NANO
Refrigerant dryer

DXR246 VSD W-A, DXR360 VSD W-A
DXR450 VSD W-A, DXR510 VSD W-A

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Instruction book

Original instructions

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1. Safety precautions

1.1 Safety symbols

Explanation,

	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
- Stop the dryer and Press the emergency stop button (If yes)
- Switch the power off
- Depressurize the compressed air circuit
- 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 dryer 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.

	Also consult following safety precautions: **Error! Reference source not found.** and **Error! Reference source not found.**. 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

	The manufacturer assumes no responsibility for equipment damage or personal injury caused by neglecting precautions or by non-compliance or careless installation, operation, maintenance and repair, even if not expressly stated.

Precautions during operation

1. Never touch any piping or components of the dryer 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

	Also consult the following safety precautions: **Error! Reference source not found.** and **Error! Reference source not found.**. 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. 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 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 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 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.

	Also consult following safety precautions: **Error! Reference source not f ound.** and **Error! Reference source not found.** 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.

2. General instructions

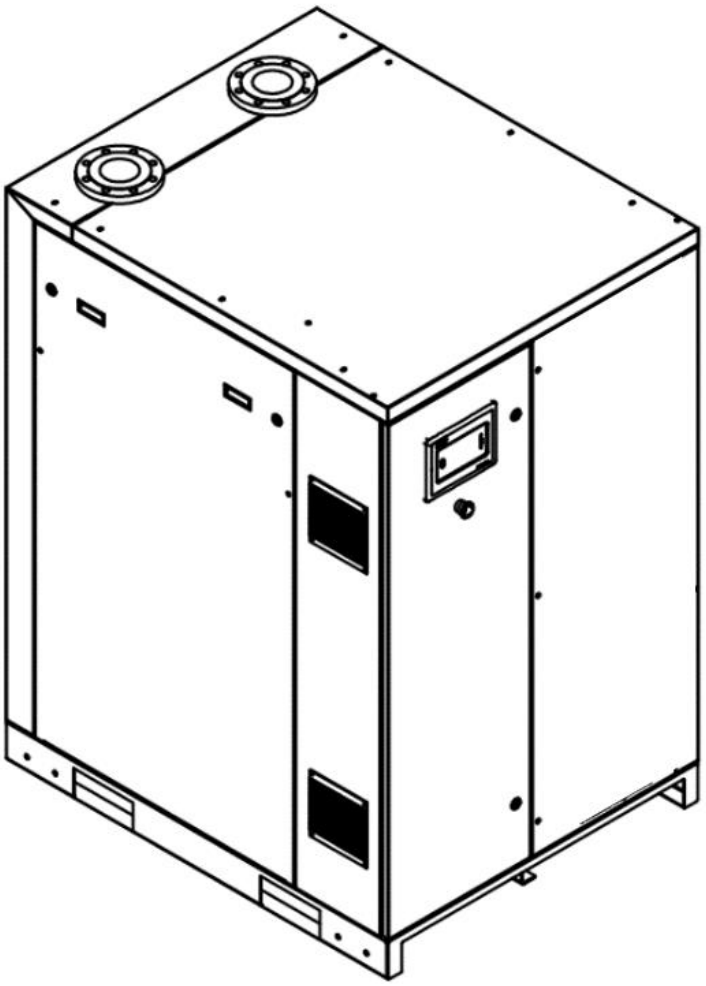
2.1 Introduction

The refrigeration dryer removes water vapor from the compressed air by cooling the air down to a level close to the dew point. Water vapor then condenses and is automatically discharged through the drain valve. The compressed air then leaves the dryer after being reheated.

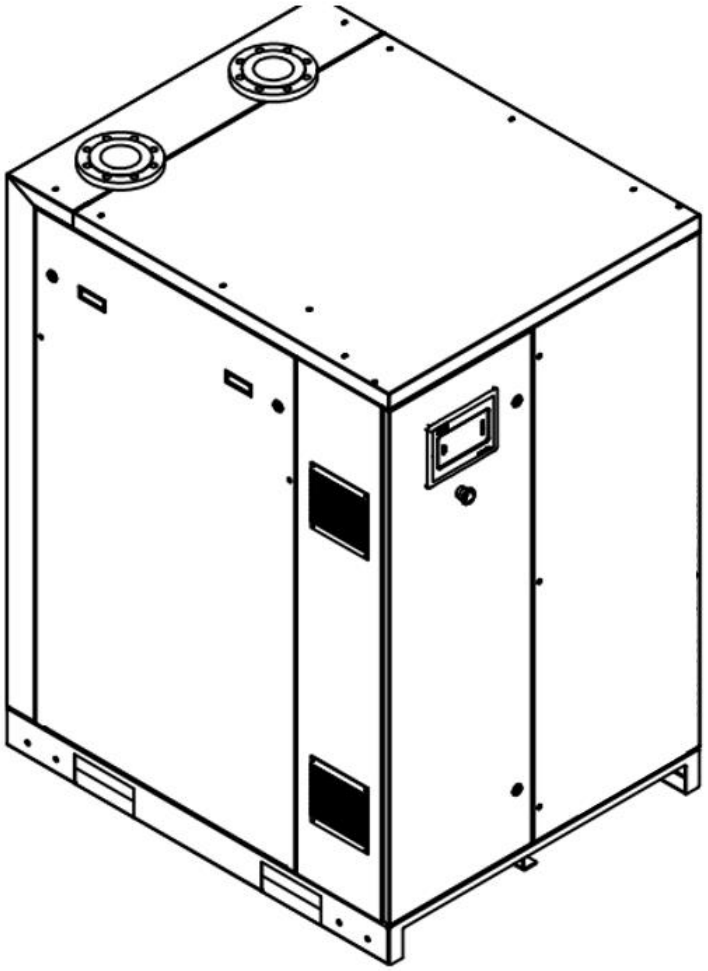
In the air-cooled refrigeration dryer, the condenser fan on/off function is controlled by a pressure sensor.

In the water-cooled refrigeration dryer, the pressure of the condenser is regulated by the regulating valve on the condenser outlet pipe.

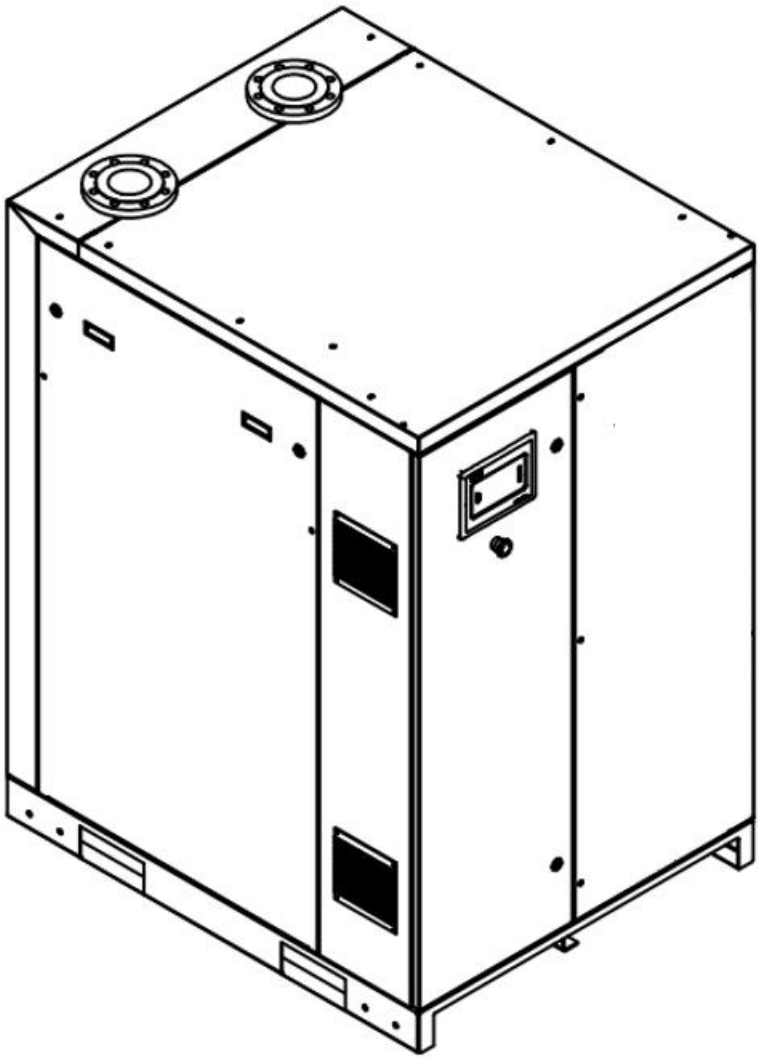
General view



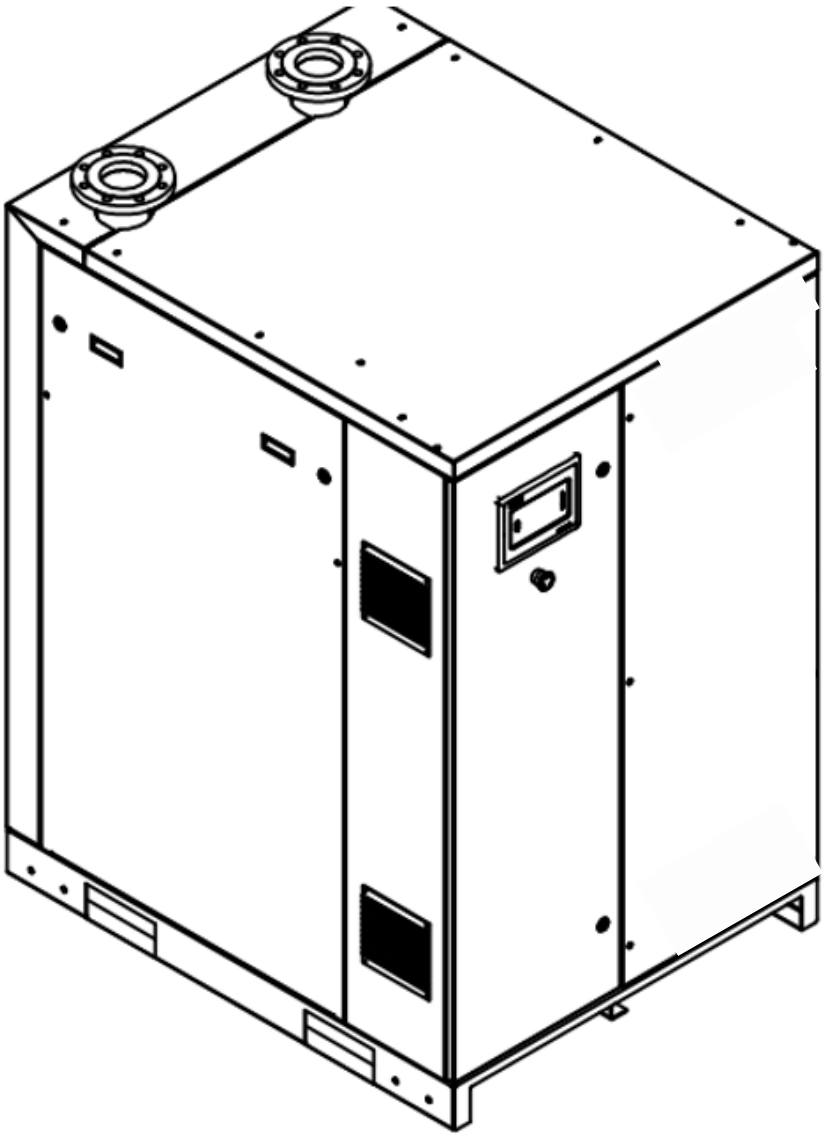
DXR246 VSD W-A



DXR360 VSD W-A



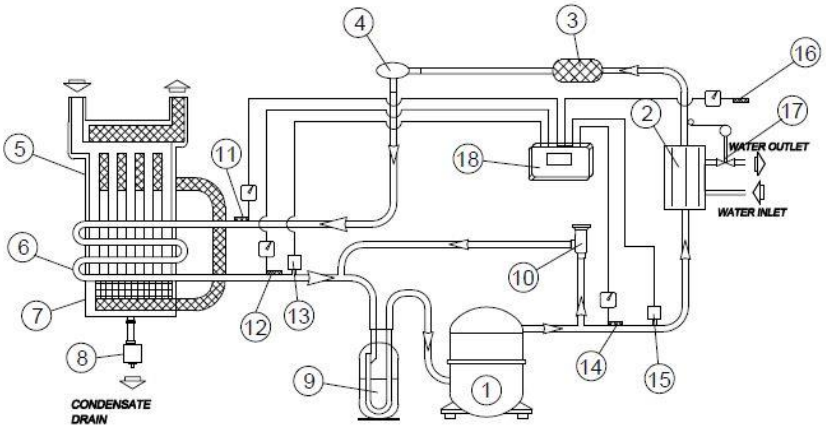
DXR450 VSD W-A



DXR510 VSD W-A

2.2 Process

2.2.1.Diagram of process



DXR246 VSD W-A~~DXR510 VSD W-A

Reference	Designations
1	Refrigerant compressor (VSD)
2	Water-cooling condenser
3	Dryer filter
4	Thermostatic expansion valve
5	Air-to-air pre-cooling heat exchanger
6	Evaporator
7	Water separators
8	Drain valve
9	Liquid-gas separator
10	Hot-gas by-pass valve
11	Dew point temperature sensor
12	Evaporating temperature sensor
13	Evaporating pressure sensor
14	Compressor exhaust temperature sensor
15	Condensation pressure sensor
16	Ambient temperature sensor
17	Water flow regulating valve
18	controller

2.2.2. Dryer system

Compressed air enters the heat exchanger (5) and is cooled by the outgoing cold, dried air. Water vapor in the compressed air begins to condense and the air flows through the evaporator (6), where the refrigerant evaporates and absorbs heat, allowing the compressed air to cool further until it reaches the evaporating temperature of the refrigerant. More water condenses from the air. The cooling air flows through the separator (7), where all condensate is separated from the air and automatically discharged through the drain valve (8).

After drying, cold compressed air flows through the heat exchanger (5) and is heated by hot air entering the dryer to around 5˚C (18˚F) lower than the air entering the compressor.

Condensation in the air net cannot occur unless the air is cooled to below the pressure dew point indicated on the control panel.

2.2.3. Refrigeration system

The compressor (1) drives high temperature, high pressure refrigerant gas through the water-cooled/air-cooled condenser (2), where the refrigerant gas condenses into liquid refrigerant. The liquid refrigerant flows through the dryer filter (3) to the expansion valve (4). After passing through the thermostatic expansion valve (4), the two-phase refrigerant is low-temperature and low-pressure. The two-phase refrigerant then enters the evaporator (6), where it absorbs heat from the compressed air to become low-temperature, low-pressure refrigerant vapor. This vapor is drawn in to the refrigerant compressor (1) by the air/liquid separator (9).

The VSD refrigeration compressor can adjust the capacity based on the load level. At unload or lower load lever, the VSD refrigeration compressor can be slow down while the compressor can be speed up at full load automatically. The VSD dryer can provide the best quality compressed air with the lowest energy consumption.

2.2.4. Regulation system

The condenser pressure must be kept as stable as possible to keep the stable performance level.

The hot gas by-pass valve (10) will open under unload or lower load conditions. Then the high-pressure, high-temperature refrigerant gas will be sent into the evaporator circuit to prevent from the ice block issue.

2.2.5. Protecting system

For air-cooling dyers, the fan will be started or stopped by the controller based on the condensing pressure level.

When the condensing pressure comes to the stopped set point, dryer will be stopped by controller.

When the evaporating pressure comes to the stopped set point, dryer will be stopped by controller.

When the compressor outlet temperature comes to the stopped set point, dryer will be stopped by controller.

3. Elektronikon™ Touch Controller

3.1 Controller

The Elektronikon™ Touch controller

Introduction

The Elektronikon™ controller has following functions:

- Controlling the dryer
- Protecting the dryer
- Monitoring components subject to service

Automatic control of the dryer

The controller maintains the PDP between programmable limits by automatically loading and unloading the dryer (fixed speed dryers) or by adapting the motor speed (dryers with frequency converter).

Protecting the dryer

Shutdown

Several sensors are provided on the dryer. If one of the measured signals exceeds the programmed shutdown level, the dryer will be stopped.

Example: If outlet temperature of compressor in dryer exceeds the programmed shutdown level, the dryer will be stopped. This will be indicated on the display of the controller.

The dryer will also be stopped in case of overload of fan motor.

⚠	Before remedying, consult the Safety precautions. Before resetting a warning or shutdown message, always solve the problem. Frequently resetting these messages without remedying may damage the compressor.

Shutdown warning

A shutdown warning level is a programmable level below the shutdown level.

If one of the measurements exceeds the programmed shutdown warning level, a message will appear on the display and the general alarm LED will light up to warn the operator before the shutdown level is reached.

The message disappears as soon as the warning condition disappears.

A warning will also appear if the dew point temperature is too high.

Service warning

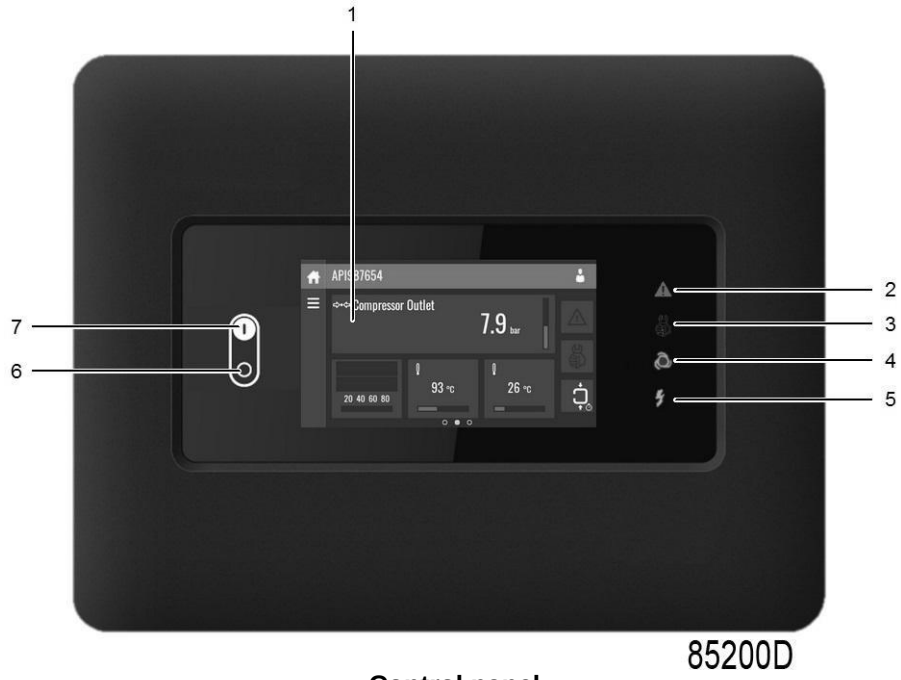
A number of service operations are grouped as a Service Plan. Each Service Plan has a programmed time interval. If the service timer exceeds a programmed value, this will be indicated on the display to warn the operator to carry out the service actions belonging to that Service Plan.

Automatic restart after voltage failure (ARAVF)

The controller has a built-in function to automatically restart the dryer when the voltage is restored after voltage failure. For dryers leaving the factory, this function is made inactive. If desired, the function can be activated. Consult your supplier.

If the function is activated and provided the regulator was in the automatic operation mode, the dryer will automatically restart if the supply voltage to the module is restored.
The ARAVF label (see section Pictographs) shall be glued near to the controller.

3.2 Control panel



Control panel

Parts and functions

Reference	Designation	Function
1	Touchscreen	Shows the dryer operating condition and a number of icons to navigate through the menu. The screen can be operated by touch.
2	Warning sign	Flashes in case of a shut-down, is lit in case of a warning condition.
3	Service sign	Is lit when service is needed.
4	Operation sign	Is lit when the dryer is running in automatic operation.
5	Voltage sign	Indicates that the voltage is switched on.
6	Stop button	This button stops the dryer.
7	Start button	This button starts the dryer. The operation sign (4) lights up. The controller is operative.

3.3 Digital output contactors

Caution

	**Voltage-free outputs may only be used to control or monitor functional systems. Do not use them for control, cut-off, or safety-related circuits.**

	Stop the dryer and switch off the voltage before connecting external equipment. Check safety precautions.

Connections for external equipment

The controller always comes with a number of digital output contacts which can be used to connect external equipment. Digital output contacts have the following specifications:

Repeater	Max Load
K01	10 A / 250 V AC
K02	10 A / 250 V AC
K03	10 A / 250 V AC
K04	10 A / 250 V AC
K05	10 A / 250 V AC
K06	10 A / 250 V AC
K07	10 A / 250 V AC
K08	10 A / 250 V AC
K09	10 A / 250 V AC

3.4 Icons used

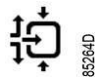
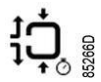
Menu icons

Menu	Icon	Menu	Icon	Menu	Icon
Data		Status			
		Inputs			
		Outputs			
		Counters			
		Aux. Equipment Parameters		Converters	
Service		Service		Overview	
				Service Plan	
				Service History	
		Service functions			
		Clean Screen			
Week Timer				Week	
				Remaining Running Time	
Event History		Saved Data			

Menu	Icon	Menu	Icon	Menu	Icon
Machine Settings		Alarms			
		Regulation			
		Control Parameters			
		Aux. Equipment Parameters		Converter(s)	
				Fan	
				Internal SmartBox	
		Auto Restart			
Controller Settings		Network Settings		Ethernet Settings	
				CAN Settings	
		Localisation		Language	
				Date/Time	
				Units	
		User Password			
		Help			
		Information			

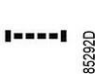
Status icons

Icon	Description
	**Motor Stopped**

	Motor Stopped Wait
	Running Unloaded
	Manual Unload
	Running Unloaded Wait
	Running Loaded
	Failed to Load
	Running Loaded Wait
	Manual Stop
	Machine Control Mode, Local
	Machine Control Mode, Remote
	Machine Control Mode, LAN
	Automatic Restart After Voltage Failure
	Week Timer Active

System icons

Icon	Description
	Basic User
	Advanced User
	Atlas Copco Service
	Antenna 25%

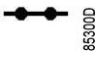
	Antenna 50%
	Antenna 75%
	Antenna 100%
	Change between screens (indication)
	Energy recovery
	Dryer
	Compressor Element
	Drain(s)
	Analogue Output
	Menu
	Reset
	Auto Restart
	Filter(s)
	Cooler
	Valve(s)
	Power Meter

Inputs icon

Icon	Description
	Pressure

Icon	Description

	Pressure

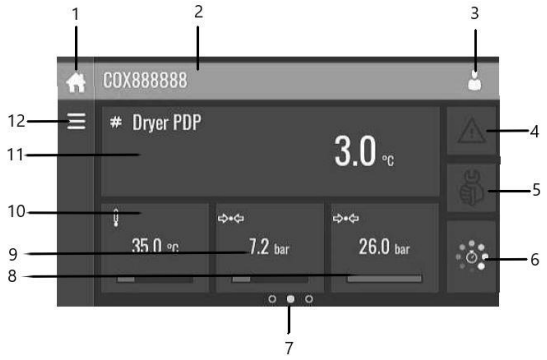
	Temperature
	Special Protection
	Open
	Closed

This chapter gives a general survey of available icons. Not all icons mentioned in this chapter are applicable to every machine.

3.5 Main screen

Function

The main screen is the screen that is shown automatically when the voltage is switched on. It is switched off automatically after a few minutes when there is no touch input.



Reference	Designation	Function
1	Home button	The home button is always shown and can be tapped to return to the main screen.
2	Screen information	On the main screen, the screen information bar shows the serial number of the machine. When scrolling through menus, the name of the current menu is shown.
3	Access level button	The access level button is always shown and can be tapped to change the current user access level.
4	Alarm button	The alarm button can be tapped to show the current alarms. If an alarm occurs, the icon on the button will be red.
5	Service button	The service button can be tapped to show the service information.
6	Dryer status	This icon shows the current dryer status.
7	Page indicator	Indicates which page you currently see. The middle indication is the main screen, left is the menu screen and at the right the quick access screen. Swipe left or right to go to another screen.
8, 9, 10, 11	These fields can contain a history chart, an input or a counter value, depending on the type of the machine.	Tap the field to view the type of measurement. This will be shown in the screen information bar. Examples of inputs: • Ambient temp • Compressor outlet • Dryer dewpoint Examples of counters: • Running hours • Load relay Loaded hours
12	Menu button	The menu button is always shown and can be tapped to go to the menu.

3.6 Quick access screen

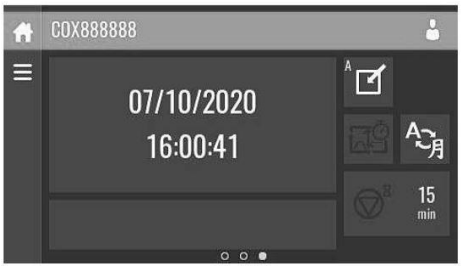
Function

The screen is used to directly access some frequently used functions

Procedure

The Quick access screen can be viewed by swiping left, starting from the main screen.

Description



Through this screen, several important settings can be viewed and modified.

Function	Description
Setpoints	Several setpoints can be modified by tapping this icon.
Control mode	The control mode can be changed by tapping this icon. • Local control via start/stop buttons • Remote control via digital input(s) • LAN control via the network. When in Remote or LAN control, the start/stop buttons on the controller will not work.
Display language	The display language of the controller can be changed by tapping this icon.
Week timer	Week timers can be set by tapping this icon.
Remaining running time	The Remaining running time can be set and modified by tapping this icon.
Internal SmartBox	The reception quality of the internal antenna can be monitored.  Each bar represents 25% reception strength. If the four bars are filled, the reception strength is 100%. If only one bar is filled, the reception strength is just 25%.
Auto restart	Auto restart can be activated by tapping this icon.

3.7 Menu screen

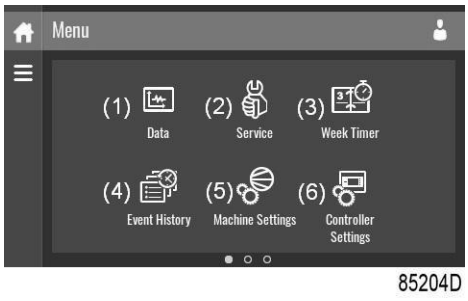
Function

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

Procedure

The menu screen can be viewed by tapping the Menu button or by swiping right, staring from the main screen.

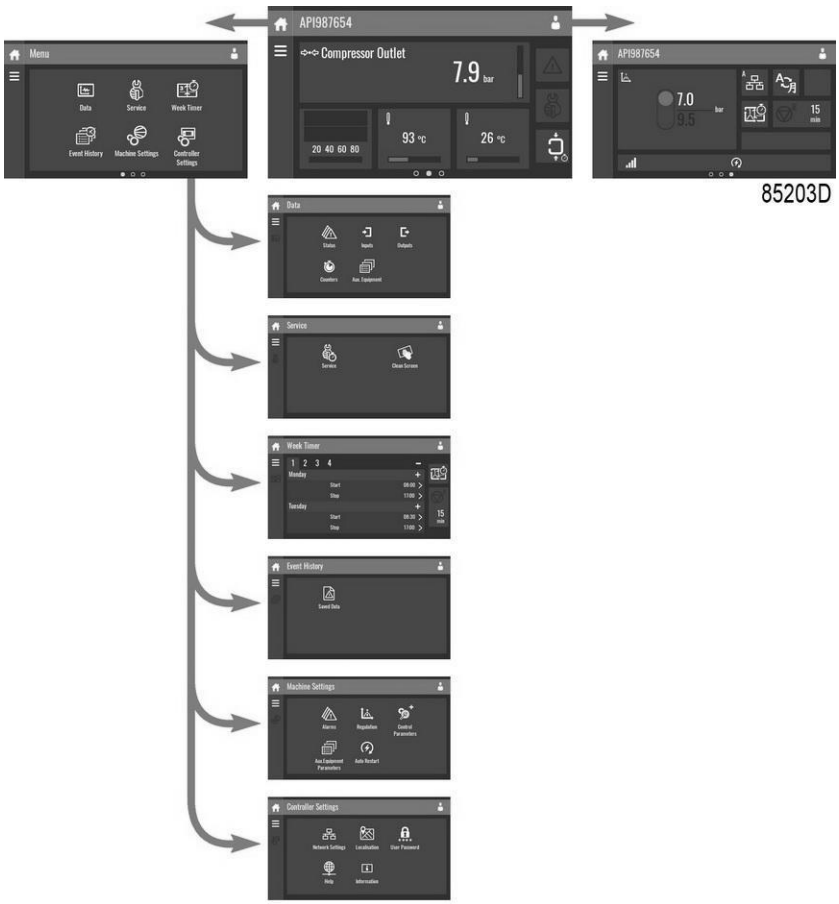
Description



Reference	Designation	Function
(1)	Data	The data menu contains the Dryer status, information about the Inputs, Outputs and Counters. The Auxiliary equipment can also be viewed through this menu.
(2)	Service	The service menu contains the Service information. The ‘Clean screen’ function can be used to clean the touchscreen.
(3)	Week timer	Multiple Week timers and a Remaining running time can be set through this menu.
(4)	Event history	In case of an alarm, the Dryer Status information is saved and can be viewed through this menu.
(5)	Machine settings	Alarms settings, Regulation settings and Control parameters can be changed through this menu. Auxiliary equipment parameters can also be changed. The Auto restart function can be set through this menu. This function is password protected.
(6)	Controller settings	Network settings, Localisation settings and a User password can be set through this menu. There is also a Help page available and the Controller information can be shown.

Menu structure

Operating the controller can be done by swiping through screen s and tapping icons or menu items.



This is the main menu structure. The structure can be different depending on the configuration of the unit.

3.8 Data menu

Function

This screen is used to display the following submenus:

- Status
- Inputs
- Outputs
- Counters
- Aux. Equipment

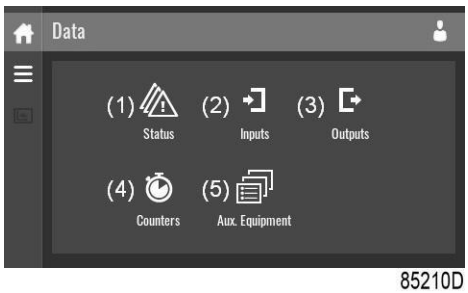
These submenus can be entered by tapping the icons.

Procedure

To enter the Data menu screen:

- Tap the Menu button
- Tap the Data icon

Description

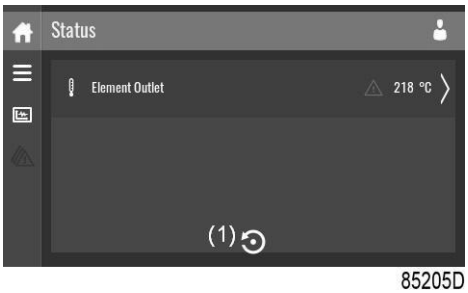


85210D

Reference	Designation
(1)	Status menu
(2)	Inputs menu
(3)	Outputs menu
(4)	Counters menu
(5)	Auxiliary equipment menu

Status menu

Tap the status icons to enter the status menu.



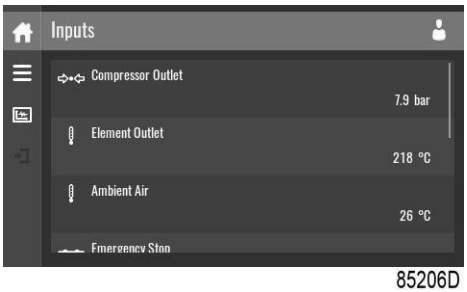
85205D

This menu shows the current dryer status.
If an alarm is active, it can be viewed by tapping the alarm message. To reset an alarm, tap the reset Button (1).

	Before remedying, consult the Safety precautions. Before resetting a warning or shutdown message, always solve the problem. Frequently resetting these messages without remedying may damage the compressor.

Input menu

Tap the inputs icons to enter the inputs menus.

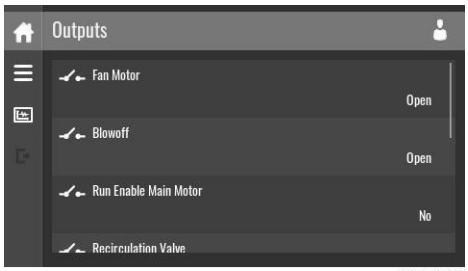


85206D

This menu shows information about all the inputs.

Outputs menu

Tap the output icon to enter the outputs menus.



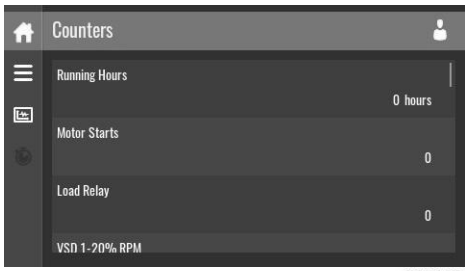
85207D

This menus shows information about all the outputs.

	Voltage-free outputs may only be used to control or monitor functional systems. They should NOT be used to control, switch or interrupt safety related circuits. Check the maximum allowed load on the label.
	Stop the dryer and switch off the supply before connecting external equipment. Check the Safety precautions.

Counters menu

Tap the counters icon to enter the counters menu

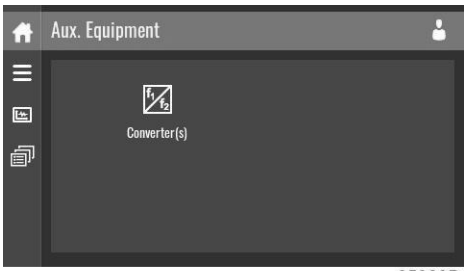


85208D

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

Auxiliary equipment menu

Tap the Aux. Equipment icon to enter the Aux. equipment menu.



85209D

This menu shows an overview of all auxiliary equipment fitted.

3.9 Service menu

Function

This screen is used to display the following submenus:

- Service
- Service functions (Only visible as advanced user)

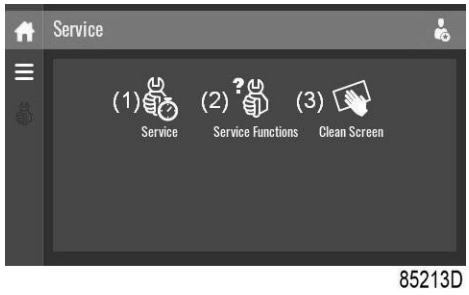
These submenus can be entered by tapping the icons.

Procedure

To enter the service menu screen:

- Tap the Menu button
- Tap the Service icon

Description

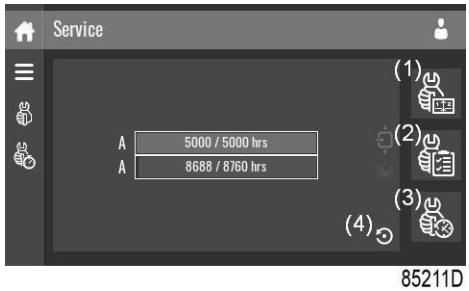


85213D

Reference	Designation
(1)	Service
(2)	Service functions (Only visible as advanced user)
(3)	Clean screen

Service menu

Tap the service icon to enter the service menu



85211D

This menu shows the remaining Running Hours and the remaining Real Time Hours until the next service. The first row A shows the Running Hours when the first service is needed (green), the second row shows the Real Time Hours (blue)

A service overview can be viewed by tapping icon (1).

The service plan can be viewed by tapping icon (2). Through this menu, the service plan can be modified:

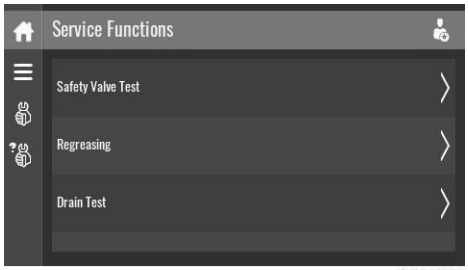
- Tap the desired service plan. A selection screen will pop up.
- Change the Running Hours by tapping '–' or '+'.

- Confirm by tapping ‘V’ or decline by tapping ‘X’. The service history can be viewed by tapping icon (3).

When a service plan interval is reached, a message will appear on the screen. When service has been performed, the service timer can be reset by tapping the reset button (4).

Service functions (Only visible as advanced user)

Tap the service functions icons to enter the service functions menu.

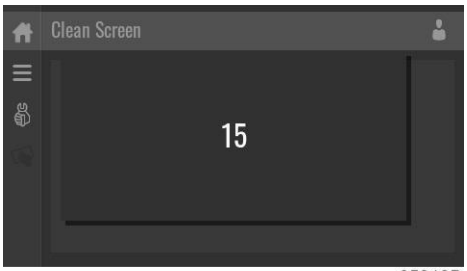


85232D

Depending on the machine, this menu can have a different set of functions. Many of them are password protected, as they are only accessible for authorized personnel.

Clean screen

Tap the Clean Screen icon to start the 15 seconds countdown to perform cleaning of the touchscreen.



85212D

The touchscreen and the start and stop button become inactive for 15 seconds.

3.10 Week timer menu

Function

This screen is used to set up to 4 different week timers with each up to 8 settings per day. The week timers can be activated through this screen.

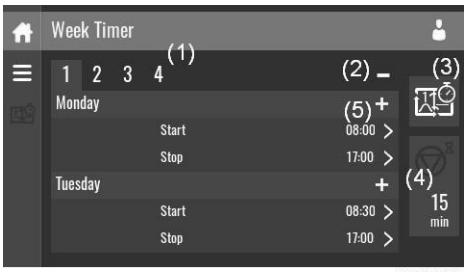
A Remaining Running Time can be set from 5 up to 240 minutes.

Procedure

To enter the Week Timer menu screen:

- Tap the Menu button
- Tap the Week Timer icon

Description



Reference	Designation	Function
(1)	Add or select week	If less than 4 weeks are programmed, tap the '+' button to add a week.
(2)	Remove week	Tap to remove a programmed week timer.
(3)	Activate week timer	A selection screen pops up. The user can choose the correct week by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.
(4)	Remaining running time	A selection screen pops up. The user can change the remaining time by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.
(5)	Add setting	A selection screen pops up. The user can change the setting by swiping up or down and confirm by tapping 'V' or decline by tapping 'X'.

3.11 Event history menu

Function

This screen is used to display the saved data in case of an alarm.

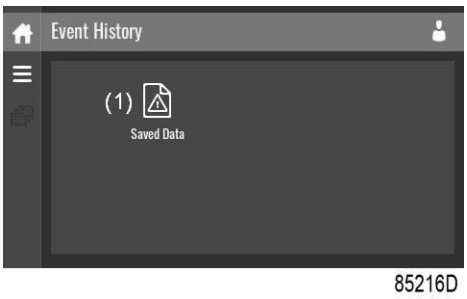
These submenus can be entered by tapping the icons.

Procedure

To enter the Event history menu screen:

- Tap the Menu button
- Tap the Event History icon

Description



Reference	Designation
(1)	Saved Data

Saved data

Tap the Saved Data icon to enter the Saved Data menu.

Scroll through the items swiping up and down in this list. The event date and time is shown at the right side of the screen.

Press on one of the items in the list for more information reflecting the status of the dryer when the shutdown occurred.

3.12 Machine setting menu

Function

This screen is used to display the following submenus:

- Alarms
- Regulation
- Control Parameters

  Only visible if the machine has adaptable parameters.
- Aux. Equipment parameters
- Auto Restart

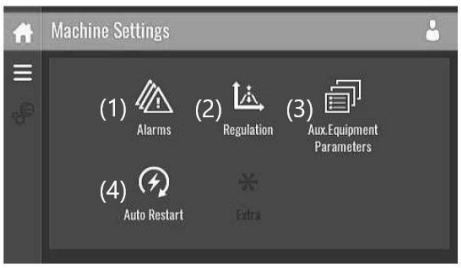
These submenus can be entered by tapping the icons

Procedure

To enter the Machine settings menu screen:

- Tap the Menu button
- Tap the Machine Settings icon

Description

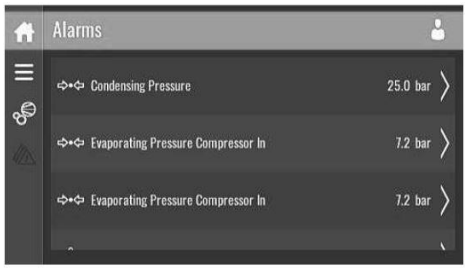


Reference	Designation
(1)	Alarms menu
(2)	Regulation menu
(3)	Aux. Equipment Parameters menu

(4)	Auto Restart menu

Alarms menu

Tap the Alarms Icon to enter the Alarm menu.



A list of all alarms is shown.

When pressing on one of the items in this list, the warning and/or shutdown levels are shown for this alarm.

Regulation menu (For different operation model)

Tap the Regulation icons to enter the Regulation menu.

Setpoints or pressure bands can be modified through this menu.

Modify a setting

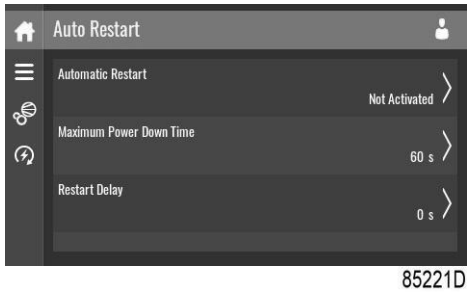
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

Change a selection

When tapping a list item, a selection screen pops up. The user can change the selection by swiping up or down and confirm by tapping 'V' or decline by tapping 'X'.

Auto restart menu

Tap the Auto restart icon to enter the Auto Restart menu.



85221D

Through this menu, the automatic restart can be activated. The activation is password protected. The

automatic restart settings can also be changed.

Enter a password

When tapping a password protected item, a selection screen pops up. The user can enter the password by swiping up or down to select the desired number. Once the 4 digits are entered, the user can confirm by tapping ‘V’ or decline by tapping ‘X’.

Modify a setting

When clicking a list item, a selection screen pops up. The user can modify the setting by tapping ‘–’ or ‘+’ and can confirm by tapping ‘V’ or decline by tapping ‘X’.

3.13 Controller settings menu

Function

This screen is used to display the following submenus:

- Network Settings
- Localisation
- Help
- Information

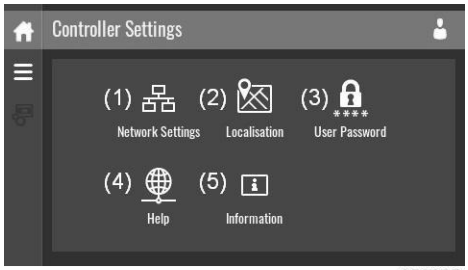
These submenus can be entered by tapping the icons.

Procedure

To enter the Controller Settings menu screen:

- Tap the Menu button
- Tap the Controller Setting icon

Description

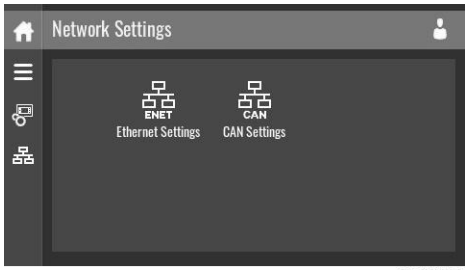


85228D

Reference	Designation
(1)	Network Settings menu
(2)	Localization menu
(3)	User Password menu
(4)	Help menu
(5)	Information menu

Network settings menu

Tap the Network Settings icon to enter the Network Settings menu.



85223D

Ethernet Settings

The list of Ethernet Settings is shown. When ethernet is turned off, the settings can be modified.

Can settings

The list of CAN Settings is shown. When CAN is turned off, the settings can be modified.

Modify a setting

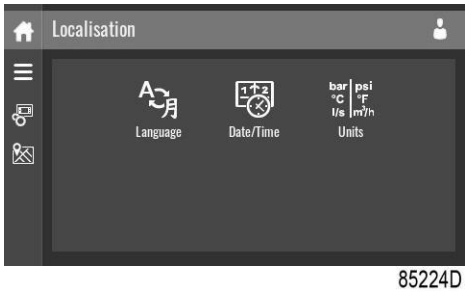
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

Change a selection

When tapping a list item, a selection screen pops up. The user can change the selection by swiping up or down and confirm by tapping 'V' or decline by tapping 'X'.

Localization menu

Tap the Localization icon to enter the Localization menu.



85224D

Language

The language setting 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.

Units

The units displayed can be modified through this menu.

Modify a setting

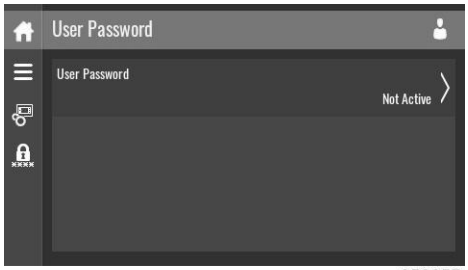
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

Change a selection

When tapping a list item, a selection screen pops up. The user can change the selection by swiping up or down and confirm by tapping 'V' or decline by tapping 'X'.

User password menu

Tap the User Password icon to enter the User Password menu.



85225D

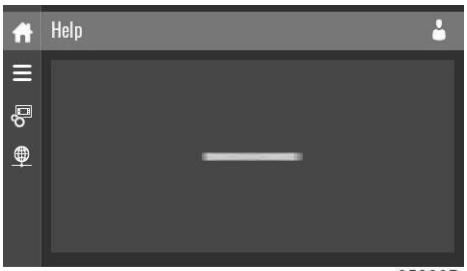
The user password can be activated or deactivated through this menu. Enter and confirm a user password to activate, repeat to deactivate.

Enter a password

When tapping a password protected item, a selection screen pops up. The user can enter the password by swiping up or down to select the desired number. Once the 4 digits are entered, the user can confirm by tapping ‘V’ or decline by tapping ‘X’.

Help menu

Tap the Help icon to enter the Help menu.

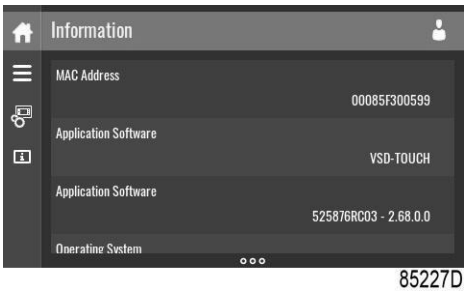


85226D

This menu can show a link to the web page of your supplier, a helpdesk phone number or other helpful information.

Information menu

Tap the Information icon to enter the Information menu.



85227D

This menu shows information about the controller.

3.14 Access level

Function

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

Procedure

The Access Level screen can be viewed or changed by tapping the Access Level button at the upper right corner of the screen.

Description

85229D

Reference	Designation	Function
(1)	User	A basic set of parameters is visualized, no password required.
(2)	Service	A basic set of parameters can be modified, no password required.
(3)	Full	This access level is not accessible to end users.
(4)	Decline	Tap to decline the selected user level.
(5)	Confirm	Tap to confirm the selected user level.

Service access level

85230D

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

The screen information bar (1) now shows the current compressor status instead of the machine serial number.

The Received Signal Strength Indicator (RSSI) value is now shown in the Internal SmartBox menu. See Quick access screen.

In the service menu, an extra menu item is now available. See Service menu.

3.15 Other programmable settings

The safety alarm values have been set at the factory for optimal dryer performance, therefore the settings in the controller do not need to be adjusted.

4. Installation

4.1 Dimensional drawings

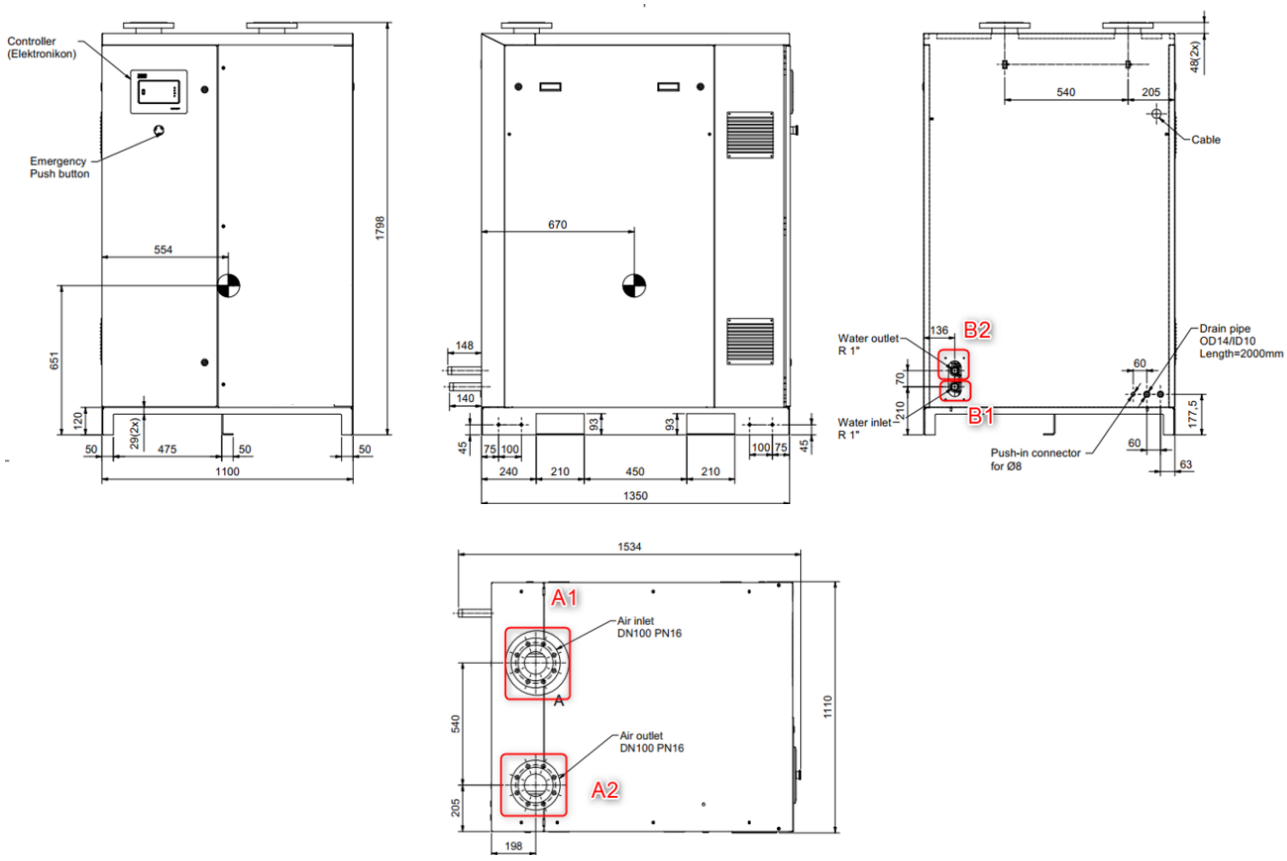
A1: Compressed air inlet

A2: Compressed air outlet

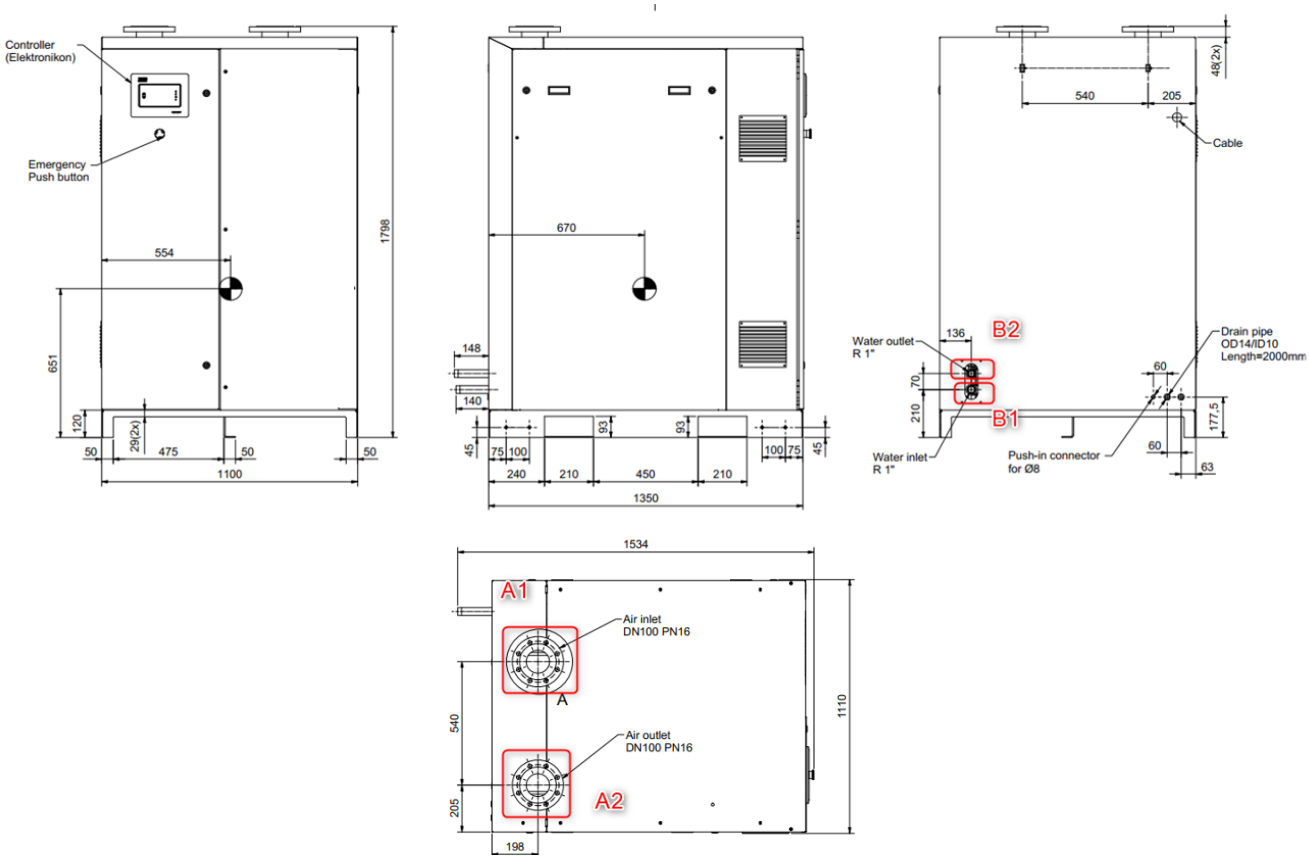
B1: Cooling water inlet

B2: Cooling water outlet

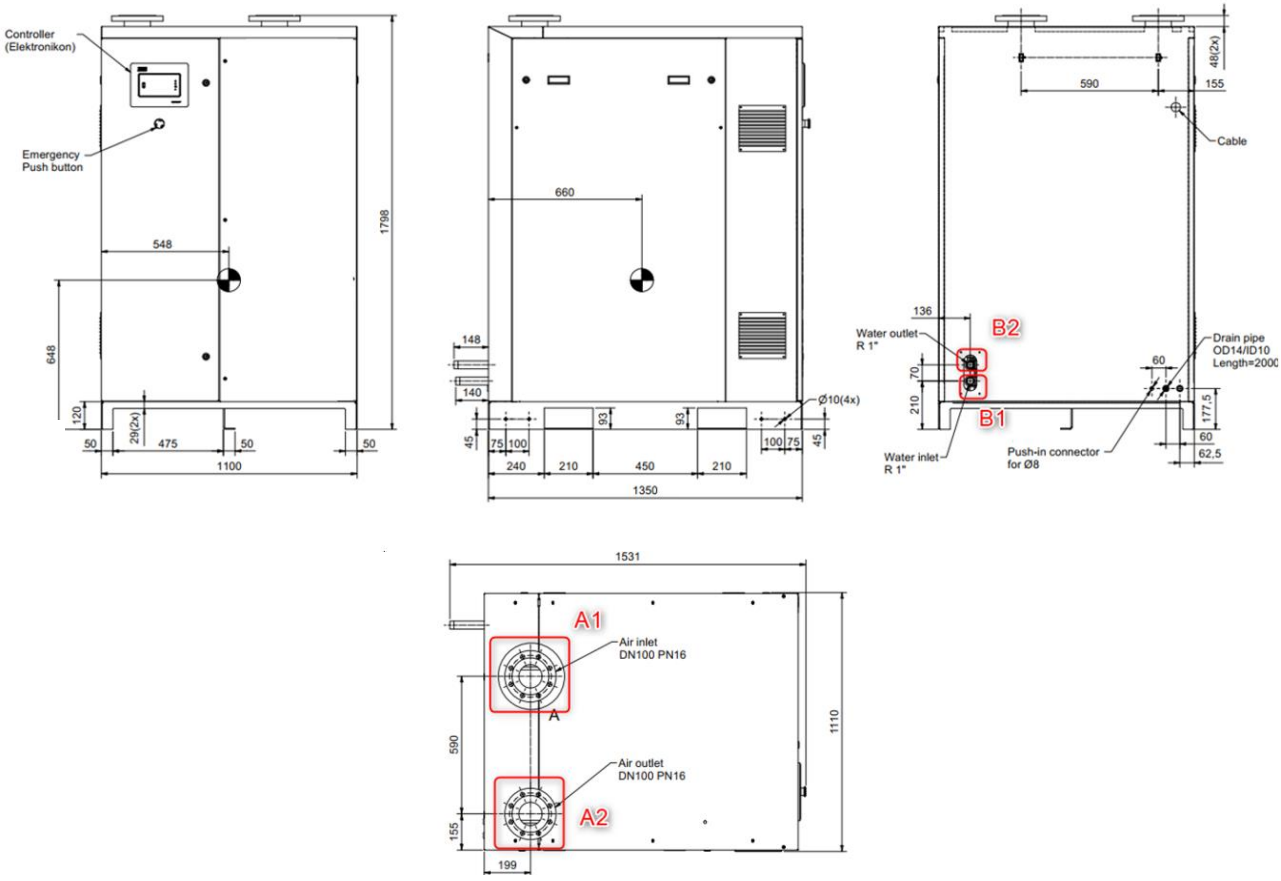
DXR246 VSD W-A



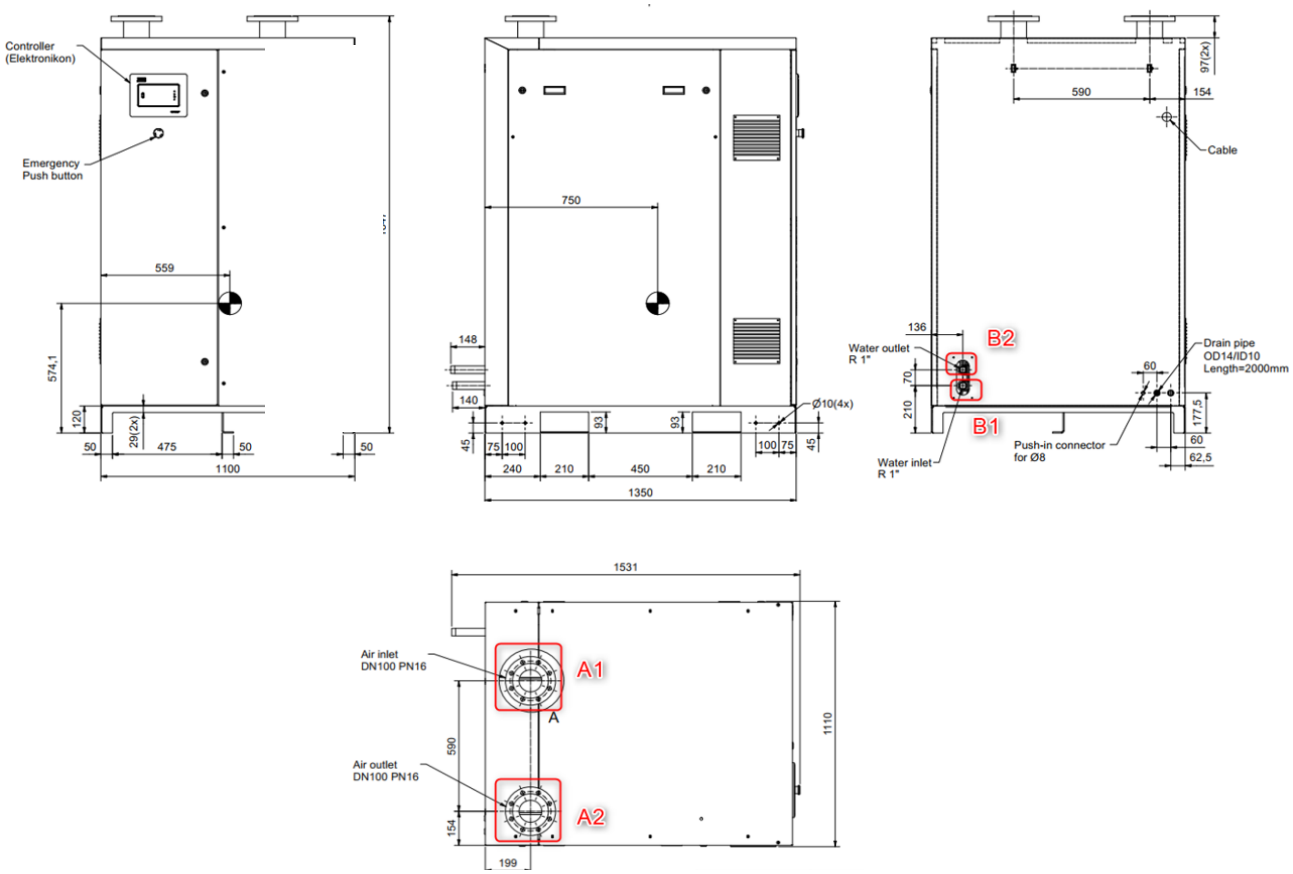
DXR360 VSD W-A



DXR450 VSD W-A



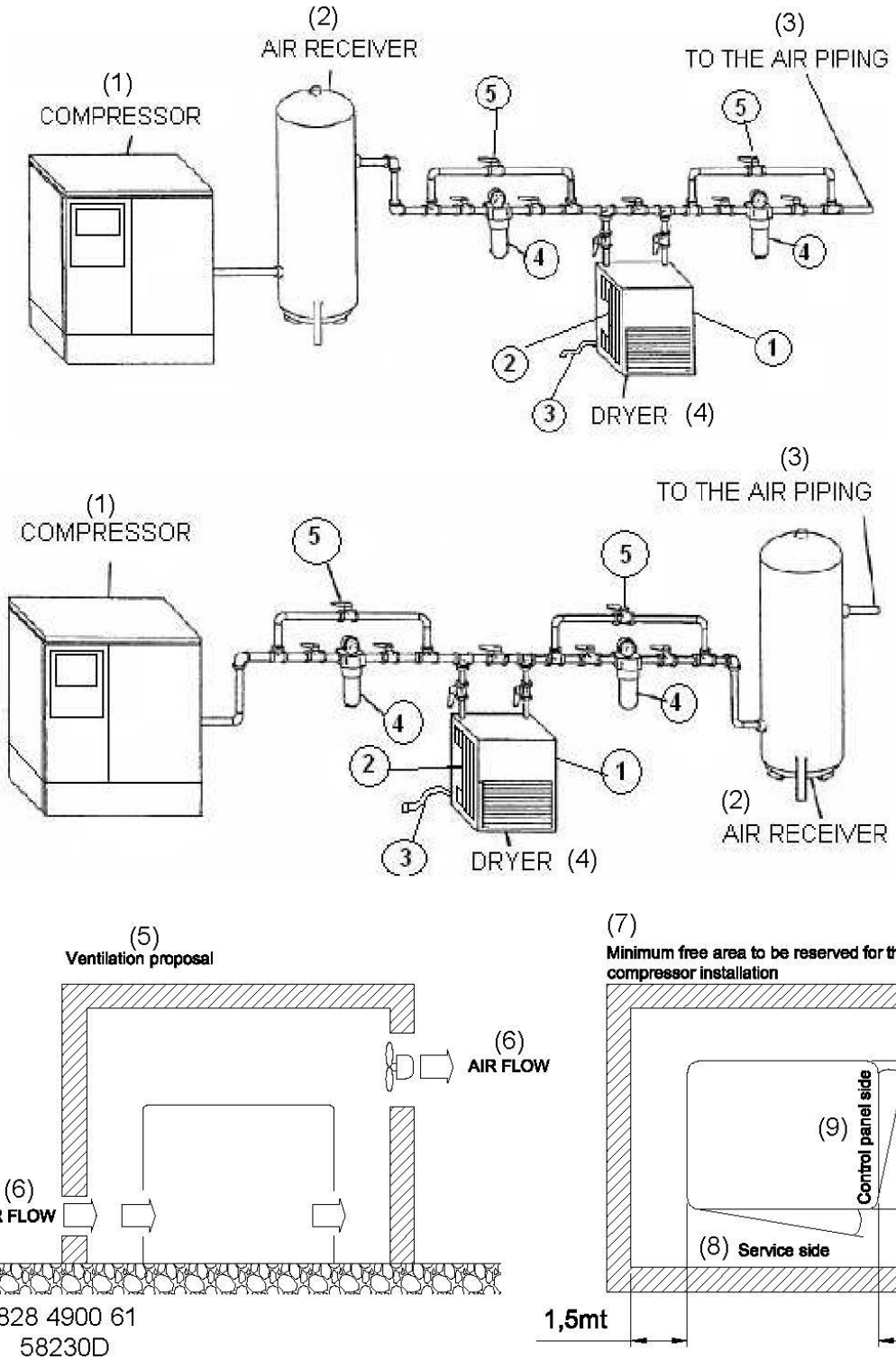
DXR510 VSD W-A



4.2 Installation recommendations

⚠	• Use a forklift to move the dryer. • Do not use metal cables for raising or lowering. • Move the dryer with care.

Compressor room example



Compressor room example

Reference	Designations
(1)	Compressors
(2)	Air tank
(3)	To air pipe
(4)	Dryer
(5)	Ventilation recommendation
(6)	Air Flow
(7)	Minimum free area to be reserved for 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 the dryer upstream of the air receiver:** This can be used when 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.

  And this type is 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/m3. 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/m3. If oil vapours and doors 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.

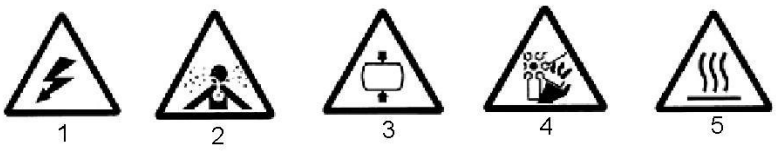
4.3 Cable sizes and settings for motor circuit breakers

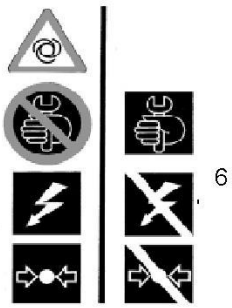
	Local regulations remain applicable where they are more stringent than the values provided. For 50 Hz dryers, the power cable size applies to cable PVC at 70˚C (158˚F) and an ambient temperature of 40˚C (104˚F).

Electrical data for 50 Hz dryers

See Section 8 Technical Data for more information.

4.4 Safety labels





Reference	Designations
1	Warning, electric current
2	Warning, air not suitable for breathing
3	Warning, high pressure
4	Warning, rotating fan
5	Warning, hot surface
6	Turn off the voltage and depressurize the dryer before performing maintenance or repairs.

4.5 Cooling water requirements

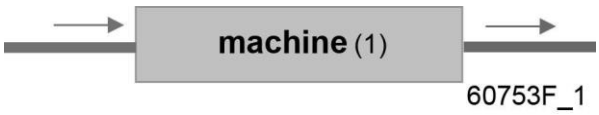
General

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.

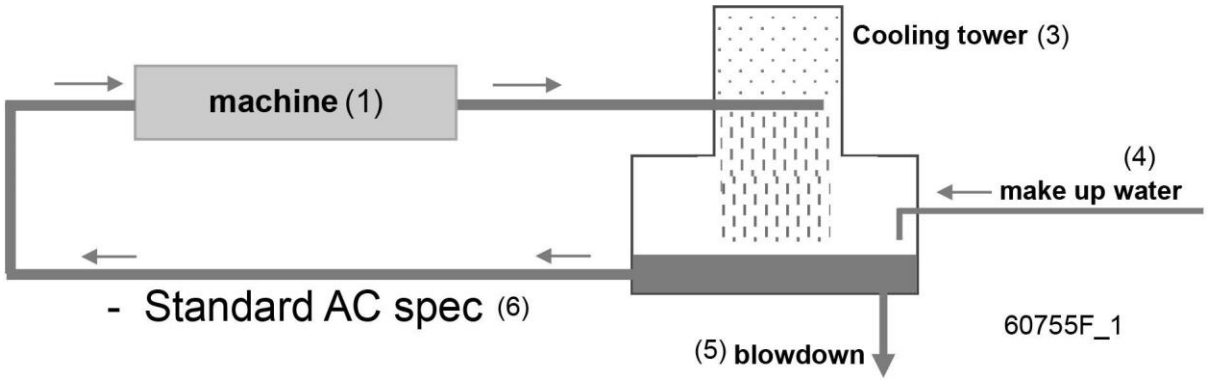
The requirements for water refers to water which has not been treated. Certain parameters change when water is treated. Water treatment should be performed by professional water treatment

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:

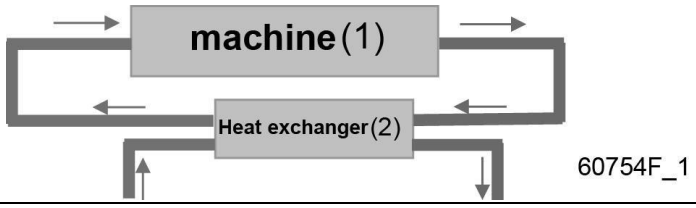
- Cooling circuit type:
  - Open
    - Single pass



- Recirculating tower



- Closed



Reference	Description
(1)	Machine
(2)	Heat exchanger
(3)	Cooling tower
(4)	Supplemental water
(5)	Water drain
(6)	Standard specifications

- Application:
- Standard (maximum water temperature at the outlet 65°C/149°F)
- Energy recovery (water temperature up to 95°C/203°F)

Factory 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 factory.

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 CaCO3	< 500	< 2	< 500	< 1000	< 50
5	Total alkalinity	ppm CaCO3	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	$< 10^5$	$< 10^3$	$< 10^5$	$< 10^3$	$< 10^3$

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 for 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 (pHs).

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:

$RSI = 2*pHs - pH$

Symbol	Description
pH	The measured pH of the water sample (at room temperature)
pH_s	Saturated pH

pH_s may be calculated with the following formula:
$pH_s = (9.3 + A + B) - (C + D)$

Symbol	Calculation
A	$(_{10}\log (TDS) - 1) / 10$
B	$13.12 \times {}_{10}\log(°C+273) + 34.55$
C	${}_{10}\log(Ca^{2+}) - 0.4$ (Ca^{2+} $CaCO_3$ represented in ppm)
D	${}_{10}\log$ (M alkalinity) (M-alkalinity represented as ppm $CaCO_3$)

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.

5. Operation instructions

5.1 Warning

Safety information

The operator must take all relevant safety precautions, including but not limited to those mentioned in this manual.

Operating at high altitudes

Consult your supplier if operating at altitudes above 3000 meters.

Checks/preparation for starting

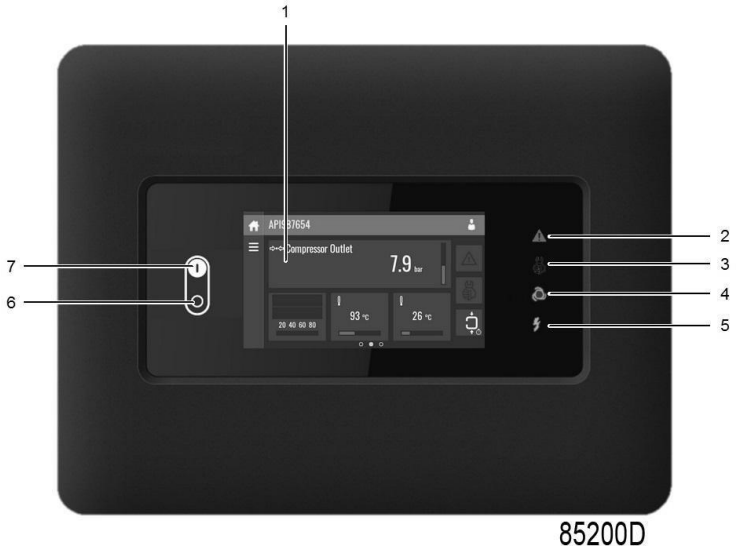
1. The cold-drying machine room is well ventilated, and the maximum/minimum temperature of the room do not exceed the limits of the machine (refer to the technical parameters for details).
2. Do not operate the machine under conditions outside the limits. (Placed in the technical parameters).
   - Low load limits/working conditions
     - Air cooling - ambient temperature ≥ 5℃.
     - Water cooling - water temperature ≥5℃.
   - High load limits/working conditions.
     - Air cooling - inlet temperature ≤55℃; ambient temperature ≤ 45℃.
     - Water cooling - inlet air temperature ≤55℃; water temperature ≤32℃.
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 (4.2 is recommended).
19. Are all pipe inlets and outlets of the air compressor and dryer properly connected, as well as water inlets and outlets.

5.2 First-time startup

Control panel



Description

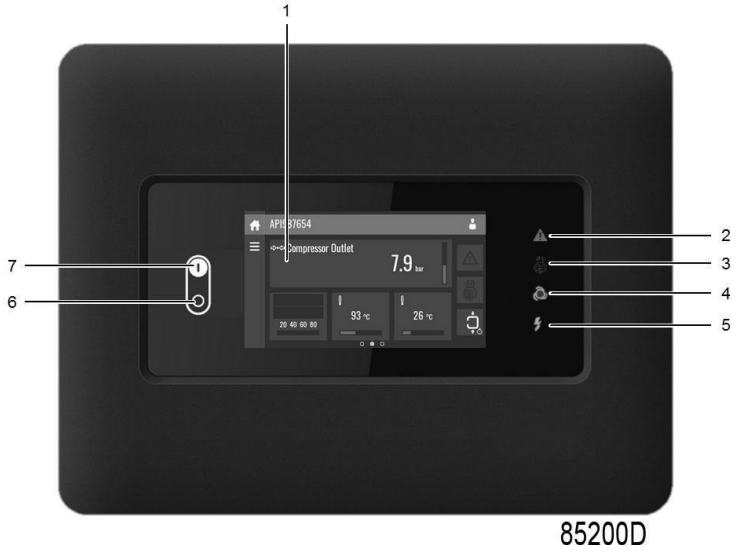
Step	Action
1	At least 10 minutes before starting, the main supply to the dryer must be switched on to initialize the controller.
2	For water-cooled models, you must also open the cooling water inlet and outlet. Press the Power On icon (7). • Dryers with 3-phase power supplies are equipped with phase sequence relay. If the controller panel displays a phase sequence protection warning, turn off the power supply and reverse the refrigerated air dryer's two main power supply wires (client terminal connectors).

CAUTION

	To ensure optimal performance, DO NOT repeatedly start up and shut down the dryer within a short period of time. Wait at least 5 minutes after shutting down the dryer before starting it up again, to allow the pressure to equalize.
	To keep the compressed air filter free of condensate, always start up the dryer before starting up the compressor, and always shut down the compressor before shutting down the dryer. To keep the drain pipe with free pressure and forbid to connect the drain pipe with any higher pressure than atmospheric pressure.

5.3 Starting

Controller panel



Description

Step	Action
1	Power on the dryer at least 10 minutes before starting up, in order to initialize the controller.
2	Close the dryer by-pass valve (if installed).
3	For water-cooled dryers, open the water inlet and outlet valves (customer's installation).
4	Press the button (7)
5	Open the air inlet valve (customer's installation).
6	After approximately 5 minutes, open the dryer air outlet valve (customer's installation).
7	After approximately 10 minutes, the desired dew point will be reached.

5.4 During operation

Controller panel

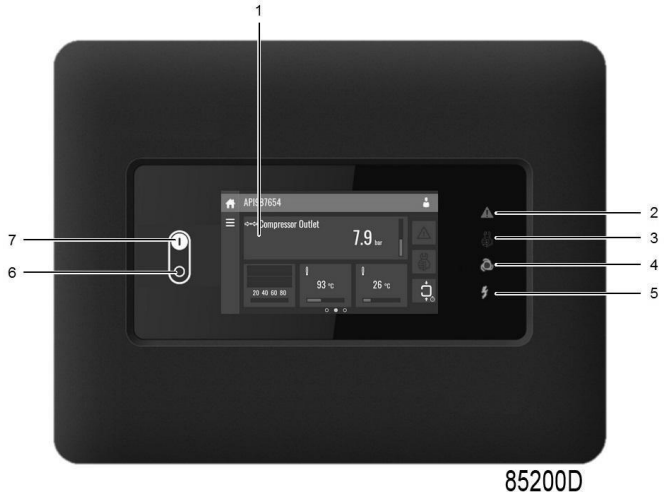
Description

Regular checks

- The controller panel always displays the current pressure dew point. If the air intake conditions or flow volume do not match the standard operating conditions, the actual pressure dew point value may differ from the nominal dew point.
- The condensate in the compression controller is automatically drained and the flow rate varies depending on operating conditions.
- To keep the drain pipe with free pressure and forbid to connect the drain pipe with any higher pressure than atmospheric pressure. Otherwise the drain alarm will be triggered and the actual pressure dew point may differ from the nominal dew point.

5.5 Shutdown

Controller panel



Description

Step	Action
1	Close the dryer's air inlet and outlet valves (customer's installation).
2	Press the stop button (6) to shut down the refrigerated air dryer. For water-cooled units, close the water inlet and outlet of the cooling water circuit (customer's installation). If the ambient temperature outside the dryer may be below 0°C, drain the dryer's cold water circuit.

6. Maintenance

6.1 Maintenance instructions

CAUTION

	The refrigerated air dryer contains HFC refrigerant (R410A). When the dryer's automatic operation LED is lit up, the dryer will start up and shut down automatically. When the dryer's startup/shutdown timer is enabled, the dryer may start automatically, even if it is manually shut down.

Safety precautions

When handling R410A refrigerant, all applicable safety precautions must be observed. Please be aware of the following points:

- The refrigerant will cause freeze burns if it comes in contact with skin. Special gloves must be worn. If the refrigerant comes into contact with your skin, rinse off with water. Do not remove clothing under any circumstances.
- Fluid refrigerant will also cause freeze burns to the eyes, so safety glasses must be worn.
- Refrigerant R410A is poisonous. Avoid inhaling refrigerant vapors. Check that the working area has adequate ventilation.
- Use caution when removing the dryer's side panel, as pipes and other internal components may reach up to 110˚C (230˚F). Wait until the dryer has cooled down before removing the side panel.
- Turn off the voltage and close the air inlet and outlet valves before beginning any maintenance or repair work.

Local laws

Local laws may stipulate that:

- An authorized controller must be responsible for all work involving the refrigerated air dryer's refrigerant circuit or any equipment that affects this function.
- An authorized controller must check the installation once a year.

General

Remember the following points:

- Keep the dryer clean.
- Keep the drain pipe with free pressure.
- Check and clean the steam trap filters daily.
- Brush or blow off the heat sinks of the condenser monthly.

Instructions for routine maintenance

<table>
<tr><th colspan="3">High and Low Pressure Settings</th></tr>
<tr><td>Refrigerant types</td><td colspan="2">Low Pressure Range of Refrigerant（unit Mpa）</td></tr>
<tr><td>R407C</td><td colspan="2">0.39-0.5(Standard working condition)</td></tr>
<tr><td>R410A</td><td colspan="2">0.7-0.8(Standard working condition)</td></tr>
<tr><th colspan="3">High and Low Pressure Protection Value</th></tr>
<tr><td>Refrigerant types</td><td>Low Pressure Protection Value of Refrigerant (Automatic reset unit Mpa）</td><td>High Pressure Protection Value of Refrigerant (Manual reset unit Mpa)</td></tr>
<tr><td>R410A</td><td>0.57（F+ series）</td><td>4.30（Air cooling）2.80（F+ series, water cooling)</td></tr>
<tr><th colspan="3">Contents</th></tr>
<tr><td>Startup debugging</td><td colspan="2">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 ℃).</td></tr>
<tr><td rowspan="4">Maintenance</td><td colspan="2">Good maintenance of chiller is the guarantee of long-term stable operation of unit, and also reduces wear and prolongation of parts.</td></tr>
<tr><td colspan="2">The premise of machine life, so please do the following maintenance on time:</td></tr>
<tr><td colspan="2">Daily: Press manual test key of drainage valve to confirm normal drainage</td></tr>
<tr><td colspan="2">Weekly: Clean drain valve filter ring</td></tr>
<tr><td rowspan="7">Leakage and replacement of spare parts</td><td colspan="2">Monthly: Use compressed air to blow the fins from the motor direction (do not rinse with water)</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="2">3. Replacement of spare parts (if any)</td></tr>
<tr><td colspan="2">4. Pressure holding with refrigerant or helium after welding the leak point. Pressure holding time is not less than 4H.</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="2">6. Refrigerant filling (type, weight see nameplate)</td></tr>
<tr><td colspan="2">7. Debugging machines according to high and low voltage setting table</td></tr>
</table>

7. Troubleshooting

7.1 Troubleshooting

CAUTION

	Use only authorized parts. Damage or malfunction caused by the use of unauthorized parts is not covered under the warranty or product liability. Follow all relevant safety precautions when performing maintenance or repairs.
	Before performing any maintenance or repair work on the dryer: • Close the dryer's air inlet and outlet valves. • Press the test button for the electronic condenser drain. • Set the dryer switch to position 0. • Turn off the voltage. See Section 5.5 Shutdown for more information. • Open the isolating switch to prevent an accidental start.
	For maintenance or repair work, the air inlet and outlet valves can be locked as follows: • Close the valve. • Use a wrench to remove the screws that secure the handle. • Lift the handle and rotate until the groove in the handle aligns with the dividing edges on top of the valve. • Fasten the screws.

Faults and corrective actions

	Conditions	Fault	Corrective action
1	Pressure dew-point too high	The air inlet temperature is too high	Check and correct; if necessary, install a pre-cooler.
		Ambient temperature too high	Check and correct; if necessary, use a pipe to draw cooling air from a cooler location, or adjust the dryer position.
		Air inlet pressure too low	Increase inlet pressure. Adjust the pressure switch
		Dryer capacity exceeded	Reduce airflow.
		Insufficient refrigerant	Check the circuit for leaks and replenish.
		Refrigerant compressor does not run	• Check the current (refrigerant compressor is blocked or shuts down). • Refrigerant compressor has burned out.

	Conditions	Fault	Corrective action
		Evaporator pressure too high	• Check that the LAT sensor is in the correct position. • The customer's operating conditions are incorrect. • HGB valve must be closed slightly • Check for low pressure. If the pressure is below the specification, add more freon.
		Condenser pressure too high	• Check whether the ambient temperature is higher than the specification • Check that the fan is running. • Check for high pressure. If the pressure is above the specification, add more freon.
2	Condenser pressure too high or too low	Fan or fan motor malfunction	Check fan/fan motor.
		Ambient temperature too High	Check and correct; if necessary, use a pipe to draw cooling air from a cooler room, or adjust the dryer position.
		Condenser externally clogged	Clean the condenser
3	Compressor stops or does not start	Compressor power supply is interrupted	Check and correct as necessary.
		Thermal protection for refrigerant compressor motor trips	Reset temperature gauge.
		Dryer restarted too soon, not enough time to equalize pressure	Wait a few minutes and restart.
		High-pressure switch trips with manual reset	Reset switch
4	Condensate drainage remains inoperative or alarm	Cooling water system clogged	Have system checked
		Filter upstream of the solenoid valve clogged	Check filter
		Drain pipe with pressure	Keep the drain pipe with free pressure and drain the water in system by manual ball valve.
5	Evaporator pressure is too high or too low at unload	High temperature gas by-pass valve set incorrectly or faulty	Adjust the high-temperature gas by-pass valve.
		Condenser pressure too high or too low	• Check if the ambient temperature is higher or lower than the specification. • Check that the fan is functional and running.

	Conditions	Fault	Corrective action
			• Check the pressure
		Insufficient refrigerant	Check the circuit for leaks and replenish.

8. Technical Data

8.1 Reference conditions and limits

Specification	Unit	Values			
		DXR246 VSD W-A	DXR360 VSD W-A	DXR450 VSD W-A	DXR510 VSD W-A
Compressed air effective inlet pressure	bar	7	7	7	7
Ambient Air	˚C	25	25	25	25
Compressed air inlet temperature	˚C	35	35	35	35
Cooling water inlet temperature	˚C	32	32	32	32
Pressure Dewpoint	˚C	3-5	3-5	3-5	3-5
Cooling water flow rate	(l/min)	68	99	122	136

Operating limits

Specification	Unit	Values
		DXR246 VSD W-A~~ DXR510 VSD W-A
Maximum compressed air effective inlet pressure	bar(e)	13
Maximum ambient temperature	˚C	/
Maximum inlet water temperature	˚C	32
Minimum ambient temperature	˚C	/
Minimum inlet water temperature	˚C	5
Maximum compressed air inlet temperature	˚C	55

Performance data

Specification		Unit	Values			
			DXR246 VSD W-A	DXR360 VSD W-A	DXR450 VSD W-A	DXR510 VSD W-A
Dryer inlet volume flow rate		l/s	410	600	750	850
		m^3/min	24.6	36.0	45.0	51.0
Refrigerant type			R410A	R410A	R410A	R410A
	Total volume	g	4000	4000	5000	5500
Shipping weight (Net weight) (approximate)		kg	700(500)	700(500)	730(530)	750(550)
Canopy dimensions (approximate)	Length	mm	1350	1350	1350	1350
	Width	mm	1100	1100	1100	1100
	Heigth	mm	1750	1750	1750	1750

Electrical data

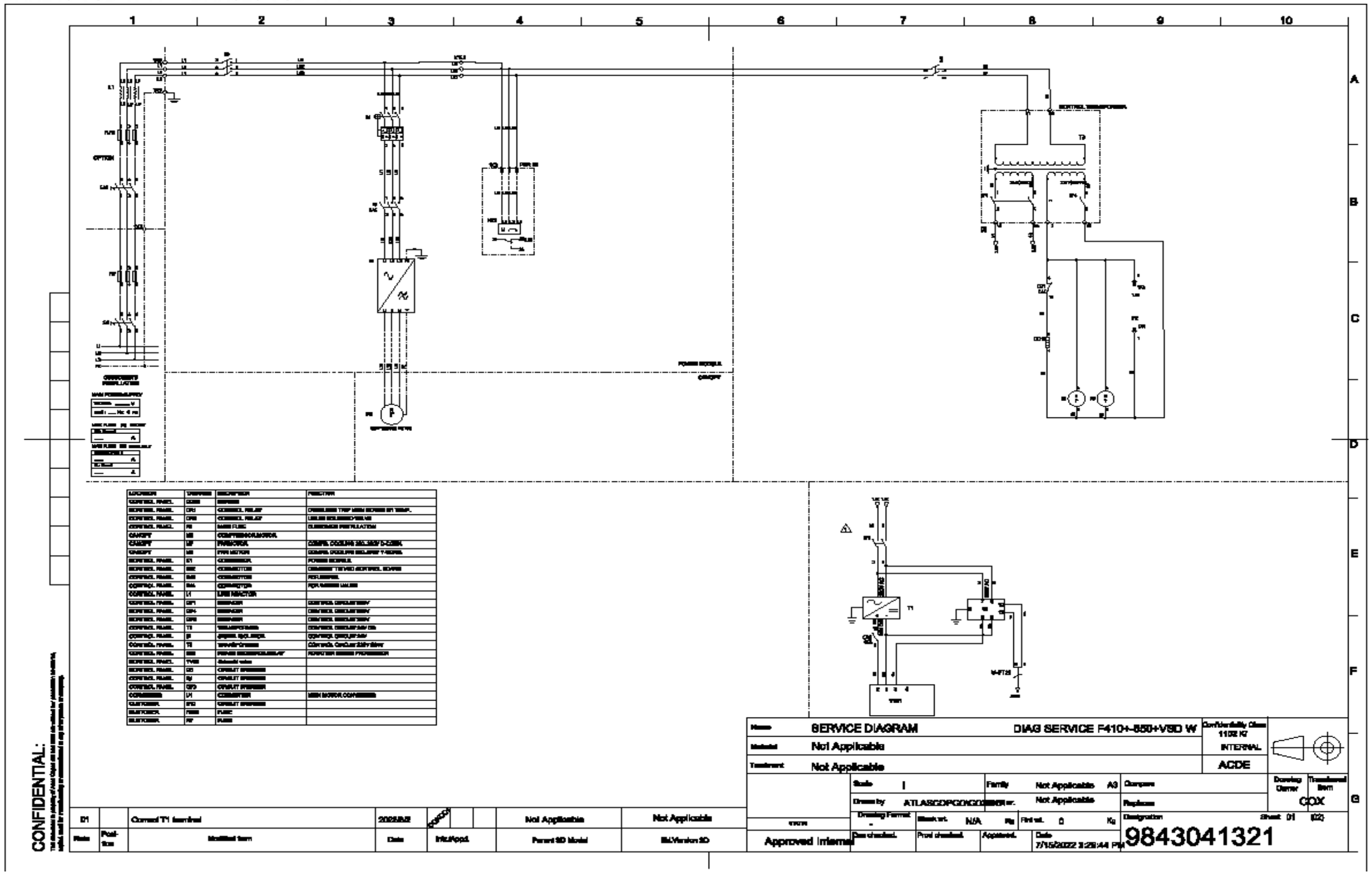
Specification	Unit	Values			
		DXR246 VSD W-A	DXR360 VSD W-A	DXR450 VSD W-A	DXR510 VSD W-A
Voltage-phase-frequency	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50
Maximum power (ambient temperature 45˚C; inlet temperature 55˚C)	W	3890	5870	7300	8360
Rated power (ambient temperature 25°C, inlet temperature 35°C)	W	1860	2730	3330	3800
Minimum cable size (maximum cable length 10 meters)	mm^2	10	10	10	10

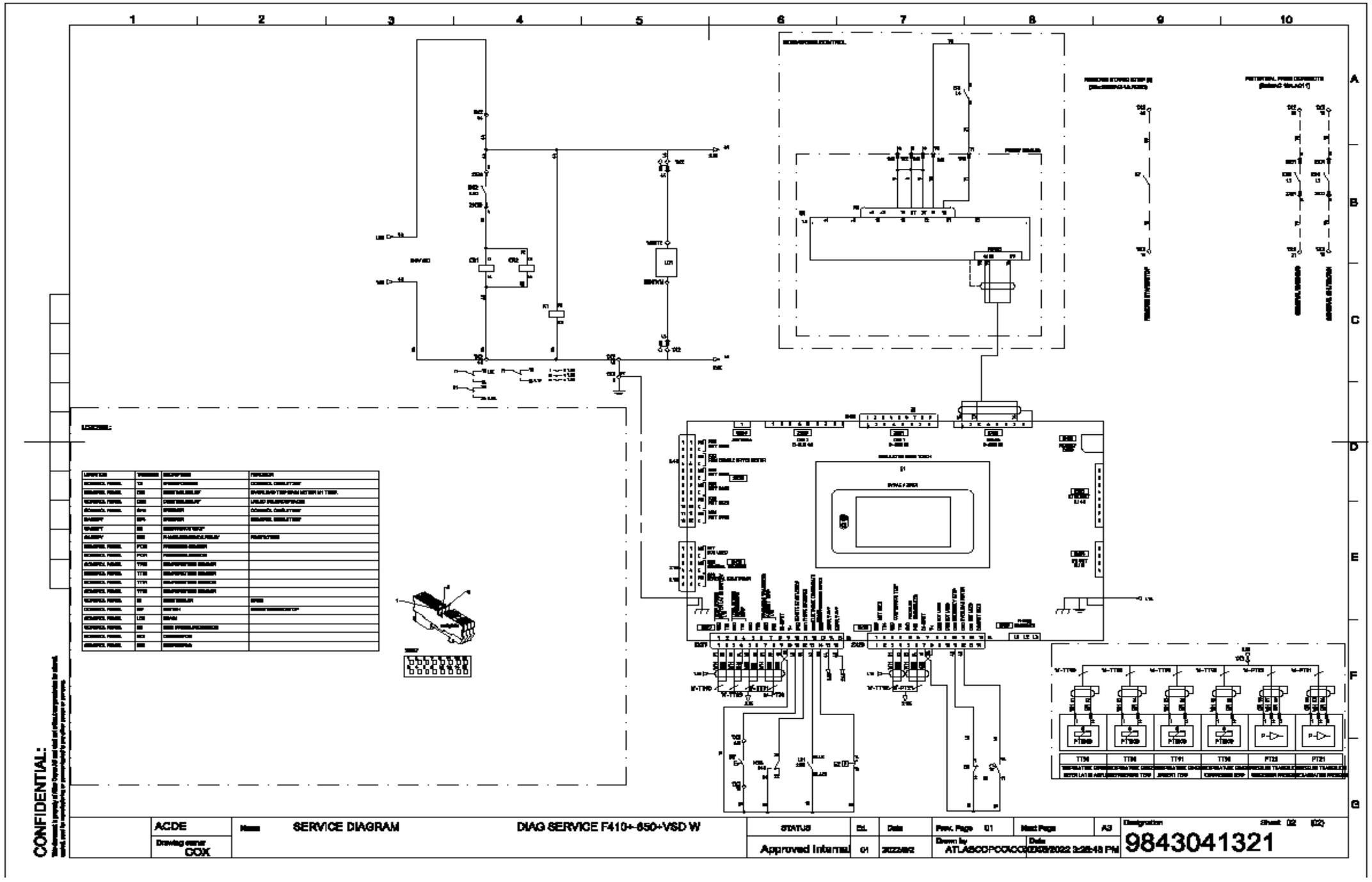
Pipe connections

Specification	Values			
	DXR246 VSD W-A	DXR360 VSD W-A	DXR450 VSD W-A	DXR510 VSD W-A
Air connections	Flange DN100 PN16	Flange DN100 PN16	Flange DN100 PN16	Flange DN100 PN16
Water connections	G1”(Male)	G1”(Male)	G1”(Male)	G1”(Male)

9. Service diagram

DXR246 VSD W-A~~ DXR510 VSD W-A

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Experience. Customer. Service