

# **INSTRUCTION BOOK**

## **OIL-INJECTED ROTARY SCREW COMPRESSORS**

GA 11+, GA 15+, GA 18+, GA 22+, GA 26+, GA 30





# Atlas Copco

## Oil-injected rotary screw compressors

GA 11+, GA 15+, GA 18+, GA 22+, GA 26+, GA 30

### Instruction book

Original instructions

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

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
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# 1 Safety precautions

## 1.1 Safety icons


### Explanation


	Danger to life
	Warning
	Important note

## 1.2 Safety precautions, general

### General precautions

1. The operator must employ safe working practices and observe all related work safety requirements and regulations.
2. If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
4. The compressor is not considered capable of producing air of breathing quality. For air of breathing quality, the compressed air must be adequately purified according to the applicable legislation and standards.
5. Before any maintenance, repair work, adjustment or any other non-routine checks, stop the compressor, press the emergency stop button, switch off the voltage and depressurize the compressor. In addition, the power isolating switch must be opened and locked.  
VSD units are powered by a frequency converter, wait 10 minutes before starting any electrical repair.

	In a domestic environment, this product may cause radio interference in which case supplementary mitigation measures are required.
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	If the machine is equipped with an automatic restart after voltage failure function and if this function is active, be aware that the machine will restart automatically when the power is restored if it was running when the power was interrupted!
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6. Never play with compressed air. Do not apply the air to your skin or direct an air stream at people. Never use the air to clean dirt from your clothes. When using the air to clean equipment, do so with extreme caution and wear eye protection.
7. The owner is responsible for maintaining the unit in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.
8. It is not allowed to walk or stand on the unit or on its components.

## 1.3 Safety precautions during installation



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

### Precautions during installation

1. The machine must only be lifted using suitable equipment in accordance with the applicable safety regulations. Loose or pivoting parts must be securely fastened before lifting. It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Lifting acceleration and deceleration must be kept within safe limits. Wear a safety helmet when working in the area of overhead or lifting equipment.
2. The unit is designed for indoor use. If the unit is installed outdoors, special precautions must be taken. Consult your supplier.
3. In case the device is a compressor, place the machine where the ambient air is as cool and clean as possible. If necessary, install a suction duct. Never obstruct the air inlet. Care must be taken to minimize the entry of moisture at the inlet air.
4. Any blanking flanges, plugs, caps and desiccant bags must be removed before connecting the pipes.
5. Air hoses must be of correct size and suitable for the working pressure. Never use frayed, damaged or worn hoses. Distribution pipes and connections must be of the correct size and suitable for the working pressure.
6. In case the device is a compressor, the aspirated air must be free of flammable fumes, vapors and particles, e.g. paint solvents, that can lead to internal fire or explosion.
7. In case the device is a compressor, arrange the air intake so that loose clothing worn by people cannot be drawn in.
8. Ensure that the discharge pipe from the compressor to the aftercooler or air net is free to expand under heat and that it is not in contact with or close to flammable materials.
9. No external force may be exerted on the air outlet valve; the connected pipe must be free of strain.
10. If remote control is installed, the machine must bear a clear sign stating: DANGER: This machine is remotely controlled and may start without warning.  
The operator has to make sure that the machine is stopped and depressurized and that the electrical isolating switch is open, locked and labelled with a temporary warning before any maintenance or repair. As a further safeguard, persons switching on or off remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment.
11. Air-cooled machines must be installed in such a way that an adequate flow of cooling air is available and that the exhausted air does not recirculate to the compressor air inlet or cooling air inlet.
12. The electrical connections must correspond to the applicable codes. The machines must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the compressor.
13. On machines with automatic start/stop system or if the automatic restart function after voltage failure is activated, a sign stating "This machine may start without warning" must be affixed near the instrument panel.

14. In multiple compressor systems, manual valves must be installed to isolate each compressor. Non-return valves (check valves) must not be relied upon for isolating pressure systems.
15. Never remove or tamper with the safety devices, guards or insulation fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure must be protected by a pressure relieving device or devices as required.
16. Piping or other parts with a temperature in excess of 70°C (158°F) and which may be accidentally touched by personnel in normal operation must be guarded or insulated. Other high temperature piping must be clearly marked.
17. For water-cooled machines, the cooling water system installed outside the machine has to be protected by a safety device with set pressure according to the maximum cooling water inlet pressure.
18. If the ground is not level or can be subject to variable inclination, consult the manufacturer.
19. If the device is a dryer and no free extinguishing system is present in the air net close to the dryer, safety valves must be installed in the vessels of the dryer.



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

These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein.

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

## 1.4 Safety precautions during operation



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

### Precautions during operation

1. Never touch any piping or components of the machine during operation.
2. Use only the correct type and size of hose end fittings and connections. When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury. Make sure that a hose is fully depressurized before disconnecting it.
3. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
4. Never operate the machine when there is a possibility of taking in flammable or toxic fumes, vapors or particles.
5. Never operate the machine below or in excess of its limit ratings.
6. Keep all bodywork doors shut during operation. The doors may be opened for short periods only, e.g. to carry out routine checks. Wear ear protectors when opening a door. On machines without bodywork, wear ear protection in the vicinity of the machine.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 80 dB(A) shall wear ear protectors.
8. Periodically check that:

- All guards are in place and securely fastened
  - All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
  - No leaks occur
  - All fasteners are tight
  - All electrical leads are secure and in good order
  - Safety valves and other pressure relief devices are not obstructed by dirt or paint
  - Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse
  - Air cooling filters of the electrical cabinet are not clogged
9. If warm cooling air from compressors is used in air heating systems, e.g. to warm up a workroom, take precautions against air pollution and possible contamination of the breathing air.
  10. On water-cooled compressors using open circuit cooling towers, protective measures must be taken to avoid the growth of harmful bacteria such as Legionella pneumophila bacteria.
  11. Do not remove any of, or tamper with, the sound-damping material.
  12. Never remove or tamper with the safety devices, guards or insulations fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure shall be protected by a pressure relieving device or devices as required.
  13. Yearly inspect the air receiver. Minimum wall thickness as specified in the instruction book must be respected. Local regulations remain applicable if they are more strict.



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

## 1.5 Safety precautions during maintenance or repair



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

### Precautions during maintenance or repair

1. Always use the correct safety equipment (such as safety glasses, gloves, safety shoes, etc.).
2. Use only the correct tools for maintenance and repair work.
3. Use only genuine spare parts for maintenance or repair. The manufacturer will disclaim all damage or injuries caused by the use of non-genuine spare parts.
4. All maintenance work shall only be undertaken when the machine has cooled down.
5. A warning sign bearing a legend such as "Work in progress; do not start" shall be attached to the starting equipment.

6. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
7. Close the compressor air outlet valve and depressurize the compressor before connecting or disconnecting a pipe.
8. Before removing any pressurized component, effectively isolate the machine from all sources of pressure and relieve the entire system of pressure.
9. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapors of cleaning liquids.
10. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.
11. Never weld or perform any operation involving heat near the oil system. Oil tanks must be completely purged, e.g. by steam cleaning, before carrying out such operations. Never weld on, or in any way modify, pressure vessels.
12. Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of the oil vapor when air is admitted.
13. Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
14. Make sure that no tools, loose parts or rags are left in or on the machine.
15. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
16. Before clearing the machine for use after maintenance or overhaul, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly. If removed, check that the coupling guard of the compressor drive shaft has been reinstalled.
17. Every time the separator element is renewed, examine the discharge pipe and the inside of the oil separator vessel for carbon deposits; if excessive, the deposits should be removed.
18. Protect the motor, air filter, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam cleaning.
19. Make sure that all sound-damping material and vibration dampers, e.g. damping material on the bodywork and in the air inlet and outlet systems of the compressor, is in good condition. If damaged, replace it by genuine material from the manufacturer to prevent the sound pressure level from increasing.
20. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.
21. **Only if applicable, the following safety precautions are stressed when handling refrigerant:**
  - Never inhale refrigerant vapors. Check that the working area is adequately ventilated; if required, use breathing protection.
  - Always wear special gloves. In case of refrigerant contact with the skin, rinse the skin with water. If liquid refrigerant contacts the skin through clothing, never tear off or remove the latter; flush abundantly with fresh water over the clothing until all refrigerant is flushed away; then seek medical first aid.



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

## 1.6 Dismantling and disposal

### Dismantling

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

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

### Disposal of electrical and electronic appliances (WEEE)

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



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

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

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

### Disposal of other used material

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

## 2 General description

### 2.1 Introduction

#### Introduction

GA 11+ up to GA 30 are single-stage, oil-injected screw compressors driven by an electric motor.

GA 11+ up to GA 26+ are controlled by the Elektronikon™ Touch or Swipe controller based on the voltage.

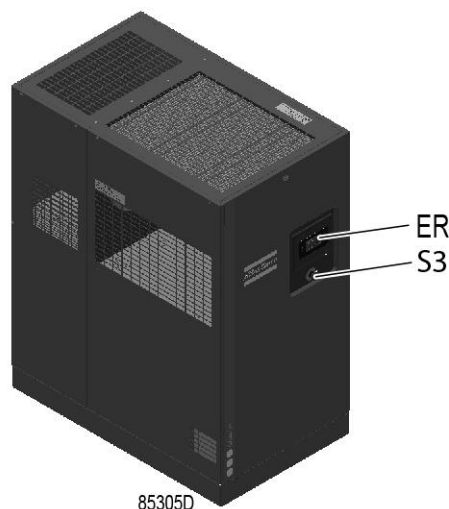
GA 30 is controlled by the Elektronikon™ Swipe controller.

The controller is fitted to the cubicle door. An electric cabinet comprising the motor starter is located behind this panel.

The compressors are air-cooled and are enclosed in a sound-insulated bodywork.

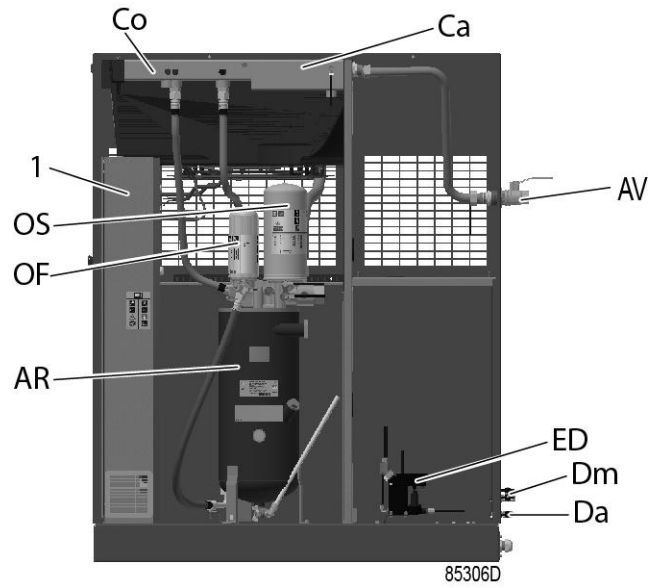
There are 2 versions of the compressor: Workplace (without integrated dryer) and Full-Feature (with integrated dryer).

#### GA, without integrated dryer



85305D

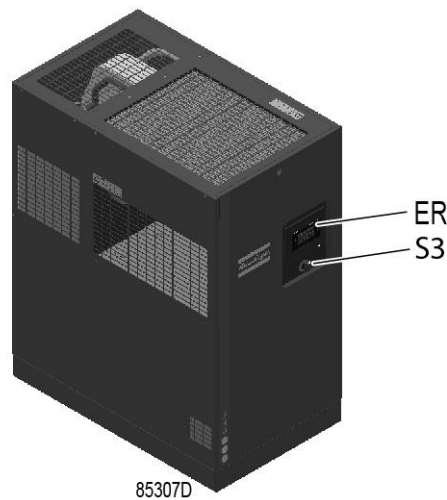
Front view



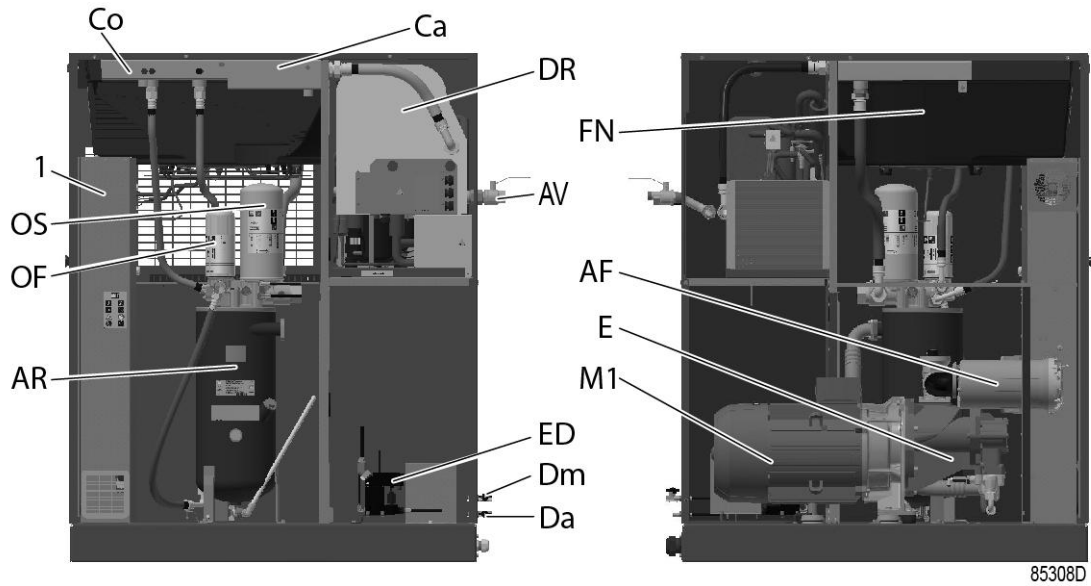
Open side view

**GA, with integrated dryer**

The compressors have an air dryer which is integrated in the sound-insulated bodywork. The dryer removes condensate from the compressed air by cooling the air to near freezing point.



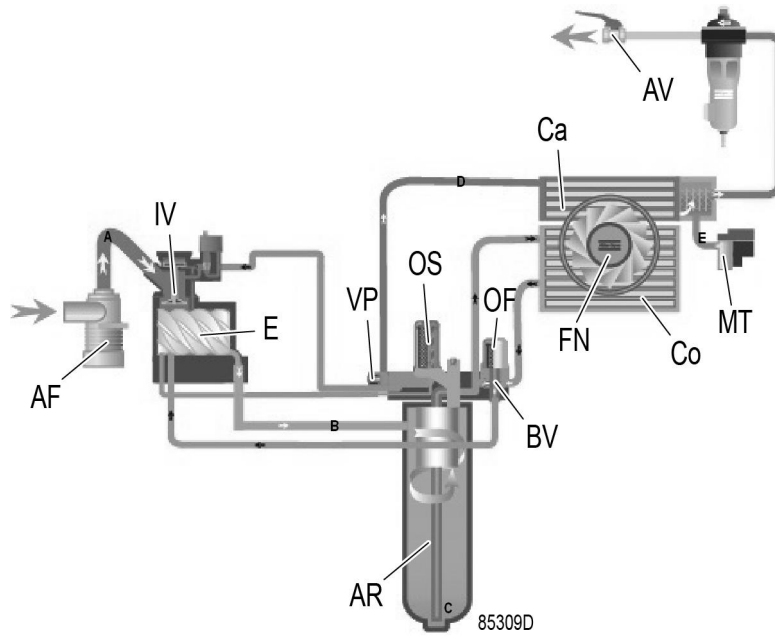
Front view



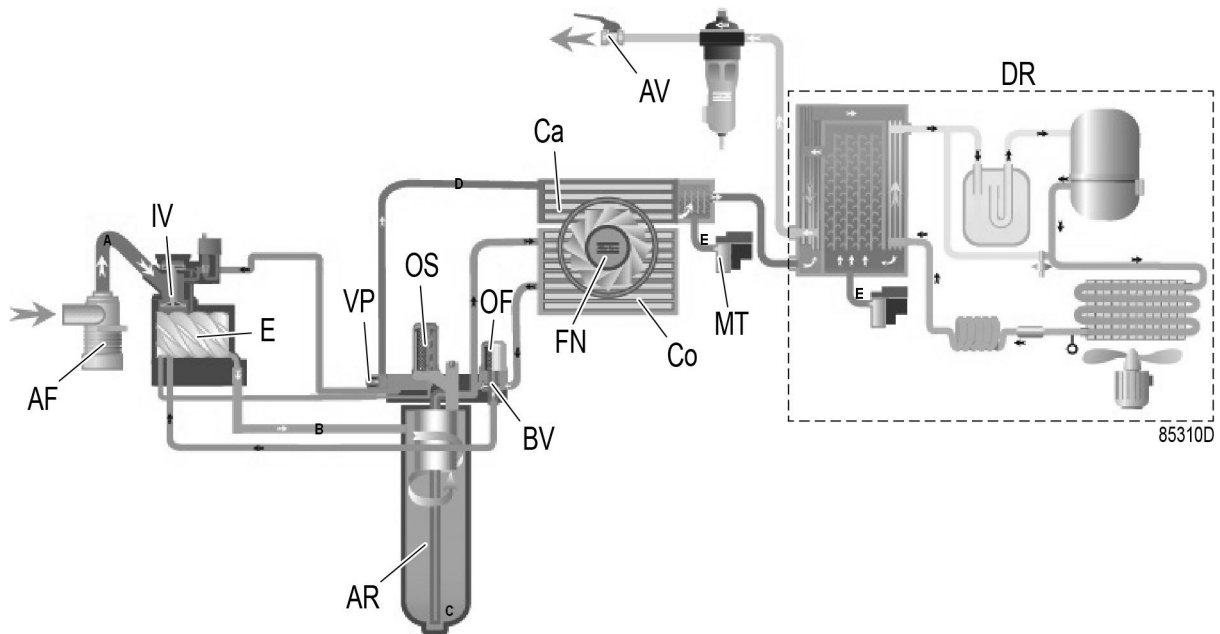
Open side view

Reference	Name
AF	Air filter
AR	Air receiver
AV	Air outlet
Ca	Air cooler
Co	Oil cooler
Da	Automatic condensate outlet
Dm	Manual condensate outlet
DR	Refrigerant dryer
E	Compressor element
ED	Electronic water drain
ER	Elektronikon™ Touch controller
FN	Cooling fan
M1	Motor of the compressor
OF	Oil filter
OS	Oil separator
S3	Emergency stop button
1	Electric cabinet

## 2.2 Flow diagram



GA 11+ up to GA 30, without integrated dryer



GA 11+ up to GA 30, with integrated dryer

Reference	Description
A	Air inlet
B	Air/oil mixture
C	Oil
D	Wet compressed air
E	Condensate

### Air flow

Air comes in through filter (AF) and inlet valve (IV) and is compressed in the compressor element (E).

A mixture of compressed air and oil flows into the air receiver/oil separator (AR), where oil and air are separated.

The air flows through the minimum pressure valve (Vp), the air cooler (Ca) and the condensate trap (MT) to the outlet valve (AV).

Minimum pressure valve (Vp) prevents the receiver pressure from dropping below a minimum pressure and includes a check valve which prevents blow-back of compressed air from the net.

Units with integrated dryer have a dryer (DR) after the air cooler.

### Oil circuit

The air receiver (AR) removes most of the oil from the air/oil mixture by centrifugal action. The oil collects in the lower part of the air receiver (AR) which serves as oil tank.

The oil separator (OS) removes the remaining oil.

The oil circuit has a thermostatic bypass valve (BV) that prevents that the oil flows through the oil cooler (Co) when the oil temperature is low.

Air pressure forces the oil from air receiver (AR) through the oil filter (OF).

The filtered oil flows back through the outlet housing and to the element.

### Cooling on air-cooled compressors

The cooling system has an air cooler (Ca) and an oil cooler (Co) (see [Flow diagram](#)).

The fan (FN) blows air over the coolers. This fan is set on and off, depending on the operating conditions, according to a specific algorithm.

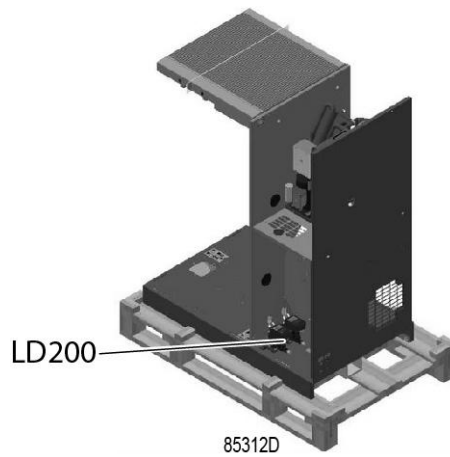
## 2.3 Condensate system

### Drain connections

The compressors have an electronic water drain (LD200).



*Location of the electronic water drain (without integrated dryer)*

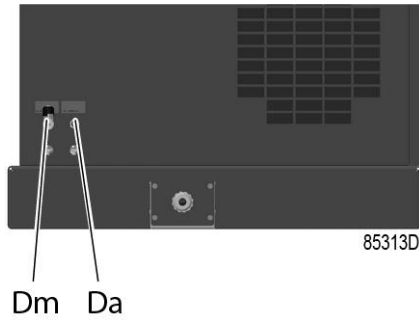


*Location of the electronic water drain (with integrated dryer)*

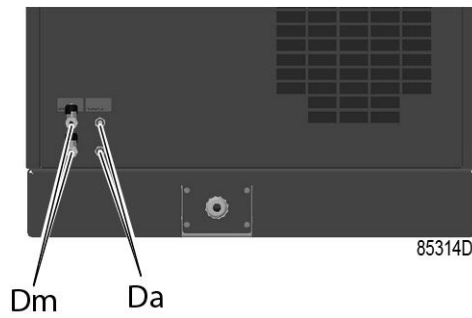
The condensate collects in the condensate trap (MT) of the air cooler.

On units with integrated dryer, the condensate formed in the dryer collects in the lower part of the heat exchanger/ evaporator.

When the condensate in the electronic drain reaches a certain level, it is drained via the automatic drain outlet (Da).

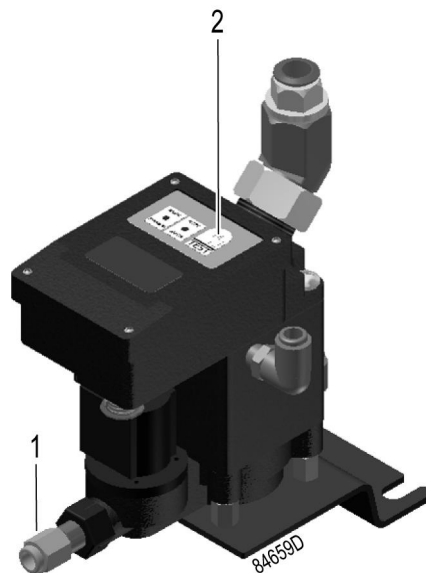


Condensate drain connections, units without integrated dryer



Condensate drain connections, units with integrated dryer

Reference	Designation
Da	Automatic drain connection
Dm	Manual drain connection











Electronic water drain (LD200)

The Test button (2) on top of the drain can be used in three different ways, according the situation:

- When pressed during normal operation, it starts the manual drain test.
- When pressed during an alarm, it resets the control logic.
- By pressing the Test button for at least 5 seconds, the self diagnosis routine will start.

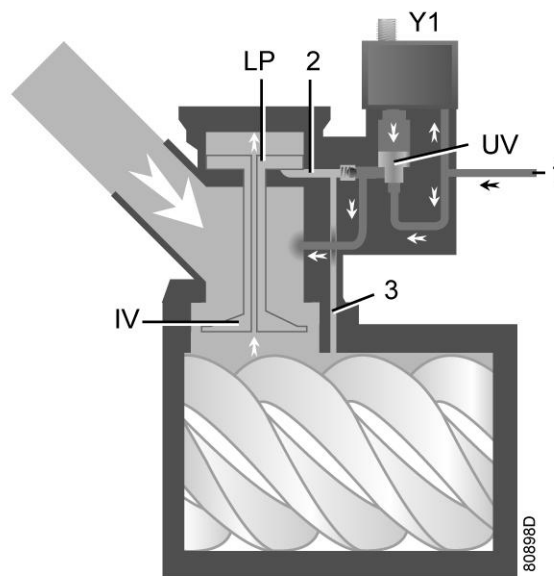
**LED explanation**

 84730D   84735D	<p><b>Green and red LED alternating on/off for 6 seconds after switching on.</b> Drain is powered.</p>
 84730D	<p><b>Green LED on</b> Normal operation, drain is in standby and awaiting condensate.</p>
 84731D	<p><b>Green LED blinking</b> Normal operation, drain valve is open to drain water.</p>
 84732D	<p><b>Green LED fading on/off</b> Water is not flowing in to the drain's tank. If the floater does not reach the upper level for 3 hours, the solenoid is energized for 2 seconds. This cycle is repeated for 5 times (so up to 15 hours). Afterwards, the green light starts fading on/off. Causes:  <ul style="list-style-type: none"> <li>• No condensate entering the tank.</li> <li>• Float mounted incorrectly (upside down).</li> </ul>                     Checks:  <ul style="list-style-type: none"> <li>• Is any condensate reaching the drain? Does the water separation take place in the heat exchanger?</li> <li>• Is the floater mounted in its correct position, for instance after maintenance?</li> </ul>                     Solution:  <ul style="list-style-type: none"> <li>• Although this LED sign does not indicate any kind of failure, the drain can be reset by pushing the test button (T) for 5 seconds.</li> </ul> </p>
 84733D	<p><b>Red LED blinking slowly: cleaning routine 1</b> The drain's tank is filled and the water cannot be drained or can only be drained very slowly. In normal operation, the drain gets 20 seconds time to drain all water. If the drain is not emptied within this time frame, a (first) cleaning routine is activated, alternatively opening and closing the valve for 2 seconds, during maximum 30 cycles. This routine is started in an attempt to unblock the drain. If this first unlock routine is unsuccessful, a second routine will be started. Causes:  <ul style="list-style-type: none"> <li>• Filter mesh clogged.</li> <li>• Not enough pressure on drain.</li> <li>• Internal problem with the drain.</li> </ul>                     Checks:  <ul style="list-style-type: none"> <li>• Is the filter clean and in good condition?</li> <li>• Is there a minimum pressure of 0.2 bar (2.8 psi) in the drain?</li> </ul>                     Press the test button (T) for at least 5 seconds to reset the drain.</p>

	<p><b>Red LED blinking fast</b></p> <p>If cleaning routine 1 is completed (after 30 cycles) but still unsuccessful, cleaning routine 2 is activated. This routine will open (3 sec) and close (60 sec) the drain's valve until a floater is in lower position, so the water is completely drained. Meanwhile, the <b>external alarm signal is activated</b>.</p> <p>Causes:</p> <ul style="list-style-type: none"> <li>• Filter mesh clogged.</li> <li>• Not enough pressure on drain.</li> <li>• Internal problem with the drain.</li> </ul> <p>Checks:</p> <ul style="list-style-type: none"> <li>• Is the filter clean and in good condition?</li> <li>• Is there a minimum pressure of 0.2 bar (2.8 psi) in the drain?</li> </ul> <p>From this point onwards, the drain will remain in this routine, even after restart. Press the test button (T) for at least 5 seconds to reset the drain.</p>
	<p><b>Red LED on</b></p> <p>An irreversible error occurred. Replace the drain and keep the failed one for further analysis.</p>

## 2.4 Regulating system

### Load/unload regulating system



Regulating system (loaded condition)

### Loading

When the net pressure is below the loading pressure, solenoid valve (Y1) is energised. Results:

- The space above unloading valve/blow-off valve (UV) is connected with the oil separator tank pressure (1) via the solenoid valve.
- Unloading valve/blow-off valve (UV) moves downwards, closing off the connection to channels (2) and (3).

- Underpressure from the compressor element causes loading plunger (LP) to move downwards and inlet valve (IV) to open fully.

Air delivery is 100%, the compressor runs loaded.

### Unloading

If the air consumption is less than the air output of the compressor, the net pressure increases. When the net pressure reaches the unloading pressure, solenoid valve (Y1) is de-energised.

Results:

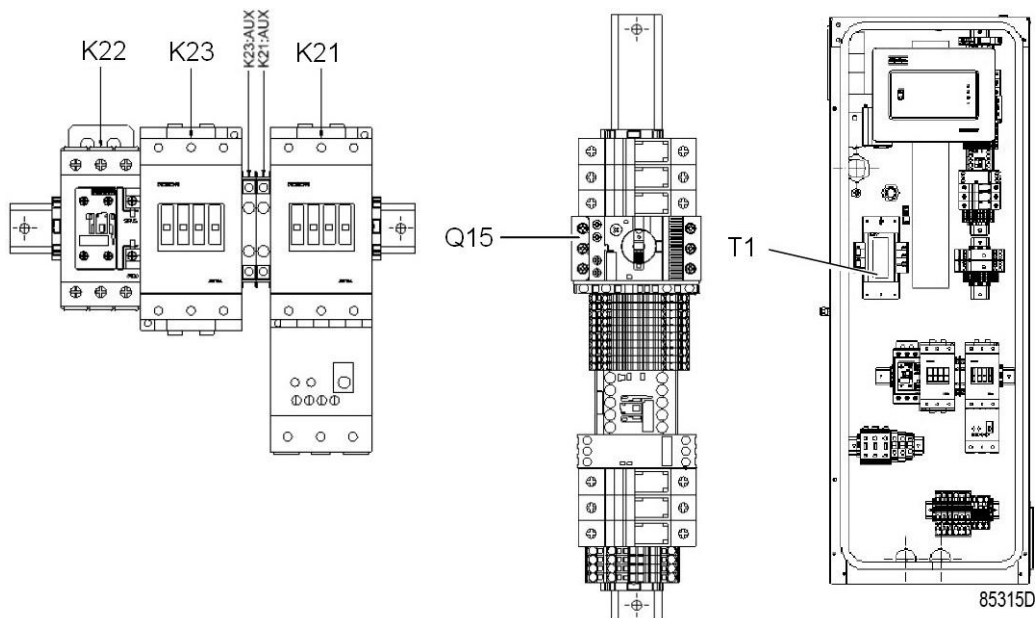
- The pressure above unloading valve/blow-off valve (UV) is released to atmosphere and the space above valve (UV) is no longer in connection with the oil separator tank pressure (1).
- Unloading valve/blow-off valve (UV) moves upwards, connecting the oil separator tank pressure (1) with channels (2) and (3).
- The pressure in channel (2) causes the loading plunger (LP) to move upwards, causing inlet valve (IV) to close, while the pressure is gradually released to atmosphere.
- The pressure in the separator tank stabilises at low value. A small amount of air is kept drawn in to guarantee a minimal pressure, required for lubrication during unloaded operation.

Air output is stopped, the compressor runs unloaded.

## 2.5 Electrical system

### Electrical components

The electrical system has the following components:



Electric cabinet, typical example

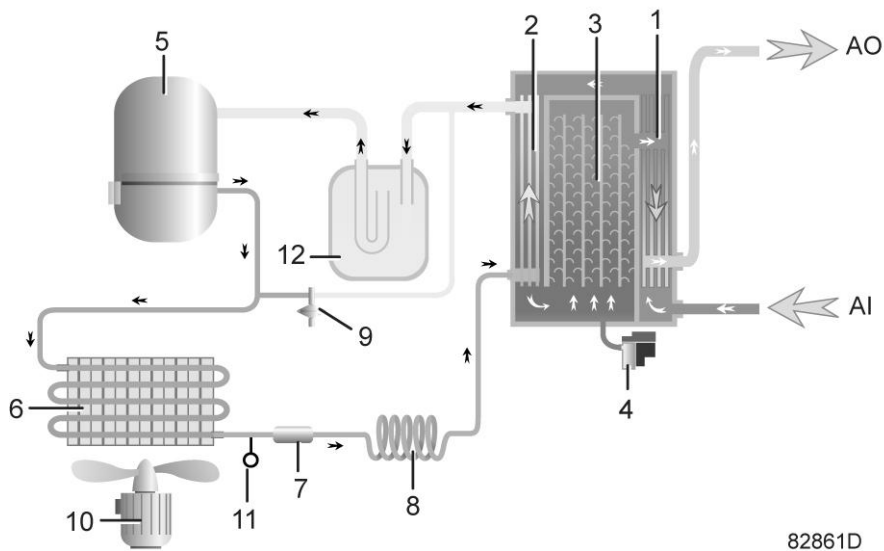
Reference	Designation
T1	Transformer
Q15	Circuit breaker
K21	Contactora
K22	Contactora
K23	Contactora

**Electrical diagrams**

The complete electrical diagram can be found in the electric cabinet as well as in the technical documentation, supplied with the unit.

**2.6 Air dryer**

**Flow diagram**



82861D

*Air dryer*

Reference	Name
AI	Air inlet
AO	Air outlet
1	Air/air heat exchanger
2	Air/refrigerant heat exchanger/evaporator
3	Condensate separator
4	Automatic drain / condensate outlet
5	Refrigerant compressor
6	Refrigerant condenser
7	Liquid refrigerant dryer/filter

Reference	Name
8	Capillary
9	Bypass valve
10	Condenser cooling fan
11	Pressure switch, fan control
12	Liquid separator

### Compressed air circuit

Compressed air enters the heat exchanger (1) and is cooled by the outgoing, cold, dried air.

Water in air starts to condense. Then, the air flows through the heat exchanger/evaporator (2), where the refrigerant evaporates.

This causes the air to cool further close to the evaporating temperature of the refrigerant. More water in the air condenses.

The cold air flows through the separator (3) where all the condensate gets out of the air.

The condensate is automatically drained through the outlet (4).

The outgoing, cold, dried air flows through the heat exchanger (1) where it is warmed up by the incoming compressed air.

### Refrigerant circuit

The refrigerant compressor (5) delivers hot, high-pressure refrigerant gas which flows through the refrigerant condenser (6).

Most of the refrigerant condenses.

The liquid refrigerant flows through the liquid refrigerant dryer/filter (7) to the capillary tube (8).

The refrigerant leaves the capillary tube at about evaporating pressure.

The refrigerant enters the evaporator (2) where it gets heat from the compressed air by further evaporation at about constant pressure.

The heated refrigerant leaves the evaporator and gets into the compressor (5) through a liquid separator (12).

A bypass valve (9) regulates the refrigerant flow.

The fan (10) blows cool air over the refrigerant condenser (6).

Pressure switch (11) controls fan (10), depending on the operating conditions.

## 3 Elektronikon™ Swipe controller

### 3.1 Controller



85384D

*The Elektronikon™ Swipe controller*

#### Introduction

##### The controller has following functions:

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

#### Automatic control of the unit

The controller maintains the net pressure between programmable limits by automatically loading and unloading the unit.

A number of programmable settings, e.g. the unloading and loading pressures, the minimum stop time and the maximum number of motor starts are taken into account.

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



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

## Protecting the unit

### Shutdown

If the element outlet temperature exceeds the programmed shutdown level, the unit will be stopped.

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



Before remedying, consult the [Safety precautions](#).  
Before resetting a warning or shutdown message, always solve the problem. Frequently resetting these messages without remedying may damage the unit.

### Shutdown warning

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

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

The message disappears as soon as the warning condition disappears or after a manual warning reset on the display.

A warning will also appear if the dew point temperature is too high in relation to the ambient temperature (on units with integrated dryer).

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

### Service warning

The service timer has a programmed time interval. If the service timer exceeds the programmed value, this will be indicated on the display to warn the operator to carry out the service actions.

When the service warning is shown, stop the unit, switch off the voltage and carry out the required service actions. See section Preventive Maintenance.

### 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.

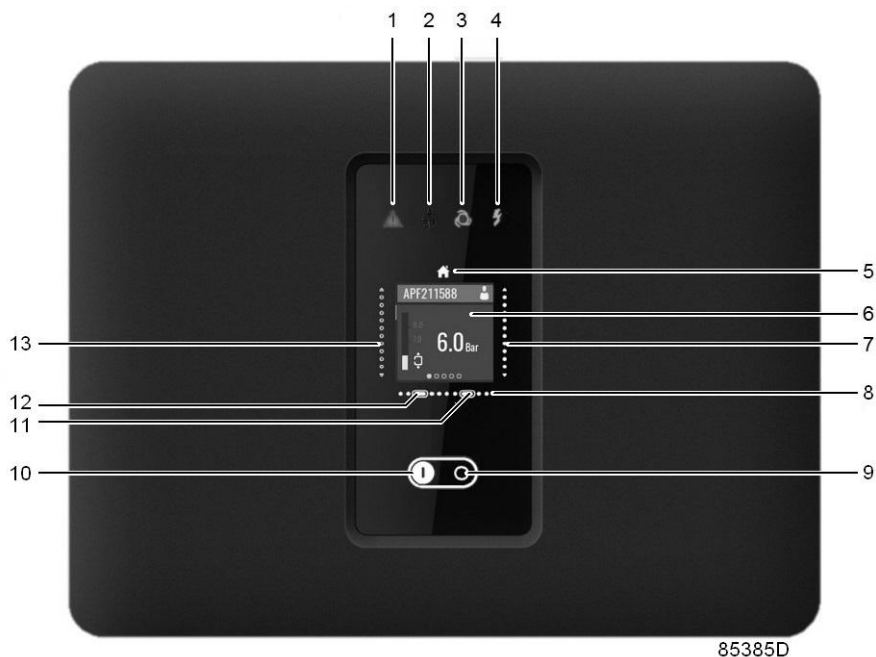
To activate this function, you have to change the Access level to 'Service user'. This profile is password protected. See [Controller settings menu](#).

Consult your supplier.



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

### 3.2 Control panel










Control panel

#### Parts and functions









Reference	Designation	Function
1	Warning sign	Flashes in case of a shut-down, is lit in case of a warning condition.
2	Service sign	Is lit when service is needed.
3	Operation sign	Is lit when the unit is running.
4	Voltage sign	Indicates that the voltage is switched on.
5	Home button	Tap this button to return to the <a href="#">Main screen</a> .
6	Display	The information is shown on the display.
7	Right vertical swipe bar	Swipe up or down to modify a setting. After modifying, tap the cancel (12) or confirm (11) button.
8	Horizontal swipe bar	Swipe left or right to move horizontally through the menu.
9	Stop button	Tap this button to stop the unit.
10	Start button	Tap this button to start the unit. The operation sign (3) lights up. The controller is operative.
11	Confirm button	After modifying a value, tap the confirm button to finalise.
12	Cancel button	Tap the cancel button to cancel a modification.
13	Left vertical swipe bar	Swipe up or down to move vertically through the menu.




### 3.3 Icons used

#### Menu icons






Menu	Icon
Main screen	 85236D
Machine Settings	 85237D
Aux. Equipment Parameters	 852343D
Data	 85233D
Service	 85234D
Controller Settings	 85238D
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
 85269D	Running Loaded Wait
 85271D	Machine Control Mode, Local

 85272D	Machine Control Mode, Remote
 85273D	Machine Control Mode, LAN
 85274D	Auto Restart After Voltage Failure (ARAVF)

### System icons

Icon	Description
 85276D	Basic User
 85277D	Advanced User
 85278D	Service User
 85283D	Change between screens (indication)
 85290D	Reset

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

## 3.4 Menu

### Procedure

Starting from the main screen, use the left vertical swipe bar to navigate through the menu items.

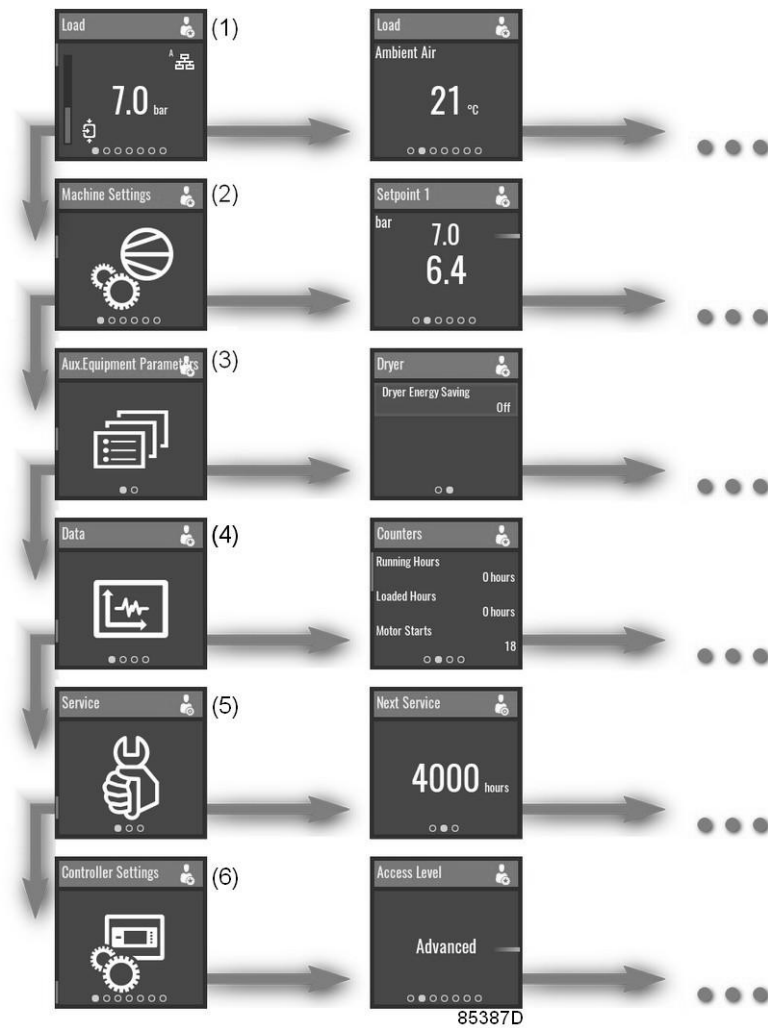
Use the horizontal swipe bar to navigate through the different screens of a menu item.

The page indicator



shows how many screens there are available for the current menu item, depending on the user access level.

**Menu structure**

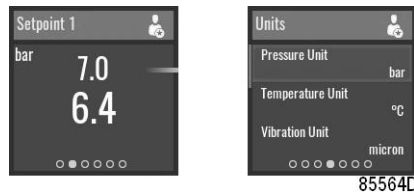


Reference	Designation	Function
(1)	Main screen	Next to the main screen, a maximum of 3 extra values can be shown.
(2)	Machine settings	Setpoints, Regulation settings and Control parameters can be viewed and modified through this menu.
(3)	Aux. Equipment parameters	Settings for auxiliary equipment can be viewed and modified through this menu. This menu is only visible when the Access level is set to Advanced. See <a href="#">Controller settings</a> .
(4)	Data	The data menu contains information about the Counters, Inputs and Outputs.
(5)	Service	Information about the service interval can be found through this menu. This menu is only visible when the Access level is set to Service. See <a href="#">Controller settings</a> .
(6)	Controller settings	Different controller settings, such as Access level or Ethernet settings can be viewed and modified through this menu.

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

### Select or modify a setting

Several settings can be modified. The process of selecting or modifying a setting anywhere in the menu is basically the same.



Examples of modifiable settings

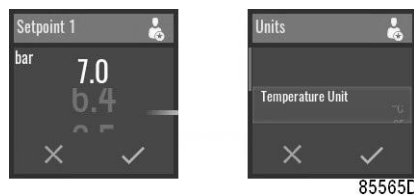
#### Select

In these examples, the upper value is selected.

To select the lower value, swipe down on the left vertical swipebar.

#### Modify

To modify the selected value, tap the right vertical swipebar.



Swipe up or down on the right vertical swipebar to change the value.

On the horizontal swipebar, tap 'V' to confirm or 'X' to decline.

## 3.5 Main screen

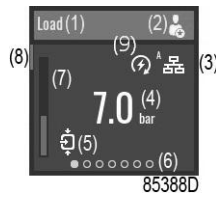
### Function

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

Swipe left to navigate to the following screens:

- Predefined IO or counter data (optional)
- Setpoint used (optional)
- Manual unload (optional)
- Status

## Description



Reference	Designation	Function
(1)	Screen information	On the main screen, the screen information bar shows the current status of the machine. When scrolling through menus, the name of the current menu item is shown.
(2)	Access level icon	The access level icon shows the current access level setting. See <a href="#">Controller settings menu</a> to switch between User, Advanced or Service.
(3)	Control mode icon	The control mode icon shows the current control mode setting. <ul style="list-style-type: none"> <li>• Local control via start/stop buttons</li> <li>• Remote control via digital input(s)</li> <li>• LAN control via the network.</li> </ul> When in Remote or LAN control, the start/stop buttons on the controller will not work.
(4)	Input value	This field contains an input value, depending on the type of the machine. In this case, the current outlet pressure is shown.
(5)	Status	This icon shows the current status of the unit.
(6)	Page indicator (Breadcrumbs)	Indicates how many pages there are available for a given menu item. The page which is currently active is indicated by a filled white circle. Swipe left or right to go to another screen.
(7)	Value bar	This is an indicator for the input value, also shown on the main screen. When the regulation sensor is selected 2 extra load, unload lines are shown.
(8)	Scrollbar	This is an indication of the vertical position in the menu. Swipe up or down to go to another menu item.
(9)	ARAVF icon	The ARAVF icon is shown when the Automatic Restart functionality is activated.

## Parameters

Starting from the main screen, swipe left to scroll through predefined IO or counter data. (optional)



Example

### Setpoint used

Starting from the main screen, swipe left until the Setpoint used screen is shown.



To switch to a different setpoint, swipe up or down on the left vertical swipecard or tap next to the corresponding square.

### Manual unload

Starting from the main screen, swipe left until the Manual unload screen is shown.



Manual unload can only be activated when the machine is in LOAD and Local control.  
To manually unload the unit, tap on the left vertical swipecard.

### Status

Starting from the main screen, swipe left until the Status screen is shown.



This screen shows the current status of the unit.  
If an alarm is active, tap the right vertical swipecard.



To reset the alarm, press the confirm button under the reset icon.

To cancel without resetting, press the cancel button under the red 'X' icon.

	<p>Before remedying, consult the <a href="#">Safety precautions</a>.                  Before resetting a warning or shutdown message, always solve the problem. Frequently resetting these messages without remedying may damage the unit.</p>
--	--

## 3.6 Machine settings menu

### Function

The Machine Settings menu provides the ability to view and modify several machine settings.

Swipe left to navigate to the following screens:

- Setpoint 1 (optional)
- Setpoint 2 (optional)
- Regulation
- Control Mode
- Auto Restart

### Procedure

To view the Machine Settings menu:

1. Tap the Home button



on top of the screen to go to the main screen.

2. Swipe up on the left vertical swipecbar until the Machine Settings menu is shown:



### Setpoint 1

Starting from the Machine Settings menu, swipe left until the Setpoint 1 screen is shown.



To select a load and unload setpoint, or to modify the values, see section [Select or modify a setting](#).



## Setpoint 2

Starting from the Machine Settings menu, swipe left until the Setpoint 2 screen is shown.



To select a load and unload setpoint, or to modify the values, see section [Select or modify a setting](#).

## Regulation

Starting from the Machine Settings menu, swipe left until the Regulation screen is shown.



To select a menu item, or to change the setting, see section [Select or modify a setting](#).

## Control Mode

Starting from the Machine Settings menu, swipe left until the Control Mode screen is shown.



Following control modes are available:

- Local control through start/stop buttons
- Remote control through digital input(s)
- LAN control through UDP ethernet commands.

When in Remote or LAN control, the start/stop buttons on the controller will not work.

To change the setting, see section [Select or modify a setting](#).

## Auto Restart

Starting from the Machine Settings menu, swipe left until the Auto Restart screen is shown.



The controller has a built-in function to automatically restart the compressor when voltage is restored after voltage failure. This function is deactivated in compressors leaving the factory and can only be modified after entering a password, please consult your supplier to activate this function.

To select a menu item, or to change the setting, see section [Select or modify a setting](#).

### 3.7 Auxiliary equipment parameters menu

#### Function

The Aux. Equipment parameters menu provides the ability to view and modify several settings related to the auxiliary equipment of the unit.

Swipe left to navigate to the following screens:

- Dryer (optional)
- Fan (optional)
- Phase sequence detection (optional)
- Internal or External SmartBox

#### Procedure

To view the Aux. Equipment parameters menu:

1. Tap the Home button



on top of the screen to go to the main screen.

2. Swipe up on the left vertical swipecbar until the Aux. Equipment parameters menu is shown:



#### Dryer

Starting from the Aux. Equipment parameters menu, swipe left until the Dryer screen is shown.



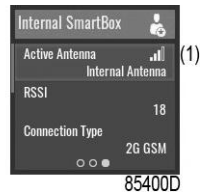
To select a menu item, or to change the setting, see section [Select or modify a setting](#).




85409D

### SmartBox

Starting from the Aux. Equipment parameters menu, swipe left until the Internal SmartBox screen is shown.



85400D

(1)	<p>The reception quality of the internal antenna can be monitored.</p> 
-----	--

To select a menu item, or to change the setting, see section [Select or modify a setting](#).

## 3.8 Data menu

### Function

The Data menu provides the ability to view several important values.

Swipe left to navigate to the following screens:

- Counters
- Inputs
- Outputs

### Procedure

To view the Data menu:

1. Tap the Home button



on top of the screen to go to the main screen.

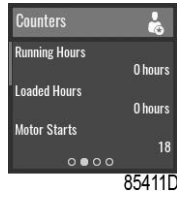
2. Swipe up on the left vertical swipecbar until the Data menu is shown:



85410D

### Counters

Starting from the Data menu, swipe left until the Counters screen is shown.

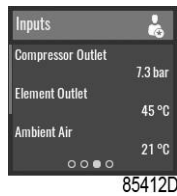


#### Select

To select a different item, swipe up or down on the left vertical swipebar.

### Inputs

Starting from the Data menu, swipe left until the Inputs screen is shown.

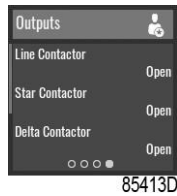


#### Select

To select a different item, swipe up or down on the left vertical swipebar.

### Outputs

Starting from the Data menu, swipe left until the Outputs screen is shown.



#### Select

To select a different item, swipe up or down on the left vertical swipebar.

	<b>Voltage-free outputs may only be used to control or monitor functional systems. They should NOT be used to control, switch or interrupt safety related circuits. Check the maximum allowed load on the label.</b>
	Stop the unit and switch off the supply before connecting external equipment. Check the <a href="#">Safety precautions</a> .

## 3.9 Service menu

### Function

The Service menu provides the ability to reset the service timer. This menu is only available as Service user.

Swipe left to navigate to the following screens:

- Next service
- Safety valve test

**Procedure**

To view the Service menu:

1. Use the controller as a Service user



85278D

See [Controller settings menu](#) to change the user profile.

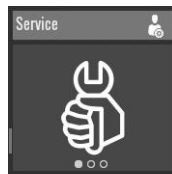
2. Tap the Home button



85386D

on top of the screen to go to the main screen.

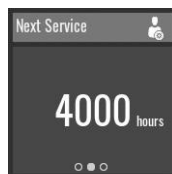
3. Swipe up on the left vertical swipear until the Machine Settings menu is shown:



85414D

**Next Service**

Starting from the Service menu, swipe left until the Next Service screen is shown.

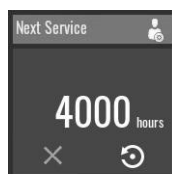


85415D

The Next Service will be triggered after the Running Hours value exceeds the Next Service value.

**Reset**

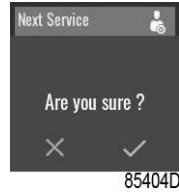
Tap the right vertical swipear, the following screen is now shown:



85402D

To cancel without resetting, press the cancel button under the red 'X' icon.

To reset the alarm, press the confirm button under the reset icon. The following screen is now shown:



On the horizontal swipecbar, tap 'V' to confirm or 'X' to decline.

### 3.10 Controller settings menu

#### Function

The Controller Settings menu provides the ability to view and modify several settings of the controller.

Swipe left to navigate to the following screens:

- Access Level
- Language
- Units
- CAN Settings
- Ethernet Settings
- Display Timeout

#### Procedure

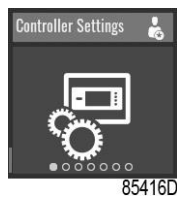
To view the Controller Settings menu:

1. Tap the Home button



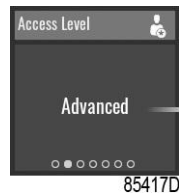
on top of the screen to go to the main screen.

2. Swipe up on the left vertical swipecbar until the Controller Settings menu is shown:



#### Access Level

Starting from the Controller Settings menu, swipe left until the Access Level screen is shown.

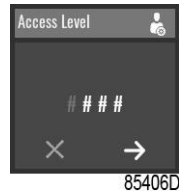


To modify the setting, see section [Select or modify a setting](#).



### Enter a password

The Service user profile is protected by a password. After selecting the Service user profile, the following screen pops up:



The user can enter the password by swiping up or down on the right vertical swipecover to select the first digit.

Tap '→' to be able to enter the second digit.

Once the 4 digits are entered, the user can confirm by tapping 'V' or decline by tapping 'X'.

### Language

Starting from the Controller Settings menu, swipe left until the Language screen is shown.



To modify the setting, see section [Select or modify a setting](#).



The controller will reboot after changing this setting.

### Units

The units displayed can be modified through this menu.

### CAN Settings

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

### Ethernet Settings

The list of Ethernet Settings is shown. When ethernet is turned off, IP address, Subnet mask and Gateway can be modified.



Do not forget to turn on ethernet settings after changing these settings. Otherwise the controller can't connect anymore!

## Display Timeout

Starting from the Controller Settings menu, swipe left until the Display Timeout screen is shown.

Display timeout is used to save energy and save the lifetime of the display. Timer starts after last operator actions on the push buttons or swipe bars.



To modify the setting, see section [Select or modify a setting](#).

## 3.11 Information menu

### Function

The Information menu provides the ability to view important information.

Swipe left to navigate to the following screens:

- Help
- Information

### Procedure

To view the Information menu:

1. Tap the Home button



on top of the screen to go to the main screen.

2. Swipe up on the left vertical swipecbar until the Information menu is shown:

### Help

Starting from the Information menu, swipe left until the Help screen is shown.

The manufacturer's website is shown.

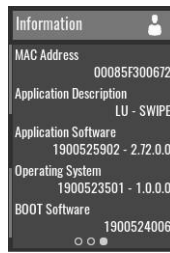
### Info

Starting from the Information menu, swipe left until the Info screen is shown.

Following items are displayed:

- Mac Address
- Application Description
- Application Software: nr + version
- Operation: nr + version

- BOOT Software: nr



## 4 Elektronikon™ Touch controller

### 4.1 Controller



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

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

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



It is possible to program a number of time-based commands for automatic start/stop. Take into account that a start command will be executed (if programmed and activated), even after manually stopping the unit.

## Protecting the unit

### Shutdown

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

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

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



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

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

### Shutdown warning

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

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

The message disappears as soon as the warning condition disappears.

A warning will also appear if the dew point temperature is too high (on units with integrated dryer).

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

### Service warning

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

When the service warning is shown, stop the unit, switch off the voltage and carry out the required service actions. See section **Preventive maintenance schedule**.

### Automatic Restart After Voltage Failure (ARAVF)

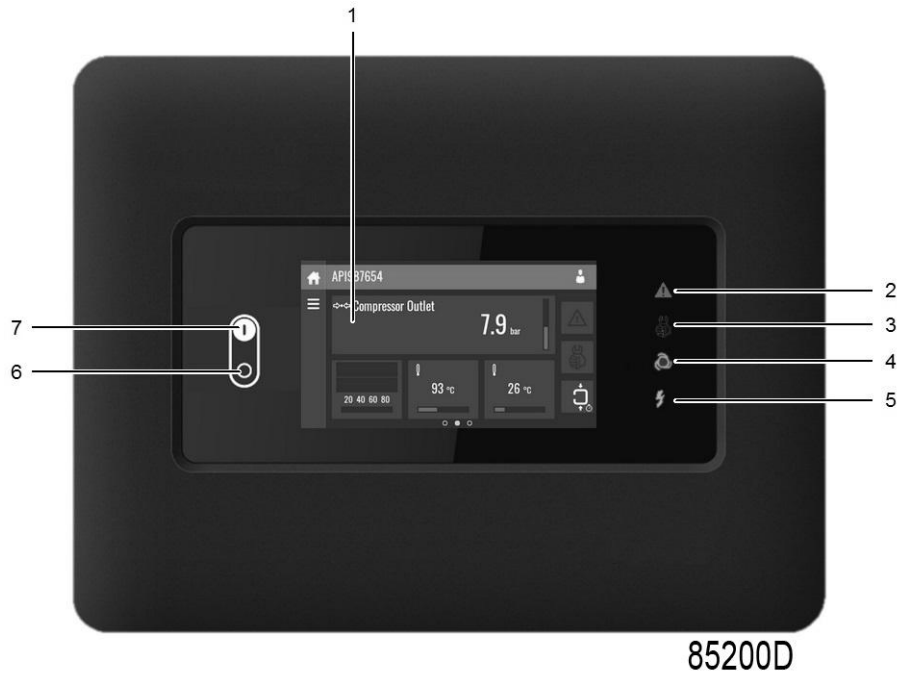
The controller has a built-in function to automatically restart the unit when the voltage is restored after voltage failure.

For units leaving the factory, this function is made inactive. If desired, the function can be activated. Consult your supplier.



If the function is activated and provided the regulator was in the automatic operation mode, the unit will automatically restart if the supply voltage to the module is restored. The ARAVF label shall be glued next to the controller.

## 4.2 Control panel




















Control panel





















### Parts and functions

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 and is lit in case of a warning condition.
3	Service sign	Lit when service is needed.
4	Operation sign	Lit when the unit is running in automatic operation.
5	Voltage sign	Indicates that power is switched on.
6	Stop button	Stops the unit.
7	Start button	Starts the unit. The operation sign (4) lights up. The controller is operative.


## 4.3 Icons used














### Menu icons

Menu	Icon	Menu	Icon	Menu	Icon
Data	 85233D	Status	 85239D		
		Inputs	 85240D		
		Outputs	 85241D		
		Counters	 85242D		
		Aux. Equipment Parameters	 85243D		
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	 85238D	Saved Data	 85245D		


Menu	Icon	Menu	Icon	Menu	Icon
Machine Settings	 85237D	Alarms	 85239D		
		Regulation	 85246D		
		Control Parameters	 85247D		
		Aux. Equipment Parameters	 85243D	Converter(s)	 85251D
		Auto Restart	 85274D	Fan	 85255D
				Internal SmartBox	 85256D
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


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

**System icons**


Icon	Description
	Basic User
	Advanced User
	Service User
	Antenna 25%

 85280D	Antenna 50%
 85281D	Antenna 75%
 85282D	Antenna 100%
 85283D	Change between screens (indication)
 85284D	Energy recovery
 85285D	Dryer
 85286D	Element
 85287D	Drain(s)
 85288D	Analogue Output
 85289D	Menu
 85290D	Reset
 85291D	Auto Restart
 85292D	Filter(s)
 85293D	Cooler
 85294D	Valve(s)
 85295D	Power Meter

### Input icons

Icon	Description
 85296D	Pressure

 85297D	Temperature
 85298D	Special Protection
 85299D	Open
 85300D	Closed

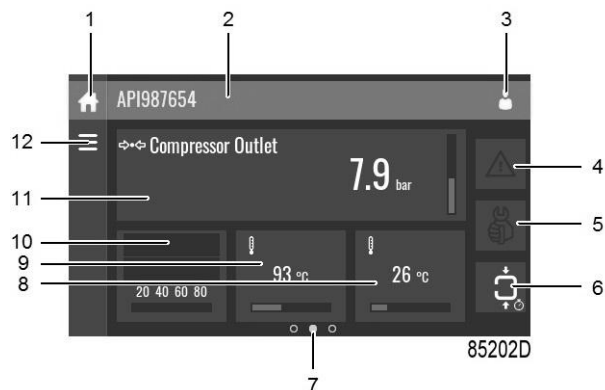
	This chapter gives a general survey of available icons. Not all icons mentioned in this chapter are applicable to every machine.
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## 4.4 Main screen

### 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.

Reference	Designation	Function
4	Alarm button	The alarm button can be tapped to show the current alarms. If an alarm occurs, the icon on the button will be red.
5	Service button	The service button can be tapped to show the service information.
6	Status	This icon shows the current status of the unit.
7	Page indicator	Indicates which page you currently see. The middle indication is the main screen, left is the menu screen and at the right the quick access screen. Swipe left or right to go to another screen.
8, 9, 10, 11	These fields can contain a history chart, an input or a counter value, depending on the type of the machine.	Tap the field to view the type of measurement. This will be shown in the screen information bar. Examples of inputs: <ul style="list-style-type: none"> <li>• Ambient temp</li> <li>• Outlet</li> <li>• Dryer dewpoint</li> </ul> Examples of counters: <ul style="list-style-type: none"> <li>• Running hours</li> <li>• Load relay</li> <li>• Loaded hours</li> </ul>
12	Menu button	The menu button is always shown and can be tapped to go to the menu.

## 4.5 Quick access screen

### Function

The screen is used to directly access some frequently used functions.


### Procedure

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

### Description



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

Function	Description
Setpoints	Several setpoints can be modified by tapping this icon.
Control mode	The control mode can be changed by tapping this icon. <ul style="list-style-type: none"> <li>• Local control via start/stop buttons</li> <li>• Remote control via digital input(s)</li> <li>• LAN control via the network.</li> </ul> When in Remote or LAN control, the start/stop buttons on the controller will not work.
Display language	The display language of the controller can be changed by tapping this icon.
Manual unload (only on fixed speed units)	When tapped, the machine will go in Manual unload mode until the icon is tapped again.
Week timer	Week timers can be set by tapping this icon.
Remaining running time	The Remaining running time can be set and modified by tapping this icon.
Internal SmartBox	The reception quality of the internal antenna can be monitored. <div style="text-align: center;">  </div> 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

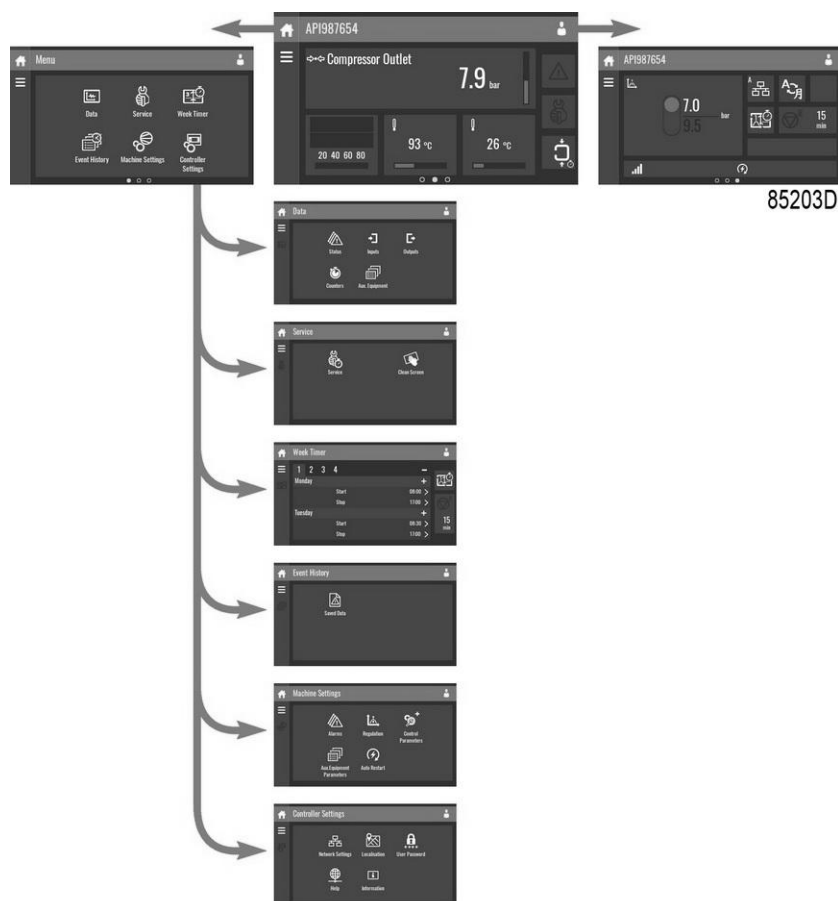


Reference	Designation	Function
(1)	Data	The data menu contains the status of the unit, information about the Inputs, Outputs and Counters. The Auxiliary equipment can also be viewed through this menu.

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

### Menu structure

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



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

## 4.7 Data menu

### Function

This screen is used to display the following submenus:

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

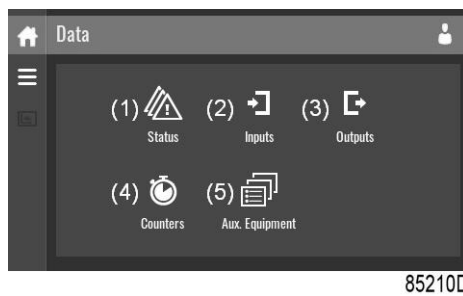
These submenus can be entered by tapping the icons.

### Procedure

To enter the Data menu screen:

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

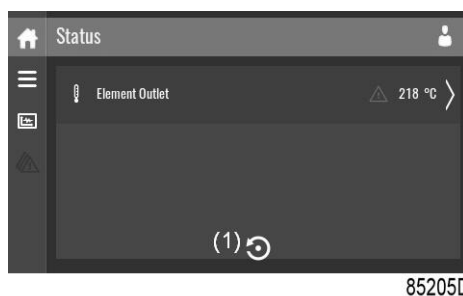
### Description



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

### Status menu

Tap the Status icon to enter the Status menu.



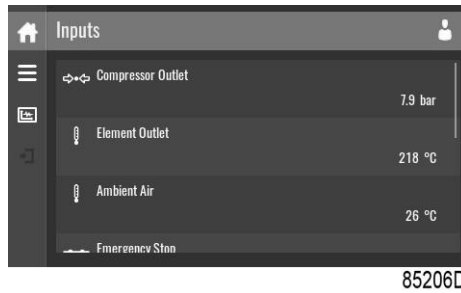
This menu shows the current status of the unit.

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

	<p>Before remedying, consult the <a href="#">Safety precautions</a>.                  Before resetting a warning or shutdown message, always solve the problem. Frequently resetting these messages without remedying may damage the unit.</p>
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### Inputs menu

Tap the Inputs icon to enter the Inputs menu.

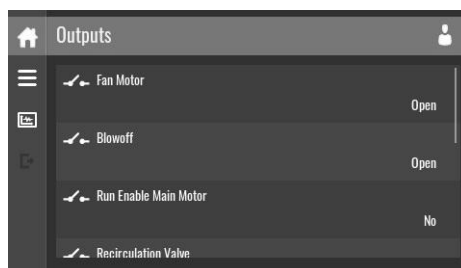


85206D

This menu shows information about all the inputs.

### Outputs menu

Tap the Outputs icon to enter the Outputs menu.



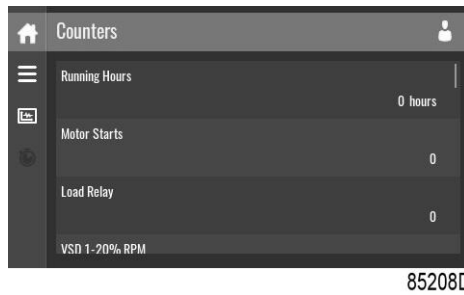
85207D

This menu shows information about all the outputs.

	<p><b>Voltage-free outputs may only be used to control or monitor functional systems. They should NOT be used to control, switch or interrupt safety related circuits. Check the maximum allowed load on the label.</b></p>
	<p>Stop the unit and switch off the supply before connecting external equipment. Check the <a href="#">Safety precautions</a>.</p>

### Counters menu

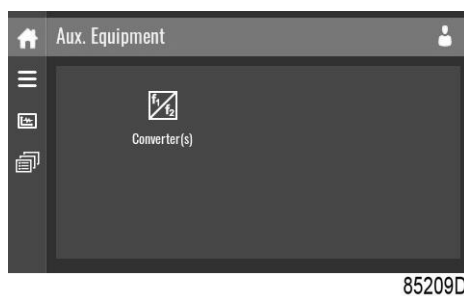
Tap the Counters icon to enter the Counters menu.



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

### Auxiliary equipment menu

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



This menu shows an overview of all auxiliary equipment fitted.

## 4.8 Service menu

### Function

This screen is used to display the following submenus:

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

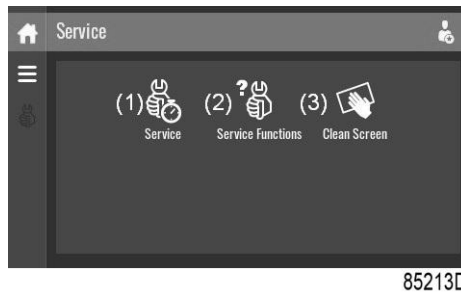
These submenus can be entered by tapping the icons.

### Procedure

To enter the Service menu screen:

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

## Description

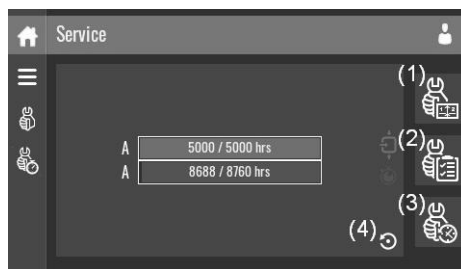


85213D

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

## Service menu

Tap the Service icon to enter the Service menu.



85211D

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

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

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

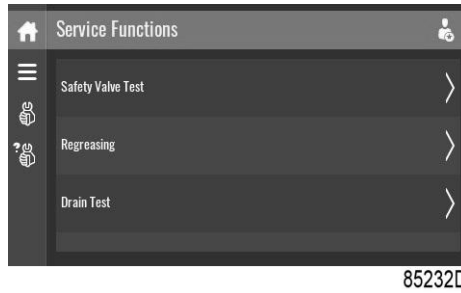
1. Tap the desired service plan. A selection screen will pop up.
2. Change the Running Hours by tapping '–' or '+'.
3. Confirm by tapping 'V' or decline by tapping 'X'.

The service history can be viewed by tapping icon (3).

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

## Service functions (Only visible as advanced user)

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

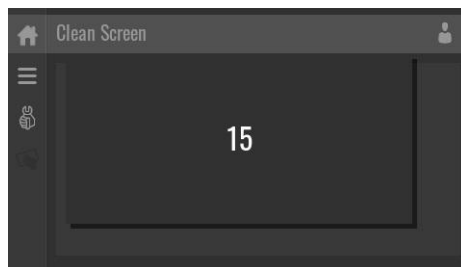


85232D

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

### Clean screen

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



85212D

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

## 4.9 Week timer menu

### Function

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

The week timers can be activated through this screen.

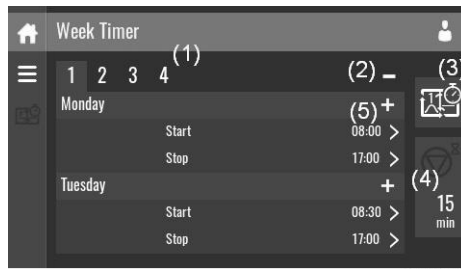
A Remaining Running Time can be set from 5 up to 240 minutes.

### Procedure

To enter the Week Timer menu screen:

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

**Description**



85214D

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.

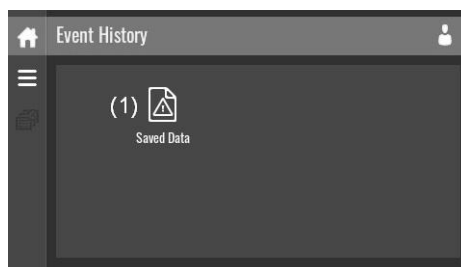
These submenus can be entered by tapping the icons.

**Procedure**

To enter the Event history menu screen:

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

**Description**

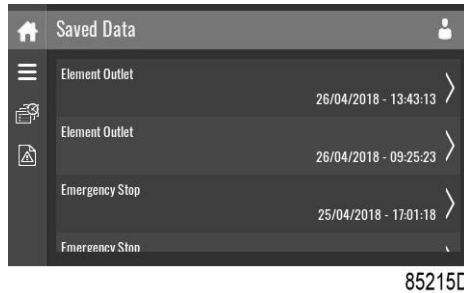


85216D

Reference	Designation
(1)	Saved Data

## Saved data

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



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

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

## 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

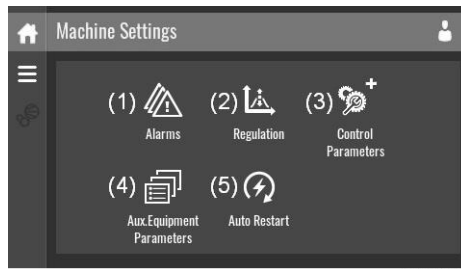
These submenus can be entered by tapping the icons.

### Procedure

To enter the Machine settings menu screen:

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

## Description

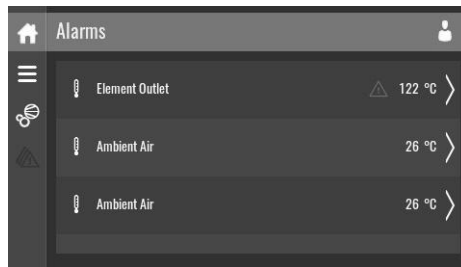


85222D

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

### Alarms menu

Tap the Alarms icon to enter the Alarms menu.



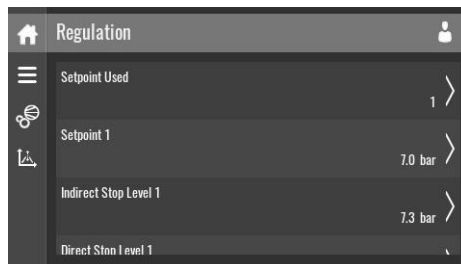
85217D

A list of all alarms is shown.

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

### Regulation menu

Tap the Regulation icon to enter the Regulation menu.



85218D

Setpoints or pressure bands can be modified through this menu.

#### Modify a setting

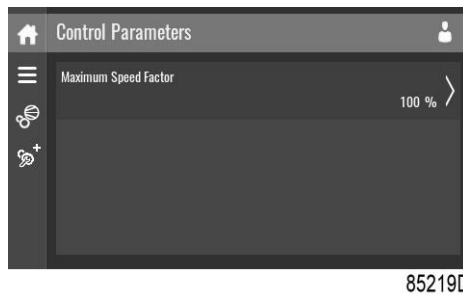
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '–' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

### Change a selection

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

## Control parameters menu

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



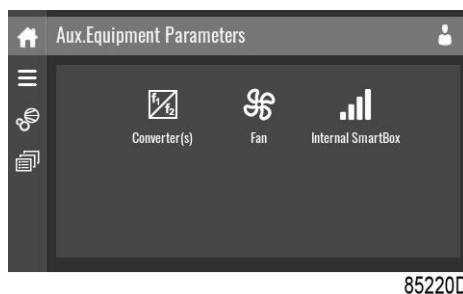
This menu shows information about the Control Parameters.

### Modify a setting

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

## Auxiliary equipment parameters menu

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



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

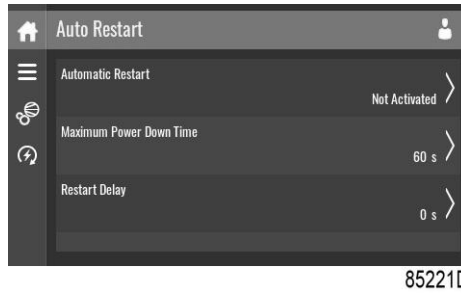
Through this menu, the parameters of the auxiliary equipment can be changed.

### Modify a setting

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

## Auto restart menu

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



85221D

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

**Enter a password**

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

**Modify a setting**

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

## 4.12 Controller settings menu

**Function**

This screen is used to display the following submenus:

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

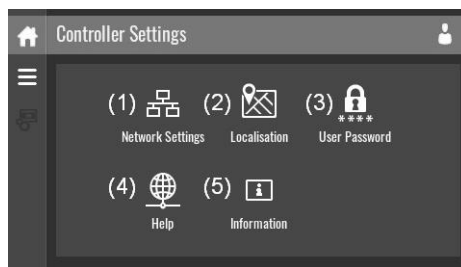
These submenus can be entered by tapping the icons.

**Procedure**

To enter the Controller Settings menu screen:

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

**Description**

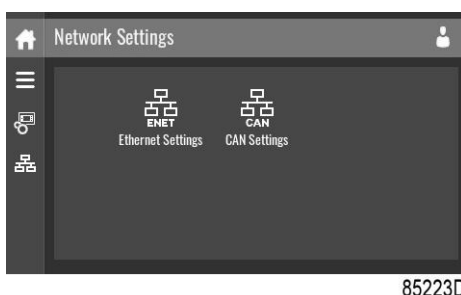


85228D

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

### Network settings menu

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



#### Ethernet Settings

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

#### CAN Settings

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

#### Modify a setting

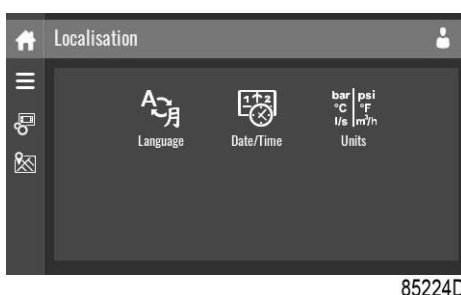
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping '-' or '+' and can confirm by tapping 'V' or decline by tapping 'X'.

#### Change a selection

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

### Localisation menu

Tap the Localisation icon to enter the Localisation menu.



#### Language

The language setting of the controller can be modified through this menu.

#### Date/Time

The date and time settings of the controller can be modified through this menu.

**Units**

The units displayed can be modified through this menu.

**Modify a setting**

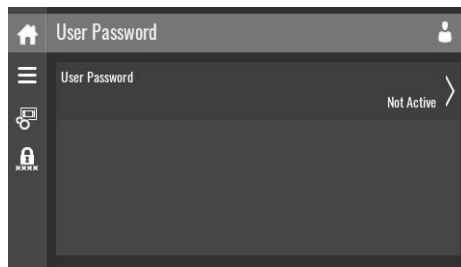
When tapping a list item, a selection screen pops up. The user can modify the setting by tapping ‘-’ or ‘+’ and can confirm by tapping ‘V’ or decline by tapping ‘X’.

**Change a selection**

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

**User password menu**

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



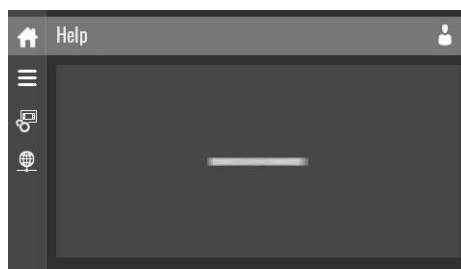
The user password can be activated or deactivated through this menu. Enter and confirm a user password to activate, repeat to deactivate.

**Enter a password**

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

**Help menu**

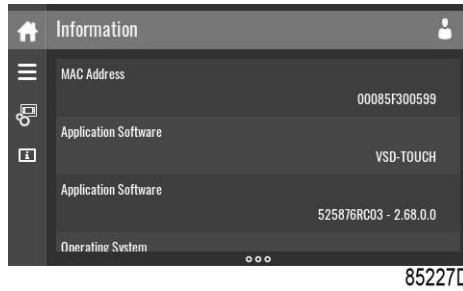
Tap the Help icon to enter the Help menu.



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

**Information menu**

Tap the Information icon to enter the Information menu.



This menu shows information about the controller.

## 4.13 Access level

### Function

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

### Procedure

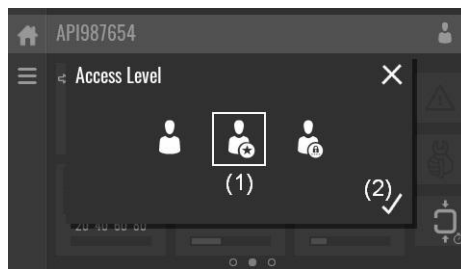
The Access Level screen can be viewed or changed by tapping the Access Level button at the upper right corner of the screen.

### Description



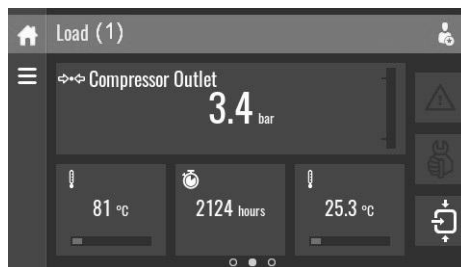
Reference	Designation	Function
(1)	User	A basic set of parameters is visualized, no password required.
(2)	Service	A basic set of parameters can be modified, no password required.
(3)	Full	This access level is not accessible to end users.
(4)	Decline	Tap to decline the selected user level.
(5)	Confirm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

## Service access level



85230D

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



85231D

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

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

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

## 5 Installation

### 5.1 Dimension drawings


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

Dimension drawing	Model
9828 5323 21	GA 11+, GA 15+, GA 18+, GA 22+, GA 26+, GA 30

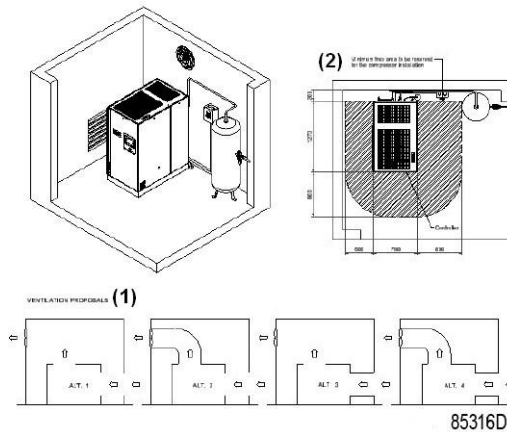
Text on drawing	Explanation,
Electrical cable passage	Electric cable entry Use the cable tray inside the bottom of the frame.
Cooling air outlet of dryer	Cooling air outlet of the dryer
Cooling air outlet of compressor and cubicle	Cooling air outlet of the compressor and cubicle
Compressed air outlet	Compressor air outlet
Cooling air inlet of compressor	Cooling air inlet of the compressor
Manual drain of compressor	Manual drain of the compressor
Automatic drain of compressor	Automatic drain of the compressor
Cooling air inlet of cubicle	Cooling air inlet of the cubicle
Oil level indicator	Oil level indicator
Cooling air inlet of dryer	Cooling air inlet of the dryer
Cooling air inlet of motor	Cooling air inlet of the motor
Compressor air inlet	Compressor air inlet
Water inlet (Energy Recovery)	Water inlet (Energy Recovery)
Water outlet (Energy Recovery)	Water outlet (Energy Recovery)
Manual drain of dryer	Manual drain of the dryer
Automatic drain of dryer	Automatic drain of the dryer
Only for Energy Recovery option	Only for Energy Recovery option
Bottom view	Bottom view

### 5.2 Installation proposal

#### Safety

	<p>Apply all relevant safety precautions, including those mentioned in this book. Read the manual before installing the compressor. The instruction book contains the necessary information regarding to the detailed values. Check the situation. Use the correct tooling.</p>
---	---

### Compressor room example



Compressor room example

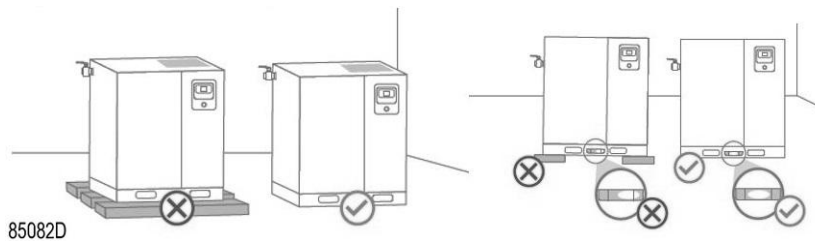
Text on image

(1)	Ventilation proposals
(2)	Minimum free area to be reserved for the compressor installation

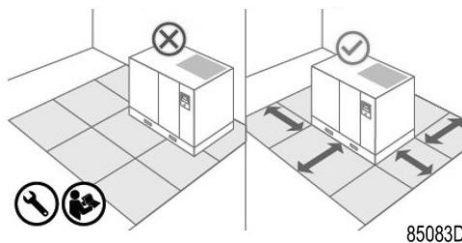
All piping has to be connected stress free to the compressor.

### Foundation, placement of the compressor unit

Install the compressor unit on a solid, level floor, suitable for the compressor mass. It is not allowed to place any extra (damping) material between the floor and the base frame so the frame is not supported on the complete surface.

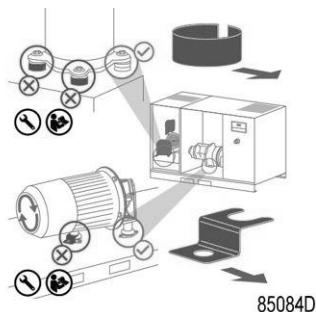


Make sure enough space is available for proper maintenance and servicing. All dimensions can be found in the compressor room example in the drawing above.



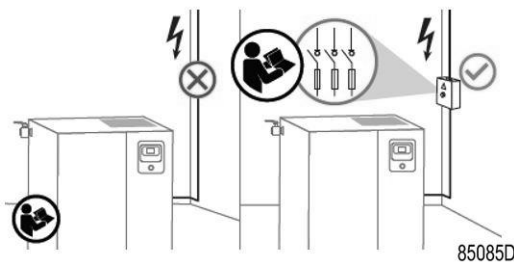
## Transportation brackets

Before starting the compressor for the first time, check that all red-colored transportation brackets/bolts have been removed. They can be under the drivetrain, separation vessel and the compressor of the integrated dryer (optional).

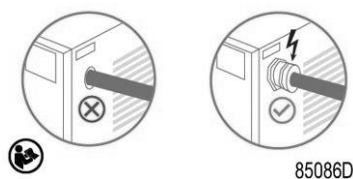


## Electrical connections

- The supply voltage on the compressor terminals must not deviate more than 10% of the nominal voltage. It is highly recommended to keep the voltage drop over the supply cable at nominal current below 5% of the nominal voltage.
- Power supply cable must be sized and installed by a qualified electrician. Cable sizing examples according to IEC and UL can be found in the Technical Data section of the Atlas Copco Instruction Book. If cables are grouped together with other power cables, it may be necessary to use cables of a larger size than those calculated for the standard operating conditions. Local regulations remain applicable if they are stricter than the values proposed.
- A main switch and fuses are not included in the compressor unit and should be foreseen externally by a qualified electrician. For selecting the correct fuse type and size, refer to the service diagram or the Technical Data section of the instruction book. Note that different sizes exist for compressors with or without integrated dryer.



- Always double-check the fuse size versus the calculated cable size. If required, reduce fuse size or enlarge cable size.
- To preserve the protection degree of the electric cubicle and to protect its components from dust from the environment, it is mandatory to use a well sealing cable gland when connecting the supply cable to the compressor.



- For VSD compressors, fast reacting fuses should be installed as mentioned in the instruction book. The use of circuit breakers is not allowed.
- Electric screw connections need to be checked and torqued before initial start-up. Torque values can be found on the service diagram.

### Rotation check

At first startup, a rotation check must be done in order to check the phase direction of the incoming power lines.

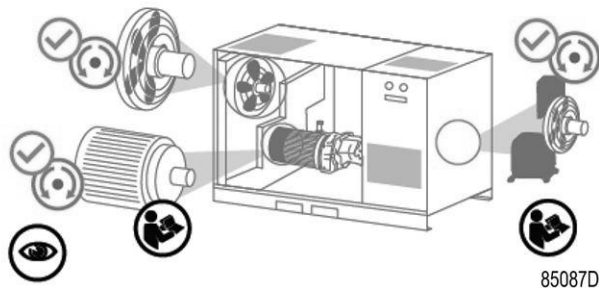
	Incorrect phase direction on the incoming power lines may cause irreversible damage to the compressor element.
--	--

- **Fixed speed compressors**

- Switch on the voltage. Start the compressor and stop it immediately. Check the rotation direction of the drive motor while the motor is coasting to a stop. The correct rotation direction of the drive is indicated by an arrow shown on the motor fan cowl. If the rotation direction of the drive motor is incorrect, open the isolating switch and reverse two incoming main power lines.

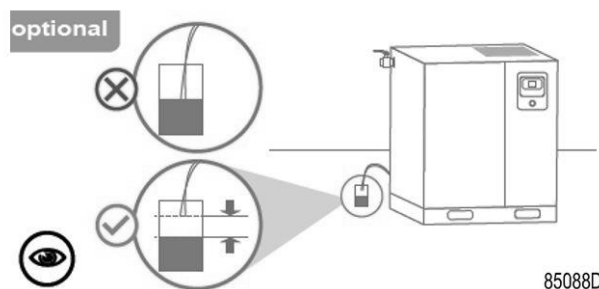
- **VSD compressors**

- Aircooled versions: Check the rotation of the main fan. The cooling fan contactor (mostly denoted as Q15 or K15, see service diagram) must be switched manually for a short moment of time. Rotation arrows, visible through the grating in the roof, are provided on the plate below the fan to indicate the correct rotation direction on the fan motor. If the rotation direction of the fan motor is incorrect, open the isolating switch and reverse two incoming main power lines.
- Water cooled versions: Check the rotation of the dryer (only needed for Full-Feature versions, Pack versions will rotate correctly). The dryer contactor (mostly denoted as K11, see service diagram) must be switched manually for a short moment of time. Rotation arrows are provided to indicate the correct rotation direction of the dryer condenser fan. If the rotation direction of the dryer condenser fan is incorrect, open the isolating switch and reverse two incoming main power lines.



### Condensate collection

The drain pipes to the drain collector may not dip into the water of the drain collector.

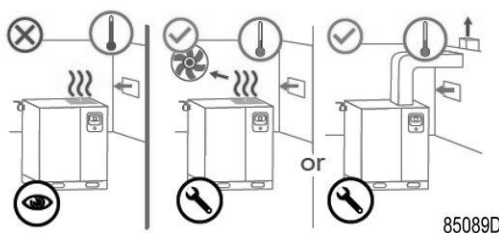



Atlas Copco has oil/water separators (type OSD or OSCi) to separate oil from the condensate to ensure that the condensate meets the requirements of the environmental codes. Drain pipes of

different compressors may not be interconnected before the (atmospheric) collector as this can damage the electronic drains.

### Ventilation

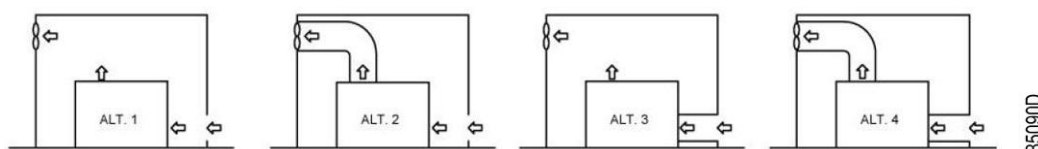
The compressor room should have proper ventilation in order to keep the air inlet temperature of the compressor under control. The maximum air temperature at the compressor intake is 46°C (115°F), the minimum temperature is 0°C (32°F). If the room temperature exceeds any of these limits, the compressor will automatically shut down.



 If the unit is equipped with the option “High Ambient Version”, it is allowed to operate the unit up to 55°C (131°F). This option comes with RXD oil filling. A compressor with the freeze protection option will shut down below -10°C (14°F).


The inlet grids, ducting and external ventilation fan should always be installed in such way that recirculation of cooling air to the integrated dryer and/or motor compartment is avoided. To prevent feedback of exhaust air into the cooling inlet, sufficient space should be foreseen above the unit to evacuate the exhaust air. Otherwise a duct for the exhaust air should be installed.

If ducting needs to be foreseen, a different cooling capacity may be required depending on the four alternative ducting configurations:



The direction of cooling flows may never be inverted.

The maximum air velocity through the ventilation grids is 5m/s (16.5 ft/s). The maximum allowed pressure drop in ventilation ducts before or after the compressor is 30Pa. If it exceeds this value, a fan is needed at the outlet of the ducts. When a duct is foreseen on the air inlet, the ambient temperature sensor needs to be repositioned in such way that the inlet temperature is correctly monitored.

 If the pressure drop of the ducting is too big to be overcome by the standard fan, it is recommended to equip the unit with the “Power Duct Fan” option. This option increases the total allowable pressure drop through the ducts without the need to install an additional external fan.

### For air-cooled compressors and ventilation alternatives 1 and 3

The ventilation capacity required to limit the compressor room temperature can be calculated as follows:

- For compressors without dryer:  
 $Q_v = 1.06 N/\Delta T$
- For compressors with dryer:

$$Q_v = (1.06 N + 1.2 D)/\Delta T$$

$Q_v$  = required ventilation capacity in m<sup>3</sup>/s

N = nominal power of the compressor motor in kW

D = electric power of the dryer in kW

$\Delta T$  = temperature increase in the compressor room in C

#### **For air-cooled compressors and ventilation alternatives 2 and 4**

The fan capacity should match the compressor fan capacity at a pressure head equal to the pressure drop over the air ducts.

Make sure that the cooling air duct of the air/oil cooler is separated from the cooling air duct of the dryer.

#### **For water-cooled compressors**

The ventilation capacity required to limit the compressor room temperature can be calculated from:

- For compressors without dryer:

$$Q_v = 0.13 N/\Delta T$$

- For compressors with dryer:

$$Q_v = (0.13 N + 1.2 D)/\Delta T$$

$Q_v$  = required ventilation capacity in m<sup>3</sup>/s

N = nominal power of the compressor motor in kW

D = electric power of the dryer in kW

$\Delta T$  = temperature increase in the compressor room in C

The cooling air of the dryer can be ducted outside

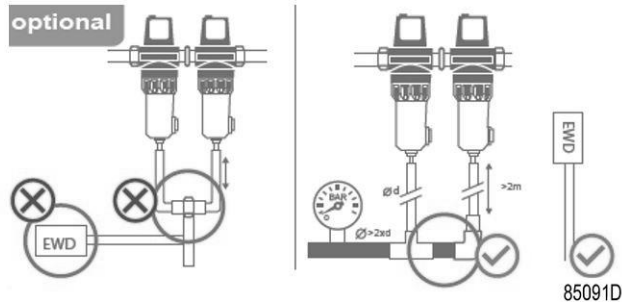
### **Air filtration**

Filter DD to be installed for general purpose filtration (particle removal down to 1 micron with a maximum oil carry-over of 0.5 mg/m<sup>3</sup>). A high-efficiency filter, type PD, may be installed downstream of a DD filter. This filter traps solid particles down to 0.01 micron with a maximum oil carry-over of 0.01 mg/m<sup>3</sup>. An UD+ filter leads to the same air purity as a DD filter combined with a PD. If oil vapor and odors are undesirable, a QD type filter can be installed downstream of the PD filter. All filters should be preceded by a water separator if no water separator is integrated in the after cooler of the compressor. In case a dryer is preceding the filter, a water separator is no longer required.

It is recommended to install bypass pipes with ball valves over each filter in order to isolate the filters during service operations without disturbing the compressed air delivery.

The condensate collecting tubes should have a minimum length of two meter before they are interconnected. After the interconnecting point, the drain tube requires twice the diameter of the original tubes.

It is not allowed to connect pressurized electronic drains on the draining tubes of the filters.



**Air delivery pipe**

The pressure drop over the air delivery pipe can be calculated from:

$$\Delta p = (L \times 450 \times Q_c^{1.85}) / (d^5 \times P)$$

d = inner diameter of the pipe in mm

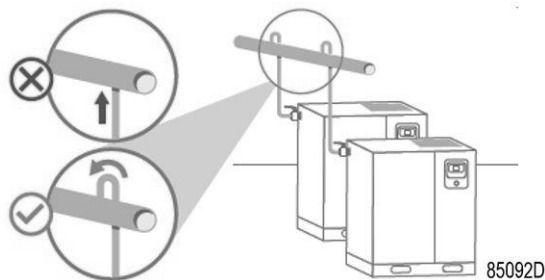
$\Delta p$  = pressure drop in bar (recommended maximum: 0.1 bar (1.5 psi))

L = length of the pipe in m

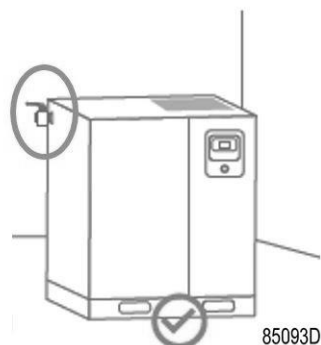
P = absolute pressure at the compressor outlet in bar(a)

$Q_c$  = free air delivery of the compressor in l/s

It is recommended that the connection of the compressor air outlet pipe is made on top of the main air net pipe in order to minimize carry-over of possible condensate residue.



For proper maintenance, a manual controllable valve has to be installed on the compressed air outlet in order to isolate the compressor from the compressed air network.



**Dryer bypass**

A set of pipes to bypass the dryer during service operations is available as standard option. Consult your supplier.

## Air receiver

Install the air receiver (to be purchased separately) in a frost free room and on a solid level floor, suitable for its mass.

The air receiver must be fitted with a correctly sized and approved safety valve that is directly connected with the vessel. At the bottom of the vessel, a drain needs to be installed to collect the condensate.

For normal air consumption, the volume of the air net (receiver and piping) can be calculated from:

$$V = (0.25 \times Q_c \times P_1 \times T_0) / (f_{\max} \times \Delta P \times T_1)$$

V = volume of the air net in l

$Q_c$  = free air delivery of the compressor in l/s

$P_1$  = compressor air inlet pressure in bar(a)

$f_{\max}$  = maximum cycle frequency (recommended: 1 cycle/30s)

$\Delta P$  = difference between unloading pressure and loading pressure in bar

$T_1$  = compressor air inlet temperature in K

$T_0$  = air receiver temperature in K

## Moving/ lifting

The compressor can be moved by a lift truck using the slots in the frame. Take care not to damage the bodywork during lifting or transport. The transport bolts cannot be removed until the unit is on its fixed and final position. Reinstall these each time the unit is moved.

Make sure that the forks protrude the other side of the frame. The compressor can also be lifted after inserting beams in the slots. Make sure that the beams cannot slide and that they equally protrude the frame. The chains must be held parallel to the bodywork by chain spreaders in order not to damage the compressor. The lifting equipment must be placed in such a way that the compressor is lifted perpendicularly. Lift gently and avoid twisting.



In case of units equipped with the Lifting Device Option, it is not allowed to lift the compressor if the canopy parts or lifting supports are not completely installed. When the compressor is being lifted, it is forbidden to come under the load or to perform maintenance activities on it.

## Precautions for water-cooled compressors

Water flow and pressure to be adjusted depending on local conditions.

For cooling water quality, see section Cooling Water Requirements in this instruction book.

A water shut-off valve and a water drain valve should be installed by the customer in the compressor water inlet pipe and outlet pipe. If water shut-off valves at the compressor water inlet and outlet pipe are installed, a safety device with set pressure according to the maximum cooling water inlet pressure (see section Reference conditions and limitations in this instruction book) has to be installed between the compressor water outlet pipe and shut-off valve.

When operating the unit, the operator must ensure that the cooling water system cannot be blocked. The above mentioned applies also to the energy recovery cooling water system.

Remove the plastic plugs (if provided) from the compressor water pipes and connect the pipes to the cooling water circuit.

### Outdoor/ altitude operation

Compressors can be sold with the option rain protection. With this, the compressor can be installed outside under a shelter, in frost free conditions.

If frost might occur, the appropriate measures should be taken to avoid damage to the machine and its ancillary equipment. In combination with the *Freeze Protection* option, the unit can start up in ambient temperatures down to minus 20°C (-4°F) and can run continuously at minus 10°C (14°F). This option comes with RXD oil filling.

Maximum operating altitude of the unit is 1000m (3000ft).

### Quality of the intake air

The compressors intake air must be clean and free of solid and avoid gaseous contamination. Particles of dirt that cause wear and corrosive gasses (SO<sub>2</sub>, NO<sub>x</sub>, chlorides, H<sub>2</sub>S, NH<sub>3</sub>,...) can be particularly damaging. Care must be taken to minimize the entry of moisture\* at the inlet air. No water droplets should enter the air intake.

Maximum acceptable relative humidity per ambient temperature

100% RH	35°C (95°F)
70% RH	40°C (104°F)
30% RH	46°C (115°F)

### Acclimatization



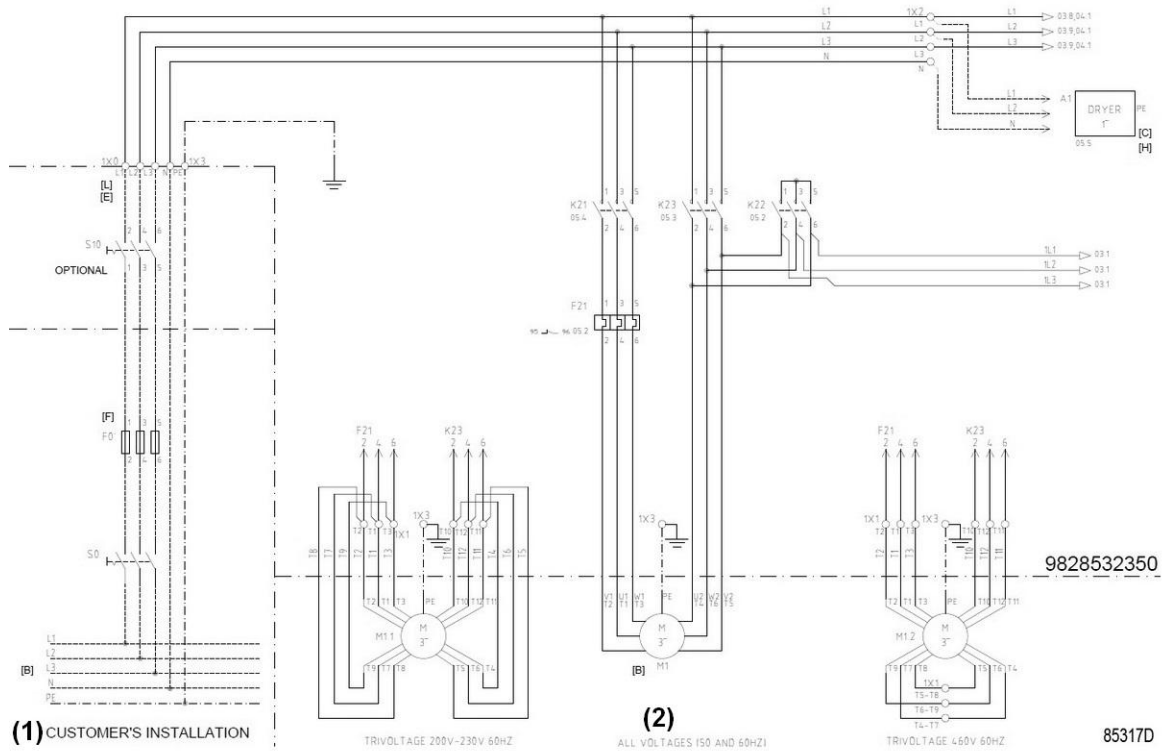
When moving the compressor into an installation room, forming of condense can occur on some components.  
To avoid dew harming of electrical components, ensure at least 2 hours of acclimatization before switch on the compressor.

## 5.3 Electrical connections

### Important remark



To preserve the protection degree of the electric cubicle and to protect its components from dust from the environment, it is mandatory to use a proper cable gland when connecting the supply cable to the compressor.



Electrical connections

Reference	Designation
(1)	Customer's installation
(2)	All voltages (50 and 60 Hz)

	The correct position for the electrical connection can be found on the dimension drawings.
--	--

**Instructions**

1. Provide an isolating switch.
2. Check that the motor cables and wires inside the electric cabinet are clamped tight to their terminals.
3. Check the fuses and the setting of the overload relay. See section [Electric cable size and fuses](#).
4. Connect earth conductor Earth terminal.
5. Connect the power supply cables to their terminals L1, L2, L3 and neutral if applicable.

**Compressor status indication**

On compressors equipped with an Elektronikon™ Touch controller, the controller is provided with potential free auxiliary NO contacts (NO = normally open) (K05, K07 and K08) for remote indication of:

On compressors equipped with an Elektronikon™ Swipe controller, the controller is provided with potential free auxiliary NO contacts (NO = normally open) (K05, K07 and K08) for remote indication of:

- Manual load/unload or automatic operation (K07)
- Warning condition (K08)
- Shut-down condition (K05)

Example: K05 is a NO (NO = normally open) contact. It will be closed if all conditions are normal and will open in case of power failure or shutdown.

Maximum contact load: 10 A / 250 V AC.

Stop the compressor and switch off the voltage before connecting external equipment. Consult your supplier.

### Compressor control mode

On compressors equipped with an Elektronikon™ Swipe controller, consult the controller chapter if it is desired to switch to another control mode.

On compressors equipped with an Elektronikon™ Touch controller, consult section [Quick access screen](#) if it is desired to switch to another control mode.

#### The following control modes can be selected:

- **Local control:** The compressor will react to commands entered by means of the buttons on the control panel. Compressor start/stop commands via Clock function are active, if programmed.
- **Remote control:** The compressor will react to commands from external switches. Emergency stop remains active. Compressor start/stop commands via Clock function are still possible.

Options:

- Remote starting and stopping (switch S1')
- Remote loading/unloading (switch S4')
- Remote pressure sensing (switch S' combined with pressure switch S4')



Have the modifications checked by your supplier.  
Stop the compressor and switch off the voltage before connecting external equipment.  
Only potential-free contacts are allowed.

- **LAN control:** The compressor is controlled via a local network. Consult your supplier.


See service diagram 9828 5323 50 (9828 5323 51 for Ammann) to locate the connectors.

# 5.4 Pictographs

## Description

### Pictographs

<p>1</p>	<p>84224D</p>	<p>2</p>	<p>85318D</p>
<p>3</p>	<p>84234D</p>	<p>4</p>	<p>84221D</p>
<p>5</p>	<p>84219D</p>	<p>6</p>	<p>85319D</p>
<p>7</p>	<p>84228D</p>	<p>8</p>	<p>84227D</p>
<p>9</p>	<p>85320D</p>	<p>10</p>	<p>85321D</p>
<p>11</p>	<p>85322D</p>	<p>12</p>	<p>85323D</p>
<p>13</p>	<p>85324D</p>	<p>14</p>	<p>85325D</p>

15			
----	---	--	--

Reference	Designation
1	Warning: Always read the manual, switch off the voltage, depressurise compressor and lock out/ tag out before repairing.
2	IF the rotation direction is wrong, open the isolating switch in the voltage supply line and reverse two incoming electric lines.
3	Warning, voltage
4	Automatic condensate drain
5	Stop the compressor before cleaning the coolers
6	Lightly oil the gasket of the oil filter, screw it on and tighten by hand (approx. half a turn)
7	Before connecting the compressor electrically, consult the Instruction book for the motor rotation direction
8	Compressor remains pressurized for 180 seconds after switching off the voltage
9	Quick start guide
10	Switch off the voltage and wait at least 10 minutes before maintenance
11	Warning, hot surface
12	Manual condensate drain
13	Consult the instruction book before carrying out maintenance
14	Waste electrical and electronic equipment (WEEE)
15	Automatic restart after voltage failure (ARAVF)

## 6 Options

### 6.1 Energy recovery

#### 6.1.1 Energy recovery unit

##### Description

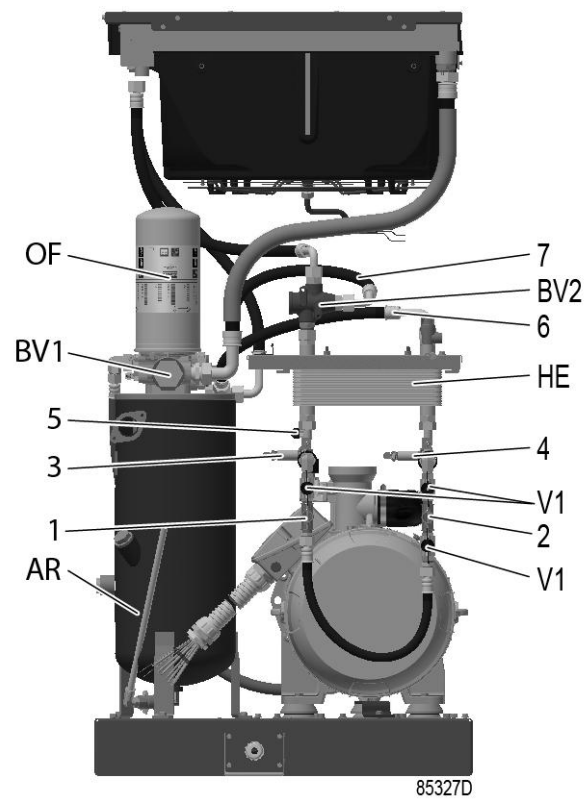
A large part of the energy required for any compression process is transformed into heat. The major part of the compression heat is dissipated through the oil system. Energy Recovery (ER) systems are designed to recover most of this heat by transforming it into warm or hot water without any adverse effects on compressor performance. The water can be used for diverse applications.

##### Components

**The energy recovery system is completely integrated and comprises the following:**

- Stainless steel oil/water heat exchanger
- Thermostatic by-pass valve for energy recovery heat exchanger (BV2)
- Two temperature sensors for water inlet and outlet control (3 and 4)
- The necessary bolts, pipes, etc.
- Pressure relieve valve with pressure setting of 10 bar
- Oil drain valve

### Energy Recovery (ER) unit



*Main components of the ER unit (typical installation)*

Reference	Designation
1	Water inlet pipe
2	Water outlet pipe
3	Temperature sensor, water inlet pipe
4	Temperature sensor, water outlet pipe
5	Oil drain valve
6	Oil line from compressor oil separator vessel to ER unit
7	Oil line from ER unit to oil filter housing
BV2	Location of heat exchanger by-pass valve (BV2)
HE	Heat exchanger
V1	Selector valve
AR	Oil separator vessel
OF	Oil filter housing
BV1	Location of oil cooler bypass valve (BV1)

### Field installation

The main components are assembled ex-factory as a compact unit which fits inside the bodywork of the compressor. Consult your supplier for installing and connecting the energy recovery unit.

## 6.1.2 Energy recovery systems

### General

The energy recovery systems can be applied as low temperature rise/high water flow systems or as high temperature rise/low water flow systems.

### Low temperature rise/high water flow systems

For this type of application, the temperature difference between the water in the energy recovery system and the compressor oil is low. As a consequence, a high water flow is needed for maximum energy recovery.

Example: The heated water is used to keep another medium at a moderately high temperature, in a closed circuit, e.g. central heating.

### High temperature rise/low water flow systems

For this type of application, a high water temperature rise in the energy recovery system is obtained, which consequently brings on a low flow rate.

Example: An open circuit where cold water from a main supply is heated by the energy recovery system for use in a factory, e.g. pre-heating of boiler feed water.

### Recovery water flow

The recovery water enters the unit at inlet connection (1). The compression heat is transferred from the compressor oil to the water in the heat exchanger (HE). The water leaves heat exchanger (HE) via outlet connection (2).

### Water requirements for closed water circuits

The use of a closed water circuit minimizes supplementary water requirements. Therefore, the use of soft or even demineralized water is economically feasible and eliminates the problem of scale deposits. Although the heat exchanger is made of stainless steel, the water circuit connected to the compressor may require corrosion inhibitors.

Add an anti-freeze product such as ethylene-glycol to the water in proportion to the expected temperature to avoid freezing.

### Water requirements for open water circuits

In open, non-recirculating water circuits, major problems that are usually encountered are related to deposit control, corrosion control, and microbiological growth control. To minimize these problems, the water that is being used should meet a number of requirements.

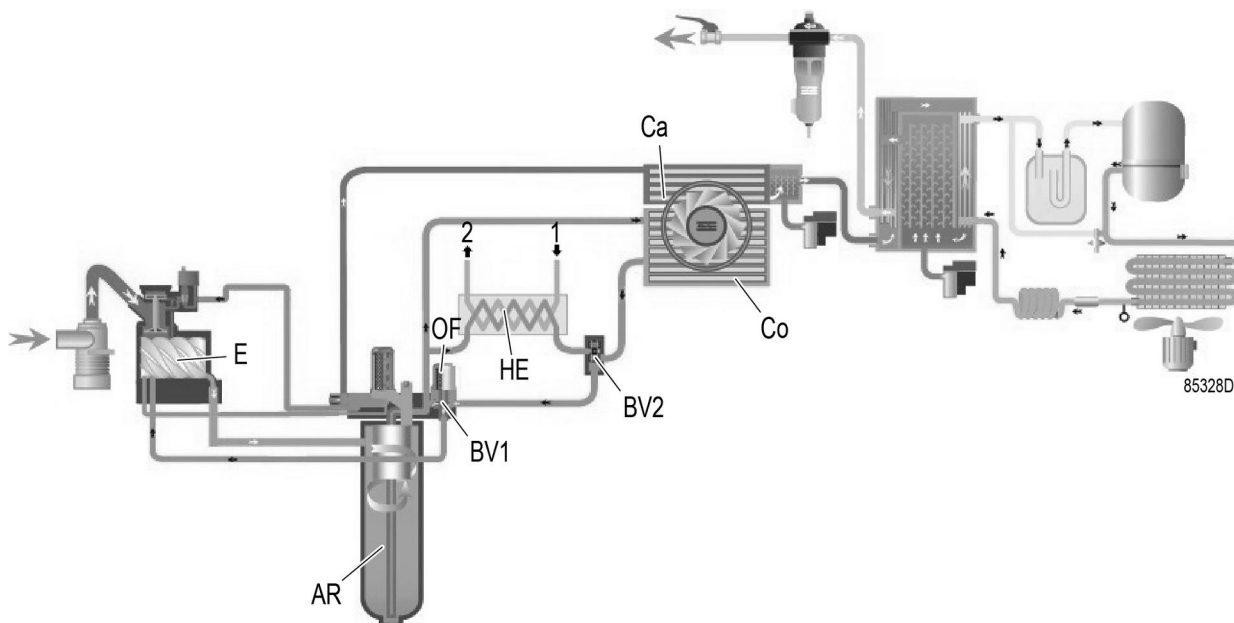
## 6.1.3 Operation

### Description

The compressor oil flow is controlled by two thermostatic valves (BV1 and BV2), ensuring reliable compressor operation and optimum energy recovery.

Bypass valve (BV1) is integrated in the oil filter housing of the compressor and controls the oil flow to the heat exchanger (HE) and the main oil cooler (Co) of the compressor. Bypass valve

(BV2) controls the oil flow through the oil/water heat exchanger (HE) of the ER unit. Both valves consist of an insert (thermostat) mounted in a housing.



*Flow diagram of compressor with energy recovery system*

Reference	Designation	Reference	Designation
BV2	Thermostatic bypass valve of ER unit	OF	Oil filter
HE	Oil/water heat exchanger (ER unit)	AR	Oil separator vessel
E	Compressor element	BV1	Thermostatic bypass valve in oil filter housing
Co	Oil cooler (compressor)	Ca	Aftercooler (compressor)
1	Water inlet	2	Water outlet

BV1 starts closing the bypass line over the oil cooling circuit at the lower limit of its temperature range. At the upper limit of its temperature range, the bypass line is completely closed and all the oil flows through the oil cooling circuit.

BV2 starts closing the bypass line over the ER heat exchanger (HE) at the lower limit of its temperature range. At the upper limit of its temperature range, the bypass line is completely closed and all the oil flows through the main oil cooler (Co).

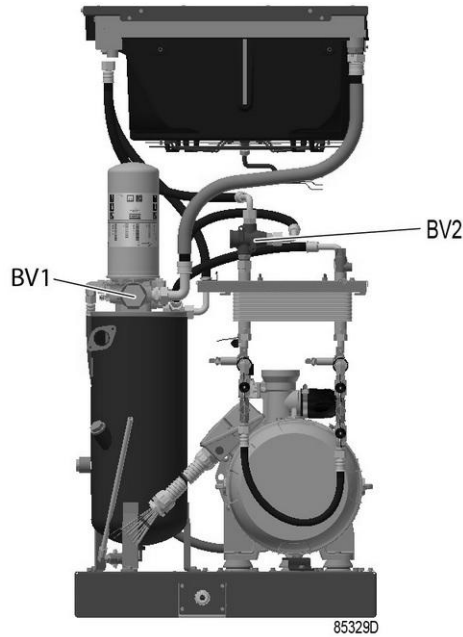
Bypass valve BV1 starts opening at 71 °C (160 °F) and is completely open at 85 °C (185 °F).

Bypass valve BV2 starts opening at 75 °C (167 °F) and is completely open at 90 °C (194 °F).

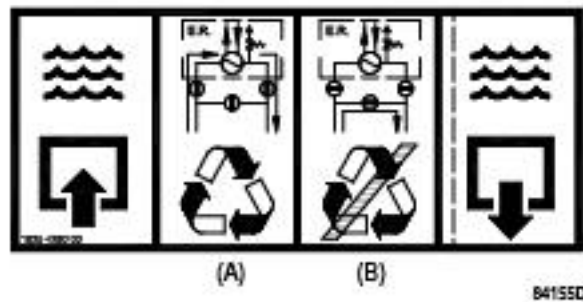
The ER system can be provided with bypass valves on the water side.

When the ball valves are in position (A), as shown on the ER label, the ER unit is integrated in the water circuit and will recover energy.


When the ball valves are in position (B), the heat exchanger (HE) is bypassed and no energy will be recovered.



Position of bypass ball valves



ER label

	<p><b>Attention:</b> It is <b>NOT</b> allowed to use the ball valves at an in-between position!</p>
---	---

**Energy recovery system in use (see drawing)**

Bypass valves in position (A): the heat exchanger (HE) is integrated in the water side of the ER.

- Compressor start-up

When the compressor is started up from cold, the oil temperature will be low. Bypass valve (BV1) shuts off the oil supply to the oil cooling system to prevent the compressor oil from being cooled. The oil flows from the oil separator vessel (AR) through the oil filter(s) (OF) back to compressor element (E).

All energy input is used to rapidly warm up the compressor oil. No energy is recovered.

- Maximum energy recovery

As soon as the oil temperature reaches the set point (opening temperature) of bypass valve (BV1), the valve starts closing off the bypass over the oil cooling system, gradually allowing the oil to flow through the heat exchanger (HE). As the oil temperature rises to approx. 75 °C (167 °F), all the oil passes through the cooling system. The exchange of heat between the compressor oil and the heat recovery water is maximum. The oil from the heat exchanger outlet flows via oil filter (OF), compressor element (E) and separator (AR) back to the inlet of heat exchanger (HE).

Bypass valve (BV2) bypasses the main oil cooler (Co) as long as the oil temperature remains below its set point.

Operation principle at different loads:

- Low consumption of recovered energy  
The temperature of the oil leaving heat exchanger (HE) rises. When the temperature rises above its set point, oil cooler bypass valve (BV2) will gradually allow the oil to be cooled in the oil cooler (Co).
- Recovery water flow too high/temperature too low  
In this case, bypass valve (BV1) will open the bypass line allowing oil from heat exchanger (HE) to be mixed with oil from separator (AR). Energy is transferred from the compressor oil to the water, but at a relatively low temperature level.

### Energy recovery system not in use

Bypass valves in position (B): the heat exchanger (HE) is bypassed in the water side of the ER.

The oil circuit is the same as without installation of the energy recovery system.

No energy is recovered.

This situation should be considered as exceptional, e.g. in case of maintenance of the energy recovery system or when no energy is required for a long period.

### Stopping the unit for a long period

In case of an open water system and/or if freezing temperatures can be expected, isolate the compressor water system and blow it through with compressed air.

## 6.1.4 Maintenance

### Compressor oil

For references used consult section Energy recovery unit.

#### Oil change:

1. Run the unit until warm. Stop the unit, switch off the isolating switch and close the air outlet valve of the compressor.
2. Depressurize the compressor and drain the oil by opening the drain valve. Also drain the oil from the heat exchanger by opening the drain valve on the heat exchanger (HE). Close the valve after draining.
3. Resume oil change as described in section Oil and Filter Change in this book.

### Thermostatic bypass valves


Change the thermostat of the ER system at the same interval as the thermostat of the unit.

## Heat exchanger (HE)

If the temperature rise over the energy recovery system declines over a period of time with the same basic working conditions, the heat exchanger should be inspected. To clean the oil side, soak the heat exchanger in a degreasing solution. To remove scale formation in the water compartment, a proper descaling process should be applied. Consult your supplier.

### 6.1.5 Cooling water requirements

#### General

	<p>Cooling water needs to fulfill certain requirements in order to avoid problems of scaling, fouling, corrosion or bacterial growth.</p> <p>In open circuit cooling towers, protective measures must be taken to avoid the growth of harmful bacteria such as legionella pneumophila when there is a risk of inhalation of the water droplets.</p>
---	---

No general recommendation can encompass the effects of all combinations of the various compounds, solids and gases typically found in cooling water in interaction with different materials. Therefore the recommendations formulated in our Cooling Water Specifications are a general guide line for acceptable coolant quality. However, where strict limits apply, a statement is made in the specification.

The water requirements refer to untreated water. When water is treated, some parameters will change. Water treatments should be carried out by a specialized water treatment company, taking the responsibility for the performance of the treated cooling water and the compatibility with the materials in the cooling circuit. This includes not only the selection of the appropriate additives, but also the correct application, monitoring of concentrations and properties, prevention of sludge formation and maintenance of the system. This applies also to treatment with antifreeze products. They must be provided with suitable stabilizers and inhibitors. Specifications are also depending on the type of cooling circuit (open, once through / recirculating with tower / closed) and on the application (Standard – max 65 °C cooling water temperature at the outlet) or Energy Recovery (water temperature up to 95 °C).

In case water is not in line with recommended values or if any doubt, consult the manufacturer.

#### Cooling water parameters

##### 1. pH

The effect of pH is already included in the Ryznar Stability Index (RSI - see item 4 below), but also the pH itself is subject to limitations:

Type of cooling system	Materials	pH	
		Standard	Energy recovery
Single pass	Containing copper	6.8 - 9.3	6.8 - 9.3
	Stainless steel with carbon steel and / or cast iron	6.8 - 9.3	6.8 - 9.3
	Stainless steel only	6 - 9.3	6 - 9.3
Recirculating (with tower)	Containing copper	6.8 - 9.3	not applicable
	Stainless steel with carbon steel and / or cast iron	6.8 - 9.3	
	Stainless steel only	6 - 9.3	

Type of cooling system	Materials	pH	
		Standard	Energy recovery
Closed loop	Containing copper	<b>7.5 - 9.3</b>	<b>7.5 - 9.3</b>
	Stainless steel with carbon steel and / or cast iron	<b>7.5 - 9.3</b>	<b>7.5 - 9.3</b>
	Stainless steel only	<b>6 - 9.3</b>	<b>6 - 9.3</b>

The values in **bold** are rejection limits.

When the system contains Zn or Al, the pH must be < 8.5.

**2. Total dissolved solids (TDS) and conductivity**

The conductivity is expressed in  $\mu\text{S/cm}$ , the TDS in ppm.

Both parameters are related with each other. The conductivity is convenient for quick monitoring of general water quality, but the TDS is required for calculating the RSI. If only one of both parameters is measured, an estimation can be obtained by using a theoretical conversion factor (0.67):

$$\text{TDS} = \text{conductivity} \times 0.67$$

**3. Hardness**

Different types of hardness are in relation with each other and together with the pH and the alkalinity of the water they determine the equilibrium situation of the water, determined and specified by the RSI.

In addition, the calcium hardness must be limited to:

Type of cooling system	Ca (ppm Ca CO <sub>3</sub> )	
	Standard	Energy recovery
Single pass	< 500	< 2
Recirculating (with tower)	< 500	not applicable
Closed loop	< 1000	< 50

**4. The Ryznar Stability Index (RSI)**

The Ryznar Stability Index is a parameter for predicting whether water will tend to dissolve or precipitate calcium carbonate. The adhesion of scaling depositions and their effect are different on different materials, but the equilibrium of the water (scaling or corrosive) is only determined by its actual pH value and by the saturation pH value (pH<sub>s</sub>). The saturation pH value is determined by the relationship between the calcium hardness, the total alkalinity, the total solids concentration and the temperature.

The Ryznar Stability Index is calculated as follows:

$$\text{RSI} = 2 \cdot \text{pH}_s - \text{pH}$$

in which

- pH = measured pH (at room temp) of the water sample
- pH<sub>s</sub> = pH at saturation

pH<sub>s</sub> is calculated from:

$$\text{pH}_s = (9.3 + A + B) - (C + D)$$

in which

- A : depends on the total solids concentration
- B : depends on the water temperature at the outlet of the heat exchanger
- C : depends on the calcium hardness (CaCO<sub>3</sub>)
- D : depends on the HCO<sub>3</sub><sup>-</sup> concentration or M-alkalinity

The values of A, B, C and D can be found in below table:

Total dissolved solids (mg/l)	A	Temperature (°C)	B	Ca hardness (ppm CaCO <sub>3</sub> )	C	M-Alkalinity (ppm CaCO <sub>3</sub> )	D
< 30	0.1	0 - 1	2.3	9 - 11	0.6	10 - 11	1.0
30 - 320	0.2	2 - 6	2.2	12 - 14	0.7	12 - 14	1.1
> 320	0.3	7 - 11	2.1	15 - 17	0.8	15 - 17	1.2
		12 - 16	2.0	18 - 22	0.9	18 - 22	1.3
		17 - 22	1.9	23 - 28	1.0	23 - 28	1.4
		23 - 27	1.8	29 - 35	1.1	29 - 35	1.5
		28 - 32	1.7	36 - 44	1.2	36 - 44	1.6
		33 - 38	1.6	45 - 56	1.3	45 - 56	1.7
		39 - 43	1.5	57 - 70	1.4	57 - 70	1.8
		44 - 49	1.4	71 - 89	1.5	71 - 89	1.9
		50 - 55	1.3	90 - 112	1.6	90 - 112	2.0
		56 - 61	1.2	113 - 141	1.7	113 - 141	2.1
		62 - 67	1.1	142 - 177	1.8	142 - 177	2.2
		68 - 73	1.0	178 - 223	1.9	178 - 223	2.3
		74 - 79	0.9	224 - 281	2.0	224 - 281	2.4
		80 - 85	0.8	282 - 355	2.1	282 - 355	2.5
		86 - 91	0.7	356 - 446	2.2	356 - 446	2.6
		92 - 95	0.6	447 - 563	2.3	447 - 563	2.7
				564 - 707	2.4	564 - 707	2.8
				708 - 892	2.5	708 - 892	2.9
				893 - 1000	2.6	893 - 1000	3.0

**Interpretation of the values obtained:**

- RSI < 6: boiler scale formation
- 6 < RSI < 7: neutral water
- RSI > 7: corrosive water



As a general rule, the RSI index should be between 5.6 and 7.5. If that is not the case, contact a specialist.

**5. Free chlorine (Cl<sub>2</sub>)**

Disinfecting with chlorine is **not done in closed systems, neither in energy recovery systems.**

A continuous level of 0.5 ppm should not be exceeded. For shock treatments, a maximum limit of 2 ppm for maximum 30 minutes/day applies.

**6. Chlorides (Cl<sup>-</sup>)**

Chloride ions will create pitting corrosion on stainless steel. Their concentration should be limited, depending from the RSI value.

	RSI < 5.5	5.6 < RSI < 6.2	6.3 < RSI < 6.8	6.9 < RSI < 7.5	7.6 < RSI
Cl <sup>-</sup> (ppm)	200	350	500	350	200

For energy recovery systems, the limit is 100 ppm.

### 7. Sulphates (SO<sub>4</sub><sup>2-</sup>)

Type of cooling system	Sulphate (ppm)	
	Standard	Energy recovery
Single pass	< 1000	< 200
Recirculating (with tower)	< 1000	not applicable
Closed loop	< 400	< 200

### 8. Iron and Manganese

Type of cooling system	Dissolved iron (ppm)		Dissolved manganese (ppm)	
	Standard	Energy recovery	Standard	Energy recovery
Single pass	< 1	< 0.2	< 0.2	< 0.05
Recirculating (with tower)	< 1	not applicable	< <b>0.2</b>	not applicable
Closed loop	< 1	< 0.2	< 0.2	< 0.05

The values in **bold** are rejection limits.

### 9. Copper

Type of cooling system	Copper (ppm)	
	Standard	Energy recovery
Single pass	< 1	< 0.2
Recirculating (with tower)	< 1	not applicable
Closed loop	< 1	< 0.2

### 10. Ammonium

The limit of **0.5 ppm** is a rejection limit.

The limitation only applies for copper containing systems.

### 11. Suspended solids

Large particles (size > 10 µm) should not be present as they can be filtered out.

Small particles (< 0.5 µm) are not taken into account.

For particles between 0.5 µm and 10 µm, the following limits apply:

Type of cooling system	Suspended solids (ppm)	
	Standard	Energy recovery
Single pass	< 10	< 1
Recirculating (with tower)	< 10	not applicable
Closed loop	< 10	< 1

### 12. Oil or grease


< **1 ppm** (rejection value)

### 13. Biology

If biology is present, it must be aerobic. Anaerobic biology (in closed systems) must be avoided.

Type of cooling system	Biology (CFU/ml)	
	Standard	Energy recovery
Single pass	< 10 <sup>5</sup> / < <b>10<sup>7</sup></b>	< 10 <sup>3</sup> / < <b>10<sup>5</sup></b>
Recirculating (with tower)	< 10 <sup>5</sup> / < <b>10<sup>7</sup></b>	not applicable
Closed loop	< 10 <sup>3</sup> / < <b>10<sup>5</sup></b>	< 10 <sup>3</sup> / < <b>10<sup>5</sup></b>

The table shows the recommended values. The values in **bold** are rejection limits.

	<p>If additives are used in the cooling water, take into account that the cooling capacity will change.</p> $\Delta m = ((C_{pw} - C_{pa}) * X) / (C_{pw} * (1-X) + X * C_{pa}) * 100 \%$ <p>with</p> <p><math>\Delta m</math>: change of mass flow of the coolant  <math>C_{pw}</math>: specific heat capacity of water  <math>C_{pa}</math>: specific heat capacity of the additives  <math>X</math>: the percentage of additives</p>
---	---

### 6.1.6 Energy recovery data

#### Reference conditions

See section [Reference conditions and limitations](#).

#### Effective working pressure

See section **Compressor data** for the normal working pressure.

#### Maximum allowed pressure of the heat exchanger

Oil side	15 bar (217 psi)
Water side	10 bar (145 psi)

#### Reading settings

**In addition to other data, the following temperatures can be read on the controller display:**

##### For air-cooled units:

- The water inlet temperature of the energy recovery system
- The water outlet temperature of the energy recovery system

#### Modifying settings

If the programmed warning settings for the water temperatures are exceeded, a warning indication is shown on the controller:

Temperature input		Minimum setting	Nominal setting	Maximum setting
Water inlet temperature of energy recovery	°C	0	50	99
Water inlet temperature of energy recovery	°F	32	122	210
Energy recovery water outlet temperature	°C	0	60	99
Energy recovery water outlet temperature	°F	32	60	210

To modify a setting, consult the relevant section in the description of the controller.

**Recoverable energy**

The recoverable energy can be calculated from:

$$\text{RECOVERED ENERGY (kW)} = 4.2 \times \text{water flow (l/s)} \times \text{water temperature rise (°C)}$$

In the tables below, typical examples are given.

**Data for low temperature rise/high water flow systems**

Parameter	Unit	GA 11+	GA 15+	GA 18+	GA 22+	GA 26+	GA 30
Recoverable energy	kW	9.7	13.2	15.8	19.4	22.9	26.4
Recoverable energy	hp	13.2	18	21.5	26.3	31.1	35.9
Water flow	l/min	13.9	18.9	22.7	27.8	32.8	37.9
Pressure drop	mbar	50	75	150	170	250	330
Water flow	cfm	0.5	0.7	0.8	1	1.2	1.3
Pressure drop	in WC	20	30	60	68	100	132
Temperature at inlet	°C	50	50	50	50	50	50
Temperature at inlet	°F	122	122	122	122	122	122
Temperature at outlet	°C	60	60	60	60	60	60
Temperature at outlet	°F	140	140	140	140	140	140

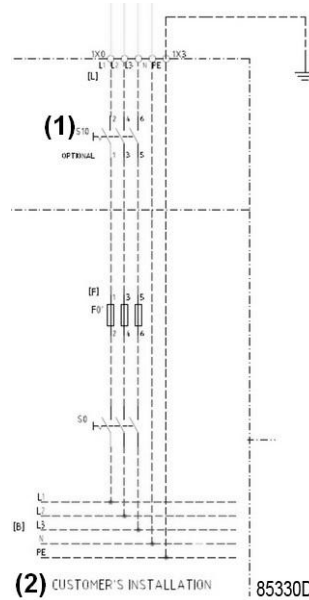
**Data for high temperature rise/low water flow systems**

Parameter	Unit	GA 11+	GA 15+	GA 18+	GA 22+	GA 26+	GA 30
Recoverable energy	kW	9.7	13.2	15.8	19.4	22.9	26.4
Recoverable energy	hp	13.2	18	21.5	26.3	31.1	35.9
Water flow	l/min	3.5	4.7	5.7	6.9	8.2	9.5
Pressure drop	mbar	10	25	25	25	35	35
Water flow	cfm	0.1	0.1	0.2	0.2	0.3	0.3
Pressure drop	in WC	4	10	10	10	14	14
Temperature at inlet	°C	20	20	20	20	20	20
Temperature at inlet	°F	68	68	68	68	68	68
Temperature at outlet	°C	60	60	60	60	60	60
Temperature at outlet	°F	140	140	140	140	140	140

## 6.2 Main switch

A built-in main switch can be ordered as a sales option.

### Electrical connections



Electric connection diagram (typical example)

Reference	Designation
1	Main Switch
2	Customer's installation

#### Note

The complete electrical diagram can be found in the electrical cubicle

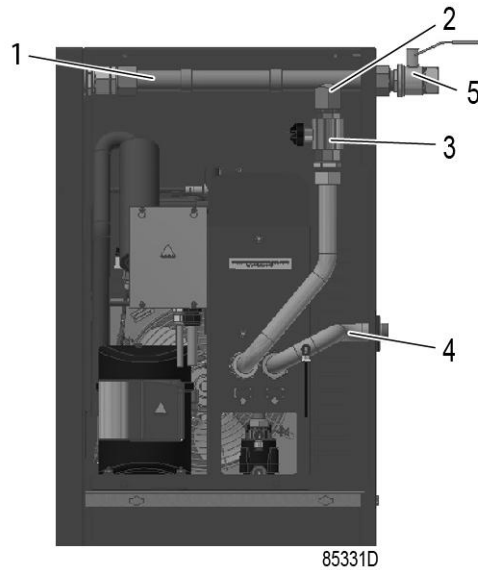
## 6.3 Dryer bypass

### Description

This kit allows the user to bypass the integrated dryer in case of a failure. By changing the direction of the airflow by means of a manual ball valve, the integrated dryer will be bypassed. The time to dismount the dryer is reduced to an absolute minimum. There is no need to dismount the bypass pipe itself because internally the bypass is lead behind the dryer and can remain fixed whilst removing the dryer.

### Components

The dryer bypass system is completely integrated.



*Dryer bypass components*

Reference	Name
1	Straight bypass pipe at the outlet of the cooler.
2	T-joint and pipe to connect the straight pipe to the dryer.
3	Ball valve at the T-joint.
4	Dryer outlet.
5	Ball valve at the outlet of the dryer bypass.

## Function

During normal operation of the compressor, the ball valve (3) always remains open and air from the after cooler flows through the dryer to the dryer outlet.

During maintenance or failure of the dryer, the outlet of the dryer (4) and ball valve (3) is closed and air flows towards the application through dryer bypass valve (5).

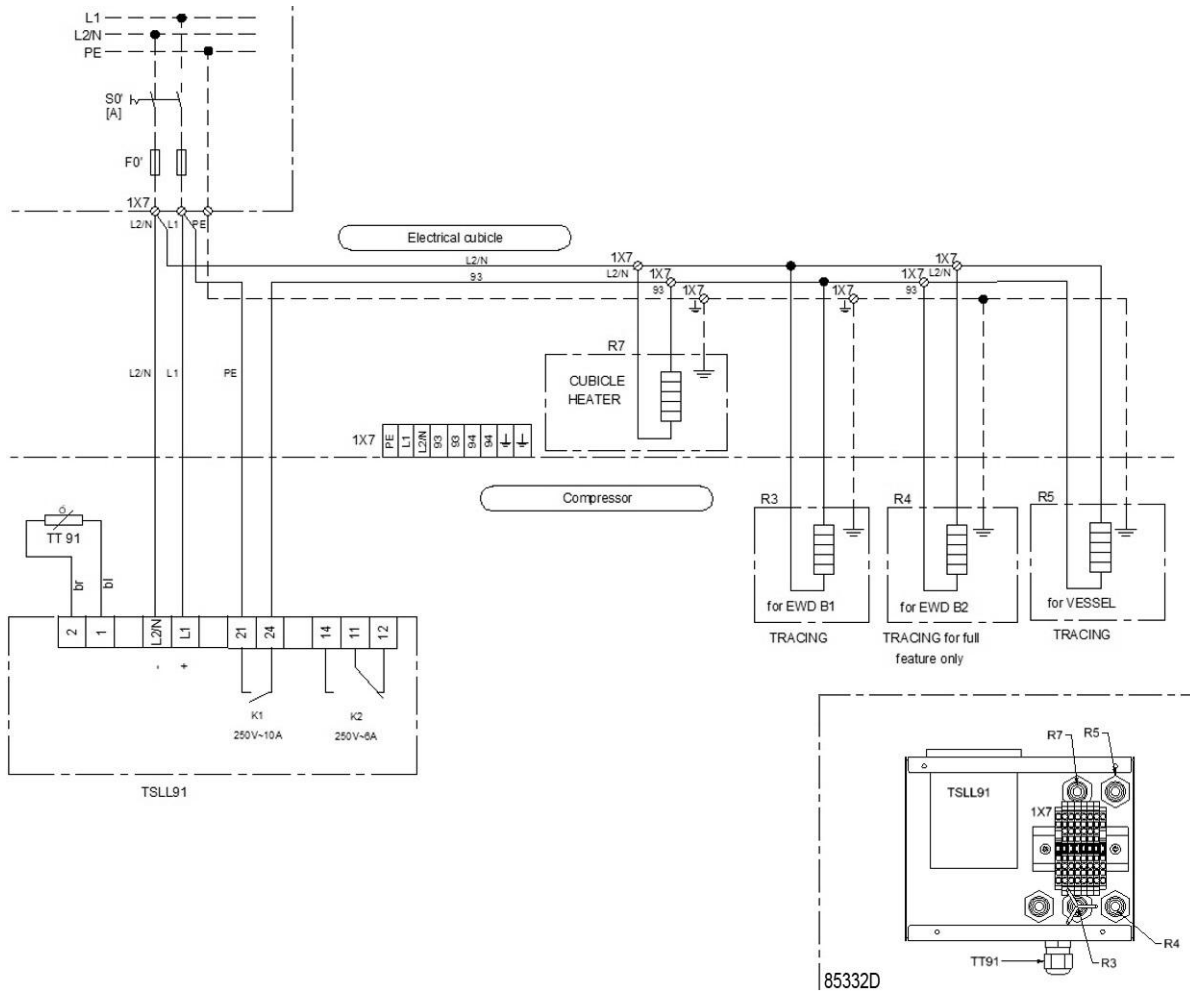
## 6.4 Freeze protection

### Description

The freeze protection allows the unit to start up in ambient temperatures down to minus 20°C. The unit can run continuously at minus 10°C. Typical applications are compressors installed in non-heated rooms outside the main factory building. After start-up, the room will heat up by the compressor cooling air flow. To prevent high viscosity at these temperatures RIF oil is replaced by the better performing RXD, including the matching oil filter (8000 hrs).

### Components

The freeze protection system is completely integrated.



Freeze protection components

Reference	Name
S0'	Main switch (Customer installation)
F0'	Main protection (Customer installation)
R3	Tracing for electronic water drain on after cooler
R4	Tracing for electronic water drain on dryer (Units with integrated dryer only)
R5	Tracing for vessel
R7	Heater for electrical cubicle
TSLL91	Thermostat CSA-UL/IEC Factory setting 5°C, contact closes below setpoint
TT91	Temperature sensor for thermostat
1X7	Terminals

## 6.5 Heavy duty filter

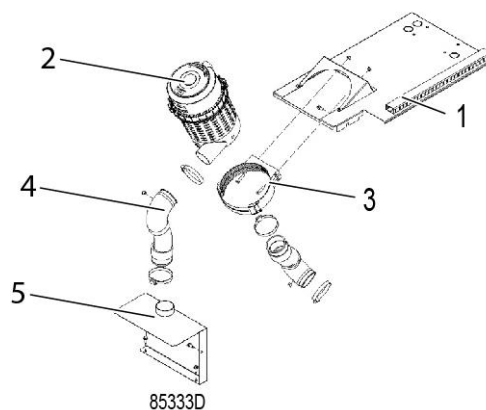
### Description

This option will extend the oil change interval and the interval on the inlet filter change in dusty environments like for instance cement plants and desert conditions. This is done by adding a pre-filtration through tangential inlet of the air and including a secondary filter element.

It replaces the current air filter.

### Components

The heavy duty filter system is completely integrated.



*Heavy duty filter components*

Reference	Name
1	Separation plate
2	Heavy duty filter
3	Support and screws to mount filter on separation plate
4	Hose and hose clamp
5	Air inlet duct

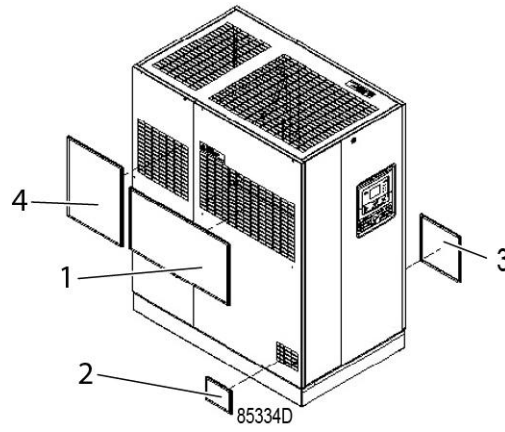
## 6.6 Prefilter

### Description

This option will maintain the interval to clean the aftercooler by preventing clogging by large particles (>300  $\mu\text{m}$ ). The lifetime of a heavy duty inlet filter is positively influenced as well. The prefilters can be cleaned and can be re-used to a certain extend.

### Components

The prefilters are fixed at the gratings of the side panel in order to avoid contaminants mixed with air.





*Prefilter components*

Reference	Name
1-4	Prefilter

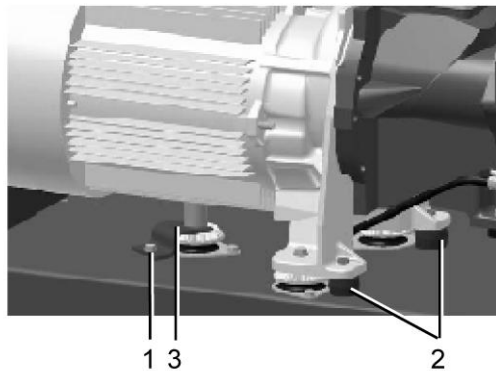
## 7 Operating instructions

### 7.1 Initial start-up

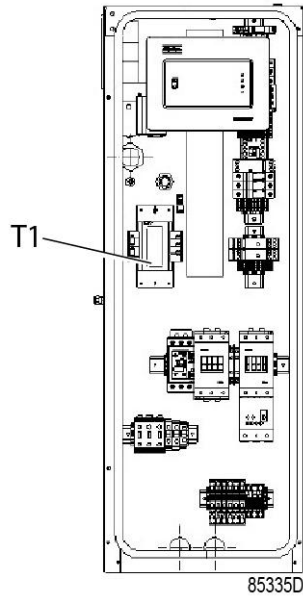
	The operator must apply all applicable <a href="#">Safety precautions</a> .
	For the location of the air outlet valve and the drain connections, see sections <a href="#">Introduction</a> and <a href="#">Condensate system</a> .

#### Preparations

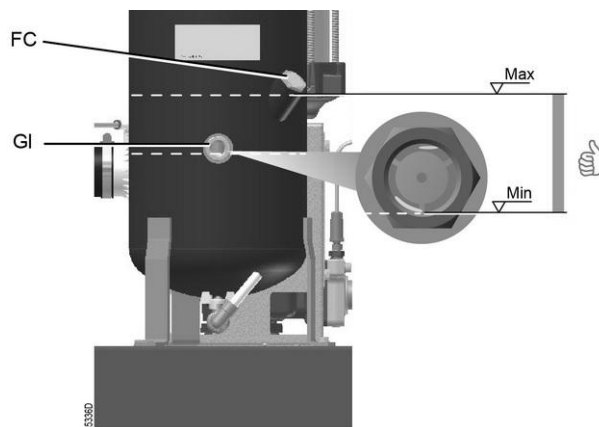
1. Consult the sections [Electrical cable size](#), [Installation proposal](#) and [Dimension drawings](#).
2. **The following transport fixtures, painted red, must be removed:**
  - Bolt (1)
  - Bolts and bushes under the gear casing (2)
  - Support (3)



3. Check that the electrical connections correspond to the applicable codes and that all wires are clamped tight to their terminals.  
The installation must be earthed and protected against short circuits by fuses of the inert type in all phases. An isolating switch must be installed near the compressor.
4. Check transformer (T1) for correct connection.  
Check the settings of drive motor overload relay (F21).  
Check that the motor overload relay is set for manual resetting.



5. Check the setting of circuit breaker (Q15). Also check that the switch on the circuit breaker is in position I.
6. Fit air outlet valve (AV). See section [Introduction](#) for the location of the valve.  
Close the valve.  
Connect the air net to the valve.  
On compressors equipped with a dryer bypass, fit the air outlet valve to the dryer bypass pipe.
7. Connect the condensate drain outlet(s) to a drain collector.  
See section [Condensate system](#).  
The drain pipes to the drain collector must not dip into the water. If there is a risk for freezing, the pipes must be insulated.
8. For compressors with a DD or a DD and UD+ filter: connect the automatic drain of the filters to a suitable drain collector.
9. Check the oil level. The oil level should reach the bottom of the oil filler neck (FC). The oil level should reach the oil sight glass (GI) when the compressor is stopped. If needed, top up the oil. Take care that no dirt drops into the oil system. Refit and tighten the filler plug (FC).

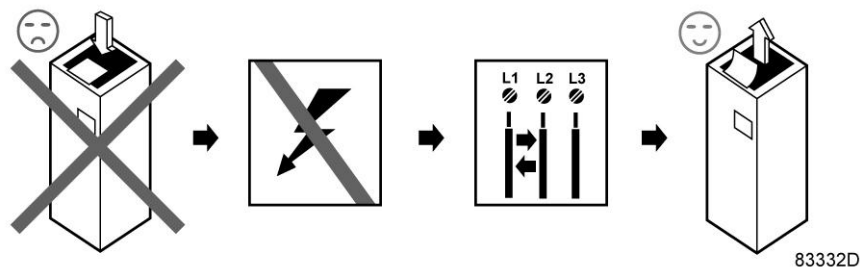


10. **Provide labels, warning the operator that:**
  - The compressor may automatically restart after voltage failure (if activated, consult Atlas Copco).
  - The compressor is automatically controlled and may be restarted automatically .
11. Open the air outlet valve.

Start and run the compressor for a few minutes. Check that the compressor operates normally.

12. Check the rotation direction of the fan motor. For this purpose, a sheet is fixed to the top grating of the compressor.
  - a. Switch on the voltage.
  - b. Start the compressor and stop it immediately.

If the rotation direction is correct, the sheet will be blown upwards. If the sheet remains in place, the rotation direction is incorrect.
  - c. If the rotation direction is wrong, open the isolating switch in the voltage supply line and reverse two incoming electric lines.
  - d. Remove the label.



*Label to check correct rotation of the fan motor*

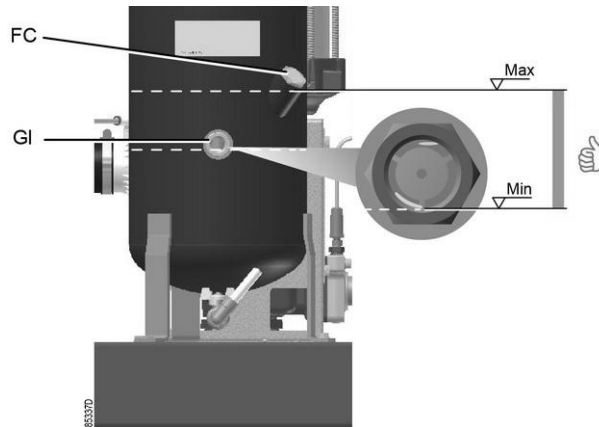
13. Check the programmed settings.
14. Remove packaging foam from the fan.
15. Check if the set with loose parts is complete:
  - Compressed air outlet valve
  - Key for cubicle door and service panel
  - Manual drain valve
  - Cable gland
  - Cover plate for cable passage

For any questions, please contact your supplier.

## 7.2 Before starting

### Procedure

1. If the compressor has not run for the past 6 months, it is strongly recommended to improve the lubrication of the compressor element before starting. See section [Initial start](#).
2. Check oil level. Top up if necessary.

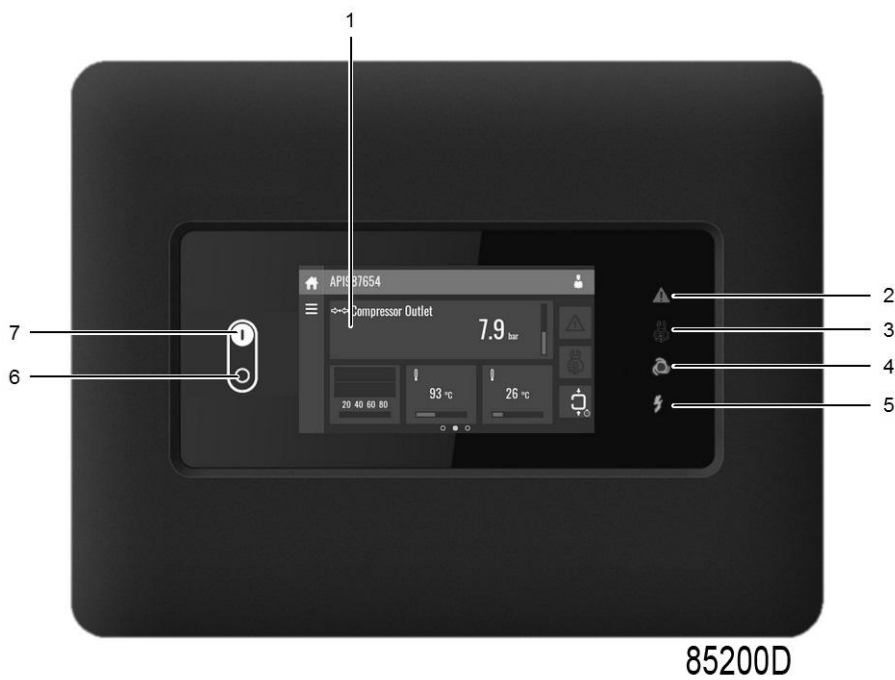


Position of oil level sight glass

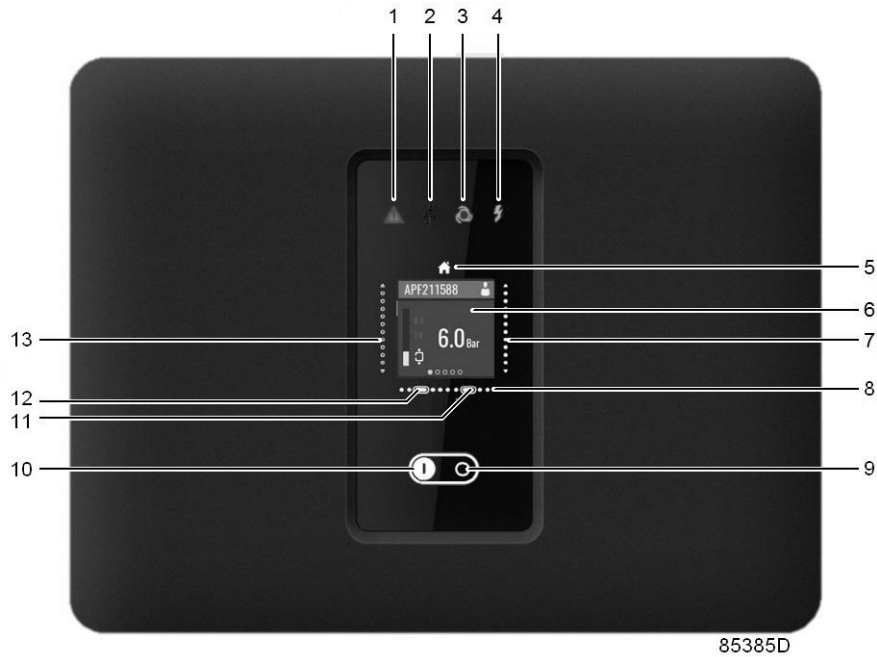
### 7.3 Starting



For the position of the air outlet valve and the drain connections, see sections [Introduction](#) and [Condensate system](#).



Control panel Elektronikon™ Touch



Control panel Elektronikon™ Swipe

## Procedure

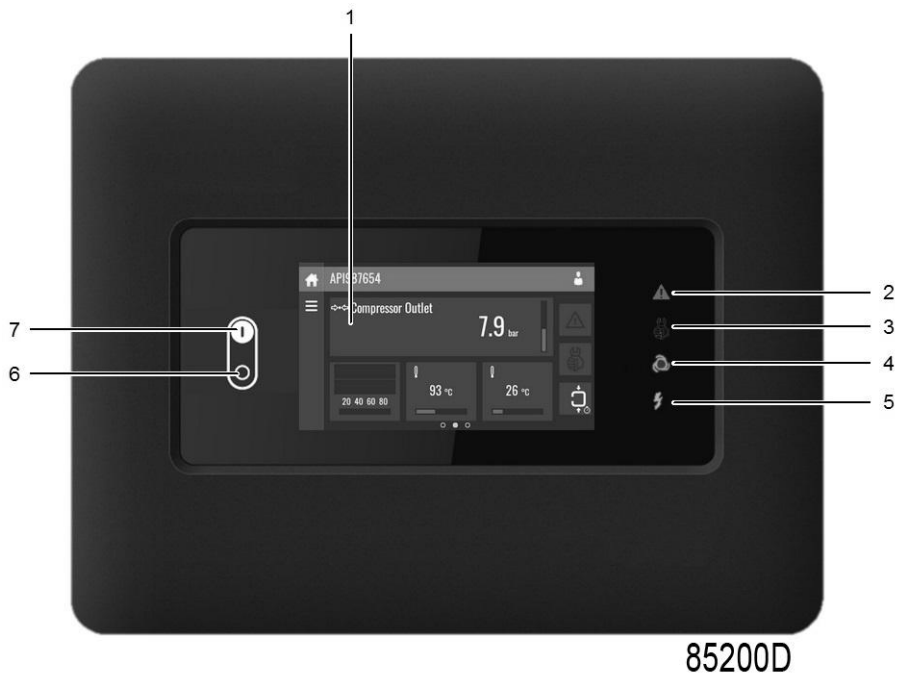
1. Open the air outlet valve.
2. Switch on the voltage. Check that voltage on LED (5) lights up.
3. Press start button (7) on the control panel. The compressor starts running and the automatic operation LED (4) lights up. Ten seconds after starting, the drive motor switches over from star to delta and the compressor starts running loaded.

## 7.4 During operation

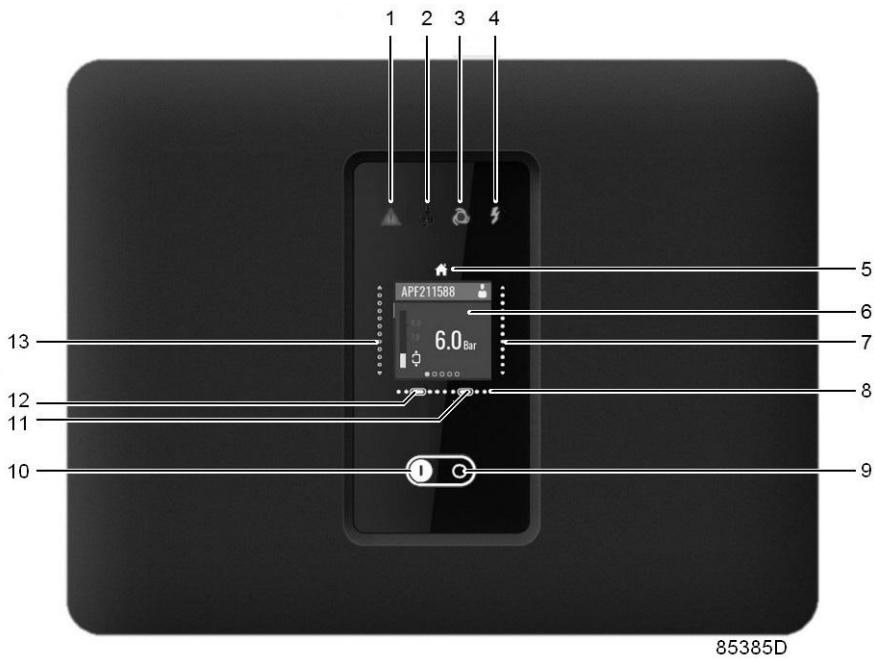
### Warnings

	The operator must apply all relevant <a href="#">Safety precautions</a> . Also consult section <a href="#">Problem solving</a> .
	Keep the doors closed during operation. They may be opened for short periods only to carry out checks.
	When the motors are stopped and LED (4) (automatic operation) is alight, the motors may start automatically.

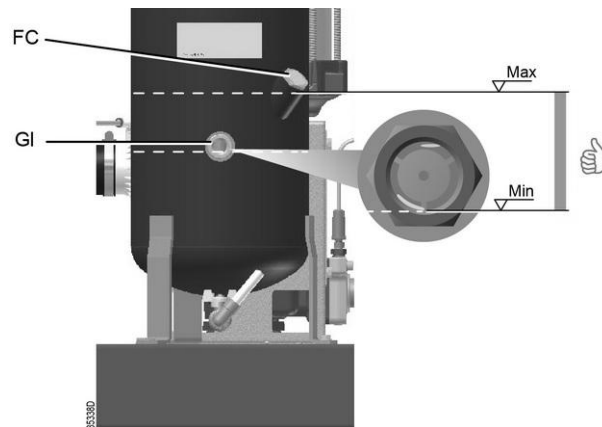
### Checking the oil level



Control panel Elektronikon™ Touch



Control panel Elektronikon™ Swipe



Regularly check the oil level. To do so:

1. Press stop button (6).
2. A few minutes after stopping, the oil level should be between the oil filler neck (FC) and the bottom of the sight glass (GI).
3. If the oil level is too low, push the emergency stop button to avoid the compressor to start unexpectedly.
4. Next, close the air outlet valve and open the manual drain valve (Dm) until the air system between oil separator/air receiver vessel and outlet valve is fully depressurized. See section [Condensate system](#) for location of the outlet valve and water drain.
5. Unscrew oil filler plug (FC) one turn to permit any pressure left in the system to escape. Wait a few minutes.
6. Remove the plug and add oil until the level reaches the filler opening.
7. Fit and tighten the plug (FC).

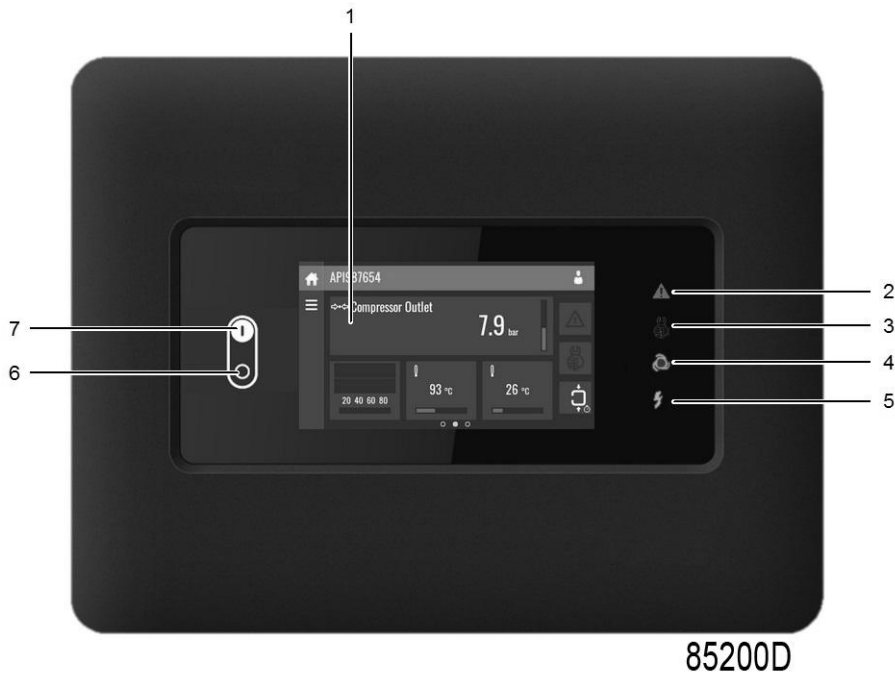
On compressors equipped with an Elektronikon™ Touch controller, unlock the emergency stop button, select the STOP icon on the display and press reset before restarting.

## Drains

Regularly check that condensate is discharged during operation. See section [Condensate system](#). The amount of condensate depends on environmental and working conditions.

## 7.5 Checking the display

Compressors with Elektronikon™ Touch controller:



Control panel Elektronikon™ Touch

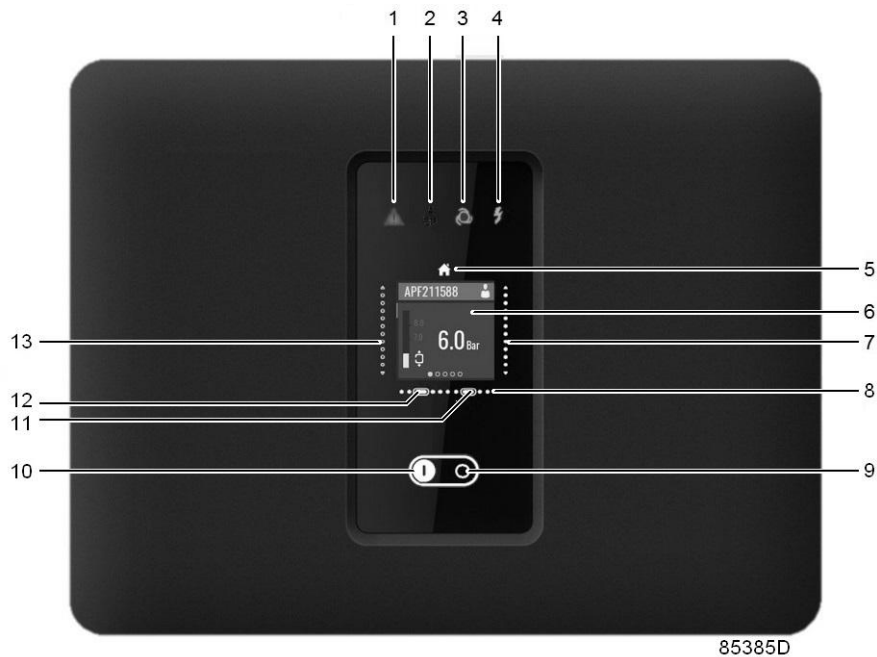
Check the main screen (1) regularly for readings and messages. The display normally shows the compressor. outlet pressure, while the status of the compressor is indicated by pictographs.

Remedy the trouble if alarm LED (2) is lit or flashes, see section Shutdown warning, Shutdown and Problem solving.

The panel will show a service indication (3) if a service plan interval has been exceeded or if a service level for a monitored component has been exceeded.

Carry out the service actions of the indicated plans or replace the component and reset the relevant timer, see section Service warning.

**Compressors with Elektronikon™ Swipe controller:**



Control panel Elektronikon Swipe™

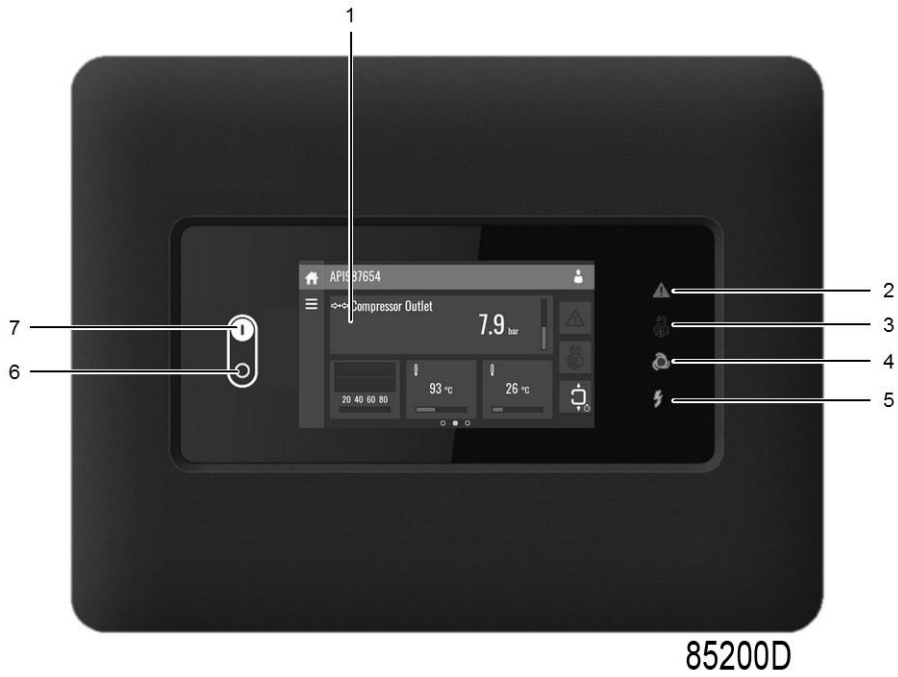
Check the main screen (6) regularly for readings and messages. The display normally shows the compressor outlet pressure, while the status of the compressor is indicated by pictographs.

Remedy the trouble if alarm LED (1) is lit or flashes, see section Shutdown warning, Shutdown and Problem solving.

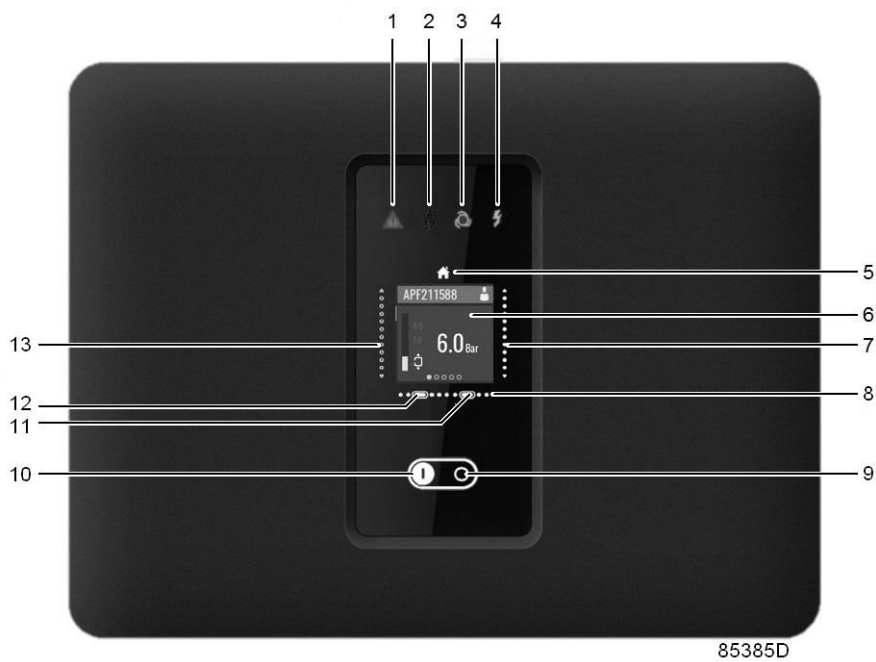
The panel will show a service indication (2) if a service plan interval has been exceeded or if a service level for a monitored component has been exceeded.

Carry out the service actions of the indicated plans or replace the component and reset the relevant timer, see section Service warning.

## 7.6 Stopping



Control panel Elektronikon™ Touch



Control panel Elektronikon™ Swipe

## Procedure

Step	Action
1	Press stop button (6). Automatic operation LED (4) goes out and the compressor stops after 30 seconds of unloaded operation.
2	<p><b>To stop the compressor in the event of an emergency</b>, press emergency stop button. Alarm LED flashes (2).</p> <ul style="list-style-type: none"> <li>• On compressors equipped with an Elektronikon™ Touch controller, remedy the problem cause and unlock the button by pulling it out.</li> <li>• To reset the alarm, see <a href="#">Data menu</a>.</li> </ul> <p><b>Do not use emergency stop button for normal stopping!</b></p>
3	Close the air outlet valve.
4	Press the test button on top of the electronic water drain(s) (if supplied) to the depressurize the piping between air receiver and outlet valve, next open the manual drain valve (Dm). See section <a href="#">Condensate system</a> . Switch off the voltage.

## 7.7 Taking out of operation

### Warning



The operator must apply all relevant [Safety precautions](#).

### Procedure

Step	Action
-	Stop the compressor and close the air outlet valve.
-	Switch off the voltage and disconnect the compressor from the mains.
-	Unscrew the oil filler plug only one turn to permit any pressure in the system to escape. Consult section <a href="#">Oil and oil filter change</a> to locate the filler plug.
-	Shut off and depressurise the part of the air net which is connected to the outlet valve. Disconnect the compressor air outlet pipe from the air net.
-	Drain the oil.
-	Drain the condensate circuit and disconnect the condensate piping from the condensate net.

## 8 Maintenance

### 8.1 Preventive maintenance schedule

#### Control panel

#### Warning



**Before carrying out any maintenance, repair work or adjustments, proceed as follows:**

- Stop the compressor.
- Close the air outlet valve and open the condensate drain valve to depressurize the air system between air receiver and outlet valve.
- Press the emergency stop button (10).
- Switch off the voltage.
- Depressurize the compressor.

For detailed instructions, see section [Problem solving](#).

The operator must apply all relevant [Safety precautions](#).

#### Warranty - Product Liability

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

#### Service kits

For overhauling or carrying out preventive maintenance, service kits are available (see section [Service kits](#)).

#### Service agreements

Contact Atlas Copco to set up a tailor-made service agreement. It will ensure optimum operational efficiency, minimize downtime and reduce the total life cycle cost.

#### General

When servicing, replace all removed O-rings and washers.

#### Intervals

The local Atlas Copco Customer Center may overrule the maintenance schedule, especially the service intervals, depending on the environmental and working conditions of the compressor.

The longer interval checks must also include the shorter interval checks.

#### Service plans for compressors with an Elektronikon™ Touch controller

Besides the daily and 3-monthly checks, preventive maintenance actions are specified in the schedule below.

Each plan has a programmed time interval at which all service actions belonging to that plan are to be carried out. When reaching the interval, a message will appear on the screen indicating

which service plans are to be carried out. After servicing, the intervals must be reset, see section [Service menu](#).

### Service plans for compressors with an Elektronikon™ controller

Besides the daily and 3-monthly checks, preventive maintenance actions are specified in the schedule below.

Each plan has a programmed time interval at which all service actions belonging to that plan are to be carried out. When reaching the interval, a message will appear on the screen indicating which service plans are to be carried out. After servicing, the intervals must be reset, see section [Service menu](#).

### Preventive maintenance schedule

#### Daily and 3-monthly check list

Period	Action
Daily	Check oil level. If needed, top up the oil (see section <a href="#">Operating instructions — During operation</a> ) Check readings on display. Check that condensate is discharged by waiting for some time during operation. You can use the test button on top of the electronic water drain to check the drain function.
Monthly	Check that condensate is discharged when pressing the test button on top of the electronic water drain.
3-monthly (1)	Check coolers, clean if necessary. Remove the air filter element and inspect. Replace damaged or heavily contaminated elements. Check the filter elements of the electric cabinet. Replace if necessary.

#### Check list for compressors with dryer

Period	Action
Daily	Check that condensate is discharged by the dryer drain by waiting for some time during operation. You can use the test button on top of the electronic water drain to check the drain function.
Monthly (1)	Condenser cleaning: <ul style="list-style-type: none"> <li>• Stop the compressor, close the air outlet valve and switch off the voltage.</li> <li>• Remove any dirt on the condenser inlet with a vacuum cleaner.</li> <li>• Next, clean with an air jet in the reverse direction to normal flow. Use low pressure air. Keep the compressed air nozzle more than 30 cm away from the condenser to avoid damaging the of condenser fins.</li> <li>• Remove dust from inside the dryer, e.g. with a vacuum cleaner.</li> </ul> Do not use water or solvents to clean the condenser.

(1): More frequently when operating in a dusty atmosphere.

Preventive Maintenance schedule programmed in the Elektronikon™ controller

Running hours	Action
4000 (1)	Change oil and oil filter (except when Roto-Xtend Duty Fluid is used). Replace the air filter element. Check condition of the air intake hose between air filter and compressor element (where applicable). Check pressure and temperature readings. Check operation of cooling fans of converter. Check blow-off solenoid valve after stopping and pressing the emergency stop button. Clean coolers. Check and clean cooling fan assembly. Replace the oil separator element.
8000 (2)(3)	All the actions for 4000 hrs. Change oil and oil filter (when Roto-Xtend Duty Fluid is used). Replace the filter elements of the electric cabinet. Replace the non return valve of the scavenge line and clean the restriction nozzle. Replace the minimum pressure valve, and replace the thermostatic valve. Remove carefully. Replace the electronic drain valve. Carry out a LED/display test. Check for possible air and oil leakages. Have safety valve tested.

(1): or yearly, whichever comes first


(2): or every 2 years, whichever comes first

(3): For all 8000 hours actions, contact Atlas Copco.

The indicated oil exchange intervals are valid for standard operating conditions (see section [Reference conditions and limitations](#)) and nominal operating pressure (see section [Compressor data](#)). Exposure of the compressor to external pollutants, operation at high humidity combined with low duty cycles or operation at higher temperatures may require a shorter oil exchange interval. Contact Atlas Copco if in doubt.

**Oils**

In order to achieve the best machine performance and guarantee the reliability, it is required to use genuine Atlas Copco Lubricants. Their tailor made formulation is the result of years of field experience, research and in-house development. Consult the Spare Parts list for part number information.

	Avoid mixing lubricants of different brands or types as they may not be compatible and the oil mix may have inferior properties. A label, indicating the type of oil filled ex factory is stuck on the air receiver/oil tank.
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Relation between operating conditions and duty type

Ambient temperature	Humid	Dust	Duty type
Below 30 °C (86 °F)	No	No	Mild
Below 30 °C (86 °F)	Yes	No	Mild
Below 30 °C (86 °F)	No	Yes	Mild
Below 30 °C (86 °F)	Yes	Yes	Demanding
Between 30 °C (86 °F) and 40 °C (104 °F)	No	No	Demanding

Ambient temperature	Humid	Dust	Duty type
Between 30 °C (86 °F) and 40 °C (104 °F)	Yes	No	Demanding
Between 30 °C (86 °F) and 40 °C (104 °F)	No	Yes	Demanding
Between 30 °C (86 °F) and 40 °C (104 °F)	Yes	Yes	Extreme
Above 40 °C (104 °F)	-	-	Extreme

### Exchange interval for Roto-Inject Fluid Ndurance

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 30°C (86°F)	up to 95°C (203°F)	4000	1 year
from 30°C (86°F) up to 35°C (95°F) (see note)	from 95°C (203°F) up to 100°C (212°F)	3000	1 year
from 35°C (95°F) up to 40°C (104°F) (see note)	from 100°C (212°F) up to 105°C (221°F)	2000	1 year
above 40°C (104°F)	above 105°C (221°F)	use Roto Synthetic Fluid Xtend Duty	

Note: the presence of dust and/or high humidity may require a shorter exchange interval. Consult Atlas Copco.

### Exchange interval for Roto Synthetic Fluid Ultra

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 35°C (95°F)	up to 100°C (212°F)	6000	2 years
from 35°C (95°F) up to 40°C (104°F) (see note)	from 100°C (212°F) up to 105°C (221°F)	4000	2 years
from 40°C (104°F) up to 45°C (113°F) (see note)	from 105°C (221°F) up to 110°C (230°F)	2000	2 years

### Exchange interval for Roto Synthetic Fluid Xtend-Duty

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 35°C (95°F)	up to 100°C (212°F)	8000	2 years
from 35°C (95°F) up to 40°C (104°F) (see note)	from 100°C (212°F) up to 105°C (221°F)	6000	2 years
above 40°C (104°F)	above 105°C (221°F)	5000	2 years

Note: the presence of dust and/or high humidity may require a shorter exchange interval. Consult Atlas Copco.


### Exchange interval for Roto-Foodgrade Fluid

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 35°C (95°F) (see note)	up to 100°C (212°F)	4000	1 year
from 35°C (95°F) up to 40°C (104°F) (see note)	from 100°C (212°F) up to 105°C (221°F)	3000	1 year
from 40°C (104°F) up to 45°C (113°F) (see note)	from 105°C (221°F) up to 110°C (230°F)	2000	1 year
above 45°C (113°F)	above 110°C (230°F)	use not recommended	

Note: the presence of dust and/or high humidity may require a shorter exchange interval. Consult Atlas Copco.


\* whichever comes first.

**Important**

	<ul style="list-style-type: none"> <li>• Always consult your supplier if a timer setting has to be changed.</li> <li>• For the change interval of oil and oil filter in extreme conditions of temperature, humidity or cooling air, consult your supplier.</li> <li>• Any leakage should be attended to immediately. Damaged hoses or flexible joints must be replaced.</li> <li>• For change of oil contact Atlas Copco for the correct procedure.</li> <li>• For changing of one type of oil to another type of oil consult Atlas Copco for the correct procedure as this is not allowed in some conditions.</li> </ul>
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## 8.2 Oil specifications

It is strongly recommended to use genuine Atlas Copco Lubricants. They are the result of years of field experience and research. See section Preventive maintenance schedule for the advised replacement intervals and consult your Spare Parts list for part number information.

	<p>Avoid mixing lubricants of different brands or types as they may not be compatible and the oil mix may have inferior properties. A label, indicating the type of oil filled ex factory, is stuck on the air receiver/oil tank.</p>
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### Roto-Inject Fluid NDURANCE

Atlas Copco's Roto-Inject Fluid NDURANCE is a premium mineral oil based 4000 hours lubricant, specially developed for use in single stage oil injected screw compressors running in mild conditions. Its specific formulation keeps the compressor in excellent condition. Roto-Inject Fluid NDURANCE can be used for compressors operating at ambient temperatures between 0 °C (32°F) and 40 °C (104 °F). If the compressor is regularly operating in ambient temperatures above 35°C (95 °F), it is recommended to use Roto Synthetic Fluid ULTRA or Roto Synthetic Fluid XTEND DUTY.

### Roto Synthetic Fluid ULTRA

Roto Synthetic Fluid ULTRA is a synthetic oil based 4000 hours lubricant, specially developed for use in single stage oil injected screw compressors running in demanding conditions. Roto Synthetic Fluid ULTRA can be used for compressors operating at ambient temperatures between 0 °C (32 °F) and 45 °C (113 °F). For more extreme conditions, or when longer oil life is required, it is recommended to use Roto Synthetic Fluid XTEND DUTY.

### Roto Synthetic Fluid XTEND DUTY

Atlas Copco's Roto Synthetic Fluid XTEND DUTY is a high quality synthetic 8000 hours lubricant for oil injected screw compressors which keeps the compressor in excellent condition. Because of its excellent oxidation stability, Roto Synthetic Fluid XTEND DUTY can be used for compressors operating at ambient temperatures between 0 °C (32 °F) and 46 °C (115 °F). Roto Synthetic Fluid XTEND DUTY is the standard lubricant for oil injected screw compressors equipped with freeze protection or Energy Recovery.

If the compressor is regularly operating in ambient temperatures above 40 °C (104 °F), oil lifetime is reduced (see table oil lifetime [Preventive maintenance schedule](#)).

### Roto-Foodgrade Fluid

#### Special oil, delivered as an option.

Atlas Copco's Roto-Foodgrade Fluid is a unique high quality synthetic lubricant, specially created for oil injected screw compressors that provide air for the food industry. This lubricant keeps the compressor in excellent condition. Roto-Foodgrade Fluid can be used for compressors operating at ambient temperatures between 0 °C (32 °F) and 40 °C (104 °F).

Roto-Foodgrade Fluid has all required certification for use in food & beverage industry: like NSFH1, Kosher, Halal and Allergen Free approvals.

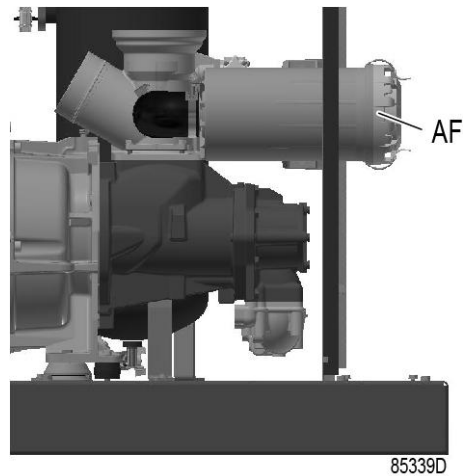
If the compressor is regularly operating in ambient temperatures above 35 °C (95 °F), oil lifetime is reduced (see table oil lifetime [Preventive maintenance schedule](#)).

## 8.3 Drive motor

### Bearing maintenance

The motor bearing is lubricated by oil injection. Re-greasing is not necessary.

## 8.4 Air filter



*Location of air filter*

### Procedure

1. Stop the compressor. Switch off the voltage.
2. Remove the cover of the air filter (AF) by opening the clip system. Remove the filter element.
3. Fit the new element and the cover.
4. Reset the air filter service warning.

## 8.5 Oil and oil filter change

### Warning

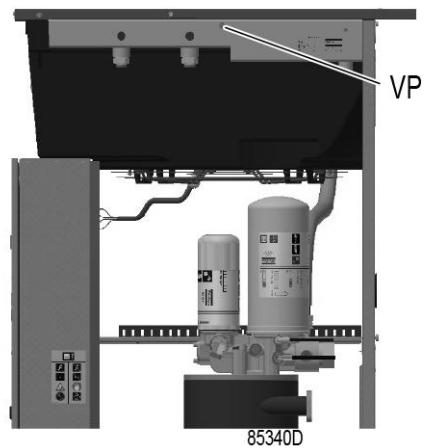


The operator must apply all relevant [Safety precautions](#). Always drain the compressor oil at all drain points. Used oil left in the compressor can contaminate the oil system and can shorten the lifetime of the new oil. Never mix lubricants of different brands or types as they may not be compatible and the oil mix will have inferior properties. A label, indicating the type of oil filled ex factory, is stuck on the air receiver/oil tank. If the compressor is equipped with an Energy Recovery unit, also consult [Maintenance for Energy Recovery Systems](#)

### Procedure

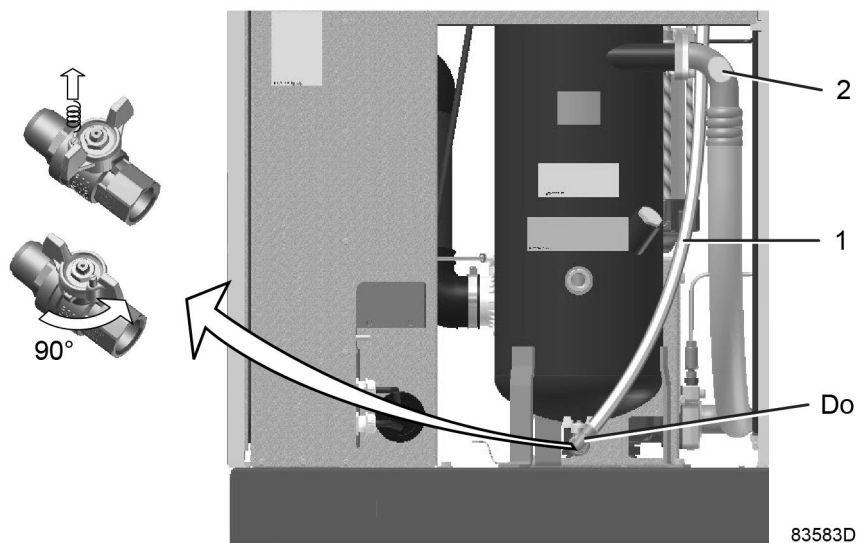
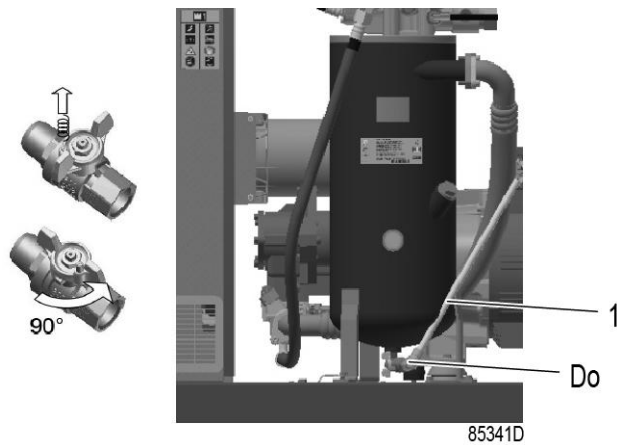
1. Run the compressor until warm and stop the compressor.
  - Close the air outlet valve and switch off the voltage.
  - Wait 3 minutes for the compressor to depressurise the vessel.
  - Open the condensate drain valve to depressurise the cooler. (see condensate system) and close again.
  - Unscrew the oil filler plug (FC) just one turn to permit any remaining pressure in the system to escape.
  - Cover the duct of the heat sink on the electric cabinet on VSD units..

2. Remove the vent plug (VP) of the oil cooler.



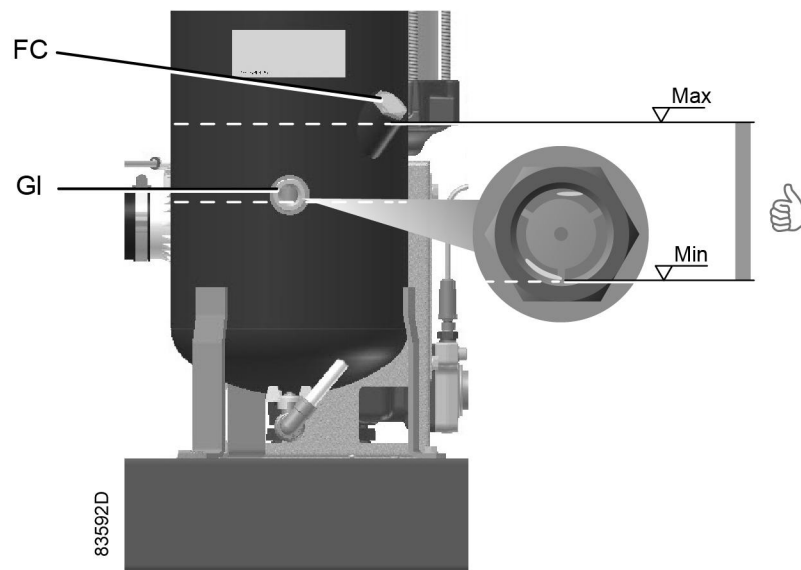
Vent plug, oil cooler

3. Open the oil drain valve (Do).
  - Hold the oil drain hose (1) downward to drain the oil.



4.
  - Drain oil from outlet housing.
  - Remove the oil filter (OF). **Be aware that this filter has a left thread connection.**

- Remove the oil separator (OS). **Be aware that this filter has a left thread connection.**
  - Collect the oil in a collector and deliver it to the local collection service. Refit the vent plugs after draining.
5.
    - Close the oil drain valve (Do).
    - Refit the drain hose at the top of the air receiver.
  6. Clean the seat on the manifold. Lubricate the gasket of the new oil filter and screw it into place. Tighten firmly by hand.
    - Clean the seat on the manifold. Lubricate the gasket of the new oil separator and screw it into place. Tighten firmly by hand.
  7. Remove filler plug (FC).  
Fill the air receiver with oil until the level reaches the filler neck.



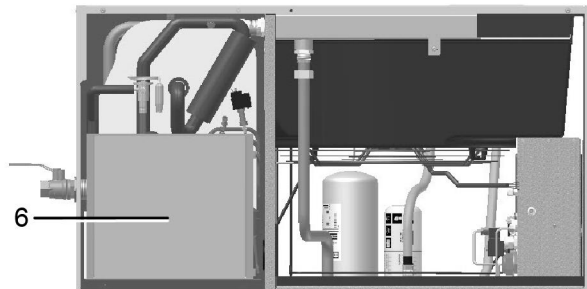
- Take care that no dirt drops into the system. Refit and tighten filler plug (FC).
8. Run the compressor loaded for a few minutes. Stop the compressor.
  9. Close the air outlet valve and switch off the voltage.
    - Wait 3 minutes for the compressor to depressurize the vessel.
    - Open the condensate drain valve (Dm) to depressurize the cooler. (see [Condensate system](#)) and close again.
    - Unscrew the oil filler plug (FC) just one turn to permit any remaining pressure in the system to escape.
  10. Fill the air receiver (AR) with oil until the level reaches the filler neck. (see [Operating instructions / During operation](#))
    - Refit and tighten filler plug (FC).
 When the oil level is too low, go back to step 7.

## 8.6 Coolers

### General

Keep the coolers clean to maintain their efficiency.

## Procedure for compressors with dryer.



*Location of the condenser of the dryer*

- Remove dirt on the inlet of the condenser (6) with a fibre brush.
- Clean with an air jet in the reverse direction to normal flow.
- Clean the condenser area with a fibre brush.

## 8.7 Dryer maintenance instructions

### Safety precautions

Refrigeration dryers of ID type contain refrigerant HFC.

**When handling refrigerant, all applicable [safety precautions](#) must be observed. Please be specifically aware of the following points:**

- Contact of refrigerant with the skin will cause freezing. Special gloves must be worn. If contacted with the skin, the skin should be rinsed with water. On no account may clothing be removed.
- Fluid refrigerant will also cause freezing of the eyes; always wear safety glasses.
- Refrigerant is harmful. Do not inhale refrigerant vapours. Check that the working area is adequately ventilated.

Be aware that certain components such as the refrigerant compressor and the discharge pipe can become quite hot (up to 110 °C - 230 °F). Therefore, wait until the dryer has cooled down before removing the panels.

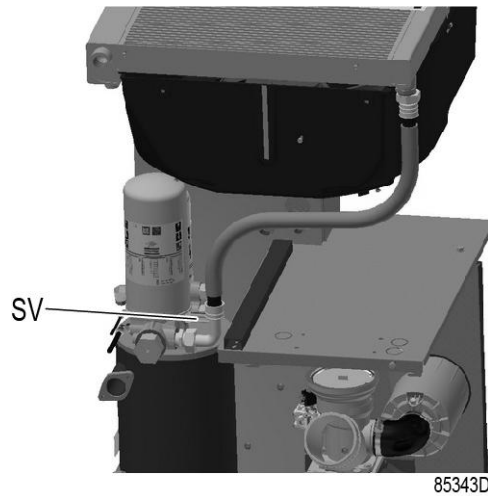
Before starting any maintenance or repair work, switch off the voltage and close the air inlet and outlet valves.

### Local legislation

**Local legislation may stipulate that:**

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

## 8.8 Safety valves



*Location of safety valve*

### Testing



The safety valve (SV) test can only be performed by authorized personnel and is protected by a security code. Refer to Elektronikon™ Touch controller.

If the safety valve does not open at the set pressure stamped on the valve, it needs to be replaced.

### Warning



No adjustments are allowed. Never run the compressor without safety valve.

## 8.9 Service intervals filters

### UD+ filters

The filter elements of oil mist filters (UD+) should be replaced after 4000 hours. The gauge or pop-up is not a measure, as a typical oil mist filter operates in the steady state mode during its life and this mode is e.g. 200-250 mbar.

Note that the indicator or gauge will not move into the red area but will stay yellow or orange during operation.

Summarizing, the following service intervals should be observed (whatever comes first):

- 4000 operating hours
- 12 months in use
- Pressure drop: 350 mbar

## 8.10 Service kits

### Service kits

For overhauling and for preventive maintenance, a wide range of service kits is available. Service kits comprise all parts required for servicing the component and offer the benefits of genuine Atlas Copco parts while keeping the maintenance budget low.

Also a full range of extensively tested lubricants, suitable for your specific needs is available to keep the compressor in excellent condition.

Consult the Spare Parts List for part numbers.

## 8.11 Storage after installation

### Procedure


Run the compressor regularly, e.g. twice a week, until warm.



If the compressor is going to be stored without running from time to time, protective measures must be taken. Consult your supplier.

## 9 Problem solving

### Warning

	<p>Before carrying out any maintenance, repair work or adjustment, stop compressor, wait 3 minutes and close the air outlet valve.</p> <p>Press the test button on top of the electronic water drain until the air system between the air receiver and outlet valve is fully depressurized.</p> <p>Press the emergency stop button and switch off the voltage.</p> <p>Depressurise the compressor by opening the oil filler plug one turn.</p> <p><b>For location of components, see sections:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Introduction</a></li> <li>• <a href="#">Condensate system</a></li> <li>• <a href="#">Operation instructions</a></li> <li>• <a href="#">Preventive maintenance schedule</a></li> </ul>
	Open and lock the isolating switch.
	<p>Lock the air outlet valve during maintenance or repair as follows:</p> <ul style="list-style-type: none"> <li>• Close the valve.</li> <li>• Remove the screw fixing the handle with the wrench delivered with the compressor.</li> <li>• Lift the handle and turn it until the slot of the handle fits over the blocking edge on the valve body.</li> <li>• Fit the screw.</li> </ul>
	The operator must apply all relevant <a href="#">Safety precautions</a> .

### Faults and remedies, compressor

If the alarm LED is lit or flashes, consult sections [Event history menu](#) or [Service menu](#).

If the alarm LED is lit or flashes, consult section [Service menu](#).

Condition	Fault	Remedy
Condensate is not discharged from condensate separator during loading	Discharge flexible clogged	Check and correct as necessary.

Condition	Fault	Remedy
Fan out of order	Fan overload	Replace fan.

Condition	Fault	Remedy
Compressor starts running, but does not load after a delay time	Solenoid valve out of order	Replace valve.
	Inlet valve stuck in closed position	Have valve checked.
	Leak in control air flexibles	Replace leaking flexible.
	Minimum pressure valve leaking (when net is depressurised)	Have valve checked.

Condition	Fault	Remedy
Compressor does not unload, safety valve blows	Solenoid valve out of order	Replace valve.
	Inlet valve does not close	Have valve checked.

Condition	Fault	Remedy
Compressor air output or pressure below normal	Air consumption exceeds air delivery of compressor	Check equipment connected.
	Choked air filter element	Replace filter element.
	Solenoid valve malfunctioning	Replace valve.
	Oil separator clogged	Have element replaced.
	Air leakage	Have leaks repaired.
	Safety valve leaking	Have valve replaced.
	Compressor element out of order	Consult Atlas Copco.

Condition	Fault	Remedy
Safety valve blows	Minimum pressure valve malfunctioning	Check and have defective parts replaced.
	Oil separator clogged	Have element replaced.
	Safety valve out of order	Have valve checked. Replace if necessary.
	On Full-Feature compressors, dryer piping clogged due to formation of ice	Have system checked by Atlas Copco.

Condition	Fault	Remedy
Compressor element outlet temperature or delivery air temperature above normal	Oil level too low	Check and correct, see <a href="#">Operation instructions / During operation</a>
	On air-cooled compressors, insufficient cooling air or cooling air temperature or relative humidity is too high	Check for cooling air restriction or improve ventilation of the compressor room. Avoid recirculating of cooling air. If installed, check capacity of compressor room fan.
	Oil cooler clogged	Clean cooler.
	By-pass valve malfunctioning	Have valve tested.
	Air cooler clogged	Clean cooler.
	Compressor element out of order	Consult Atlas Copco.
	Degraded oil	Check service intervals, see <a href="#">Preventive maintenance schedule</a> .

Condition	Fault	Remedy
Low Load Alarm triggered on VSD+ units: Compressor running with too low oil temperature over a longer period of time	Solenoid valve malfunctioning	Replace valve.
	Extreme low usage of compressor	Increase loading profile (longer and/or more load cycles required). If not possible, consult Atlas Copco.

### Faults and remedies, dryer

For all references hereafter, consult section [Air dryer](#).

Condition	Fault	Remedy
Pressure dew point too high	Air inlet temperature too high	Check and correct; if necessary, clean the aftercooler of the compressor.
	Ambient temperature too high	Check and correct; if necessary, draw cooling air via a duct from a cooler place or relocate the compressor.
	Shortage of refrigerant	Have circuit checked for leaks and recharged.
	Refrigerant compressor does not run	See below.
	Evaporator pressure too high	See below.
	Condenser pressure too high	See below.
Condenser pressure too high or too low	Fan control switch out of order	Replace.
	Fan blades or fan motor out of order	Have checked fan/fan motor, if necessary replace.
	Ambient temperature too high	Check and correct; if necessary, draw cooling air via a duct from a cooler place or relocate the compressor.
	Condenser externally clogged	Clean condenser.
Compressor stops or does not start	Electric power supply to compressor is interrupted	Check and correct as necessary.
	Thermal protection of refrigerant compressor motor has tripped	Motor will restart when motor windings have cooled down.
Electronic condensate drain remains inoperative	Electronic drain system clogged	Have system inspected. Clean the filter of the automatic drain by opening the manual drain valve. Check functioning of the drain by pushing the test button.
Condensate trap continuously discharges air and water	Automatic drain out of order	Have system checked. If necessary, replace the automatic drain.
Evaporator pressure is too high or too low at unload	Hot gas bypass valve incorrectly set or out of order	Have hot gas bypass valve adjusted.

<b>Condition</b>	<b>Fault</b>	<b>Remedy</b>
	Condenser pressure too high or too low	See above.
	Shortage of refrigerant	Have circuit checked for leaks and recharged if necessary.

## 10 Technical data

### 10.1 Readings on display



85199D

*Elektronikon™ Touch controller*



85384D

*Elektronikon™ Swipe controller*

**Important**



The readings mentioned below are valid under the reference conditions (see section [Reference conditions and limitations](#)).

Reference	Reading
Air outlet pressure	Depends on the setpoint (desired net pressure).
Compressor element outlet temperature	Approx. 80 °C (176 °F) (ambient temperature 20 °C + 60 °C)
Dewpoint temperature (on units with integrated dryer)	Approx. 4 °C (39 °F).

## 10.2 Electric cable size and fuses

**Important**



- To preserve the protection degree of the electric cubicle and to protect its components from dust from the environment, it is mandatory to use a proper cable gland when connecting the supply cable to the compressor.
- The voltage on the compressor terminals must not deviate more than 10% of the nominal voltage.  
It is however highly recommended to keep the voltage drop over the supply cables at nominal current below 5% of the nominal voltage (IEC 60204-1).
- If cables are grouped together with other power cables, it may be necessary to use cables of a larger size than those calculated for the standard operating conditions.
- Use the original cable entry. See section [Dimension drawings](#).
- **To preserve the IP protection degree of the electric cubicle and to protect its components from dust from the environment, it is mandatory to use a proper cable gland when connecting the supply cable to the compressor.**
- Local regulations remain applicable if they are stricter than the values proposed below.
- **Caution:**
  - Always double-check the fuse size versus the calculated cable size. If required, reduce fuse size or enlarge cable size.
  - Cable length should not exceed the maximum length according to IEC60204 table 10.

## Currents and fuses

IEC approval

Compressor type			$I_{max} (1)$	Maximu	$I_{max} (2)$	Maximu
				m fuse		m fuse
				(1)		(2)
				gL/gG		gL/gG
	<b>V</b>	<b>Hz</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>
GA11+	230	50	48	63	53	63
GA11+	400	50	28	32	33	40
GA11+	230	60	47	63	53	63
GA11+	380	60	29	40	33	40
GA11+	460	60	24	32	27	32

Compressor type			$I_{max} (1)$	Maximu	$I_{max} (2)$	Maximu
				m fuse		m fuse
				(1)		(2)
				gL/gG		gL/gG
	<b>V</b>	<b>Hz</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>
GA15+	230	50	66	80	71	80
GA15+	400	50	38	50	43	50
GA15+	230	60	73	100	79	100
GA15+	380	60	38	50	42	50
GA15+	460	60	32	40	35	40

Compressor type			$I_{max} (1)$	Maximu	$I_{max} (2)$	Maximu
				m fuse		m fuse
				(1)		(2)
				gL/gG		gL/gG
	<b>V</b>	<b>Hz</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>
GA18+	230	50	80	100	85	100
GA18+	400	50	46	63	51	63
GA18+	230	60	83	100	89	100
GA18+	380	60	46	63	50	63
GA18+	460	60	38	50	42	50

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				gL/gG		gL/gG
	V	Hz	A	A	A	A
GA22+	230	50	91	125	97	125
GA22+	400	50	52	80	59	80
GA22+	230	60	89	125	95	125
GA22+	380	60	54	63	58	63
GA22+	460	60	44	63	48	63

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				gL/gG		gL/gG
	V	Hz	A	A	A	A
GA26+	230	50	124	160	130	160
GA26+	400	50	72	100	78	100
GA26+	230	60	107	125	113	125
GA26+	380	60	65	80	69	80
GA26+	460	60	54	63	57	63

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				gL/gG		gL/gG
	V	Hz	A	A	A	A
GA30	230	50	122	160	128	160
GA30	400	50	70	100	77	100
GA30	230	60	122	160	128	160
GA30	380	60	74	100	78	100
GA30	460	60	61	80	65	80

UL/cUL approval

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				K5/HRC form II		K5/HRC form II
	V	Hz	A	A	A	A
GA11+	460	60	24	35	27	35
GA11+	575	60	19	30	24	30
GA11+ TRI	200	60	54	70	62	70
GA11+ TRI	230	60	51	70	57	70
GA11+ TRI	460	60	26	35	29	35

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				K5/HRC form II		K5/HRC form II
	V	Hz	A	A	A	A
GA15+	460	60	32	40	35	40
GA15+	575	60	25	35	30	35
GA15+ TRI	200	60	73	90	81	90
GA15+ TRI	230	60	73	90	79	90
GA15+ TRI	460	60	36	45	40	45

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				K5/HRC form II		K5/HRC form II
	V	Hz	A	A	A	A
GA18+	460	60	38	50	42	50
GA18+	575	60	31	40	35	40
GA18+ TRI	200	60	88	110	96	110
GA18+ TRI	230	60	83	110	89	110
GA18+ TRI	460	60	42	50	45	50

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				K5/HRC form II		K5/HRC form II
	V	Hz	A	A	A	A
GA22+	460	60	44	60	48	60
GA22+	575	60	36	45	40	45
GA22+ TRI	200	60	102	125	110	125
GA22+ TRI	230	60	93	125	99	125
GA22+ TRI	460	60	47	60	50	60

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				K5/HRC form II		K5/HRC form II
	V	Hz	A	A	A	A
GA26+	460	60	54	70	57	70
GA26+	575	60	43	60	47	60
GA26+ TRI	200	60	123	150	131	150
GA26+ TRI	230	60	120	150	126	150
GA26+ TRI	460	60	60	80	63	80

Compressor type			$I_{max}$ (1)	Maximum fuse (1)	$I_{max}$ (2)	Maximum fuse (2)
				K5/HRC form II		K5/HRC form II
	V	Hz	A	A	A	A
GA30	460	60	61	80	65	80
GA30	575	60	49	60	53	60
GA30	200	60	138	175	146	175
GA30 DUO	230	60	133	175	139	175
GA30 DUO	460	60	66	80	70	80

$I_{max}$  : current in the supply lines at maximum load and nominal voltage

(1): compressors without integrated dryer

(2): compressors with integrated dryer

Compressors without built-in transformer require quick fuses to protect the frequency converter. Compressors with transformer have slow fuses in the supply lines, but quick fuses in the

secondary of the transformer. The indicated fuse values are valid for the fuses to be installed by the customer.

### Setting motor overload relay (F21)

Overload relay and fuses

		GA11+	GA15+	GA18+	GA22+	GA26+	GA30
Freq (Hz)	Voltage (V)	(A)	(A)	(A)	(A)	(A)	(A)
IEC							
50	230	27	38	45	51	70	69
50	400	16	22	26	30	41	40
60	230	27	42	46	50	60	69
60	380	16	21	26	30	37	42
60	460	13	18	21	25	30	35
UL/cUL							
60	460	13	18	21	25	30	35
60	575	11	14	17	20	24	28
60	200	31	42	49	57	69	78
60	230	29	42	46	52	67	75
60	460	14	21	23	26	34	38

### Setting fan motor overload protection (Q15/ F15)

Circuit breaker

		GA11+	GA15+	GA18+	GA22+	GA26+	GA30
Freq (Hz)	Voltage (V)	(A)	(A)	(A)	(A)	(A)	(A)
IEC							
50	230	0.7	0.7	1.9	1.9	2.5	2.5
50	400	0.4	0.4	1.1	1.1	1.5	1.5
60	230	1	1	2.6	2.6	2.6	2.6
60	380	0.5	0.5	1.5	1.5	1.5	1.5
60	460	0.5	0.5	1.4	1.4	1.4	1.4
UL/cUL							
60	460	0.5	0.5	1.4	1.4	1.4	1.4
60	575	0.7	0.7	1.2	1.2	1.2	1.2
60	200	1.1	1.1	3.3	3.3	3.3	3.3
60	230	1	1	2.8	2.8	2.8	2.8
60	460	0.5	0.5	1.4	1.4	1.4	1.4

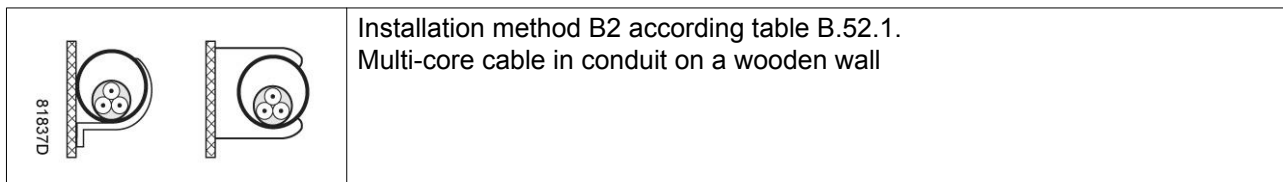
### Earthing

The earthing cable connected to the compressor (PE) should be minimum 10 mm<sup>2</sup> (according to EN 60204-1 section 828).

### Cable sizing according IEC

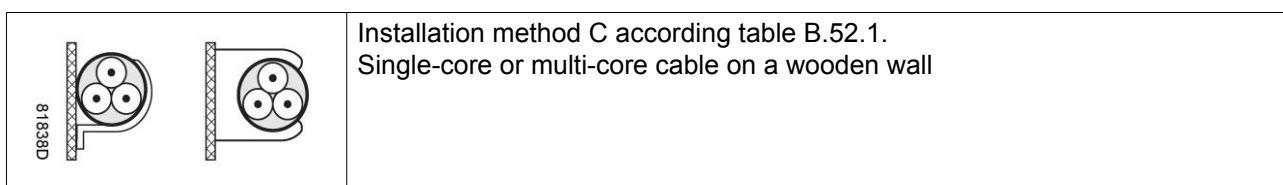
The tables below indicate the current carrying capacities of cables for 3 commonly used installation methods, calculated according to standard 60364-5-52 - electrical installations of buildings part 5 - selection and erection equipment and section 52 - current carrying capacities in wiring systems.

The allowed currents are valid for PVC insulated cables with three loaded copper conductors (maximum conductor temperature 70 °C).



Maximum allowed current in function of the ambient temperature for installation method B2

Cable section	Ambient temperature				
	30 °C	40 °C	45 °C	50 °C	55 °C
4 mm <sup>2</sup>	< 27 A	< 23 A	< 21 A	< 19 A	< 16 A
6 mm <sup>2</sup>	< 34 A	< 30 A	< 27 A	< 24 A	< 21 A
10 mm <sup>2</sup>	< 46 A	< 40 A	< 36 A	< 33 A	< 28 A
16 mm <sup>2</sup>	< 62 A	< 54 A	< 49 A	< 44 A	< 38 A
25 mm <sup>2</sup>	< 80 A	< 70 A	< 63 A	< 57 A	< 49 A
35 mm <sup>2</sup>	< 99 A	< 86 A	< 78 A	< 70 A	< 60 A
50 mm <sup>2</sup>	< 118 A	< 103 A	< 93 A	< 84 A	< 72 A
70 mm <sup>2</sup>	< 149 A	< 130 A	< 118 A	< 106 A	< 91 A
95 mm <sup>2</sup>	< 179 A	< 156 A	< 141 A	< 127 A	< 109 A
120 mm <sup>2</sup>	< 206 A	< 179 A	< 163 A	< 146 A	< 126 A



Maximum allowed current in function of the ambient temperature for installation method C

Cable section	Ambient temperature				
	30 °C	40 °C	45 °C	50 °C	55 °C
4 mm <sup>2</sup>	< 32 A	< 28 A	< 25 A	< 23 A	< 20 A
6 mm <sup>2</sup>	< 41 A	< 36 A	< 32 A	< 29 A	< 25 A
10 mm <sup>2</sup>	< 57 A	< 50 A	< 45 A	< 40 A	< 35 A
16 mm <sup>2</sup>	< 76 A	< 66 A	< 60 A	< 54 A	< 46 A
25 mm <sup>2</sup>	< 96 A	< 84 A	< 76 A	< 68 A	< 59 A
35 mm <sup>2</sup>	< 119 A	< 104 A	< 94 A	< 84 A	< 73 A
50 mm <sup>2</sup>	< 144 A	< 125 A	< 114 A	< 102 A	< 88 A

Cable section	Ambient temperature				
	30 °C	40 °C	45 °C	50 °C	55 °C
70 mm <sup>2</sup>	< 184 A	< 160 A	< 145 A	< 131 A	< 112 A
95 mm <sup>2</sup>	< 223 A	< 194 A	< 176 A	< 158 A	< 136 A
120 mm <sup>2</sup>	< 259 A	< 225 A	< 205 A	< 184 A	< 158 A

	Installation method F according table B.52.1. Single-core cables, touching in free air Clearance to wall not less than one cable diameter
--	---

Maximum allowed current in function of the ambient temperature for installation method F

Cable section	Ambient temperature				
	30 °C	40 °C	45 °C	50 °C	55 °C
25 mm <sup>2</sup>	< 110 A	< 96 A	< 87 A	< 78 A	< 67 A
35 mm <sup>2</sup>	< 137 A	< 119 A	< 108 A	< 97 A	< 84 A
50 mm <sup>2</sup>	< 167 A	< 145 A	< 132 A	< 119 A	< 102 A
70 mm <sup>2</sup>	< 216 A	< 188 A	< 171 A	< 153 A	< 132 A
95 mm <sup>2</sup>	< 264 A	< 230 A	< 209 A	< 187 A	< 161 A
120 mm <sup>2</sup>	< 308 A	< 268 A	< 243 A	< 219 A	< 188 A

**Calculation method for IEC:**

- Single supply cables (3 phases + PE - configuration (1)):
  - Add 10 % to the total compressor current ( $I_{tot}Pack$  or  $I_{tot}FF$  from the tables)
  - Install the prescribed fuse on each cable
- Parallel supply cable (2 x 3 phases + PE - configuration (2)):
  - Add 10 % to the total compressor current ( $I_{tot}Pack$  or  $I_{tot}FF$  from the tables) and divide by 2
  - Multiply the ampacity of the cables with 0.8 (see table A.52.17 (52-E1))
  - Install fuses of half the size of the recommended maximum fuse size on each cable.
- When using 2 x 3 phases + PE as in (3):
  - Add 10 % to the total compressor current ( $I_{tot}Pack$  or  $I_{tot}FF$  from the tables) and divide by  $\sqrt{3}$
  - Multiply the ampacity of the cables with 0.8 (see table A.52.17 (52-E1))
  - Fuse size: the recommended maximum fuse size divided by  $\sqrt{3}$  on each cable.
- Size of the PE cable:
  - For supply cables up to 35 mm<sup>2</sup>: same size as supply cables
  - For supply cables larger than 35 mm<sup>2</sup>: half the size of the supply wires

Always check the voltage drop over the cable (less than 5 % of the nominal voltage is recommended).

**Example:**  $I_{tot} = 89$  A, maximum ambient temperature is 45 °C, recommended fuse = 100 A

- Single supply cables (3 phases + PE - configuration (1)):
  - $I = 89$  A + 10 % =  $89 \times 1.1 = 97.9$  A

- The table for B2 and ambient temperature = 45 ° C allows a maximum current of 93 A for a 50 mm<sup>2</sup> cable. For a cable of 70 mm<sup>2</sup>, the maximum allowed current is 118 A, which is sufficient. Therefore, use a 3 x 70 mm<sup>2</sup> + 35 mm<sup>2</sup> cable.  
If method C is used, 50 mm<sup>2</sup> is sufficient. (35 mm<sup>2</sup> for method F) => cable 3 x 50 mm<sup>2</sup> + 25 mm<sup>2</sup>.
- Parallel supply cable (2 x 3 phases + PE - configuration (2)):
  - $I = (89 \text{ A} + 10 \%) / 2 = (89 \times 1.1) / 2 = 49 \text{ A}$
  - For a cable of 25 mm<sup>2</sup>, B2 at 45 ° C, the maximum current is 63 A x 0.8 = 50.4 A. So 2 parallel cables of 3 x 25 mm<sup>2</sup> + 25 mm<sup>2</sup> are sufficient.
  - Install 50 A fuses on each cable instead of 100 A.

**Cable sizing according UL/cUL**

Calculation method according UL 508A, table 28.1 column 5: allowable ampacities of insulated copper conductors (75 °C (167 °F)).

Maximum allowed current in function of the wire size

AWG or kcmil	Maximum current
10	< 30 A
8	< 50 A
6	< 65 A
4	< 85 A
3	< 100 A
2	< 115 A
1	< 130 A
1/0	< 150 A
2/0	< 175 A
3/0	< 200 A

**Calculation method for UL:**

- Single supply cables (3 phases + 1 PE - configuration (1)):
  - Add 25 % to the total current from the tables (see UL 508A 28.3.2: "Ampacity shall have 125 % of the full load current")
  - Install the prescribed maximum fuse on each cable
- Parallel supply cable (2 x 3 phases + 2 PE - configuration (2)):
  - Add 25 % to the total current from the tables and divide by 2
  - Multiply the ampacity of the cables with 0.8 (see UL 508A table 28.1 continued)
  - Install fuses of half the size of the recommended maximum fuse size on each cable.
- When using 2 x 3 phase + 2 PE as in (3):
  - Add 25 % to the total current from the tables and divide by  $\sqrt{3}$
  - Multiply the ampacity of the cables with 0.8 (see UL 508A table 28.1 continued)
  - Fuse size: the recommended maximum fuse size divided by  $\sqrt{3}$  on each cable.
- Size PE cable:
  - For supply cables up to AWG8: same size as the supply cables
  - For supply cables larger than AWG8: use maximum allowed ampacity of the selected supply cables and compare with value in table below (see CEC Part 1 table 17)

< 100 A: use AWG8
< 200 A: use AWG6
< 300 A: use AWG4

Always check the voltage drop over the cable (less than 5 % of the nominal voltage is recommended).

**Example of supply cable calculation:**  $I_{tot} = 128 \text{ A}$ , maximum ambient temperature is  $45 \text{ }^\circ\text{C}$ , recommended fuse = 150 A

- Single supply cables (3 phases + 1 PE - configuration (1)):
  - $I = 128 \text{ A} + 25 \% = 128 \times 1.25 = 160 \text{ A}$
  - For AWG2/0, the maximum current is 175 A, which is sufficient => use AWG2/0
  - Install the prescribed maximum fuse (150 A) on each cable
- Parallel supply cable (2 x 3 phases + 2 PE - configuration (2)):
  - $I = (128 \text{ A} + 25\%)/2 = (128 \times 1.25)/2 = 80 \text{ A}$
  - For a AWG4, the maximum current is  $85 \text{ A} \times 0.8 = 68 \text{ A}$ , which is insufficient. For an AWG3, the maximum current is  $100 \times 0.8 = 80 \text{ A}$ . So 2 parallel cables of 3 x AWG3 + 2 x AWG8 are sufficient.
  - Install 80 A fuses on each cable.

### 10.3 Reference conditions and limitations

#### Reference conditions

Air inlet pressure (absolute)	bar	1
Air inlet pressure (absolute)	psi	14.5
Air inlet temperature	$^\circ\text{C}$	20
Air inlet temperature	$^\circ\text{F}$	68
Relative humidity	%	0
Working pressure		See section <a href="#">Compressor data</a> .

#### Limitations

Maximum working pressure		See section <a href="#">Compressor data</a> .
Minimum working pressure	bar(e)	4
Minimum working pressure	psig	58
Maximum air inlet temperature	$^\circ\text{C}$	46
Maximum air inlet temperature	$^\circ\text{F}$	115
Minimum ambient temperature	$^\circ\text{C}$	0
Minimum ambient temperature	$^\circ\text{F}$	32

## 10.4 Compressor data

### Reference conditions



All data specified below apply under reference conditions, see section [Reference conditions and limitations](#).

### GA 11<sup>+</sup>

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Reference working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Reference working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pressure drop over dryer, Full-Feature units	psig	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Motor shaft speed	r/min	2950	2950	2950	2950	2950	2950	2950	2950
Set point, thermostatic valve	°C	71	71	71	71	71	71	71	71
Set point, thermostatic valve	°F	160	160	160	160	160	160	160	160
Temperature of air leaving outlet valve (approx.)	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.)	°F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Full-Feature units	°F	86	86	86	86	86	86	86	86
Pressure dew-point, Full-Feature units	°C	3	3	3	3	3	3	3	3
Pressure dew-point, Full-Feature units	°F	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Nominal motor rating	kW	11	11	11	11	11	11	11	11
Nominal motor rating	hp	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Power consumption (dryer at full load), Full-Feature units	kW	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Power consumption (dryer at full load), Full-Feature units	hp	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Refrigerant type, Full-Feature units		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
Total amount (refrigerant), Full-Feature units	kg	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total amount (refrigerant), Full-Feature units	lb	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Oil capacity	l	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Oil capacity	US gal	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88
Oil capacity	Imp gal	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
Oil capacity	cu.ft	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Sound pressure level, Pack and Pack Full-Feature (according to ISO 2151 (2004))	dB(A)	68	68	68	68	68	68	68	68

**GA 15+**

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Reference working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Reference working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pressure drop over dryer, Full-Feature units	psig	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Motor shaft speed	r/min	2950	2950	2950	2950	2950	2950	2950	2950
Set point, thermostatic valve	°C	71	71	71	71	71	71	71	71
Set point, thermostatic valve	°F	160	160	160	160	160	160	160	160
Temperature of air leaving outlet valve (approx.)	°C	30	30	30	30	30	30	30	30

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Temperature of air leaving outlet valve (approx.)	°F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Full-Feature units	°F	86	86	86	86	86	86	86	86
Pressure dew-point, Full-Feature units	°C	3	3	3	3	3	3	3	3
Pressure dew-point, Full-Feature units	°F	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Nominal motor rating	kW	15	15	15	15	15	15	15	15
Nominal motor rating	hp	20.12	20.12	20.12	20.12	20.12	20.12	20.12	20.12
Power consumption (dryer at full load), Full-Feature units	kW	0.48	0.48	0.48	0.35	0.48	0.48	0.48	0.35
Power consumption (dryer at full load), Full-Feature units	hp	0.64	0.64	0.64	0.47	0.64	0.64	0.64	0.47
Refrigerant type, Full-Feature units		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
Total amount (refrigerant), Full-Feature units	kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total amount (refrigerant), Full-Feature units	lb	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Oil capacity	l	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Oil capacity	US gal	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06
Oil capacity	Imp gal	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Oil capacity	cu.ft	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Sound pressure level, Pack and Pack Full-Feature (according to ISO 2151 (2004))	dB(A)	69	69	69	69	69	69	69	69

**GA 18<sup>+</sup>**

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Reference working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Reference working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pressure drop over dryer, Full-Feature units	psig	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Motor shaft speed	r/min	2950	2950	2950	2950	2950	2950	2950	2950
Set point, thermostatic valve	°C	71	71	71	71	71	71	71	71
Set point, thermostatic valve	°F	160	160	160	160	160	160	160	160
Temperature of air leaving outlet valve (approx.)	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.)	°F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Full-Feature units	°F	86	86	86	86	86	86	86	86
Pressure dew-point, Full-Feature units	°C	3	3	3	3	3	3	3	3
Pressure dew-point, Full-Feature units	°F	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Nominal motor rating	kW	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Nominal motor rating	hp	25	25	25	25	25	25	25	25
Power consumption (dryer at full load), Full-Feature units	kW	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Power consumption (dryer at full load), Full-Feature units	hp	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Refrigerant type, Full-Feature units		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
Total amount (refrigerant), Full-Feature units	kg	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Total amount (refrigerant), Full-Feature units	lb	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09
Oil capacity	l	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
Oil capacity	US gal	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Oil capacity	Imp gal	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Oil capacity	cu.ft	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Sound pressure level, Pack and Pack Full-Feature (according to ISO 2151 (2004))	dB(A)	69	69	69	69	69	69	69	69

**GA 22<sup>+</sup>**

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Reference working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Reference working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pressure drop over dryer, Full-Feature units	psig	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Motor shaft speed	r/min	2950	2950	2950	2950	2950	2950	2950	2950
Set point, thermostatic valve	°C	71	71	71	71	71	71	71	71
Set point, thermostatic valve	°F	160	160	160	160	160	160	160	160
Temperature of air leaving outlet valve (approx.)	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.)	°F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Full-Feature units	°F	86	86	86	86	86	86	86	86
Pressure dew-point, Full-Feature units	°C	3	3	3	3	3	3	3	3
Pressure dew-point, Full-Feature units	°F	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Nominal motor rating	kW	22	22	22	22	22	22	22	22
Nominal motor rating	hp	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Power consumption (dryer at full load), Full-Feature units	kW	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Power consumption (dryer at full load), Full-Feature units	hp	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Refrigerant type, Full-Feature units		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
Total amount (refrigerant), Full-Feature units	kg	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Total amount (refrigerant), Full-Feature units	lb	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09
Oil capacity	l	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Oil capacity	US gal	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88
Oil capacity	Imp gal	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23
Oil capacity	cu.ft	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Sound pressure level, Pack and Pack Full-Feature (according to ISO 2151 (2004))	dB(A)	67	67	67	67	67	67	67	67

**GA 26+**

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Reference working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Reference working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pressure drop over dryer, Full-Feature units	psig	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Motor shaft speed	r/min	2950	2950	2950	2950	2950	2950	2950	2950
Set point, thermostatic valve	°C	71	71	71	71	71	71	71	71
Set point, thermostatic valve	°F	160	160	160	160	160	160	160	160
Temperature of air leaving outlet valve (approx.)	°C	30	30	30	30	30	30	30	30

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Temperature of air leaving outlet valve (approx.)	°F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Full-Feature units	°F	86	86	86	86	86	86	86	86
Pressure dew-point, Full-Feature units	°C	3	3	3	3	3	3	3	3
Pressure dew-point, Full-Feature units	°F	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Nominal motor rating	kW	26	26	26	26	26	26	26	26
Nominal motor rating	hp	34.87	34.87	34.87	34.87	34.87	34.87	34.87	34.87
Power consumption (dryer at full load), Full-Feature units	kW	0.54	0.54	0.48	0.48	0.54	0.54	0.48	0.48
Power consumption (dryer at full load), Full-Feature units	hp	0.76	0.76	0.64	0.64	0.76	0.76	0.64	0.64
Refrigerant type, Full-Feature units		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
Total amount (refrigerant), Full-Feature units	kg	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total amount (refrigerant), Full-Feature units	lb	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
Oil capacity	l	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
Oil capacity	US gal	4.09	4.09	4.09	4.09	4.09	4.09	4.09	4.09
Oil capacity	Imp gal	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41
Oil capacity	cu.ft	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Sound pressure level, Pack and Pack Full-Feature (according to ISO 2151 (2004))	dB(A)	68	68	68	68	68	68	68	68

**GA 30**

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Reference working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12

	<b>Units</b>	<b>7.5 bar</b>	<b>8.5 bar</b>	<b>10 bar</b>	<b>13 bar</b>	<b>100 psi</b>	<b>125 psi</b>	<b>150 psi</b>	<b>175 psi</b>
Reference working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pressure drop over dryer, Full-Feature units	psig	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Motor shaft speed	r/min	2950	2950	2950	2950	2950	2950	2950	2950
Set point, thermostatic valve	°C	71	71	71	71	71	71	71	71
Set point, thermostatic valve	°F	160	160	160	160	160	160	160	160
Temperature of air leaving outlet valve (approx.)	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.)	°F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	°C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Full-Feature units	°F	86	86	86	86	86	86	86	86
Pressure dew-point, Full-Feature units	°C	3	3	3	3	3	3	3	3
Pressure dew-point, Full-Feature units	°F	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Nominal motor rating	kW	30	30	30	30	30	30	30	30
Nominal motor rating	hp	40.23	40.23	40.23	40.23	40.23	40.23	40.23	40.23
Power consumption (dryer at full load), Full-Feature units	kW	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Power consumption (dryer at full load), Full-Feature units	hp	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Refrigerant type, Full-Feature units		R410a	R410a	R410a	R410a	R410a	R410a	R410a	R410a
Total amount (refrigerant), Full-Feature units	kg	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total amount (refrigerant), Full-Feature units	lb	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
Oil capacity	l	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1
Oil capacity	US gal	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23

	Units	7.5 bar	8.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Oil capacity	Imp gal	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52
Oil capacity	cu.ft	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Sound pressure level, Pack and Pack Full-Feature (according to ISO 2151 (2004))	dB(A)	70	70	70	70	70	70	70	70

## 10.5 Technical data controller

### General

Supply voltage	24 V AC /16 VA 50/60Hz (+40%/-30%) 24 V DC/0.7 A
Type of protection	IP54 (front) IP21 (back)
<ul style="list-style-type: none"> <li>• Operating temperature range</li> <li>• Storage temperature range</li> </ul>	<ul style="list-style-type: none"> <li>• -10°C.....+60°C (14 °F .....140 °F)</li> <li>• -30°C.....+70°C (-22 °F .....158 °F)</li> </ul>
Permissible humidity	Relative humidity 90% No condensation
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.

### 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

## 11 Instructions for use

### Air/oil separator vessel

-	This vessel can contain pressurised air; this can be potentially dangerous if the equipment is misused.
-	This vessel must only be used as a compressed air/oil separator and must be operated within the limits specified on the data plate.
-	No alterations must be made to this vessel by welding, drilling or any other mechanical methods without the written permission of the manufacturer.
-	The safety valve must correspond with pressure surges of 1.1 times the maximum allowable operating pressure. It should guarantee that the pressure will not permanently exceed the maximum allowable operating pressure of the vessel.
-	Use only oil as specified by the manufacturer.
-	This vessel has been designed and built to guarantee an operational lifetime in excess of 20 years. The vessel needs a yearly visual inspection. National legislation may require in service inspection.

## 12 Guidelines for inspection

### Guidelines

On the Declaration of Conformity / Declaration by the Manufacturer, the harmonised 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 compressor.

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

## 13 Pressure equipment directives

### Components subject to 2014/68/EU Pressure Equipment Directive

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 and all pressure equipment according to the Simple Pressure Vessel Directive 2014/29/EU.

Compressor type	Component	Description	Volume	Design pressure	Minimum and maximum design temperature	PED Class
GA 11+ up to GA 30	1625 4815 01	Vessel	29 l	15 bar(e)	-8 °C/ 120 °C	-
	0830 1010 03	Safety valve	-	-	-	IV
	0830 1009 98	Safety valve	-	-	-	IV
	0830 1009 87	Safety valve	-	7.5 bar(e)	-	IV
	0830 1010 02	Safety valve	-	8.5 – 10 bar(e)	-	IV
	0830 1009 89	Safety valve	-	107 psi	-	IV
	0830 1009 96	Safety valve	-	132 psi	-	IV

Compressor type	Component	Description	Number of cycles (1)	Minimum wall thickness	Visual inspection frequency (2)	Hydrostatic inspection frequency (2)
GA 11+ up to GA 30	1625 4815 01	Vessel	2 x 10 <sup>6</sup>	2 mm	1 year	10 years
	0830 1010 03	Safety valve	-	-	-	-
	0830 1009 98	Safety valve	-	-	-	-
	0830 1009 87	Safety valve	-	-	-	-
	0830 1010 02	Safety valve	-	-	-	-
	0830 1009 89	Safety valve	-	-	-	-
	0830 1009 96	Safety valve	-	-	-	-

The compressors conform to PED smaller than category III.

(1) The number of cycles refers to the number of cycles from 0 bar(e) to maximum pressure.

(2) Other inspection techniques such as ultrasonic or X-ray are equivalent to hydrostatic testing for this equipment.

# 14 Declaration of conformity

Insert logo here

## EU DECLARATION OF CONFORMITY

- 1
- 2 We, (1) declare under our sole responsibility, that the product
- 3 Machine name :
- 4 Machine type :
- 5 Serial number :
- 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.

7

	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

- 8a The harmonized and the technical standards used are identified in the attachments hereafter
- 8b <1> is authorized to compile the technical file.
- |    |  |  |
|----|--|--|
|    | <b>Conformity of the specification to the directives</b> | <b>Conformity of the product to the specification and by implication to the directives</b> |
| 9  |  |  |
| 10 | Engineering  | Manufacturing  |
| 11 | Issued by  |  |
| 12 |  |  |
| 13 | Name   |  |
| 14 | Signature  |  |
| 15 | Date   |  |
| 16 | Place  |  |
| 17 |  |  |

84950D

*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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