

INSTRUCTION BOOK

API480496

GA 37 VSD

Atlas Copco



Atlas Copco

GA 37 VSD

API480496

Instruction book

Original instructions

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

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1 Safety precautions


1.1 Safety icons

Explanation

	Danger to life
	Warning
	Important note

1.2 General safety 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. The personnel should apply safe working practices by use of personal protection equipment, appropriate tools and defined procedures.
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 machine
 - Press the emergency stop button
 - Switch off the voltage
 - Depressurize the machine
 - Lock Out - Tag Out (LOTO):
 - Open the power isolating switch and lock it with a personal lock
 - Tag the power isolating switch with the name of the service technician.
 - On units powered by a frequency converter, wait 10 minutes before starting any electrical repair.
 - Never rely on indicator lamps or electrical door locks before maintenance work, always disconnect and check with measuring device.

	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 prohibited to walk or stand on the unit or on its components.

9. If compressed air is used in the food industry and more specifically for direct food contact, it is recommended, for optimal safety, to use certified Class 0 compressors in combination with appropriate filtration depending on the application. Please contact your customer center for advice on specific filtration.

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 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 Specific safety precautions for equipment with SMARTBOX

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

- Respect the restrictions on the use of radio equipment in fuel depots, chemical plants or other explosive environments.
- Avoid **SMARTBOX** operation close to personal medical devices (e.g. hearing aids and pacemakers). Consult the manufacturers of the medical device to determine if it is adequately protected.
- Avoid **SMARTBOX** operation close to other electronic equipment. It may cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturers recommendations.
- Respect a distance from the human body of at least 20 cm (0.66 ft) during operation.
- Do not operate the **SMARTBOX** in areas where cellular modems are not advised without proper device certifications. These areas include environments where cellular radio can interfere such as explosive atmospheres, medical equipment, or any other equipment which may be susceptible to any form of radio interference. The modem can transmit signals that could interfere with this equipment.

2 General description

2.1 Introduction

Introduction

GA 37 VSD and GA 45 VSD are single-stage, oil-injected screw compressors driven by an electric motor.

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

The compressors are controlled by the Atlas Copco Elektronikon® Graphic regulator.

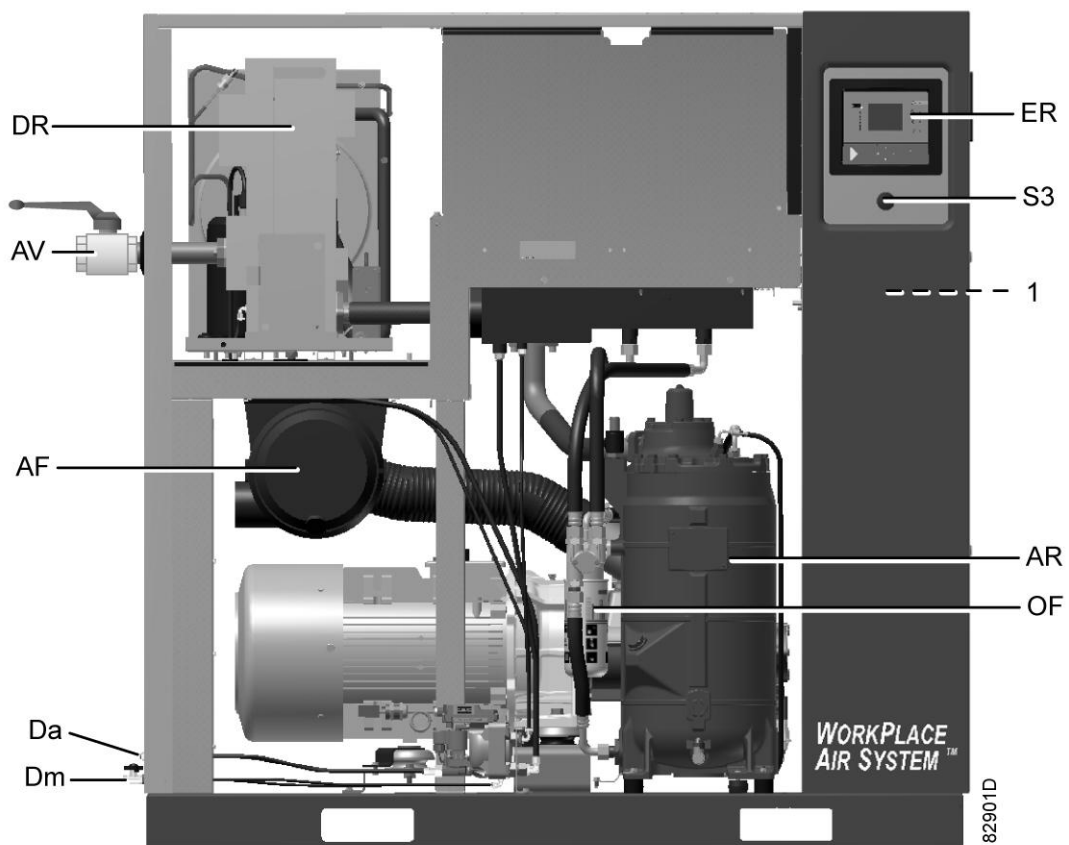
The machine is **SMARTLINK**-ready. **SMARTLINK** is Atlas Copco's web-based platform to monitor compressed air installations.

The electronic control module is fitted to the door at the right side. An electric cabinet comprising fuses, transformers, relays, etc. is located behind this panel.

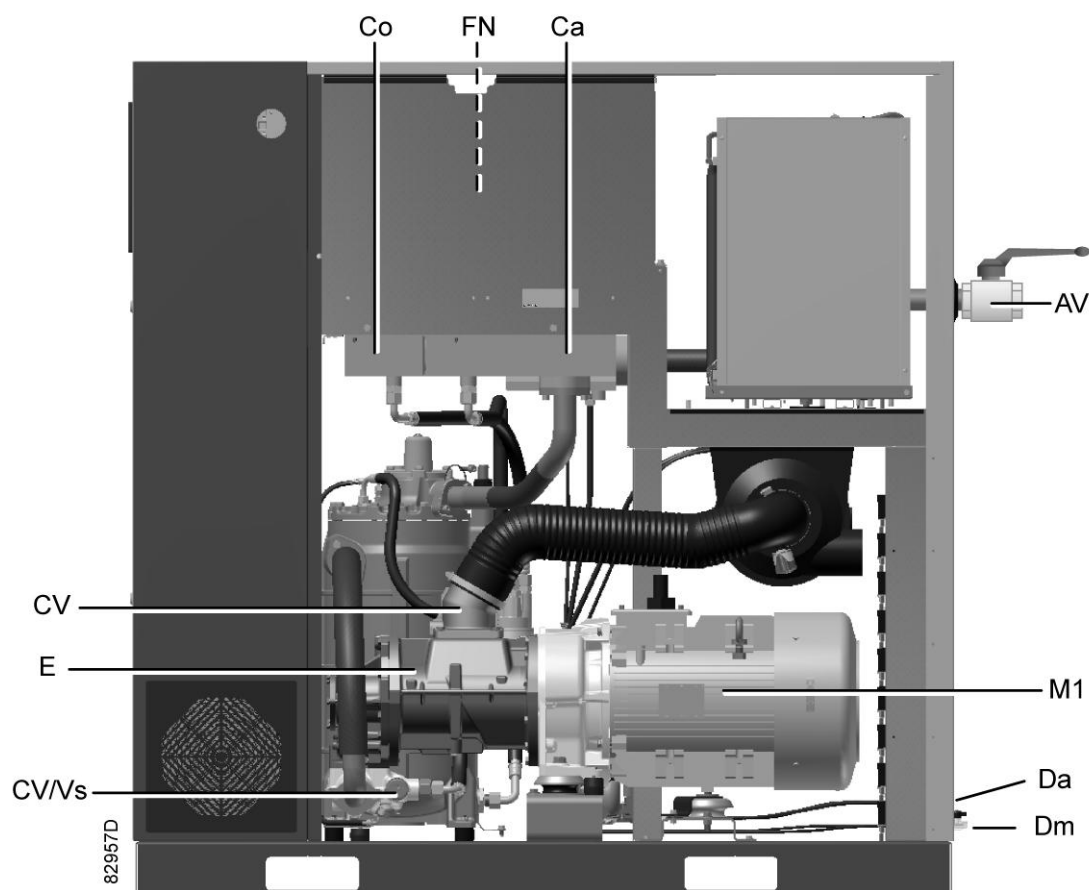
Atlas Copco's integrated VSD (Variable Speed Drive) technology mirrors air usage, automatically adjusting the motor speed depending on the compressed air demand.

GA Workplace Full-Feature

The Workplace Full Feature compressors are provided with 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, GA 37 VSD up to GA 45 VSD Workplace Full-Feature



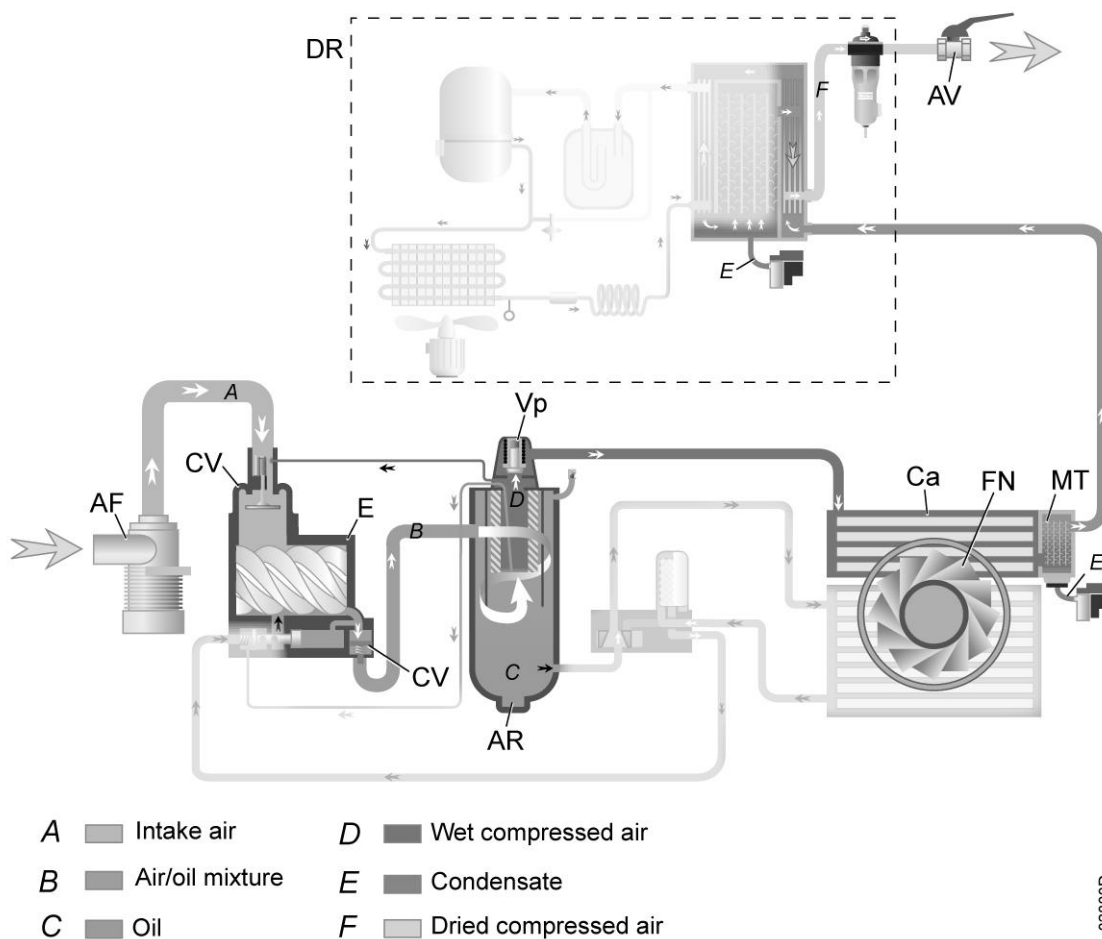
Rear view, GA 37 VSD up to GA 45 VSD Workplace Full-Feature

Reference	Name
AF	Air filter
AR	Air receiver
AV	Air outlet valve
Ca	Air cooler
Co	Oil cooler
CV/Vs	Check valve/oil stop valve
Da	Automatic condensate outlet
Da1	Automatic condensate outlet, dryer
DR	Dryer
E	Compressor element
ER	Elektronikon™ Graphic controller
FN	Cooling fan
M1	Drive motor
OF	Oil filter
S3	Emergency stop button
VP	Vent plug

Reference	Name
1	Electric cubicle

2.2 Air flow

Flow diagrams



GA 37 VSD and GA 45 VSD Workplace Full-Feature

Reference	Description
A	Air inlet
B	Air/oil mixture
C	Oil
D	Wet compressed air
E	Condensate
F	Dry compressed air (Full-Feature)

Description

Air drawn in through filter (AF) and check valve (CV) is compressed in compressor element (E).

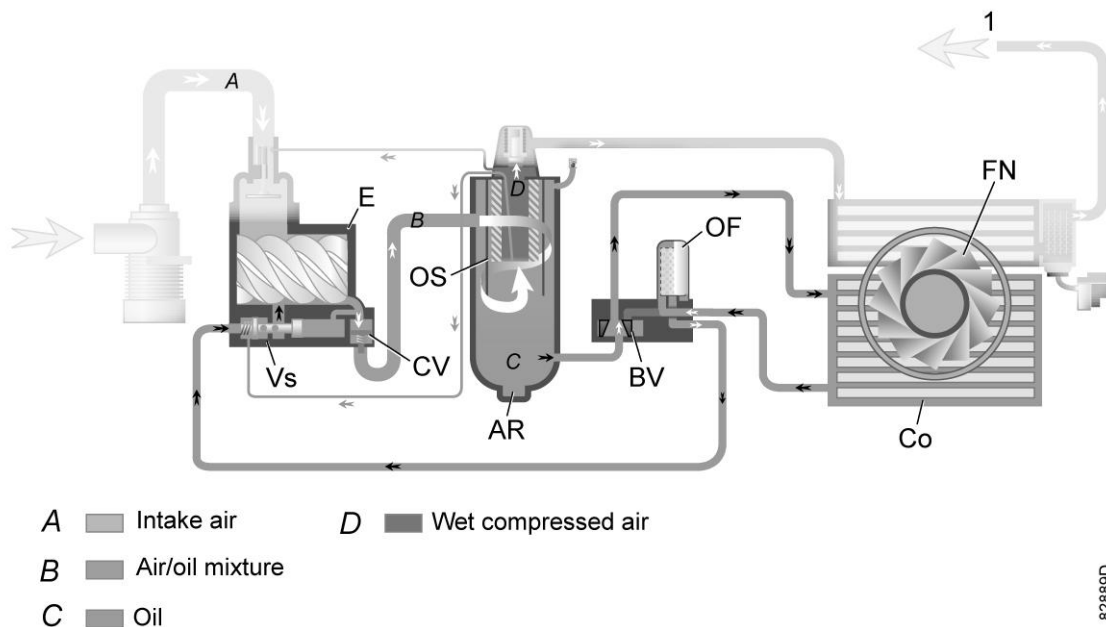
A mixture of compressed air and oil flows into the air receiver/oil separator (AR). The air is discharged through the outlet valve via minimum pressure valve (Vp), air cooler (Ca) and condensate trap (MT).

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.

Full-Feature compressors are provided with a dryer (DR).

2.3 Oil system

Flow diagram



Reference	Description
A	Air inlet
B	Air/oil mixture
C	Oil
D	Wet compressed air
1	To the dryer in case of a Workplace Full-Feature version.

Note: The cooling fan (FN) is not provided on water-cooled compressors.

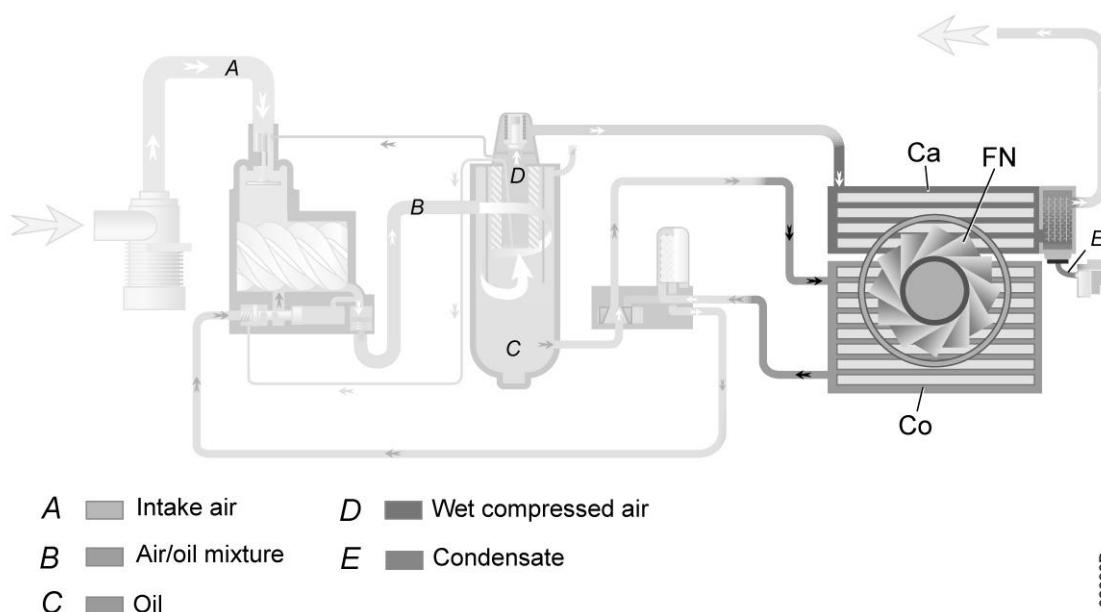
Description

In air receiver (AR) most of the oil is removed from the air/oil mixture by centrifugal action. The remaining oil is removed by oil separator (OS). The oil collects in the lower part of air receiver/oil separator (AR) which serves as oil tank.

The oil system is provided with a thermostatic bypass valve (BV). When the oil temperature is below 40 °C (104 °F), the bypass valve shuts off the oil supply from oil cooler (Co). Air pressure forces the oil from air receiver (AR) through oil filter (OF) and oil stop valve (Vs) to compressor element (E). Oil cooler (Co) is bypassed. When the oil temperature has increased to 40 °C (104 °F), bypass valve (BV) starts opening the supply from oil cooler (Co). At approx. 55 °C (131 °F), all the oil flows through the oil cooler.

2.4 Cooling system

Air-cooled compressors



References	Description
A	Intake air
B	Air/oil mixture
C	Oil
D	Wet compressed air
E	Condensate

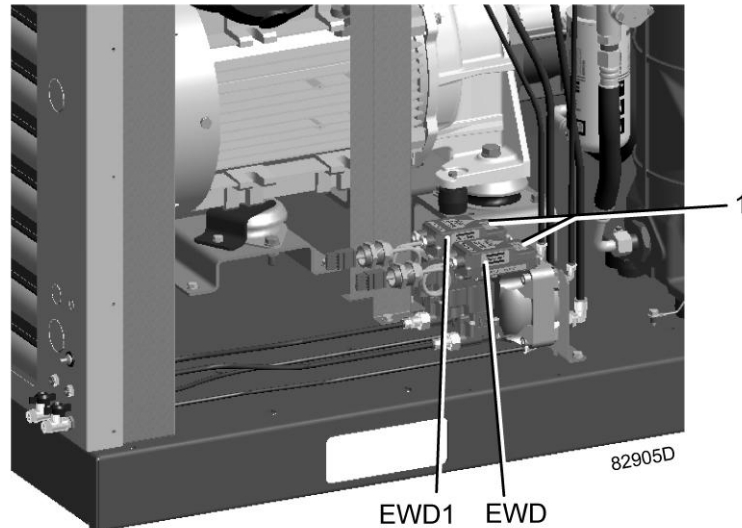
Description

The cooling system on air-cooled compressors comprises air cooler (Ca) and oil cooler (Co).

The cooling air flow is generated by fan (FN). This cooling fan is switched on and off depending on the operating conditions according a specific algorithm.

2.5 Condensate system

Drain connections



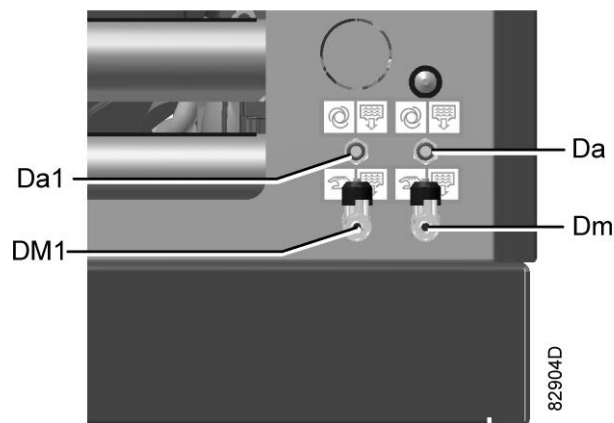
Electronic condensate drains, typical example

The compressors have an electronic water drain (EWD). The condensate formed in the air cooler accumulates in the collector. When the condensate reaches a certain level, it is discharged through the automatic drain outlet (Da).

On Full-Feature compressors, an additional electronic water drain (EWD1) is provided. The condensate trap of the heat exchanger is drained by EWD1 and discharged through automatic drain outlet (Da1).

See also section [Air flow](#).

Testing the electronic water drain can be done by briefly pressing the test button (1) on top of the device.



Condensate drains, typical example

Reference	Designation
Da	Automatic drain connection
Dm	Manual drain connection
Da1	Automatic drain connection of the dryer (only on Full-Feature units)
Dm1	Manual drain connection of the dryer (only on Full-Feature units)

Beside each automatic drain outlet is a manual (Dm) condensate drain connection for manually draining of the condensate.

Electronic drains

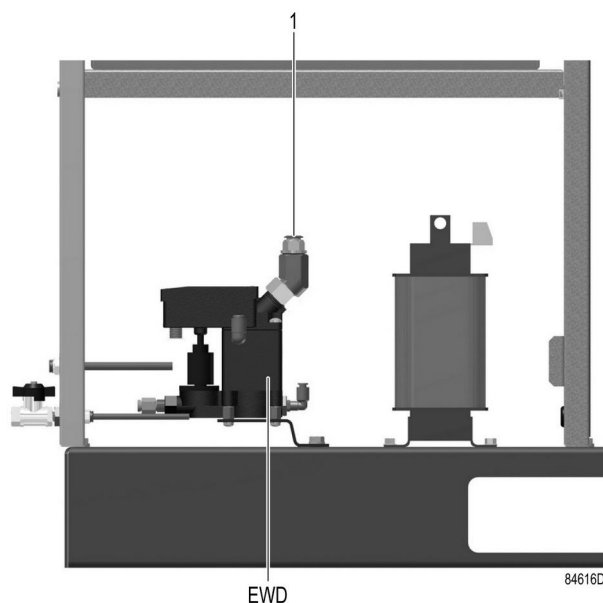
On some models, another model of electronic drains is used.

Operation

The condensate accumulates in the collector of the drain. When the condensate reaches a certain level, it is discharged through the automatic drain outlet (Da).



The Test button 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.



Electronic condensate drains

LED explanation

 847300	Green LED on Normal operation, drain is in standby and awaiting condensate.
 847310	Green LED blinking Normal operation, drain valve is open to drain water.

	<p>Green LED fading on/off</p> <p>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.</p> <p>Causes:</p> <ul style="list-style-type: none"> • No condensate entering the tank. • Float mounted incorrectly (upside down). <p>Checks:</p> <ul style="list-style-type: none"> • Is any condensate reaching the drain? Does the water separation take place in the heat exchanger? • Is the floater mounted in its correct position, for instance after maintenance? <p>Solution:</p> <ul style="list-style-type: none"> • 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.
	<p>Red LED blinking slowly: cleaning routine 1</p> <p>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.</p> <p>If this first unlock routine is unsuccessful, a second routine will be started.</p> <p>Causes:</p> <ul style="list-style-type: none"> • Filter mesh clogged. • Not enough pressure on drain. • Internal problem with the drain. <p>Checks:</p> <ul style="list-style-type: none"> • Is the filter clean and in good condition? • Is there a minimum pressure of 0.2 bar (2.8 psi) in the drain? <p>Press the test button (T) for at least 5 seconds to reset the drain.</p>
	<p>Red LED blinking fast</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.</p> <p>Meanwhile, the external alarm signal is activated.</p> <p>Causes:</p> <ul style="list-style-type: none"> • Filter mesh clogged. • Not enough pressure on drain. • Internal problem with the drain. <p>Checks:</p> <ul style="list-style-type: none"> • Is the filter clean and in good condition? • Is there a minimum pressure of 0.2 bar (2.8 psi) in the drain? <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>Red LED on</p> <p>An irreversible error occurred. Replace the drain and keep the failed one for further analysis.</p>

2.6 Regulating system

Description

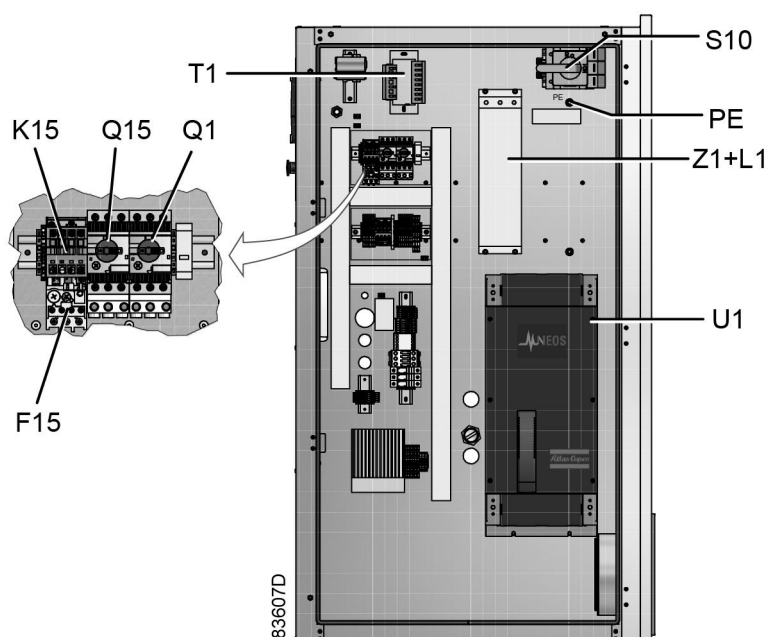
If the consumption is less than the air output of the compressor, the net pressure increases. When the net pressure is higher than the set-point (desired net pressure), the regulator will

decrease the motor speed. If the net pressure keeps on rising when the motor runs at minimum speed, the regulator stops the motor. If the motor is stopped automatically and the net pressure approaches the set-point, the regulator will restart the motor.

2.7 Electrical system

Electric components

The electrical system comprises the frequency converter Neos (or Control Technics optional) with the following components:



Electric cabinet for GA 37 VSD and GA 45 VSD, typical example

Reference	Designation
T1	Transformer
Q15	Circuit breaker
Q1	Circuit breaker
K15	Contactor
F15	Overload relay
Z1+L1	EMC filter and choke
U1	Frequency converter
PE	Earthing terminal
S10	Main switch (optional)

Electrical diagrams

9820 6700 01	Service diagram GA30-45 VSD
9820 2175 00	

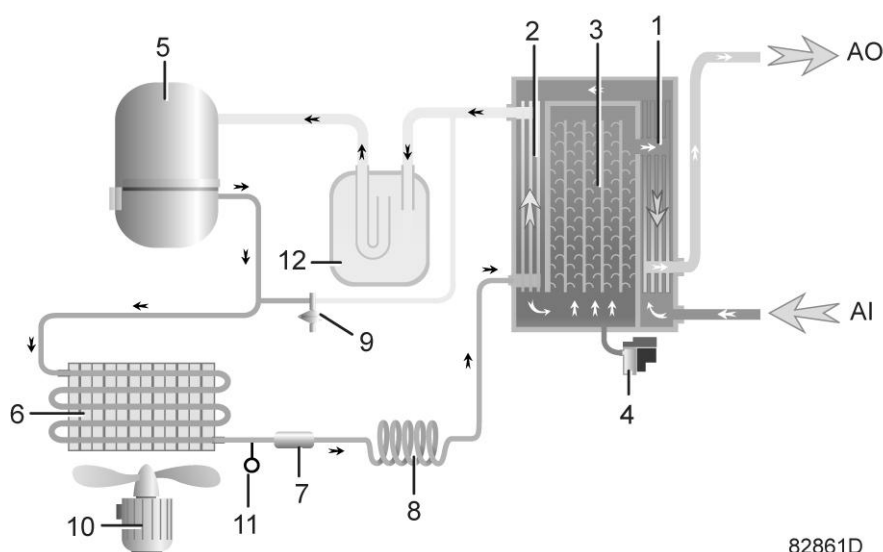
The complete electrical diagram can be found in the electric cubicle.

The complete electrical diagram can be found on the CD supplied with the machine.

2.8 Air dryer

(On compressors with integrated dryer only)

Flow diagram



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
8	Capillary
9	Bypass valve
10	Condenser cooling fan

Reference	Name
11	Pressure switch, fan control
12	Liquid separator

Compressed air circuit

Compressed air enters heat exchanger (1) and is cooled by the outgoing, cold, dried air. Water in the incoming air starts to condense. The air then flows through heat exchanger/evaporator (2), where the refrigerant evaporates, causing the air to be cooled further to close to the evaporating temperature of the refrigerant. More water in the air condenses. The cold air then flows through separator (3) where all the condensate is separated from the air. The condensate is automatically drained through condensate drain (4).

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

Refrigerant circuit

Compressor (5) delivers hot, high-pressure refrigerant gas which flows through condenser (6) where most of the refrigerant condenses.

The liquid refrigerant flows through liquid refrigerant dryer/filter (7) to capillary tube (8). The refrigerant leaves the capillary tube at about evaporating pressure.

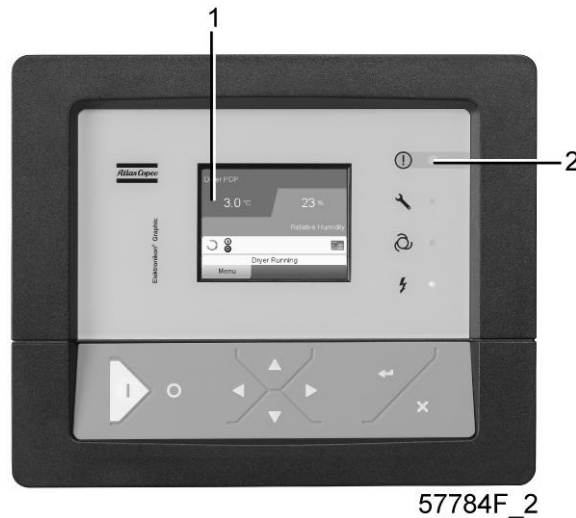
The refrigerant enters evaporator (2) where it withdraws heat from the compressed air by further evaporation at about constant pressure. The heated refrigerant leaves the evaporator and is sucked in by the compressor (5) through a liquid separator (12).

Bypass valve (9) regulates the refrigerant flow. Fan (10) is switched on or off by switch (11) depending on the pressure degree of the condensate.

3 Elektronikon® Graphic controller

3.1 Elektronikon® Graphic controller

Control panel



57784F_2

Display of the Elektronikon® Graphic controller

Introduction

The Elektronikon controller has following functions:

- Controlling the compressor
- Protecting the compressor
- Monitoring components subject to service
- Automatic restart after voltage failure (made inactive)

Automatic control of the compressor operation

The controller maintains the net pressure between programmable limits by automatically loading and unloading the compressor (on compressors running at a fixed speed) or by adapting the motor speed (compressors with frequency converter). A number of programmable settings, e.g. the unloading and loading pressures (for fixed speed compressors), the setpoint (for compressors with frequency converter), the minimum stop time and the maximum number of motor starts and several other parameters are hereby taken into account.

The controller stops the compressor whenever possible to reduce the power consumption and restarts it automatically when the net pressure decreases. In case the expected unloading period is too short, the compressor 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 compressor.

Protecting the compressor

Shut-down

Several sensors are provided on the compressor. If one of the measured signals exceeds the programmed shut-down level, the compressor will be stopped. This will be indicated on display (1) and general alarm LED (2) will blink.

Remedy the trouble and reset the message. See also the [Inputs menu](#).



Before remedying, consult the applicable safety precautions.

Shut-down warning

A shut-down warning level is a programmable level below the shut-down level.

If one of the measured signals exceeds the programmed shut-down warning level, a message will appear on display (1) and general alarm LED (2) will light up to warn the operator that the shut-down warning level is exceeded.

The message disappears as soon as the warning condition disappears.

Warning

A warning message will appear if, on Full-Feature compressors, the dew point temperature is too high in relation to the ambient temperature.

Service warning

A number of service operations are grouped (called Service Plans). Each Service Plan has a programmed time interval. If a time interval is exceeded, a message will appear on display (1) to warn the operator to carry out the service actions belonging to that Service Plan.

Automatic restart after voltage failure

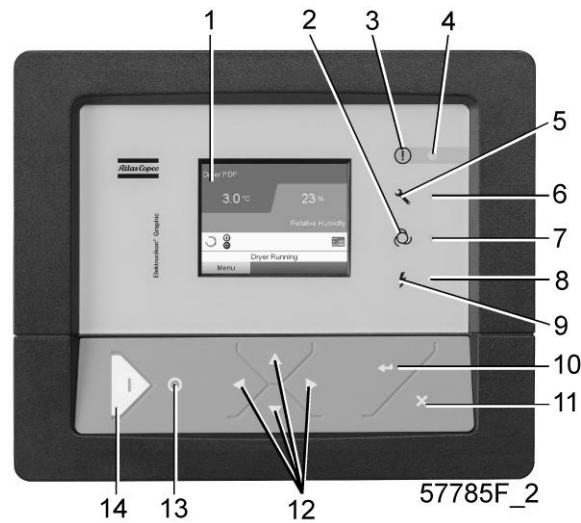
The controller has a built-in function to automatically restart the compressor when the voltage is restored after voltage failure. For compressors leaving the factory, this function is made inactive. If desired, the function can be activated. Consult the Atlas Copco Customer Centre.



If the function is activated and provided the regulator was in the automatic operation mode, the compressor will automatically restart if the supply voltage to the module is restored.

3.2 Control panel

Elektronikon regulator













Control panel









Parts and functions

Reference	Designation	Function
1	Display	Shows the compressor operating condition and a number of icons to navigate through the menu.
2	Pictograph	Automatic operation
3	Pictograph	General alarm
4	Alarm LED	Flashes in case of a shut-down, is lit in case of a warning condition.
5	Pictograph	Service
6	Service LED	Lights up if service is needed
7	Automatic operation LED	Indicates that the regulator is automatically controlling the compressor.
8	Voltage on LED	Indicates that the voltage is switched on.
9	Pictograph	Voltage
10	Enter key	Use this button to confirm the last action.
11	Escape key	Use this button to go to previous screen or to end the current action.
12	Scroll keys	Keys to scroll through the menu.
13	Stop button	Button to stop the compressor. LED (7) goes out.
14	Start button	Button to start the compressor. LED (7) lights up indicating that the Elektronikon regulator is operative.





3.3 Icons used

Status icons











Name	Icon	Description
Stopped / Running	 57786F	When the compressor is stopped, the icon stands still. When the compressor is running, the icon is rotating.
Compressor status	 57787F	Motor stopped
	 57788F	Running unloaded
	 57789F	Running loaded
Machine control mode	 57790F or  59161F	Local start / stop
	 57791F	Remote start / stop
	 57792F	Network control
Automatic restart after voltage failure	 57793F	Automatic restart after voltage failure is active
Week timer	 57794F	Week timer is active

Name	Icon	Description
Active protection functions	 57795F	Emergency stop
	 57796F	Shutdown
	 57797F	Warning
Service	 57798F	Service required
Main screen display	 59162F	Value lines display icon
	 82196F	Chart display icon
General icons	 81105D	No communication / network problem
	 82418D	Not valid





Input icons










Icon	Description
 57799F	Pressure
 57800F	Temperature
 57801F	Digital input
 57802F	Special protection

System icons



Icon	Description
 57803F	Compressor element (LP, HP, ...)
 57804F	Dryer
 57805F	Fan
 57806F	Frequency converter
 57807F	Drain
 57808F	Filter
 57809F	Motor
 57810F	Failure expansion module
 81105D	Network problem
 57812F	General alarm

Menu icons

Icon	Description
 57813F	Inputs
 57814F	Outputs
 57812F	Alarms (Warnings, shutdowns)
 57815F	Counters

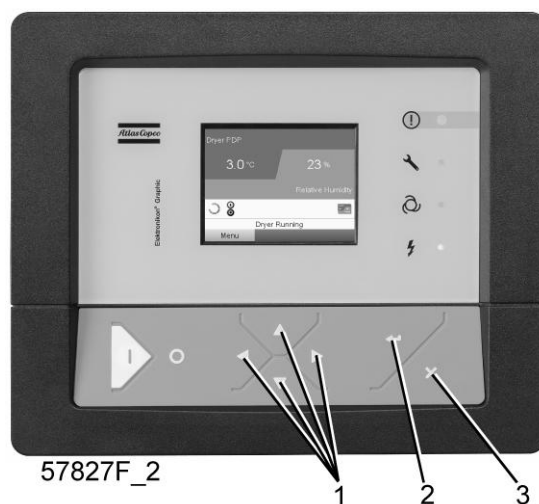
Icon	Description
 57816F or  82641D	Test
 57817F	Settings
 57798F	Service
 57818F	Event history (saved data)
 57819F	Access key / User password
 57792F	Network
 57820F	Setpoint
 57867F	Info

Navigation arrows

Icon	Description
 57821F	Up
 57822F	Down

3.4 Main screen

Control panel



(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Function

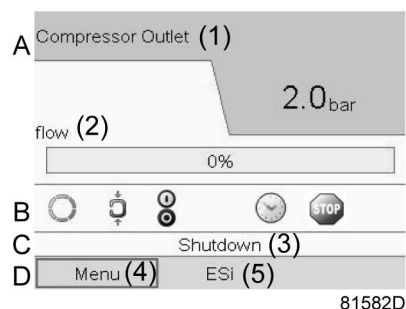
The Main screen is the screen that is shown automatically when the voltage is switched on and one of the keys is pushed. It is switched off automatically after a few minutes when no keys are pushed.

Typically, 5 different main screen views can be chosen:

1. Two value lines
2. Four value lines
3. Chart (High resolution)
4. Chart (Medium resolution)
5. Chart (Low resolution)

Two and four value lines screens

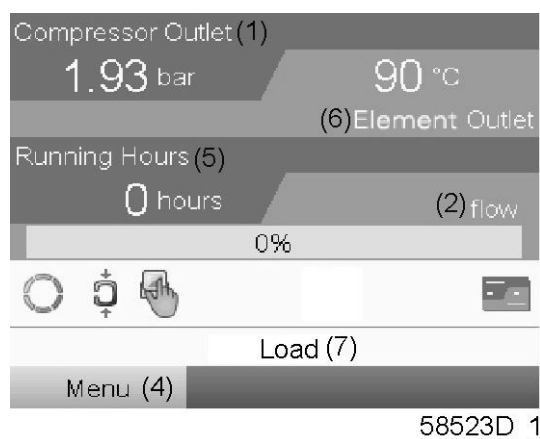
This type of Main screen shows the value of 2 or 4 parameters (see section [Inputs menu](#)).



Typical Main screen (2 value lines)

Text on figures

(1)	Compressor Outlet
(2)	Flow
(3)	Load, shutdown, ... (text varies upon the compressors actual condition)
(4)	Menu
(5)	Unload, ES,...(text varies upon the compressors actual condition)



Typical Main screen (4 value lines)

Text on figures

(1)	Compressor Outlet
(2)	Flow
(3)	Off, Shutdown,... (text varies upon the compressors actual condition)
(4)	Menu
(5)	Running hours
(6)	Element outlet
(7)	Load, Unload, ... (text varies upon the compressors actual condition)

- **Section A** shows information regarding the compressor operation (e.g. the outlet pressure or the temperature at the compressor outlet). On compressors with a frequency converter, the load degree (flow) is given in % of the maximum flow.

- **Section B** shows Status icons. Following icon types are shown in this field:
 - Fixed icons
These icons are always shown in the main screen and cannot be selected by the cursor (e.g. Compressor stopped or running, Compressor status (running, running unloaded or motor stopped).
 - Optional icons
These icons are only shown if their corresponding function is activated (e.g. week timer, automatic restart after voltage failure , etc.)
 - Pop up icons
These icons pop up if an abnormal condition occurs (warnings, shutdowns, service,...)
To call up more information about the icons shown, select the icon concerned using the scroll keys and press the enter key.
- **Section C** is called the Status bar
This bar shows the text that corresponds to the selected icon.
- **Section D** shows the Action buttons. These buttons are used:
 - To call up or program settings
 - To reset a motor overload, service message or emergency stop
 - To have access to all data collected by the regulator
 The function of the buttons depends on the displayed menu. The most common functions are:

Designation	Function
Menu	To go to the menu
Modify	To modify programmable settings
Reset	To reset a timer or message

To activate an action button, highlight the button by using the Scroll keys and press the Enter key.

To go back to the previous menu, press the Escape key.

Chart views

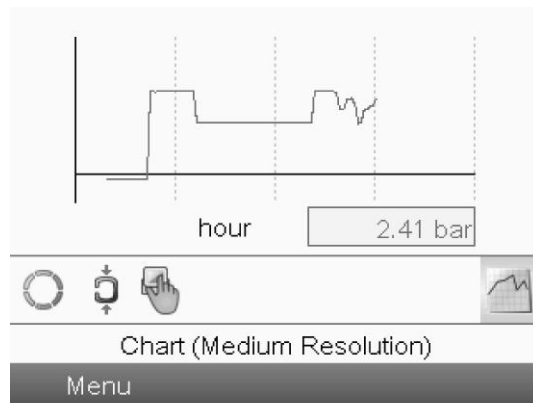
Instead of viewing values, it is also possible to view a graph of one of the input signals (see section [Inputs menu](#)) in function of the time.



59166D

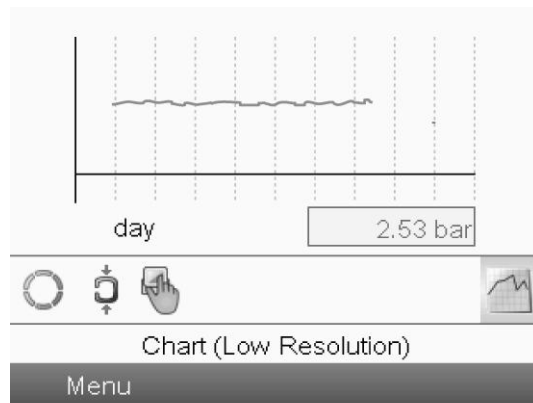
When Chart (High Resolution) is selected, the chart shows the variation of the selected input (in this case the pressure) per minute. Also the instantaneous value is displayed. The screen shows the last 4 minutes.

The switch button (icon) for selecting other screens is changed into a small Chart and is highlighted (active).



59167D

When the Chart (Medium Resolution) is selected, the chart shows the variation of the selected input per hour. The screen shows the last 4 hours.

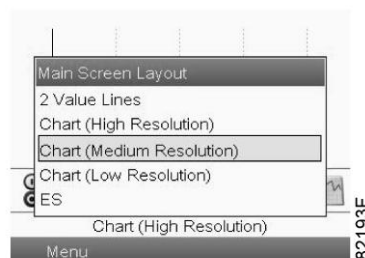


59168D

When the Chart (Low Resolution) is selected, the chart shows the variation of the selected input per day. The screen shows the evolution over the last 10 days.

Selection of a main screen view

To change between the different screen layouts, select the far right icon in the control icons line (see value lines display icon or chart display icon in section [Icons used](#)) and press the Enter key. A screen similar to the one below opens:

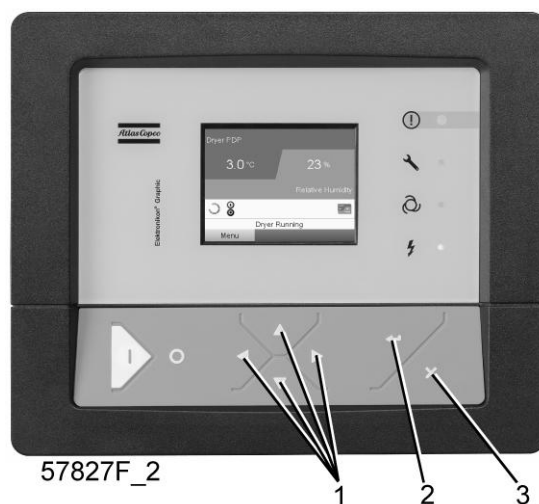


82193F

Select the layout required and press the Enter key. See also section [Inputs menu](#).

3.5 Calling up menus

Control panel

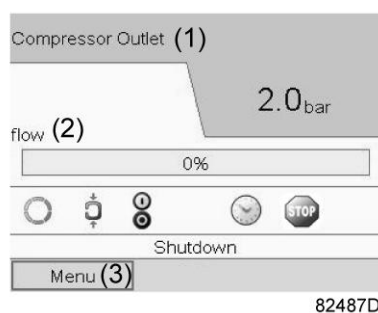


Control panel

(1)	Scroll keys
(2)	Enter key
(3)	Escape key

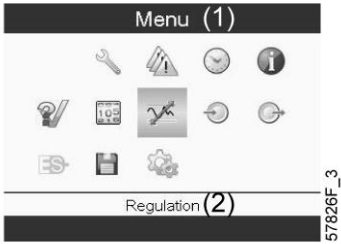
Description

When the voltage is switched on, the main screen is shown automatically (see section [Main screen](#)):



Typical Main screen (2 value lines)

- To go to the Menu screen, select <Menu> (3), using the Scroll keys.
- Press the Enter key to select the menu. Following screen appears:



- The screen shows a number of icons. Each icon indicates a menu item. By default, the Pressure Settings (Regulation) icon is selected. The status bar shows the name of the menu that corresponds with the selected icon.
- Use the Scroll keys to select an icon.
- Press the Escape key to return to the Main screen.

3.6 Inputs menu

Menu icon, Inputs



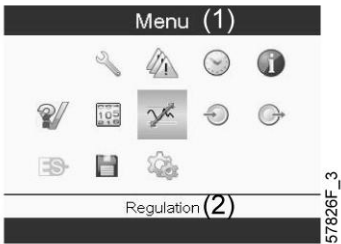
Function

- To display the actual value of the measured data (analog inputs) and the status of the digital inputs (e.g. emergency stop contact, motor overload relay, etc.).
- To select the digital input to be shown on the chart in the main screen.

Procedure

Starting from the main screen,

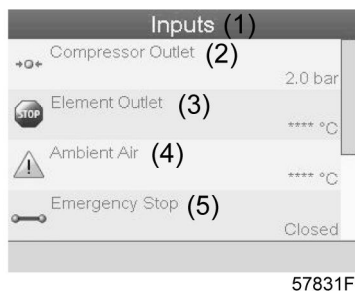
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Inputs icon (see above, section Menu icon).
- Press the Enter key. A screen similar to the one below appears:



57831F

Text on image

(1)	Inputs
(2)	Compressor Outlet
(3)	Element Outlet
(4)	Ambient Air
(5)	Emergency Stop

- The screen shows a list of all inputs with their corresponding icons and readings.
- If an input is in warning or shutdown, the original icon is replaced by the warning or shutdown icon respectively (i.e. the Stop icon and the Warning icon in the screen shown above).

A small chart icon, shown below an item in the list means this input signal is shown on the chart at the main screen. Any analog input can be selected.

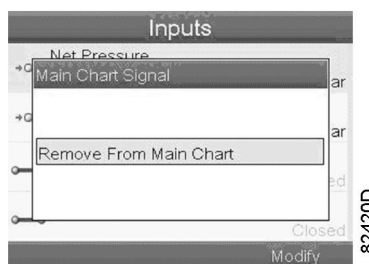
Selecting another input signal as main chart signal

With the Modify button active (light grey background in above screen), press the Enter button on the controller. A screen similar to the one below appears:



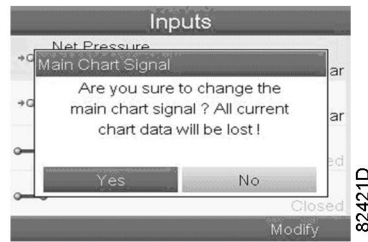
82419D

The first item in the list is highlighted. In this example, the Net Pressure is selected (chart icon). To change, press the Enter button again: a pop-up window opens:



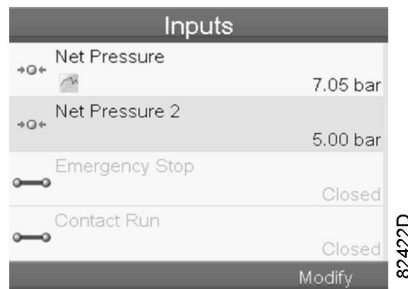
82420D

Press Enter again to remove this input from the chart. Another confirmation pop-up opens:



Select Yes to remove or No to quit the current action.

In a similar way, another input signal can be highlighted and selected as Main Chart signal:



(1): Set as main chart signal

3.7 Outputs menu

Menu icon, Outputs



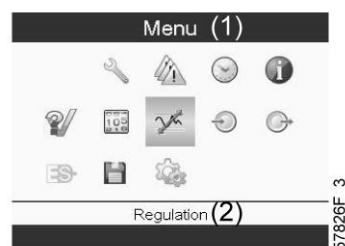
Function

To call up information regarding the actual status of some outputs such as the condition of the Fan overload contact (on air cooled compressors), the Emergency stop contact, etc.

Procedure

Starting from the Main screen,

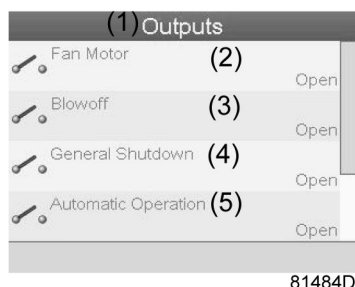
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

- Move the cursor to the Outputs icon (see above, section Menu icon, using the Scroll keys).
- Press the Enter key. A screen similar to the one below appears:



Outputs screen (typical)

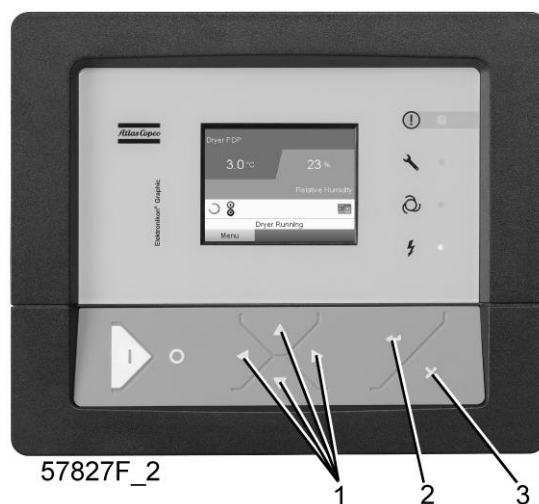
Text on image

(1)	Outputs
(2)	Fan motor
(3)	Blowoff
(4)	General shutdown
(5)	Automatic operation

- The screen shows a list of all outputs with their corresponding icons and readings. If an output is in warning or shutdown, the original icon is replaced by the warning or shutdown icon respectively.

3.8 Counters

Control panel



(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Menu icon, Counters



Function

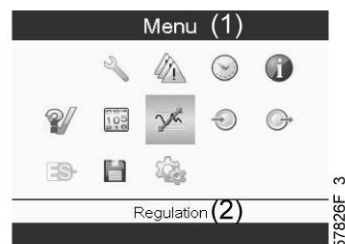
To call up:

- The running hours
- The loaded hours
- The number of motor starts
- The number of hours that the regulator has been powered
- The number of load cycles
- The number of recirculation cycles
- The number of recirculation cycle failures

Procedure

Starting from the Main screen (see [Main screen](#)),

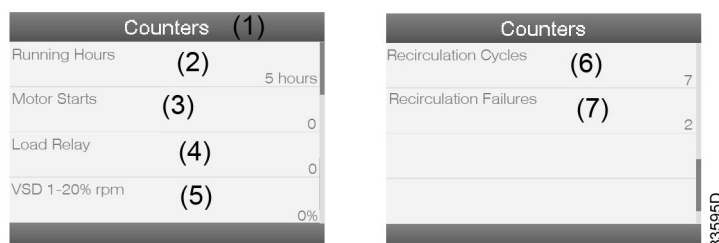
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on figure

(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Counters icon (see above, section Menu icon)
- Press the Enter key. Following screen appears:



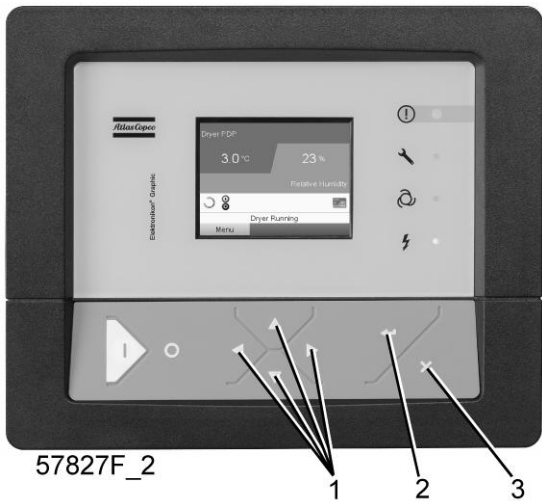
Text on figure

(1)	Counters
(2)	Running Hours
(3)	Motor Starts
(4)	Load Relay
(5)	VSD 1-20 % rpm in % (the percentage of the time during which the motor speed was between 1 and 20 %)
(6)	Recirculation Cycles
(7)	Recirculation Failures

The screen shows a list of all counters with their actual readings.

3.9 Control mode selection

Control panel



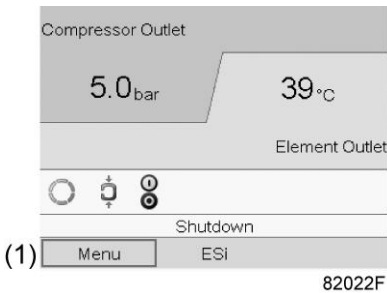
(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Function

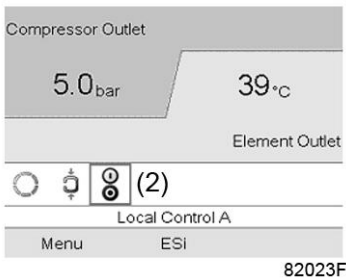
To select the control mode, i.e. whether the compressor is in local control, remote control or controlled via a local area network (LAN).

Procedure

Starting from the main screen, make sure the button Menu (1) is selected:

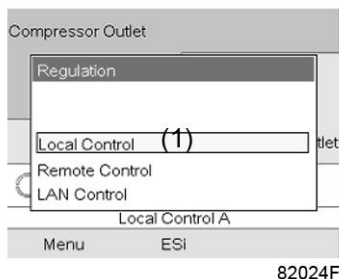


Next, use the scroll buttons to go to the regulation icon (2) and press the enter button:



There are 3 possibilities:

- Local control
- Remote control
- LAN (network) control



After selecting the required regulation mode, press the enter button on the controller to confirm your selection. The new setting is now visible on the main screen. See section [Icons used](#) for the meaning of the icons.

3.10 Service menu

Menu icon, Service



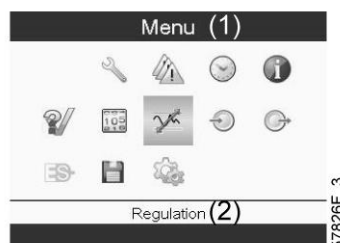
Function

- To reset the service plans which are carried out.
- To check when the next service plans are to be carried out.
- To find out which service plans were carried out in the past.
- To modify the programmed service intervals.

Procedure

Starting from the Main screen,

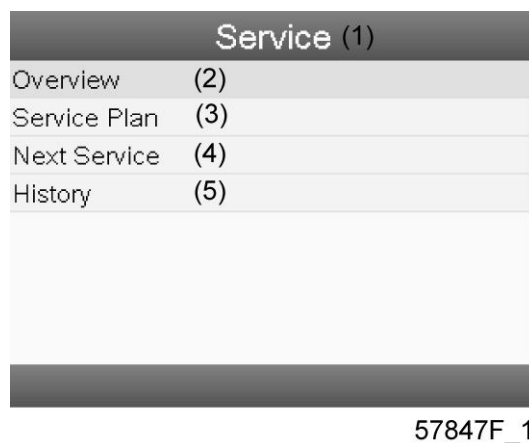
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Service icon (see above, section Menu icon).
- Press the Enter key. Following screen appears:

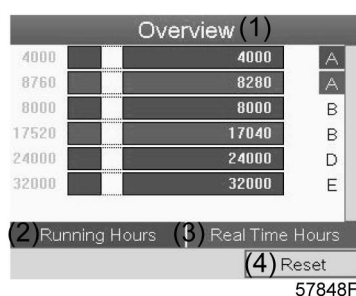


Text on image

(1)	Service
(2)	Overview
(3)	Service Plan
(4)	Next Service
(5)	History

- Scroll through the items to select the desired item and press the Enter key to see the details as explained below.

Overview



Text on image

(1)	Overview
(2)	Running Hours
(3)	Real Time Hours
(4)	Reset

Example for service level (A):

The figures at the left are the programmed service intervals. For Service interval A, the programmed number of running hours is 4000 hours (upper row) and the programmed number of real time hours is 8760 hours, which corresponds to one year (second row). This means that the controller will launch a service warning when either 4000 running hours or 8760 real hours are reached, whichever comes first. Note that the real time hours counter keeps counting, also when the controller is not powered.

The figures within the bars are the number of hours to go till the next service intervention. In the example above, the compressor was just started up, which means it still has 4000 running hours or 8280 hours to go before the next Service intervention.

Service plans

A number of service operations are grouped (called Level A, Level B, etc...). Each level stands for a number of service actions to be carried out at the time intervals programmed in the Elektronikon® controller.

When a service plan interval is reached, a message will appear on the screen.

After carrying out the service actions related to the indicated levels, the timers must be reset.

From the Service menu above, select Service plan (3) and press Enter. Following screen appears:

Service Plan (1)		
(2) Level	(3) Running Hours	(4) Real Time
A	4000	8760
B	8000	17520
C		
D	24000	
E	32000	
		(5) Modify

57849F

Text on image

(1)	Service Plan
(2)	Level
(3)	Running hours
(4)	Real Time (hours)
(5)	Modify

Modifying a service plan

Dependant on the operating conditions, it can be necessary to modify the service intervals. To do so, use the Scroll keys to select the value to be modified. A screen similar to the one below appears:

Service Plan (1)		
(2) Level	(3) Running Hours	(4) Real Time
A	4000	8760
B	8000	17520
C		
D	24000	
E	32000	
		(5) Modify
57850F		

Press the Enter key. Following screen appears:

Service Plan (1)		
Level (2)	Running (3)	Real (4)
Modify Hours		
	100000	
	4000	
	0	
E	32000	
		(5) Modify
57851F		

Modify the value as required using the ↑ or ↓ scroll key and press the Enter key to confirm.

Note: Running hours and real time hours can be modified in steps of 100 hours.

Next Service

Next Service (1)		
(2) Level	(3) Running Hours	
		(4) Actual
		0
A	4000	
57852F		

Text on image

(1)	Next service
(2)	Level
(3)	Running Hours
(4)	Actual

In the example above, the A Service level is programmed at 4000 running hours, of which 0 hours have passed.

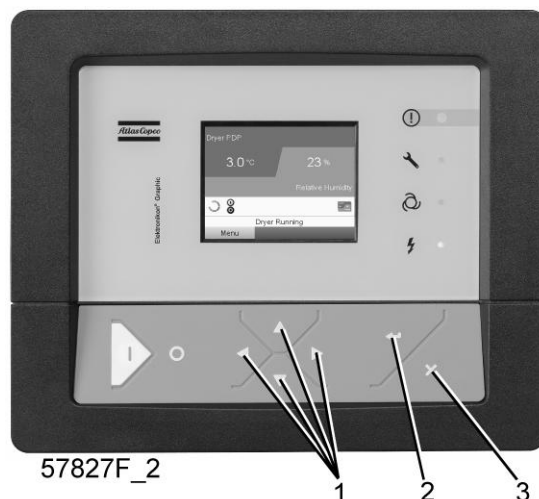
History

The History screen shows a list of all service actions done in the past, sorted by date. The date at the top is the most recent service action. To see the details of a completed service action (e.g.

Service level, Running hours or Real time hours), use the Scroll keys to select the desired action and press the Enter key.

3.11 Modifying the setpoint

Control panel



(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Menu icon, Setpoint



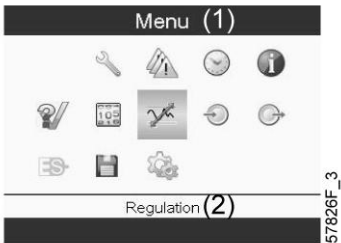
Function

On compressors with a frequency converter driven main motor, it is possible to program two different setpoints. This menu is also used to select the active setpoint.

Procedure

Starting from the Main screen,

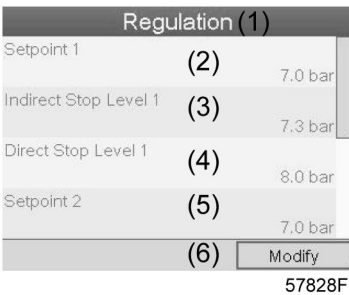
- Highlight the action key Menu using the Scroll keys and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

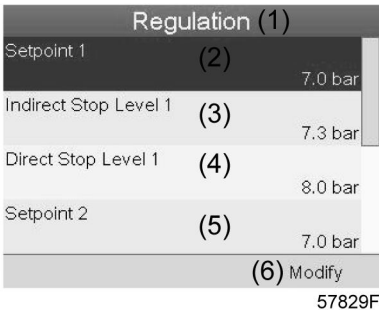
- Activate the menu by pressing the enter key. A screen similar to the one below appears:



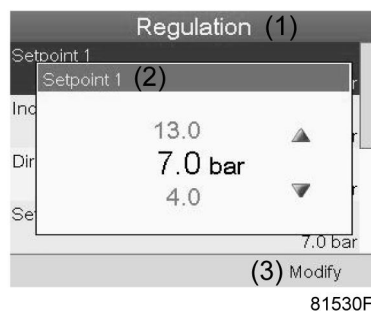
Text on image

(1)	Regulation
(2)	Setpoint 1
(3)	Indirect stop level 1
(4)	Direct stop level 1
(5)	Setpoint 2
(6)	Modify

- The screen shows the actual settings.
To modify the settings, move the cursor to the action button Modify and press the Enter key.
Following screen appears:



- The first line of the screen is highlighted. Use the Scroll keys (1) to highlight the setting to be modified and press the Enter key (2). Following screen appears:



The upper and lower limit of the setting is shown in grey, the actual setting is shown in black. Use the ↑ or ↓ key of the Scroll keys to modify the settings as required and press the Enter key to accept.

If necessary, change the other settings as required in the same way as described above.

Indirect stop: occurs when the pressure rises to the pre-set Indirect stop setpoint (= setpoint plus Indirect stop level). The motor will decelerate to minimum speed and the compressor will switch to unloaded condition.

Direct stop: occurs when the compressor runs at a speed between minimum and maximum and the net pressure rises above the direct stop setpoint (= setpoint plus Direct stop level).

Both settings (Indirect stop level and Direct stop level) are programmable, see section Programmable settings.

3.12 Event history menu

Menu icon, Event History

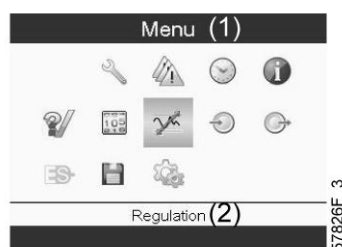


Function

To call up the last shutdown and last emergency stop data.

Procedure

- Starting from the Main screen, move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Event History icon (see above, section Menu icon)
- The list of last shutdown and emergency stop cases is shown.



Example of Event History screen

- Scroll through the items to select the desired shutdown or emergency stop event.
- Press the Enter key to find the date, time and other data reflecting the status of the compressor when that shutdown or emergency stop occurred.

3.13 Modifying general settings

Menu icon, Settings



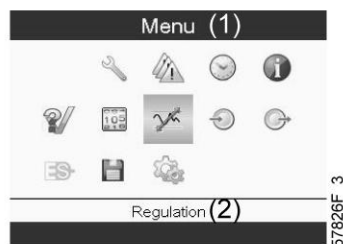
Function

To display and modify a number of settings.

Procedure

Starting from the Main screen,

- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

- Next, move the cursor to the Settings icon (see above, section menu icon), using the Scroll keys.
- Press the Enter key. Following screen appears:

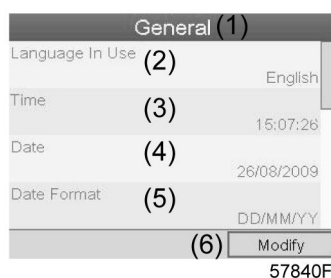


This screen shows again a number of icons. By default, the User Password icon is selected. The status bar shows the description that corresponds with the selected icon. Each icon covers one or more items , such as

- Access key
- User password
- Main chart
- General
- Automatic restart after voltage failure (ARAVF)
- Network
- Regulation

For adapting certain parameters, a password may be necessary.

Example: Selecting the General Settings icon gives the possibility to change e.g. the language, the date, the date format, etc.:



Text on image

(1)	General
(2)	Language in Use
(3)	Time
(4)	Date
(5)	Date Format
(6)	Modify

- To modify, select the Modify button using the Scroll keys and press the Enter key.
- A screen similar to the one above is shown, the first item (Language) is highlighted. Use the ↓ key of the Scroll keys to select the setting to be modified and press the Enter key.

- A pop-up screen appears. Use the ↑ or ↓ key to select the required value and press the Enter key to confirm.

3.14 Info menu

Menu icon, Info



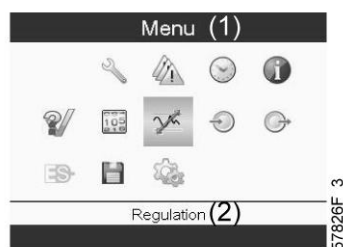
Function

To show the Atlas Copco internet address.

Procedure

Starting from the Main screen,

- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



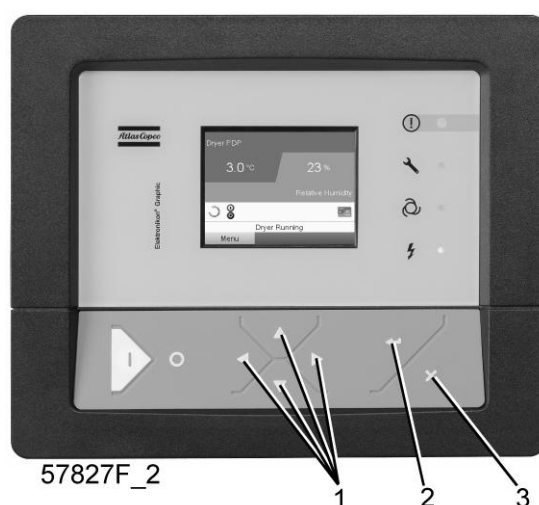
Text on image

(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Info icon (see above, section Menu icon).
- Press the Enter key. The Atlas Copco internet address appears on the screen.

3.15 Week timer menu

Control panel



(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Menu icon, Week timer



Function

- To program time-based start/stop commands for the compressor
- To program time-based change-over commands for the net pressure band
- Four different week schemes can be programmed.
- A week cycle can be programmed, a week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four programmed week schemes can be chosen.



Important remark:

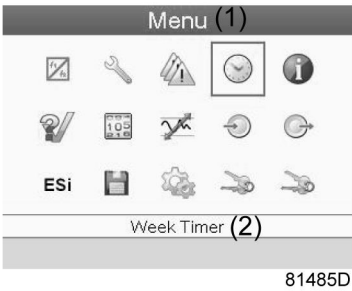
In the Elektronikon you can select different timers on one day.(up to 8 actions). It is however not possible to program 2 actions at the same time. The solution: leave at least 1 minute in between 2 actions.

Example: Start Compressor: 5.00 AM, Pressure Setpoint 2: 5.01 AM (or later).

Procedure

Starting from the Main screen (see [Main screen](#)),

- Move the cursor to the action button Menu and press the Enter key. Use the Scroll buttons to select the Timer icon.



Text on figure

(1)	Menu
(2)	Week Timer

- Press the Enter key on the controller. Following screen appears:

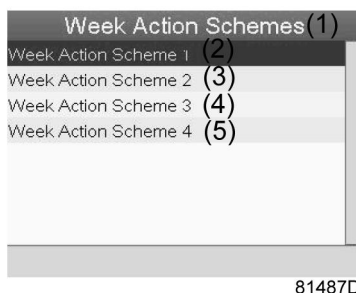


(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Week Timer Inactive
(6)	Remaining Running Time

The first item in this list is highlighted in red. Select the item requested and press the Enter key on the controller to modify.

Programming week schemes

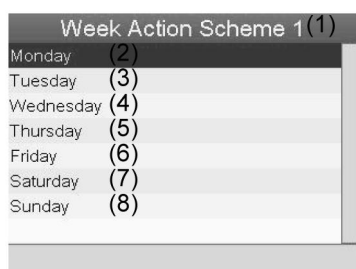
- Select Week action schemes and press Enter. A new window opens. The first item in the list is highlighted in red. Press the Enter key on the controller to modify Week Action Scheme 1.



81487D

(1)	Week Action Schemes
(2)	Week Action Scheme 1
(3)	Week Action Scheme 2
(4)	Week Action Scheme 3
(5)	Week Action Scheme 4

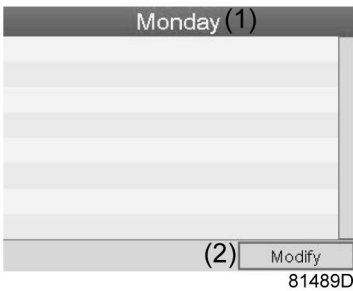
- A weekly list is shown. Monday is automatically selected and highlighted in red. Press the Enter key on the controller to set an action for this day.



81488D

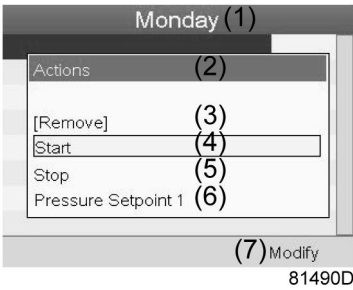
(1)	Week Action Scheme 1
(2)	Monday
(3)	Tuesday
(4)	Wednesday
(5)	Thursday
(6)	Friday
(7)	Saturday
(8)	Sunday

- A new window opens. The Modify action button is selected. Press the enter button on the controller to create an action.



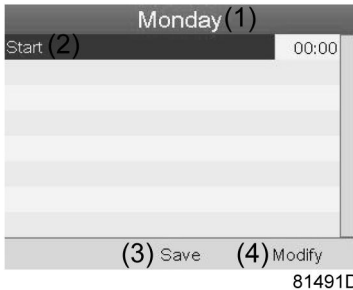
(1)	Monday
(2)	Modify

- A new pop-up window opens. Select an action from this list by using the Scroll keys on the controller. When ready press the Enter key to confirm.



(1)	Monday
(2)	Actions
(3)	Remove
(4)	Start
(5)	Stop
(6)	Pressure Setpoint 1
(7)	Modify

- A new window opens. The action is now visible in the first day of the week.



(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

- To adjust the time, use the Scroll keys on the controller and press the Enter key to confirm.



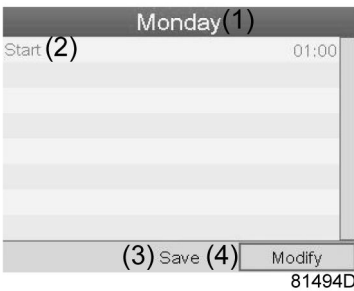
(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

- A pop-up window opens. Use the ↑ or ↓ key of Scroll keys to modify the values of the hours. Use the ← or → Scroll keys to go to the minutes.



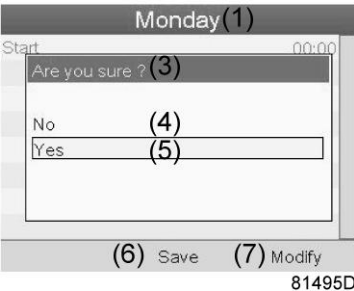
(1)	Monday
(2)	Time
(3)	Save
(4)	Modify

- Press the Escape key on the controller. The action button Modify is selected. Use the Scroll keys to select the action Save.



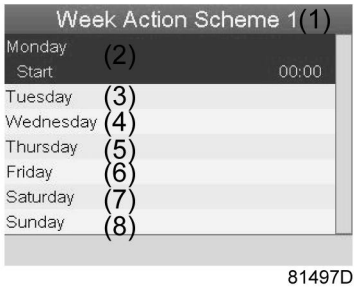
(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

- A new pop-up window opens. Use the Scroll keys on the controller to select the correct actions. Press the Enter key to confirm.



(1)	Monday
(3)	Are you sure?
(4)	No
(5)	Yes
(6)	Save
(7)	Modify

- Press the Escape key to leave this window.
- The action is shown below the day the action is planned.



(1)	Week Action Scheme 1
-----	----------------------

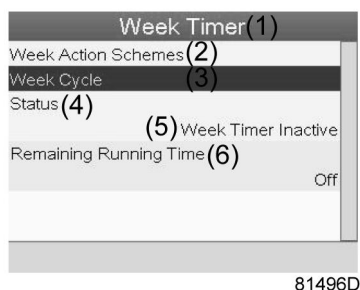
(2)	Monday - Start
(3)	Tuesday
(4)	Wednesday
(5)	Thursday
(6)	Friday
(7)	Saturday
(8)	Sunday

Press the Escape key on the controller to leave this screen.

Programming the week cycle

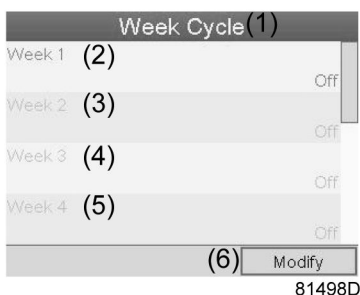
A week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four programmed week schemes can be chosen.

- Select Week Cycle from the main Week Timer menu list.



(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Week Timer Inactive
(6)	Remaining Running Time

- A list of 10 weeks is shown.

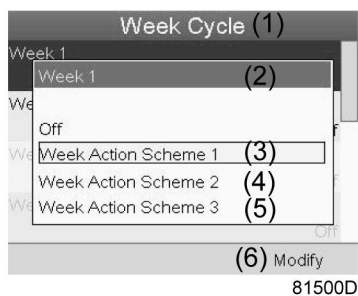


(1)	Week Cycle
(2)	Week 1
(3)	Week 2

(4)	Week 3
(5)	Week 4
(6)	Modify

Press twice the Enter key on the controller to modify the first week.

- A new window opens. Select the action, example: Week Action Scheme 1



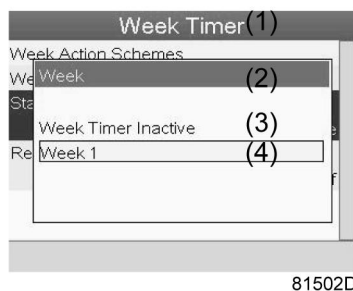
(1)	Week Cycle
(2)	Week 1
(3)	Week Action Scheme 1
(4)	Week Action Scheme 2
(5)	Week Action Scheme 3
(6)	Modify

- Check the status of the Week Timer
Use the Escape key on the controller to go back to the main Week Timer menu. Select the status of the Week Timer.



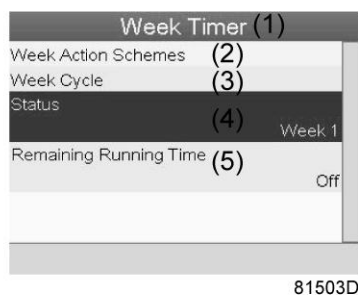
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Week Timer Inactive
(6)	Remaining Running Time

- A new window opens. Select Week 1 to set the Week Timer active.



(1)	Week Timer
(2)	Week
(3)	Week Timer Inactive
(4)	Week 1

- Press the Escape key on the controller to leave this window. The status shows that week 1 is active.



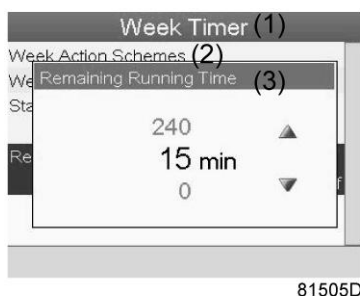
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Remaining Running Time

- Press the Escape key on the controller to go to the main Week Timer menu. Select Remaining Running Time from the list and press the Enter key on the controller to Modify.



(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Remaining Running Time

- This timer is used when the week timer is set and for certain reasons the compressor must continue working, for example, 1 hour, it can be set in this screen. This timer is prior to the Week Timer action.



(1)	Week Timer
(2)	Week action schemes
(3)	Remaining Running Time

3.16 Test menu

Menu icon, Test



or



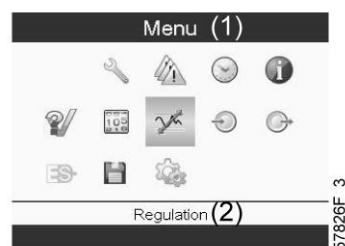
Function

- To carry out a display test, i.e. to check whether the display and LED's are still intact.

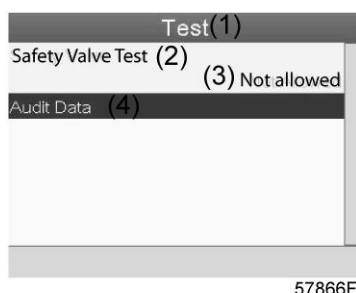
Procedure

Starting from the Main screen,

- Move the cursor to the action button Menu and press the enter key (2), following screen appears:



- Using the scroll keys (1), move the cursor to the test icon (see above, section Menu icon)
- Press the enter key (2), following screen appears:



Text on image

(1)	Test
(2)	Safety Valve Test
(3)	Not allowed
(4)	Audit Data

- The safety valve test can only be performed by authorized personnel and is protected by a security code.
- Select the item display test and press the enter key. A screen is shown to inspect the display, at the same time all LED's are lit.

3.17 User password menu

Menu icon, Password



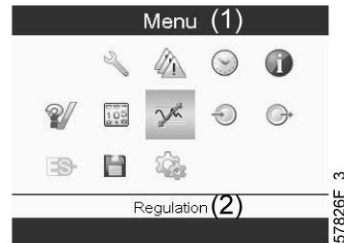
Function

If the password option is activated, it is impossible for not authorized persons to modify any setting.

Procedure

Starting from the Main screen (see section Main screen),

- Move the cursor to Menu and press the Enter key (2). Following screen appears:



- Using the Scroll keys, select the Settings icon (see section [Modifying general settings](#))
- Press the Enter key. Following screen appears:



- Move the cursor to the Password icon (see above, section Menu icon)
- Select <Modify> using the Scroll keys and press the Enter key. Next, modify the password as required.

3.18 Web server

All controllers have a built-in web server that allows direct connection to the company network or to a dedicated PC via a local area network (LAN). This allows to consult certain data and settings via a PC instead of the display of the controller.

Getting started

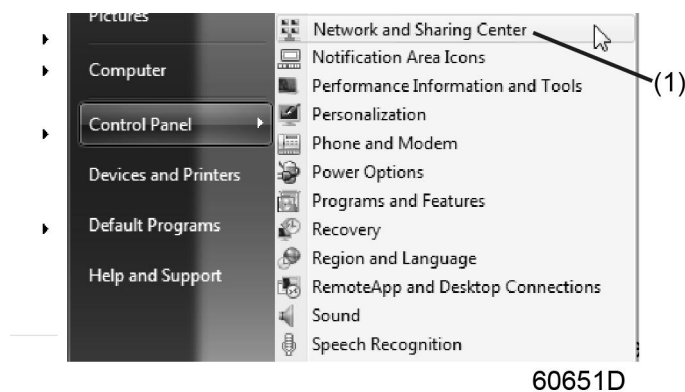
Make sure you are logged in as administrator.

- Use the internal network card from your computer or a USB to LAN adapter.
- Use a UTP cable (CAT 5e) to connect to the controller (see picture below).

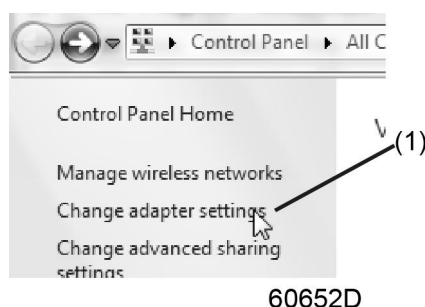


Configuration of the network card

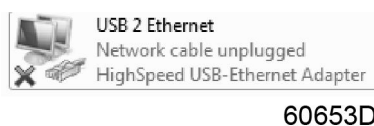
- Go to Network and Sharing Center (1).



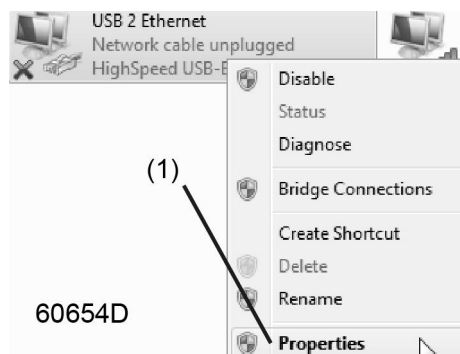
- Click on Change adapter settings (1).



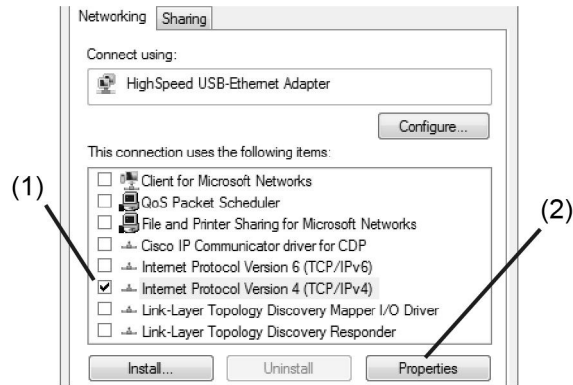
- Select the Local Area Connection, which is connected to the controller.



- Click with the right button and select Properties (1).

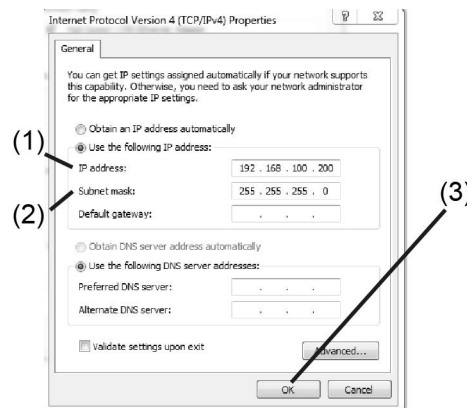


- Use the check box Internet Protocol version +4 (TCP/IPv4) (1) (see picture). To avoid conflicts, uncheck other properties if they are checked. After selecting TCP/IPv4, click on the Properties button (2) to change the settings.



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- Use the following settings:
 - IP Address 192.168.100.200 (1)
 - Subnetmask 255.255.255.0 (2)
- Click OK (3) and close network connections.



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Configure a company network (LAN) connection

- Ask your IT department to generate a fixed IP address in your company's network.
- That IP address will be excluded from the DNS server, so it will be reserved for the controller.
- Also get the correct Gateway and Subnet mask settings. For example:
 - IP = 10.25.43.200
 - Gateway = 10.25.42.250
 - Subnet mask = 255.255.254.0
- Connect the controller to the company's network (LAN) by using a UTP cable (min. CAT 5e).

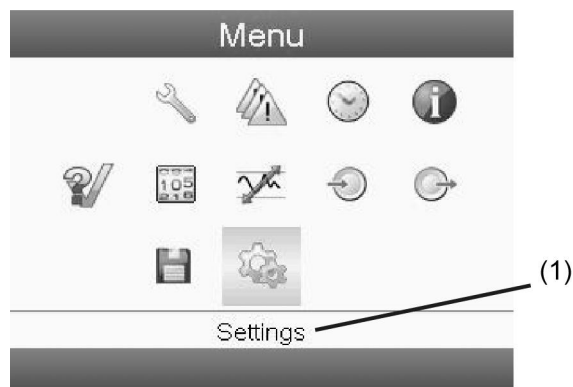


- Adapt the network settings in the controller:
 - Go to Main Menu



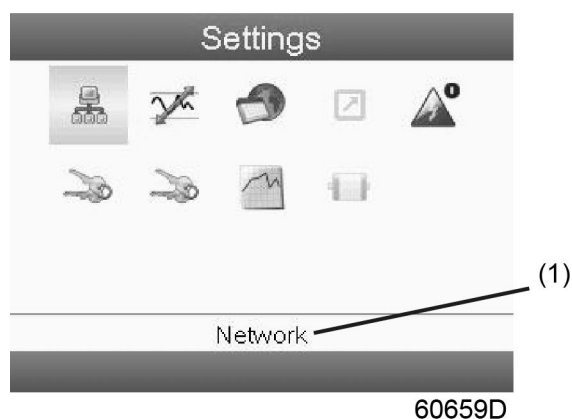
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- Go to Settings (1)

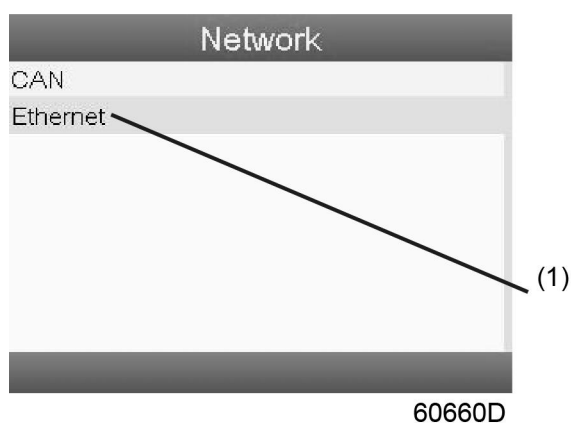


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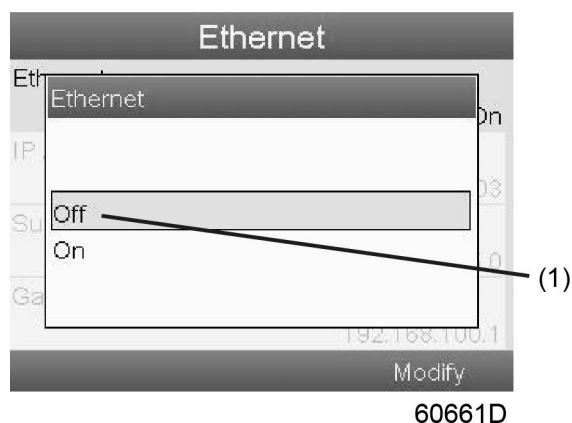
- Go to Network (1)



- Go to Ethernet (1)



- Switch Off (1) the Ethernet communication to allow editing the settings



- Adapt IP Address (1)
- Adapt Gateway IP (2)
- Adapt Subnet Mask (3)
- Switch On (4) the Ethernet communication

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- Wait a few minutes so the LAN network can connect to the controller

Configuration of the web server

The internal web server is designed and tested for Microsoft® Internet Explorer.

Also **"Opera"**, **"Mozilla Firefox"**, **"Safari"** and **"Chrome"** should work.

Viewing the controller data



All screen shots are indicative. The number of displayed fields depends on the selected options.

- Open your browser and type the IP address of the controller you want to view in your browser (in this example <http://192.168.100.100>). The interface opens:

Analog Inputs	Value
Element Outlet	80.40 °C
Compressor Outlet	6.40 bar

Counters	Value
Running Hours	140 hrs
Loaded Hours	140 hrs
Motor Starts	4
Load Relay	5
Module Hours	492 hrs

Digital Outputs	Value
Line Contactor	Closed
Star Contactor	Open
Delta Contactor	Closed
Load/Unload	Closed
General Shutdown	Closed
Automatic Operation	Closed
General Warning	Closed

Service Plan	Level	Running Hours
Running Hours	A	3883
Running Hours	B	3883
Running Hours	C	3883
Running Hours	D	23883

81520D

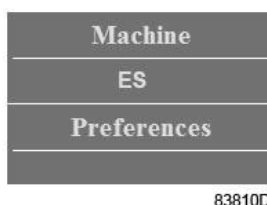
Screen shot (example!)

Navigation and options

- The banner shows the unit type and the language selector. In this example, three languages are available on the controller.



- On the left side of the interface, you can find the navigation menu. If a license for ESi is foreseen, the menu contains 3 buttons.
 - Machine: shows all generator settings.
 - ES: shows the ESi status (if a license is provided).
 - Preferences: allows to change temperature and pressure unit.



Unit settings

All unit settings can be displayed or hidden. Put a check mark in front of each point of interest and it will be displayed. Only the machine status is fixed and can not be removed from the main screen.

Analog inputs

Lists all current analog input values. The measurement units can be changed in the preference button from the navigation menu.

☒ Analog Inputs

Analog Inputs	Value
Element Outlet	131.90 °F
Compressor Outlet	110.21 psi

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Counters

Lists all current counter values from controller and unit.

☒ Counters

Counters	Value
Running Hours	29 hrs
Loaded Hours	29 hrs
Motor Starts	3
Load Relay	4
Module Hours	549 hrs

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Info status

Machine status is always shown on the web interface.



Digital inputs

Lists all digital inputs and their status.

☒ Digital Inputs

Digital Inputs	Value
Emergency Stop	Closed
Overload Motor/Fan Motor	Closed
Remote Start/Stop	Open
Remote Load/Unload	Open
Remote Pressure Sensing	Open
Pressure Setting Selection	Pressure Band 1

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Digital outputs

Lists all digital outputs and their status.

☒ Digital Outputs

Digital Outputs	Value
Line Contactor	Closed
Star Contactor	Open
Delta Contactor	Closed
Load/Unload	Closed
General Shutdown	Closed
Automatic Operation	Closed
General Warning	Closed

81527D

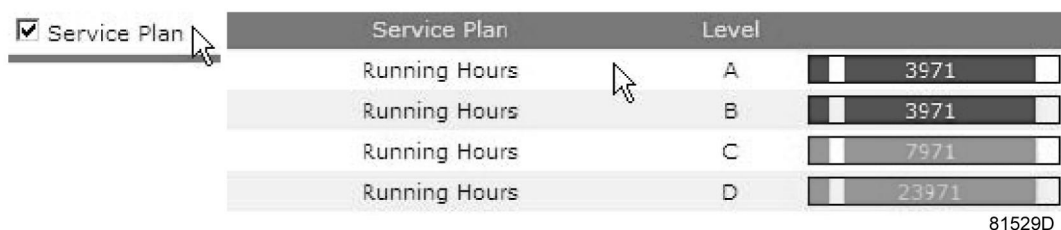
Special protections

Lists all special protections of the unit.



Service plan

Displays all levels of the service plan and their status. This screen shot underneath only shows the running hours. It is also possible to show the current status of the service interval.



3.19 Programmable settings

Compressor/motor

		Minimum setting	Factory setting	Maximum setting
Set-point 1 and 2, Workplace Full-Feature compressors	bar(e)	4	6.8	12.8
Indirect stop level	bar	0.1	0.3	1
Direct stop level	bar	0.3	1	1.5
Proportional band	%	6	10	15
Integration time	sec	5	6	10

Parameters

		Minimum setting	Factory setting	Maximum setting
Minimum stop time	sec	5	5	30
Power recovery time	sec	10	10	3600
Restart delay	sec	0	0	1200
Communication time-out	sec	10	30	60
Fan motor starts per day (air-cooled compressors)		1	240	240

Protections

		Minimum setting	Factory setting	Maximum setting
Compressor element outlet temperature (shut-down warning level)	°C	50	110	119
Compressor element outlet temperature (shut-down level)	°C	111	120	120

Specific protections for Full-Feature compressors:

		Minimum setting	Factory setting	Maximum setting
Dewpoint warning temperature	°C		25	99
Dewpoint warning temperature	°F		77	210

Service plan

The built-in service timers will give a Service warning message after their respective preprogrammed time interval has elapsed.

For specific data, see section Preventive Maintenance.

Consult Atlas Copco if a timer setting needs to be changed. The intervals must not exceed the nominal intervals and must coincide logically. See section [Modifying general settings](#).

Terminology

Term	Explanation
ARAVF	Automatic Restart After Voltage Failure. See section Elektronikon regulator .
Power recovery time	Is the period within which the voltage must be restored to have an automatic restart. Is accessible if the automatic restart is activated. To activate the automatic restart function, consult Atlas Copco.
Restart delay	This parameter allows to programme that not all compressors are restarted at the same time after a power failure (ARAVF active).
Compressor element outlet	The recommended minimum setting is 70 °C (158 °F). For testing the temperature sensor the setting can be decreased to 50 °C (122 °F). Reset the value after testing. The regulator does not accept inconsistent settings, e.g. if the warning level is programmed at 95 °C (203 °F), the minimum limit for the shut-down level changes to 96 °C (204 °F). The recommended difference between the warning level and shut-down level is 10 °C (18 °F).
Delay at signal	Is the time period during which the warning signal must exist before the warning message appears.
Delay at start	Is the time period after starting which must expire before generating a warning. The setting should be less than the setting for the delay at signal.
Minimum stop time	Once the compressor has automatically stopped, it will remain stopped for the minimum stop time, whatever happens with the net air pressure.
Proportional band and integration time	The settings for the Proportional band and integration time are determined by experiment. Altering these settings may damage the compressor. Consult Atlas Copco.

4 SMARTBOX and SMARTLINK

SMARTBOX

The machine is equipped with a **SMARTBOX** mounted in the electrical cabinet.



59850F

The **SMARTBOX** allows read-out of a number of parameters of the machine on a user login-protected web site called **SMARTLINK**. The connected antenna is mounted on the outside of the machine.

SMARTLINK

In case **SMARTLINK** access is desired, at least one machine SMARTLINK-ready machine is required. Follow the next steps:

- Take the information about the **SMARTLINK**-ready machine(s) (e.g. picture of the data plate; invoice,...)
- Go to the **SMARTLINK** web site <http://www.atlascopco.com/smartlink>
- Click on the left button in the screen below.



59851F

- Use the data of the **SMARTLINK**-ready machine to register as a user.

SMARTLINK - create account

User details

Language: English

Email: first.last@mycompany.com

Confirm email: first.last@mycompany.com

Time zone: Central European Standard Time

Measurement system: Metric

Company details

Serial number: AIF11111111

Machine name: MyCompressor1

Machine type: ZR400

Year of manufacture: 2012

Customer name: MyCompany

Country: Belgium

Customer center: AC Belgium

Retyp code: c5821f

Cancel Create

59852F

- You will receive an e-mail with login credentials.
- Go to the **SMARTLINK** web site <http://www.atlascopco.com/smartlink>, log in with the user credentials.
- Enjoy **SMARTLINK**!
- In case more **SMARTLINK**-ready machines are available, you can add these via *My Profile*.

5 Installation

5.1 Dimension drawings

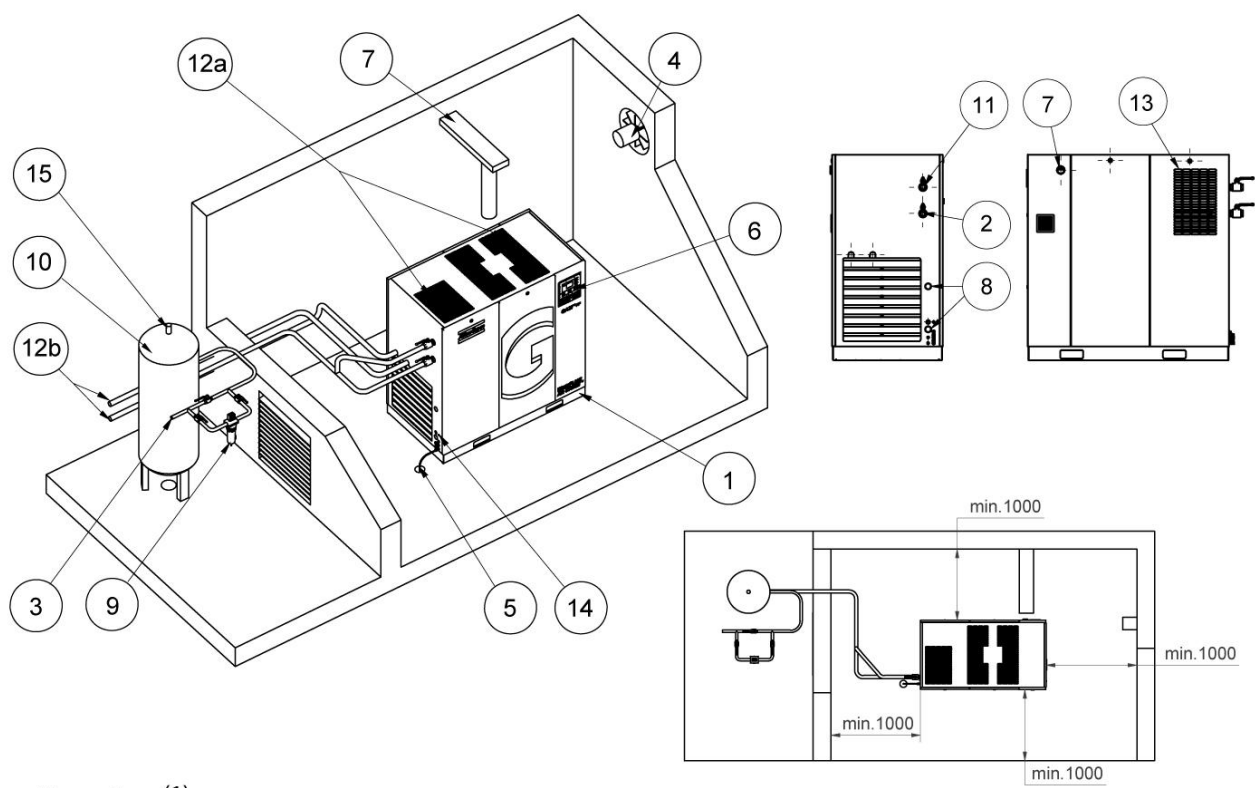
The drawings are on the CD, supplied with your machine

Dimension drawing	Model
9820 9790 03	GA 37 VSD, GA 45 VSD

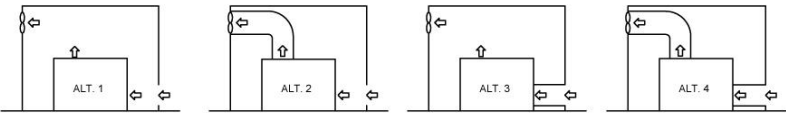
Text on drawings	Translation or Explanation
Compressor cooling air outlet	Cooling air outlet of compressor and motor
Compressor cooling air inlet	Cooling air inlet of compressor and motor
Compressed air outlet	Compressed air outlet connection
Electrical cable passage	Electrical cable passage
Cubicle cooling air outlet	Cubicle cooling air outlet
Cubicle cooling air inlet	Cubicle cooling air inlet
Doors fully open	Dimensions with doors fully open
Cooling water outlet	Cooling water outlet connection
Cooling water inlet	Cooling water inlet connection
Prepared for manual drain	Prepared for manual drain
Dryer cooling air inlet	Dryer cooling air inlet
Dryer cooling air outlet	Dryer cooling air outlet
Centre of gravity	Centre of gravity
Mass	Mass of the machine
Type	Machine type
Water outlet (Energy recovery - option)	Water outlet (Energy recovery - option)
Water inlet (Energy recovery - option)	Water inlet (Energy recovery - option)
Automatic drain, dryer	Automatic drain, dryer
Automatic drain, aftercooler	Automatic drain, aftercooler
Manual drain, dryer	Manual drain, dryer
Manual drain, aftercooler	Manual drain, aftercooler
Compressed air connection for OSCi	Compressed air connection for OSCi
Electrical connection for OSCi	Electrical connection for OSCi
Ambient sensor	Ambient sensor

5.2 Installation proposal

Compressor room example

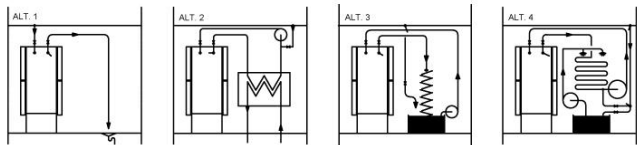


Air cooling (1)



The direction of the cooling flows may never be inverted (3)

Water cooling (2)




9820 9790 58
9820 9790 50
82964D

Compressor room example

(1)	Air cooling
(2)	Water cooling
(3)	The direction of the cooling flows may never be inverted


Description

1	Compressor Install the compressor unit on a solid, level floor, suitable for taking its weight.
---	--

2	Position of the compressed air outlet valve.
3	<p>The pressure drop over the air delivery pipe can be calculated from: $\Delta p = (L \times 450 \times Q_c^{1.85}) / (d^5 \times P)$, with d = inner diameter of the pipe in mm Δp = 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.</p>
4	<p>Ventilation: the inlet grids and ventilation fan should be installed in such a way that any recirculation of cooling air to the compressor or dryer is avoided. The maximum air velocity through the grids is 5 m/s (16.5 ft/s). The maximum allowed pressure drop in ventilation ducts before or after the compressor is 30 Pa. The maximum air temperature at the compressor intake is 46 °C (115 °F), the minimum temperature is 0 °C (32 °F).</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • For compressors without dryer: $Q_v = 1.06 N / \Delta T$ • For compressors with dryer: $Q_v = (1.06 N + 1.2 D) / \Delta T$ <p>with Q_v = required ventilation capacity in m³/s N = nominal power of the compressor motor in kW D = electric power of the dryer in kW ΔT = temperature increase in the compressor room in °C For 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. Apply separate outlet ducts for the compressor and the dryer.</p>
5	<p>The drain pipes to the drain collector must not dip into the water of the drain collector. Atlas Copco has oil/water separators (type OSD or OSCi) to separate the 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.</p>
6	Control module with monitoring panel.
7	<p>Power supply cable to be sized and installed by a qualified electrician. 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.</p> 
8	Provision for energy recovery system.
9	<p>Filter DD for general purpose filtration (particle removal down to 1 micron with a maximum oil carry over of 0.5 mg/m³. 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/m³. If oil vapors and odors are undesirable, a QD type filter can be installed downstream of the PD filter. 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.</p>

10	<p>Install the air receiver (to be purchased separately) in a frost free room, on a solid, level floor, suitable for taking its weight.</p> <p>For normal air consumption, the volume of the air net (receiver and piping) can be calculated from:</p> $V = (0.25 \times Q_c \times P1 \times T0) / (f_{max} \times \Delta P \times T1), \text{ with}$ <p>V = volume of the air net in l Q_c = free air delivery of the compressor in l/s P1 = compressor air inlet pressure in bar(a) f_{max} = maximum cycle frequency (recommended: 1 cycle/30s) ΔP = difference between unloading pressure and loading pressure in bar T1 = compressor air inlet temperature in K T0 = air receiver temperature in K</p>
11	Bypass system to bypass the dryer during service operations (available as an option, consult Atlas Copco).
12a	<p>Air-cooled compressors:</p> <p>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. See alternatives 1 up to 4.</p>
13	Cooling air grating, dryer
14	When a duct is foreseen on the air inlet, the ambient temperature sensor need to be repositioned in such a way that the inlet temperature is monitored.
15	Safety valve

Safety


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

Outdoor/altitude operation

Fix speed compressors can be sold with option rain protection. With this option, this 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 this case, and also if operating above 1000 m (3300 ft), consult Atlas Copco.

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. Before lifting, reinstall the transport securing bolts. Make sure that the forks protrude from 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 protrude from the frame equally. 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 also forbidden to come under the load or to perform maintenance activities to it.
---	---

5.3 Electrical connections

Important remark



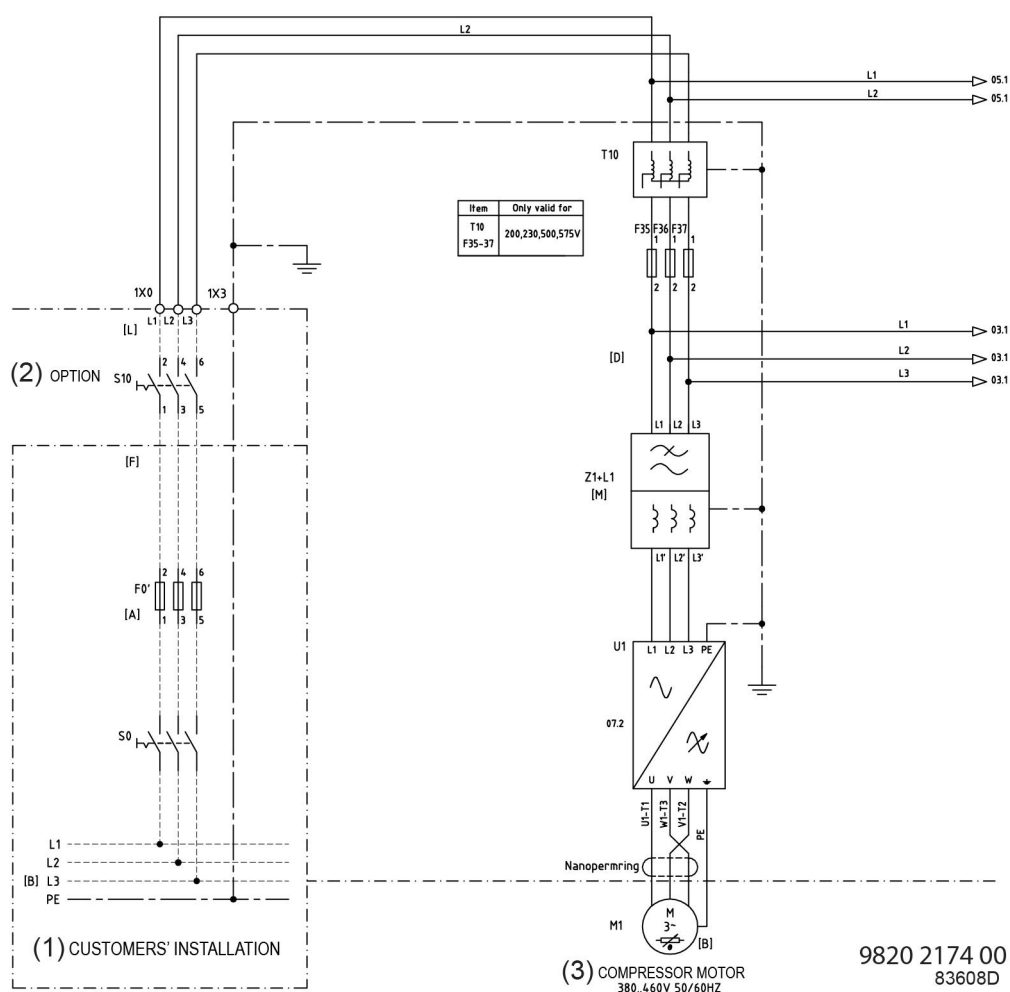
Working with machinery controlled by a frequency converter requires special safety precautions. These safety precautions depend on the kind of network used (TN, TT, IT system). Consult Atlas Copco.



Most compressors are designed for use in TT/TN networks and are intended for industrial environments where the electrical supply is separated from the residential/commercial supply network.
To use the machine in light industrial, commercial or residential environments with a shared supply network or in an IT network, extra measures can be required. Contact Atlas Copco.
Set the switch (S) on (I) for use in a TT/TN network, and set the switch off (O) for use in an IT network.



Electrical connections for GA 37 VSD and GA 45 VSD



Reference	Designation
(1)	Customer's installation
(2)	(Available as) option
(3)	Compressor motor

Note


The complete electrical diagram can be found in the electrical cubicle.

The complete electrical diagram can be found on the CD supplied with the machine.

Description

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. See section [Electric cable size and fuses](#)
4. Connect the power supply cables to terminals (1, 3 and 5) on contactor (K21) of the Control Technics converter.
Connect the power supply cables to terminals (1, 3 and 5) on contactor (Z1+L1) of the Neos converter.

5. Connect the earth conductor to the earth bolt (PE).

	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.
---	---

Compressor status indication

The controller is provided with potential-free auxiliary NO contacts (NO = normally open) (K05, K07 and K08) for remote indication of:

- Manual 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 Atlas Copco.

Compressor control modes

See also section [Control mode selection](#).

The following control modes can be selected:

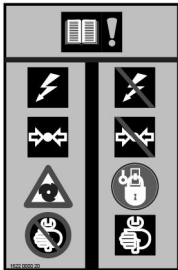

- **Local control:** The compressor will react to commands entered by means of the buttons on the control panel. Compressor start/stop commands via Clock function are active, if programmed.
- **Remote control:** The compressor will react to commands from external switches. Emergency stop remains active.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

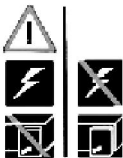




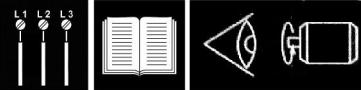

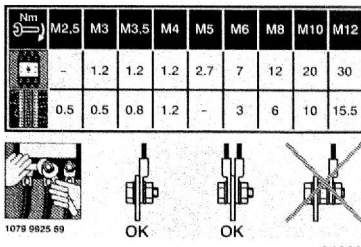
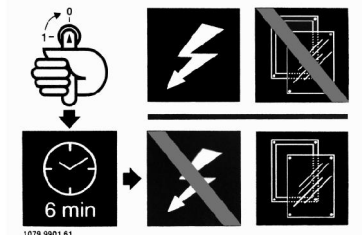




	Have the modifications checked by Atlas Copco. Stop the compressor and switch off the voltage before connecting external equipment. Only potential-free contacts are allowed.
---	---

- **LAN control:** The compressor is controlled via a local network. Consult Atlas Copco.

5.4 Pictographs

Pictographs

1	 84224D	2	 84231D
---	---	---	--

3	 <p>84230D</p>	4	 <p>84234D</p>
5	 <p>84221D</p>	6	 <p>84219D</p>
7	 <p>84226D</p>	8	 <p>84228D</p>
9	 <p>84227D</p>	10	 <p>84229D</p>
11	 <p>84225D</p>	12	 <p>84232D</p>
15	 <p>84222D</p>	16	 <p>84223D</p>
17	 <p>84145D</p>		



Reference	Designation
1	Warning: Always read the manual, switch off the voltage, depressurise compressor and lock out/ tag out before repairing.
2	Keep the doors closed during operation

Reference	Designation
3	Switch off the voltage before removing protecting cover inside electric cubicle
4	Warning, voltage
5	Automatic condensate drain
6	Stop the compressor before cleaning the coolers
7	Lightly oil the gasket of the oil filter, screw it on and tighten by hand (approx. half a turn)
8	Before connecting the compressor electrically, consult the Instruction book for the motor rotation direction
9	Compressor remains pressurized for 180 seconds after switching off the voltage
10	Torques for steel (Fe) or brass (CuZn) bolts
11	Switch off the voltage and wait at least 6 minutes before removing the screen
12	Oil outlet (option DD/PD filters)
17	Automatic Restart After Voltage Failure (ARAVF)

6 Operating instructions

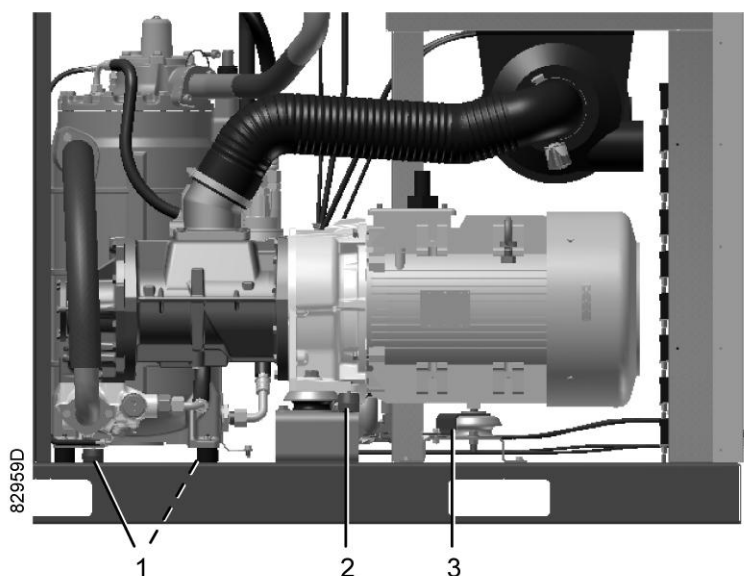
6.1 Initial start-up

Safety

	The operator must apply all relevant Safety precautions . Also consult section Problem solving .
	For the location of the air outlet valve and the drain connections, see sections Introduction and Condensate system .

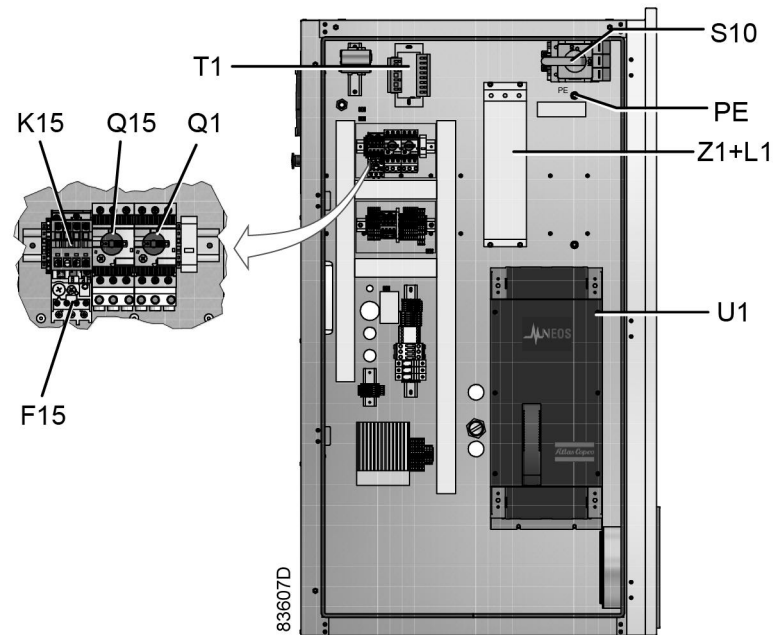
Preparations

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



Transport fixtures of GA 37 VSD and GA 45 VSD

3. Check that the electrical connections correspond to the local 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. On air-cooled compressors, check the setting of circuit breaker (Q15). Also check that the switch on the circuit breaker is in position I.
5. Check the voltage selecting wires at the primary side of transformer T1.



Electric cabinet of GA 37 VSD and GA 45 VSD, typical example

6. Fit air outlet valve (AV); see section [Introduction](#) for the position of the valve.
Close the valve.
Connect the air net to the valve.
7. Connect the condensate drain outlet(s) to a drain collector. See section [Condensate system](#) and in case of an OSCi see section [Putting into operation OSCi](#).
For Full-Feature units: also connect the condensate drain outlet of the dryer to a drain collector.
The drain pipes to the drain collector must not dip into the water. For draining of pure condensate water, install an oil/water separator which is available from Atlas Copco as an option. See section [Introduction OSCi](#). If the pipes have been fitted outside the room where freezing is possible, they must be insulated.
8. For compressors with a DD or a DD and PD filter: connect the automatic drain of the filters to a suitable drain collector.
9. **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.
 - The compressor may be remotely controlled.

Initial start procedure

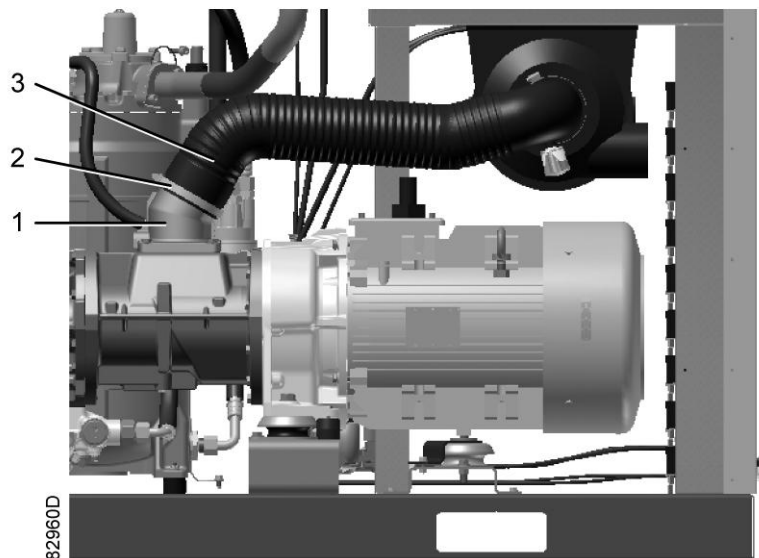


If the compressor has not run for the past 6 months, it is strongly recommended to improve the lubrication of the compressor element before starting.

To do so:

1. Loosen the hose clip (2) and disconnect the inlet hose (3).
2. Remove the unloader (1).
3. Pour 0.75 l (0.20 US gal, 0.17 Imp gal) of compressor oil into the inlet arrestor (1).
For oil specifications, see section [Oil specifications](#).
4. Reinstall the inlet hose.

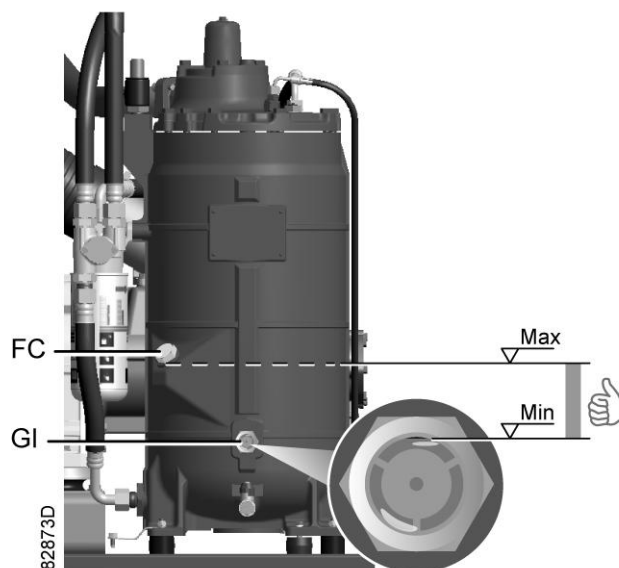
Make sure that all connections are tight.



Position of arrestor on GA 37 VSD and GA 45 VSD

1. Check the oil level.

The oil level should be between the oil filler neck (FC) and the top in the sight glass (GI).

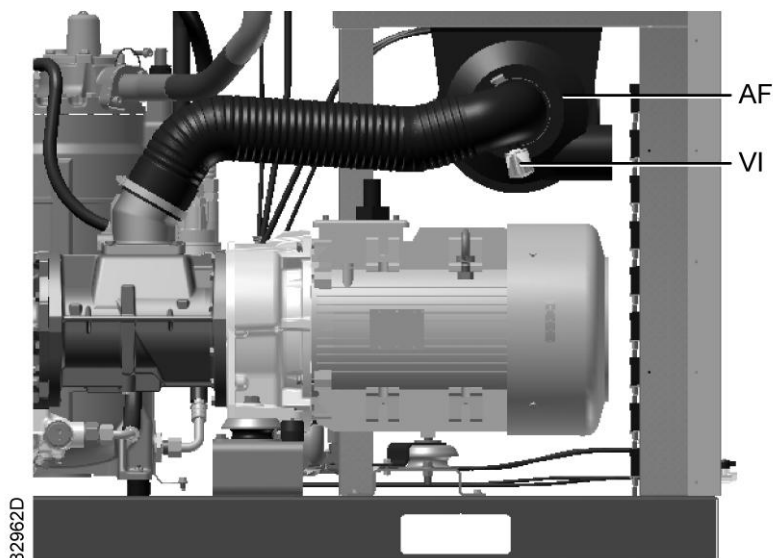


2. Switch on the voltage.
On Full-Feature compressors: switch on the voltage and actuate contactor K12 (dryer fan) on the dryer rail for a few seconds (e.g. by means of a screw driver) to check for the rotation direction. The rotation direction of the fan is indicative for the rotation direction of the dryer compressor. If the direction is wrong, interchange two phases of the mains supply.
The dryer will become damaged when operating in the wrong direction!
3. On air-cooled compressors, check the rotation direction of the fan motor. Rotation arrows, visible through the grating in the roof, are provided on the plate below the fan to indicate the correct rotation direction of the fan motor.
4. Check the programmed settings.
5. Start and run the compressor for a few minutes. Check that the compressor operates normally.

6.2 Before starting

Procedure

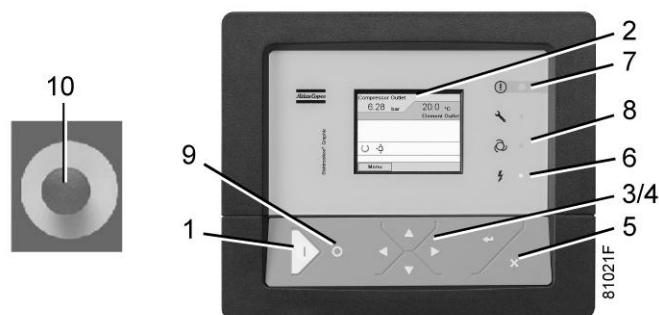
1. If the compressor has not run for the past 6 months, it is strongly recommended to improve the lubrication of the compressor element before starting. See section [Initial start](#).
2. Check the oil level. Top up if necessary. See section [Initial start](#).
3. If necessary, empty the dust trap of the filter; see section [Air filter](#).
If the red part of the air filter service indicator shows full out, replace the air filter element. Reset the service indicator (VI) by pushing the knob in the extremity of the indicator.



6.3 Starting



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



Control panel Elektronikon™ Graphic

Procedure

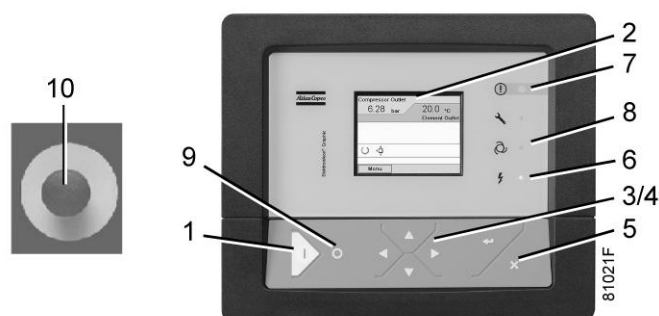
1. Open the air outlet valve.
2. Switch on the voltage. Check that voltage on LED lights up.
3. Press the start button on the control panel. The compressor starts running and the automatic operation LED lights up. Ten seconds after starting, the drive motor switches over from star to delta and the compressor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

6.4 During operation

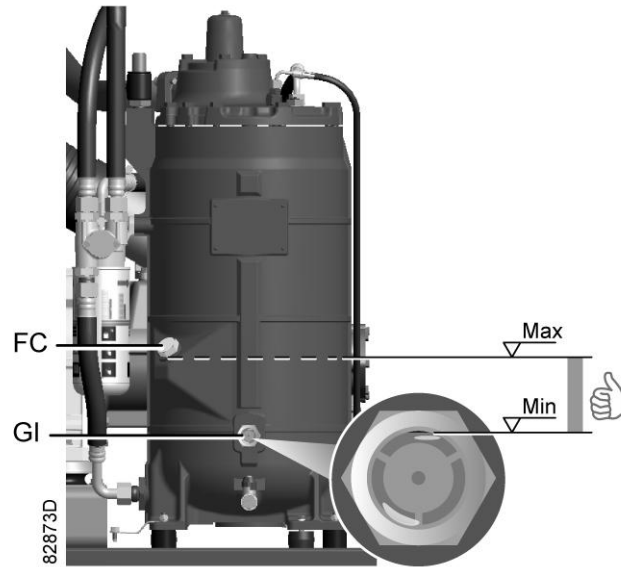
Warnings

	The operator must apply all relevant Safety precautions . Also consult section Problem solving .
	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 (automatic operation) is alight, the motors may start automatically.

Checking the oil level



Control panel Elektronikon™ Graphic

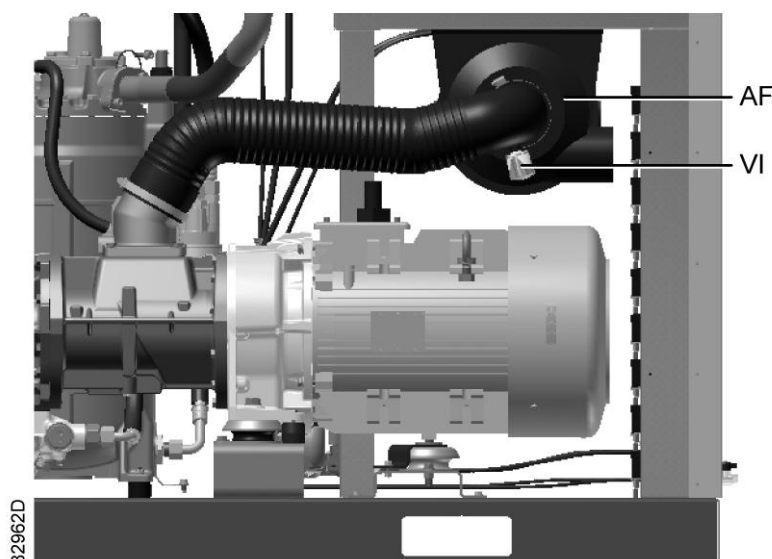


Regularly check the oil level. To do so:

1. Press the stop button on the control panel.
2. A few minutes after stopping, the oil level should be between the oil filler neck (FC) and the top 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).

Unlock the emergency stop button, select the STOP icon and press reset before starting.

Air filter



Position of the service indicator

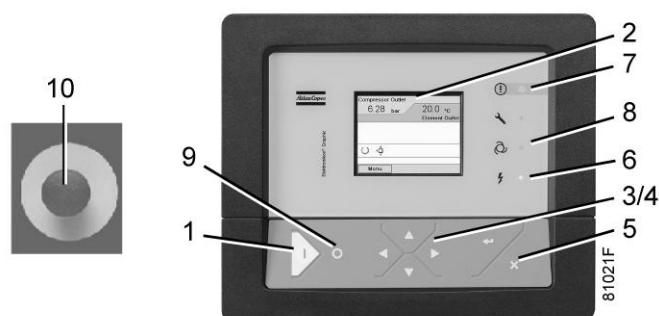
Regularly check the service indicator. If the colored part of service indicator (VI) shows full out, replace the air filter element. Reset the service indicator by pushing the knob in the extremity of the indicator body.

Drains

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

6.5 Checking the display

Compressors with Elektronikon™ Graphic controller:



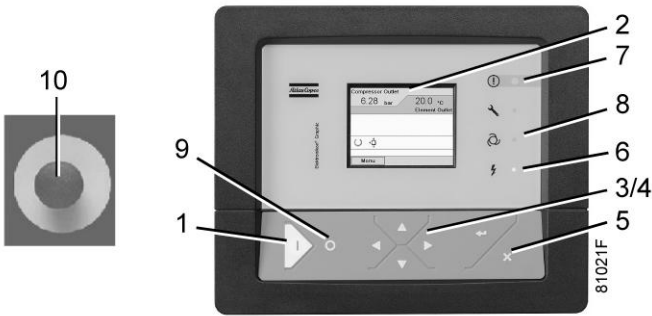
Control panel of the Elektronikon™ Graphic controller

Check the display (2) regularly for readings and messages. The display normally shows the compressor outlet pressure, while the status of the compressor is indicated by means of a number of icons. Remedy the trouble if alarm LED (7) is lit or flashes, see section 'Icons used'. The display (2) will show a service message 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 menu](#).

6.6 Stopping

Control panel




Control panel Elektronikon™ Graphic

Procedure

Step	Action
-	Press stop button (9). Automatic operation LED (8) goes out and the compressor stops after 30 seconds of unloaded operation.
-	To stop the compressor in the event of an emergency , press emergency stop button (10). Alarm LED flashes (7). On compressors with an Elektronikon® Graphic controller: <ul style="list-style-type: none">• Remedy the problem cause and unlock the button by pulling it out.• Navigate to the Stop icon on the display by means of the navigation keys (3/4) and press the Select key. Press Reset. Do not use the emergency stop button for normal stopping!
-	Close the air outlet valve.
-	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 Condensate system . Switch off the voltage.

6.7 Taking out of operation

Warning

	The operator must apply all relevant Safety precautions .
---	---

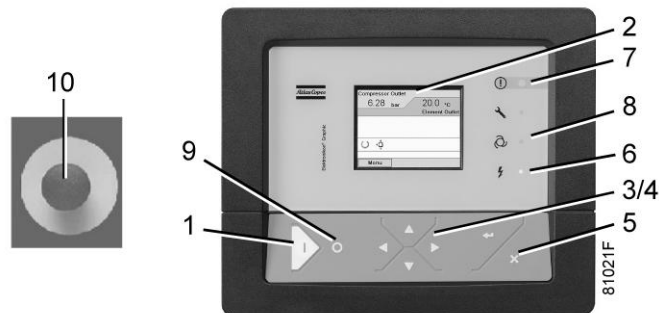
Procedure

Step	Action
-	Stop the compressor and close the air outlet valve.
-	Press the test button on top of the electronic water drain(s) until the air system between air receiver and outlet valve is fully depressurized. Consult section Condensate system to locate the drain.
-	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 Oil and oil filter change to locate the filler plug.
-	Shut off and depressurize 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.

7 Maintenance

7.1 Preventive maintenance schedule

Warning



Control panel



Always apply all relevant [Safety precautions](#).

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

- Stop the compressor.
- Close the air outlet valve and press the test button on top of the electronic water drain(s) until the air system between air receiver and outlet valve is fully depressurized.
- Press the emergency stop button (10).
- Switch off the voltage. Open and lock the isolating switch.
- Depressurize the compressor by opening the oil filler plug one turn.

Before electrical maintenance



- Wait for at least 10 minutes before starting any electrical repairs as dangerous high voltage remains on the capacitors of the start and speed regulation unit during some minutes after switching off the voltage.
- Always switch off the voltage. Only pressing the emergency stop button is not sufficient to make the compressor voltage free.
- 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.

Warranty - Product Liability

Use only authorised parts. Any damage or malfunction caused by the use of unauthorised 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 contracts

Atlas Copco offers several types of service contracts, relieving you of all preventive maintenance work. Consult your Atlas Copco Customer Centre.

General

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

Intervals

The local Atlas Copco Customer Centre 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 interventions

Following actions have to be done on a regular basis:

Maintenance checklist

Period	Operation
Daily	Check oil level. Check readings on display. Check air filter service indicator. Check that condensate is discharged during operation. Drain condensate.
Monthly	Check that condensate is discharged when pressing the test button on top of the electronic water drain. On compressors with integrated dryer: <ul style="list-style-type: none"> • Stop the compressor, close the air outlet valve and switch off the voltage. • Remove any dirt from the condenser inlet with a vacuum cleaner. • Next, clean with an air jet in the reverse direction of the 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. • Remove dust from inside the dryer, e.g. with a vacuum cleaner. Do not use water or solvents to clean the condenser.
3-monthly (1)	Check coolers, clean if necessary. Remove the air filter element and inspect. If necessary, clean using an air jet. Replace damaged or heavily contaminated elements. Check the filter element of the electric cabinet. Replace if necessary
Yearly or every 8000 hours (2)	Replace the wearing parts of the electronic water drain(s). A service kit is available. Have the safety valve tested.
Every 5 years or 40000 hours (2)	Replace all hoses and flexibles

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

(2): Whichever comes first

Apart from the above mentioned actions, the service interventions in the table below are programmed in the memory of the Elektronikon™ controller. 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. See section "Service menu" of the controller. After servicing, the intervals must be reset.

Preventive Maintenance schedule programmed in the Elektronikon™

Running hours	Operation
4000 (1)	<p>If Atlas Copco Roto-Inject Fluid is used, change oil and oil filter.</p> <p>Replace the air filter element.</p> <p>Replace the filter element of the electric cabinet.</p> <p>Check condition of the air intake hose between air filter and compressor element (where applicable).</p> <p>Check pressure and temperature readings.</p> <p>Do a LED and display test.</p> <p>Test the temperature shut-down function.</p> <p>On air-cooled compressors: clean coolers. Check and clean cooling fan assembly.</p> <p>Clean cooling fins of electric motors.</p> <p>Inspect the restriction nozzle in the scavenging line for cleanness.</p> <p>Check operation of cooling fans of converter.</p> <p>Check blow-off solenoid valve after stopping and pressing the emergency stop button.</p>
8000 (2)	<p>If Atlas Copco Roto-Xtend Duty Fluid is used, change oil and oil filter.</p> <p>Have the oil separator element replaced.</p> <p>The oil separator element must also be replaced when the pressure drop over it exceeds 1 bar (14.5 psi). Check the pressure drop while the compressor is running loaded and preferably with a stable working pressure.</p> <p>Visually inspect the oil separator vessel for damage and corrosion. The minimum wall thickness must be respected. See section Pressure equipment directives.</p>

(1): or when the real time counter indicates the service plan, whichever comes first

(2): or when the real time counter indicates the service plan, whichever comes first

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.



- Consult Atlas Copco before modifying a timer setting.
- For the change interval of oil and oil filter in extreme conditions consult your Atlas Copco Customer Centre.
- Any leakage should be attended to immediately. Damaged hoses or flexible joints must be replaced.

7.2 Oil specifications

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.

Relation between the operating conditions and the 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
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

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.

See the table below for recommended oil exchange intervals:

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	use Roto Synthetic Fluid XTEND DUTY

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

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 40 °C (104 °F). For more extreme conditions, or when continuously operating at temperatures above 40 °C (104 °F), it is recommended to use Roto Synthetic Fluid XTEND DUTY.

See the table below for recommended oil exchange intervals:

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

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

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).

See the table below for oil exchange intervals:

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.

* Whichever comes first.

7.3 Drive motor

General

Keep the outside of the electric motor clean for efficient cooling. If necessary, remove dust with a brush and/or compressed air jet.

Bearing maintenance

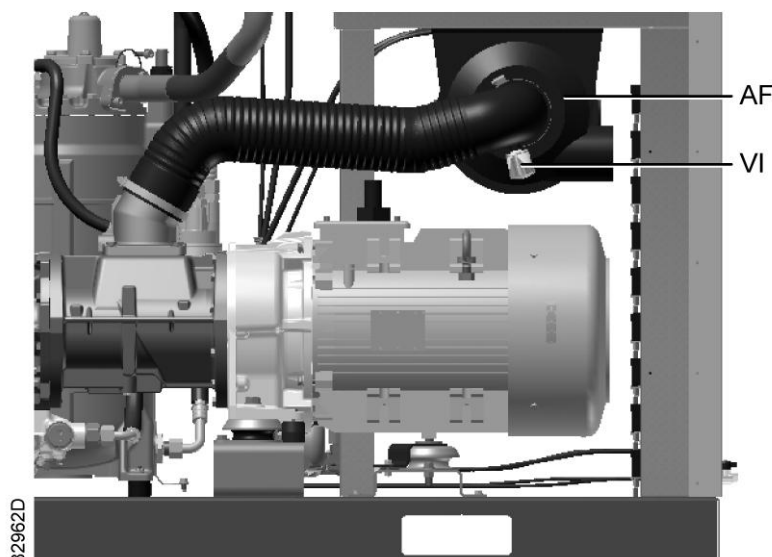
The bearing at the drive end side is lubricated by the oil system and requires no periodic maintenance.

The non drive end side bearing of motors without grease nipples requires no periodic maintenance.

Motors with a grease nipple at the non drive end side must follow the maintenance interval as mentioned on the motor data plate.

7.4 Air filter

Location of air filter



Recommendations

1. Never remove the element while the compressor is running.
2. For minimum downtime, replace the dirty element by a new one.
3. Discard the element when damaged.

Procedure

1. Stop the compressor. Switch off the voltage.
2. Release the snap clips of air filter (AF) and remove the cover and the air filter element. Discard the filter element.
3. Fit the new element and the cover.
4. Reset service indicator (VI) by pushing the knob in the extremity of the body.
5. Reset the air filter service warning.
For compressors equipped with an Elektronikon® Graphic regulator, see section [Service menu](#).

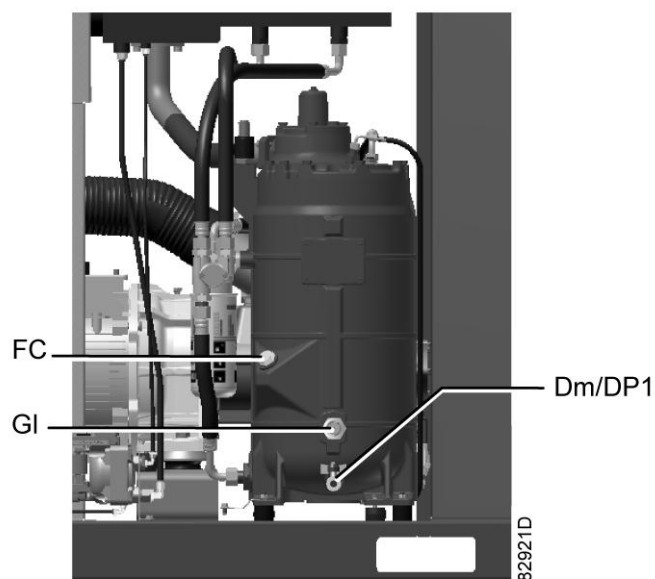
7.5 Oil and oil filter change

Warning

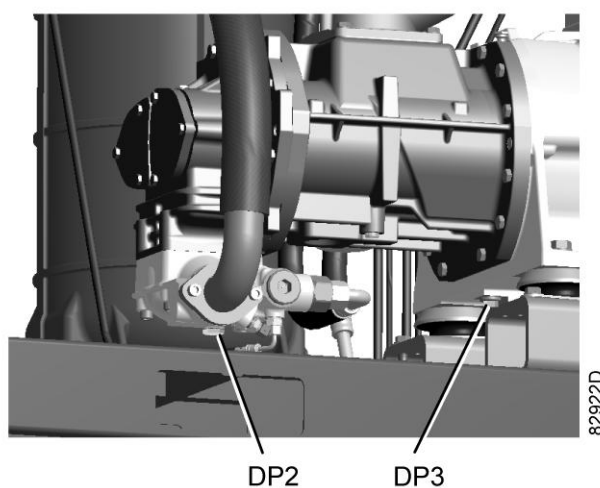


The operator must apply all relevant [Safety precautions](#).
Always drain the compressor oil at all drain points. Used oil left in the compressor can contaminate the oil system and can shorten the lifetime of the new oil.
Never mix lubricants of different brands or types as they may not be compatible 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.

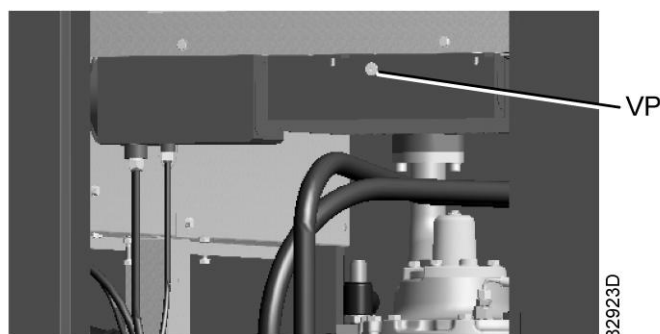
Procedure



Oil drain and filler plug on the oil separator vessel



Oil drain plugs, check valve and gear casing



Vent plug, oil cooler

Step	Description
-	Run the compressor until warm. Stop the compressor after 3 minutes of unloaded operation. Close the air outlet valve and switch off the voltage. Wait a few minutes and depressurise by unscrewing oil filler plug (FC) just one turn to permit any pressure in the system to escape.
-	Air cooled units: loosen the vent plug (VP) of the oil cooler and wait for 5 minutes.
-	Remove drain plug (DP1) and open drain valve (Dm). Also drain the oil by removing the drain plug: <ul style="list-style-type: none"> • on the check valve (DP2) • on the gear casing (DP3)
-	Collect the oil in a collector and deliver it to the local collection service. Refit and tighten the drain and vent plugs after draining. Close the drain valve (Dm).
-	Remove the oil filter (OF). Be aware that this filter has a left thread connection. Clean the seat on the manifold. Oil the gasket of the new filter and screw it into place. Tighten firmly by hand.
-	Remove filler plug (FC). Fill the air receiver (AR) with oil until the level reaches the filler neck. Take care that no dirt drops into the system. Refit and tighten filler plug (FC).
-	Run the compressor loaded for a few minutes. Stop the compressor and wait a few minutes to allow the oil to settle.
-	Depressurise the system by unscrewing filler plug (FC) just one turn to permit any pressure in the system to escape. Remove the plug. Fill the air receiver with oil until the level reaches the filler neck. Tighten the filler plug.
-	Reset the service warning after carrying out all service actions in the relevant Service Plan.

7.6 Coolers

General

Keep the coolers clean to maintain their efficiency.

Instructions for air-cooled compressors

- Stop the compressor, close the air outlet valve and switch off the voltage.
- Cover all parts under the coolers.

- Remove the service plates (1) at the fan compartment.



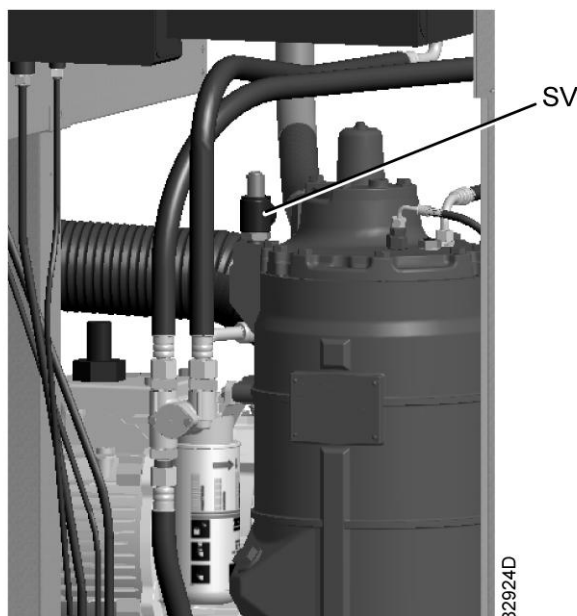
- Remove any dirt from the coolers with a fibre brush. Brush in the direction of the cooling fins. Also remove any dirt from the fan with a fibre brush.
- Next, clean with an air jet in the reverse direction to normal flow. Use low pressure air. If necessary, the pressure may be increased up to 6 bar(e) (87 psig).
- If it is necessary to wash the coolers with a cleaning agent, consult Atlas Copco.
- Remove the cover used during cleaning.
- Mount the service plates (1) at the fan compartment.

Instructions for compressors with dryer.

- Stop the compressor, close the air outlet valve and switch off the voltage.
- Remove any dirt on the condenser inlet with a vacuum cleaner.
- Next, clean with an air jet in the reverse direction to normal flow. Use low pressure air. If necessary, the pressure may be increased up to 6 bar(e) (87 psig).
- Clean the condenser area with a vacuum cleaner.

7.7 Safety valves

Location of safety valve



Position of safety valve

Operating

Operate the safety valve from time to time by unscrewing the cap one or two turns. Retighten it afterwards.

Testing

Before removing the valve, depressurize the compressor. See also section Problem solving.

The safety valve (SV) can be tested on a separate air line. If the 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.

7.8 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.

General

For all references see section Introduction.

The following remarks should be kept in mind:

- Keep the dryer clean.
- Brush or blow off the finned surface of condenser monthly.
- Inspect and clean the electronic condensate drain monthly.

7.9 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 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.

7.10 Storage after installation

Procedure

Run the compressor regularly, e.g. twice a week, until warm. Load and unload the compressor a few times.



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


7.11 Disposal of used material

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


Electronic components are subject to the EU Directive 2012/19/EC for Waste Electrical and Electronic Equipment (WEEE). As such, these parts must not be disposed of at a municipal waste collection point. Refer to local regulations for directions on how to dispose of this product in an environmental friendly manner.

8 Problem solving

Warning

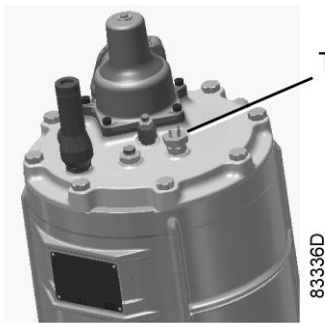
	Always apply all relevant Safety precautions .
	<p>Before carrying out any maintenance, repair work or adjustment, press the stop button, wait until the compressor has stopped and close the air outlet valve.</p> <p>Open the manual drain valve(s).</p> <p>Press the emergency stop button and switch off the voltage. Open and lock the isolating switch.</p> <p>Depressurise the compressor by opening the oil filler plug one turn.</p> <p>For location of components: see sections Introduction, Condensate system and Initial start.</p>
	<p>The air outlet valve can be locked during maintenance or repair as follows:</p> <ul style="list-style-type: none"> • Close the valve. • Remove the screw fixing the handle with the wrench delivered with the compressor. • Lift the handle and turn it until the slot of the handle fits over the blocking edge on the valve body. • Fit the screw.

Before electrical maintenance

	<ul style="list-style-type: none"> • Wait for at least 10 minutes before starting any electrical repairs as dangerous high voltage remains on the capacitors of the start and speed regulation unit during some minutes after switching off the voltage. • Always switch off the voltage. Only pressing the emergency stop button is not sufficient to make the compressor voltage free. • 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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Faults and remedies, compressor

On compressors equipped with an Elektronikon® Graphic controller, if the alarm LED is lit or flashes, consult sections [Event history menu](#) or [Service menu](#).

Condition	Possible cause	Remedy
Compressor does not start or stops during operation. Elektronikon shows <Main Motor Converter Alarm>.	Too high temperature in oil the separator vessel or temperature switch (TSHH1) defective 	Check switch functionality. Check wiring. Replace if necessary
Condensate is not discharged from condensate separator during loading	Discharge tube clogged	Check and correct as necessary
Compressor air output or pressure below normal	Air consumption exceeds air delivery of compressor	Check the connected equipment.
	Choked air filter element	Replace filter element
	Solenoid valve malfunctioning	Replace valve
	Oil separator element clogged	Have element replaced
	Air leakage	Have leaks repaired. Replace leaking tubes
	Safety valve leaking	Replace valve
	Compressor element out of order	Consult Atlas Copco
Safety valve blows	Minimum pressure valve malfunctioning	Check and have defective parts replaced
	Oil separator element 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 Customer Centre
Compressor element outlet temperature or delivery air temperature above normal	Oil level too low	Check and correct
	On air-cooled compressors, insufficient cooling air or cooling air temperature 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
	Thermostatic valve malfunctioning	Have valve tested. Replace if necessary.
	Air cooler clogged	Clean cooler
	Compressor element out of order	Consult Atlas Copco Customer Centre

Condition	Possible cause	Remedy
Excessive oil consumption; oil carry-over through discharge line	Incorrect oil causing foam	Change to correct oil
	Oil level too high	Check for overfilling. Release pressure and drain oil to correct level.
	Oil separator defective	Replace oil separator element
	Malfunctioning of the scavenge line	Replace non-return valve in the scavenge line

Faults and remedies, dryer

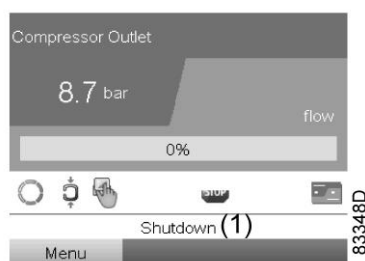
For all references hereafter, consult section [Air dryer](#).

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

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

Converter fault codes

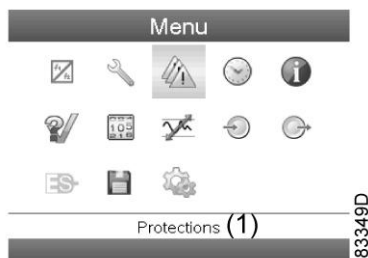
If a problem is detected by the converter, a specific code (Main motor converter alarm) will appear on the Elektronikon display, together with a fault code.



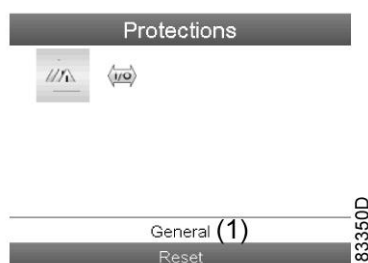
Typical display when the compressor is stopped by a shutdown

(1)	Shutdown
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Navigate to the Stop icon or to the Protections icon and press Enter.

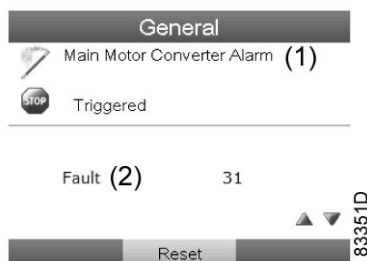


(1)	Protections
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(1)	General
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The display shows the problem (Main Motor Converter Alarm) and a fault code (31 in this case).

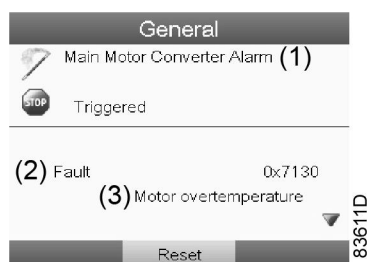


(1)	Main Motor Converter Alarm
(2)	Fault

Below table lists the most important error codes. If another code appears, please contact Atlas Copco.

Neos

If a problem is detected by the Neos converter, a specific code (Main motor converter alarm) will appear on the Elektronikon display, together with a fault code and a fault description.



Typical display, Main Motor Converter Alarm (1) , Fault (2) Code (0x7130) and description (Motor overtemperature (3)) in this case.

Below table lists the most important error codes. If another code appears, please contact Atlas Copco.

Fault code	Fault description	Cause	Actions
0x1111	Undervoltage	Main Power supply voltage too low or missing links in the control panel	Check if main supply voltage is within specs. Check main fuses. Check for loose connectors at the control unit of the converter and Elektronikon. Check for tripped fuses at the secondary of the transformer T1 in the electrical panel.
0x2312 0x2314	Motor overcurrent	Overcurrent detected at motor side	Check if main supply voltage is within specs.

Fault code	Fault description	Cause	Actions
0x2315	Motor overcurrent	Short Circuit detected in U phase	Try to reset the error. If error returns, contact Atlas Copco.
0x2316	Motor overcurrent	Short Circuit detected in V phase	
0x2317	Motor overcurrent	Short Circuit detected in W phase	
0x3210	Overvoltage	Overvoltage detected	Check if main supply voltage is within specs. Check main fuses.
0x3221	Undervoltage	Main Power supply voltage too low.	
0x3223	Undervoltage	Phase loss detected	
0x3224	Overvoltage	Maximum allowable voltage of the DC-link exceeded; Threshold is lowered in case of higher temperature	Let drive cool off Check for excessive ambient temperature Clean heatsink with compressed air Clean inlet filter cubicle Ensure proper flow of cooling air in compressor room Check if supply voltage is within specs
0x3225	Undervoltage	Undervoltage detected	Check if main supply voltage is within specs. Check main fuses.
0x3226	Overvoltage	Overvoltage or overtemperature detected in IGBT (U phase)	Let drive cool off. Check for excessive ambient temperature. Clean heatsink with compressed air. Clean inlet filter cubicle. Ensure proper flow of cooling air in compressor room. Check if supply voltage is within specs.
0x3227	Overvoltage	Overvoltage or overtemperature detected in IGBT (V phase)	
0x3228	Overvoltage	Overvoltage or overtemperature detected in IGBT (W phase)	

Fault code	Fault description	Cause	Actions
0x4311	Drive overtemperature	Overtemperature detected in an IGBT	<p>Let drive cool off. Check for excessive ambient temperature. Clean heatsink with compressed air. Clean inlet filter cubicle. Ensure proper flow of cooling air in compressor room.</p>
0x4312	Drive overtemperature	Overtemperature detected in the heatsink	
0x4314	Drive overtemperature	Overtemperature detected in IGBT junction UH	
0x4315	Drive overtemperature	Overtemperature detected in IGBT junction UL	
0x4316	Drive overtemperature	Overtemperature detected in IGBT junction VH	
0x4317	Drive overtemperature	Overtemperature detected in IGBT junction VL	
0x4318	Drive overtemperature	Overtemperature detected in IGBT junction WH	
0x4319	Drive overtemperature	Overtemperature detected in IGBT junction WL	
0x4320	Drive overtemperature	Overtemperature detected in powerboard	
0x4321	Drive overtemperature	Overtemperature detected in control board	
0x4322	Drive overtemperature	Overtemperature detected in IGBT board U phase	
0x4323	Drive overtemperature	Overtemperature detected in IGBT board V phase	
0x4324	Drive overtemperature	Overtemperature detected in IGBT board W phase	
0x5020	Emergency off (STO)	Emergency stop circuit opened	<p>Check emergency stop button. Check for loose connectors at the control unit of the converter.</p>
0x5021	Emergency off (STO)	Emergency stop circuit opened	
0x5022	Emergency off (STO)	Emergency stop circuit opened Hardware fault detected	

Fault code	Fault description	Cause	Actions
0x5114	Drive failure (hardware)	Internal power supply tripped	Try to reset the error. If error returns, contact Atlas Copco.
0x5115	Drive failure (hardware)	Internal power supply tripped	
0x5401	Drive failure (hardware)	General fault detected in power section	
0x5402	Drive failure (hardware)	General fault detected in power section	
0x6101	Drive failure (hardware)	Eeprom read failed Time-out communication	
0x6102	Drive failure (hardware)	Failed temperature reading of power board Time-out communication at initialization	
0x6103	Drive failure (hardware)	General fault detected	
0x6104	Drive failure (hardware)	Internal checksum error detected	
0x6105	Drive failure (hardware)	Internal communication timeout	
0x6106	Drive failure (hardware)	Internal checksum error detected	
0x6107	Drive failure (hardware)	Internal communication timeout	
0x6108	Drive failure (hardware)	Internal communication timeout	
0x6109	Drive failure (hardware)	Internal checksum error detected	
0x610A	Drive failure (hardware)	Internal communication overload	
0x610B	Drive failure (hardware)	Internal control overload	
0x610C	Drive failure (hardware)	CAN communication time-out	Check CAN-cable connection between Elektronikon and converter. Check position of the CAN termination switch at both sides of the CAN cable. Both should be OFF.
0x610D	Drive failure (hardware)	Firmware not compatible	Try to reset the error. If error returns, contact Atlas Copco.
0x610E	Drive failure (hardware)	Not able to identify power board	
0x610F	Drive failure (hardware)	Not able to identify IGBT module	
0x6110	Drive failure (hardware)	Power board not compatible with IGBT modules	

Fault code	Fault description	Cause	Actions
0x6111	Drive failure (software)	Internal CAN state machine fault	Check CAN-cable connection between Elektronikon and converter. Check position of the CAN termination switch at both sides of the CAN cable. Both should be OFF.
0x6112	Drive failure (software)	Requested command cannot be executed because of limited access level	Try to reset the error. If error returns, contact Atlas Copco.
0x6113	Drive failure (software)	CAN communication overload	Check CAN-cable connection between Elektronikon and converter. Check position of the CAN termination switch at both sides of the CAN cable. Both should be OFF.
0x6114	Drive failure (software)	The firmware version is not compatible with the parameter version	Try to reset the error. If error returns, contact Atlas Copco.
0x7130	Motor overtemperature	Motor overtemperature detected	Let motor cool off. Ensure main fan and air flow in and out compressor is not obstructed. Ensure proper flow of cool air in compressor room. Check for loose connectors at the control unit of the converter.
0x8401	Overvoltage	Motor maximum speed exceeded	Try to reset the error. If error returns, contact Atlas Copco.
0x8402	Overvoltage	Motor startup unsuccessful; requested speed not reached	Wait until the vessel depressurizes by blow off. (by not resetting the fault immediately). If the problem persists, contact Atlas Copco.
0x9001	Hardware run enable missing	Hardware enable signal missing	Check for loose connectors at the control unit of the converter and Elektronikon. Check for tripped fuses at the secondary of the transformer T1 in the electrical panel.
0x9065 to 91F4	Drive failure (software)	Failure on attempt to write parameter Pyyy out of range	Try to reset the error. If error returns, contact Atlas Copco.

Control Technics (Optional)

Fault code	Text on converter display	Cause	Actions
1	UU	Too low voltage. The voltage on the converter is below the specifications.	Check the supply voltage. Contact Atlas Copco.
2	OU	Too high voltage. The voltage on the converter is above the specifications.	Check the supply voltage. Contact Atlas Copco.
3	OI.AC	Too high current. The converter is overloaded.	Contact Atlas Copco.

Fault code	Text on converter display	Cause	Actions
21	O.ht1	Converter overheating (IGBT)	Check the ambient temperature. Check the cubicle cooling. Contact Atlas Copco.
22	O.ht2	Converter overheating (heat sink)	Check the ambient temperature. Check the cubicle cooling. Contact Atlas Copco.
24	th	Motor overheating (thermistor)	Check the ambient temperature. Clean the motor cooling fins. Contact Atlas Copco.
27	O.ht3	Converter overheating (thermal model)	Check the ambient temperature. Check the cubicle cooling. Contact Atlas Copco.
32	PH	High input voltage phase imbalance or input phase loss	Check supply phases. Contact Atlas Copco.
102	O.ht4	Converter overheating (Power module)	Check the ambient temperature. Check the cubicle cooling. Contact Atlas Copco.
(blank)	(blank)	Various	Contact Atlas Copco.


9 Technical data

9.1 Readings on display



Elektronikon™ Graphic 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. 60 °C (108 °F) above ambient temperature.
Dewpoint temperature (on Full-Feature compressors)	Approx. 4 °C (39 °F).

9.2 Electric cable size and fuses

Important



- 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.
 - The cable size is limited between 50 and 95 mm² (see table).
 - Use the original cable entry. See section [Dimension drawings](#).
- 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.**
- Local regulations remain applicable if they are stricter than the values proposed below.
 - Currents are calculated with the full service factor but we suggest to add 10% due to over- and under-voltage.
Fuses are maximum allowed values calculated for full service factor and 10% over- and under-voltage.
 - **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

UL/cUL approval

Compressor type			I (1)	Max fuse (1)		I (2)	Max fuse (2)	
				HSJ (3) JJS (4)	K5/ HRC form II		HSJ (3) JJS (4)	K5/ HRC form II
	V	Hz	A	A	A	A	A	A
GA 37 VSD	460	60	63.9	80	-	67.5	80	-

I: current in the supply lines at maximum load and nominal voltage

(1): compressors without integrated dryer

(2): compressors with integrated dryer

(3): fuse type for compressors with Control Technics converter

(4): fuse type for compressors with Neos converter

Fuse calculations for UL/cUL: the indicated fuse size is the maximum fuse size in order to protect the motor against short circuit.

Cable sizing according UL/cUL

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

Maximum allowed current in function of the wire size

AWG or kcmil	Maximum current	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
4/0	< 230 A	250	< 255 A
300	< 285 A	350	< 310 A
400	< 335 A	500	< 380 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.
- 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: $I_{\text{tot}} = 128 \text{ A}$, maximum ambient temperature is 45 °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.

9.3 Protection settings

Settings for fan motor overload protection (Q15) (F15 for IT)

Frequency (Hz)	Voltage (V)	GA 37 VSD Q15 (A)
UL/cUL		
60	460	2.6

9.4 Dryer switches

General

The regulating and safety devices are factory-adjusted to give optimum performance of the dryer.
Do not alter the setting of any of the devices.

9.5 Reference conditions and limitations

Reference conditions

Air inlet pressure (absolute)	bar	1
Air inlet temperature	°C	20
Relative humidity	%	0
Working pressure		See section Compressor data.

Limits

Maximum working pressure		See section Compressor data.
Minimum working pressure	bar(e)	4
Maximum air inlet temperature	°C	46
Minimum ambient temperature	°C	0
Maximum altitude operation (1)	m	1000 m above sea level
Maximum altitude operation (1)	ft	3281 ft above sea level

(1): For operation at higher altitude: contact Atlas Copco

9.6 Compressor data

Reference conditions



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

GA 37 VSD

		13 bar 175 psi	13 bar 175 psi	13 bar 175 psi
Frequency	Hz	50 60	50 60	50 60
Number of compression stages		1	1	1
Normal effective working pressure	bar(e)	7	9.5	12.5
Maximum effective working pressure, Workplace Full-Feature	bar(e)	7.3	9.8	12.8
Maximum motor shaft speed	rpm	3066	2683	2224
Minimum motor shaft speed	rpm	780	780	1172
Temperature of air leaving the outlet valve (approx.), Workplace Full-Feature	°C	23	23	23
Nominal motor power	kW	37	37	37
Dryer power at full load, Workplace Full-Feature units	kW 50 Hz 60 Hz	. 1.34 1.62	. 1.34 1.62	. 1.34 1.62
Refrigerant type, Workplace Full-Feature		R410A	R410A	R410A
Refrigerant quantity, Workplace Full-Feature	kg 50 Hz 60 Hz	. 0.97 1.01	. 0.97 1.01	. 0.97 1.01
Oil capacity, air-cooled	l	21	21	21
Sound pressure level, 60 Hz (according to ISO 2151 (2004))	dB(A)	67	67	67

9.7 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)
Ambient and temperature conditions	IEC60068-2

<ul style="list-style-type: none"> Operating temperature range Storage temperature range 	<ul style="list-style-type: none"> -10°C.....+60°C (14 °F140 °F) -30°C.....+70°C (-22 °F158 °F)
Permissible humidity	Relative humidity 90% No condensation
Noise emission	IEC61000-6-3
Noise immunity	IEC61000-6-2
Mounting	Cabinet door

Digital outputs

Number of outputs	9 (Elektronikon™ Graphic controller - p.n. 1900 5200 10 1900 5200 19)
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 (Elektronikon™ Graphic controller - p.n. 1900 5200 10 1900 5200 19)
Supply by controller	24 V DC
Supply protection	Short circuit protected to ground
Input protection	Not isolated

Analog inputs

Number of pressure inputs	2 (Elektronikon™ Graphic controller - p.n. 1900 5200 10 1900 5200 19)
Number of temperature inputs	5 (Elektronikon™ Graphic controller - p.n. 1900 5200 10 1900 5200 19)

10 Instructions for use

Oil separator vessel

This vessel can contain pressurized air. This can be potentially dangerous if the equipment is misused.
This vessel must only be used as a compressed air/oil separator tank and must be operated within the limits specified on the data plate.
No alterations must be made to this vessel by welding, drilling or other mechanical methods without the written permission of the manufacturer.
The pressure and temperature of this vessel must be clearly indicated.
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.
Original bolts have to be used after opening for inspection. The maximum torque has to be taken into consideration: for M12 bolts 73 Nm (53.8 lbf.ft)), for M16 bolts 185 Nm (136.4 lbf.ft).

11 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.

12 Pressure equipment directives

Components subject to 97/23/EC Pressure Equipment Directive (until 20/07/2014) or 2014/68/EU (from 20/07/2014 onwards)

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 97/23/EC (2014/68/EU) and all pressure equipment according to the Simple Pressure Vessel Directive 2009/105/EC (2014/29/EU).

Compressor type	Component	Description	Volume	Design pressure	Minimum and maximum design temperature	PED Class
GA 37 VSD and GA 45 VSD	1625 5641 99	Vessel	43.1 l	15 bar(e)	-10 °C/ 120 °C	II
	0830 1008 39	Safety valve	-	-	-	IV
	0830 1008 40	Safety valve	-	-	-	IV
	0832 1000 78	Safety valve	-	-	-	IV
	0832 1000 79	Safety valve	-	-	-	IV

Compressor type	Component	Description	Number of cycles (1)	Minimum wall thickness	Inspection frequency (2)
GA 37 VSD and GA 45 VSD	1625 5641 99	Vessel	2 x 10 ⁶	8 mm	10 years
	0830 1000 38	Safety valve	-	-	-
	0830 1000 40	Safety valve	-	-	-
	0832 1000 78	Safety valve	-	-	-
	0832 1000 79	Safety valve	-	-	-

The compressors conform to PED smaller than category II.

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

(2) The minimum wall thickness must be respected at all times. Inspection techniques such as ultrasonic or X-ray are equivalent to hydrostatic testing for this equipment.

13 Declaration of conformity

Insert logo here

EU DECLARATION OF CONFORMITY

- 1 We, (1) declare under our sole responsibility, that the product
 2 Machine name :
 3 Machine type :
 4 Serial number :
 5
 6 Which falls under the provisions of article 12.2 of the EC Directive 2006/42/EC on the approximation of the laws of the Member States relating to machinery, is in conformity with the relevant Essential Health and Safety Requirements of this directive.

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

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

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

- 8.b <1> is authorized to compile the technical file.

	Conformity of the specification to the directives	Conformity of the product to the specification and by implication to the directives
11 Issued by	Engineering	Manufacturing
12 Name		
13 Signature		
14 Date		
15 Place		

00500

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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We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call — Sustainable Productivity.

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