Quincy

Desiccant dryers

QCMD 45, QCMD 50, QCMD 65, QCMD 75, QCMD 90, QCMD 100, QCMD 110, QCMD 135, QCMD 140, QCMD 165, QCMD 180, QCMD 215, QCMD 220, QCMD 265, QCMD 320, QCMD 355, QCMD 400, QCMD 415, QCMD 475, QCMD 535, QCMD 625, QCMD 690

Instruction book

Quincy COMPRESSOR

Quincy

Desiccant dryers

QCMD 45, QCMD 50, QCMD 65, QCMD 75, QCMD 90,
QCMD 100, QCMD 110, QCMD 135, QCMD 140,
QCMD 165, QCMD 180, QCMD 215, QCMD 220,
QCMD 265, QCMD 320, QCMD 355, QCMD 400,
QCMD 415, QCMD 475, QCMD 535,
QCMD 625, QCMD 690

Instruction book

Original instructions

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

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www.quincycompressor.com

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General precautions

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

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

1.3 Safety precautions during installation

Precautions during installation

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

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

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

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

1.4 Safety precautions during operation

Precautions during operation

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

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

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

1.5 Safety precautions during maintenance or repair

Precautions during maintenance or repair

1. Always use the correct safety equipment (such as safety glasses, gloves, safety shoes, etc.).
2. Use only the correct tools for maintenance and repair work.
3. Use only genuine spare parts.
4. All maintenance work shall only be undertaken when the machine has cooled down.
5. A warning sign bearing a legend such as "Work in progress - do not start" shall be attached to the starting equipment.
6. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote starting equipment.
7. Close the dryer air outlet valve before connecting or disconnecting a pipe.
8. Before removing any pressurized component, effectively isolate the machine from all sources of pressure and relieve the entire system of pressure.
9. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic 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. No inspection covers shall be opened before enough cooling time has elapsed. This is done 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 operation.

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 with 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 desiccant:**
    - Check that the working area is adequately ventilated; if required, use breathing protection.

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

1.6 Dismantling and disposal

Dismantling

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

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

Disposal of electrical and electronic appliances (WEEE)

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

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

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

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

Disposal of other used material

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

2 General description

2.1 General description

Introduction

The air dryers described in this book are heatless adsorption dryers, designed to remove humidity from compressed air for industrial applications.

QCMD dryers are available in a version to reach a pressure dew point down to -20 °C (-4 °F) or down to -40 ˚C (-40 ˚F) and are equipped with a Q-Control Touch controller, including a pressure dew point (PDP) sensor.

The dryers are designed for indoor use and at altitudes up to 2000 m (6560 ft).

Figure 1: QCMD - General view

Main parts

An overview of the main parts of the dryer is given in the image below:

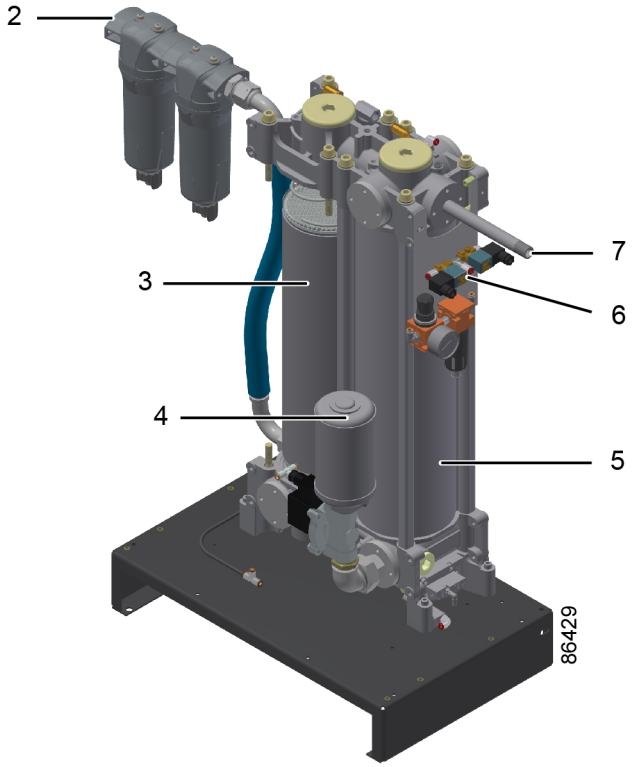

Figure 2: Main parts

v

Reference	Description	Reference	Description
1	Controller	5	Right tower
2	Air inlet and coalescing filters	6	Control valves
3	Left tower	7	Air outlet
4	Silencer		

2.2 Operation

General

With its simple construction, the air dryer is both reliable and easy to service. A dryer module basically consists of two towers, containing the desiccant. The desiccant is a very porous grain material, able to adsorb large amounts of water vapor.

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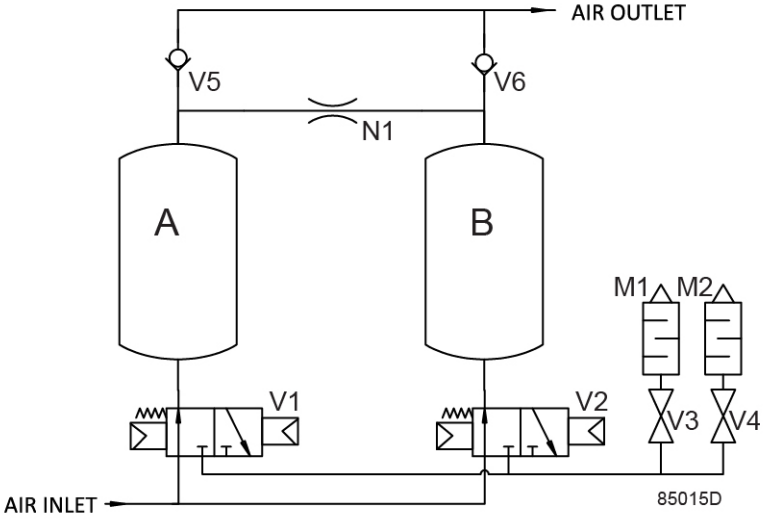


Figure 3: Flow diagram

Reference	Designation	Reference	Designation
AIR INLET	Air inlet	V4	Regeneration valve
AIR OUTLET	Air outlet	V5	Left check valve
A	Left desiccant tower	V6	Right check valve
B	Right desiccant tower	M1	Blow off silencer
V1	Left 3–2 valve (with solenoid valve)	M2	Regeneration silencer
V2	Right 3–2 valve (with solenoid valve)	N1	Nozzle
V3	Blow off valve		

Depending on dryer size, the dryer may consist of a single dryer module (see flow diagram) or a combination of several dryer modules in parallel.

Operation principle

The operation cycle of the dryer is repetitive and is controlled by a factory set timer in the controller or by the pressure dew point (PDP) sensor, which is optionally available. While the desiccant in one tower dries the compressed air, the desiccant in the second tower is being regenerated. Regeneration of the desiccant is achieved by means of purge air from the drying tower.

The compressed air entering the dryer is led to one of the towers by means of one of the two 3–2 valves. The position of the 3–2 valves is controlled by the solenoid valves. As the air flows upwards through the tower, the desiccant adsorbs the water vapor and the compressed air is dried. The dried air leaves the dryer via the outlet check valve.

A small portion of the dried air passes a nozzle, expands to atmospheric pressure and flows downwards through the other tower, regenerating (drying) the desiccant. A nozzle for operation of the dryer at 7 bar is installed as standard. Alternative nozzles for use at different operating pressures may be delivered with the units. Contact your supplier. The regeneration air is released via the corresponding solenoid valve and the silencer. The solenoid valves are controlled by the timer.

After a preset period (or when triggered by the PDP sensor) the function of the towers is reversed. The fully regenerated tower will now dry the air, while the desiccant in the other tower will be regenerated.

By default, the regeneration timer will restart from the beginning of the cycle in case of a power failure during operation or in case the dryer was switched off.

The working sequence of the controller is as follows:

Status	Left tower	Right tower	V1	V2	V3	V4
0	Stopped	Stopped	0	0	0	0
1	Adsorbing	Adsorbing	0	0	0	0
2	Shifting	Adsorbing	1	0	0	0
3	Depressurizing	Adsorbing	1	0	1	0
4	Regenerating	Adsorbing	1	0	1	1
5	Equalizing	Adsorbing	1	0	0	0
6	Freeze (compressor synchronization)	Adsorbing	1	0	0	0
7	Standby	Adsorbing	1	0	0	0
8	Adsorbing	Adsorbing	0	0	0	0
9	Adsorbing	Shifting	0	1	0	0
10	Adsorbing	Depressurizing	0	1	1	0
11	Adsorbing	Regenerating	0	1	1	1
12	Adsorbing	Equalizing	0	1	0	0
13	Adsorbing	Freeze (compressor synchronization)	0	1	0	0
14	Adsorbing	Standby	0	1	0	0

When the ON/OFF push-button is pressed during operation, the controller jumps automatically to status 5 or 12 (equalization phase). After that, the Stop status (0) will be reached. The following start command will restart the sequence from the state 2 or 9. The same happens when the power is switched off.

3 Electric diagram

The complete electric diagram can be found in the technical documentation supplied with the unit.

Drawing number	Controller type
9827 2939 00	Touch controller

4 Touch controller

4.1 Controller

Figure 4: The Q–Control™ Touch controller

Introduction

The controller has the 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 maintains the net pressure between programmable limits by automatically loading and unloading the unit (fixed speed units) or by adapting the motor speed (units with frequency converter).

A number of programmable settings, e.g. the unloading and loading pressures (for fixed speed units), the setpoint (for units with frequency converter), the minimum stop time, the maximum number of motor starts and several other parameters are taken into account.

The controller stops the unit whenever possible to reduce the power consumption and restarts it automatically when the net pressure decreases. If the expected unloading period is too short, the unit is kept running to prevent too short standstill periods.

	A number of time based automatic start/stop commands may be programmed. Take into account that a start command will be executed (if programmed and activated), even after manually stopping the unit.

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 element outlet temperature exceeds the programmed shutdown level, the unit will be stopped. This will be indicated on the display of the controller.

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.

When the shutdown warning is shown, press stop button to stop the unit and wait until the unit has stopped. Switch off the voltage, inspect the unit and remedy if necessary. The warning message will disappear 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.

When the service warning is shown, stop the unit, switch off the voltage and contact your supplier to schedule the necessary maintenance actions. See section **Preventive maintenance schedule**.

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.

4.2 Control panel

Figure 5: Control panel

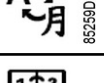
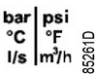
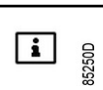
Parts and functions

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.

4.3 Icons used

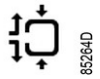
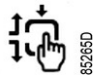
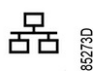
Menu icons

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		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			

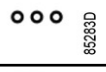
Status icons

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

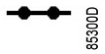
System icons

Icon	Description
	Basic User
	Advanced User
	Service User
	Antenna 25%
	Antenna 50%
	Antenna 75%

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

Input icons

Icon	Description
	Pressure
	Temperature
	Special Protection
	Open

	Closed

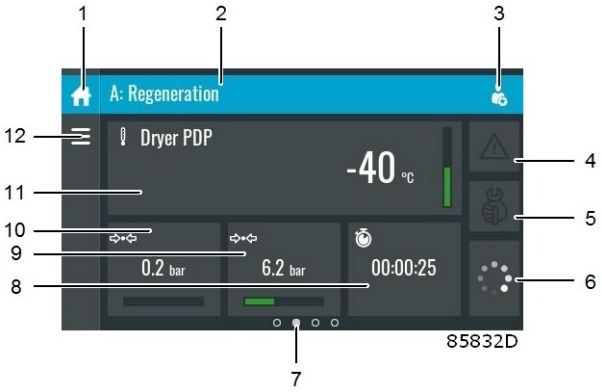
	This chapter gives a general survey of available icons. Not all icons mentioned in this chapter are applicable to every machine.

4.4 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.

Reference	Designation	Function
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 • 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.

4.5 Quick access screen

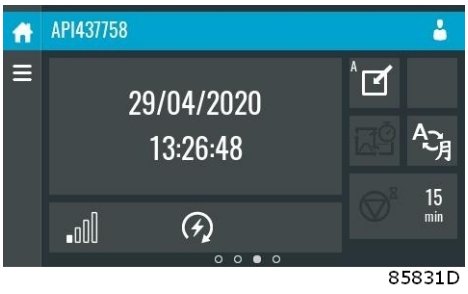
Function

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.

Function	Description
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.
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	The reception quality of the internal antenna can be monitored.  85256D 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.

4.6 Menu screen

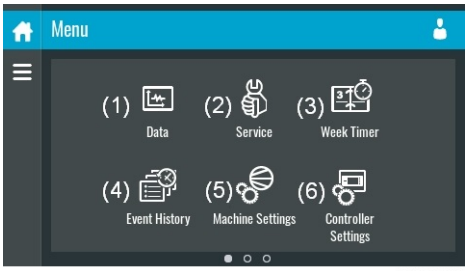
Function

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

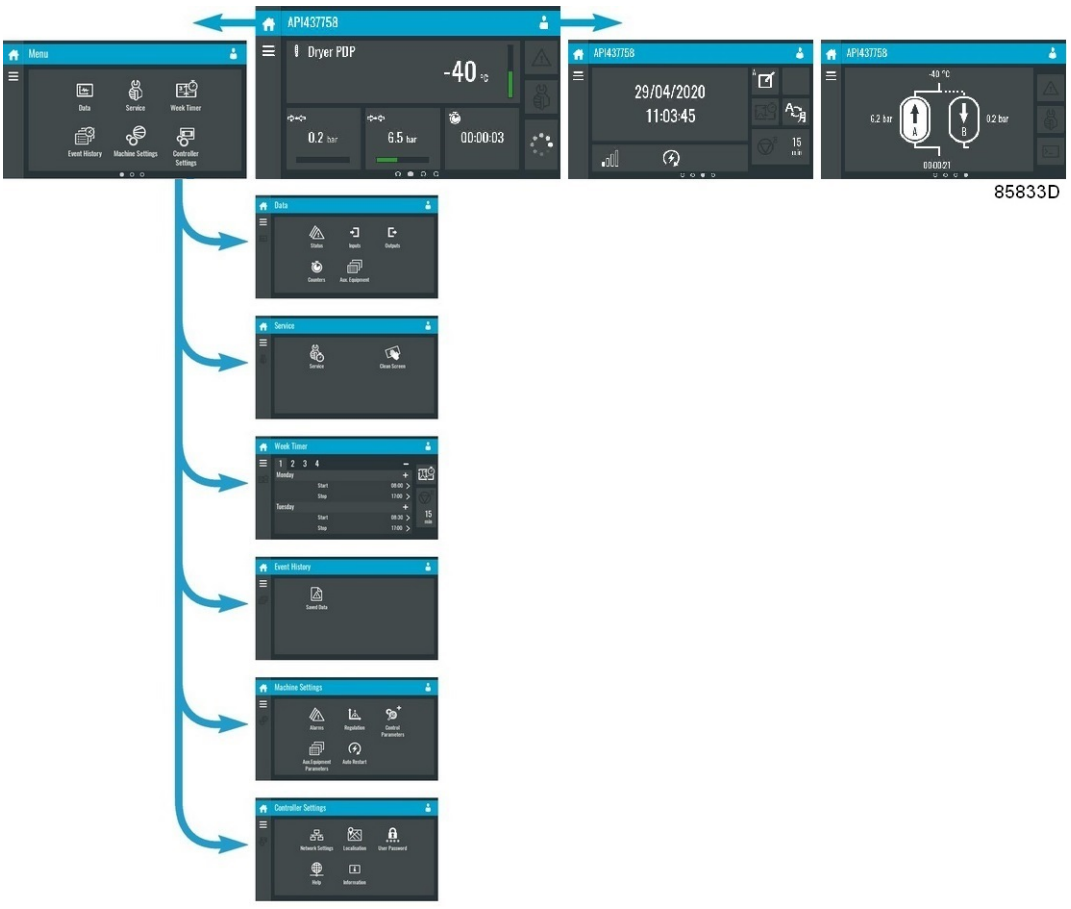


85204D

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, 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 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.

4.7 Data menu

Function

This screen is used to display the following submenus:

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

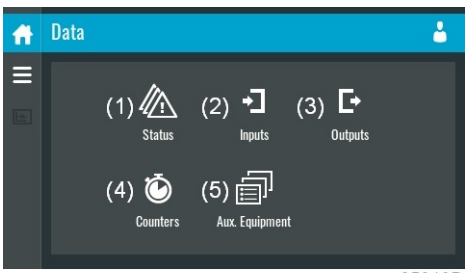
These submenus can be entered by tapping the icons.

Procedure

To enter the Data menu screen:

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

Description

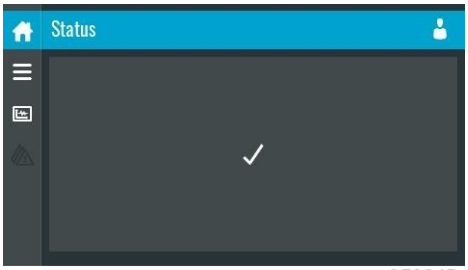


85210D

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.



85834D

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.

85835D

This menu shows information about all the inputs.

Outputs menu

Tap the Outputs icon to enter the Outputs menu.

85836D

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.

85837D

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.

85838D

This menu shows an overview of all auxiliary equipment fitted.

4.8 Service menu

Function

This screen is used to display the following submenus:

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

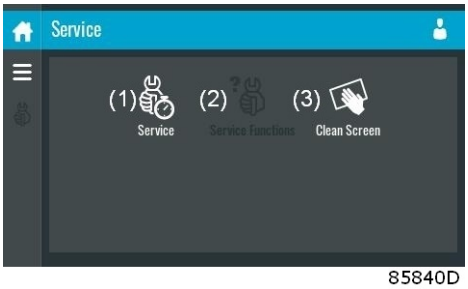
These submenus can be entered by tapping the icons.

Procedure

To enter the Service menu screen:

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

Description

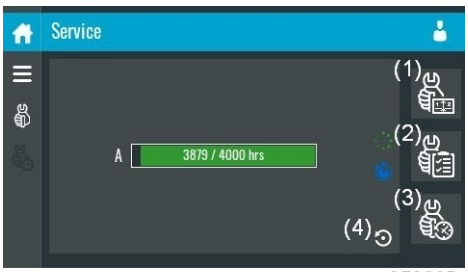


85840D

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.



85839D

This menu shows the remaining Running Hours until the next service.

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)

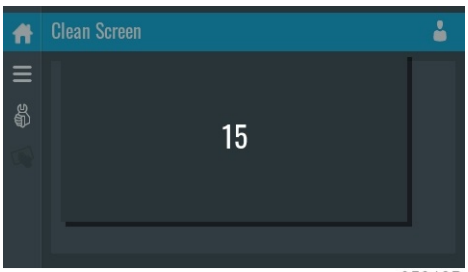
Tap the Service Functions icon to enter the Service Functions menu.

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.

4.9 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.

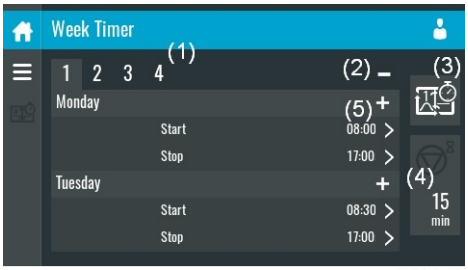
A Remaining Running Time can be set from 5 up to 240 minutes.

Procedure

To enter the Week Timer menu screen:

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

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'.

4.10 Event history menu

Function

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

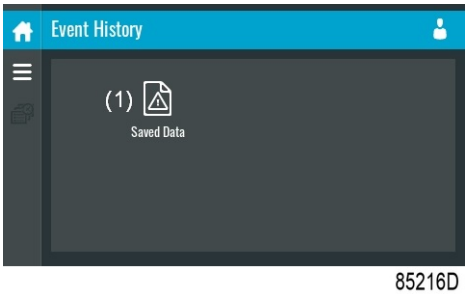
These submenus can be entered by tapping the icons.

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.

85215D

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.

4.11 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

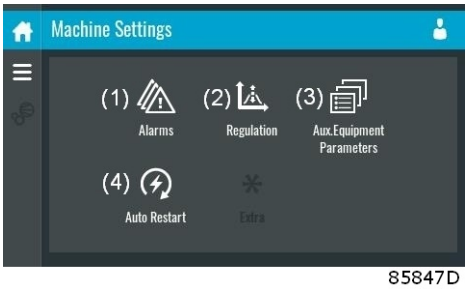
These submenus can be entered by tapping the icons.

Procedure

To enter the Machine settings menu screen:

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

Description

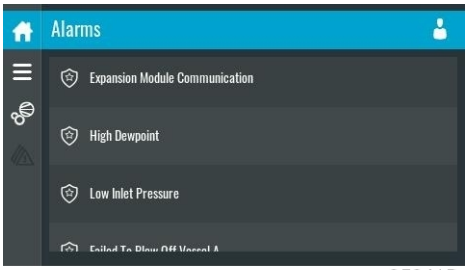


85847D

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 Alarms menu.



85841D

A list of all alarms is shown.

85842D

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.

85843D

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'.

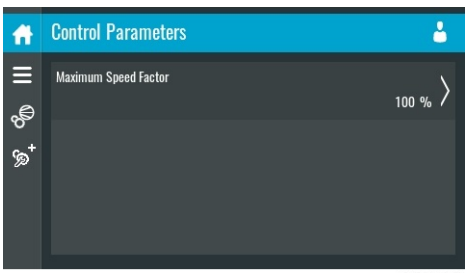
Change a selection

85844D

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'.

Control parameters menu

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



85219D

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.

85845D

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

85846D

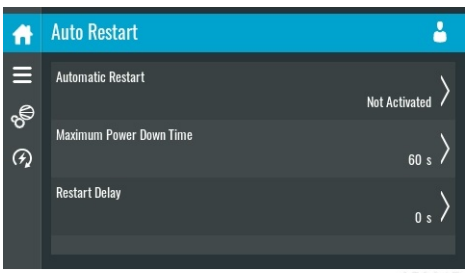
Through this menu, the parameters of the auxiliary equipment can be changed.

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.



85221D

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

The automatic restart settings can also be changed.

If you want automatic restart to be always on you need to change the setting from "Not Activated" to "Infinity". The state "Activated" only allows a restart when the power comes back on within the amount of time set for "Maximum Power Down Time".

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'.

4.12 Controller settings menu

Function

This screen is used to display the following submenus:

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

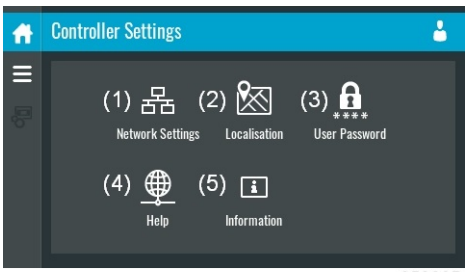
These submenus can be entered by tapping the icons.

Procedure

To enter the Controller Settings menu screen:

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

Description

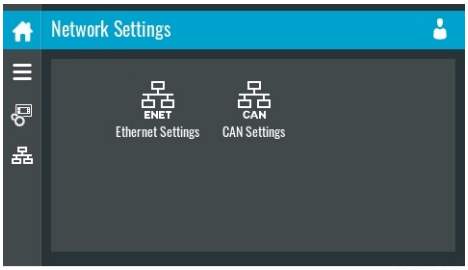


85228D

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.



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'.

Localisation menu

Tap the Localisation icon to enter the Localisation menu.

85848D

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.

Display Timeout

The amount of time until the display turns off after the last interaction.

Modify a setting

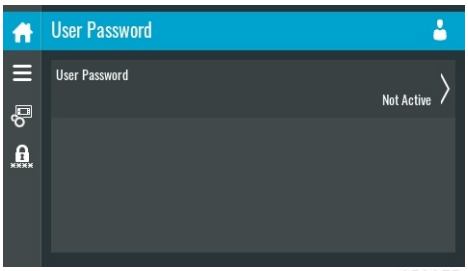
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

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

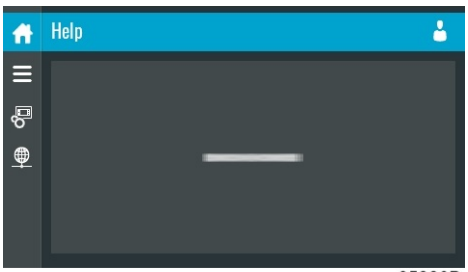
The user password can be activated or deactivated through this menu. Enter and confirm a user password to activate, repeat to deactivate.

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.

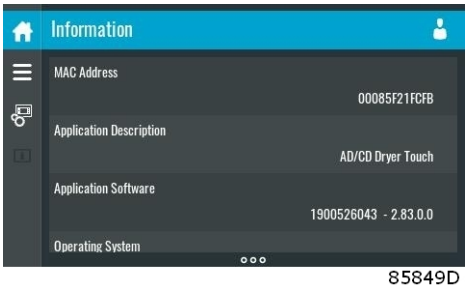


85226D

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.



85849D

This menu shows information about the controller.

4.13 Access level

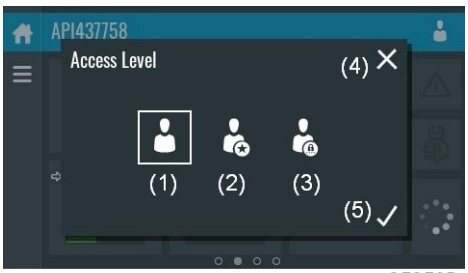
Function

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.

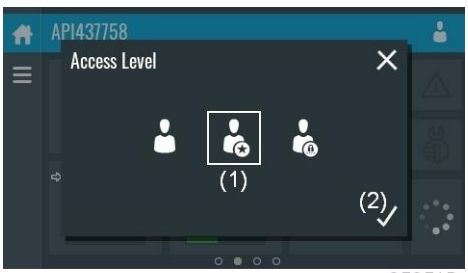
Description



85850D

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



85851D

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

85852D

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.

5 Installation

5.1 Dimension drawings

The dimension drawings can be found in your technical documentation.

Drawing number	Model
9829 5298 70	QCMD 45 – 690

Text on drawing	Description
INLET	Dryer inlet connection
OUTLET	Dryer outlet connection
L (for dismantling)	Minimal free space to be foreseen for service purposes

5.2 Installation proposal

General

	The dryer is intended for indoor use and should be placed at least under a roof (protected against sun, wind and rain). The minimum ambient temperature mentioned on the data plate must be respected. See section Limitations for operation. Install the dryer on a solid, level floor, suitable for taking its weight. Make sure to leave enough space (minimum 800 mm (2.6 ft)) around and above the dryer for servicing purposes. Consult the Dimension drawings. Provide enough space under the filter elements so that the filter cartridges can be replaced without having to disassemble the piping. Make sure that all pipes, filters, valves, etc. are clean and that they are installed correctly with or without bypass system. Make sure that the piping is installed stress free. For more information concerning air nets, cooling systems, etc. refer to the compressor installation manual.

Instructions

To ensure correct operation, the dryer must be fitted properly into the compressed air circuit, consisting of the compressor, the dryer and the application.

- Water separator (3) : A high-efficiency water separator removes 90 % of the free water in the compressed air. If not mounted in the compressor, a water separator needs to be installed between the compressor and the air receiver or the dryer inlet filter (whichever comes first).
- It is recommended to install a general purpose inlet filter upstream of the dryer to remove liquid oil.

  Two coalescing filters (4) are delivered with the dryer (5).

On both inlet filters a drain tube must be installed. The drain tubes (8) to the drain collector must not dip into the water.

On the inlet filter a drain tube must be installed. The drain tubes (8) to the drain collector must not dip into the water.

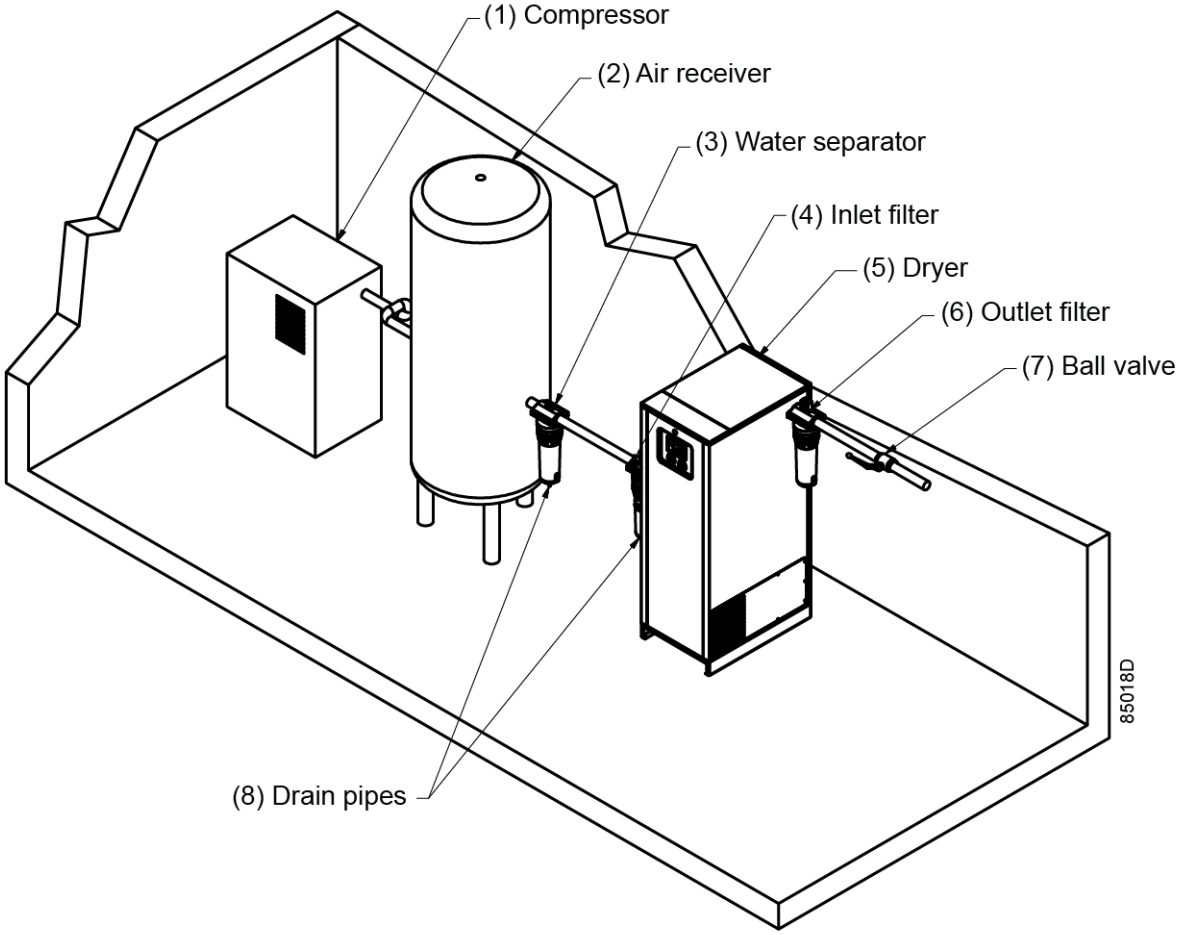
Install an oil/water separator to drain pure condensate water. Consult your supplier.

- Should oil vapor and odors be undesirable, a carbon filter can be installed downstream the outlet dust filter.
- It is advisable to install bypass pipes with ball valves over the filters in order to isolate the filters during service operations without disturbing the compressed air delivery.
- It is recommended to install a ball valve (7) after the dryer. This valve should be closed at startup to ensure pressure is built up. The valve can be left open when the pressure remains in the dryer.
- If the maximum pressure of the compressor is higher than the design pressure of the dryer, a full flow safety valve must be installed between the compressor and the dryer in order to blow off the excessive pressure.

Refer to the images below for the references used.

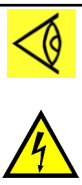
	**Never overload the dryer as a too high air speed may damage the desiccant. It is recommended to install the air dryer upstream of the air receiver to prevent overload** (e.g. after extending the dry air circuit). Consult your supplier if in doubt. See section Operating instructions for the correct operation procedure.

Installation proposal



6 Electrical connections

General

	The electrical wiring must comply with the local regulations. The air dryer must be earthed and protected by fuses against short-circuiting. Consult the electric diagram delivered with the dryer. Before switching on the main power supply, check the voltage requirements in the technical specifications or on the dryer's data plate.

7 Operating instructions

Safety

	Always observe all relevant safety instructions.

Initial start-up

To start up the dryer for the first time or after a long period of standstill, proceed as follows:

1. If installed, open the bypass valves of the dryer.
2. Close the air supply towards the pressure dew point (PDP) sensor.
3. Close off the air supply from the compressor towards the dryer by closing the external inlet valve (if installed).
4. If installed, close the outlet valve.
5. Start the compressor and wait for pressure.
6. Slowly open the inlet valve.
7. Check the connections of the dryer for air leaks and remedy if necessary.
8. Switch the dryer on by pushing the Start button on the controller.
9. Let the dryer operate for several hours with the external outlet valve closed.
10. Gradually open the external outlet valve.
11. If applicable, close the bypass valves of the dryer.
12. Open the air supply towards the pressure dew point (PDP) sensor.

	If the application allows air that is not completely dry, the valve towards the dry air consumer may be opened even before the optimal Pressure Dew Point (PDP) is reached. In this case, however, it will take more time for the desiccant to dry the air completely. At initial start-up, and especially when the dryer is loaded from the beginning, it can take a long time before the dew point is reached. It is therefore recommended to operate the dryer for a number of days with the outlet valve closed.

Normal start

If the dryer has not been used for more than 3 months, refer to section Initial startup. In all other cases, proceed as follows:

1. Cut off the air supply from the compressor towards the dryer by closing the external inlet valve.
2. Close the air supply towards the PDP sensor.
3. If installed, close the external outlet valve between the dryer and the dry air consumer.
4. Start the compressor and slowly open the external inlet valve.
5. Switch on the dryer.
6. Gradually open the air outlet valve.
7. If applicable, close the bypass valves of the dryer.
8. Open the air supply towards the PDP sensor.

	Close the external inlet valve in case the compressor needs to be restarted. The high air speed in the startup phase of the compressor may damage the desiccant.

During operation

	The LEDs for PDP warning and PDP alarm are only functional if the dryer is equipped with a PDP sensor!

Stopping

To stop the dryer, proceed as follows:

1. If installed and if necessary, open the bypass valves of the dryer so that the application will still receive compressed air.
2. Close the external inlet valve between the compressor and the dryer and the external outlet valve between the dryer and the dry air consumer.
3. Let the dryer operate for a period without consumption, to depressurize the vessels.
4. Switch off the dryer.

	If the dryer is stopped for a longer period, keep the external inlet and outlet valve closed to avoid moisture from entering the dryer. Under no circumstances shall compressed air be allowed to flow through the dryer when the electrical power is switched off. This will result in terminal failure of the desiccant material and regeneration will no longer be possible.

8 Maintenance

8.1 Maintenance

General recommendations and precautions

Before carrying out any maintenance or corrective activity, read the following recommendations and safety precautions and proceed accordingly.

- Stop the dryer by pushing the Stop button on the controller.
- Disconnect all pressure sources and vent the internal pressure of the system before dismantling any pressurized component.
- Use genuine spare parts only. Consult the Spare Parts List for part numbers. For preventive maintenance, dedicated service kits are available.
- Check for correct operation after maintenance.

	Filters and valves installed between the compressor, the dryer and the air consumer may need other maintenance activities than those mentioned below (e.g. draining the filters and replacing the filter elements). Refer to the appropriate manual for more information.

Preventive maintenance schedule

Frequency	Service plan	Activity
Daily		Check the display panel for information and service messages.
Every 6 months or every 4000 hours of operation (1)	A	• Check for damaged wiring or loose connections. • Check for air leaks. • Check pilot air pressure. • Check dewpoint (if PDP sensor is installed).
Every year or every 8000 hours of operation (1)	B	• Service plan A. • Replace the pressure dewpoint (PDP) sensor. • Replace the cartridges of the inlet filters.
Every 2 years or every 16000 hours (1)	C	• Service plan B. • Replace the silencers. • Replace the blow off valve. • Replace the angle seat valve (if installed). • Replace the angle seat valve controlling solenoid (if installed).
Every 7 years or every 56000 hours (1)	D	• Replace the desiccant. • Replace the check valves. Always replace all O-rings, seals and nylon washers that come free when executing the scheduled maintenance.

(1) whichever comes first

In normal working conditions, the lifetime of the desiccant is approximately 7 years.

It is recommended to have the desiccant cartridges replaced by a qualified service technician, authorized by the manufacturer.

Reset the service timer after a maintenance intervention.

All spare parts required for scheduled maintenance can be found in the Spare Parts List. Consult this list for part number information.

8.2 Nozzle replacement

Procedure

1. Open the top panel to access the nozzles.

   The nozzles are located on the top of the upper manifold.
2. Release the push-fits on the elbow fittings and pull and bend out the assembly of the nozzle, straight couplings and tubes.
3. Select the new nozzle according to the working pressure. See recommendation table below.
4. Place the assembly back in the elbow fittings.
5. Put all of the spare nozzles back in the bag inside the unit in case of future operating changes.

Model	PDP		Working pressure				
	°C	°F	5.5 bar 80 psi	7.0 bar 102 psi	8.5 bar 123 psi	10.0 bar 145 psi	13.0 bar 189 psi
QCMD 45	-40	-40	.10	.08	.06	.05	.03
QCMD 65	-40	-40	.16	.13	.11	.09	.06
QCMD 90	-40	-40	.20	.17	.15	.13	.10
QCMD 110	-40	-40	.24	.21	.18	.15	.12
QCMD 135	-40	-40	.28	.24	.21	.18	.15
QCMD 180	-40	-40	.35	.31	.27	.24	.20
QCMD 220	-40	-40	.25	.21	.18	.16	.12
QCMD 265	-40	-40	.28	.24	.21	.18	.14
QCMD 355	-40	-40	.35	.31	.27	.24	.20
QCMD 400	-40	-40	.28	.24	.21	.18	.15
QCMD 535	-40	-40	.37	.32	.28	.25	.20
QCMD 690	-40	-40	.37	.32	.28	.25	.20

Table 1: Recommendation table

Model	PDP		Working pressure				
	°C	°F	5.5 bar 80 psi	7.0 bar 102 psi	8.5 bar 123 psi	10.0 bar 145 psi	13.0 bar 189 psi
QCMD 50	-20	-4	.13	.10	.08	.06	.04
QCMD 75	-20	-4	.18	.15	.13	.11	.08
QCMD 100	-20	-4	.24	.20	.17	.15	.12
QCMD 140	-20	-4	.30	.25	.22	.20	.16
QCMD 165	-20	-4	.34	.29	.26	.23	.19
QCMD 215	-20	-4	.41	.35	.31	.28	.23
QCMD 265	-20	-4	.29	.25	.21	.19	.15
QCMD 320	-20	-4	.33	.28	.25	.22	.18
QCMD 415	-20	-4	.39	.34	.30	.27	.22
QCMD 475	-20	-4	.33	.28	.25	.22	.18
QCMD 625	-20	-4	.40	.34	.30	.27	.23

Table 2: Recommendation table

9 Problem solving

Overview

Fault	Cause	Remedy
Pressure dew point too high	The dryer has not had the time to regenerate completely.	Close the valve installed between the dryer and the application (if permitted) and have the desiccant regenerated.
	The drain is not working correctly.	Check the drain valve of the filter.
	The air flow through the dryer is too high.	Check for correct application.
	The outlet pressure is too low.	Check whether the compressor provides enough air for the application.
	The inlet temperature is too high.	Check the compressor aftercooler.
	Free water in the dryer.	Check the water separator and the drain valve of the filters upstream of the dryer.
The dryer produces a lot of noise.	Check the silencer and its fixation to the unit.	Replace the silencer if necessary or correct its fixation.
Insufficient air leaves the dryer.	Too much purge air escapes.	Check the condition of the solenoid valve and replace it if necessary. Check if the correct nozzle is installed (standard nozzle supplied is for 7 bar, alternative nozzles are available for other operating pressures).

10 Technical data

10.1 Reference conditions

Condition	Unit	Value
Compressed air effective inlet pressure	barg	7
Compressed air effective inlet pressure	psig	101.5
Compressed air inlet temperature	˚C	35
Compressed air inlet temperature	˚F	95
Relative humidity of the air at inlet	%	100
Pressure dew point (PDP —20 °C version)	°C	-20
Pressure dew point (PDP —20 °C version)	°F	-4
Pressure dew point (PDP —40 °C version)	˚C	-40
Pressure dew point (PDP —40 °C version)	˚F	-40

10.2 Limitations for operation

Limitation	Unit	Value
Maximum compressed air effective inlet pressure	barg	14
Maximum compressed air effective inlet pressure	psig	203
Minimum compressed air effective inlet pressure	barg	4
Minimum compressed air effective inlet pressure	psig	58
Maximum ambient air temperature	˚C	45
Maximum ambient air temperature	˚F	113
Minimum ambient air temperature	˚C	1
Minimum ambient air temperature	˚F	34
Maximum compressed air inlet temperature	˚C	60
Maximum compressed air inlet temperature	˚F	140
Minimum compressed air inlet temperature	˚C	2
Minimum compressed air inlet temperature	˚F	36
Minimum volume flow at inlet	See Dryer data.	

10.3 Dryer data

PDP -20 °C

		QCMD 50	QCMD 75	QCMD 100	QCMD 140	QCMD 165	QCMD 215
Volume flow at dryer inlet	l/s	24	36	48	65	78	102
Volume flow at dryer inlet	cfm	51	76	102	138	165	216
Pressure drop at maximum flow	bar	0.08	0.08	0.125	0.17	0.245	0.33

		QCMD 50	QCMD 75	QCMD 100	QCMD 140	QCMD 165	QCMD 215
Pressure drop at maximum flow	psi	1.2	1.2	1.8	2.5	3.6	4.8
Time to half a cycle	s	42	42	42	42	42	42
Regeneration time	s	30	30	30	30	30	30
Pressurization time	s	10	10	10	10	10	10
Average regeneration air consumption	%	16	16	16	16	16	16
Desiccant type		SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™
Desiccant amount per vessel	kg	3.6	5.4	7.2	9	10.8	14.4
Desiccant amount per vessel	lb	7.9	11.9	15.8	19.8	23.8	31.7
Inlet filter		QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF
Outlet filter 1		not part of product	not part of product	not part of product	not part of product	not part of product	not part of product
Maximum air outlet temperature	°C	70	70	70	70	70	70
Maximum air outlet temperature	°F	158	158	158	158	158	158
Minimum volume flow at inlet	l/s	6	9	12	16.25	19.5	25.5
Minimum volume flow at inlet	cfm	13	19	25	34	41	54

		QCMD 265	QCMD 320	QCMD 415	QCMD 475	QCMD 625
Volume flow at dryer inlet	l/s	125	150	195	225	295
Volume flow at dryer inlet	cfm	265	318	413	477	625
Pressure drop at maximum flow	bar	0.12	0.18	0.28	0.2	0.33
Pressure drop at maximum flow	psi	1.7	2.6	4.1	2.9	4.8
Time to half a cycle	s	42	42	42	42	42
Regeneration time	s	30	30	30	30	30
Pressurization time	s	10	10	10	10	10
Average regeneration air consumption	%	16	16	16	16	17
Desiccant type		SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™
Desiccant amount per vessel	kg	9	10.8	14.4	10.8	14.4
Desiccant amount per vessel	lb	19.8	23.8	31.7	23.8	31.7
Inlet filter		QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF
Outlet filter 1		not part of product	not part of product	not part of product	not part of product	not part of product
Maximum air outlet temperature	°C	70	70	70	70	70
Maximum air outlet temperature	°F	158	158	158	158	158

		QCMD 265	QCMD 320	QCMD 415	QCMD 475	QCMD 625
Minimum volume flow at inlet	l/s	31.25	37.5	48.75	56.25	73.75
Minimum volume flow at inlet	cfm	66	79	103	119	156

PDP -40 °C

		QCMD 45	QCMD 65	QCMD 90	QCMD 110	QCMD 135	QCMD 180
Volume flow at dryer inlet	l/s	21	31.5	42	52.5	63	84
Volume flow at dryer inlet	cfm	44	67	89	111	133	178
Pressure drop at maximum flow	bar	0.08	0.08	0.08	0.11	0.16	0.245
Pressure drop at maximum flow	psi	1.2	1.2	1.2	1.6	2.3	3.6
Time to half a cycle	s	42	42	42	42	42	42
Regeneration time	s	30	30	30	30	30	30
Pressurization time	s	10	10	10	10	10	10
Average regeneration air consumption	%	16	16	16	16	16	16
Desiccant type		SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™
Desiccant amount per vessel	kg	3.6	5.4	7.2	9	10.8	14.4
Desiccant amount per vessel	lb	7.9	11.9	15.8	19.8	23.8	31.7
Inlet filter		QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF
Outlet filter 1		not part of product	not part of product	not part of product	not part of product	not part of product	not part of product
Maximum air outlet temperature	°C	70	70	70	70	70	70
Maximum air outlet temperature	°F	158	158	158	158	158	158
Minimum volume flow at inlet	l/s	5.25	7.875	10.5	13.125	15.75	21
Minimum volume flow at inlet	cfm	11	17	22	28	33	44

		QCMD 220	QCMD 265	QCMD 355	QCMD 400	QCMD 535	QCMD 690
Volume flow at dryer inlet	l/s	105	126	168	189	252	325
Volume flow at dryer inlet	cfm	222	267	356	400	534	689
Pressure drop at maximum flow	bar	0.12	0.12	0.215	0.155	0.24	0.25
Pressure drop at maximum flow	psi	1.7	1.7	3.1	2.2	3.5	3.6
Time to half a cycle	s	42	42	42	42	42	42
Regeneration time	s	30	30	30	30	30	30
Pressurization time	s	10	10	10	10	10	10

		QCMD 220	QCMD 265	QCMD 355	QCMD 400	QCMD 535	QCMD 690
Average regeneration air consumption	%	16	16	16	16	17	17
Desiccant type		SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™	SoliDes ™
Desiccant amount per vessel	kg	9	10.8	14.4	10.8	14.4	14.4
Desiccant amount per vessel	lb	19.8	23.8	31.7	23.8	31.7	31.7
Inlet filter		QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF	QMF + QCF
Outlet filter 1		not part of product	not part of product	not part of product	not part of product	not part of product	not part of product
Maximum air outlet temperature	°C	70	70	70	70	70	70
Maximum air outlet temperature	°F	158	158	158	158	158	158
Minimum volume flow at inlet	l/s	26.25	31.5	42	47.25	63	82.5
Minimum volume flow at inlet	cfm	56	67	89	100	133	175

11 Instructions for use

Instructions

	Description
1	The dryers can contain pressurized air. This can be potentially dangerous if the equipment is misused.
2	The towers of the dryer consist of an extruded profile, which must only be used as a vessel and must be operated within the limits specified. See section Pressure Equipment Directives, table A.
3	No alterations shall be made to the vessels by welding, drilling or other mechanical methods without the written permission of the manufacturer.
4	The design pressure and temperature of this pressure bearing part must be clearly indicated on the data label.
5	If installed, the safety valve must correspond with pressure surges of 1.1 times the maximum allowable operating pressure. This should guarantee that the pressure will not permanently exceed the maximum allowable operating pressure of the vessel.
6	Original bolts have to be used after opening for inspection. The maximum torque has to be taken into consideration (see table below).

Maximum bolt torque

Thread size	Tightening torque (Nm)	Allowed deviation (Nm)
M3	1	0.3
M4	2.4	0.6
M5	5	1.2
M6	8	2.1
M8	20	5
M10	41	10
M12	73	18
M14	115	29
M16	185	46
M18	238	60
M20	335	84

12 Guidelines for inspection

Guidelines

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

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

Local legal requirements and/or use outside the limits and/or conditions as specified by the manufacturer may require other inspection periods as mentioned below.

13 Pressure Equipment Directives

Components Subject to Pressure Equipment Directive (PED) 2014/68/EU

Parts of article 4.3 of 2014/68/EU are subject to Sound Engineering Practice (SEP).

Parts of category I according to 2014/68/EU are integrated into the machine and fall under the exclusion of article I, section 2-(f)-(i).

The table below contains the necessary information for the inspection of all category I pressure equipment according to Pressure Equipment Directive (PED) 2014/68/EU.

Tube drawing p.n.	Design pressure bar(e)	Design temperature °C	PED category	Tube wall thickness mm	Tube diameter mm	Tube internal volume l
1627 6307 91	14	-10 to +66	I	5	150	9.8
1627 6307 92	14	-10 to +66	I	5	150	10.5
1627 6307 93	14	-10 to +66	I	5	150	13.6
1627 6307 94	14	-10 to +66	I	5	150	16.8
1627 6307 95	14	-10 to +66	I	5	150	19.5
1627 6307 96	14	-10 to +66	I	5	150	24.7

Recommendation of the manufacturer for inspection intervals

Following actions are to be executed by authorized service personnel only, unless stated otherwise in the applicable legislation. The stated time interval takes the start-up day of the unit as reference.

- Every 6 months: inspect the vessel material on the outside (exposed) for traces of strong corrosion. Consult the service department of your supplier if necessary.
- Every 7 years: when replacing the desiccant, following inspections are to be carried out:
  - Inspection of outside and inside of the material for excessive and local corrosion,
  - Inspection of outside and inside of the material for cracks, leaks, damage.

  Consult the service department of your supplier if necessary.
- Hydrostatic test according to the Pressure Equipment Directive (PED) 2014/68/EU when required by local regulations. Consult the service department of your supplier if necessary.
- Additional visual inspection is necessary when number of cycles is exceeded:
  - Minimum expected life time with real working pressure < 10 bar: 3 million cyles.
  - Minimum expected life time with real working pressure between 10< x<14 bar: 1.6 million cyles.

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