperature of the refrigeration compressor inside the dryer exceeds the set shut-down criteria, the refrigeration compressor will stop running. This information will be displayed on the controller display.

The compressor will also stop running if the fan motor is overloaded



Please refer to the Safety Measures before troubleshooting. Before resetting the alarm or shut-down message, make sure you have resolved the issue. Frequent resetting of the message without troubleshooting may damage the compressor.



## Shut-down Warning

The shut-down alarm criteria can be set lower than the shut-down criteria.


If a measured value exceeds the set shut-down warning criteria, a message will appear on the display, and the general alarm indicator will light up to warn the operator before the shut-down criteria are met.

When the alarm condition disappears, the message will also disappear.

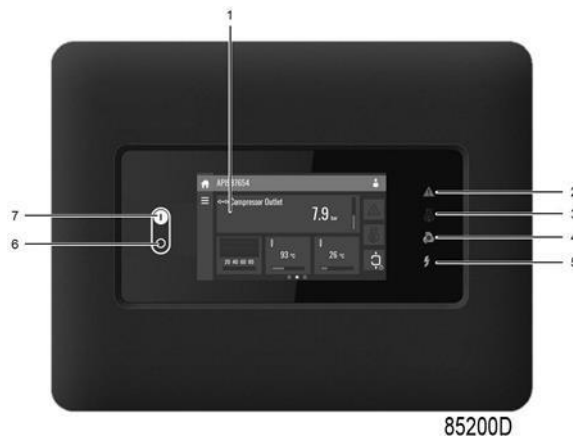
If the dew point temperature of the integrated dryer is too high, an alarm message will appear.

## Automatic Restart After Voltage Failure (ARAVF)

The controller has a built-in function that can automatically restart the compressor when the voltage is restored after a power failure. This function is not activated when the compressor is shipped from the factory. If necessary, this function can be activated. Please consult your supplier.

	<p>If this function has been activated, and the computer controller is in automatic operation mode, when the voltage supply to the module is restored, the compressor will automatically restart.</p> <p>An ARAVF label (see Icons) should be attached near the controller</p>
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## Control Panel























## Components and Functions















Reference	Name	Function
1	Touch screen	Displays the work status of the dryer along with navigation icons. Operations can be performed by touching the screen.
2	Warning indicator	This will flash when the machine shuts down. If an alarm condition exists, the indicator light will light up
3	Maintenance indicator	This will light when maintenance is required.
4	Running indicator	This indicator will light when the dryer is running.
5	Voltage indicator	This lights when a power supply is connected.
6	Stop (shut-down) button	This button stops the dryer.
7	Start button	This button starts the compressor. Running indicator (4) lights up. Controller works normally.

## All Icons Menu icons















Menu	Icon	Menu	Icon	Menu	Icon
Data	 85233D	Status	 85239D		
		Input	 85240D		
		Output	 85241D		
		Counter	 85242D		
		Auxiliary equipment parameters	 85243D	Frequency converter	 85251D
Maintenance	 85234D	Maintenance		Overview	 85252D
				Maintenance plan	 85253D
				Maintenance records	 85254D
		Maintenance functions	 85244D		
		Clear screen	 85302D		
Cycle timer	 85235D			Cycles	 85303D
				Remaining running time	 85304D
Event history	 85238D	Saved data	 85245D		







Menu	Icon	Menu	Icon	Menu	Icon
Machine settings	 85237D	Alarm	 85239D		
		Regulation	 85240D		
		Control parameter	 85241D		
		Auxiliary equipment parameters	 85242D	Frequency converter	 85251D
				Fan	 85255D
				Internal SmartBox	 85258D
		Automatic restart	 85243D		
Controller settings	 85238D	Network settings	 85246D	Ethernet settings	 85257D
				CAN settings	 85258D
		Localization	 85247D	Language	 85259D
				Date/Time	 85260D
				Unit	 85261D
		User Password	 85248D		
		Help	 85249D		
		Information	 85250D		

## Status Icons






Icon	Description
 85262D	Machine stops running
 85263D	Waiting to stop running the machine
 85264D	Unloading operation
 85265D	Manual unloading
 85266D	Waiting for manual unloading
 85267D	Currently loading
 85268D	Loading failure
 85269D	Waiting for loading operation
 85270D	Manual stop
 85271D	Local machine control mode
 85272D	Remote machine control mode
 85273D	Local area network machine control mode
 85274D	Automatic restart after voltage failure
 85275D	Cycle timer active


## System Icons

Icon	Description
 85276D	Basic user
 85277D	Advanced user
 85278D	Atlas Copco Service
 85279D	Antenna 25%
 85280D	Antenna 50%
 85281D	Antenna 75%
 85282D	Antenna 100%
 85283D	Switch screen (indicator)
 85284D	Energy recovery
 85285D	Dryer
 85286D	Main compressor machine
 85287D	Drainage device
 85288D	Analogue output
 85289D	Menu

Icon	Description
 85290D	Reset
 85291D	Automatic restart
 85292D	Filter
 85293D	Cooler
 85294D	Valve
 85295D	Dynamometer

### Input Icons

Icon	Description
 85296D	Pressure
 85297D	Temperature
 85298D	Special protection
 85299D	Turn on
 85300D	Turn off

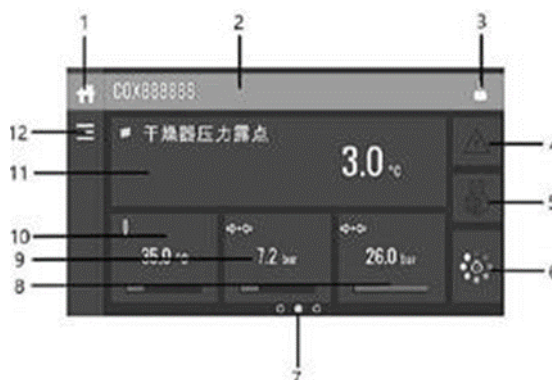
	This section gives an overview of the available icons. Not all icons mentioned are applicable to every machine.
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## Home Screen

### Function

The home screen is displayed automatically when the power is turned on. If there are no touch inputs, it will automatically turn off after a few minutes.

### Description



Reference	Name	Function
1	Home button	The home button is always shown and you can press it at any time to return to the home screen.
2	Screen information	The screen information bar on the home screen displays the serial number of the machine. When scrolling through menus, it will display the name of the current menu.
3	Access level button	The access level button is always displayed. You can change the current user access level by tapping it.
4	Alarm button	You can tap on the alarm button to show the current alarms. If an alarm occurs, the icon on the button will be red.
5	Maintenance button	You can tap the maintenance button to display maintenance information.
6	Compressor status	This icon shows the current status of the dryer.
7	Page indicator	Shows the page you are currently viewing. The home screen is shown in the middle, the menu screen is shown on the left, and the quick access screen is shown on the right. Swipe left or right to enter a different screen.
Reference	Name	Function
8, 9, 10, 11	These areas may contain historical graphs, inputs, or counter values, depending on the type of machine.	Tap the corresponding area to see the measurement type. This will then be displayed in the information bar. Input example: Ambient temperature Compressor outlet • Example of dryer dew point counter: Operating time Load relay Load time
12	Menu button	The menu button is always shown and you can press it at any time to return to the menu.

## Quick Access Screen

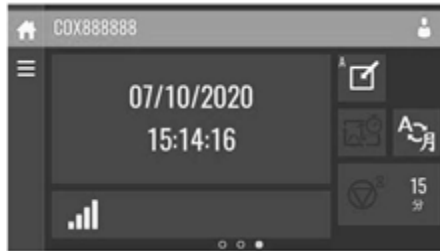
### Function

This screen is used to quickly access some frequently used functions

### Procedure


You can view the quick access screen by swiping left from the home screen.

### Description



Several important settings can be viewed and modified through this screen.

Function	Description
Set value	Several set values can be modified by tapping this icon.
Control mode	The control mode can be changed by tapping this icon. Local control using the start/stop button Remote control via digital inputs LAN control via the internet. When in remote or LAN control mode, the start/stop button on the controller will not work.
Display language	You can change the display language of the controller by tapping this icon.
Cycle timer	The cycle timer can be set by tapping this icon.
Remaining running time	The remaining running time can be set and modified by tapping this icon.

Function	Description
Internal SmartBox	Allows the reception quality from the internal antenna to be monitored.   Each grid represents 25% of reception strength. If all four grids are full, the reception is 100%. If only one grid is full, the reception is only 25%.
Automatic restart	Automatic restart is realized by tapping this icon.



## Menu Screen

### Function

This screen is used to display different menus where settings can be viewed or displayed.

### Procedure

The menu screen can be viewed by tapping the menu button or swiping to the right from the home screen

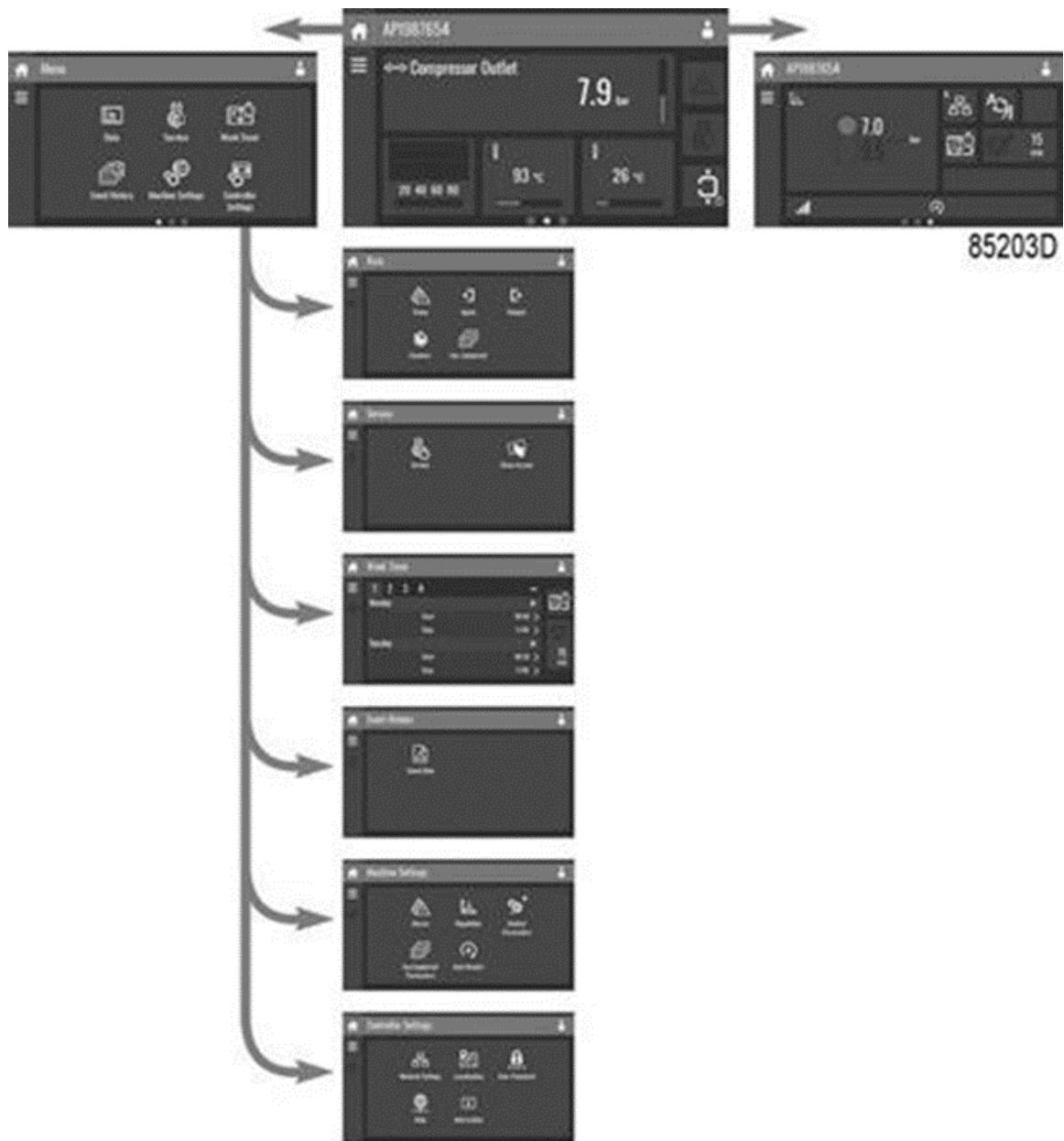
### Description



Reference	Name	Function
(1)	Data	The data menu contains dryer status information and information about the inputs, outputs and counters. Auxiliary equipment may be viewed through this menu.
(2)	Maintenance	The maintenance menu contains maintenance information. The Clear Screen function can be used to clear the screen.
(3)	Cycle timer	Multiple cycle timers and remaining running time can be set through this menu.
(4)	Event history	If an alarm occurs, dryer status information will be saved, and can be viewed through this menu.
(5)	Machine settings	The alarm settings, adjustment settings and control parameters can be changed through this menu. The auxiliary equipment parameters can also be changed through this menu. Automatic restart function can be set through this menu. This feature is password protected.
(6)	Controller settings	The network settings, localization settings and user passwords can be set through this menu. A help page is also provided which can display controller information.

## Menu structure

The controller can be operated by sliding on the screen and tapping the icons or menu items



This is the main menu structure. Based on the individual configuration, the menu structure may be different.

## Data menu

### Function

This screen is used to show the following sub-menus:

- Status
- Input
- Output
- Counter
- Auxiliary equipment

These sub-menus can be entered by tapping the icons.

## Procedure

### To enter the data menu screen:

1. Tap the menu button
2. Tap the data icon

Description




Reference	Name
(1)	Status menu
(2)	Input menu
(3)	Output menu
(4)	Counter menu
(5)	Auxiliary equipment menu
(6)	Internal data menu

Status menu

Tap the status icon to enter the status menu.



This menu will display the current status of the refrigeration dryer.  
If an alarm is active, it can be viewed by tapping on the alarm information. To reset the alarm, tap the reset button (1).



Please refer to the Safety Measures before troubleshooting.  
Before resetting the alarm or shut-down message, make sure to resolve this issue Frequent resetting of this message without troubleshooting may damage the compressor

Input menu

Tap the input icon to enter the input menu



The menu will show information about all the inputs.

Output menu

Tap the output icon to enter the output menu

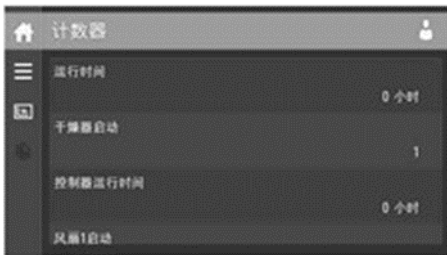


The menu will show information about all the outputs

	Passive outputs can only be used to control or monitor functional systems. They should not be used to control, switch or interrupt any safety-related circuits. Check the maximum allowable load on the label.
	Before connecting any external equipment, stop the compressor and cut off the power supply. Make sure to read the Safety Measures.

Counter menu

Tap the counter icon to enter the counter menu.



This menu shows an overview of all the actual hours and counters of the dryer and controller

Auxiliary equipment menu

Tap on the auxiliary equipment icon to enter the auxiliary equipment menu



This menu shows an overview of all installed auxiliary equipment.

## Maintenance Menu

### Function

This screen is used to show the following sub-menus:

- Maintenance
- Maintenance functions (only visible to advanced users)
- Clear screen

These sub-menus can be entered by tapping the icons.

## Procedure

To enter the maintenance menu screen:

- Tap the menu button
- Tap the maintenance icon

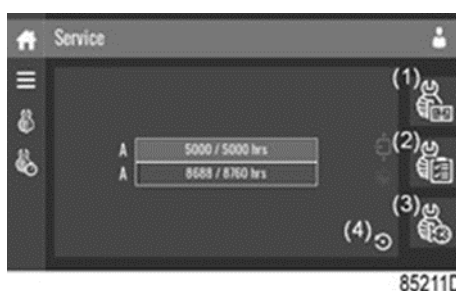
## Description



Reference	Name
(1)	Maintenance
(2)	Maintenance functions (only visible to advanced users)
(3)	Clear screen

## Maintenance menu

Tap the maintenance icon to enter the maintenance menu.



This menu shows the remaining running time and remaining real-time number of hours until the next maintenance. The first line (A) shows the running time before the first maintenance is required (green), and the second line displays the real-time number of hours (blue).

The maintenance overview can be reviewed by tapping icon (1).

The maintenance plan can be reviewed by tapping icon (2). The maintenance plan can be modified through this menu:

1. Tap on the required maintenance plan. A selection screen will pop-up.
2. Change the running time by tapping + or -.
3. Tap V to confirm or tap X

### Maintenance history can be viewed by tapping icon (3).

When the interval time in the maintenance plan has been reached, a message will be shown on this screen. After performing maintenance, the maintenance timer can be reset by tapping the reset button (4).

Maintenance functions (only visible to advanced users)

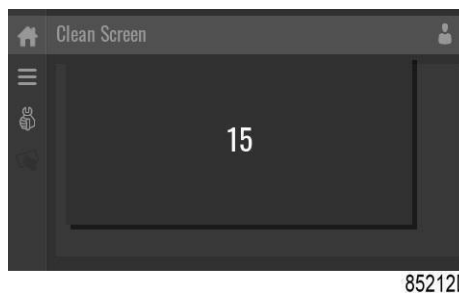
Tap the maintenance functions icon to enter the maintenance functions menu



Depending on the machine, this menu includes a range of different functions. Many functions are password protected as they can only be accessed by authorized personnel.

### Clear screen

Tap the clear screen icon to start a 15-second countdown which will be followed by the touch screen being cleared.



The touch screen and start and stop buttons will remain inactive for 15 seconds.

### Cycle Timer Menu

#### Function

This screen is used to set up to 4 cycle timers; each timer has up to 8 settings per day. The cycle timers can be activated from this screen.

The remaining running time can be set from 5 to 240 minutes.

#### Procedure

To enter the cycle timer menu screen:

1. Tap the menu button
2. Tap the cycle timer icon

#### Description



Reference	Name	Function
(1)	Add or select cycle	If the set time is less than 4 cycles, tap + to add one cycle.
(2)	Remove cycle	Tap to remove a cycle set in the cycle timer
(3)	Activate cycle timer	A selection screen will pop-up. The user can tap + or - to select the correct number of cycles, and tapping V will confirm, or the user can tap X to cancel.
(4)	Remaining running time	A selection screen will pop-up. The user can tap + or - to select the correct number of cycles, and tapping V will confirm, or the user can tap X to cancel.
(5)	Add settings	A selection screen will pop-up. Users can swipe up or down to change the setting, and tapping V will confirm or the user can tap X to cancel.

## Historical Event Menu

### Function

This screen is used to show the data saved when an alarm occurs. These sub-menus can be entered by tapping the icons.

### Procedure

To enter the event history menu screen:

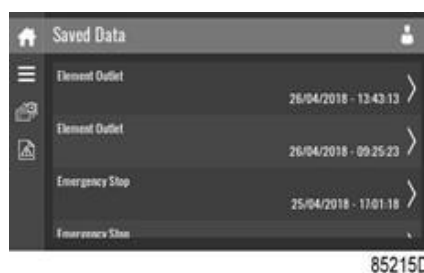
1. Tap the menu button
2. Tap the event history icon Description



Reference	Name
(1)	Saved data

## Saved data

Click the saved data icon to enter the saved data menu.



Scroll through the menu items by swiping up and down through this list. The date and time of the event are shown on the right side of the screen. Tap an item in the table to learn more about the state of the compressor when a shut-down occurred.

Machine Settings Menu

- Function
- This screen is used to show the following sub-menus:
- Alarm
  - Regulation
  - Control parameter

- Only visible when the machine comes with adaptive parameters.
- Auxiliary equipment parameters
  - Automatic restart

These sub-menus can be entered by tapping the icons. Procedure  
To enter the machine settings menu screen:

1. Tap the menu button
2. ap on the machine settings icon Description



Reference	Name
(1)	Alarm menu
(2)	Regulation menu
(3)	Automatic restart menu
(4)	Auxiliary equipment parameter menu

Alarm Menu

Tap the alarm icon to enter the alarm menu.



At this time, a list of all alarms will be shown.  
When an item is tapped, the warning and/or shut-down criteria for this alarm will be displayed.

Regulation menu

Tap the regulation icon to enter the regulation menu.



The set values or pressure range can be modified through this menu.



### Modify Settings

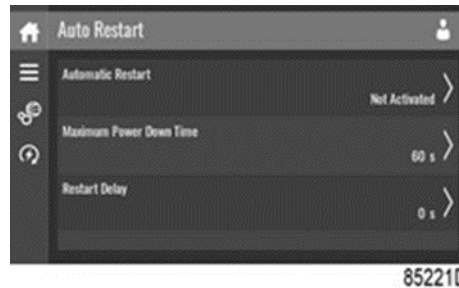
When a list item is tapped, a selection screen will pop-up. Users can modify settings by tapping - or +, and tapping V to confirm, or the user can tap X to cancel.

### Change Selection

When a list item is tapped, a selection screen will pop-up. Users can swipe up or down to change the selection, and tapping V will confirm or the user can tap X to cancel

### Automatic restart menu

Tap the automatic restart icon to enter the automatic restart menu.



The automatic restart can be activated through this menu. Activation of this feature is password protected. Automatic restart settings can be changed.

### Input Password

When a password-protected item is tapped, a selection screen will pop-up. The user can swipe up or down to select the desired numbers to enter the password. After entering 4 digits, the user can tap V to confirm or X to cancel.

### Modify Settings

When a list item is tapped, a selection screen will pop-up. Users can modify settings by tapping - or +, and tapping V to confirm, or the user can tap X to cancel.

### Controller Settings Menu

Function

This screen is used to show the following sub-menus:

- Network settings
- Localization
- User Password
- Help
- Information

These sub-menus can be entered by tapping the icons.

### Procedure

To enter the controller settings menu screen:

1. Tap the menu button
2. Tap on the controller settings icon

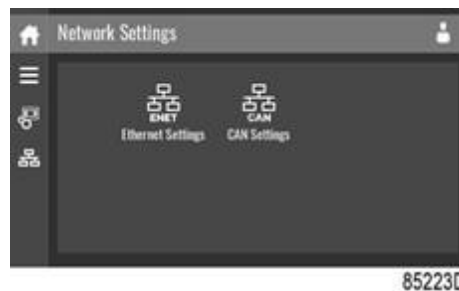
### Description



Reference	Name
(1)	Network settings menu
(2)	Localization menu
(3)	User password menu
(4)	Help menu
(5)	Information menu

## Network Settings Menu

Tap on the network settings icon to enter the network settings menu.



## Ethernet Settings

A list of Ethernet settings will be shown at this time. When the Ethernet is off, the settings can be modified.

## CAN Settings

- The CAN settings will be shown.
- When CAN is off, the settings can be modified. Modify settings

When a list item is tapped, a selection screen will pop-up. Users can modify settings by tapping - or +, and tapping V to confirm, or the user can tap X to cancel.

Change selections

When a list item is tapped, a selection screen will pop-up. Users can swipe up or down to change the selection, and tapping V will confirm or the user can tap X to cancel.

## Localization menu

Tap the localization icon to enter the localization menu.



## Language

The language settings of the controller can be modified through this menu. Date/Time The date and time settings of the controller can be modified through this menu. Unit The displayed units can be modified through this menu. Modify settings

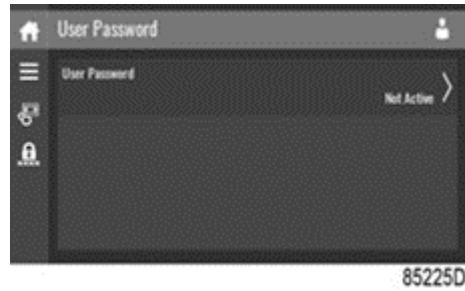
When a list item is tapped, a selection screen will pop-up. Users can modify settings by tapping - or +, and tapping V to confirm, or the user can tap X to cancel.

Change selections

When a list item is tapped, a selection screen will pop-up. Users can swipe up or down to change the selection, and tapping V will confirm or the user can tap X to cancel.

### User password menu

Click the user password icon to enter the user password menu



User passwords can be activated or stopped through this menu. Enter and confirm the user password to activate, and repeat this operation to deactivate the password. Input password  
When a password-protected item is tapped, a selection screen will pop-up. The user can swipe up or down to select the desired numbers to enter the password. After entering 4 digits, the user can tap V to confirm or X to cancel.

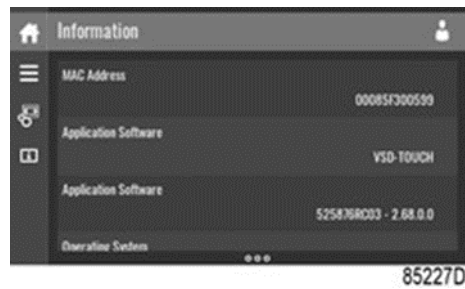
### Help Menu

Tap the help icon to enter the help menu.



This menu can display information such as the supplier's webpage, help centre phone number, or other useful information menu

Tap the information icon to enter the information menu.



This menu shows information about the controller.

### Access Levels

#### Function

Through this pop-up, the access level settings can be viewed or changed.

#### Procedure

The access level can be viewed or changed by tapping the access level button in the upper right corner of the screen.

## Description



Reference	Name	Function
(1)	User	Basic parameters can be browsed without a password.
(2)	Maintenance	Basic parameters can be modified without a password.
(3)	Full	End users cannot obtain this access level.
(4)	Refuse	Tap here to refuse the selected user level.
(5)	Confirm	Tap here to confirm the selected user level.

### Maintenance access levels





Tap the maintenance access level icon (1) and confirm (2).



The screen information bar (1) now displays the current status of the compressor instead of the machine's serial number.  
 The received signal strength indicator (RSSI) value is now displayed in the internal SmartBox menu.  
 View the Quick Access Screen In the maintenance menu, an additional menu item is now available.  
 Please read the Maintenance Menu

## 5.2. Start-up

	To ensure ideal working performance, do not press the dryer switch (S1) repeatedly in a short period of time. After stopping, wait at least 5 minutes to allow the pressure to equalize; then start the dryer again.
	To keep the compressed air network free of condensate, start the dryer first and then the compressor, stop the compressor first and then stop the dryer.

### Process

#### Checks /Preparation Before Start-up


1. The cold-drying machine room is well ventilated, and the maximum/minimum temperature of the room do not exceed the limits of the machine (refer to the technical parameters for details);
2. Do not operate the machine under conditions outside the limits. (Found in the technical parameters)
  - Low load limits/working conditions
  - Water cooling - intake air temperature  $\geq 206^{\circ}\text{C}$ ; water temperature  $\geq 5^{\circ}\text{C}$
  - High load limits/working conditions
  - Water cooling - intake air temperature/reference technical parameters; water temperature  $\leq 35^{\circ}\text{C}$
3. Any operating conditions exceeding the above may cause equipment damage or personal injury
4. Note: Please keep the box plate of air-cooled models intact and free of any damage during operation, so as to avoid abnormal operation of the machine due to the incomplete/open box plate
5. The cooling water pressure/temperature meets the requirements; the water pressure is 3-5.5 bar; the water temperature is below 35 degrees, and the flow meets the requirements (water-cooled unit)
6. Install stop valves and pressure gauges on the cooling water inlet and outlet pipelines (water-cooled units)
7. Install an inlet filter on the cooling water inlet pipeline (water-cooled units)
8. The connections of the air inlet and outlet pipes of refrigeration dryers must be not create stress for the system
9. The connections of the water inlet and outlet pipes of refrigeration dryers must not create stress for the system (water-cooled units)
10. The pipe diameter of external pipes connected to the refrigeration dryer must not have less than the standard interface pipe diameter of the refrigeration dryer
11. Are the external pipes connected to the dryer clean (no dust, oil, liquid water)
12. The upstream and downstream pipelines of the refrigeration dryer need to be installed with dust/oil filters (refer to the manual)
13. The condensate drain must discharge without any pressure. It is recommended to make an open drainage ditch (to ensure smooth drainage and so that it is easy to observe)
14. In order to prevent liquid water from entering the refrigerated dryer, a WSD or gas storage tank must be installed between the compressor and the refrigerated dryer; if a gas storage tank is installed, it must be equipped with a drain valve at the bottom
15. It is recommended to install a bypass pipeline for the air duct of refrigeration dryers; a pipeline filter is also recommended for the by-pass pipeline
16. If multiple air compressors are arranged in a parallel for general pipelines for multiple refrigeration dryers, measures to ensure uniform flow distribution should be considered (uneven air flow distribution can cause the performance of the refrigeration dryer to decrease)
17. The customer must have a power supply that allows the operation of the refrigerated dryer (the voltage fluctuation range shall not exceed 5% of the nominal voltage); the electrical configuration must meet the national standard specifications, and the customer's grounding terminal must be connected to the grounding system of the refrigerated dryer


18. Layout of air compressor station (3.2 is recommended)
19. Are all pipe inlets and outlets of the air compressor and dryer properly connected, as well as water inlets and outlets

### 5.3. Running

- Pressure dew point indicator on the control panel. If the intake conditions or volume flow rate are different from the rated value, the pressure dew point will deviate from the rated value.
- Condensate is discharged through the condensate outlet. The number of outlets depends on the operating conditions.

### 5.4. Shut-down

	<p>To ensure ideal working performance, do not press the dryer switch (S1) repeatedly in a short period of time. After stopping, wait at least 10 minutes to allow the pressure to equalize; then start the dryer again. Before water-cooled models are shut down for a long time, or if the ambient temperature may be lower than 0 degrees Celsius, empty all cooling water from the cooling water pipeline.</p>
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	<p>To keep the compressed air pipe network free of liquid condensate When starting up the system, start the dryer first and then start the air compressor. When shutting down, first stop the air compressor and then stop the dryer.</p>
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Steps	Operations
1	Close the inlet and outlet valves on the air-side of the dryer (installed by the customer).
2	Turn off the dryer switch
3	If provided, open the dryer bypass valve

## 6 Troubleshooting

### 6.1. Problem Solving

#### CAUTION

	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 during maintenance or repair
	Before carrying out any maintenance or repair work on the dryer: <ul style="list-style-type: none"> <li>• <b>Close air inlet and outlet valve of the dryer.</b></li> <li>• <b>Press the test button on the electronic condensate drain.</b></li> <li>• <b>Move dryer on/off switch to position 0.</b></li> <li>• <b>Switch off the voltage. See section 4.4 Error! Reference source not found..</b></li> <li>• <b>Open the isolating switch to prevent an accidental start</b></li> </ul>
	The air inlet and outlet valve can be locked during maintenance or repair work as follows: <ul style="list-style-type: none"> <li>• <b>Close the valve.</b></li> <li>• <b>Using a wrench, remove the screw fixing the handle.</b></li> <li>• <b>Lift the handle and turn it until the slot of the handle fits over the blocking edge on the Valve body.</b></li> <li>• <b>Fit the screw</b></li> </ul>

#### Faults and remedies

	Condition	Fault	Remedy
1	Pressure dew-point 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	Increasing the 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	<ul style="list-style-type: none"> <li>• <b>Check the current (refrigerant compressor stops or shuts down).</b></li> <li>• <b>Refrigerant compressor blows out.</b></li> </ul>
		Evaporator pressure too high	<ul style="list-style-type: none"> <li>• <b>Check that the LAT sensor is in the correct position.</b></li> <li>• <b>Bad conditions of customer.</b></li> <li>• <b>HGB valve need close a bit.</b></li> <li>• <b>Check low pressure, if lower than specifications, need charge more Freon.</b></li> </ul>
		Condenser pressure	<ul style="list-style-type: none"> <li>• <b>Check if, Ambient</b></li> </ul>

	Condition	Fault	Remedy
		too high	<b>Temperature is higher than specifications</b> <ul style="list-style-type: none"> <li>• <b>Check if Fan does not operate</b></li> <li>• <b>Check high pressure, if higher than specifications, need charge more Freon</b></li> </ul>
2	Condenser pressure 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 the condenser
3	Compressor stops or does not start	Electric power supply to compressor is interrupted	Check and correct as necessary
		Thermic protection of refrigerant compressor motor has tripped	Reset thermostatic protection
		Restart of the dryer has been too fast, not enough time for pressure balancing	Wait a few minutes and restart
		High-pressure switch that can be manually reset is activated	Reset switch
4	The Condensate drain remains inoperative	Drain system clogged	Have system checked
		Filter upstream of the solenoid valve clogged	Check filter
		Timer or solenoid exhaust valve out of order	Check timer and solenoid valve
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	<ul style="list-style-type: none"> <li>• <b>Check Ambient Temperature, if higher or lower than specifications.</b></li> <li>• <b>Check if Fan is not operating or running all the time</b></li> <li>• <b>Check the pressure</b></li> </ul>
		Shortage of refrigerant	Have circuit checked for leaks and recharged



## 7 Technical data (for Standard Working Conditions)

Specification	Unit	Value			
		DXR2500W-A	DXR3000W-A	DXR3480W-A	DXR3960W-A
Compressed air inlet pressure	bar	7	7	7	7
Ambient air temperature	°C	40	40	40	40
Compressed air inlet temperature	°C	40	40	40	40
Cooling water inlet temperature	°C	32	32	32	32
Pressure dew point	°C	10	10	10	10
Cooling water flow	(L/Min)	350	416.7	533.3	583.3

### Operating limits

Specification	Unit	value
		DXR2500W-A~~ DXR3960W-A
Maximum compressed air inlet pressure	bar(e)	10
Maximum ambient temperature	°C	45
Minimum water inlet temperature	°C	5
Maximum water inlet temperature	°C	35
Minimum ambient temperature	°C	5
Maximum compressed air inlet temperature	°C	55

### Performance data\*

Specification		Unit	Value			
			DXR2500W-A	DXR3000W-A	DXR3480W-A	DXR3960W-A
Volumetric flow through dryer inlet		l/s	4170	5000	5840	6650
		m³/h	15000	18000	21000	24000
Refrigerant type			R407C	R407C	R407C	R407C
Weight (net weight)		kg	1700	1900	2100	2300
Exterior dimensions	Length	mm	2600	2600	3300	3300
	Width	mm	1650	1650	1650	1650
	Height	mm	1900	1900	1900	1900

### Electrical data

- Maximum condition(power)
  - Ambient temperature 45°C; inlet temperature 55°C)
  - Water cooling
    - Eva. Temp. 12°C
    - Con.Temp. 55°C
- Rated condition(power)
  - Ambient temperature 40°C; inlet temperature 40°C)
  - Water cooling
    - Eva. Temp. 5°C
    - Con.Temp. 40°C

Specification	Unit	DXR2500W-A	DXR3000W-A	DXR3480W-A	DXR3960W-A
Voltage	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50
Maximum power	W	42400	42400	52600	60600
Maximum current	amps	86	94.3	82.8	94.8
Rated power	W	29000	30300	35600	41800
Rated current	amps	58.8	61.5	73.1	88.3

### Pipe Connections

Specification	Value			
	DXR2500W-A	DXR3000W-A	DXR3480W-A	DXR3960W-A
Gas connections	DN250 flange	DN250 flange	DN300 flange	DN300 flange
Cooling water connection	DN65 flange	DN65 flange	DN80 flange	DN80 flange

[illegible]





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