

INSTRUCTION BOOK

REFRIGERANT DRYER

FD 100 VSD, FD 140 VSD, FD 180 VSD, FD 220 VSD, FD 260 VSD, FD 300 VSD

Atlas Copco



Atlas Copco

Refrigerant dryer

**FD 100 VSD, FD 140 VSD, FD 180 VSD, FD 220 VSD,
FD 260 VSD, FD 300 VSD**

From following serial No. onwards: ITJ 329 262

Instruction book

Original instructions

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

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1 Safety precautions

1.1 Safety icons

Explanation

	Danger to life
	Warning
	Important note

1.2 Safety precautions, general

General precautions

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 dryer 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 dryer, press the emergency stop button, switch off the voltage and depressurize the dryer. In addition, the power isolating switch must be opened and locked.
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 dryer canopy.

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. The unit is designed for indoor use. If the unit is installed outdoors, special precautions must be taken; consult the manufacturer.
3. Place the machine where the ambient air is as cool and clean as possible. If necessary, install a suction duct. Never obstruct the air inlet. Care must be taken to minimize the entry of moisture at the inlet air.
4. Any blanking flanges, plugs, caps and desiccant bags must be removed before connecting the pipes.
5. Air hoses must be of correct size and suitable for the working pressure. Never use frayed, damaged or worn hoses. Distribution pipes and connections must be of the correct size and suitable for the working pressure.
6. The aspirated air must be free of flammable fumes, vapors and particles, e.g. paint solvents, that can lead to internal fire or explosion.
7. Arrange the air intake so that loose clothing worn by people cannot be sucked in.
8. 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.
9. No external force may be exerted on the air outlet valve; the connected pipe must be free of strain.
10. If remote control is installed, the machine must bear a clear sign stating: DANGER: This machine is remotely controlled and may start without warning.
The operator has to make sure that the machine is stopped and that the isolating switch is open and locked before any maintenance or repair. As a further safeguard, persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment.
11. Air-cooled machines must be installed in such a way that an adequate flow of cooling air is available and that the exhausted air does not recirculate to the air inlet or cooling air inlet.
12. The electrical connections must correspond to the applicable codes. The machines must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the dryer.
13. 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.
14. 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.

15. 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. Other high-temperature pipework must be clearly marked.
16. For water-cooled machines, the cooling water system installed outside the machine has to be protected by a safety device with set pressure according to the maximum cooling water inlet pressure.
17. If the ground is not level or can be subject to variable inclination, consult the manufacturer.



Also consult following safety precautions: [Safety precautions during operation](#) and [Safety precautions during maintenance](#).
 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



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 operation

1. Never touch any piping or components of the machine 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. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
4. Never operate the machine when there is a possibility of taking in flammable or toxic fumes, vapors or particles.
5. Never operate the machine below or in excess of its limit ratings.
6. Keep all bodywork 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.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) shall wear ear protectors.
8. Periodically check that:
 - All guards are in place and securely fastened
 - All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
 - There are no leaks
 - All fasteners are tight
 - All electrical leads are secure and in good order
 - Safety valves and other pressure-relief devices are not obstructed by dirt or paint
 - Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse
9. If warm cooling air from dryers is used in air heating systems, e.g. to warm up a workroom, take precautions against air pollution and possible contamination of the breathing air.
10. Do not remove any of, or tamper with, the sound-damping material.
11. Never remove or tamper with the safety devices, guards or insulations fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure shall be protected by a pressure-relieving device or devices as required.



Also consult following safety precautions: [Safety precautions during installation](#) and [Safety precautions during maintenance](#).

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.

Safety precautions

It is important to follow all regulations regarding the use of radio equipment, in particular regarding the possibility of radio frequency (RF) interference. Please follow the safety advice

given below carefully.

- Respect restrictions on the use of radio equipment in fuel depots, chemical plants or other explosive environments.
- Avoid operation close to inadequately protected personal medical devices such as hearing aids and pacemakers. Consult the manufacturers of the medical device to determine if it is adequately protected.
- Avoid operation close to other electronic equipment which may also cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturer recommendations.
- Respect a distance from the human body of at least 20 cm (8 inch) during operation.
- Do not operate the device in areas where cellular modems are not advised without proper device certifications. These areas include environments where cellular radio can interfere, such as explosive atmospheres, medical equipment, or any other equipment which may be susceptible to any form of radio interference. The modem can transmit signals that could interfere with this equipment.

1.5 Safety precautions during maintenance or repair



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 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 on, or in any way modify, pressure vessels.
12. Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of the oil vapor when air is admitted.
13. Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
14. Make sure that no tools, loose parts or rags are left in or on the machine.
15. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
16. Before clearing the machine for use after maintenance or overhaul, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly.
17. Protect the motor, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam-cleaning.
18. Make sure that all sound-damping material and vibration dampers, e.g. damping material on the bodywork, is in good condition. If damaged, replace it by genuine material from the manufacturer to prevent the sound pressure level from increasing.
19. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.

20. The following safety precautions are stressed when handling refrigerant:

- Never inhale refrigerant vapours. Check that the working area is adequately ventilated; if required, use breathing protection.
- Always wear special gloves. In case of refrigerant contact with the skin, rinse the skin with water. If liquid refrigerant contacts the skin through clothing, never tear off or remove the latter; flush abundantly with fresh water over the clothing until all refrigerant is flushed away; then seek medical first aid.



Also consult following safety precautions: [Safety precautions during installation](#) and [Safety precautions during operation](#).

These precautions apply to machinery processing or consuming air or inert gas.

Processing of any other gas requires additional safety precautions typical to the application which are not included herein.

Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.6 Dismantling and disposal

Dismantling

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

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

Disposal of electrical and electronic appliances (WEEE)

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



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

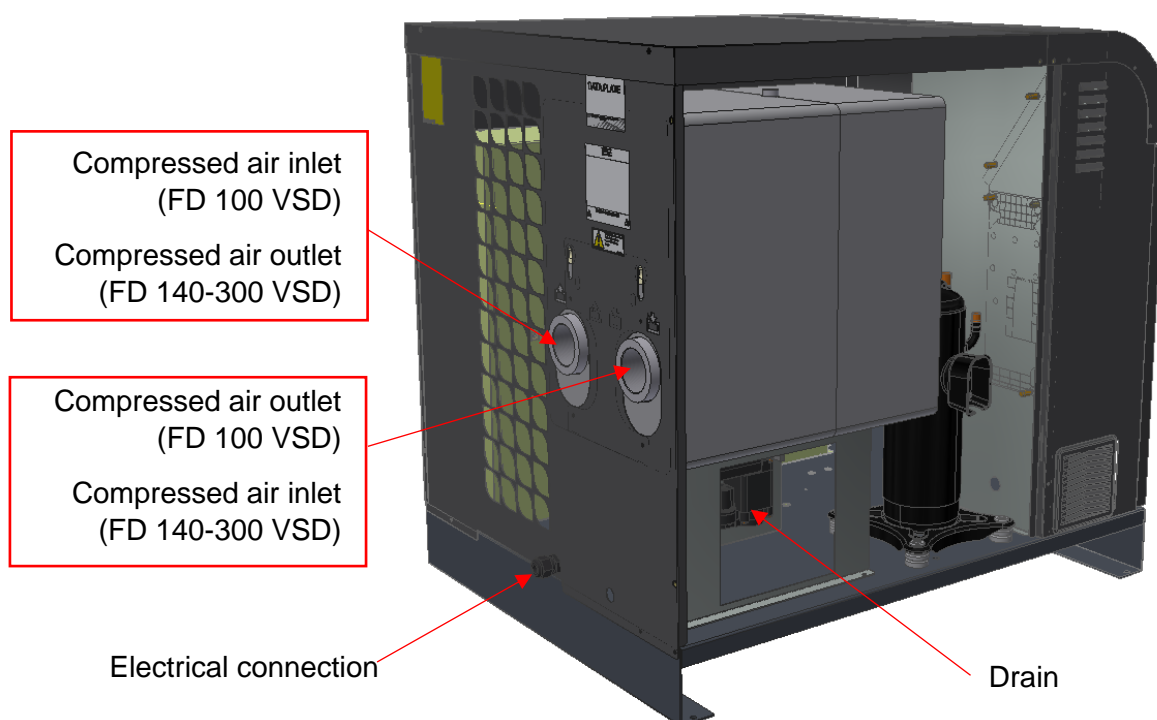
At the end of life-time of the electric and electronic equipment (EEE) it must be taken to separate collection.

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

Disposal of other used material

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

2 General description



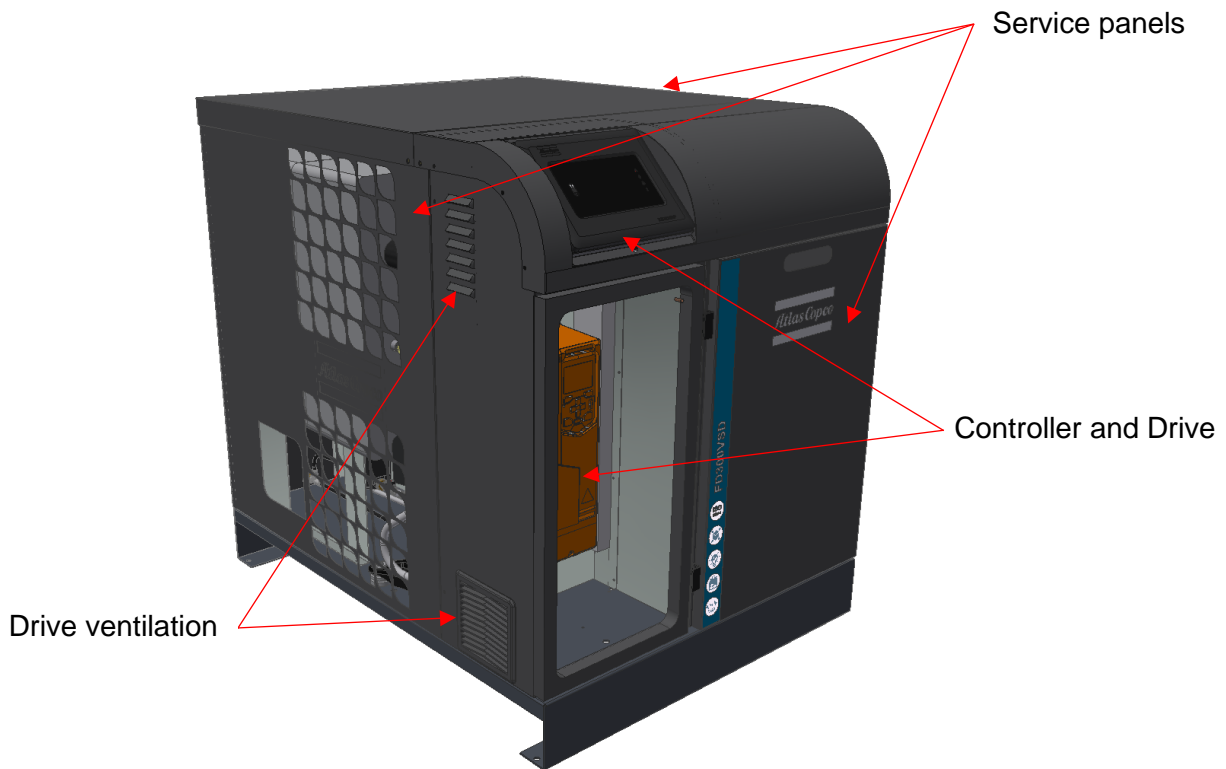
2.1 Introduction

Description

The air dryer removes moisture from compressed air by cooling the air to near freezing point. This causes water to condense. The condensate is automatically drained. The air is warmed up before leaving the dryer (approx. 5 °C (9 °F) below the incoming air temperature).

The electronic regulator keeps the pressure dew-point stable by controlling the refrigerant compressor.

General view



2.2 Intended use

The dryer has been built to dry the compressed air for industrial use. The dryer cannot be used in premises where there is a risk of fire or explosion or where work is carried out which releases substances into the environment which are dangerous with regard to safety (for example: solvents, inflammable vapours, alcohol, etc.).

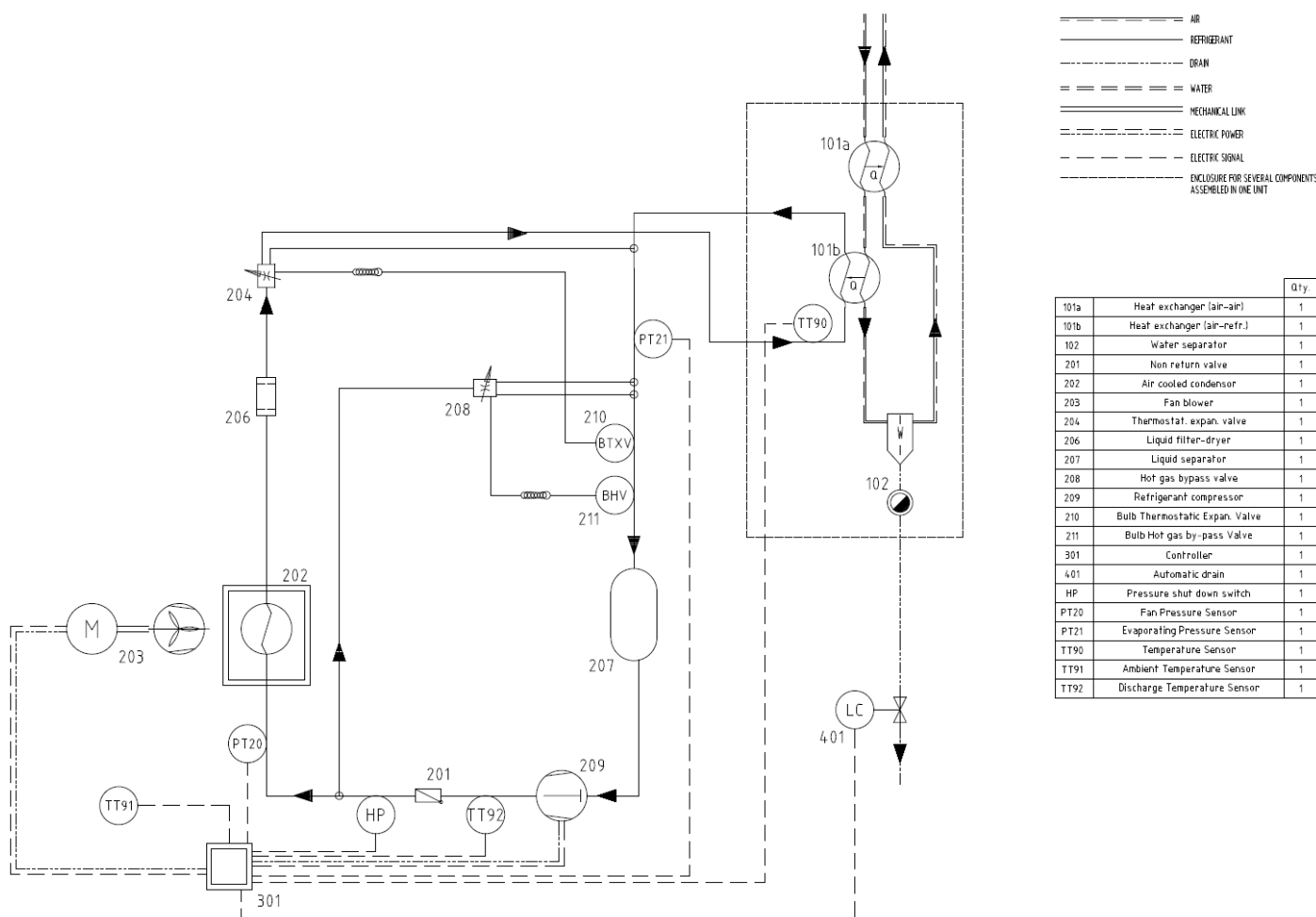
In particular the appliance cannot be used to produce air to be breathed by humans or used on direct contact with foodstuffs. These uses are allowed if the compressed air produced is filtered by means of a suitable filtering system (Consult the manufacturer for these special uses.)

This appliance must be used only for the purpose for which it was specifically designed. All other uses are to be considered incorrect and therefore unreasonable. The Manufacturer cannot be held responsible for any damage resulting from improper, incorrect or unreasonable use.

2.3 Operation

The gaseous refrigerant coming from the evaporator (101b) is sucked by the refrigeration compressor (209) and it is pumped into the condenser (202). This one allows its condensation, eventually with the help of the fan (203); the condensed refrigerant passes through the dewatering filter (206) and it expands through the thermostatic expansion valve (204) and goes back to the evaporator where it produces the refrigerating effect. Due to the heat exchange with the compressed air which passes through the evaporator against the stream, the refrigerant evaporates and goes back to the compressor for a new cycle.

The circuit is equipped with a bypass system for the refrigerant; this intervenes to adjust the available refrigerating capacity to the actual cooling load. This is achieved by injecting hot gas under the control of the valve (208): this valve keeps constant the pressure of the refrigerant in the evaporator and therefore also the dew point never decreases below 0 °C (32°F) in order to prevent the condensate from freezing inside the evaporator. The dryer runs completely automatically.



2.4 General Safety Standard






The appliance may be used only by specially trained and authorized personnel.

Any tampering with the machine or alterations not approved beforehand by the Manufacturer relieve the latter of responsibility for any damage resulting from the above actions.

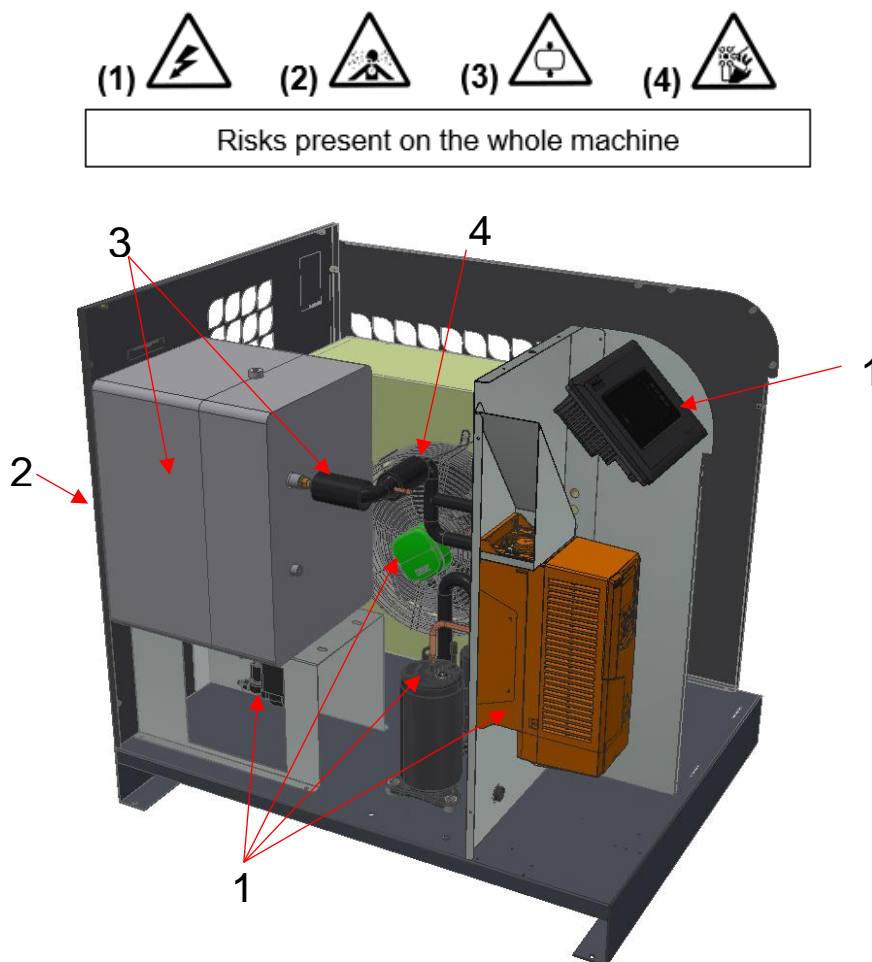
The removal of or tampering with the safety devices constitutes a violation of the European Standards on safety.

ALL WORK ON THE ELECTRIC PLANT, HOWEVER SLIGHT, MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL.

2.5 Description of danger signals

				
1) Dangerous electric voltage	2) Air not fit for breathing	3) High pressure	4) Fan rotating	5) Hot parts

2.6 Danger zone



3 Elektronikon™ Touch controller

3.1 Controller



The Touch controller

Introduction

The controller has following functions:

- Controlling the unit
- Protecting the unit
- Monitoring components subject to service
- Automatic restart after voltage failure (ARAVF)

Automatic control of the unit

The controller adapts the motor speed in order to achieve the set point (PDP) in relation to the regulation mode selected.

Protecting the unit

Shutdown

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

Example: If the PDP remains for too much time below -7°C (19,4 °F) the unit will be stopped.

The unit will also be stopped in case of overload of the drive motor or 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 unit.

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.

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 unit when the voltage is restored after voltage failure. For units 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 unit 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 unit 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 unit is running in automatic operation.
5	Voltage sign	Indicates that the voltage is switched on.
6	Stop button	This button stops the unit.
7	Start button	This button starts the unit. The operation sign (4) lights up. The controller is operative.









3.3 Icons used

Menu icons

Menu	Icon	Menu	Icon	Menu	Icon
Data	 85233D	Status	 85239D		
		Inputs	 85240D		
		Outputs	 85241D		
		Counters	 85242D		
		Aux. Equipment Parameters	 85243D	Converters	 85251D
Service	 85234D	Service		Overview	 85252D
				Service Plan	 85253D
				Service History	 85254D
		Service functions	 85244D		
		Clean Screen	 85302D		
Week Timer	 85235D			Week	 85303D
				Remaining Running Time	 85304D
Event History	 85236D	Saved Data	 85245D		


Menu	Icon	Menu	Icon	Menu	Icon
Machine Settings	 85237D	Alarms	 85239D		
		Regulation	 85346D		
		Control Parameters	 85347D		
		Aux. Equipment Parameters	 85243D	Converter(s)	 85251D
				Fan	 85255D
				Internal SmartBox	 85256D
		Auto Restart	 85274D		
Controller Settings	 85238D	Network Settings	 85246D	Ethernet Settings	 85257D
				CAN Settings	 85258D
		Localisation	 85247D	Language	 85259D
				Date/Time	 85260D
				Units	 85261D
		User Password	 85248D		
		Help	 85249D		
		Information	 85250D		

Status icons







Icon	Description
	Motor Stopped
	Motor Stopped Wait
	Motor Running
 85271D	Machine Control Mode, Local
 85272D	Machine Control Mode, Remote
 85273D	Machine Control Mode, LAN
 85274D	Automatic Restart After Voltage Failure
 85275D	Week Timer Active

System icons

Icon	Description
 85276D	Basic User
 85277D	Advanced User
 85278D	Service User
 85279D	Antenna 25%
 85280D	Antenna 50%
 85281D	Antenna 75%
 85282D	Antenna 100%
 85283D	Change between screens (indication)
 85284D	Energy recovery
 85285D	Dryer
 85286D	Element
 85287D	Drain(s)
 85288D	Analogue Output
 85289D	Menu
 85290D	Reset
 85291D	Auto Restart

Icon	Description
 85292D	Filter(s)
 85293D	Cooler
 85294D	Valve(s)
 85295D	Power Meter

Input icons

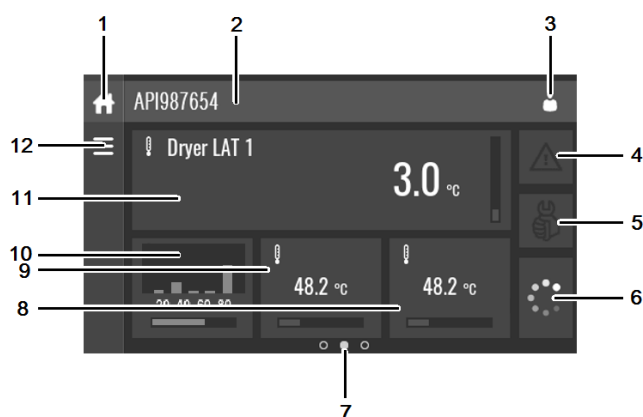
Icon	Description
 85296D	Pressure
 85297D	Temperature
 85298D	Special Protection
 85299D	Open
 85300D	Closed
	This chapter gives a general survey of available icons. Not all icons mentioned in this chapter are applicable to every machine.

3.4 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.

Description



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	Status	This icon shows the current status of the unit.
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.

Reference	Designation	Function
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: <ul style="list-style-type: none">• Ambient temp• % of speed• Dryer dewpoint Examples of counters: <ul style="list-style-type: none">• Running hours• Load relay• Loaded hours
12	Menu button	The menu button is always shown and can be tapped to go to the menu.

3.5 Quick access screen

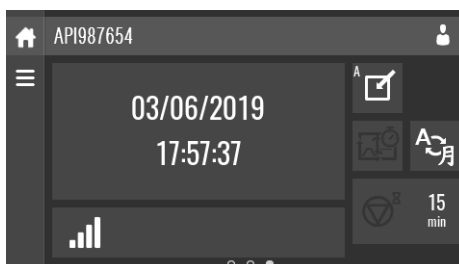
Function

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	<p>The control mode can be changed by tapping this icon.</p> <ul style="list-style-type: none"> Local control via start/stop buttons Remote control via digital input(s) LAN control via the network. <p>When in Remote or LAN control, the start/stop buttons on the controller will not work.</p>
Display language	The display language of the controller can be changed by tapping this icon.
Manual unload (only on fixed speed units)	When tapped, the machine will go in Manual unload mode until the icon is tapped again.
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	<p>The reception quality of the internal antenna can be monitored.</p>  <p>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%.</p>
Auto restart	Auto restart can be activated by tapping this icon.

3.6 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, starting from the main screen.

Description

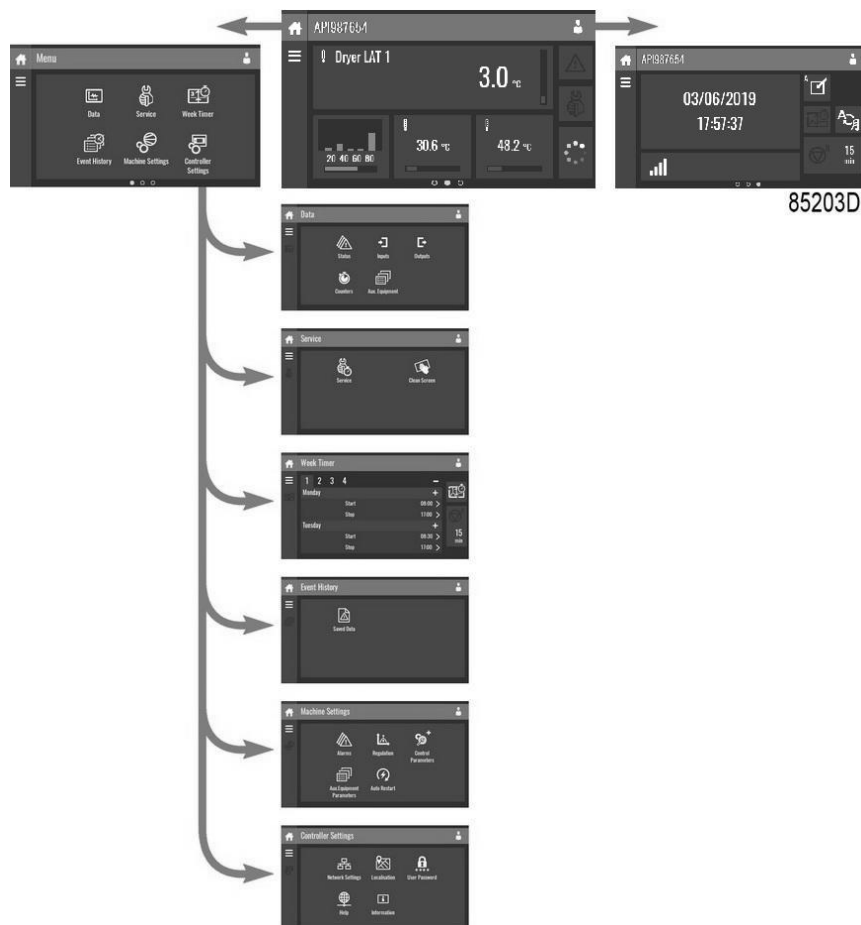


85204D

Reference	Designation	Function
(1)	Data	The data menu contains the status of the unit, 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 Status information of the unit 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, Localization 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 screens and tapping icons or menu items.



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

3.7 Data menu

Function

This screen is used to display the following submenus:

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

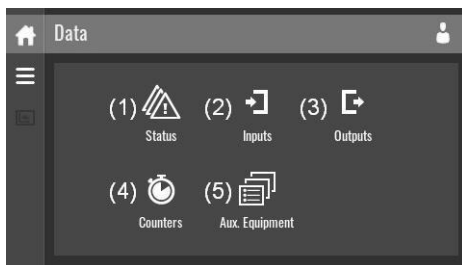
These submenus can be entered by tapping the icons.

Procedure

To enter the Data menu screen:

1. Tap the Menu button
2. Tap the Data icon

Description

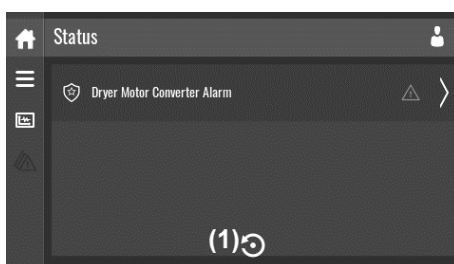


85210D

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

Status menu

Tap the Status icon to enter the Status menu.



This menu shows the current status of the unit.

If an alarm is active, it can be viewed by tapping the alarm message. To reset an alarm, tap the reset button (1).

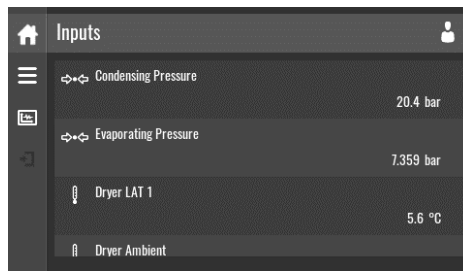


Before remedying, consult the [Safety precautions](#).

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

Inputs menu

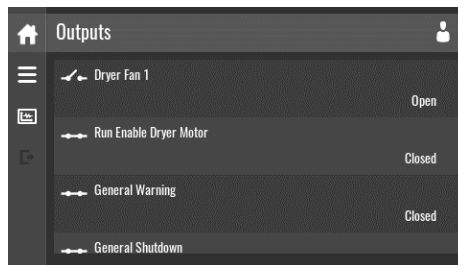
Tap the Inputs icon to enter the Inputs menu.



This menu shows information about all the inputs.

Outputs menu

Tap the Outputs icon to enter the Outputs menu.

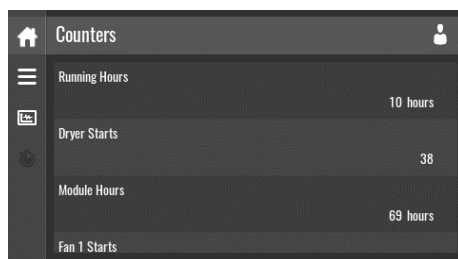


This menu shows information about all the outputs.

	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 unit and switch off the supply before connecting external equipment. Check the Safety precautions .

Counters menu

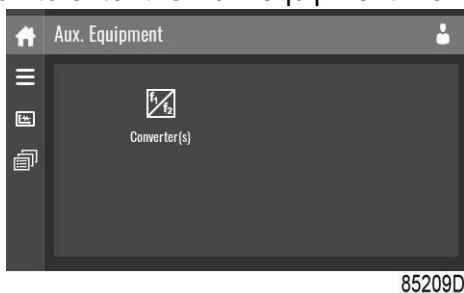
Tap the Counters icon to enter the Counters menu.



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

Auxiliary equipment menu

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



This menu shows an overview of all auxiliary equipment fitted.

3.8 Service menu

Function

This screen is used to display the following submenus:

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

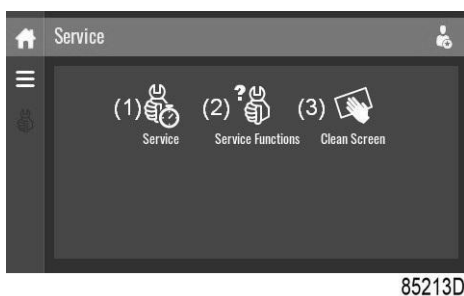
These submenus can be entered by tapping the icons.

Procedure

To enter the Service menu screen:

1. Tap the Menu button
2. Tap the Service icon

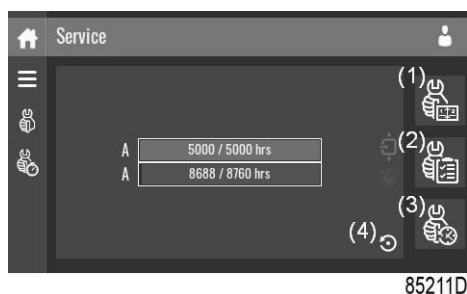
Description



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.



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:

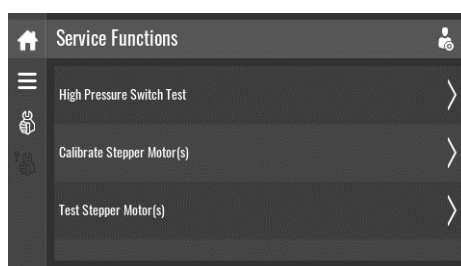
1. Tap the desired service plan. A selection screen will pop up.
2. Change the Running Hours by tapping '–' or '+'.
3. Confirm by tapping 'V' or decline by tapping 'X'.

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)

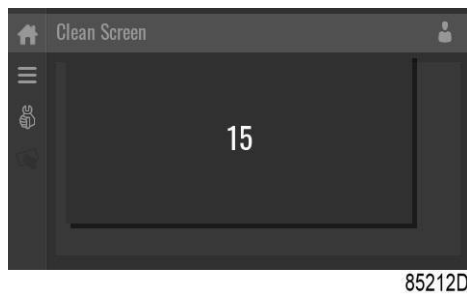
Tap the Service Functions icon to enter the Service Functions menu.



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.



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

3.9 Week timer menu

Function

This screen is used to set up to 4 different week timers with each up to 8 settings per day.

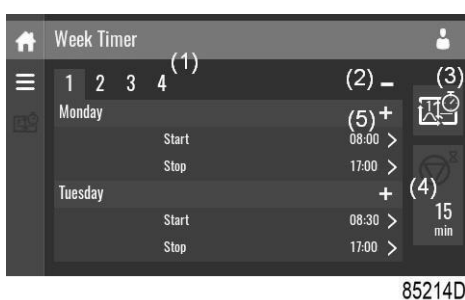
The week timers can be activated through this screen.

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

Procedure

To enter the Week Timer menu screen:

1. Tap the Menu button
2. Tap the Week Timer icon



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'.

3.10 Event history menu

Function

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

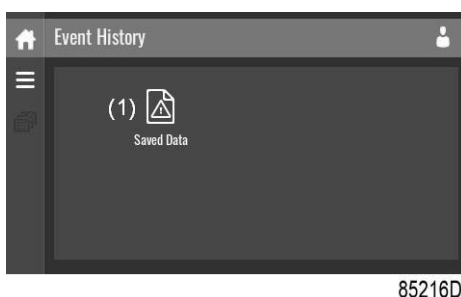
These submenus can be entered by tapping the icons.

Procedure

To enter the Event history menu screen:

1. Tap the Menu button
2. Tap the Event History icon

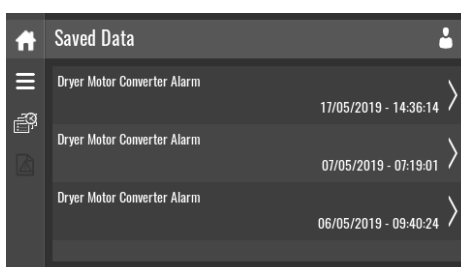
Description



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 unit when the shutdown occurred.

3.11 Machine settings menu

Function

This screen is used to display the following submenus:

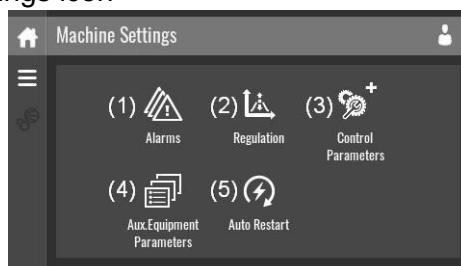
- Alarms
- Regulation
- Control Parameters
Only visible if the machine has adaptable parameters.
- Aux. Equipment parameters
- Auto Restart

These submenus can be entered by tapping the icons.

Procedure

To enter the Machine settings menu screen:

1. Tap the Menu button
2. Tap the Machine Settings icon

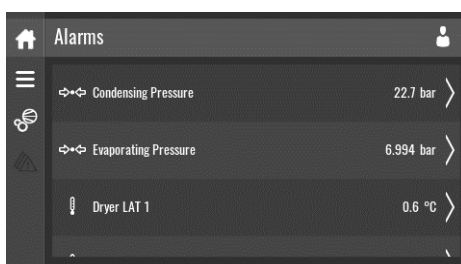


85222D

Reference	Designation
(1)	Alarms menu
(2)	Regulation menu
(3)	Control Parameters menu
(4)	Aux. Equipment Parameters menu
(5)	Auto Restart menu

Alarms menu

Tap the Alarms icon to enter the Alarms menu.

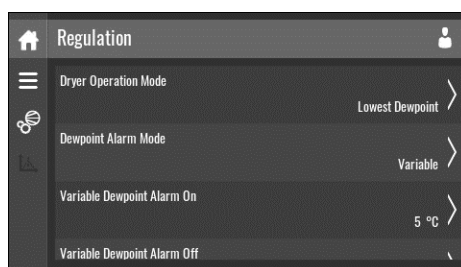


A list of all alarms is shown.

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

Regulation menu

Tap the Regulation icon to enter the Regulation menu.



Regulation mode 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'.

Regulation mode

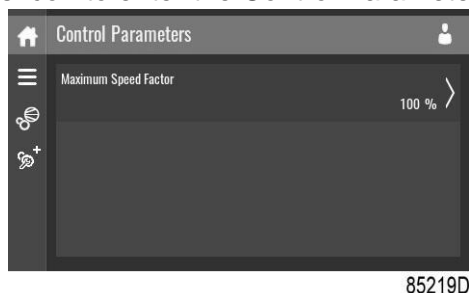
Lowest dew point: the system keeps 3 °C (37,4 °F) as PDP setpoint at the reference conditions.

Economy: the system keeps 8 °C (46,4 °F) as PDP setpoint at the reference conditions.

Maximum saving: the system keeps 15 °C (59 °F) as PDP setpoint at the reference conditions.

Control parameters menu

Tap the Control Parameters icon to enter the Control Parameters menu.



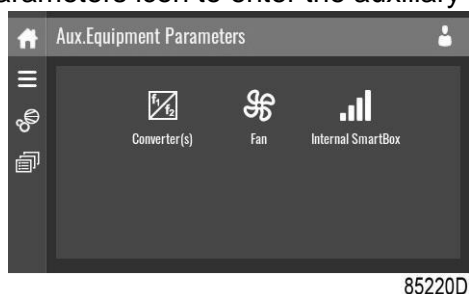
This menu shows information about the Control Parameters.

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'.

Auxiliary equipment parameters menu

Tap the Aux. Equipment Parameters icon to enter the auxiliary equipment parameters menu.



This menu shows an overview of all the auxiliary equipment fitted.

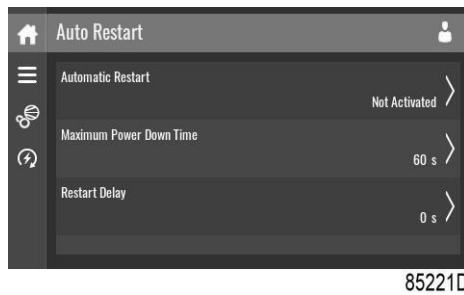
Through this menu, the parameters of the auxiliary equipment can be changed.

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'.

Auto restart menu

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



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'.

3.12 Controller settings menu

Function

This screen is used to display the following submenus:

- Network Settings
- Localisation
- User Password
- Help
- Information

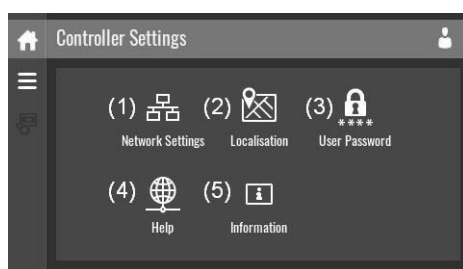
These submenus can be entered by tapping the icons.

Procedure

To enter the Controller Settings menu screen:

1. Tap the Menu button
2. Tap the Controller Settings icon

Description

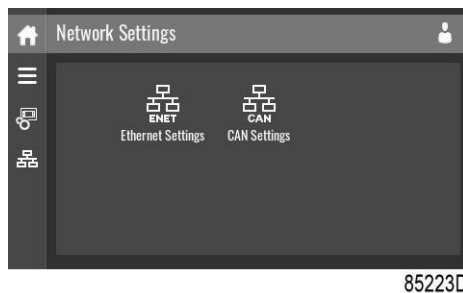


85228D

Reference	Designation
(1)	Network Settings menu
(2)	Localisation 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.



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

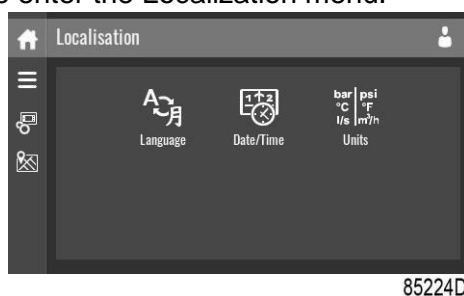
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

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.



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

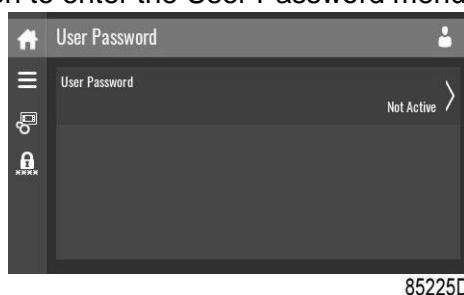
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

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.



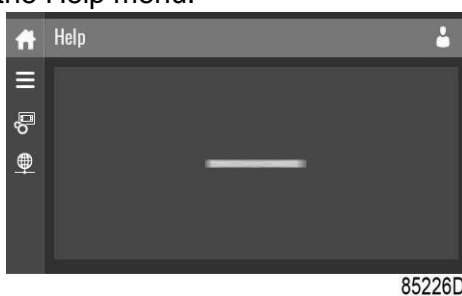
The user password can be activated or deactivated through this menu. Enter and confirm a user password to activate, repeat to deactivate.

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.



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.



This menu shows information about the controller.

3.13 Access level

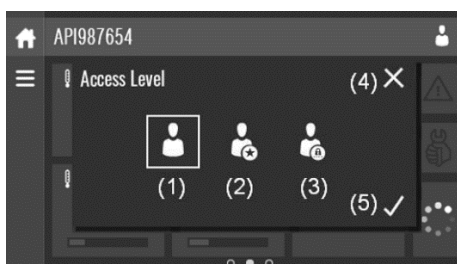
Function

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

Procedure

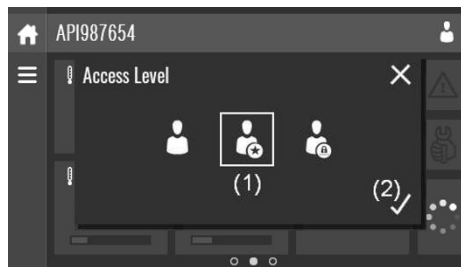
The Access Level screen can be viewed or changed by tapping the Access Level button at the upper right corner of the screen.

Description

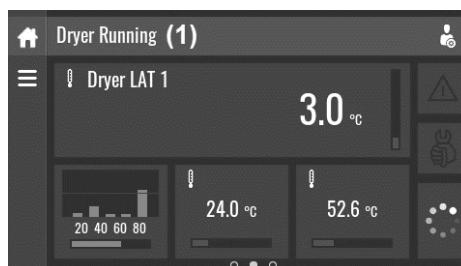


Reference	Designation	Function
(1)	User	A basic set of parameters is visualized, no password required.
(2)	Service	A basic set of parameters can be modified, no password required.
(3)	Full	This access level is not accessible to end users.
(4)	Decline	Tap to decline the selected user level.
(5)	Confirm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

Service access level



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



The screen information bar (1) now shows the current status of the unit 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](#).

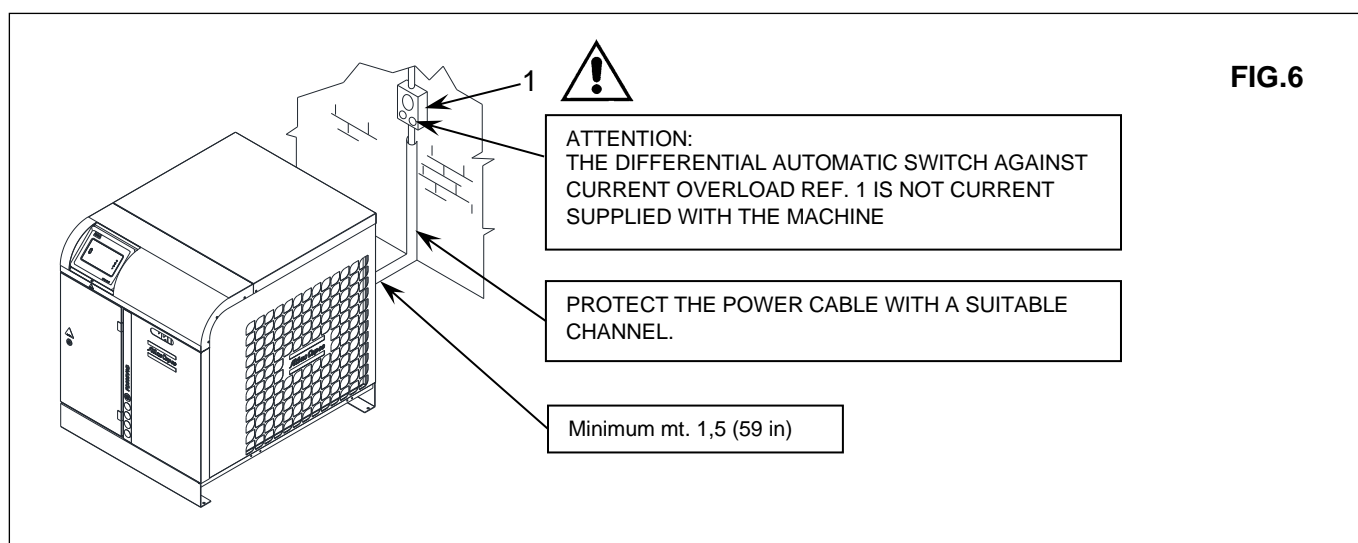
In the service menu, an extra menu item is now available. See [Service menu](#).

4 Installation

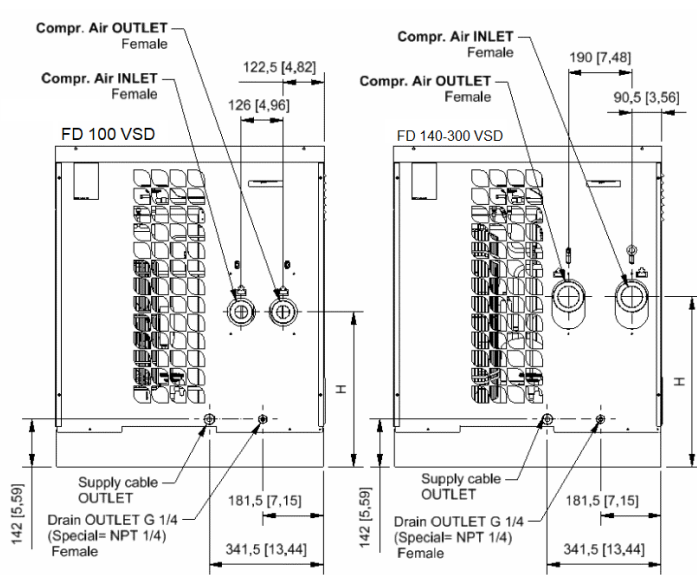
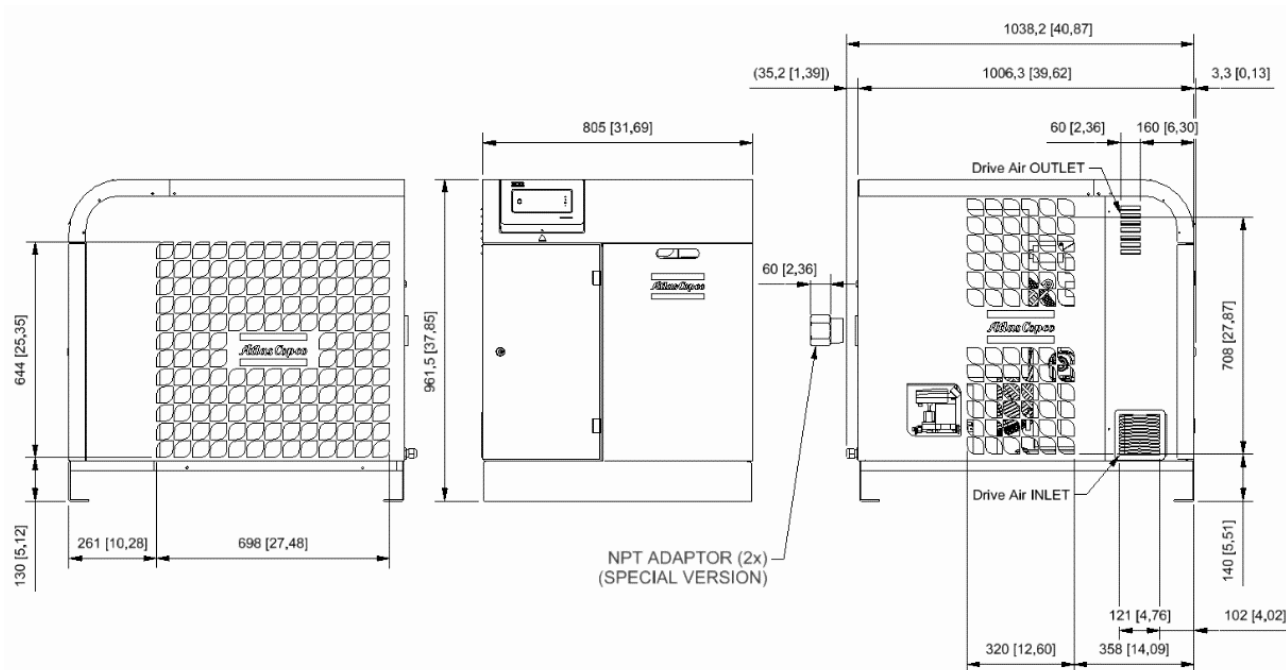
After unpacking the equipment and preparing the dryers room, put the machine into position, checking the following items:

ensure that there is sufficient space around the machine to allow maintenance (see Fig. 6).

ENSURE THAT THE OPERATOR CAN SEE THE WHOLE MACHINE FROM THE CONTROL PANEL AND CHECK THE PRESENCE OF ANY UNAUTHORIZED PERSONS IN THE VICINITY OF THE MACHINE.



4.1 Dimension drawings



DRYER type	Air connection dryers				
	IN	OUT	IN (SPECIAL)	OUT (SPECIAL)	H
FD 100 VSD	G 1 1/2	G 1 1/2	NPT 1 1/2	NPT 1 1/2	463
FD 140-180 VSD	G 2	G 2	NPT 2	NPT 2	461
FD 220 VSD	G 2 1/2	G 2 1/2	NPT 2 1/2	NPT 2 1/2	489
FD 260 VSD	G 2 1/2	G 2 1/2	NPT 2 1/2	NPT 2 1/2	509
FD 300 VSD	G 2 1/2	G 2 1/2	NPT 2 1/2	NPT 2 1/2	509

4.2 Electric cable size and fuses



Local regulations remain applicable if they are stricter than the values proposed.
 For calculations, an undervoltage of 10% is considered and according to EN60364-5-523, table 52-C11 with installation method E.
 Grouping: distance between cables is equal to the cable diameter.
 For IEC dryers, the settings of the main fuses below are according to Directive 2014/35/EU (low-voltage directive) EN60204-1. The cable size is valid for cable PVC 70 °C (158 °F) at an ambient temperature of 40 °C (104 °F) / 46 °C (114.8 °F).
 For cULus dryers, the settings of the main fuses below are according to CSA standards C22.1 and NFPA70. The cable size is valid for cable PVC 75 °C (167 °F) at an ambient temperature of 40 °C (104 °F) / 46 °C (114.8 °F).

Power cable

The power supply cable has to be sized and installed by a qualified electrician.

IEC air-cooled dryers with an ambient temperature of 46 °C (104 °F)

Dryer type	Supply voltage (V)	Fuse (A)	Fuse type	Supply cable
FD 100-300 VSD	400	3x16	gG ABB type OFAF000H16 000 Size 500V	2.5mm ²

5 Operating instructions

5.1 Warnings

Safety precautions

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

Altitude operation

Consult your supplier if operating above 1000 m (3281 ft).

5.2 Initial start

Control panel

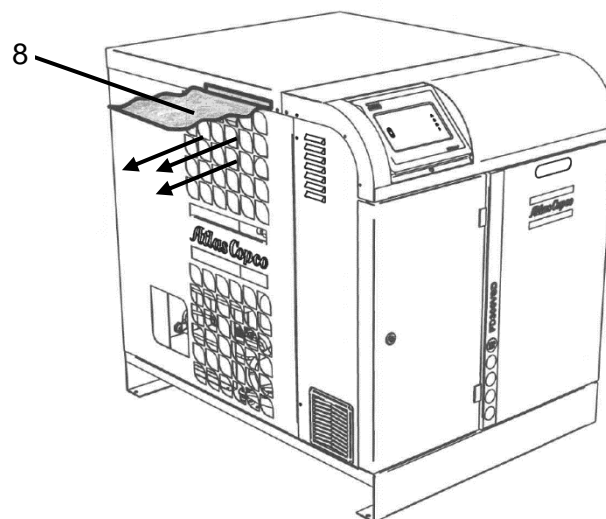


Description

Step	Action
1	At least 1 minutes before starting, the main supply to the dryer must be switched on to initialize the controller.

5.3 Starting

Control panel



Description

Step	Action
1	At least 1 minutes before starting, the main supply to the dryer must be switched on to initialize the controller.
2	<p>Check that all bodywork panels are fitted.</p> <p>Check that sheet (8) (explaining the procedure for checking the fan rotation direction) is affixed to the cooling air outlet of the dryer (grating on left panel).</p> <p>Consult Dimension drawings.</p> <p>Switch on the voltage. Start the dryer and wait for the fan to start.</p> <p>Check the rotation direction of the fan. If the fan rotation direction is correct, the sheet on the left panel grating will be blown upwards. If the sheet remains in place, the rotation direction is incorrect.</p> <p>If the rotation direction is incorrect, switch off the voltage, open the isolating switch and reverse two incoming electric lines.</p> <p>All electrical work should be carried out by professionally qualified people.</p>
3	Open the dryer air inlet valve (customer's installation).
4	Approx. 5 minutes later, open the dryer air outlet valve (customer's installation).
5	Approx. 10 minutes later, the nominal dew-point will be reached.

5.4 During operation

Control panel



Description

Regularly check:

- The pressure dew-point on the display of the control panel. The pressure dew-point will deviate from nominal if the air inlet conditions or volume flow differ from nominal.
- That condensate is discharged. The amount depends on the operating conditions.

5.5 Stopping

Control panel



Procedure

Step	Action
1	Close dryer inlet and outlet valves (customer's installation).
2	Press stop button (6). Voltage on sign (5) remains lit. Leave the voltage on if the dryer has to remain on stand-by. The fans can keep running.

6 Maintenance

6.1 Maintenance instructions

Important

	<p>The dryers contain refrigerant HFC.</p> <p>When the automatic operation LED is lit, starting and stopping of the dryer are controlled automatically.</p> <p>If the dryer start/stop timer is active, the dryer may start automatically, even if it was stopped manually.</p> <p>The compressor inlet temperature sensor cannot be removed when the dryer is filled with refrigerant.</p>
--	---

Safety precautions

When handling refrigerant R410A, all applicable safety precautions must be observed. The following points are stressed:

- Contact of refrigerant with the skin will cause freezing. Special gloves must be worn and, if there is 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; therefore, safety glasses must be worn.
- Refrigerant R410A is poisonous. Do not inhale refrigerant vapors. Check that the working area is adequately ventilated.
- When the dryer is filled with refrigerant, it is forbidden to remove the refrigerant compressor inlet sensor.

When removing the side panels of the dryer, be aware that internal elements such as the pipes can reach a temperature of 120 °C (248 °F). Therefore, wait until the dryer has cooled down before removing the side panels.

Before starting any maintenance or repairs, switch off the voltage. Isolate the dryer from the air net and depressurize by opening valve (5) on inlet collector (6).

Local legislation

Local legislation may impose that:

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

Warranty and product liability

Use only authorized genuine parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.

Service agreements

Customer Centers have a range of service agreements to suit your needs:

- An Inspection Plan.
- A Preventive Maintenance Plan.
- A Total Responsibility Plan.

Contact your Customer Center to arrange a tailor-made service agreement. This will ensure optimum operational efficiency, minimize downtime and reduce the total life cycle costs.


General

The following remarks should be kept in mind:

- Keep the dryer clean.
- Brush or blow off the finned surface of the condenser regularly.
- Inspect and clean the electronic water drain once a year.

7 Problem solving

Attention

	<p>Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.</p> <p>Apply all relevant Safety precautions.</p>
	<p>Before carrying out any maintenance or repairs on the dryer, stop the dryer and switch off the voltage.</p> <p>Open the isolating switch to prevent an accidental start.</p> <p>Isolate the dryer from the air net and depressurize by opening valve (5) on inlet collector (6).</p>

7.1 Faults and remedies (general)

Condition	Fault	Remedy
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 dryer
	Air inlet pressure too low	Increase inlet pressure
	Dryer capacity exceeded	Reduce air flow
	Shortage of refrigerant	Have circuit checked for leaks and recharged
	Refrigerant compressor does not run	See below
	Evaporator pressure too high	See below
	Condenser pressure too high	See below
	Automatic drain system clogged	Have the system cleaned
Condenser pressure too high or too low on air-cooled dryers	Fan control switch out of order	Replace
	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 place or relocate dryer
	Condenser externally clogged	Clean condenser
Compressor stops or does not start	Electric power supply to compressor is interrupted	Check and correct as necessary
	Motor overload protection of refrigerant compressor motor has tripped	Have motor checked For resetting: see the section Electrical system
	High-pressure switch tripped	See above
Condensate drain remains inoperative	Automatic drain system clogged	Flush the assembly by opening manual drain valve. Have system inspected
Condensate trap continuously discharges air and water	Automatic drain system out of order	Have system checked. If necessary replace automatic drain
Evaporator pressure is too high or too low at unload	Hot-gas by-pass valve incorrectly set or out of order	Have hot-gas by-pass valve adjusted
	Condenser pressure too high or too low	See above
	Shortage of refrigerant	Have circuit checked for leaks and recharged

7.2 Faults and remedies (controller)

Condition	Fault	Remedy
Drain alarm	No pressure in the air net	Error disappears when the pressure in the air net is restored
	Drain was not able to drain all the water	Push drain button manually. When this occurs frequently the drain should be replaced
	Drain was not able to drain all the water	Clean the drain internally (tank/membrane/piston/spring)
	No voltage supply to the drain	Check and correct supply to the drain
High pressure switch has shut down the dryer	Condensing pressure too high	Push the small button of the high-pressure switch
		Clean the condenser
		Improve ventilation of the cooling air
		See condition "condenser pressure too high or too low on air-cooled dryers"
Refrigerant compressor discharge temperature too high	Too high load	Reduce air flow
	Shortage of refrigerant	Have circuit checked for leaks and recharged

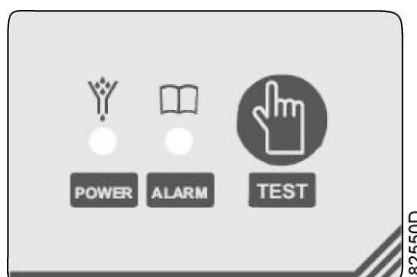
7.3 Faults and remedies (converter). Only for VSD models.

Fault	Description	Cause	What to do
A2B1	Overcurrent	Output current has exceeded internal fault limit. In addition to an actual overcurrent situation, this warning may also be caused by an earth fault or supply phase loss.	<p>Check motor load.</p> <p>Check motor and motor cable. Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable.</p> <p>Measure the insulation resistance between the phase conductors and between each phase conductor and the Protective Earth conductor. Use a measuring voltage of 1000 V DC. The insulation resistance of a motor must exceed 100 MΩ. Check motor resistance.</p> <p>Check if refrigerant compressor selected is correct for the dryer (from the main screen press two times "OK" button).</p>
A2B4	Short circuit	Short-circuit in motor cable(s) or motor.	<p>Check motor and motor cable for cabling errors.</p> <p>Check motor and motor cable.</p> <p>Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable (see reference value).</p>
A581	Fan	Cooling fan feedback missing.	<p>Check fan operation and connection.</p> <p>Replace fan if faulty.</p>
A5A0	Safe torque off Programmable warning	Safe torque off function is active, i.e. safety circuit signal(s) connected to connector STO is lost.	Check safety circuit connections.
2310	Overcurrent	Output current has exceeded internal fault limit. In addition to an actual overcurrent situation, this fault may also be caused by an earth fault or supply phase loss.	<p>Check motor load. Check motor and motor cable.</p> <p>Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable (see reference value).</p> <p>Check if refrigerant compressor selected is correct on the drive (from the main screen press two times "OK" button).</p>
2330	Earth leakage	Drive has detected load unbalance typically due to earth fault in motor or motor cable.	<p>Check motor and motor cable for cabling errors.</p> <p>Check motor and motor cable.</p> <p>Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable (see reference value).</p>


Fault	Description	Cause	What to do
2340	Short circuit	Short-circuit in motor cable(s) or motor	Check motor and motor cable for cabling errors. Check motor and motor cable. Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable (see reference value).
3130	Input phase loss	Intermediate circuit DC voltage is oscillating due to missing input power line phase or blown fuse.	Check input power line fuses. Check contactor K1. Check for loose power cable connections. Check for input power supply imbalance.
3181	Wiring or earth fault	Incorrect input power and motor cable connection (i.e. input power cable is connected to drive motor connection).	Check input power connections.
3210	DC link overvoltage	Excessive intermediate circuit DC voltage.	Check that the supply voltage matches the nominal input voltage of the drive. Check the supply line for static or transient overvoltage. Check autotransformer output voltage (if present).
3220	DC link undervoltage	Intermediate circuit DC voltage is not sufficient because of a missing supply phase, blown fuse or fault in the rectifier bridge	Check supply cabling, fuses and switchgear. Check that the supply voltage matches the nominal input voltage of the drive.
3381	Output phase loss	Motor circuit fault due to missing motor connection (all three phases are not connected).	Connect motor cable.
5080	Fan	Cooling fan feedback missing.	Check auxiliary fan(s) and connection(s). Replace fan if faulty. Make sure the front cover of the drive is in place and tightened. Reboot the control unit.
5081	Auxiliary fan broken	An auxiliary cooling fan (connected to the fan connectors on the control unit) is stuck or disconnected.	Check auxiliary fan(s) and connection(s). Replace fan if faulty. Make sure the front cover of the drive is in place and tightened. Reboot the control unit.
5090	STO hardware failure	STO hardware diagnostics has detected hardware failure.	Replace the drive
5091	Safe torque off Programmable fault: 31.22 STO indication run/stop	Safe torque off function is active, i.e. safety circuit signal(s) connected to connector STO is broken during start or run.	Check safety circuit connections.

Fault	Description	Cause	What to do
6681	EFB comm loss	Communication break in embedded fieldbus (EFB) communication.	Check if controller is working properly. Check if fieldbus cable 2X22 that is properly connected to controller. Check if fieldbus cable is not damaged and properly connected to the drive (see service diagram).
7310	Overspeed	Motor is turning faster than highest allowed speed due to incorrectly set minimum/maximum speed	Re-program the drive with the correct refrigerant compressor (i.e. DNB22).

7.4 Electronic condensate drain



Control panel

Condition	Fault	Remedy
No LED lights up and the drain alarm appears on the display	The power supply is faulty	Check if the power supply voltage to the drain is 115V 50/60Hz
	The control Printed Circuit Board (PCB) of the drain is defective.	Replace the complete drain
Red LED L2 blinking This routine will open (3 sec) and close (60 sec) the drain's valve until the floater is in lower position, so the water is completely drained.	Drain is dirty, the external alarm signal is activated . A dedicated pictogram on the controller starts flashing:  From this point onwards, the drain will remain in this routine, even after restart. Press the test button for at least 5 seconds to reset the drain (if you reset the alarm but you do not clean the drain, this alarm will restart again).	
	The air pressure has dropped below the minimum pressure	Ensure there is the minimum pressure
	The drain filter is blocked by dirt	Open the manual drain valve to clean the drain filter. In case of heavy dirt, disassemble and clean carefully the filter
	The feed and/or outlet line is shut off or blocked	Check the feed line and the outlet line
	Wear	Order the wear kit and substitute all the parts included
Red LED L2 on	An irreversible error occurred: replace the drain	

8 Technical data

8.1 Reference conditions

Specification	Unit	Value
Absolute air inlet pressure	Bar (a) / psi (a)	8 (116)
Ambient temperature	°C (°F)	25 (77)
Air inlet temperature	°C (°F)	35 (95)
Effective working pressure	Bar (g) / psi (g)	7 (102)
Relative humidity at inlet	%	100
Lowest dew point	°C (°F)	3 (37,4)
Economy dew point	°C (°F)	8 (46,4)
Maximum saving dew point	°C (°F)	15 (59)

8.2 Limitations

Specification	Value	Unit
Minimum absolute inlet pressure	Bar (a) / psi (a)	5 (73)
Maximum absolute inlet pressure	Bar (a) / psi (a)	14,5 (210)
Minimum ambient temperature	°C (°F)	5 (41)
Maximum ambient temperature (46 °C version)	°C (°F)	46 (115)
Minimum air inlet temperature	°C (°F)	1 (34)
Maximum air inlet temperature	°C (°F)	60 (140)

8.3 Air dryer data

Refrigerant gas and global warming potential

The refrigerant gas for the dryer is **R410A** and the global warming potential is 2088.

Type	Connections	Connections (special)	Weight	Refrigerant R410A charge	Total Nominal Power W (HP)			Fan Power W (HP)			Max air Pressure
			Kg (lb)	Kg (lb)	400/3/50	460/3/60	380/3/60	400/3/50	400/3/60	380/3/60	Bar (PSI)
FD 100 VSD	G 1 1/2 F	NPT 1 1/2 F	130 (286)	1,1 (2,43)	660 (0,88)	715 (0,97)	715 (0,97)	150 (0,2)	175 (0,23)	175 (0,23)	14,5 (210)
FD 140 VSD	G 2 F	NPT 2 F	134 (295)	1,12 (2,47)	1040 (1,39)	1065 (1,43)	1065 (1,43)	150 (0,2)	175 (0,23)	175 (0,23)	14,5 (210)
FD 180 VSD	G 2 F	NPT 2 F	134 (295)	1,0 (2,2)	1540 (2,07)	1570 (2,11)	1570 (2,11)	150 (0,2)	175 (0,23)	175 (0,23)	14,5 (210)
FD 220 VSD	G 2 1/2 F	NPT 2 1/2 F	143 (315)	1,35 (2,98)	1770 (2,37)	2080 (2,79)	2080 (2,79)	550 (0,73)	860 (1,15)	1000 (1,34)	14,5 (210)
FD 260 VSD	G 2 1/2 F	NPT 2 1/2 F	150 (330)	1,35 (2,98)	1900 (2,55)	2210 (2,96)	2210 (2,96)	550 (0,73)	860 (1,15)	1000 (1,34)	14,5 (210)
FD 300 VSD	G 2 1/2 F	NPT 2 1/2 F	165 (363)	2,4 (5,3)	2640 (3,54)	2840 (3,81)	2840 (3,81)	900 (1,22)	1100 (1,5)	1100 (1,5)	14,5 (210)

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