



Instruction book

Heatless adsorption compressed air dryers

CD 20+, CD 25+, CD 30+, CD 35+, CD 40+, CD 50+,
CD 55+, CD 65+, CD 80+, CD 85+, CD 105+,
CD 125+, CD 150+, CD 170+, CD 190+, CD 195+,
CD 225+, CD 250+, CD 300+, CD 335+

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Atlas Copco

Heatless adsorption compressed air dryers

CD 20+, CD 25+, CD 30+, CD 35+, CD 40+, CD 50+,
CD 55+, CD 65+, CD 80+, CD 85+, CD 105+, CD 125+,
CD 150+, CD 170+, CD 190+, CD 195+, CD 225+, CD 250+,
CD 300+, CD 335+

Instruction book

Original instructions

WARNING



Read all safety warnings, instructions, illustrations and specifications provided with this product. Failure to follow all instructions listed in this instruction book may result in personal injury, death and/or property damage.

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1 Safety precautions

1.1 Safety signal words

Explanation



DANGER

Indicates a hazard with a high level of risk, which, if not avoided, will result in death or serious injury and / or property damage.



WARNING

Indicates a hazard with a medium level of risk, which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazard with a low level of risk, which, if not avoided, could result in minor or moderate injury.



NOTICE

Indicates that a mandatory action shall be taken to avoid a hazard.



NOTE

Indicates important information.

1.2 Statement of use

This dryer is designed for indoor use only in temperatures above 2 °C (35.6 °F). The inlet pressure should not exceed 14 bar (203 psi).

Only qualified personnel should install, operate, diagnose and service the dryer. For any technical assistance, please contact your local representative.

1.3 Warranty

Only use authorized parts at the correct intervals (check with your local customer center). Any damage or malfunction caused by the use of unauthorized parts or unqualified personnel is not covered by the Warranty or Product Liability. In the event of any extended warranty, the end user must ensure that all required maintenance actions are performed when indicated on the controller display and in this instruction book. Alternatively, use your service agreement. Failure to follow the maintenance schedule may void warranty claims.

1.4 General safety precautions

DANGER



Only qualified personnel that has been specifically trained and/or is experienced in the operation, maintenance, and repair of the dryer should install, operate, diagnose, maintain, and/or repair the dryer. Failure to follow this instruction will result in death, serious personal injury, and/or property damage. Contact your local representative for assistance.

DANGER



Do not touch any electrical connections, valves, or sensors for troubleshooting purposes as this will result in death, serious personal injury, and/or property damage. Only qualified personnel should perform diagnostic work on the dryer. Contact your local representative for assistance.

DANGER



The dryer piping and pressure vessels operate with pressurized compressed air, which will result in death, serious personal injury, and/or property damage, if intentionally or accidentally released. Check the connections of the dryer for air leaks. Air leaks could result in serious or potentially fatal conditions, such as hearing damage due to noise, harm to the skin due to pressurized air, and air embolism. Only operate the dryer as described and instructed in this instruction book. Only operate the dryer within the specified temperature and pressure limits described in this instruction book.

DANGER



Ignition sources are strictly prohibited in the vicinity of a dryer and/or inside any enclosure or building housing a dryer. This includes mobile phones, cigarettes, lighters, and any other device that could create a spark or flame. Failure to follow this instruction will result in death, serious personal injury, and/or property damage.

DANGER



Follow all Lock Out/Tag Out (LOTO) procedures before any maintenance or repair work is performed on the dryer. Failure to follow all LOTO methods will result in death, serious personal injury, and/or property damage.

WARNING



The air produced by the compressors and the dryer is not of breathable quality and is therefore not safe for human breathing.

WARNING

High-voltage electrical cables used in hazardous areas must comply with all applicable federal, state, local and site-specific government regulations and company guidelines on electrical installations. The electrical system must be inspected and approved by a qualified electrical inspector with qualifications to inspect dryers before it is put into operation.

WARNING

Flammable materials such as oily rags should not be stored near the dryer.

WARNING

Do not adjust regulating or safety devices since these are factory-set for optimal dryer performance. Unauthorized changes can compromise safety, reduce efficiency, or damage the equipment.

CAUTION

Ensure that all piping and additional equipment supplied by the owner/customer and other third-party vendors, not otherwise provided as a part of the dryer, are compatible with the designated working pressure. Verify their suitability through testing and safeguard them with pressure-relieving mechanisms when required.

NOTICE

The operator must follow and comply with the safety recommendations and training provided by the owner of the dryer and/or the operator's employer. Only authorized, trained, and specialized personnel should perform repairs and/or maintenance related activities.

NOTICE

The operator must follow and comply with all federal, state, local and site-specific working practices, work safety requirements and regulations.

NOTICE

The owner is responsible for maintaining the unit in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.

Personal safety**DANGER**

Stay alert and watch what you are doing when operating the dryer. Do not operate the dryer while you are tired, under the influence of drugs,

alcohol, or medication. A moment of inattention while operating the dryer could result in death, serious personal injury, and/or property damage.

**DANGER**

Do not apply compressed air to yourself, others, or your clothes. Doing so will result in death, serious personal injury, and/or property damage.

**WARNING**

Always wear ear, eye, and hand protection while operating the dryer and/or working around compressed air. Observe all applicable federal, state, local and site-specific government regulations and company guidelines regarding PPE (Personal Protective Equipment).

**WARNING**

Wear a safety helmet when working in an area where work is being performed overhead or with lifting equipment. Observe all applicable federal, state, local and site-specific government regulations and company guidelines regarding PPE (Personal Protective Equipment).

**WARNING**

Always wear protective clothing and use PPE (Personal Protective Equipment) in accordance with instruction of all applicable federal, state, local and site-specific government regulations and company guidelines.

**WARNING**

Use ear protection when operating or working on the dryer as recommended by all applicable federal, state, local and site-specific government regulations and company guidelines regarding PPE (Personal Protective Equipment). High sound levels can cause permanent hearing loss.

1.5 Product specific instructions

General installation safety

**DANGER**

Only qualified and experienced personnel can lift the dryer using suitable equipment. When lifting the dryer, follow all applicable safety regulations.

- Use all the lifting lugs located on the top of the frame.
- Ensure that the lifting equipment (slings, hooks, etc.) has the appropriate weight capacity to lift the dryer and that it is in good working condition.
- Check for any signs of damage or wear.
- Secure loose or pivoting parts before lifting.

- All personnel must stay clear of the risk zone under a lifted load.
- Lifting acceleration and deceleration must be kept within safe limits.

Failure to follow the warning will result in death, serious personal injury, and/or property damage.

DANGER

Wear a safety helmet whenever present in an area where overhead installation work is performed or when lifting equipment is used. Failure to follow all federal, state, local, site-specific, and company safety and PPE (Personal Protective Equipment) regulations and guidelines will result in death, serious personal injury, and/or property damage.

DANGER

Keep the inlet and ambient air free from hazardous gases, fumes, vapors, and particles that can lead to an internal fire or explosion, which will result in death, serious personal injury, and/or property damage.

DANGER

Do not use any flexible hoses, plastic or other non-metal piping at any of the inlet and outlet connections. These components will fail under the normal operating temperatures and pressures of the dryer. Failure to follow the warning will result in death, serious personal injury, and/or property damage.

DANGER

Do not remove or tamper with the safety devices or guards fitted on the unit. Every pressure vessel or auxiliary that is installed outside the unit to contain air above atmospheric pressure must be protected by a pressure relieving device or devices as required. Failure to follow the warning could result in death, serious personal injury, and/or property damage.

DANGER

Piping or other parts of the dryer can reach temperatures above 80 °C (176 °F). An operator can accidentally or unintentionally touch the piping or parts which could result in serious burns. Adequate PPE (Personal Protective Equipment) should be provided and used to protect personnel when touching the dryer's equipment, pressure vessels and piping surfaces.

DANGER

Ensure that the outlet pipe of the regeneration air is directed away from any area where personnel will be working. Be careful when working around the outlet pipe of the regeneration air and other high temperature piping or parts. Temperatures at the outlet pipe of the regeneration air

and at the air exhausts can rise to 160 °C (320 °F). Contact with high temperature piping or parts will result in death or serious personal injury.

WARNING

All piping to and from the dryer, including the outlet pipe of the regeneration air, must be of sufficient size, strength, and quality to withstand normal operating pressures, temperatures and any unexpected release of compressed air. Additionally, the piping must be securely mounted and supported in accordance with all applicable federal, state, local and site-specific government regulations and company guidelines, and good engineering practices. Failure to comply with any applicable federal, state, local and site-specific government regulations or company guidelines could result in bodily injury or death.

WARNING

For dryers without a fire extinguishing system in the same room or vicinity, a safety valve on each dryer vessel is mandatory. Local regulations may mandate safety valves in all cases.

CAUTION

To ensure the dryer's safe operation, it must be placed where the air is cool and clean. If the surrounding air is unsuitable, consider installing a suction duct to improve the air quality.

CAUTION

Avoid moisture in the ambient environment to prevent corrosion issues.

CAUTION

Prevent loose clothing from being sucked into the air intake.

CAUTION

Install a full-flow safety valve between the compressor and the dryer if the compressor's maximum pressure exceeds the design pressure of the dryer. If the dryer's safety valve malfunctions or becomes blocked, this valve will be activated to release the excess pressure. Failure to install a full-flow safety valve may result in equipment damage and potential safety hazards.

CAUTION

Install the dryer on a level foundation/floor and fix it firmly. If the foundation/floor is not level or is subject to variable inclination, contact your local representative. The foundation/floor must be level to prevent excessive vibration and damage to the dryer.

CAUTION

Extreme caution is required when working near the outlet pipe of the regeneration air and other high temperature piping or parts. These surfaces can reach extremely high temperatures and cause severe burns upon contact. Always wear appropriate heat-resistant gloves and clothing when working in this area.

NOTICE

Remove all flange covers, plugs, caps, and desiccant bags before connecting any piping to the dryer to ensure proper performance.

NOTICE

Ensure that the dryers are grounded and protected against short circuits by fuses in all phases.

NOTICE

The electrical connections must correspond to the applicable codes.

- In the USA: NFPA 70® (National Electrical Code®)
- In European countries: IEC 60364

Follow all federal, state, local, and site-specific government regulations, and company guidelines. A lockable power isolating switch must be installed near the dryer.

NOTICE

The air outlet valve should not be subjected to any external force or pressure that could cause damage or compromise its functionality. Additionally, there must be no tension or stress on the pipe connecting to the valve to prevent it from dislodging or disconnecting.

NOTICE

The safety precautions are specific to machinery processing or consuming air or inert gas. Processing other gases requires additional safety precautions that are not covered in the provided precautions.

General operation safety**DANGER**

Do not remove any components of the unit during operation (piping, vessels, valves, etc.). Sudden release of pressurized compressed air will result in death or serious personal injury.

DANGER

Before disconnecting a hose, always ensure that it is fully depressurized to prevent the sudden release of pressurized air which can cause serious harm to the individuals or the dryer.

WARNING

The dryer should only be operated by qualified, trained, and experienced personnel in accordance with the instructions and requirements of the controller and its instruction book. Failure to follow this warning could result in death, serious personal injury, and/or property damage.

WARNING

Do not touch any piping or components of the unit during operation.

WARNING

Do not operate the dryer when flammable or toxic fumes, vapors or particles are present in the vicinity of the dryer.

WARNING

Do not switch on or remotely control the dryer without ensuring no one is working on the dryer. Affix a suitable notice to the remote start equipment.

WARNING

When blowing through a hose or air line, holding the open end tight is essential to prevent the hose from whipping, which can result in injury.

CAUTION

Before remotely starting the dryer, the operator must take adequate precautions to ensure that no one is operating the dryer. If the dryer can start remotely and the remote start equipment is not disabled or the Lock Out/Tag Out (LOTO) procedures have not been performed, a suitable notice or warning should be affixed to the dryer to warn personnel not to approach, operate, check or work on the dryer.

CAUTION

Ensure that all bodywork doors are closed during operation. Doors can be opened briefly for routine checks. Always wear ear protection when opening a bodywork door.

CAUTION

Check the sound-dampening material and vibration dampers on the dryer regularly. If there is any damage, use genuine material from the local supplier to fix and prevent the sound pressure level from increasing.

NOTICE

Do not operate the dryer above or below its temperature, flow or pressure ratings. The dryer needs a minimum inlet flow and pressure to operate correctly. A high flow will result in damage to the desiccant beads and loss of performance, whereas a high pressure can result in damage to the dryer, pipework and other components in the system.

General maintenance safety**DANGER**

Do not weld or modify the pressure vessel. Doing so may cause the pressure vessel to explode, which will result in death, serious personal injury, and/or property damage.

WARNING

Before conducting maintenance or repair work on any electrical equipment of the dryer, always disconnect the power source. Verify that it is de-energized using a measuring device, even if the indicator lamps or the electrical door locks are off.

WARNING

Always follow all local safety regulations for working at heights before climbing the ladder or accessing the rooftop for maintenance. Ensure that the unit is completely shut down and that the Lock Out/Tag Out (LOTO) procedures have been performed before accessing the rooftop. Utilize the appropriate fall protection equipment when climbing a ladder and walking on the rooftop of a dryer for maintenance.

WARNING

Before connecting or disconnecting any pipes, or removing any pressurized components to or from the dryer, ensure that:

- the dryer has been turned off and has stopped functioning.
- the dryer, pressure vessels and piping have been fully depressurized.
- the dryer has been effectively isolated from all sources of pressurized gas.

Always follow all applicable federal, state, local and site-specific government regulations and company guidelines regarding compressed gas including any Lock Out/Tag Out (LOTO) procedures before performing any maintenance or repair work on the dryer.

WARNING

Always keep regulating and safety devices in a proper working order and never disable or bypass them. Failure to follow this warning could result in death, serious personal injury, and/or property damage.

**WARNING**

Do not touch exposed wires and live (current-carrying) parts when the electrical system is powered.

**WARNING**

Maintenance work should only be carried out when the dryer has properly cooled down. Failure to follow this warning could result in serious burns.

**CAUTION**

Always wear the appropriate PPE (Personal Protective Equipment) including safety glasses, gloves, safety shoes, and any other necessary gear.

**CAUTION**

Only perform any maintenance work on the dryer when it has cooled down to a safe temperature.

**CAUTION**

At the time of installation and/or during regular operation of the dryer, ensure that all fasteners are tightened according to the torque values specified in the instruction book.

**CAUTION**

Use appropriate tools and equipment for any maintenance or repair work.

**CAUTION**

Use non-flammable and non-toxic cleaning solvents and take proper safety precautions while cleaning.

**CAUTION**

Do not use an open flame light source to inspect the interior of a machine or pressure vessel, as it can create a fire hazard and pose a risk of explosion.

**CAUTION**

Stop the machine if you suspect internal overheating. Make sure to provide sufficient cooling time before opening any inspection covers to prevent the risk of spontaneous ignition of oil vapor.

CAUTION

Regularly maintain and take appropriate measures to ensure that all regulating and safety devices function correctly. Under no circumstances should these devices be intentionally disabled or rendered ineffective.

CAUTION

Before using the machine after maintenance or overhaul, ensure that all operating pressures, temperatures, and time settings are correct. Also make sure that the control and shutdown devices are correctly fitted and functioning.

CAUTION

Do not use acidic solvents on the air net components, such as the polycarbonate bowls, as they can cause damage to the materials.

NOTICE

To ensure the safety of personnel, a warning sign with a message such as 'work in progress; do not start' must be affixed to the starting equipment.

NOTICE

If the dryer is to be operated by remote control then the end user needs to attach a label/sign stating "DANGER: This dryer is remotely controlled and may start without warning."

NOTICE

Maintain cleanliness during maintenance and repair work by covering parts and openings with a clean cloth, paper or tape to prevent dirt accumulation.

NOTICE

Only use genuine spare parts for maintenance or repair work. The manufacturer will disclaim all damage or injuries caused by using non-genuine spare parts.

NOTICE

Any employees or third-party personnel involved in the maintenance, repair work, service, and operation of the dryer must comply with:

- The safety training and recommendations provided by the owner/ employer of said personnel.
- The instructions, warnings, cautions, and notices contained in this instruction book.
- All federal, state, local, company and site-specific safety regulations and guidelines. If there is a question or issue regarding any maintenance, repair work, service, or operational procedure, this

should be directed to the owner/employer for instruction or resolution. If the question or issue remains unresolved, contact your local representative for technical assistance.

**NOTICE**

Ensure that the machine is free of tools, loose parts, or rags after maintenance work.

**NOTICE**

To prevent moisture from entering the air filter, electrical and regulating components, etc., protecting them during steam cleaning or any other activity involving water is essential. Proper ventilation and proper covering or shielding should be used to avoid damage and potential hazards.

**NOTICE**

A functional test must be conducted using depressurized vessels to ensure that the dryer operates correctly after maintenance or repair work.

General solenoid valve safety

While the dryer is pressurized, make sure that the operator follows the safety instructions below when working on the solenoid valves:

**WARNING**

Do not modify the pilot air lines (tubing) on the solenoid valves. This could engage the actuator resulting in the release of pressurized air.

**WARNING**

Do not modify the electrical connections inside the control cubicle nor on or to the solenoid valve of the actuators. Such modifications will cause a discrepancy between the control logic and the function of the butterfly valve, which could result in a release of pressurized air.

**WARNING**

Any action to manipulate the valves other than via the controller of the dryer is prohibited.

General safety precautions for safety valves**WARNING**

Make sure that the system is depressurized prior to the disassembly of the safety valve.

**CAUTION**

If safety valves are painted, ensure that the sliding parts are free of paint.

CAUTION

During installation, the maximum torque values must not be exceeded.



Valve size	Maximum torque value
DN 8	30 Nm
DN 10	40 Nm
DN 15	50 Nm
DN 20	60 Nm
DN 25	60 Nm
DN 32	80 Nm
DN 40	80 Nm
DN 50	90 Nm

**CAUTION**

When blowing off safety valves, be aware that gases may discharge at a high velocity and temperature, which can result in excessive noise.

**CAUTION**

Safety valves equipped with a lifting device (version sGK) can be manually opened when the working pressure reaches or exceeds 85% of the response pressure.

**CAUTION**

To manually open a safety valve equipped with a lifting device (version sGK), rotate the twist-type lifting mechanism above the bonnet counterclockwise. Once the valve is lifted, return the twist-type mechanism back to its original position.

**NOTICE**

Based on the operating conditions and the manufacturer's recommendations, determine the maintenance intervals for the safety valves.

Safety precautions for handling desiccant

**WARNING**

Desiccant handling is strictly designated for authorized and trained personnel that have received specialized training on the safe handling of desiccant. For guidance on desiccant handling procedures, contact your local representative.

WARNING

Inhalation of desiccant dust can cause illness or death. Ensure proper ventilation and wear PPE (Personal Protective Equipment), including appropriate respiratory protection suitable to handling desiccant. Observe all applicable federal, state, local and site-specific government regulations and company guidelines regarding PPE.

WARNING

Always wear eye protection when near the dryer. It is also recommended to wear ear protection, particularly if the dryer is being operated without mufflers. Even when the mufflers are utilized, the discharge of desiccant into the atmosphere can generate airborne particles and increased noise levels, potentially startling individuals who are not accustomed to this aspect of the operation.

CAUTION

Desiccant must be stored in a covered facility, shielded from environmental elements to prevent moisture contamination in case of contact with water. Failure to store desiccant properly may result in its ineffectiveness, leading to compromised performance and potential damage to the dryer.

NOTICE

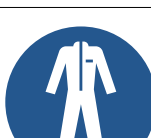
Always take appropriate safety measures when working with desiccant. For specific details and guidance on different desiccant types, consult the corresponding Safety Data Sheet (SDS).

NOTICE

Follow all local, state, federal EPA (Environmental Protection Agency), OSHA (Occupational Safety and Health Administration), and similar codes regarding disposal of used desiccant. Desiccant contaminated with oil or other foreign substances may be covered under disposal regulations for the contaminant.

1.6 Signs and stickers

The unit is fitted with signs and stickers according to ISO 7010 containing important information about personal safety and product maintenance. The signs and stickers should always be easy to read.

No.	Icon	No.	Icon
1	 Not to be serviced by users	2	 Do not touch
3	 No open flame, open ignition source	4	 Do not walk or stand here
5	 Warning: electricity	6	 Warning: automatic start-up
7	 Warning: flammable material	8	 Warning: arc flash
9	 Warning: explosive material	10	 Warning: pressurized cylinder
11	 Warning: hot surface	12	 Asphyxiating atmosphere/inhalation hazard
13	 Wear ear protection	14	 Wear eye protection
15	 Wear head protection	16	 Wear a mask
17	 Disconnect before carrying out maintenance or repair	18	 Wear protective clothing

No.	Icon	No.	Icon
19	 Wear gloves	20	 Refer to the instruction manual
21	 Automatic condensate drain		

1.7 Dismantling and disposal

The device must be disposed of according to local regulations. The product is not designed for refurbishing after the finished lifecycle.

Dismantling

Dismantling should only be performed by trained personnel familiar with the equipment and the safety requirements.

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

1. Stop the machine.
2. Check all safety precautions mentioned in the previous chapters to guarantee safe handling (e.g. LOTO, cool-down, depressurize, discharge, etc.).
3. Separate the components for disposal, such as oil-containing parts, in accordance with the local regulations.
4. Refer to the information below or contact your local representative for further details on specific materials and disposal procedures.

Disposal

- Always adhere to local regulations when disposing of the equipment. These regulations may require specific procedures or designated facilities for handling electrical waste (e-waste) and specific materials or components.
- Many parts are recyclable including metals like steel, aluminium, copper and precious metals. Plastics, rubber, cardboard and other packaging material can be used in energy recovery.
- Contact your local waste management company or recycling facility for detailed information on how to properly dispose of different components in your region.

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) as well as under the UKCA Waste Electrical and Electronic Equipment regulations 2013 and may not be disposed of as unsorted waste.



The equipment is labelled in accordance with the European Directive 2012/19/EU and the UKCA Waste Electrical and Electronic Equipment regulations 2013 with the crossed-out wheelie bin symbol.

At the end of life 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.

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2 General description

2.1 Introduction

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

CD⁺ dryers are available in a version to reach a pressure dewpoint down to -20 °C (-4 °F) or down to -40 °C (-40 °F) and are equipped with a DC1 electronic controller. An Elektronikon™ Touch controller, including a pressure dewpoint (PDP) sensor is available as an option.

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

General views



NOTICE

Drawings and illustrations are for reference only. Contact your local representative for specific models.



Figure 1: CD 65⁺ with DC1 controller - General view

Main parts

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

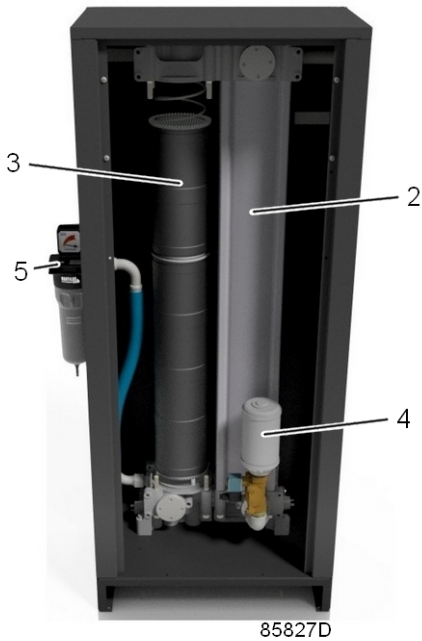


Figure 2: CD 65+ - Main parts

Reference	Description
1	Controller
2	Right tower
3	Left tower
4	Silencer
5	Air inlet

A coalescing inlet filter is supplied separately (not shown in the images).

Identification plate

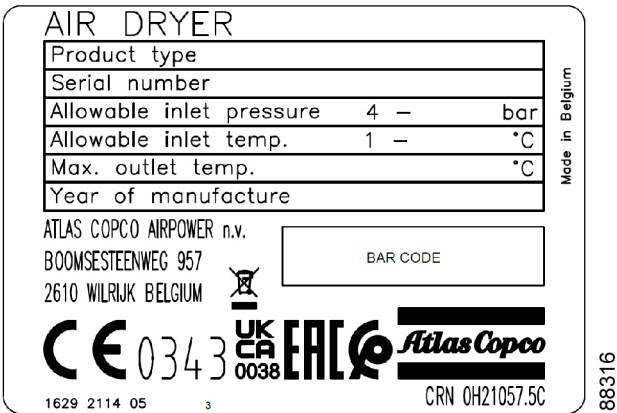


Figure 3: Example of the identification plate



Figure 4: Location of the identification plate on the dryer

2.2 Operation

General

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



NOTICE

Drawings and illustrations are for reference only. Contact your local representative for specific models.

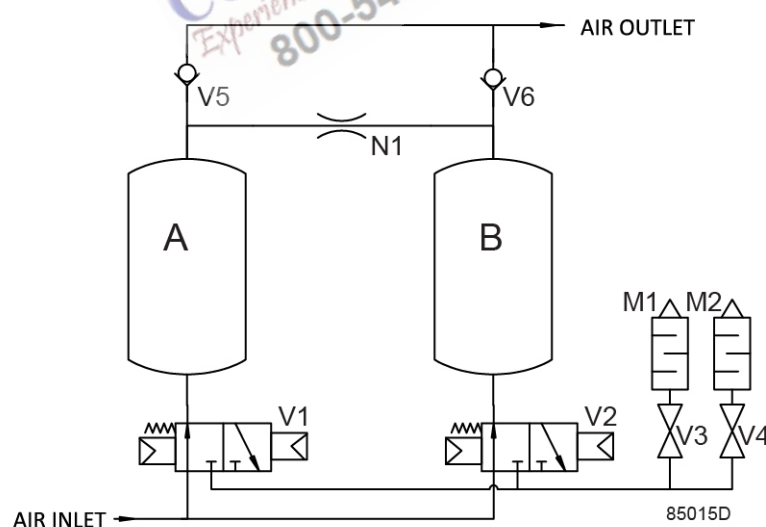


Figure 5: Flow diagram

Reference	Description
AIR INLET	Air inlet
AIR OUTLET	Air outlet
A	Left desiccant tower

Reference	Description
B	Right desiccant tower
V1	Left 3–2 valve (with solenoid valve)
V2	Right 3–2 valve (with solenoid valve)
V3	Blow-off valve
V4	Regeneration valve
V5	Left check valve
V6	Right check valve
M1	Blow-off silencer
M2	Regeneration silencer
N1	Nozzle

Depending on its 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 (101.5 psi) 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

Status	Left tower	Right tower	V1	V2	V3	V4
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 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 state 2 or 9. The same happens when the power is switched off.

2.3 Electric diagram



WARNING

The electrical wiring must comply with the local regulations. The air dryer must be earthed and protected by fuses against short-circuiting. See the electrical diagram delivered with the dryer.



WARNING

Before switching on the main power supply, check the voltage requirements in the technical specifications or on the dryer's data plate.

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

Drawing number	Controller type
9827 2940 00	DC1 controller
9827 2939 00	Touch controller

3 DC1 controller

3.1 Control panel

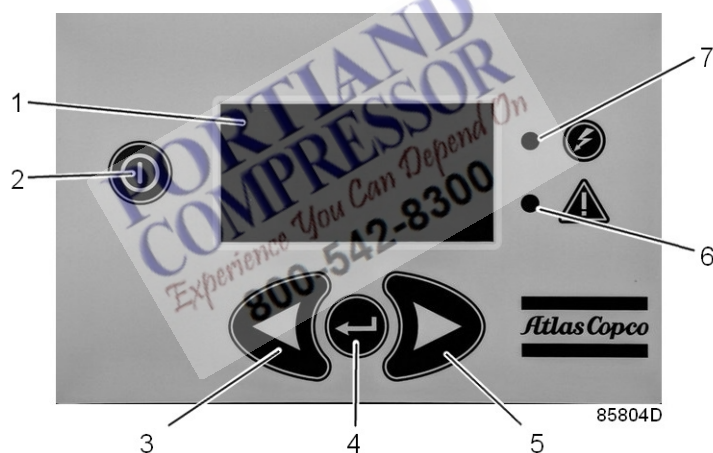
General description

The controller automatically controls and protects the dryer, i.e.:

- Keeping the pressure dewpoint stable.
- Monitoring switches to ensure safe operation and stopping the dryer whenever necessary.
- Restarting the dryer when required.

In order to control the dryer and to read and modify programmable parameters, there is a control panel provided with:

- LEDs indicating the status of the dryer.
- A display indicating the operating conditions or a fault.
- Keys to control the dryer and to access the data collected.
- Buttons to manually start and stop the dryer.



Reference	Description
1	Display
2	On/Off button
3	Left button
4	Enter button
5	Right button
6	Alarm LED
7	Power on LED

Button functions

Press any button to light up the display.

Button	Normal operation	Alarm status	Selection menu	Alarms browser	Parameters editing	Counters and service menu
On/off	Starts/stops the dryer					

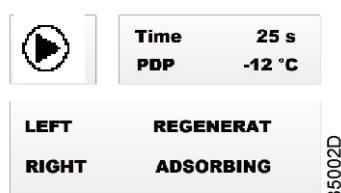
Button	Normal operation	Alarm status	Selection menu	Alarms browser	Parameters editing	Counters and service menu
Left	No action	No action	Moves the cursor upwards cyclically	Displays the previous alarm cyclically	- Selects the parameter - Decrements the data value	No action
	With the PDP option available, you can press the Left or Right button to show a graph of the PDP.					
Right	No action	No action	Moves the cursor downwards cyclically	Displays the next alarm cyclically	- Selects the parameter - Increments the data value	No action
	With the PDP option available, you can press the Left or Right button to show a graph of the PDP.					
Enter	Displays the selection menu	Cancels the displayed alarm for one minute (alarm acknowledgment)	Selects the pointed menu and activates it	- Returns to the selection menu - Cancels the service alarm when pressed for 5 seconds	- Starts the parameter editing - Selects the numerical data digits - Confirms the modified value - Returns to the selection menu when pressed for 2 seconds	Returns to the selection menu

LED functions

LED	Color	Description
Power on	Green	The controller is turned on.
Alarm	Blinking red	The controller is in alarm condition.
	Fixed red	The controller needs technical assistance.

3.2 Main screen

During normal operation, the following image is displayed:



- In the upper right area, the current working phase countdown and the measured dewpoint are displayed.

When the pressure dewpoint (PDP) sensor is not enabled, the dewpoint is not displayed.
When the PDP sensor is enabled but either not connected or defective, no dewpoint value is displayed (four dashes substitute the measure).

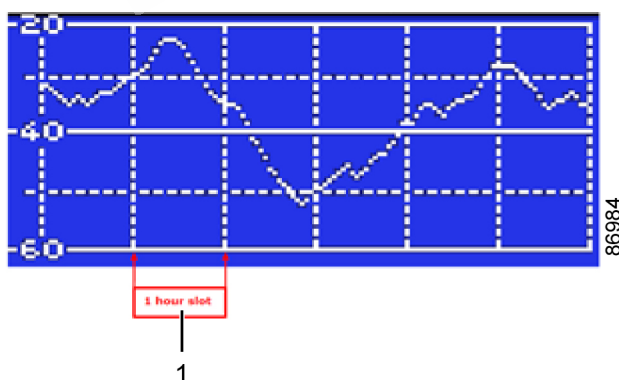
- In the lower area, the current working phase of each vessel is displayed.
- In the upper left area of the screen, an animated icon is present:

Icon	Description
	Rotating arrow Displayed when the dryer is in its working phases.
	Stationary vertical bars Displayed when the dryer is in the FREEZE status.
	Stationary square Displayed when the dryer is stopped.

The various working phases are:

Phase	Text displayed on screen	Translation
Stop	STOPPED	STOPPED
Shifting	SHIFTING	SHIFTING
Adsorbing	ADSORBING	ADSORBING
Pressure relief	DEPRESS	DEPRESS
Regeneration	REGENERAT	REGENERAT
Pressure equalize	EQUALIZE	EQUALIZE
Freeze	FREEZE	FREEZE
Standby	STANDBY	STANDBY
Blowing off	BLOW OFF	BLOW OFF

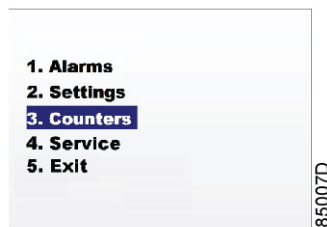
When a PDP meter is connected, pressing the left or right arrow will show a graph of the measured values from the last hours.



Reference	Description
1	1 hour slot

3.3 Selection Menu

When you press Enter in the normal operation main screen (not during alarm!), you will see the following selection menu:



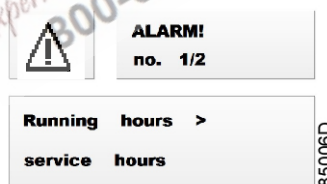
Press Left or Right to navigate to the required menu item and press Enter to select.

	Selection	Translation	Description
1	Alarms	Alarms	Alarms browser
2	Settings	Settings	Parameters list
3	Counters	Counters	Counters status
4	Service	Service	Service status
5	Exit	Exit	Back to the main display

Select item 5 (Exit) to return to the main screen or wait approximately 30 seconds.

3.4 Alarm screen

When there is an alarm, you will see the following image on your screen:



When one or more alarms are active, the alarm screen overrides the main screen.

In the upper right area, the current alarm number and the total active alarms number are displayed.

In the lower area, the current alarm description is displayed.

If more than one alarm is active, the fault messages are shown every 2 seconds.

Pressing Enter acknowledges the alarm currently being displayed.

If all the alarms have been cleared, you will return automatically to the main screen.

After one minute, if the acknowledged alarm is still active, the alarm display is shown again.

The icon in the upper left area blinks.

Module involved	Cause	Message on the display	How to clear the alarm	Alarm LED status
Pressure Dewpoint (PDP) sensor	PDP above or equal to the minimum value of the PDP range	PDP is not connected	Verify if the PDP sensor is correctly connected and if it is not damaged.	Blinking
	PDP lower than or equal to the minimum value of the PDP range	PDP measure is wrong	Verify if the PDP sensor is correctly connected and if it is not damaged.	Blinking
	PDP sensor supply voltage < 20 V	PDP supply is in fault	Verify if the sensor supply voltage is correct.	Blinking
	PDP more than 10 °C (50 °F) above the desired setpoint	PDP meas > the setpoint	The alarm is automatically cleared when the desired dew point is reached.	Blinking
Service	Running hours > programmed service hours A, B or C	Running hours > service hours X (X = A, B or C)	Perform the requested maintenance (A, B or C). Next, enter the Alarm menu, select Service Alarm, press the Enter button and keep it pressed during minimum 5 seconds.	Blinking
24 V supply	Supply voltage < 18 V	24 V supply is in fault	Contact your supplier	Blinking
Controller	Controller hardware fault	Internal error	Reset all settings to the default value. Switch off the controller and switch it on again. Contact your supplier if the fault persists.	Lit continuously

Table 1: Possible alarm causes

When an alarm is active, relay K01 and contacts 9 and 10 of relay X15 are closed. When all the alarms are cleared, K01 is open.

Acknowledgement of the alarms does not affect the status of K01 or the status of the red LED.

See section *Electric diagram*.

3.5 Editing parameters

During parameters editing (see section *Selection menu*), you will see a similar image on your screen:



In the upper right area, the current parameter number and the total modifiable parameters number are visualized.

In the lower area, the current parameter description and value are displayed.

Only the unprotected parameters can be displayed and modified. Examples of settings that are accessible to the end user are: Automatic restart after voltage failure (ARAVF), language and the display time-out.

Pressing the Enter button for at least 2 seconds ends the editing procedure. The display will return to the selection menu.

Editor button functions

Button	Description
Left	- Selects the previous parameter - Decrements the value
Right	- Selects the next parameter - Increments the value
Enter	- Starts the parameter editing - Selects the numerical data digits - Confirms the modified value - Ends the editing procedure when pressed for at least 2 seconds. The display will return to the selection menu.

How to modify a parameter

- Select the parameter to be modified using the Right or Left button.
- Start the modification procedure.
 - If the parameter is a selection value (e.g. a language) or a boolean value (On or Off), go to the following step.
 - If the parameter is a numerical value, press the Enter button repeatedly, as required.
- Modify the selected parameter using the Right or Left button.
 - If the parameter is a selection value (e.g. a language), pressing Right increments and pressing Left decrements the selection within the allowed range.
 - If the parameter is a boolean value (On or Off), Right forces the data to On, Left to Off.
 - If the parameter is a numerical value, Right increments and Left decrements the selected digit.
- Close the editing phase.
 - For numerical data, Enter moves the cursor to the upper digit (see step 2). If the digit is the last one, Enter closes the editing phase.
 - For selection or boolean values, Enter closes the editing phase.

Modifiable parameters

Following parameters can be modified without password:

Parameter number	Parameter name	Description	Default value	Allowed range
1	Automatic restart after voltage failure (ARAVF)	Selects if the controller will restart automatically or not in case of power failure.	Off	On or Off
2	Language	Selects the language of the displayed messages.	English	English, French, Spanish, Italian, Portuguese, German, Russian
3	Display timeout		5 min	1 — 999 min
4	PDP control	On: The dryer tries to follow the setpoint. Off: The dryer will run at the lowest possible dewpoint.	Off	On or Off
5	Dewpoint setpoint	Fixes the target for the PDP.	Based on the model of dryer: • -20 °C (-4 °F) • -40 °C (-40 °F)	Maximum value: -10 °C (+14 °F) Minimum value: • -20 °C (-4 °F) • -40 °C (-40 °F) based on the model of dryer.
6	PDP temp in °F	Selects the temperature.	Off	On or Off

All other parameters are protected by a password and need no modification.

PDP Sensor retrofit

For the PDP sensor retrofit kit number, refer to the parts list.

To access the PDP settings:

1. Go to main screen and press Enter to access the menu.
2. Select **Settings**
3. Go to **Password** and enter the password: **4321**

The password is recorded from right to left.

To edit the PDP parameters:

1. In **Settings**, go to **PDP enable**
Set parameter: 'ON'
2. Go to parameter **PDP control**
Choose preferred behavior.
3. Go to parameter **Dewpoint setpoint**
Modify and confirm the preferred PDP sensor setpoint.
4. To go back to the main screen, press Enter for 2 seconds. The main menu will appear. Press Exit and the main screen will display.

4 Touch controller

4.1 Controller functions



Figure 6: Elektronikon™ 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 can extend the adsorption time when the pressure dewpoint is better than expected. When the dewpoint setting is reached the dryer will switch tower and start regenerating again.



WARNING

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.

Shutdown

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

WARNING

Before remedying, consult the safety precautions.

Before resetting a warning or shutdown message, an authorized technician should solve the problem. If a warning or alarm persists to occur, consult your supplier. 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 the Stop button to stop the unit and wait until the unit has stopped. Consult an authorized technician to solve the problem.

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 carry out the required service actions.

WARNING

Ignoring this service warning could severely damage your machine in the long term. The supplier is not liable for failures caused by neglecting service interval timings.

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.

WARNING

If the function is activated and the controller was in the automatic operation mode before the supply voltage was interrupted, the unit will automatically restart once the supply voltage to the unit is restored. The ARAVF label shall be attached near to the controller.

4.2 Control panel



Figure 7: Control panel

Reference	Designation	Function
1	Touch screen	Shows the unit operating condition and several 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	Stops the unit.
7	Start button	Starts the unit. The operation sign lights up. The controller is operative.

4.3 Icons used



NOTICE

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

Menu icons

Menu	Icon	Menu	Icon	Menu	Icon
Data	 85233D	Status	 85239D		
		Inputs	 85240D		
		Outputs	 85241D		
		Counters	 85242D		
		Auxiliary 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		
Machine Settings	 85237D	Alarms	 85239D		
		Regulation	 85346D		
		Control Parameters	 85347D		
		Auxiliary Equipment Parameters	 85243D	Converters	 85251D
				Fan	 85255D
				Internal SmartBox	 85256D

Menu	Icon	Menu	Icon	Menu	Icon
		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
 85262D	Motor Stopped
 85263D	Motor Stopped Wait
 85264D	Running Unloaded
 85265D	Manual Unload
 85266D	Running Unloaded Wait
 85267D	Running Loaded
 85268D	Failed to Load
 85269D	Running Loaded Wait
 85270D	Manual Stop

Icon	Description
 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

Icon	Description
 85289D	Menu
 85290D	Reset
 85291D	Auto Restart
 85292D	Filter(s)
 85293D	Cooler
 85294D	Valve(s)
 85295D	Power Meter

Input icons

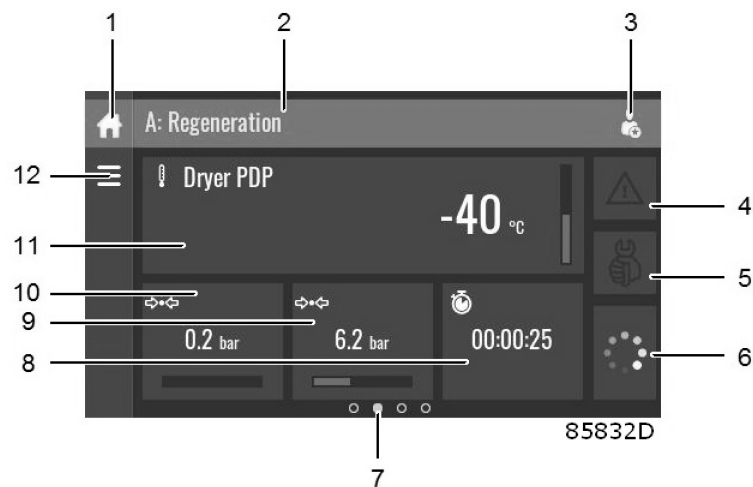
Icon	Description
 85296D	Pressure
 85297D	Temperature
 85298D	Special Protection
 85299D	Open
 85300D	Closed

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.
7	Page indicator	This indicates which page you are currently seeing. The middle indication is the main screen, left is the menu screen and the right the quick access screen. Swipe left or right to go to another screen.
8, 9, 10, 11	These fields can contain a certain value, depending on the type of the unit.	Tap the field to view the type of measurement. This will be shown in the screen information bar. Examples of inputs: - Ambient temperature - Outlet pressure or temperature - 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



85831D

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

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

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



85204

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 automatic 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.

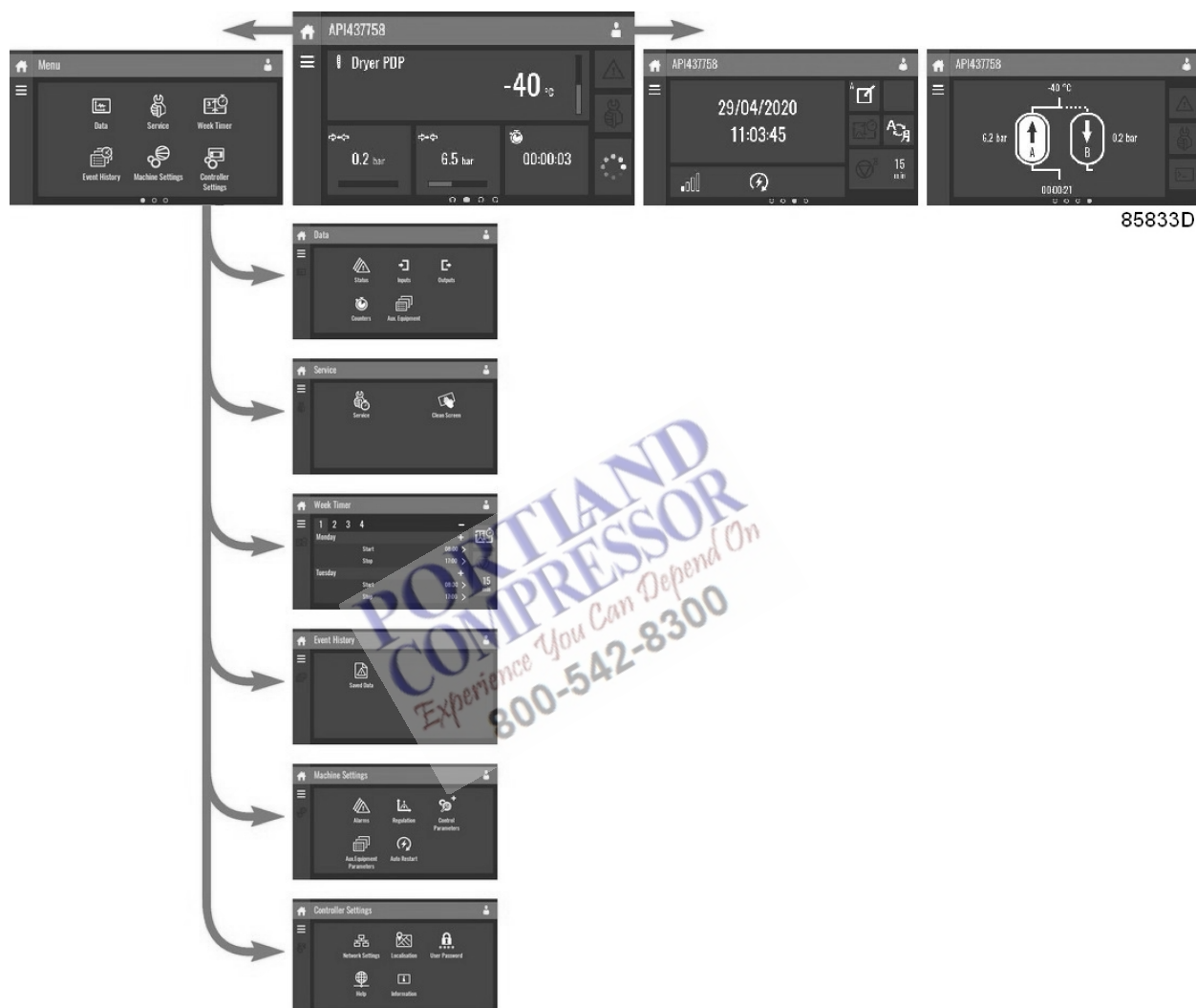
Menu structure



NOTICE

This is the main structure. It can differ depending on the configuration of the unit.

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



4.7 Data menu

Function

This screen is used to display the following submenus:

- **Status**
- **Inputs**
- **Outputs**
- **Counters**
- **Auxiliary Equipment**

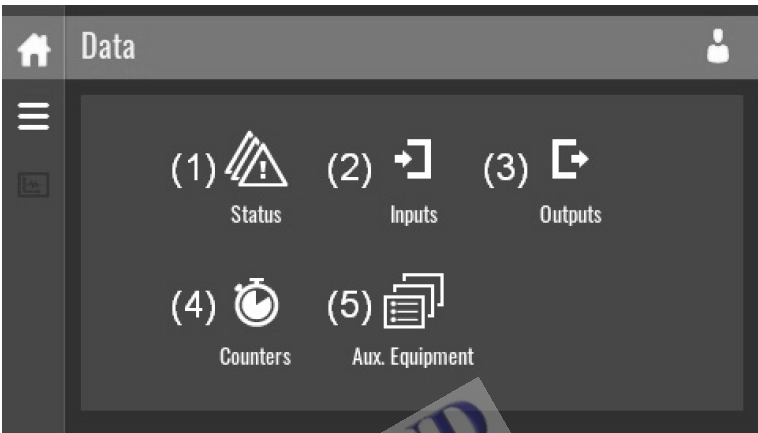
These submenus can be entered by tapping the icons.

Procedure

To enter the **Data** menu screen:

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

Description

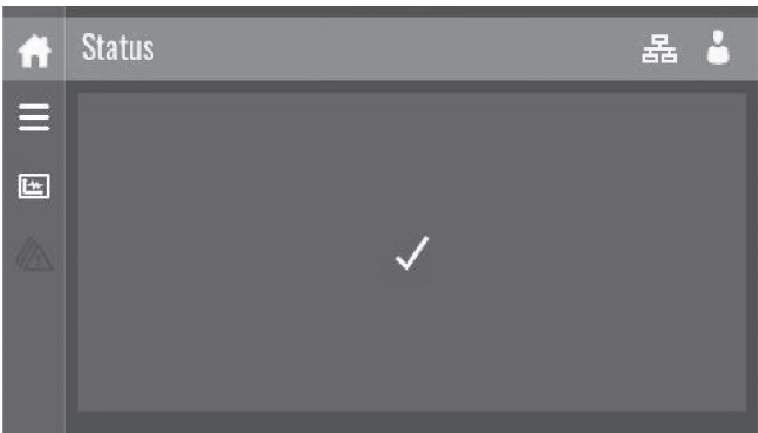


85210

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

Status menu

Tap the **Status** icon to enter the **Status** menu.



86370

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.

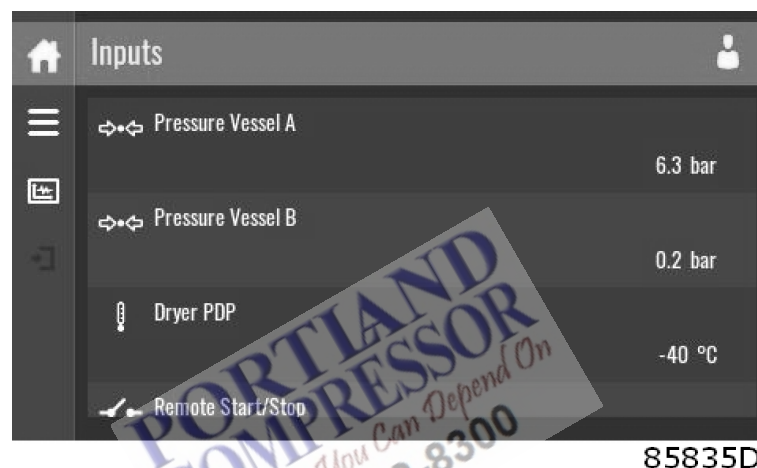
WARNING

Before remedying, consult the safety precautions.

Before resetting a warning or shutdown message, an authorized technician should solve the problem. If a warning or alarm persists to occur, consult your supplier. 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.

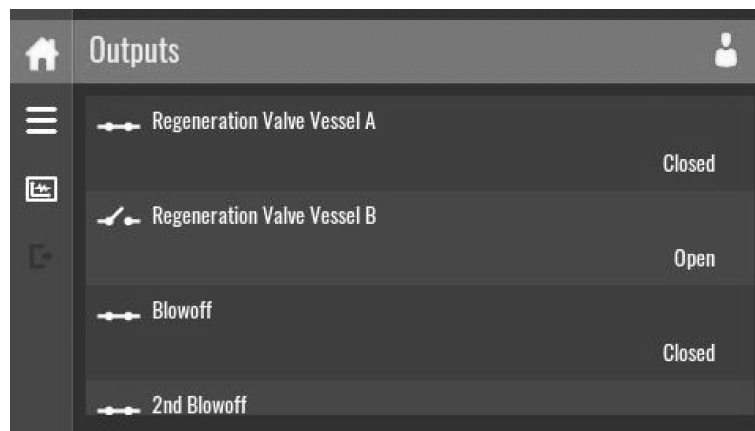
Outputs menu**CAUTION**

Voltage-free outputs may be used to control or monitor only functional systems. They should NOT be used to control, switch or interrupt safety related circuits. Check the maximum allowed load on the label.

CAUTION

Stop the unit and switch off the supply before connecting external equipment. Consult the *Safety precautions*.

Tap the **Outputs** icon to enter the **Outputs** menu.



85836D

This menu shows information about all the outputs.

Counters menu

Tap the **Counters** icon to enter the **Counters** menu.

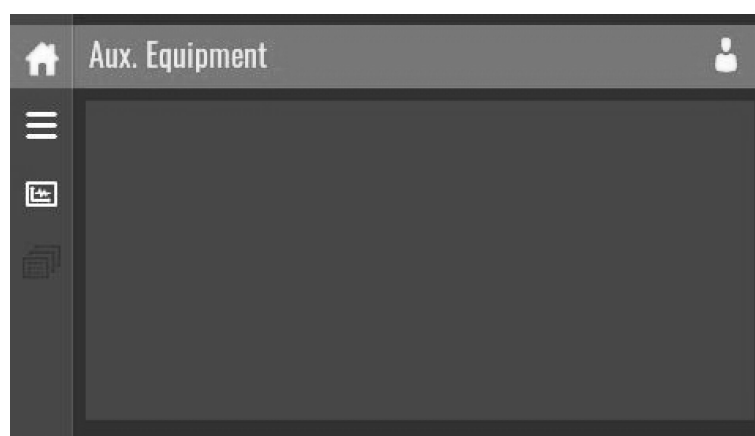


85837D

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

Auxiliary Equipment menu

Tap the **Auxiliary Equipment** icon to enter the **Auxiliary 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** (visible as advanced user)
- **Clean Screen**

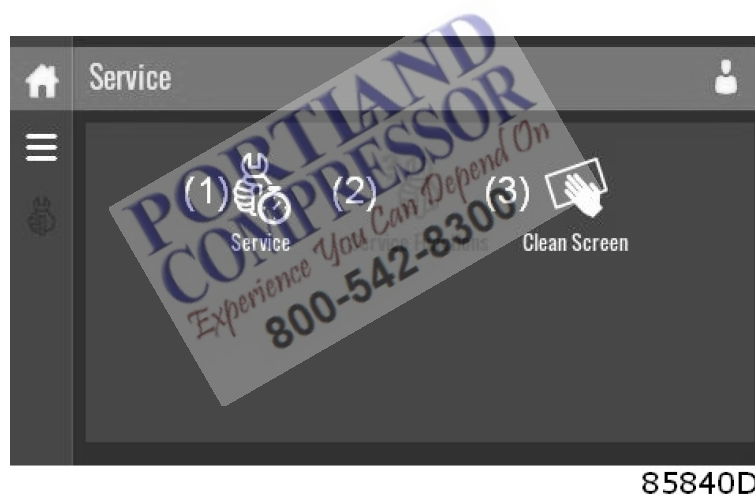
These submenus can be entered by tapping the icons.

Procedure

To enter the **Service** menu screen:

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

Description

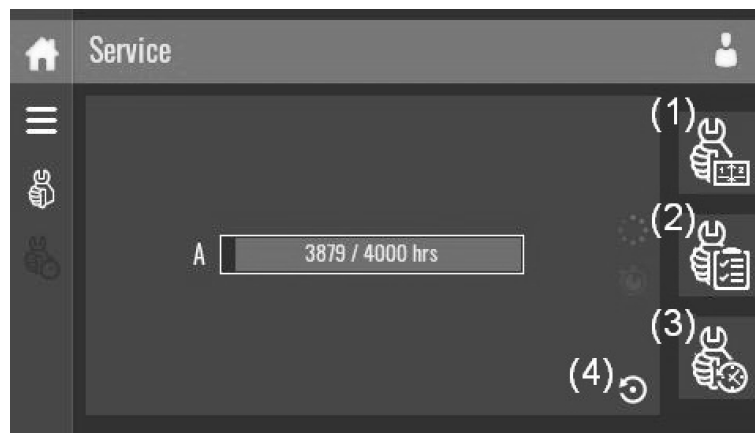


85840D

Reference	Description
(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** 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:

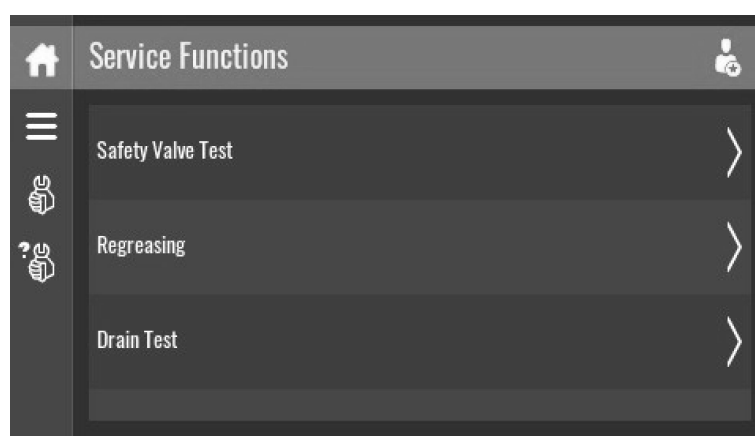
1. Tap the desired service plan. A selection screen will pop up.
2. Change the Running Hours by tapping '-' or '+'.
800-542-8300
3. Confirm by tapping 'V' or decline by tapping 'X'.

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 (visible for advanced user)

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

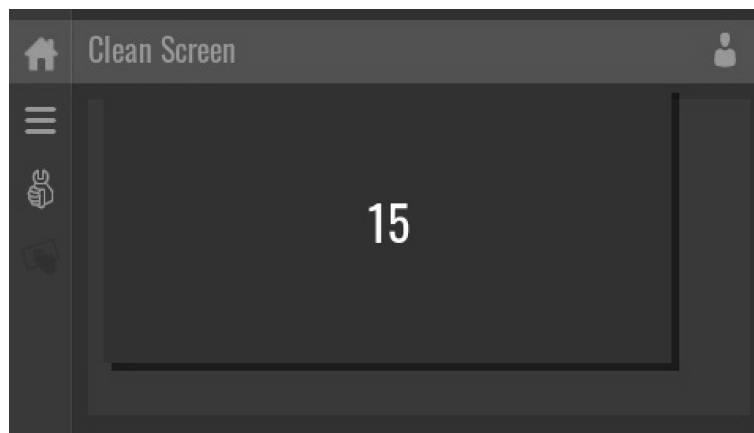


85232

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 touch screen.



85212

The touch screen 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 timers with each up to 8 settings per day.

The week timers can be activated through this screen.

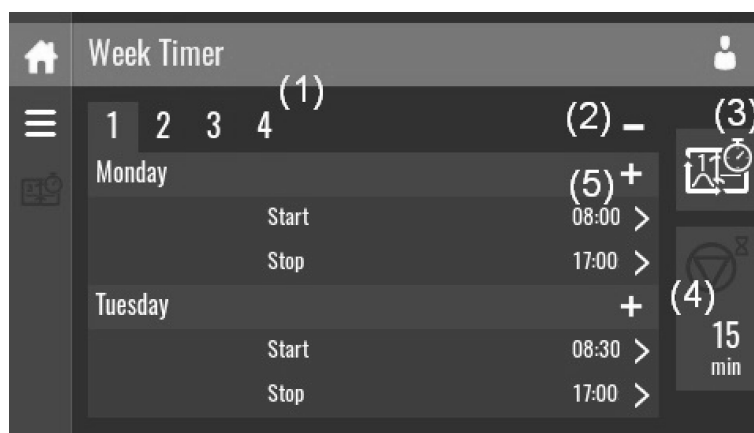
A **Remaining Running Time** can be set from 5 up to 240 minutes.

Procedure

To enter the **Week Timer** menu screen:

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

Description



85214

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.

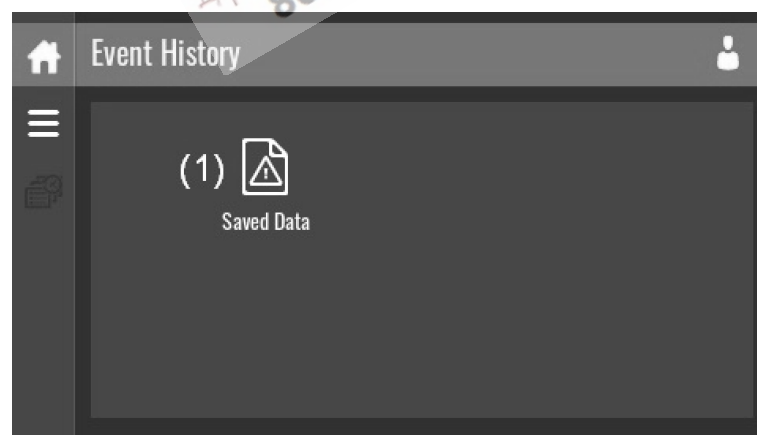
These submenus can be entered by tapping the icons.

Procedure

To enter the **Event History** menu screen:

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

Description



85216

Reference	Description
(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.

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

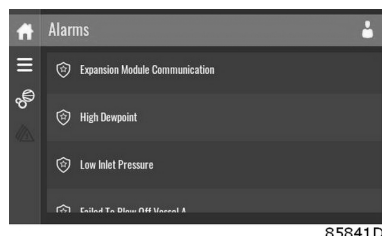


85847D

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

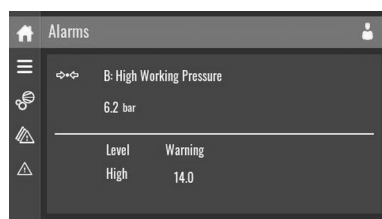
Alarms menu

Tap the **Alarms** icon to enter the **Alarms** menu.



85841D

A list of all alarms is shown.

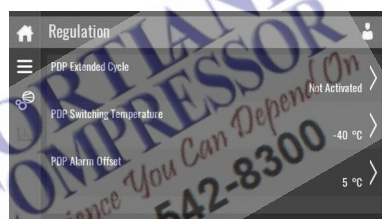


85842D

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

Regulation menu

Tap the **Regulation** icon to enter the **Regulation** menu.



85843D

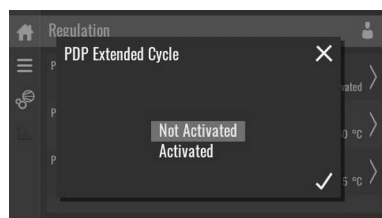
Setpoints can be modified and capacity control can be consulted through this menu.

Modify a setting

When a list item is tapped, 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

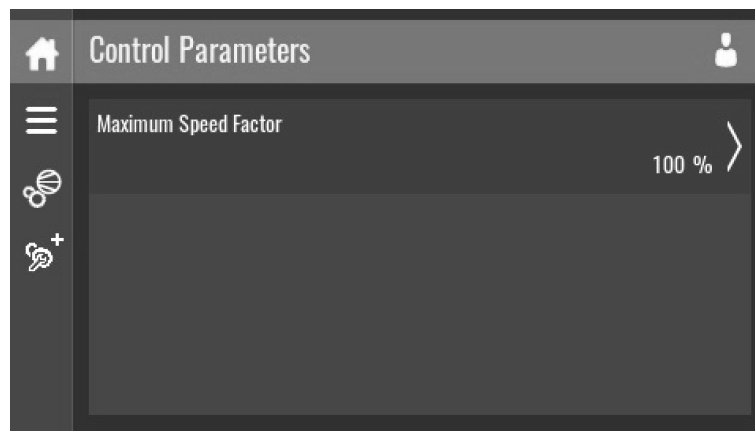
When a list item is tapped, a selection screen pops up. The user can change the selection by swiping up or down and confirm by tapping 'V' or decline by tapping 'X'.



85844D

Control parameters menu

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



85219

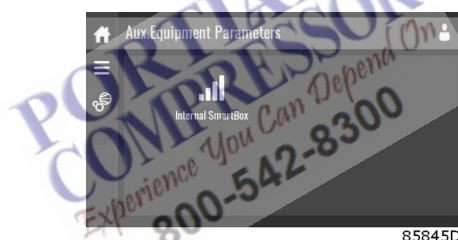
This menu shows information about the **Control Parameters**.

Modify a setting

When a list item is tapped, 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'.

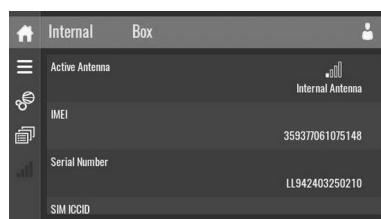
Auxiliary equipment parameters menu

Tap the **Aux. Equipment Parameters** icon to enter the **Aux. Equipment Parameters** menu.



85845D

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



85846D

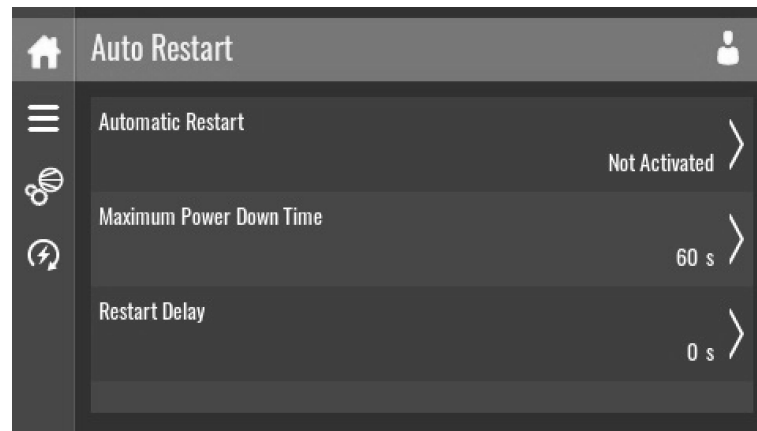
Through this menu, the parameters of the auxiliary equipment can be changed.

Modify a setting

When a list item is tapped, 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.



85221

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

For automatic restart the user may have up to three options:

1. Not Activated – The unit will not restart automatically after power failure.
2. Activated – The unit will restart automatically when power is restored, only if the power was off less than the time set in the maximum power down time setting. When the controller has completely rebooted, the unit will wait the amount of time set in the restart delay before it will start.
3. Activate Infinite - The unit will restart automatically when power is restored no matter how long the power was off. There will be no option for a maximum power down time setting. When the controller has completely rebooted, the unit will wait the amount of time set in the restart delay before it will start.

Enter a password

When a password-protected item is tapped, 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 a list item is tapped, 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**

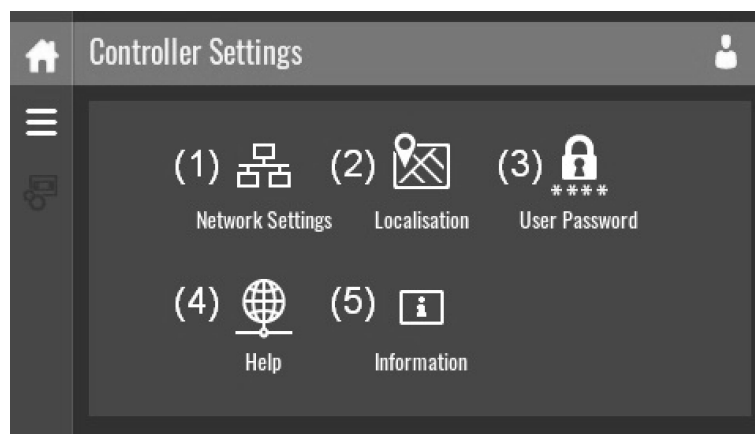
These submenus can be entered by tapping the icons.

Procedure

To enter the **Controller Settings** menu screen:

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

Description

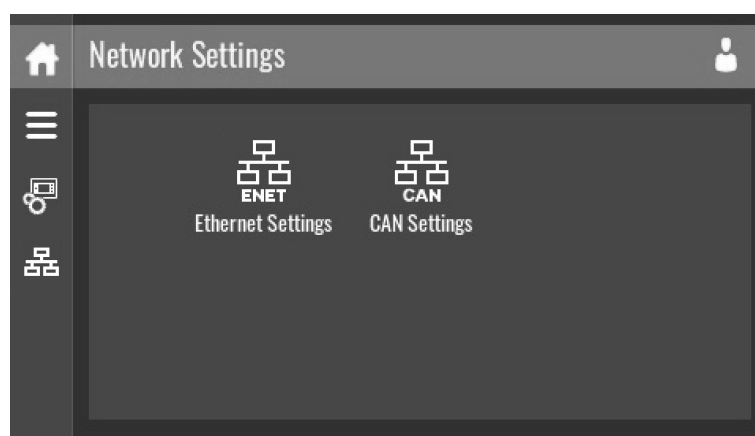


85228

Reference	Description
(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.



85223

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

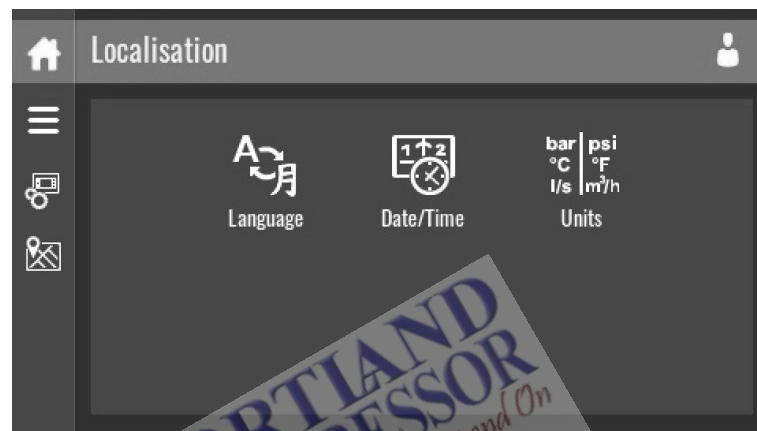
When a list item is tapped, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

Change a selection

When a list item is tapped, 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.



85224

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

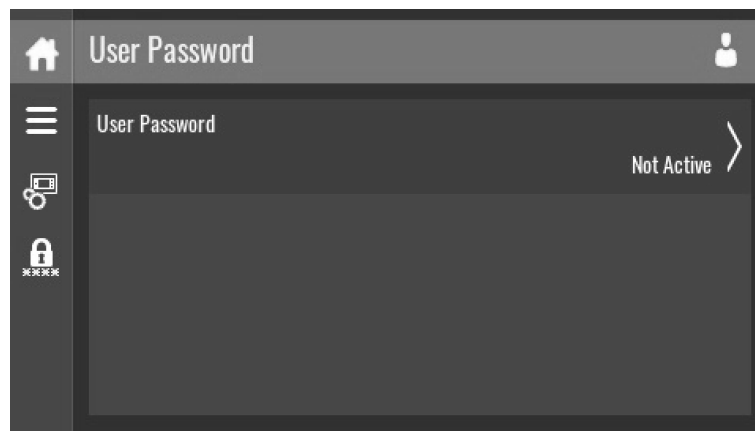
When a list item is tapped, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

Change a selection

When a list item is tapped, 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.



85225

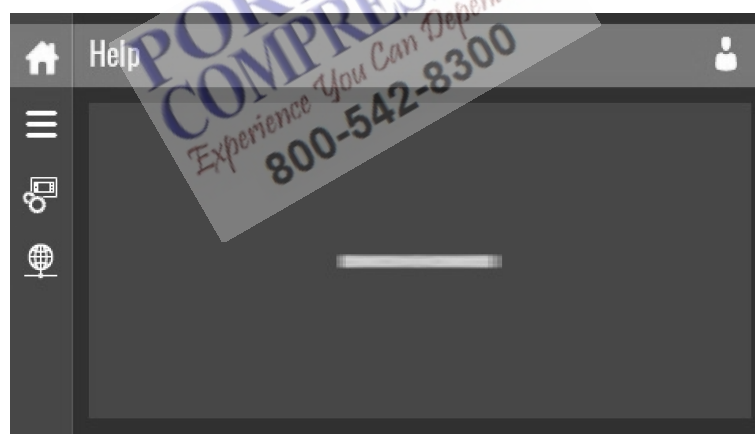
The user password can be activated or deactivated through this menu. Enter and confirm a user password to activate, repeat to deactivate.

Enter a password

When a password-protected item is tapped, 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.



85226

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

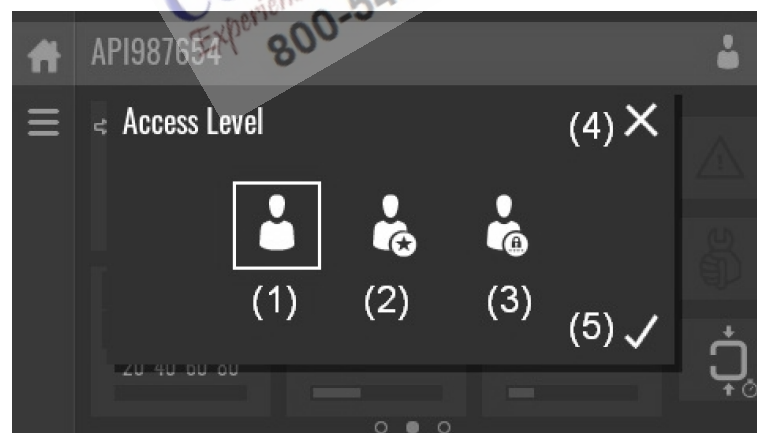
Function

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.

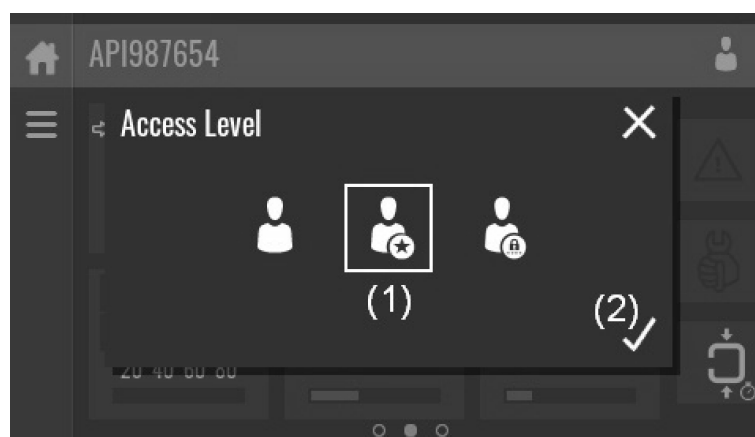
Description



85229

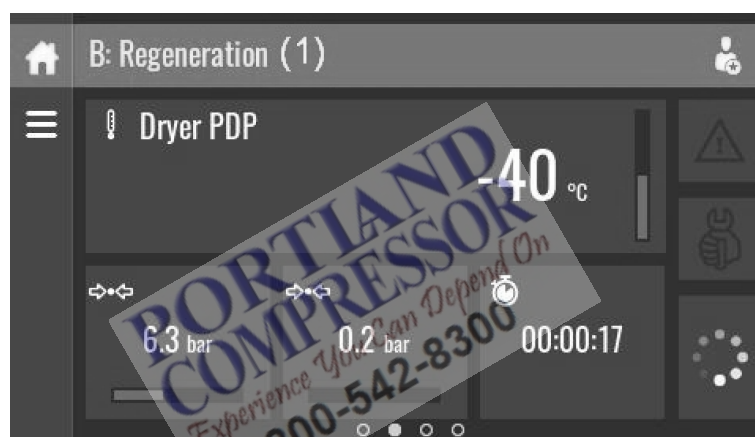
Reference	Designation	Function
(1)	Basic user	A basic set of parameters is visualized, no password required.
(2)	Advanced user	A basic set of parameters can be modified, no password required.
(3)	Service user	This access level is not accessible to end users.
(4)	Decline	Tap to decline the selected user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

Advanced access level



85230

Tap the **Advanced** 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 section *Quick access screen*.

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

4.14 Technical data Touch controller

General

Supply voltage	24 V AC / 16 A, 50 / 60Hz (+40% / -30%) 24 V DC / 0.7 A
Type of protection	IP54 (front) IP21 (back)
Ambient and temperature conditions	IEC60068-2
Operating temperature range	-10 °C - 60 °C (14 °F - 140 °F)
Storage temperature range	-30 °C - 70 °C (-22 °F - 158 °F)

Permissible humidity	Relative humidity 90%. No condensation.
Noise emission	IEC61000-6-3
Noise immunity	IEC61000-6-2
Mounting	Cabinet door

Digital outputs

Number of outputs	9
Type	Relay (voltage free contacts)
Rated voltage AC	250 V AC / 10 A max.
Rated voltage DC	30 V DC / 10 A max.
Minimum amperage	10 mA on potential free contact

Digital inputs

Number of inputs	10
Supply by controller	24 V DC
Supply protection	Short circuit protected to ground
Input protection	Not isolated

Analog inputs

Number of pressure inputs	2
Number of temperature inputs	5

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5 Installation

5.1 Dimension drawings

The dimension drawings can be found in the technical documentation supplied with the unit.

See section *Statement of use* for more details about the safety instructions.



NOTICE

Drawings and illustrations are for reference only. Contact your local representative for specific models.

Drawing number	Model
9829 5298 00	CD 20 – 335 ⁺

5.2 Inspection after shipment



NOTICE

If transport damage is encountered, a damage claim must be submitted immediately, directly with the carrier. Send a copy of the damage claim report to your service department.



NOTICE

It is imperative to inspect the dryer immediately after arrival. Check the shipping documents to determine how long the unit has been in transit since leaving the factory.

Shipping precautions, ex-factory

Special procedures are followed when packaging equipment. Their aim is to prevent corrosion during shipment. These procedures apply to all dryer units.

Dryer units

The complete dryer unit is enclosed in a plastic cover and placed on a pallet or in a crate. Lifting marks are painted on the crates.

The flanges that connect the dryer to the compressor are covered with a plastic cover.

Once implemented, these precautions will protect the dryer for a period of at least one year. The precautions remain valid providing there has been no rough handling during transport, and that the equipment has not been subjected to unfavourable ambient conditions (excessive humidity, heat or cold).

Inspection after shipment

Always inspect the equipment immediately after shipment. Verify the mode of transport as well as the length of time that the equipment has been in transit. The purpose of such an interim inspection is to ensure that the equipment will reach its final destination in perfect condition.

A brief inspection entails checking the crate or container for damage. Check that no moisture has penetrated the packaging material and that the contents have not moved inside the box or container.

Inspecting the dryer units

WARNING

Some items may be heavy or complex and require special lifting tools or the help of more than one person.



1. Dismount the top part and the sides of the crate. Take the plastic cover off the unit.
2. Check the equipment inside.

If the dryer or any of its parts/equipment appear to be damaged, or if any parts of the dryer are loose or have fallen off the dryer during shipment, take photographs and document the condition in writing. Contact your local representative. Do not attempt to fix any damage or fasten or replace any loose or disconnected parts.

5.3 Installation



NOTE

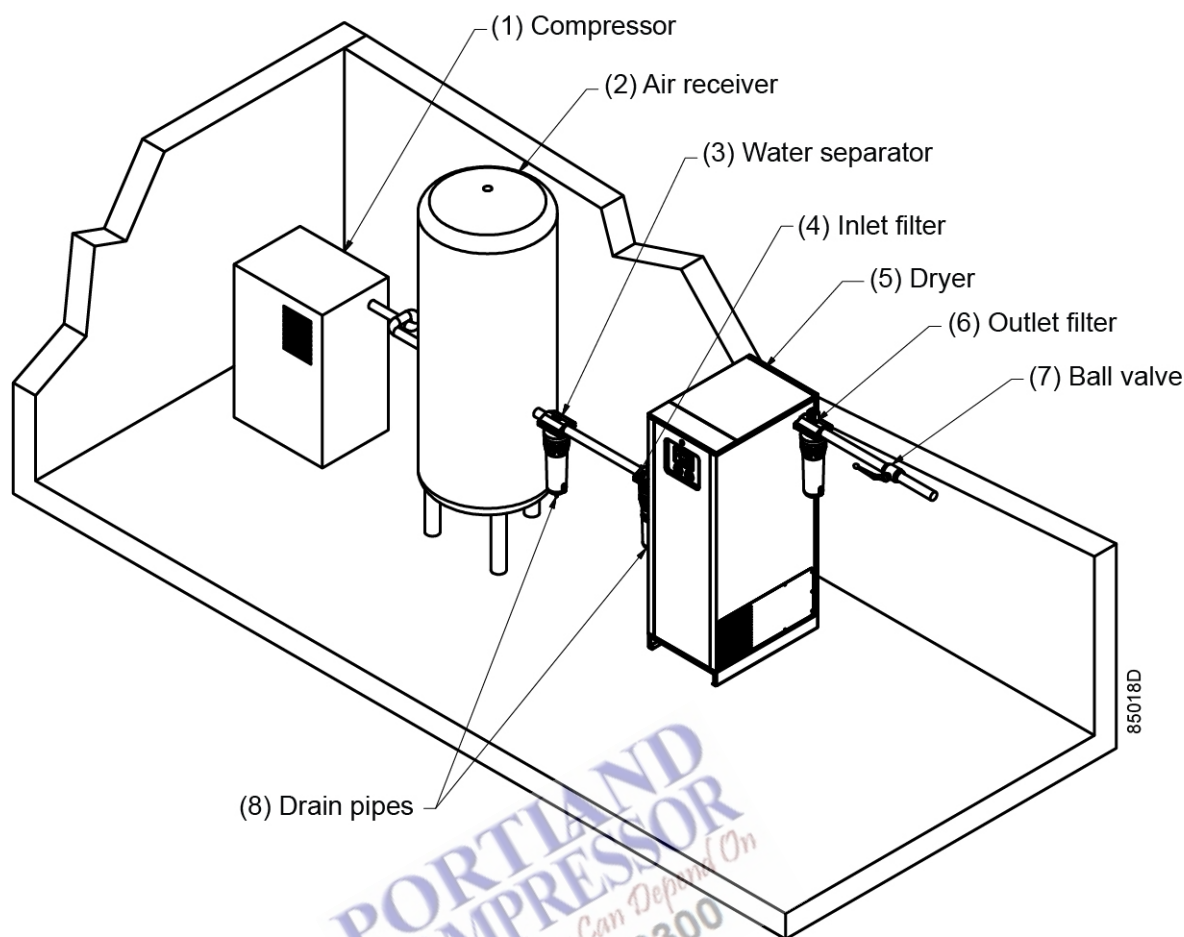
Make sure that all pipes, filters, valves, etc. are clean and that they are installed correctly with or without bypass system.



NOTE

Make sure that the piping is installed stress-free. For more information concerning air nets, cooling systems etc. refer to the compressor installation manual.

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



Reference	Description
(1)	Compressor
(2)	Air receiver
(3)	Water separator
(4)	Inlet filter
(5)	Dryer
(6)	Outlet filter
(7)	Ball valve
(8)	Drain pipes

Inlet air quality

The properties of the compressed air at the inlet of the dryer, as well as the minimum pressure and flow rate, play an important role with regards to its performance and lifetime.

The compressed air at the inlet of the dryer, after filtration, cannot contain liquid water or oil and should be of a quality that meets ISO 8573-1; class 1-7-2. Using a lower quality of compressed air will cause irreversible damage to the adsorption dryer. In this case, the manufacturer denies all liability for damages and any costs for repairs will be charged to the client. To achieve the required air quality, the following treatment components should be installed downstream the of compressor:

- Water separation:

- Install a water separator (3) if the water separation system of the compressor is inadequate, or if there is a risk of liquid water or oil entering the dryer, preventing compliance with ISO 8573-1 (class 1-7-2).
- If the condensate contains oil, use an oil/water separator to drain pure condensate water.
- Filtration:
 - Always install a UD+ filter (4) at the inlet of the dryer.
This filter removes particles down to 0.01 micron with a maximum oil carry-over 0.01 ppm.
 - Use a dust filter (6) at the outlet of the dryer.
This filter removes dust particles originating from the desiccant.

NOTE

The dust filter is an optional component and is not included with the standard unit. For more information, contact your local supplier.

- If oil vapor and odors are undesirable, a carbon filter can be installed downstream the dust filter.
- The drainpipes (8) of the water separator and the filters must not dip into the waste.

Installation requirements

Keep the following in mind when installing the dryer:

- Place the dryer at a location where the temperature never exceeds the limits. See section *Technical data*.
- Fix the dryer level to the floor. Make sure that the fixating bolts are tightened firmly and that the floor is suitable for taking the weight of the dryer.
- 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 sufficient space under the filter elements to be able to replace the filter cartridges without having to disassemble the piping.

- It is recommended 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 required to install pressure relief valves on each vessel of the dryer when ball valves are installed at the inlet and the outlet of the dryer to isolate the dryer from the air net.

NOTICE

Do not overload the dryer as a too high air speed may damage the desiccant. It is recommended to install the dryer upstream of the air receiver to prevent overload. Contact your local representative.

6 Operating instructions

DANGER



Prior to operating the dryer, the operator must read and understand all relevant safety precautions, operating instructions, and maintenance instructions. Refer to chapters *Safety precautions*, *Operating instructions* and *Maintenance*. Failure to read, understand, and follow all procedures and warnings may result in death, serious personal injury, and/or property damage.

6.1 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 on the dryer 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.

WARNING



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 dewpoint (PDP) is reached. In this case however, it will take more time for the desiccant to dry completely. At initial start-up, and specially when the dryer is loaded from the beginning, it can take a long time before the dewpoint is reached. It is therefore recommended to operate the dryer for a number of days with the outlet valve closed.

6.2 Normal start

If the dryer has not been used for more than 3 months, see section *Initial start-up*. 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.

**WARNING**

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

6.3 During operation

**NOTICE**

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

6.4 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 still receives 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.

**WARNING**

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.

7 Maintenance

7.1 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.

DANGER



Do not touch any electrical connections, valves, or sensors for troubleshooting purposes as this will result in death, serious personal injury, and/or property damage. Only qualified personnel should perform diagnostic work on the dryer. Contact your local representative for assistance.

DANGER



The dryer piping and pressure vessels operate with pressurized compressed air, which will result in death, serious personal injury, and/or property damage, if intentionally or accidentally released. Check the connections of the dryer for air leaks. Air leaks could result in serious or potentially fatal conditions, such as hearing damage due to noise, harm to the skin due to pressurized air, and air embolism. Only operate the dryer as described and instructed in this instruction book. Only operate the dryer within the specified temperature and pressure limits described in this instruction book.

DANGER



Follow all Lock Out/Tag Out (LOTO) procedures before any maintenance or repair work is performed on the dryer. Failure to follow all LOTO methods will result in death, serious personal injury, and/or property damage.

WARNING



Before starting any maintenance or repair work, see sections *General safety precautions* and *Product specific instructions*.

WARNING



Safeguard against unintentional activation. Apply all relevant safety precautions, including those mentioned in this book. Filters and valves between the compressor, dryer and air consumers may require other

maintenance than stated below. Refer to the appropriate manual for more information.

NOTICE



Filters and valves installed between the compressor, dryer and 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.

7.2 Preventive maintenance schedule

A number of service operations are grouped by means of service plans. If the programmed service interval is reached, an alarm will appear on the display of the controller to carry out these service actions. The following checks should be carried out regularly to ensure safe operation and a long service life. Depending on the environmental and working conditions of the unit, the local Customer Center may overrule the standard maintenance schedule. Always check if in doubt.



WARNING

This section is only intended for authorized, trained, and specialized personnel.

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 the regeneration cycle.
Every year or every 8000 hours of operation (1)	B	• Service plan A. • Replace the inlet filter cartridge. • Replace the pressure dewpoint (PDP) sensor.
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 solenoid of the angle seat valve (if installed). Always replace all O-rings, seals and nylon washers that come free when executing the scheduled maintenance.
Every 7 years or every 56000 hours (1)		Replace the desiccant. 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.

7.3 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 the 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
CD 20 ⁺	-40	-40	0.10	0.08	0.06	0.05	0.03
CD 30 ⁺	-40	-40	0.16	0.13	0.11	0.09	0.06
CD 40 ⁺	-40	-40	0.20	0.17	0.15	0.13	0.10
CD 55 ⁺	-40	-40	0.24	0.21	0.18	0.15	0.12
CD 65 ⁺	-40	-40	0.28	0.24	0.21	0.18	0.15
CD 85 ⁺	-40	-40	0.35	0.31	0.27	0.24	0.20
CD 105 ⁺	-40	-40	0.25	0.21	0.18	0.16	0.12
CD 125 ⁺	-40	-40	0.28	0.24	0.21	0.18	0.14
CD 170 ⁺	-40	-40	0.35	0.31	0.27	0.24	0.20
CD 190 ⁺	-40	-40	0.28	0.24	0.21	0.18	0.15
CD 250 ⁺	-40	-40	0.37	0.32	0.28	0.25	0.20
CD 335 ⁺	-40	-40	0.37	0.32	0.28	0.25	0.20

Table 2: 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
CD 25 ⁺	-20	-4	0.13	0.10	0.08	0.06	0.04
CD 35 ⁺	-20	-4	0.18	0.15	0.13	0.11	0.08
CD 50 ⁺	-20	-4	0.24	0.20	0.17	0.15	0.12
CD 65 ⁺	-20	-4	0.30	0.25	0.22	0.20	0.16
CD 80 ⁺	-20	-4	0.34	0.29	0.26	0.23	0.19
CD 105 ⁺	-20	-4	0.41	0.35	0.31	0.28	0.23
CD 125 ⁺	-20	-4	0.29	0.25	0.21	0.19	0.15
CD 150 ⁺	-20	-4	0.33	0.28	0.25	0.22	0.18
CD 195 ⁺	-20	-4	0.39	0.34	0.30	0.27	0.22
CD 225 ⁺	-20	-4	0.33	0.28	0.25	0.22	0.18
CD 300 ⁺	-20	-4	0.40	0.34	0.30	0.27	0.23

Table 3: Recommendation table

7.4 Service kits

Your local Customer Center will be glad to provide you with a wide range of service kits. Service kits consist of all parts needed to service components and offer the benefits of genuine parts while keeping the maintenance budget low. All service kits are mentioned in the relevant Parts Lists.

7.5 Service agreements

Your Customer Center has 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 agree on a tailor-made service agreement. It will ensure optimum operational efficiency, minimize downtime and reduce the total life cycle costs.

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8 Problem solving

WARNING



In the case of any fault or problem with the dryer that cannot be resolved by the user via the control panel, contact your local representative. Under no circumstances should the user attempt to troubleshoot, diagnose or repair the dryer. Any attempt to troubleshoot, diagnose or repair the dryer by a person not specifically trained to service the dryer could result in death or personal injury.

Problem solving table

Fault	Cause	Remedy
Pressure dew point too high LED PDP warning/PDP alarm is lit.	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 air cooler.
	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. The standard nozzle supplied is for 7 bar (101.5 psi), alternative nozzles are available for other operating pressures.

9 Technical data

9.1 Reference conditions

Condition	Unit	Value
Compressed air actual inlet pressure	barg	7
Compressed air actual 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 (-4 °F) version	°C	-20
Pressure dew point (PDP) -20 °C (-4 °F) version	°F	-4
Pressure dew point (PDP) -40 °C (-40 °F) version	°C	-40
Pressure dew point (PDP) -40 °C (-40 °F) version	°F	-40

9.2 Limitations for operation

Limitation	Unit	Value
Maximum compressed air actual inlet pressure	barg	14
Maximum compressed air actual inlet pressure	psig	203
Minimum compressed air actual inlet pressure	barg	4
Minimum compressed air actual inlet pressure	psig	58
Maximum ambient air temperature	°C	45
Maximum ambient air temperature	°F	113
Minimum ambient air temperature	°C	2
Minimum ambient air temperature	°F	35.6
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 section <i>Dryer data</i> .	

9.3 Dryer data

PDP -20 °C (-4 °F)

		CD 25 ⁺	CD 35 ⁺	CD 50 ⁺	CD 65 ⁺	CD 80 ⁺	CD 105 ⁺
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
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

		CD 25⁺	CD 35⁺	CD 50⁺	CD 65⁺	CD 80⁺	CD 105⁺
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		CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM
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 1		UD25+	UD45+	UD60+	UD60+	UD100+	UD100+
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

		CD 125⁺	CD 150⁺	CD 195⁺	CD 225⁺	CD 300⁺
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		CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM
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 1		UD140+	UD180+	UD180+	UD310+	UD310+
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
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 (-40 °F)

		CD 20⁺	CD 30⁺	CD 40⁺	CD 55⁺	CD 65⁺	CD 85⁺
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

		CD 20⁺	CD 30⁺	CD 40⁺	CD 55⁺	CD 65⁺	CD 85⁺
Desiccant type		CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM
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 1		UD25+	UD25+	UD45+	UD60+	UD60+	UD100+
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

		CD 105⁺	CD 125⁺	CD 170⁺	CD 190⁺	CD 250⁺	CD 335⁺
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
Average regeneration air consumption	%	16	16	16	16	17	17
Desiccant type		CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM	CeraDes TM
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 1		UD100+	UD140+	UD180+	UD180+	UD310+	UD310+
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

9.4 Maximum bolt torque

After opening for inspection, original bolts have to be used. The maximum torque has to be taken into consideration (see the table below).

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

Thread size	Tightening torque (Nm)	Allowed deviation (Nm)
M16	185	46
M18	238	60
M20	335	84

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10 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 dryer.

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

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11 Pressure Equipment Directives (PED)

Components subject to Pressure Equipment Directive 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 1.2 (f)(i).

Parts subject to the Simple Pressure Vessel Directive 2014/29/EU are excluded from 2014/68/EU according to article 1.2 (c).

The following table contains the necessary information for the inspection of all pressure equipment of category II and higher according to the Pressure Equipment Directive 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, the following inspections are to be carried out:
 - Inspection of the outside and inside of the material for excessive and local corrosion,
 - Inspection of the outside and inside of the material for cracks, leaks, damage.

Consult the service department of your supplier if necessary.

- An additional visual inspection is necessary when number of cycles is exceeded:
 - Minimum expected lifetime with an actual working pressure < 10 bar: 3 million cycles.
 - Minimum expected lifetime with an actual working pressure between 10 < x < 14 bar: 1.6 million cycles.

12 Declaration of conformity

Insert logo here

EU DECLARATION OF CONFORMITY

1 We, **(1)** declare under our sole responsibility, that the product

2 Machine name :

3 Machine type :

4 Serial number :

5

6 Which falls under the provisions of article 12.2 of the EC Directive 2006/42/EC on the approximation of the laws of the Member States relating to machinery, is in conformity with the relevant Essential Health and Safety Requirements of this directive.

The machinery complies also with the requirements of the following directives and their amendments as indicated.

	Directive on the approximation of laws of the Member States relating to	Harmonized and/or Technical Standards used	Att'mnt
a	(2)	(3)	
b			X
c			
d			X
e			
f			
g			X

8 a The harmonized and the technical standards used are identified in the attachments hereafter

9 <1> is authorized to compile the technical file.

10 **Conformity of the specification to the directives**

11 Issued by

12 Engineering

13 Name

14 Signature

15 Date

16 Place

Conformity of the product to the specification and by implication to the directives

Manufacturing

84350D

Figure 8: Typical example of a Declaration of Conformity document

- (1) Contact address:
Atlas Copco Airpower n.v.
P.O. Box 100
B-2610 Wilrijk (Antwerp)
Belgium
- (2) Applicable directives
- (3) Standards used

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 device.

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