Atlas Copco

Oil-injected rotary screw compressors

GA 15, GA 18, GA 22, GA 26

Instruction book

Atlas Copco

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Oil-injected rotary screw compressors

GA 15, GA 18, GA 22, GA 26

From following serial No. onwards: CAI 782 294

Instruction book

Original instructions

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

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1 Safety precautions

1.1 Safety icons

Explanation

	Danger for 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 compressor
   - Press the emergency stop button
   - Switch off the voltage
   - Depressurize the compressor
   - 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!

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.

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.

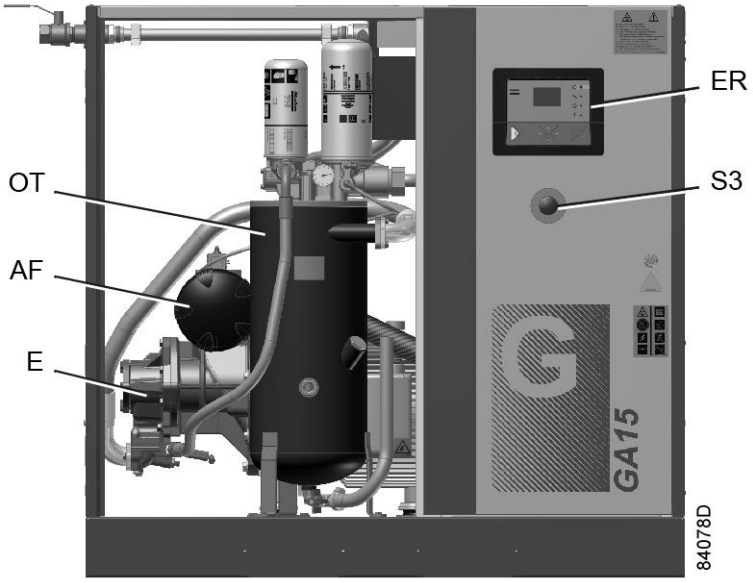
2 Introduction

GA 15, GA 18, GA 22 and GA 26 are single- stage, oil injected screw compressors driven by an electric motor. The compressors are air-cooled. The compressors are enclosed in a sound insulating bodywork.

The compressors are controlled by an Elektronikon® controller, fitted to the door on the front side. The cabinet with electric equipment is located behind the door panel.

The compressors are available in two versions: the floor mounted version and the receiver mounted version. Each of these versions can be supplied without integrated air dryer (the Pack version) or with integrated air dryer (the Full Feature version).

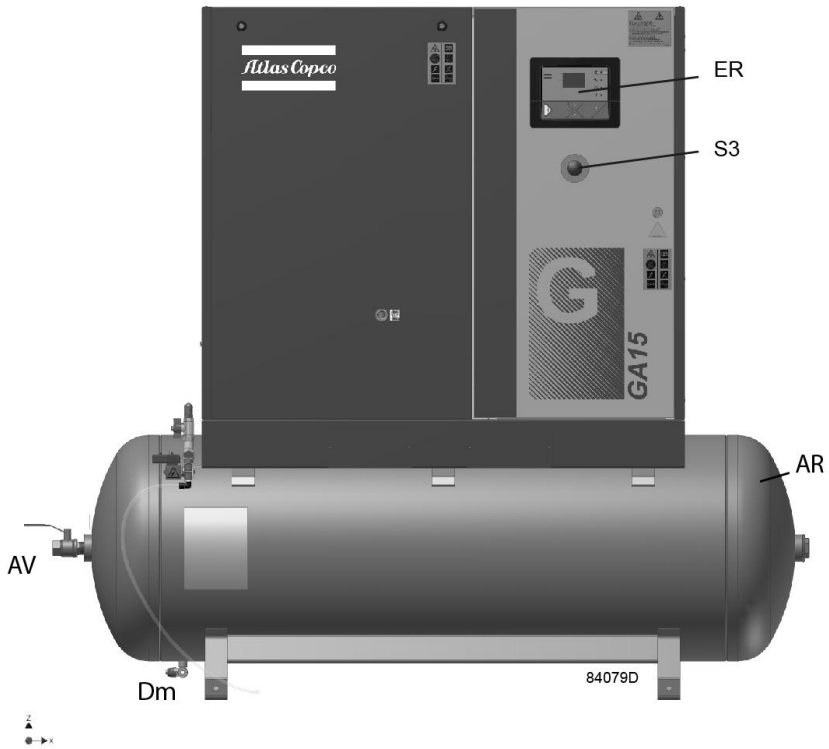
GA Pack



Front view GA 15 P, floor mounted

ER	Elektronikon®controller	OT	Oil separator tank
S3	Emergency stop button	AF	Air filter
E	Compressor element		

On the receiver mounted version, the compressor is mounted on a large air receiver (AR) of 500 l (125 gal, 4.5 cu.ft):



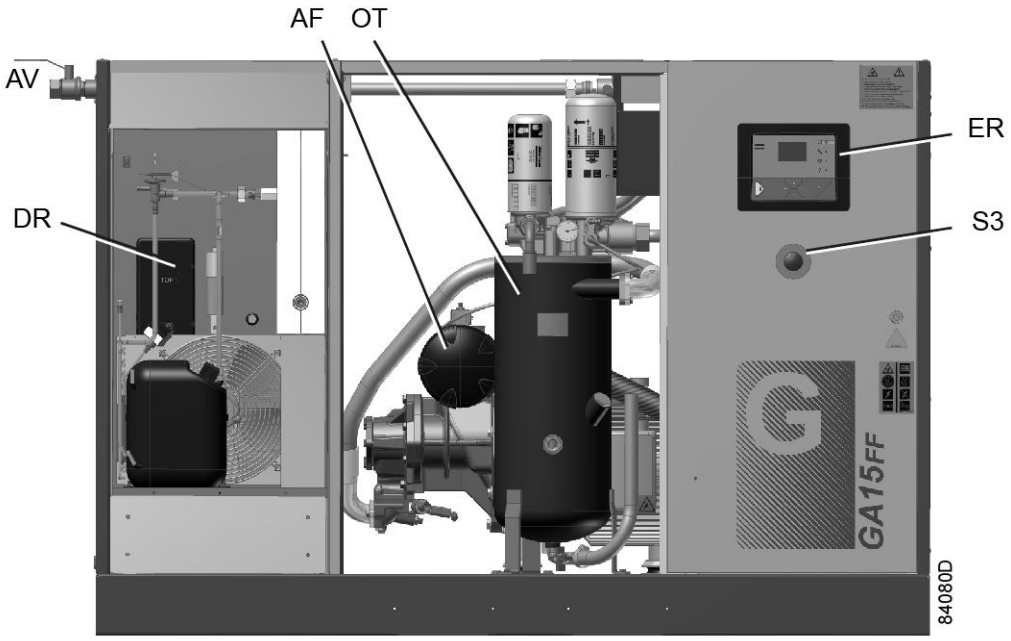
Front view GA 15 P, receiver mounted

ER	Elektronikon® controller	AR	Air receiver
S3	Emergency stop button	AV	Air outlet valve
Dm	Manual drain, air receiver		

GA Full-Feature

GA Full-Feature (FF) compressors are provided with an air dryer, integrated in the canopy. The dryer removes condensate from the compressed air by cooling the air to near freezing point and automatically draining the condensate.

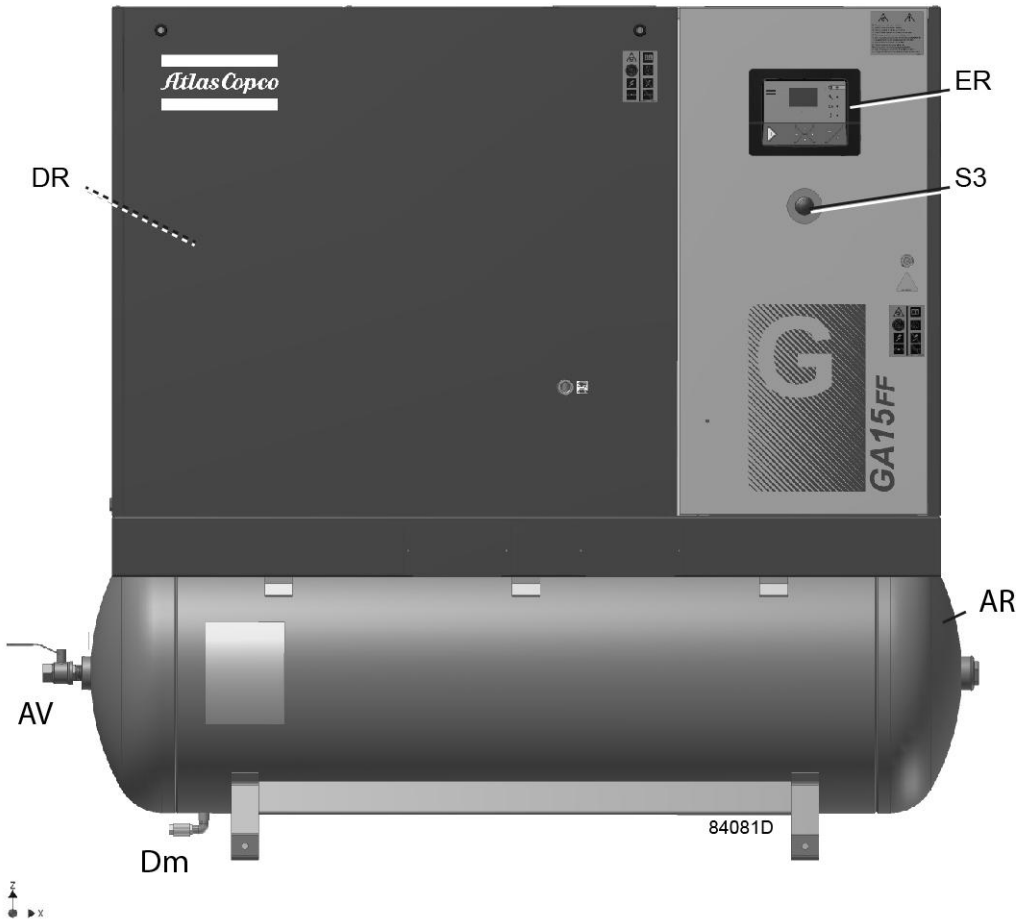
Floor mounted compressors are directly installed on the floor:



Front view GA 15 FF, floor mounted

ER	Elektronikon® controller	OT	Oil separator tank
S3	Emergency stop button	AF	Air filter
DR	Dryer	AV	Air outlet valve

On the receiver mounted version, the compressor is mounted on a large air receiver (AR) of 500 l (125 gal, 4.5 cu.ft):

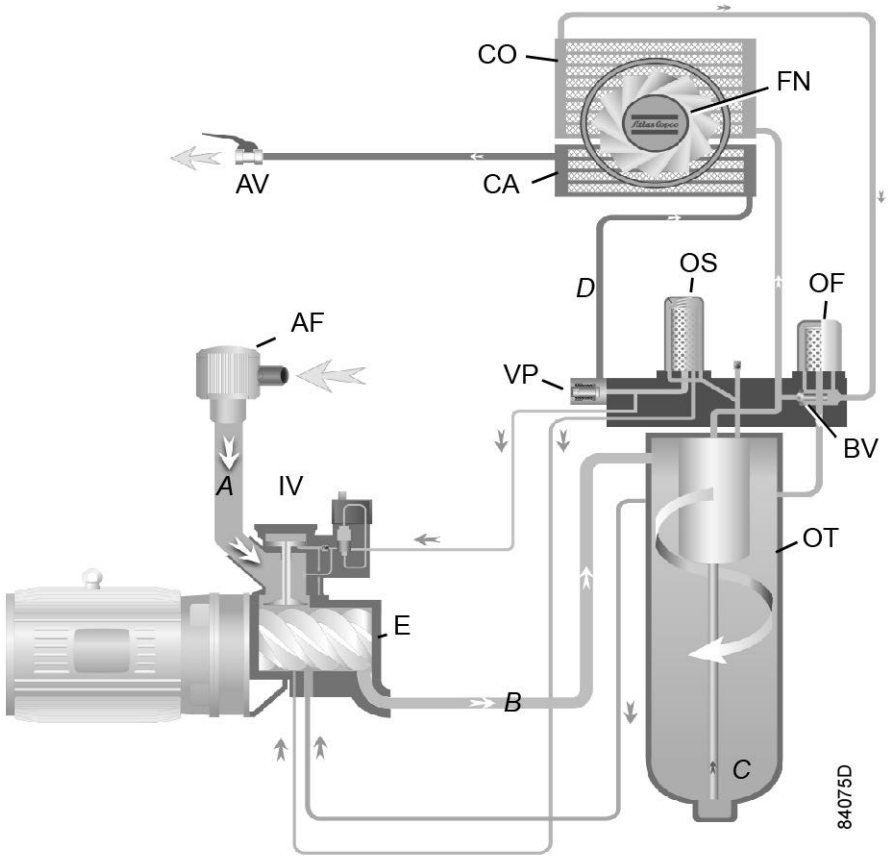


Front view GA 15 FF, receiver mounted

ER	Elektronikon® controller	AR	Air receiver
S3	Emergency stop button	AV	Air outlet valve
Dm	Manual drain, air receiver	DR	Dryer

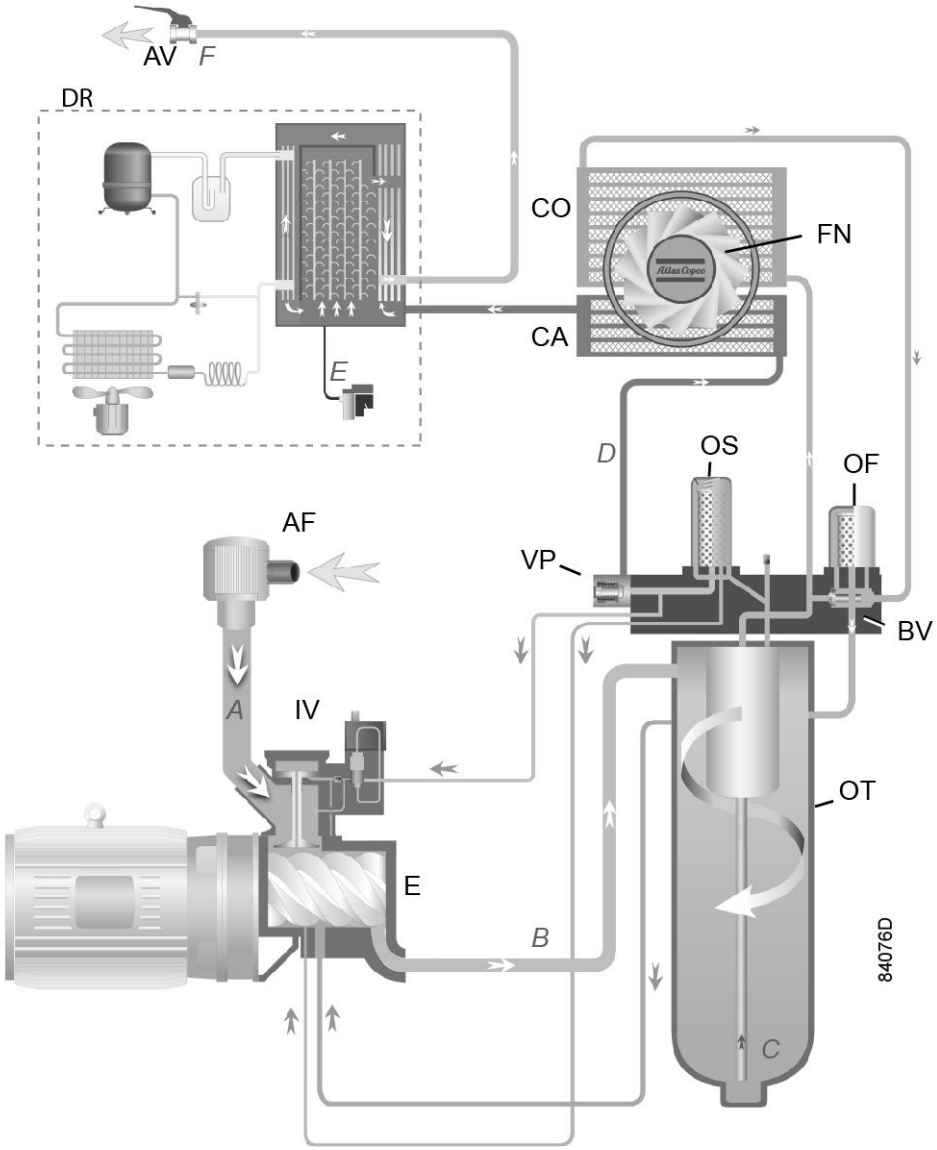
3 Operation

Flow diagrams



Flow diagram, GA Pack

A	Intake air	*C*	Oil
B	Air/oil mixture	*D*	Wet compressed air



Flow diagram, GA Full-Feature

A	Intake air	*D*	Wet compressed air
B	Air/oil mixture	*E*	Condensate
C	Oil	*F*	Dried compressed air

Air flow

Air drawn through air filter (AF) and open inlet valve (IV) is compressed by compressor element (E). A mixture of compressed air and oil (see also paragraph *Oil flow* hereafter) flows into the oil tank (OT), where the air is separated from the oil. The compressed air is discharged via minimum pressure valve (Vp) and air cooler (Ca).

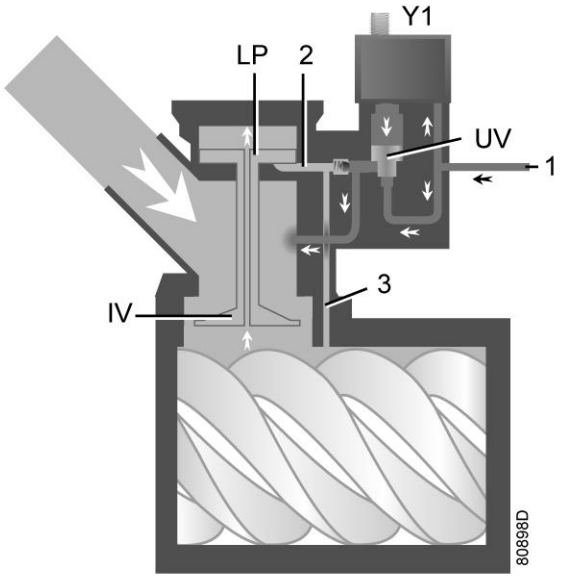
On compressors without integrated dryer, the air flows directly to the outlet valve (AV).

On compressors with integrated dryer, the air flows through air dryer (DR) before it is discharged through outlet valve (AV). See section Air dryer for details on the operation of the dryer.

During operation, minimum pressure valve (Vp) keeps the pressure in the separator tank (OT) above a minimum value, required for lubrication. An integrated check valve prevents the compressed air downstream the valve from being vented to atmosphere during unloaded operation.

When the compressor is stopped, inlet valve (IV) closes, preventing compressed air and oil to flow to the air filter.

Regulation



Unloading valve (loaded condition)

- When the net pressure is below the loading pressure, solenoid valve (Y1) is energised.
  - The space above unloading valve/blow-off valve (UV) is connected with the oil separator tank pressure (1) via the solenoid valve.
  - Unloading valve/blow-off valve (UV) moves downwards, closing off the connection to channels (2) and (3).
  - Underpressure from the compressor element causes loading plunger (LP) to move downwards and inlet valve (IV) to open fully.

  Result: air delivery is 100%, the compressor runs loaded.
- If the air consumption is less than the air output of the compressor, the net pressure increases. When the net pressure reaches the unloading pressure, solenoid valve (Y1) is de-energized.
  - The pressure above unloading valve/blow-off valve (UV) is released to atmosphere and the space above valve (UV) is no longer in connection with the oil separator tank pressure (1).
  - Unloading valve/blow-off valve (UV) moves upwards, connecting the oil separator tank pressure (1) with channels (2) and (3).
  - The pressure in channel (2) causes the loading plunger (LP) to move upwards, causing inlet valve (IV) to close, while the pressure is gradually released to atmosphere.
  - The pressure in the separator tank stabilizes at low value. A small amount of air is kept drawn in to guarantee a minimal pressure, required for lubrication during unloaded operation.

  Result: air output is stopped, the compressor runs unloaded.

Oil flow

In oil separator tank (OT), most of the oil is removed from the air/oil mixture by centrifugal action. The oil collects in the lower part of oil tank. The remaining oil is separated from the compressed air by oil separator element (OS).

Air pressure forces the oil from oil tank (OT) through oil cooler (Co) and filter (OF) to compressor element (E).

The oil system is provided with a thermostatic bypass valve (BV). When the oil temperature is below its set point, bypass valve (BV) shuts off the supply to oil cooler (Co) and the oil cooler is bypassed.

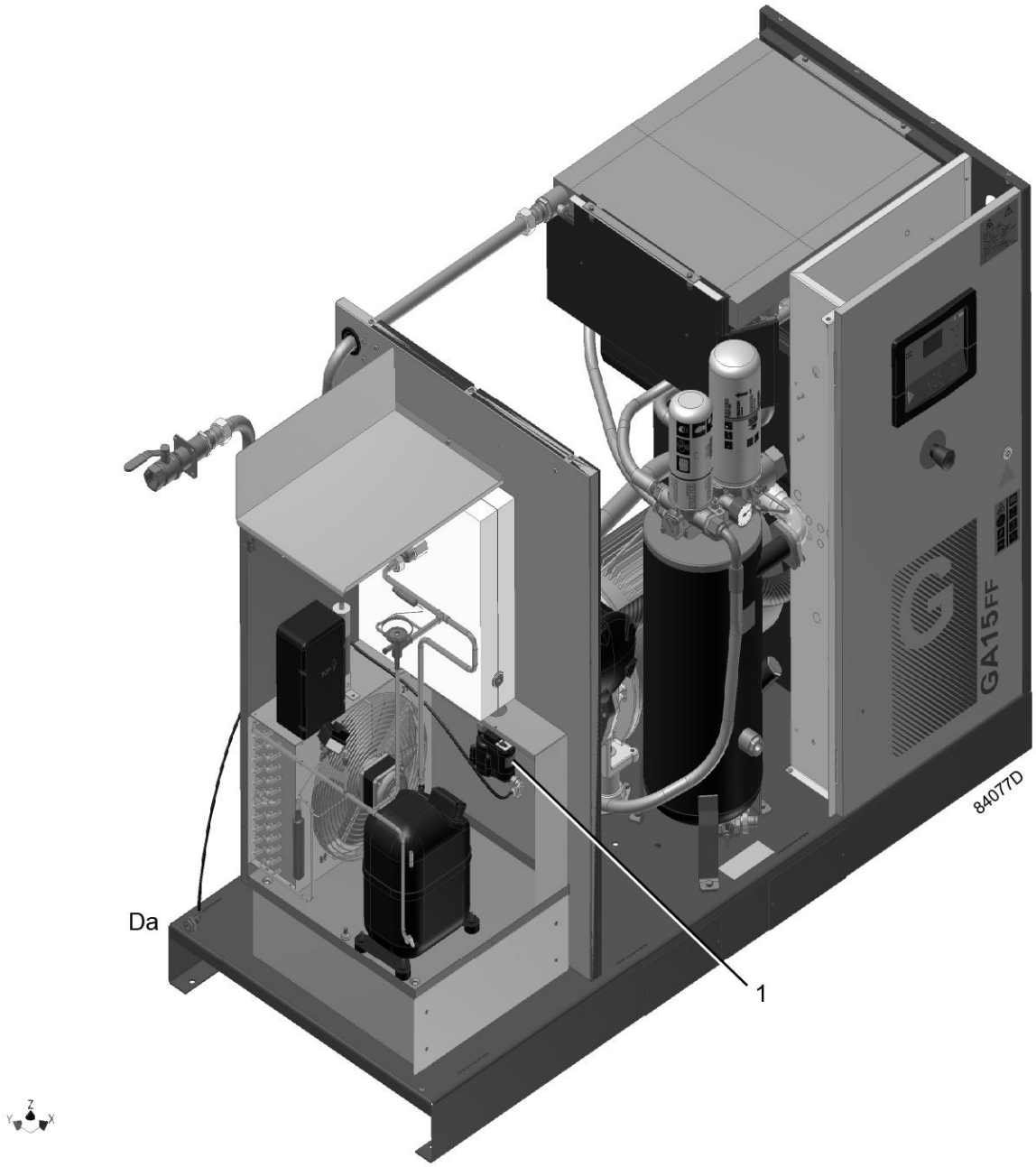
Thermostatic bypass valve (BV) starts opening the supply from cooler (Co) when the oil temperature has increased to the set point. At approximately 15 ˚C (27 ˚F) above the set point, all the oil flows through the oil cooler.

Cooling

The cooling system comprises an air cooler (Ca) and an oil cooler (Co).

The cooling flow is generated by fan (FN).

Condensate removal



On Full-Feature units, the dryer is equipped with an electronic drain (1). The electronic drain is provided with an automatic drain outlet (Da).

Tank mounted units are provided with an additional manual drain on the air receiver.

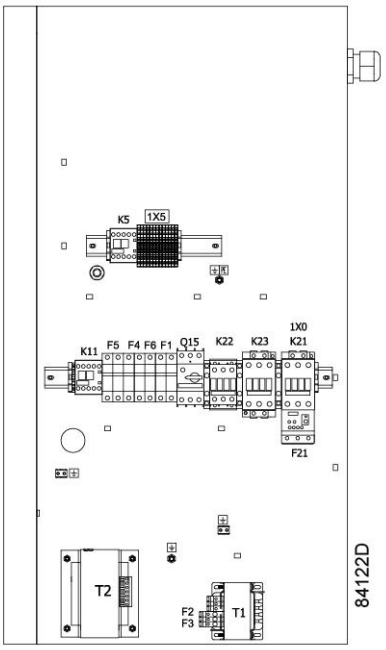
4 Electrical system

General

Also consult sections Electrical diagrams and Electrical connections.

Electrical components

The electrical system comprises following components:



Electric cubicle, typical example

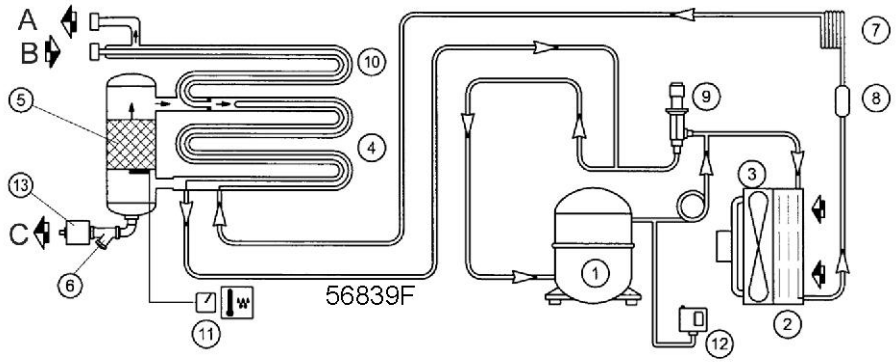
Reference	Designation
F1...6	Fuses
K5	Auxiliary relay
F21	Overload relay, compressor motor
K11	Auxiliary contactor for dryer (only on Full-Feature compressors)
K21	Line contactor
K22	Star contactor
K23	Delta contactor
Q15	Circuit breaker, fan motor
T1/T2	Transformers
1X0	Terminal strip (voltage supply)
1X1	Terminal strip (motor)
1X5	Terminal strip (Control circuit)
PE	Earth terminal

5 Electrical diagrams

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

6 Air dryer

Description



Air dryer

Air circuit

Compressed air enters heat exchanger (10) and is cooled by the outgoing, cold, dried air. Water vapor in the incoming air starts to condense. The air then flows through heat exchanger/evaporator (4) where the refrigerant evaporates, causing the air to be cooled further to near the evaporating temperature of the refrigerant. More water condenses. The cold air then flows through separator (5) where all the condensate is separated from the air. The condensate is automatically drained. The cold, dried air flows through heat exchanger (10) where it is warmed up by the incoming air.

Refrigerant circuit

Refrigerant compressor (1) delivers hot, high-pressure refrigerant gas which flows through condenser (2) where most of the refrigerant condenses.

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

The refrigerant enters evaporator (4) where it withdraws heat from the compressed air by further evaporation at constant pressure. The heated refrigerant leaves the evaporator and is sucked in by the compressor (1).

7 Elektronikon® controller

7.1 Elektronikon® regulator

Control panel

Introduction

In general, the Elektronikon® regulator 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

The regulator maintains the net pressure between programmable limits by automatically loading and unloading the compressor. A number of programmable settings, e.g. the unloading and loading pressures, the minimum stop time and the maximum number of motor starts are taken into account.

The regulator stops the compressor whenever possible to reduce the power consumption and restarts it automatically when the net pressure decreases. If the expected unloading period is to short, the compressor is kept running to prevent too short stand-still periods.

Protecting the compressor

Shutdown

If the compressor element outlet temperature exceeds the programmed shutdown level, the compressor will be stopped. This will be indicated on the display of the regulator. The compressor will also be stopped in case of overload of the drive motor.

Air-cooled compressors will also be stopped in the event of overload of the fan motor.

	Before remedying, consult the Safety precautions.

Shutdown warning

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

If one of the measurements exceeds the programmed shutdown warning level, this will also be indicated to warn the operator before the shutdown level is reached.

Service warning

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

Other warnings

On compressors equipped with an integrated dryer, a warning message will appear if the dew point is too high or too low for the given ambient temperature.

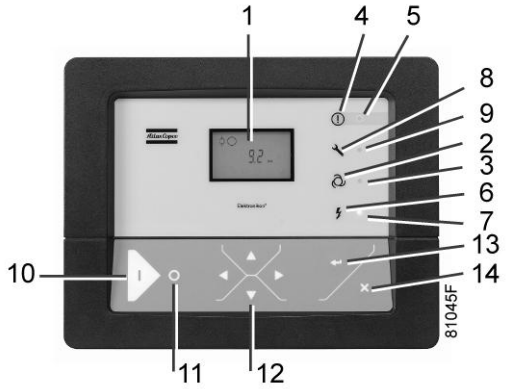
Automatic restart after voltage failure

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

⚠	If activated, and if the regulator was in the automatic operation mode, the compressor will automatically restart when the supply voltage to the module is restored!

7.2 Control panel

Detailed description

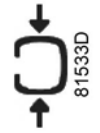
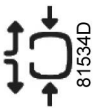
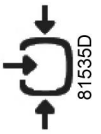


Control panel of the Elektronikon controller

Reference	Designation	Function
1	Display	Shows icons and operating conditions.
2	Automatic operation symbol	
3	LED, Automatic operation	Indicates that the regulator is automatically controlling the compressor: the compressor is loaded, unloaded, stopped and restarted depending on the air consumption and the limitations programmed in the regulator.

Reference	Designation	Function
4	Warning symbol	
5	LED, Warning	Is lit if a warning condition exists.
6	Voltage symbol	
7	LED, Voltage on	Indicates that the voltage is switched on.
8	Service symbol	
9	LED, Service	Is lit when service is needed.
10	Start button	This button starts the compressor. Automatic operation LED (3) lights up. The Elektronikon is operative.
11	Stop button	This button is used to stop the compressor. Automatic operation LED (3) goes out.
12	Scroll buttons	Use these buttons to scroll through the menu .
13	Enter button	Use this button to confirm the last action.
14	Escape button	Use this button to go to previous screen or to end the current action.

7.3 Icons used on the display

Function	Icon	Description
Compressor status	 81532D	When the compressor is stopped, the icon stands still. When the compressor is running, the icon is rotating.
	 81533D	Motor stopped
	 81534D	Running unloaded
	 81535D	Running loaded
Machine control mode	 81536D	Remote start / stop
	 81537D	LAN control
Automatic restart after voltage failure	 81538D	Automatic restart after voltage failure is active

Function	Icon	Description
Timer		
Active protection functions		Emergency stop
Service		Service required
Units		Pressure unit (Mega Pascal)
		Pressure unit (pounds per square inch)
		Pressure unit (bar)
		Temperature unit
		Temperature unit
		Hours (always shown together with seconds)
		Percent
		The value shown must be multiplied by 10 to get the actual value
		The value shown must be multiplied by 100 to get the actual value
		The value shown must be multiplied by 1000 to get the actual value
		Motor (overload)
		Element outlet temperature.
		Filter

Function	Icon	Description
	 81545D	Drain
	 81104D	Energy saving (dryer)
	 81117D	Ambient temperature
	 81106D	Dewpoint temperature

7.4 Main screen

When the voltage is switched on, the first screen is a test screen. The next screen is the Main screen, shown automatically.

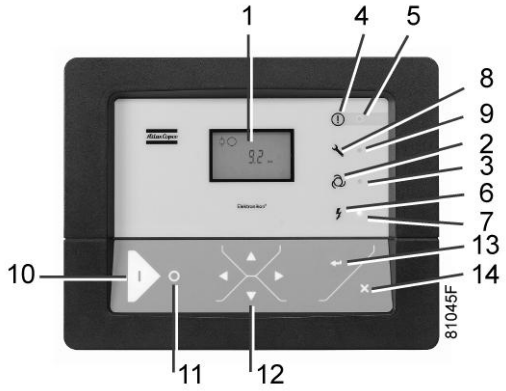
The Main screen shows:

- The compressor status by means of pictographs
- The air outlet pressure

	Always consult Atlas Copco if the pressure on the display is preceded by a "t".

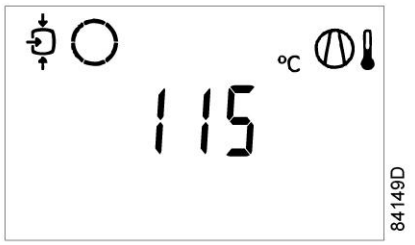
7.5 Shutdown warning

Description



If the compressor element outlet temperature exceeds the shutdown warning level (see section Programmable settings), a shutdown warning will appear. Warning LED (5) is on.

Press Scroll down button (12). The screen shows the temperature at the compressor element outlet:



It remains possible to scroll through other screens, using the Scroll buttons (12) to check the actual status of other parameters.

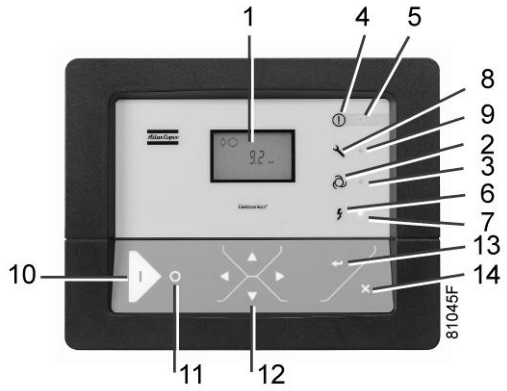
Press stop button (11) to stop the compressor and wait until the compressor has stopped. Switch off the voltage, inspect the compressor and remedy if necessary. The warning message will disappear as soon if the warning condition disappears.

7.6 Shutdown

Description

The compressor will be shut down in following circumstances:

- In case the temperature at the outlet of the compressor element exceeds the programmed shutdown level (detected by temperature sensor (TT11) or by temperature switch (TSHH11)).
- In case of too high air/oil temperature (detected by additional temperature switch (TSHH21)).
- In case of overload of the compressor motor (M1) or the fan motor (M2).
- In case of error of the outlet pressure sensor (PT20).
- In case of incorrect phase sequence, detected by phase sequence relay (K25).



Compressor element outlet temperature (TT11)

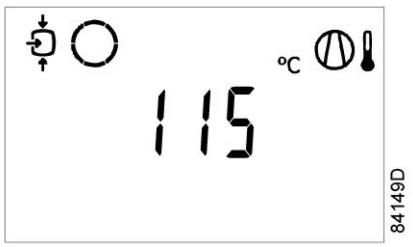
If the compressor element outlet temperature, measured by temperature sensor TT11, exceeds the shutdown level (see section Programmable settings), the compressor will be shutdown, alarm LED (5) will flash, automatic operation LED (3) will go out and the following screen will appear:

Main screen with shutdown indication, element outlet temperature

The related pictograph

will appear flashing.

Press Scroll buttons (12) until the actual compressor element outlet temperature appears.



Shutdown screen, element outlet temperature

The above screen shows that the temperature at the outlet of the compressor element is 115 ˚C.

Actions:

- Switch off the voltage and remedy the problem cause.
- After remedying and when the shutdown condition has disappeared, switch on the voltage and restart the compressor.

Other shutdown causes

In case the compressor is shut down (or cannot start) by one of following causes:

- Too high element outlet temperature, detected by temperature switch (TSHH11) or additional temperature switch (TSHH21).
- Overload of the compressor motor (M1) or the fan motor (M2).
- Incorrect phase sequence, detected by phase sequence relay (K25).

The compressor will be shutdown, alarm LED (5) will flash, automatic operation LED (3) will go out and following screen will appear:

Main screen with shutdown indication

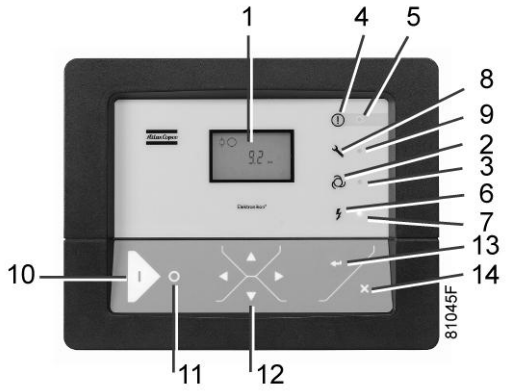
Actions:

- Switch off the voltage and remedy the problem cause.
  - In case of incorrect phase sequence, reverse two phases of the supply cable.
  - If the additional temperature switch (TSHH21) has tripped, you must contact the Atlas Copco customer centre.
- After remedying and when the shutdown condition has disappeared, switch on the voltage and restart the compressor. The shutdown message will disappear automatically when the shutdown condition has disappeared.

7.7 Service warning

Description

A service warning will appear when the service timer has reached the programmed time interval.



If the service timer exceeds the programmed time interval, service LED (9) will light up.

To display the service timer, press Scroll buttons (12) to scroll to <d.6>: the service symbol is shown. Next, press the Enter button (13). The reading of the service timer is shown in <hrs> (or <x1000 hrs> if the service timer value is higher than 9999).

Example of the service timer screen

The example screen shows that the service timer is at 4002 hours.

Actions to be taken:

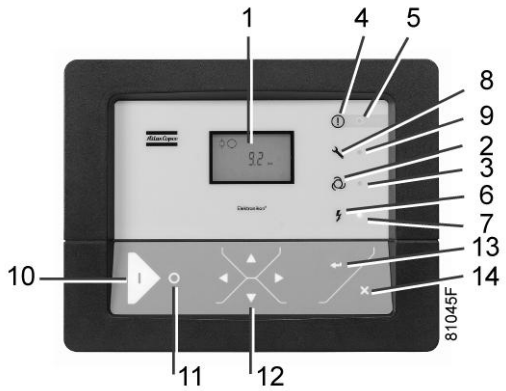
Stop the compressor, switch off the voltage and carry out the required service actions. See section Preventive Maintenance.

	• The longer interval service actions must also include the shorter interval actions. In the example above, carry out all service operations belonging to the 8000 running hours interval as well as those belonging to the 4000 running hours interval. • The setting of the service timer can be changed in function of the operating conditions. See section Preventive Maintenance schedule.

After servicing, reset the service timer. See section Calling up/resetting the service timer

7.8 Scrolling through all screens

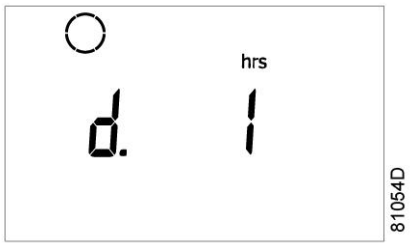
Control panel



Control panel

Scroll buttons (12) can be used to scroll through all screens. The screens are divided into register screens, measured data screens, digital input screens (numbered as <d.in>, <d.1>, ...), parameter screens (numbered as <P.1>, <P.2>, ...), protections screens (numbered as <Pr.1>,...) and test screens (numbered as <t.1>,...).

During scrolling, the numbers of the screens appear consecutively. For most screens, the unit of measurement and the related pictograph are shown together with the screen number.



Example: display the number of running hours:

The screen shows the screen number <d.1>, the unit used <hrs> and the related symbol for running hours. Press Enter key (13) to call up the actual running hours.

Overview of the screens

Digital input screens	Designation	Related topic
<d.in>	Digital input status	
<d.1>	Running hours (hrs or x 1000 hrs)	See section Calling-up running hours
<d.2>	Motor starts (x 1 or x 1000)	See section Calling up motor starts
<d.3>	Module hours (hrs or x 1000 hrs)	See section Calling up module hours
<d.4>	Loading hours (hrs or x1000 hrs)	See section Calling up loading hours
<d.5>	Load relay (x1 or x 1000)	See section Calling up Calling up load relay
<d.6>	Service timer reading (hrs or x 1000 hrs)	See section Calling up/resetting the service timer
<d.7>	Actual software version	

Parameter screens	Designation	Related topic
<P.1>	Selection between local, remote or LAN control	See section Selection between Local, Remote or LAN control.
<P.2>	Setting a node ID for LAN control and the channels for Mk 4 and Mk 5	See section Calling up/modifying CAN address control
<P.3>	Settings for IP, gateway and Subnet mask	See section Calling up/modifying IP, Gateway and Subnetmask
<P.4>	Pressure band settings	See section Calling up/modifying pressure band settings
<P.5>	Pressure band selection	See section Modifying pressure band selection
<P.6>	Service timer settings	See section Calling up/modifying service timer settings
<P.7>	Temperature unit	See section Calling up/modifying unit of temperature

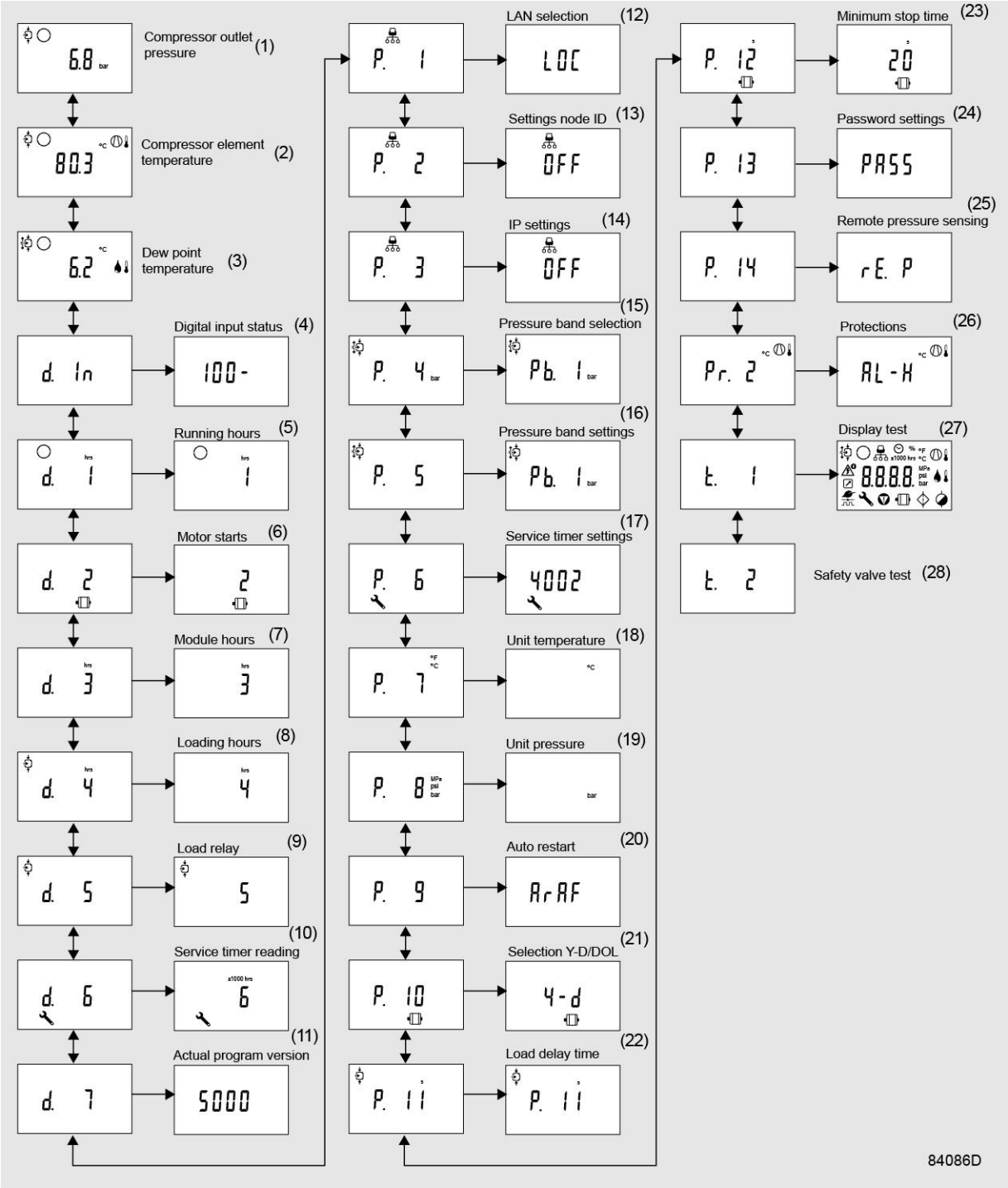
Parameter screens	Designation	Related topic
<P.8>	Pressure unit	See section Calling up/modifying unit of pressure
<P.9>	Automatic Restart After Voltage Failure (only for Atlas Copco)	See section Activating automatic restart
<P.10>	Selection between Y-D or DOL starting	See section Selection between Y-D or DOL starting
<P.11>	Load delay time	See section Calling up/modifying load delay time
<P.12>	Minimum stop time	See section Calling up/Modifying minimum stop time
<P.13>	Setting a password	See section Activating password protection
<P.14>	Remote pressure sensing	See section Activate Load/Unload remote pressure sensing.
<P.15>	Y-D time	Indicates the time (s) between Y and D.
<P.16>	Number of motor starts per day	Limits the maximum number of starts per day.
<P.17>	Unload to stop time	Defines the time the compressor must run unloaded before it can stop.

Parameters <P.15>, <P.16> and <P.17> are only reachable after entering a code. Contact Atlas Copco.

Protections screens	Designation	Related topic
<Pr.2>	Protections screen	See section Calling up/modifying protection settings

Test screens	Designation	Related topic
<t.1>	Display test	See section Test screens.
<t.2>	Safety valve test	See section Test screens.

Menu flow



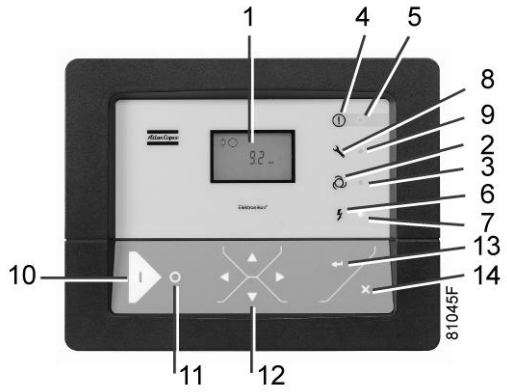
Simplified menu flow

Ref.	Description	Ref.	Description
(1)	Compressor outlet pressure	(16)	Pressure band setting
(2)	Compressor outlet temperature	(17)	Service timer settings
(3)	Dewpoint temperature	(18)	Temperature unit
(4)	Digital input status	(19)	Unit pressure

Ref.	Description	Ref.	Description
(5)	Running hours	(20)	Auto restart
(6)	Motor starts	(21)	Selection Y-D/DOL
(7)	Module hours	(22)	Load delay time
(8)	Loading hours	(23)	Minimum stop time
(9)	Load relay	(24)	Password settings
(10)	Service timer reading	(25)	Remote pressure sensing
(11)	Actual program version	(26)	Protections
(12)	LAN selection	(27)	Display test
(13)	Settings node ID	(28)	Safety valve test
(14)	IP settings		
(15)	Pressure band selection		

7.9 Calling up outlet and dewpoint temperatures

Control panel

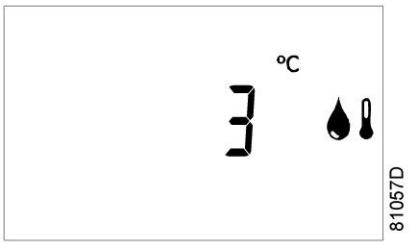


Starting from the Main screen:

- Press Scroll button (12). The outlet temperature will be shown:

The screen shows that the outlet temperature is 82 ˚C.

- For Full-Feature compressors:
  Press Scroll button (12). The dewpoint temperature will be shown:

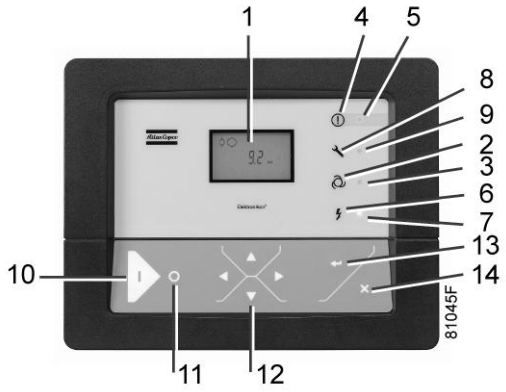


The screen shows that the dewpoint temperature is 3 ˚C.

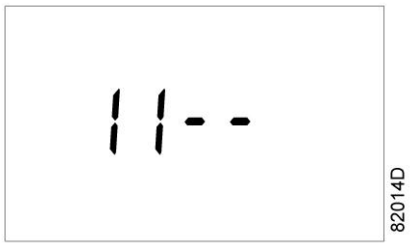
- Press Scroll button (12) to scroll downwards or upwards through the screens.

7.10 Digital inputs

Control panel



Starting from the Main screen, press Scroll button (12) until <d. In> is shown and then press the Enter button (13). A screen similar to the following appears:

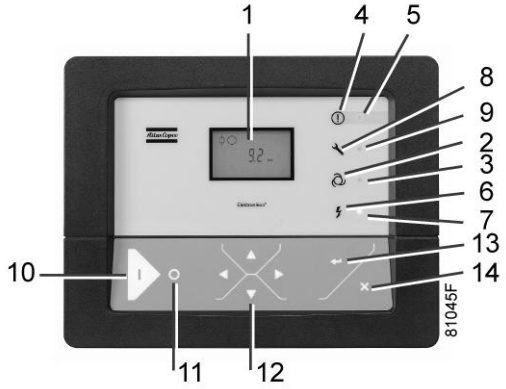


The screen shows (from left to right) the status of the emergency stop contact and the compressor motor overload protection (1 = contact closed, 0 = contact open).

Contact	Description	Value	Status
1	Emergency stop switch	0	Emergency stop button pressed
		1	Emergency stop button released
2	Compressor motor overload relay	0	Overload protection tripped
		1	No problem

7.11 Calling up running hours

Control panel



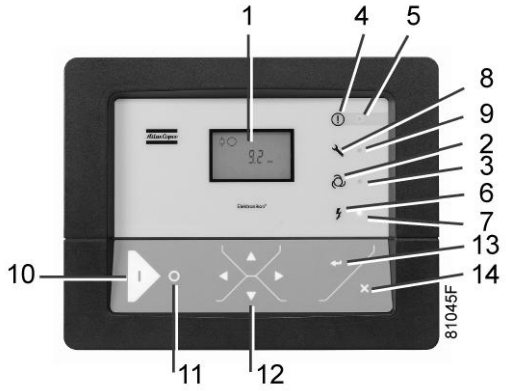
Starting from the Main screen:

- Press Scroll button (12) until <d.1> is shown and then press Enter button (13):

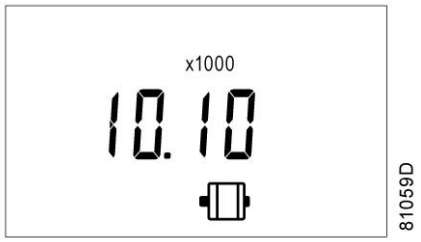
The screen shows the unit used (x1000 hrs) and the value (11.25): the running hours of the compressor are 11250 hours.

7.12 Calling up motor starts

Control panel



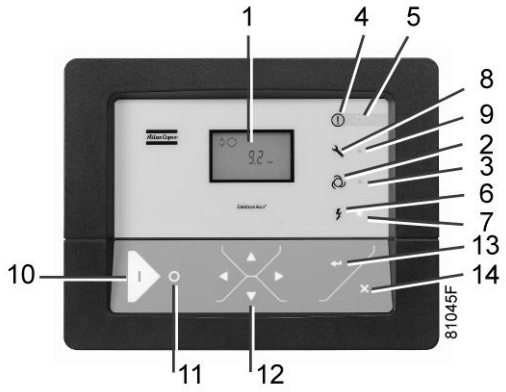
Starting from the Main screen, press Scroll button (12) until <d. 2> is shown and then press Enter button (13). A screen similar to the following appears:



This screen shows the number of motor starts (x 1 or - if <x1000> lights up - x 1000). In the above example, the number of motor starts is 10100.

7.13 Calling up module hours

Control panel



Starting from the Main screen, press Scroll button (12) until <d. 3> is shown and then press Enter button (13). A screen similar to the following appears:

In the example shown, the screen shows the unit used (hrs) and the value (5000): the regulator module has been in service during 5000 hours.

7.14 Calling up loading hours

Starting from the Main screen:

- Press Scroll button (12) until <d.4> is shown and then press Enter button (13):

The screen shows the unit used <hrs> (or <x1000 hrs>) and the value <1755>: the compressor has been running loaded during 1755 hours.

7.15 Calling up load relay

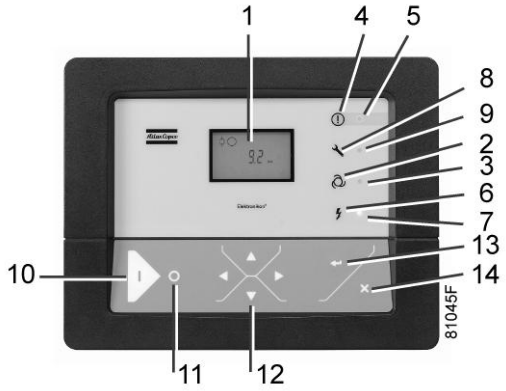
Starting from the Main screen:

- Press Scroll button (12) until <d.5> is shown and then press Enter button (13):

This screen shows the number of unload to load actions (x 1 or - if <x1000> lights up - x 1000). In the above example, the number of unload to load actions is 10100.

7.16 Calling up/resetting the service timer

Calling up the service timer



Starting from the Main screen:

- Press Scroll button (12) until <d.6> is shown and then press Enter button (13):

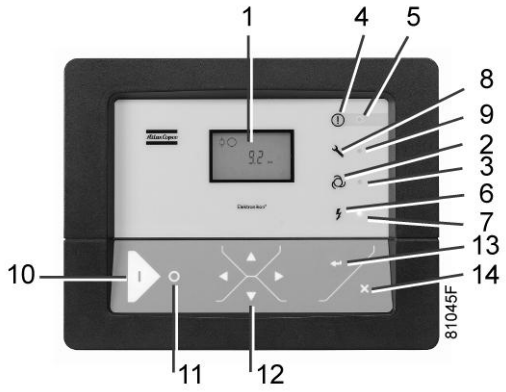
This screen shows the unit used <hrs> (or <x1000 hrs>) and the value <1191>. In the example shown, the compressor has run 1191 hours since the previous service.

Resetting the service timer

After servicing, see section Service warning, the timer has to be reset:

- Scroll to register screen <d.6> and press Enter button (13).
- The reading (e.g. 4000) will appear.
- Press Enter button (13) and - if a password is set - enter the password.
  The icon will flash (indicating that resetting is possible).
- Press Enter button (13) to reset the timer to <0.000> or press the Escape button (14) to cancel the operation.

7.17 Selection between local, remote or LAN control



Starting from the Main screen, press Scroll button (12) until <P. 1> is shown and then press Enter button (13). The actually selected control mode is shown: <LOC> for local control, <rE> for remote control or <LAn> for LAN control.

To change: press Enter button (13) and - if necessary - enter the password (see section Activating password protection). The actually selected control mode is blinking. Use Scroll button (12) to change the control mode. Press Enter button (13) to program the new control mode or press Escape button (14) to cancel.

Contact the Atlas Copco Customer Centre to activate remote control.

7.18 Calling up/modifying CAN address control

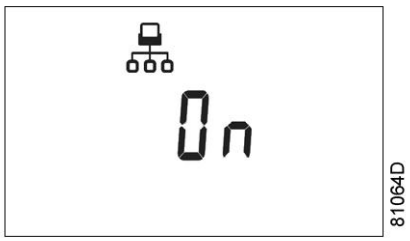
Calling up

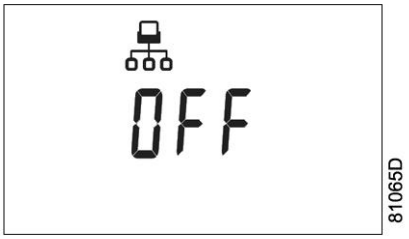
Starting from the main screen, press the Scroll button (12) until <P. 2> is shown and then press Enter button (13).

If necessary enter the password. The next screen shows that the function is ON or OFF. Press the Enter button (13) to change this mode. Use the Scroll buttons (12) to select <On> or <OFF> and press Enter to program.

When this function is ON, use the Scroll buttons up or down (12) to see the node ID.

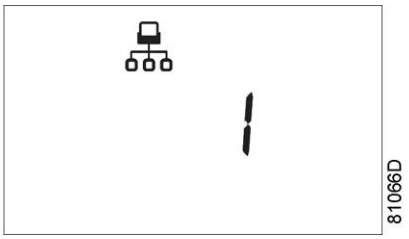
If desired the user can change this ID. Press the Enter button (13): the node ID value starts blinking. Use the Scroll buttons (12) to change the node ID. Press the Enter button (13) to program the new node ID or press the Escape button (14) to leave this screen or to cancel this operation.

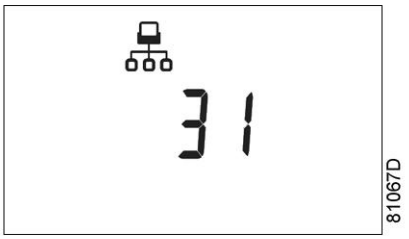




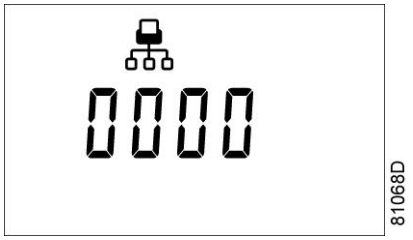
Modifying the Node ID

The Node ID can be changed; use a value between 1 and 31. When the function is ON, the parameters cannot be modified. Change the function to OFF to change the node ID.





It is also possible to change the channels. The controller has 4 channels. When changing the channels, the controller can act as a Mk IV controller (a previous version of the controller). To set the channels, go to the screen where the node ID is visible. Press the Scroll button down (12). The following screen appears:



Press the Enter button (13) to modify the setting. The utmost left value will blink. Change this value by using the Scroll buttons (12). Press the Enter button (13) to confirm. Change the other values in the same way, as required.

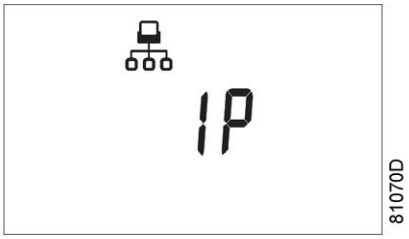
After modifying the settings, the screen may look as follows:

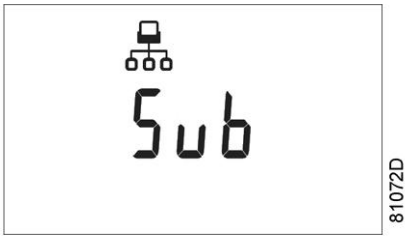
7.19 Calling up/modifying IP, Gateway and Subnetmask

Calling up

Starting from the Main screen, press the Scroll button (12) until <P. 3> is shown and then press Enter button (13).

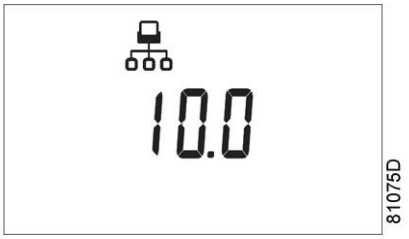
The next screen shows either <OFF> or <On>. If <On>, press the Enter button (13) to modify it to <OFF>. Use the Scroll buttons Up or Down (12) to scroll between the items in this list (<IP> for IP address, <Sub> for Subnetmask or <GAtE> for Gateway):

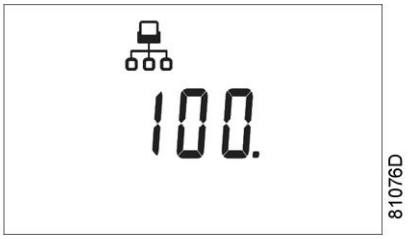




Modification

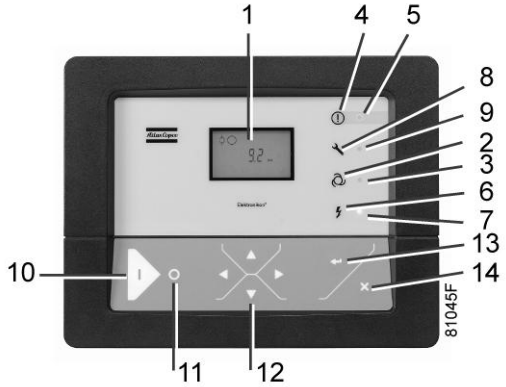
Press the Enter button (13) and if necessary enter the password. The first digits are blinking. Use the Scroll buttons Up or Down (12) to modify the settings and press Enter (13) to confirm. Modify the next digits the same way. The standard IP address is set as 192.168.100.100.





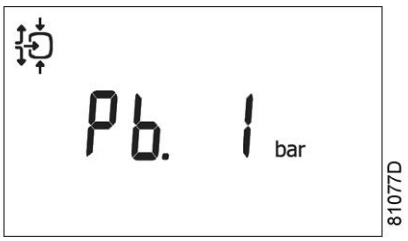
7.20 Calling up/modifying pressure band settings

Calling up the settings



Starting from the Main screen:

- Press Scroll button (12) until <P.04> is shown and then press Enter button (13). Pressure band 1 (<Pb. 1>) is shown on the display. Button (12) can be used to scroll to pressure band 2 (<Pb.2>).
- Press Enter button (13) on the desired pressure band. The load level of the selected pressure band appears. Button (12) can be used to scroll to the unload level.



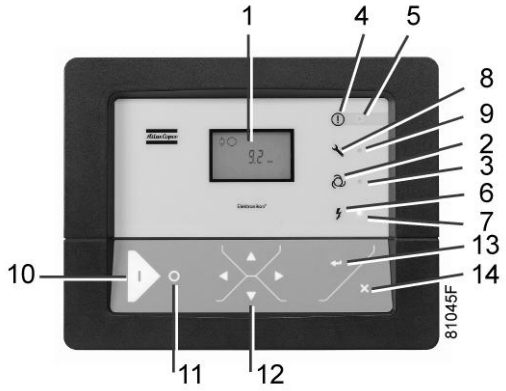
Loading pressure

Unloading pressure

- Press Enter button (13) to modify the load level (value starts blinking). A password may be required. Use Scroll buttons (12) to change the loading pressure.
- Press Enter button (13) to program the new values or press the Escape button (14) to cancel.

7.21 Modifying the pressure band selection

Control panel

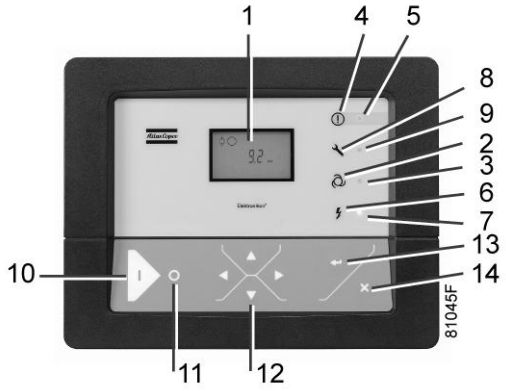


Starting from the Main screen:

- Press Scroll button (12) until <P.05> is shown and then press Enter button (13). The active pressure band 1 (<Pb.1>) is shown on the display.
- Press Enter button (13) to modify the pressure band selection (a password may be required). The active pressure band <Pb.1> starts blinking.
- Press button (12) to modify the active pressure band. Press Enter button (13) to confirm or the Escape button (14) to cancel.

7.22 Calling up/modifying service timer settings

Control panel



Starting from the Main screen:

- Press Scroll button (12) until <P. 6> is shown and then press Enter button (13): the setting of the service timer is shown in <hrs> (hours) or <x1000 hrs> (hours x 1000). Example: <4000 hrs> means the timer is set at 4000 running hours.
- Press Enter button (13) to modify this value (a password may be required): the value blinks. Use the Scroll buttons (12) to modify the setting.
- Press Enter button (13) to program the new value.

7.23 Calling up/modifying the unit of temperature

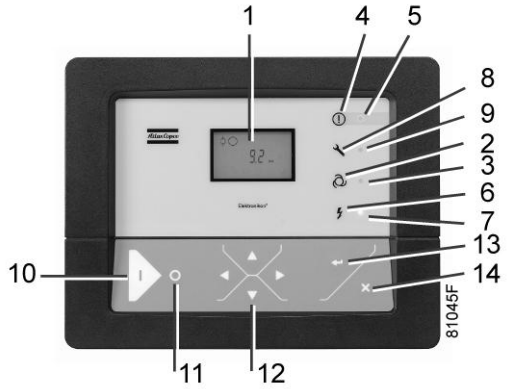
Control panel

Starting from the Main screen:

- Press Scroll button (12) until <P.07> is shown and then press Enter button (13). The actually used unit is shown. Possible settings are <˚C> and <˚F>.
- Press Enter button (13) (unit blinks) and use the Scroll buttons (12) to select another unit of temperature.
- Press Enter button (13) to program the new unit or press Escape button (14) to return to the parameter screen without changes.

7.24 Calling up/modifying unit of pressure

Control panel



Starting from the Main screen:

- Press Scroll button (12) until <P.08> and the possible settings are shown (<Mpa>, <psi>, and <bar>). Press Enter button (13) and the actually used unit is shown.
- Press Enter button (13) (unit starts blinking) and use the Scroll buttons (12) to select another unit of pressure.
- Press Enter button (13) to program the new unit of pressure. Press the escape button (14) to return to the parameter screens.

7.25 Activating automatic restart after voltage failure

Description

This function allows the compressor to restart automatically after a power failure.

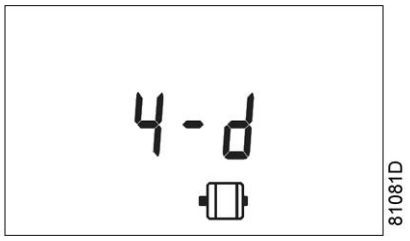
This parameter, accessible in screen <P. 9>, can only be modified after entering a code. Consult your supplier if this function is to be activated.

7.26 Selection between Y-D or DOL starting

Control panel

Starting from the Main screen:

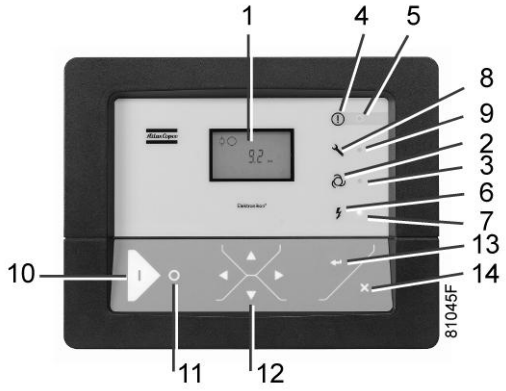
- Press Scroll button (12) until <P.10> and the motor pictograph is shown and then press Enter button (13). The actually used starting mode is shown: <Y-D> (star-delta) or <doL> (Direct-On-Line).
- For obvious reasons, this parameter must normally not be altered. Therefore it can only be modified after entering a secure code. Consult Atlas Copco if the parameter is to be changed.



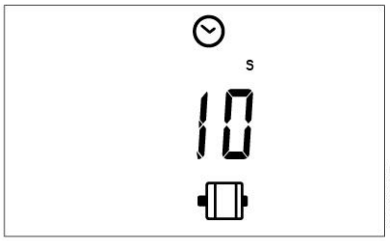
Example of Y-D setting

7.27 Calling up modifying load delay time

Control panel



- Starting from the Main screen, press Scroll button (12) until <P.11> and the compressor load pictograph is shown and press the Enter button (13).
  Following screen appears:



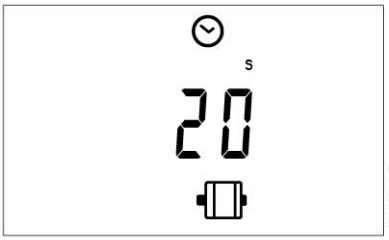
- This screen shows the load delay time (10) and the unit (s= seconds). To modify this value press the Enter button (13) (a password may be required).
- The value starts blinking and Scroll buttons (12) can be used to modify the value.
- Press the Enter button (13) to program the new value.

The minimum and maximum value depends on the parameters.

7.28 Calling up modifying minimum stop time

Starting from the Main screen:

- Press the Scroll button (12) until <P.12> and the motor pictograph is shown and press the Enter button (13):



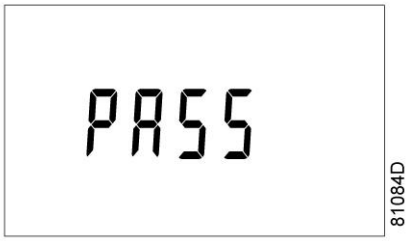
- This screen shows the minimum stop time (20) and the unit <s> (seconds).
- To modify this value press the Enter button (13). The value starts blinking and Scroll buttons (12) can be used to modify this value.
- Press Enter button (13) to program the new value.
  The minimum and maximum values depend on the parameters.

7.29 Activating password protection

Important settings such as the setting of the service timer, pressure band setting, control mode settings,... can be protected by a password.

Starting from the Main screen:

- Press Scroll buttons (12) until <P.13> is shown and press Enter button (13):



- Password (<PASS>) appears on the screen. Press the Enter button (13).

- The screen shows the password status (ON (<On>) or OFF (<OFF>). Press Enter button (13) to modify.
- Change the value with Scroll buttons (12).
- Select <On> and press Enter button (13).
- Enter the new password and press Enter button (13) to confirm.
- Enter the password again and press Enter button (13) to confirm.
- <On> appears on the display. Press reset key to return to the parameter screen.

	Lost passwords can not be recovered. Save the password carefully.

7.30 Activate load/unload remote pressure sensing

Starting from the Main screen:

- Press the Scroll button (12) until <P.14> appears
  .
- Press the Enter button (13).

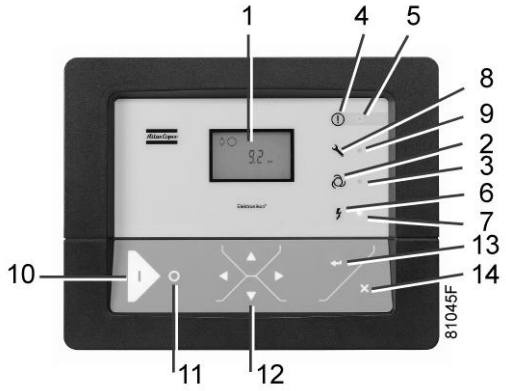
The function of this screen is to activate the remote load/unload relay. To be able to activate this remote Load/Unload functionality, a physical digital input with function Load/Unload is required.

Once this parameter is activated, the physical digital input can be used to switch the compressor between Load and Unload.

Contact the Atlas Copco Customer centre for activation of the digital input.

7.31 Calling up/modifying protection settings

Available protections



A number of protection settings are provided. The protection screens are labelled <Pr.>. The pictograph shown with the protection screen indicates the purpose of the protection.

Possible combinations are <Pr.>, followed by a number and one of the next pictographs:

Pictograph	Designation
	<Pr.> combined with the pressure pictograph shows the pressure protections.
	<Pr.> combined with the element outlet temperature pictograph shows the element outlet temperature protections.
	<Pr.> combined with the dew point temperature pictograph shows the dew point temperature protections.
	<Pr.> combined with the ambient temperature pictograph shows the ambient temperature protections.

Following protection settings are available:

- A low warning level, shown on the display as <AL-L>.
- A high warning level, shown on the display as <AL-H>.
- A low shutdown level, shown on the display as <Sd-L>.
- A high shutdown level, shown on the display as <Sd-H>.
- Service level shown on the display as <SE-L>.
- Service level shown on the display as <SE-H>.

Example of protection screens

In this menu the temperature protection settings can be checked and modified.

Changing the settings

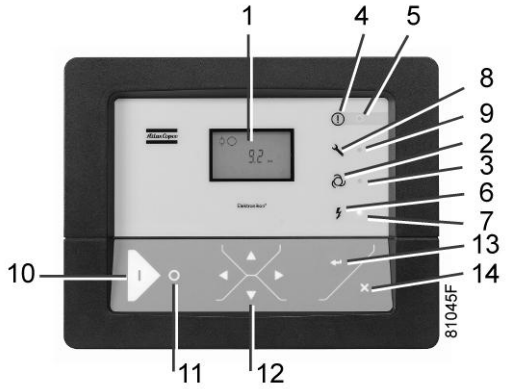
Starting from the Main screen (the example given describes the protection of the element outlet temperatures):

Press Scroll buttons (12) until <Pr.>, followed by a number and the element outlet temperature pictograph is shown and press Enter button (13):

- The warning level for the high temperature warning level <AL-H> and the high temperature shutdown level <Sd-H> become visible. Use Scroll keys (12) to move between the warning level (<AL>) and the shutdown level (<Sd>), press the Enter button (13) to modify the value.
- An optional password may be required, the value starts blinking and Scroll buttons (12) can be used to modify the value.
- Press the Enter button (13) to program the new value.

	Programmable settings can only be modified within allowed limits.

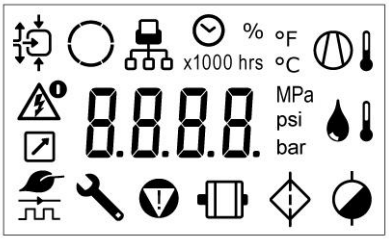
7.32 Test screens



Display test

Starting from the Main screen, press Scroll buttons (12) until <t. 1> is shown and then press Enter button (13).

The display now shows all icons that can be displayed:



Safety valve test

In the test screen <t. 2>, a safety valve test is provided. The safety valves can only be tested after entering a code. Consult Atlas Copco if the safety valves are to be tested.

7.33 Web server

All Elektronikon 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

	If the compressor is equipped with a **SMART**BOX, the network connection of the Elektronikon is already in use. To allow the web server functionality, the network cable that is connected to the **SMART**BOX should be unplugged and replaced by the cable of the company network. If both the web server functionality and **SMART**BOX are required, please contact your local Atlas Copco Customer Centre for support.

Make sure you are logged in as administrator.

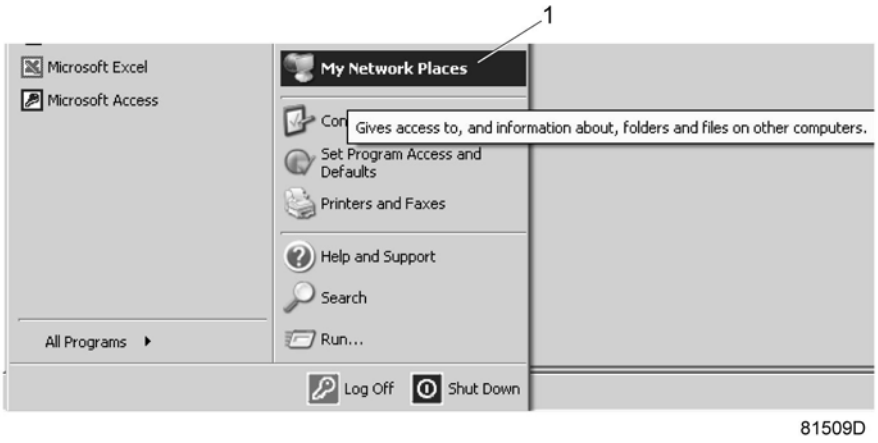
- Use the internal network card from your computer or a USB to LAN adapter (see picture below).

USB to LAN adapter

- Use a UTP cable (CAT 5e) to connect to the controller (see picture below).

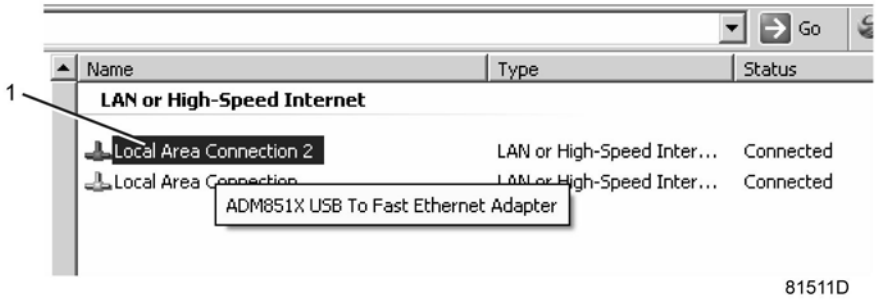
Configuration of the network card (in Windows XP)

- Go to My Network places (1).

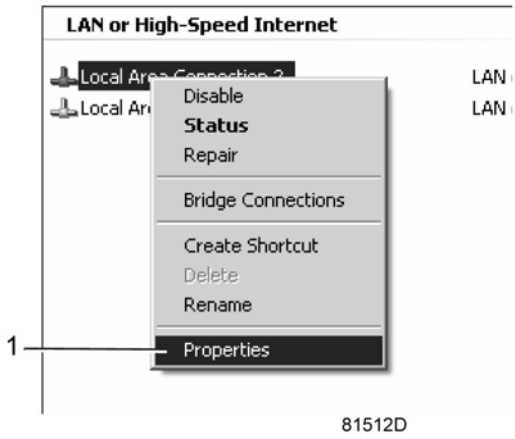


- Click on View Network connections (1).

- Select the Local Area connection (1), which is connected to the controller.



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



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

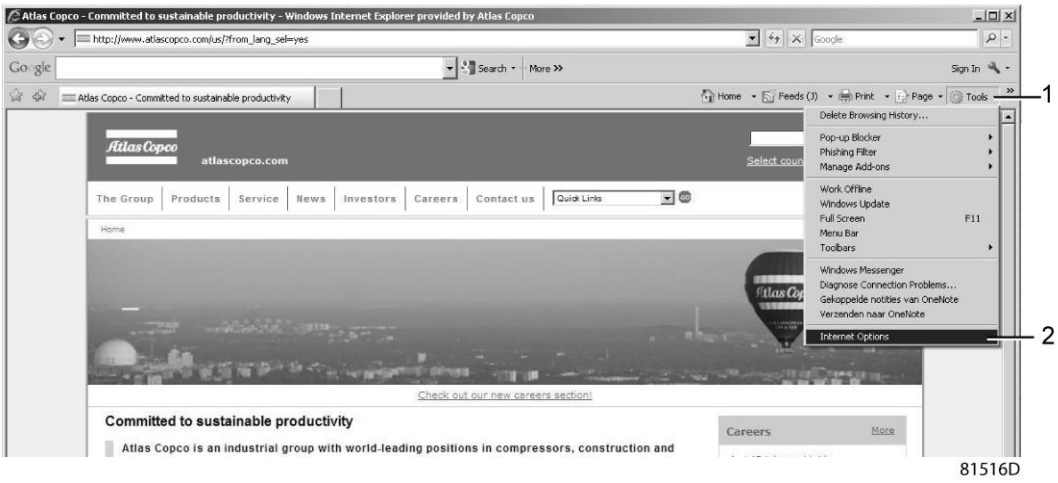
- Use the following settings:
  - IP Address 192.168.100.200
  - Subnetmask 255.255.255.0

  Click OK and close network connections.

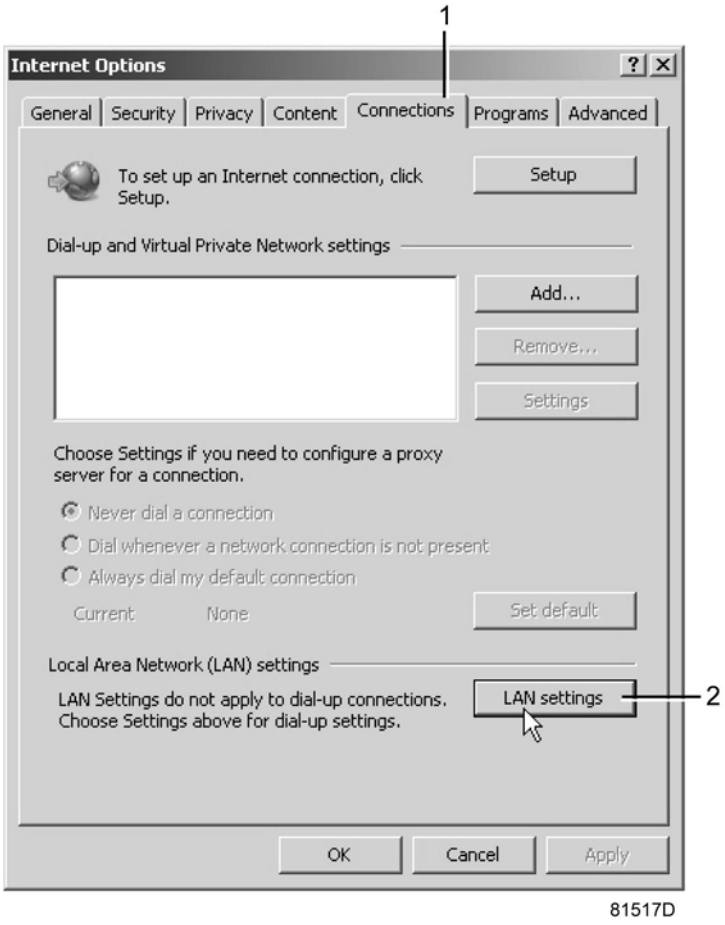
Configuration of the web server

Configure the web interface (for Internet Explorer)

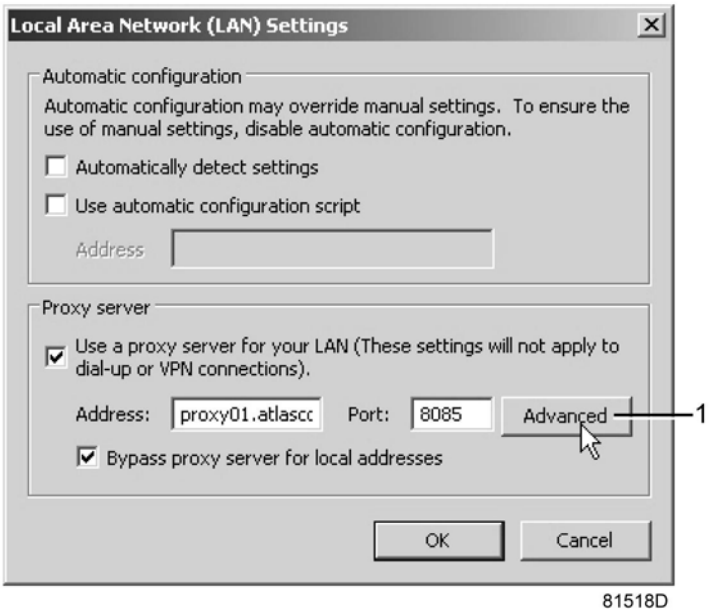
- Open Internet Explorer and click on Tools - Internet options (2).



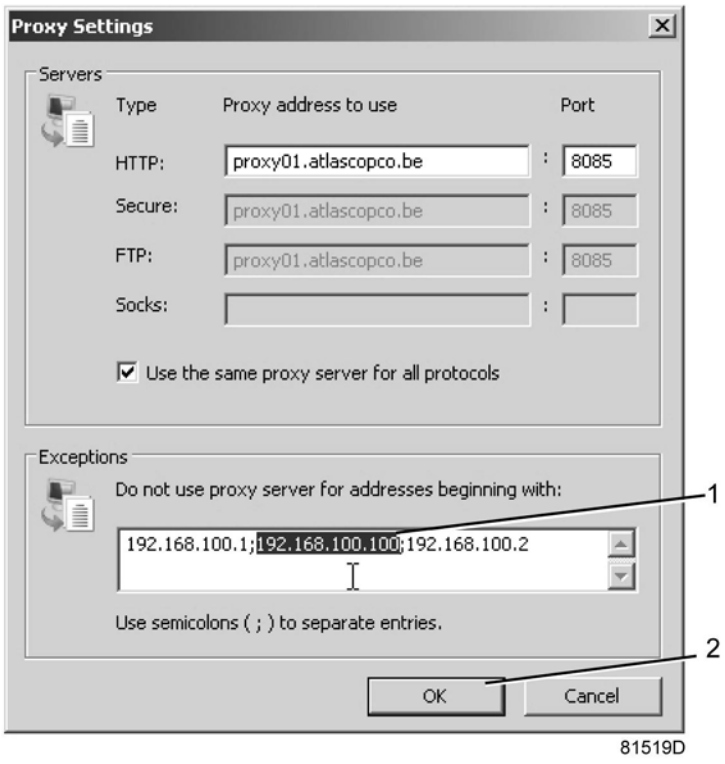
- Click on the Connections tab (1) and then click on the LAN settings button (2).



- In the Proxy server Group box, click on the Advanced button (1).



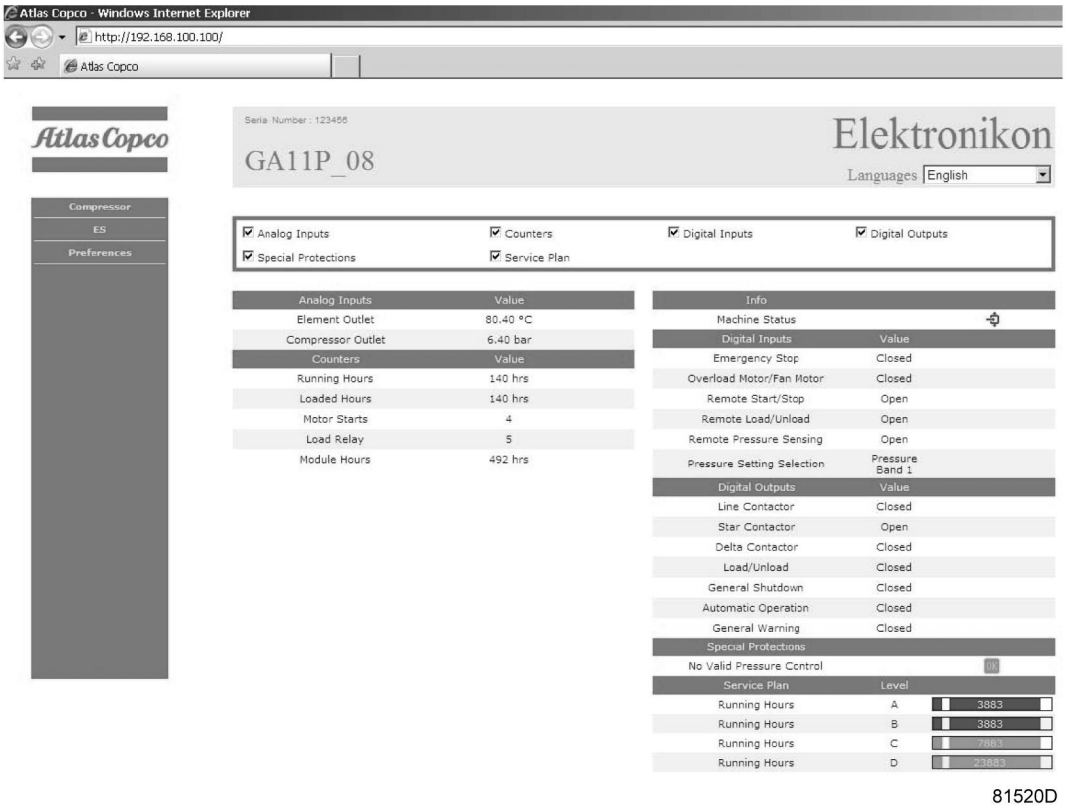
- In the Exceptions Group box, enter the IP address of your controller. Multiple IP addresses can be given but they must be separated with semicolons (;).
  Example: Suppose that you already added two IP addresses (192.168.100.1 and 192.168.100.2). Now you add 192.168.100.100 and separate the 3 IP addresses by putting semicolons between them (1) (see picture).
  Click OK (2) to close the window.



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:



Screen shot (example!)

Navigation and options

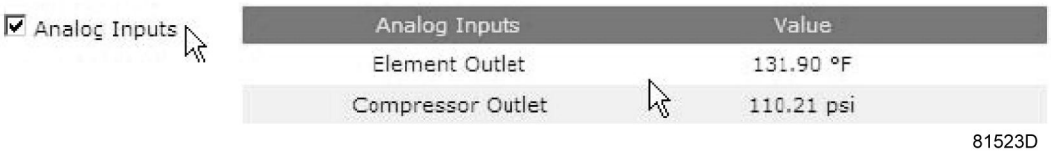
- The banner shows the compressor type and the language selector. In this example, three languages are available on the controller.

Compressor settings

All compressor 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.



81523D

Counters

Lists all current counter values from controller and compressor.

81524D

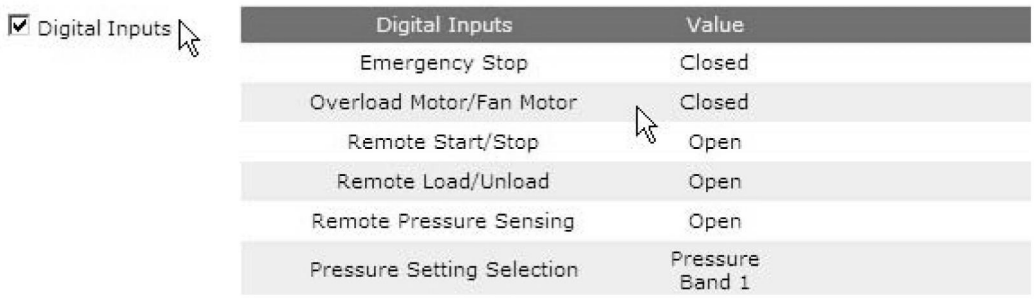
Info status

Machine status is always shown on the web interface.

81525D

Digital inputs

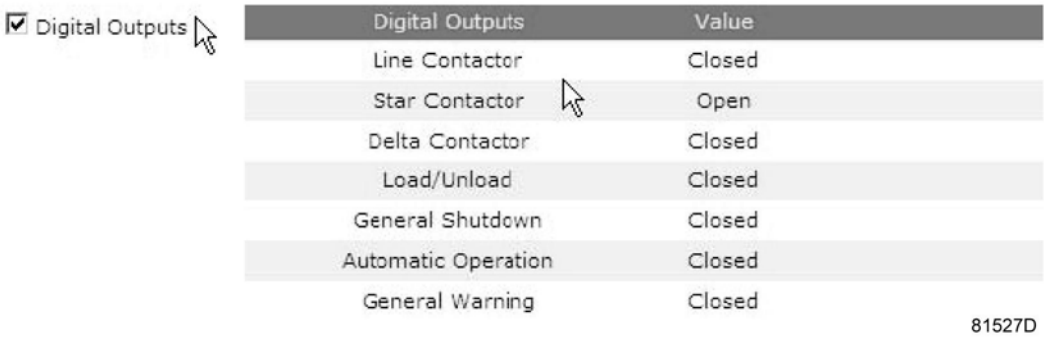
Lists all Digital inputs and their status.



81526D

Digital outputs

Lists all Digital outputs and their status.



Special protections

Lists all special protections of the compressor.

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.

7.34 Programmable settings

Parameters: unloading/loading pressures for compressors without built-in refrigeration dryer

		Minimum setting	Factory setting	Maximum setting
Unloading pressures				
Unloading pressure (7.5 bar compressors)	bar(e)	6.1	7	7.5
Unloading pressure (7.5 bar compressors)	psig	88.5	101.5	108.8
Unloading pressure (8.5 bar compressors)	bar(e)	6.1	8	8.5
Unloading pressure (8.5 bar compressors)	psig	88.5	116	123.5
Unloading pressure (10 bar compressors)	bar(e)	6.1	9.5	10
Unloading pressure (10 bar compressors)	psig	88.5	137.8	145.0
Unloading pressure (13 bar compressors)	bar(e)	6.1	12.5	13
Unloading pressure (13 bar compressors)	psig	88.5	181.3	188.6
Unloading pressure (100 psi compressors)	bar(e)	6.1	6.9	7.4

		Minimum setting	Factory setting	Maximum setting
Unloading pressure (100 psi compressors)	psig	88.5	100	107
Unloading pressure (125 psi compressors)	bar(e)	6.1	8.6	9.1
Unloading pressure (125 psi compressors)	psig	88.5	125	132
Unloading pressure (150 psi compressors)	bar(e)	6.1	10.3	10.8
Unloading pressure (150 psi compressors)	psig	88.5	150	157
Unloading pressure (175 psi compressors)	bar(e)	6.1	12	12.5
Unloading pressure (175 psi compressors)	psig	88.5	175	181
Loading pressures				
Loading pressure (7.5 bar compressors)	bar(e)	6	6.4	7.4
Loading pressure (7.5 bar compressors)	psig	87	92.8	107.3
Loading pressure (8.5 bar compressors)	bar(e)	6	7.4	8.4
Loading pressure (8.5 bar compressors)	psig	87	107.3	121.8
Loading pressure (10 bar compressors)	bar(e)	6	8.9	9.9
Loading pressure (10 bar compressors)	psig	87	129.1	143.6
Loading pressure (13 bar compressors)	bar(e)	6	11.9	12.9
Loading pressure (13 bar compressors)	psig	87	172.6	187.1
Loading pressure (100 psi compressors)	bar(e)	6	6.3	7.3
Loading pressure (100 psi compressors)	psig	87	91	105
Loading pressure (125 psi compressors)	bar(e)	6	8	9
Loading pressure (125 psi compressors)	psig	87	116	130
Loading pressure (150 psi compressors)	bar(e)	6	9.7	10.7
Loading pressure (150 psi compressors)	psig	87	141	156
Loading pressure (175 psi compressors)	bar(e)	6	11.4	12.4
Loading pressure (175 psi compressors)	psig	87	166	180

Parameters: unloading/loading pressures for compressors with built-in refrigeration dryer

		Minimum setting	Factory setting	Maximum setting
Unloading pressures				
Unloading pressure (7.5 bar compressors)	bar(e)	6.1	7	7.3
Unloading pressure (7.5 bar compressors)	psig	88.5	101.5	105.9
Unloading pressure (8.5 bar compressors)	bar(e)	6.1	8.0	8.3
Unloading pressure (8.5 bar compressors)	psig	88.5	116.0	120
Unloading pressure (10 bar compressors)	bar(e)	6.1	9.5	9.8
Unloading pressure (10 bar compressors)	psig	88.5	137.8	142.1
Unloading pressure (13 bar compressors)	bar(e)	6.1	12.5	12.8
Unloading pressure (13 bar compressors)	psig	88.5	181.3	185.6
Unloading pressure (100 psi compressors)	bar(e)	6.1	6.9	7.1
Unloading pressure (100 psi compressors)	psig	88.5	100	104
Unloading pressure (125 psi compressors)	bar(e)	6.1	8.6	8.9

		Minimum setting	Factory setting	Maximum setting
Unloading pressure (125 psi compressors)	psig	88.5	125	129
Unloading pressure (150 psi compressors)	bar(e)	6.1	10.3	10.6
Unloading pressure (150 psi compressors)	psig	88.5	150	154
Unloading pressure (175 psi compressors)	bar(e)	6.1	12	12.2
Unloading pressure (175 psi compressors)	psig	88.5	175	179
Loading pressures				
Loading pressure (7.5 bar compressors)	bar(e)	6	6.4	7.2
Loading pressure (7.5 bar compressors)	psig	87	92.8	104.4
Loading pressure (8.5 bar compressors)	bar(e)	6	7.4	8.2
Loading pressure (8.5 bar compressors)	psig	87	107.3	119
Loading pressure (10 bar compressors)	bar(e)	6	8.9	9.7
Loading pressure (10 bar compressors)	psig	87	129.1	140.7
Loading pressure (13 bar compressors)	bar(e)	6	11.9	12.7
Loading pressure (13 bar compressors)	psig	87	172.6	184.2
Loading pressure (100 psi compressors)	bar(e)	6	6.3	7.1
Loading pressure (100 psi compressors)	psig	87	91	103
Loading pressure (125 psi compressors)	bar(e)	6	8	8.8
Loading pressure (125 psi compressors)	psig	87	116	128
Loading pressure (150 psi compressors)	bar(e)	6	9.7	10.5
Loading pressure (150 psi compressors)	psig	87	141	153
Loading pressure (175 psi compressors)	bar(e)	6	11.4	12.2
Loading pressure (175 psi compressors)	psig	87	166	178

Parameters

		Minimum setting	Factory setting	Maximum setting
Motor running time in star	sec	5	10	10
Load delay time (star-delta)	sec	0	0	10
Number of motor starts	starts/day	0	240	480
Minimum stop time	sec	10	20	30
Programmed stop time	sec	90	90	90
Power recovery time (ARAVF)	sec	60	60	3600
Restart delay	sec	40	40	1200
Communication time-out	sec	10	30	60

Protections

		Minimum setting	Factory setting	Maximum setting
Compressor element outlet temperature (shutdown warning level)	˚C	50	110	114
Compressor element outlet temperature (shutdown warning level)	˚F	122	230	237
Compressor element outlet temperature (shutdown level)	˚C	110	115	115
Compressor element outlet temperature (shutdown level)	˚F	230	239	239

Service plan

The built-in service timer will give a Service warning message after a pre-programmed time interval has elapsed.

Also see section Preventive maintenance schedule.

Consult Atlas Copco if a timer setting has to be changed. See section Calling up/modifying service timer settings. The intervals must not exceed the nominal intervals and must coincide logically.

Terminology

Term	Explanation
ARAVF	Automatic restart after voltage failure. See section Elektronikon regulator and Activating automatic restart.
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 regulator does not accept inconsistent settings, e.g. if the warning level is programmed at 95 ˚C (203 ˚F), the minimum limit for the shutdown level changes to 96 ˚C (204 ˚F). The recommended difference between the warning level and shutdown level is 10 ˚C (18 ˚F).
Delay at shutdown signal	Is the time for which the signal must exist before the compressor is shut down. If it is required to program this setting to another value, consult Atlas Copco.
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. Consult Atlas Copco if a setting lower than 20 seconds is required.
Unloading/ Loading pressure	The regulator does not accept illogical settings, e.g. if the unloading pressure is programmed at 7.0 bar(e) (101 psi(g)), the maximum limit for the loading pressure changes to 6.9 bar(e) (100 psi(g)). The recommended minimum pressure difference between loading and unloading is 0.6 bar (9 psi(g)).

8 Elektronikon® Graphic controller

8.1 Elektronikon® Graphic controller

Control panel

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.

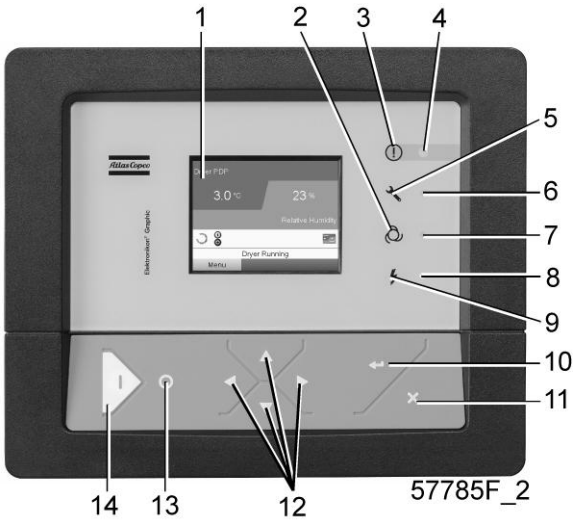
Automatic restart after voltage failure

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.

8.2 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.

8.3 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

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
 57816F	Test
 57817F	Settings
 57798F	Service

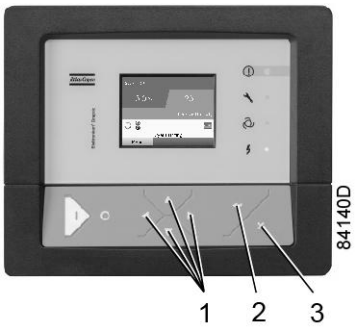
	Event history (saved data)
	Access key / User password
	Network
	Setpoint
	Info

Navigation arrows

Icon	Description
	Up
	Down

8.4 Main screen

Control panel



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

Function

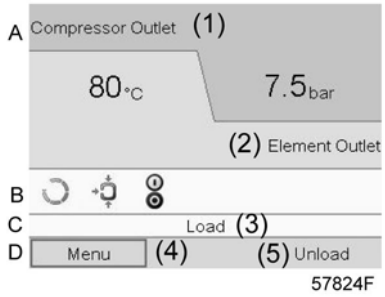
The Main screen is the screen that is shown automatically when the voltage is switched on and one of the keys is pushed. It is switched off automatically after a few minutes when no keys are pushed.

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

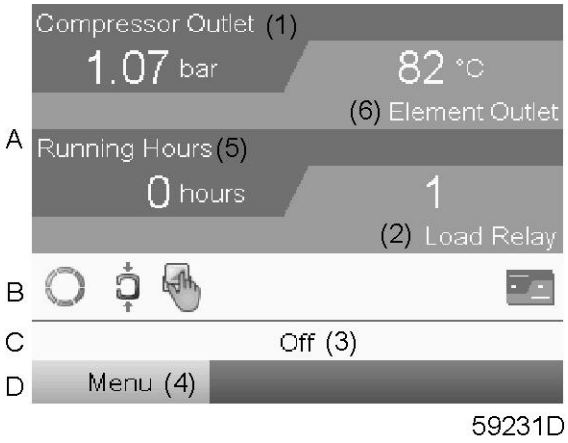
This type of Main screen shows the value of 2 or 4 parameters (see section Inputs menu).



Typical Main screen (2 value lines), fixed speed compressors

Text on image

(1)	Compressor Outlet
(2)	Element Outlet
(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), fixed speed compressors

Text on image

(1)	Compressor Outlet
(2)	Load Relay (one of the input signals of fixed speed compressors)
(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).
- **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.

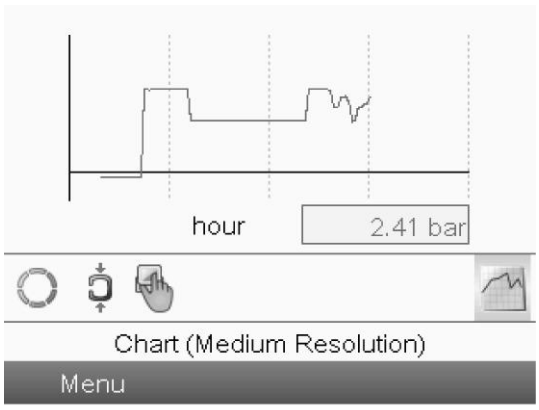
Chart views

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

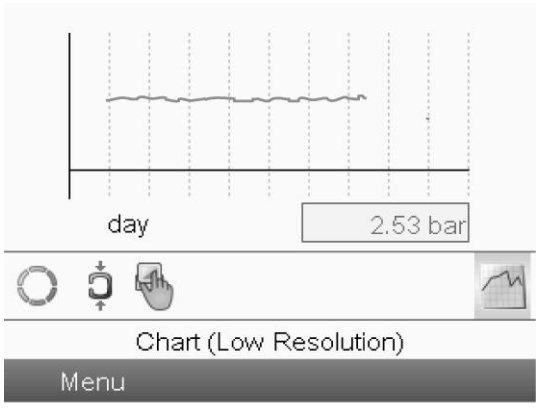
When Chart (High Resolution is selected, the chart shows the variation of the selected input (in this case the pressure) per minute. Also the instantaneous value is displayed. The screen shows the last 4 minutes.

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.

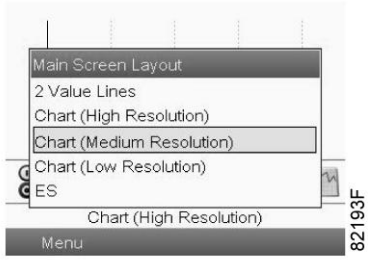


59168D

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.

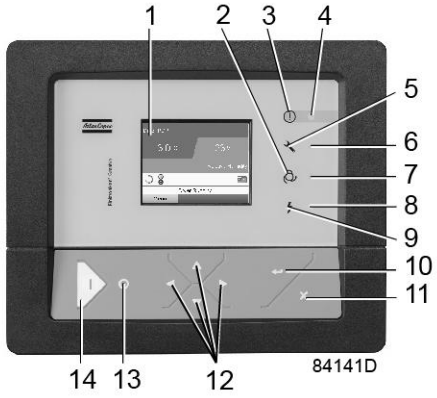
Selection of a main screen view

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:

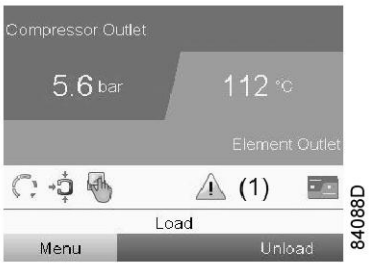


Select the layout required and press the Enter key. See also section Inputs menu.

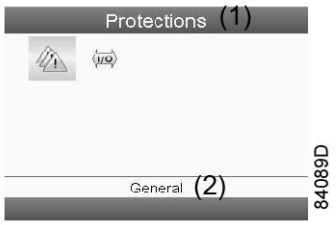
8.5 Shutdown warning



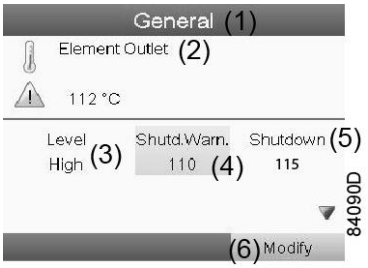
If the compressor element outlet temperature exceeds the shutdown warning level (see section Programmable Settings), warning LED (4) will light up and a warning icon (1) is shown in the lower side of the display as in below image:



Using the scroll keys (12), select warning icon (1) and press enter key (10) to see the Protections menu:



Use scroll keys (12) to check all protections. In case of element outlet temperature warning, the display will appear as below:



Text on image

(1)	General
(2)	Element Outlet
(3)	Level High
(4)	Shutd.Warn.
(5)	Shutdown
(6)	Modify

It remains possible to scroll through other screens, using the Scroll keys (12) to check the actual status of other parameters.

Press stop key (13) to stop the compressor and wait until the compressor has stopped.

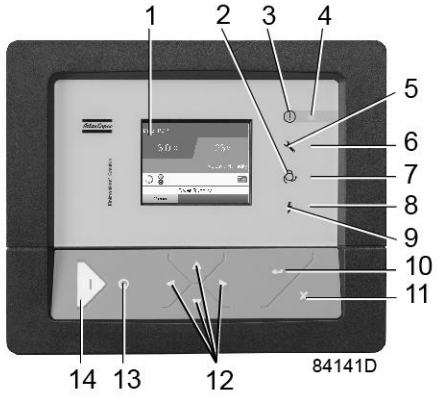
Switch off the voltage, inspect the compressor and remedy. The warning message will disappear as soon the warning condition disappears.

8.6 Shutdown

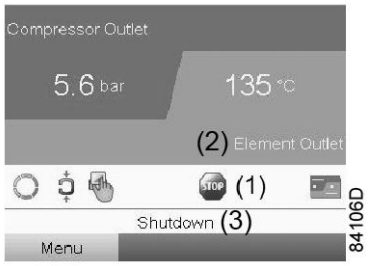
Description

The compressor will be shut down in following circumstances:

- In case the temperature at the outlet of the compressor element exceeds the programmed shutdown level (detected by temperature sensor (TT11) or by temperature switch (TSHH11)).
- In case of too high air/oil temperature (detected by additional temperature switch (TSHH21)).
- In case of overload of the compressor motor (M1) or the fan motor (M2).
- In case of error of the outlet pressure sensor (PT20).
- In case of incorrect phase sequence, detected by phase sequence relay (K25).



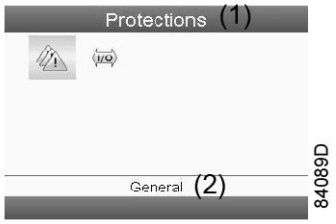
The compressor will be shutdown, alarm LED (5) will flash, automatic operation LED (3) will go out and following screen will appear:



Text on image

(1)	Stop icon
(2)	Element Outlet
(3)	Shutdown

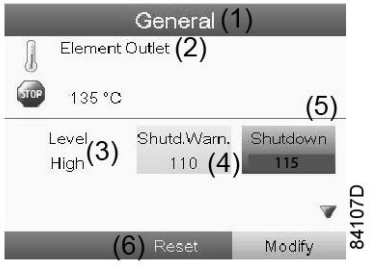
Using the scroll keys (12), select stop icon (1) and press enter key (10) to see the Protections menu:



Use scroll keys (12) to check all protections.

Compressor element outlet temperature (TT11)

If the compressor element outlet temperature, measured by temperature sensor TT11, exceeds the shutdown level (see section Programmable settings), following screen will appear:



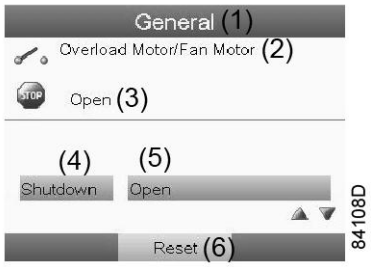
Text on image

(1)	General
(2)	Element Outlet
(3)	Level High
(4)	Shutd.Warn.
(5)	Shutdown
(6)	Reset

Other shutdown causes

- In case the compressor is shut down by one of following causes:
  - Too high element outlet temperature, detected by temperature switch (TSHH11) or additional temperature switch (TSHH21).
  - Overload of the compressor motor (M1) or the fan motor (M2).
  - Incorrect phase sequence, detected by phase sequence relay (K25).

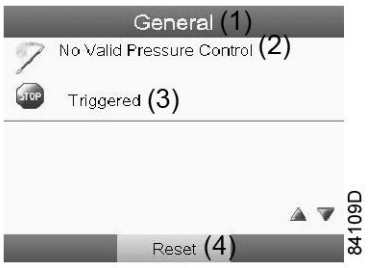
  Following screen will appear:



Text on image

(1)	General
(2)	Overload Motor/Fan Motor
(3)	Open
(4)	Shutdown
(5)	Open
(6)	Reset

- In case of the outlet pressure sensor error, following screen will appear:



Text on image

(1)	General
(2)	No valid pressure control
(3)	Triggered
(4)	Reset

It remains possible to scroll through other screens by means of the scroll keys (12) to check the actual status of other parameters.

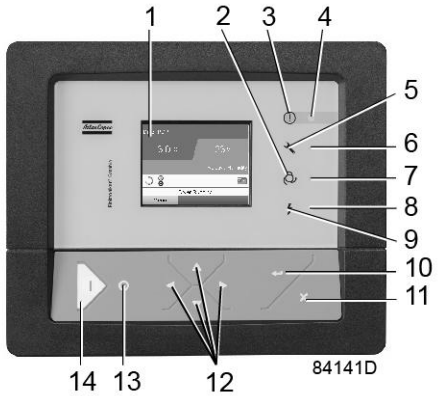
Actions:

- Switch off the voltage and remedy the problem cause.
  - In case of incorrect phase sequence, reverse two phases of the supply cable.
  - If the additional temperature switch (TSHH21) has tripped, you must contact the Atlas Copco customer centre.
- After remedying and when the shutdown condition has disappeared, switch on the voltage and restart the compressor.

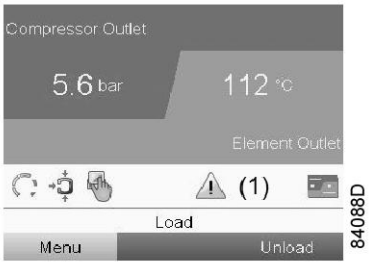
8.7 Other warnings

A warning will appear in the event of:

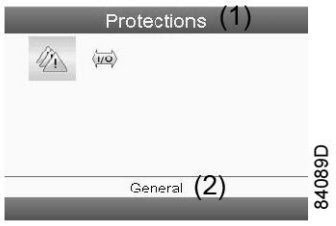
- Too high a dew point temperature (dryer dew point protection)
- Too low dew point temperature (freeze protection)



Warning LED (4) will light up and a warning icon (1) is shown in the lower side of the display as in below image:

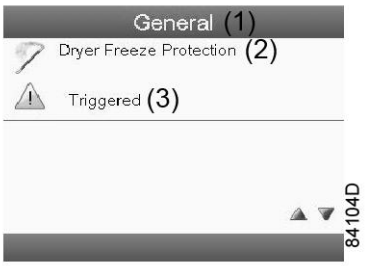


Using the scroll keys (12), select warning icon (1) and press enter key (10) to see the Protections menu:



Use scroll keys (12) to check all protections.

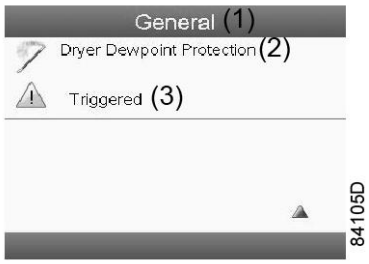
In case of too low dew point (freeze protection), following will be shown:



Text on image

(1)	General
(2)	Dryer Freeze Protection
(3)	Triggered

In case of too high dew point (dew point protection), following will be shown:



Text on image

(1)	General
(2)	Dryer Dewpoint Protection
(3)	Triggered

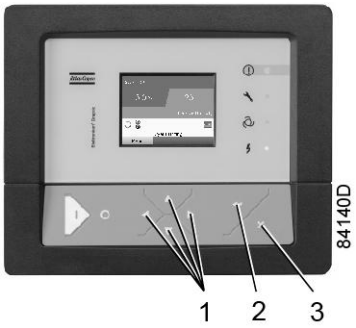
It remains possible to scroll through other screens, using the Scroll keys (12) to check the actual status of other parameters.

Press stop key (13) to stop the compressor and wait until the compressor has stopped.

Switch off the voltage, inspect the compressor and remedy. The warning message will disappear as soon the warning condition disappears.

8.8 Calling up menus

Control panel

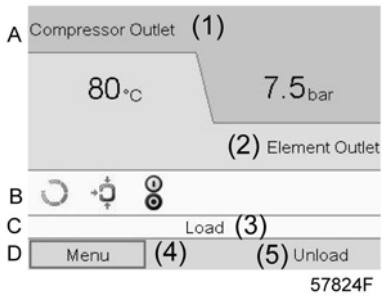


Control panel

(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):



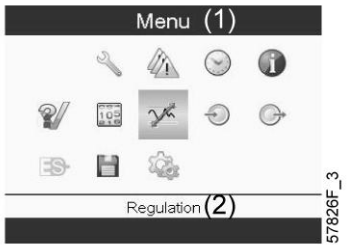
Typical Main screen (2 value lines), fixed speed compressors

Text on image

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

To go to the Menu screen, highlight Menu, using the Scroll keys.

- Press the Enter key to select the menu. Following screen appears:



Typical menu screen

- 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.

8.9 Inputs menu

Menu icon, Inputs

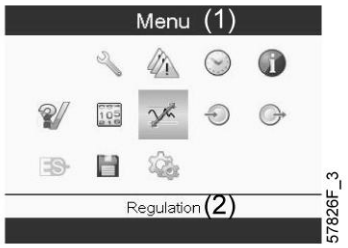
Function

- 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,

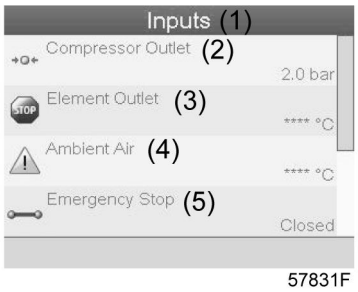
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



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:



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).

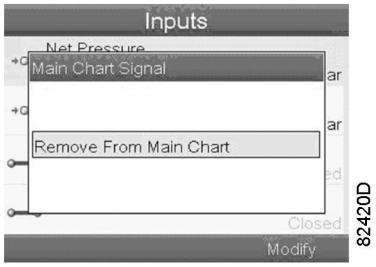
A small chart icon, shown below an item in the list means this input signal is shown on the chart at the main screen. Any analog input can be selected.

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:

The first item in the list is highlighted. In this example, the Net Pressure is selected (chart icon).

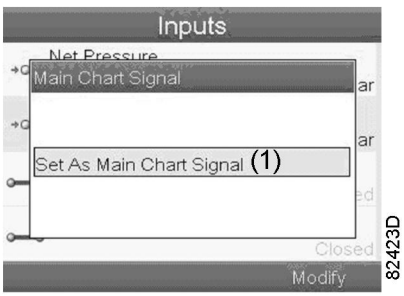
To change, press the Enter button again: a pop-up window opens:



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

8.10 Outputs menu

Menu icon, Outputs

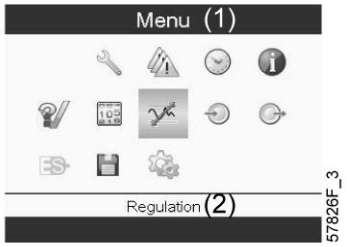
Function

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,

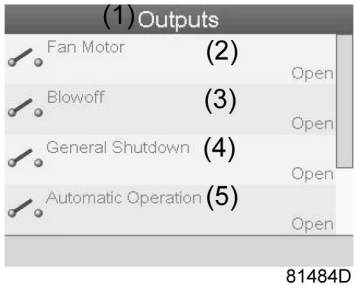
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



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.

8.11 Counters

Menu icon, Counters

Function

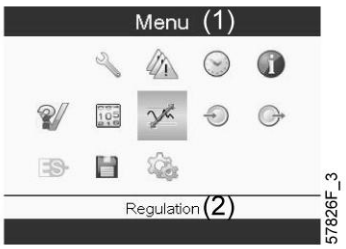
To call up:

- 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

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 image

(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 image

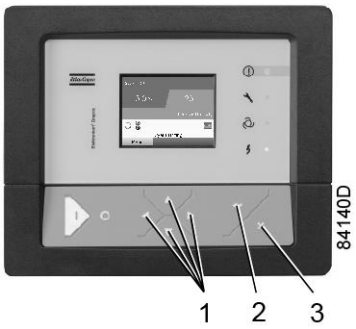
(1)	Counters
(2)	Running Hours
(3)	Motor Starts
(4)	Load Relay
(5)	VSD 1-20 % RPM (the percentage of the time during which the motor speed was between 1 and 20 %) (compressors with frequency converter)

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

Note: the example above is for a frequency converter driven compressor. For a fixed speed compressor, the actual screen will be somewhat different.

8.12 Control mode selection

Control panel



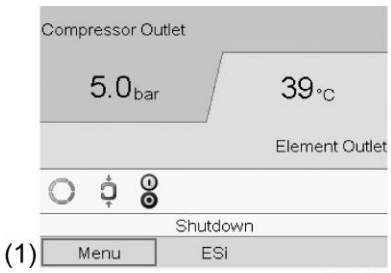
(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Function

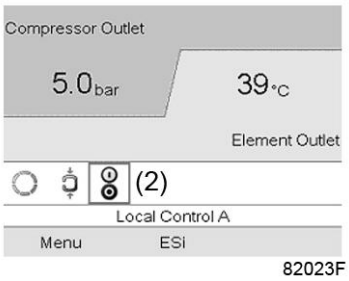
To select the control mode, i.e. whether the compressor is in local control, remote control or controlled via a local area network (LAN).

Procedure

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

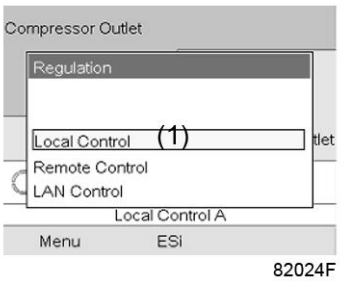


Next, use the scroll buttons to go to the regulation icon (2) and press the Enter button:



There are 3 possibilities, of which you can select 2 by default:

- Local control
- Remote control (not selectable)
- LAN control (network)



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.

Contact Atlas Copco to activate remote control.

8.13 Service menu

Menu icon, Service

Function

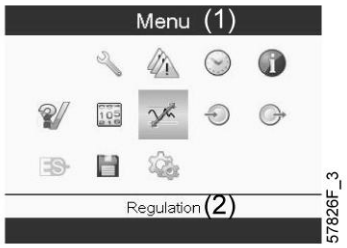
- To reset the service plans which are carried out.
- To check when the next service plans are to be carried out.

- To find out which service plans were carried out in the past.
- To modify the programmed service intervals.

Procedure

Starting from the Main screen,

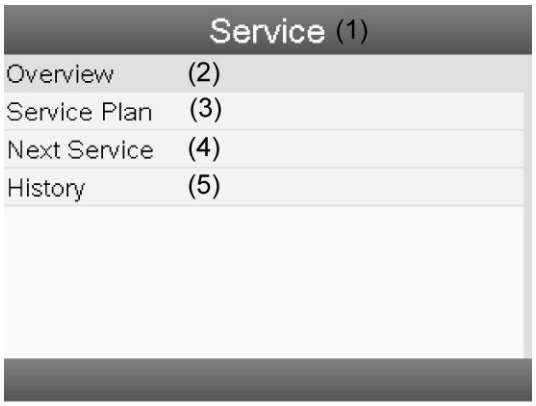
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



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:

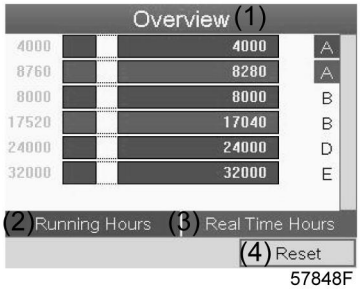


Text on image

(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.

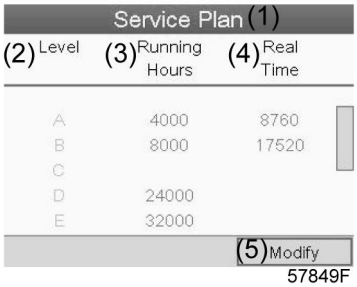
Service plans

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:

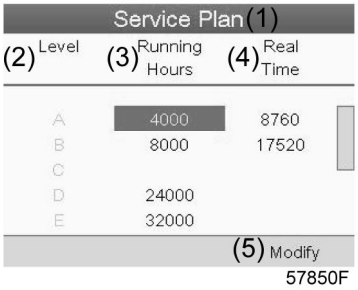


Text on image

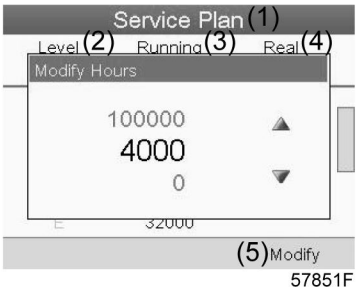
(1)	Service Plan
(2)	Level
(3)	Running hours
(4)	Real Time (hours)
(5)	Modify

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:



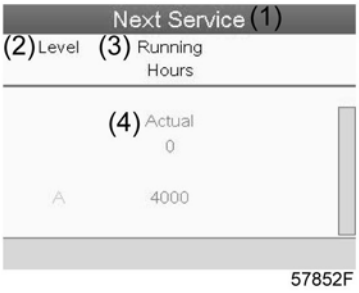
Press the Enter key. Following screen appears:



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



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.

8.14 Setpoint menu

Menu icon, Setpoint

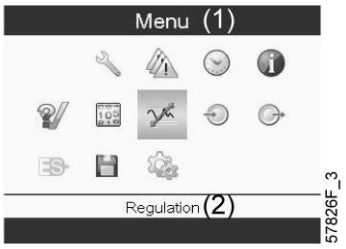
Function

On fixed speed compressors , the operator can program two different pressure bands. This menu is also used to select the active pressure band.

Procedure

Starting from the Main screen (see Main screen),

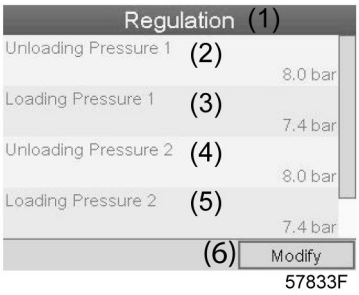
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

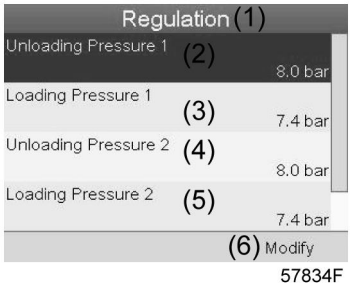
- Move the cursor to the Setpoint icon (see above, section menu icon) using the Scroll keys.
- Press the Enter key. Following screen appears:



Text on image

(1)	Regulation
(2)	Unloading Pressure 1
(3)	Loading Pressure 1
(4)	Unloading Pressure 2
(5)	Loading Pressure 2
(6)	Modify

- The screen shows the actual unloading and loading pressure settings for both pressure bands. 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 to highlight the setting to be modified and press the Enter key. Following screen appears:

Text on image

(1)	Regulation
(2)	Unloading Pressure 1
(3)	Modify

- 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.

8.15 Event history menu

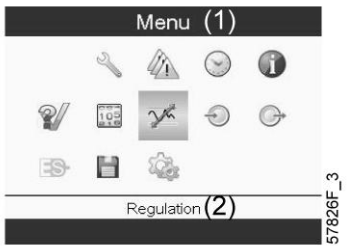
Menu icon, Event History

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.

8.16 Modifying general settings

Menu icon, Settings

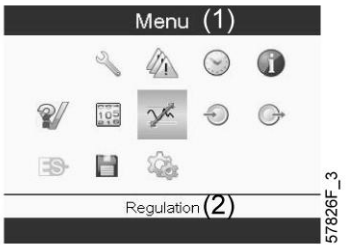
Function

To display and modify a number of settings.

Procedure

Starting from the Main screen,

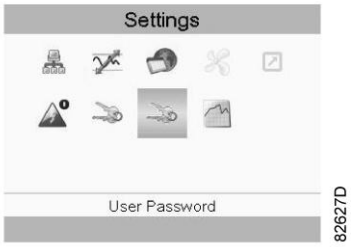
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



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:

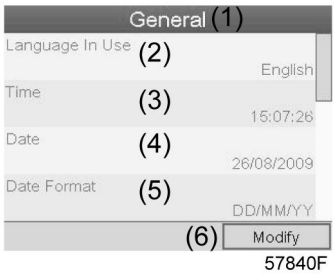


This screen shows again a number of icons. By default, the User Password icon is selected. The status bar shows the description that corresponds with the selected icon. Each icon covers one or more items , such as

- 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.

8.17 Info menu

Menu icon, Info

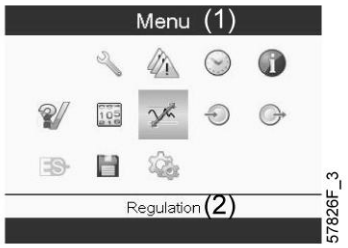
Function

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.

8.18 Week timer menu

Menu icon, Week timer

Function

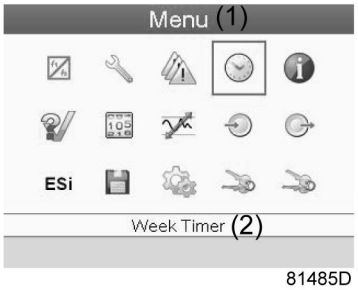
- To program time based start/stop commands for the compressor
- To program time based changeover commands for the net pressure band
- Four different week schemes can be programmed.
- A week cycle can be programmed, a week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four programmed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

(1)	Menu
(2)	Week Timer

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

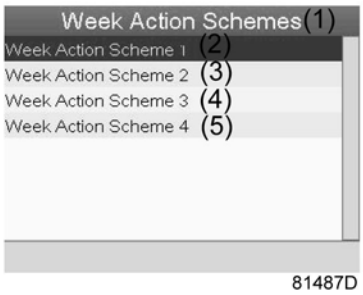
Text on image

(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. Select the item requested and press the Enter key on the controller to modify.

Programming week schemes

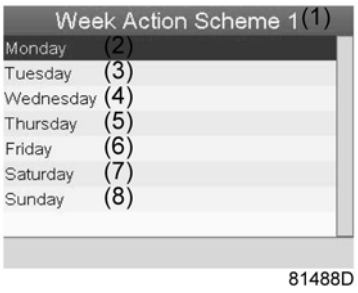
- Select Week action schemes and press Enter. A new window opens. The first item in the list is highlighted. Press the Enter key on the controller to modify Week Action Scheme 1.



Text on image

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

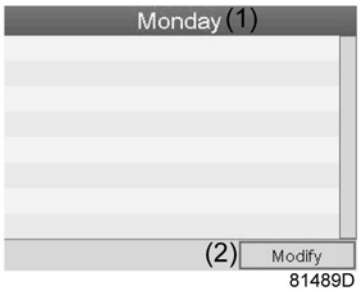
- A weekly list is shown. Monday is automatically selected and highlighted. Press the Enter key on the controller to set an action for this day.



Text on image

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

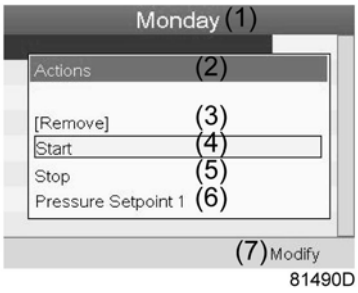
- A new window opens. The Modify action button is selected. Press the enter button on the controller to create an action.



Text on image

(1)	Monday
(2)	Modify

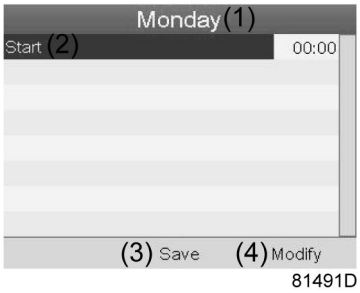
- A new pop-up window opens. Select an action from this list by using the Scroll keys on the controller. When ready press the Enter key to confirm.



Text on image

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

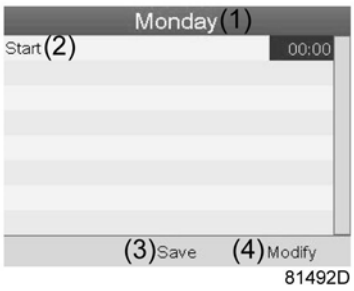
- A new window opens. The action is now visible in the first day of the week.



Text on image

(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.



81492D

- 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.

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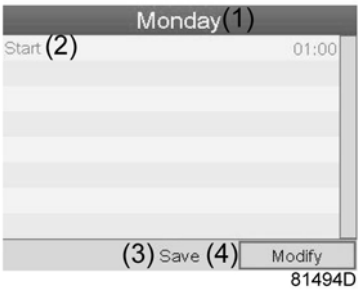
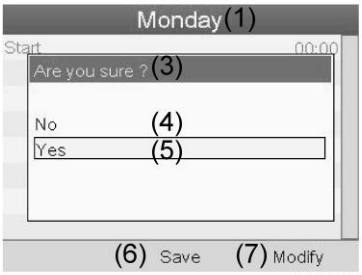
- Press the Escape key on the controller. The action button Modify is selected. Use the Scroll keys to select the action Save.



81494D

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

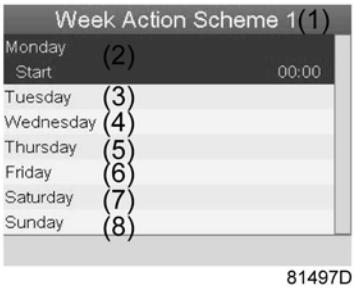


Text on image

(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.



Text on image

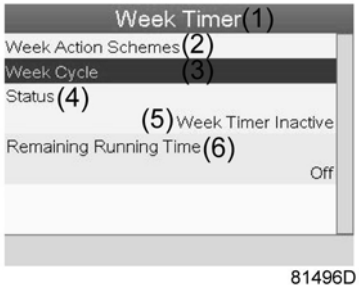
(1)	Week Action Scheme 1
(2)	Monday
(3)	Tuesday
(4)	Wednesday
(5)	Thursday
(6)	Friday
(7)	Saturday
(8)	Sunday

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.

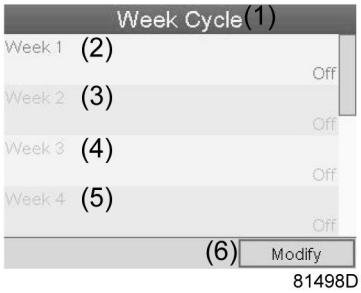
- Select Week Cycle from the main Week Timer menu list.



Text on image

(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.

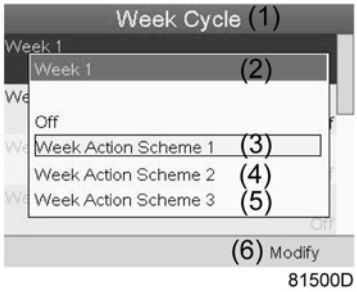


Text on image

(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.

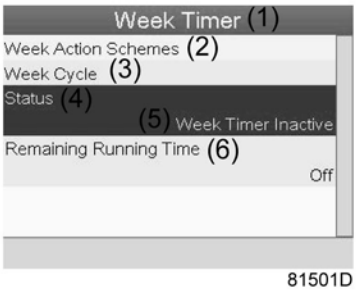
- A new window opens. Select the action, example: Week Action Scheme 1



Text on image

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

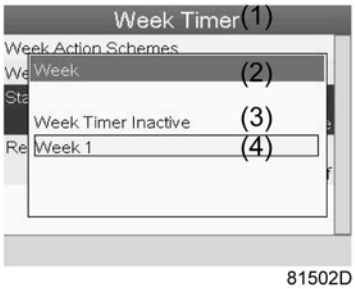
- Check the status of the Week Timer
  Use the Escape key on the controller to go back to the main Week Timer menu. Select the status of the Week Timer.



Text on image

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

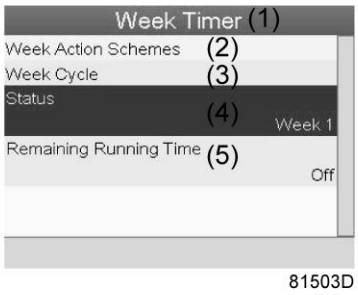
- A new window opens. Select Week 1 to set the Week Timer active.



Text on image

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

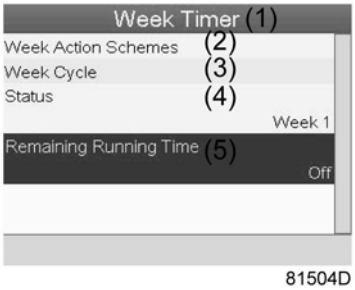
- Press the Escape key on the controller to leave this window. The status shows that week 1 is active.



Text on image

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

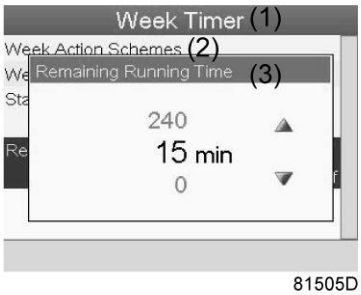
- Press the Escape key on the controller to go to the main Week Timer menu. Select Remaining Running Time from the list and press the Enter key on the controller to Modify.



Text on image

(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.



Text on image

(1)	Week Timer
(2)	Week Action Schemes
(3)	Remaining Running Time

8.19 Test menu

Menu icon, Test

or

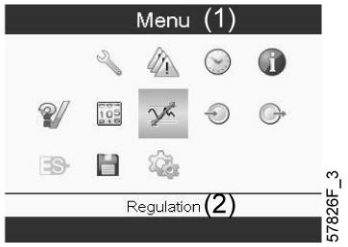
Function

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

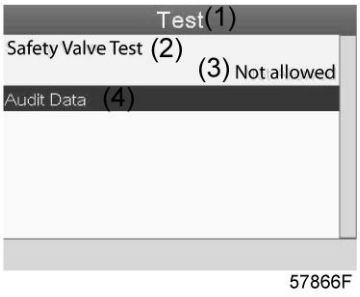
Procedure

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.

8.20 User password menu

Menu icon, Password

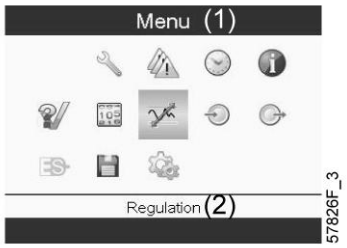
Function

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

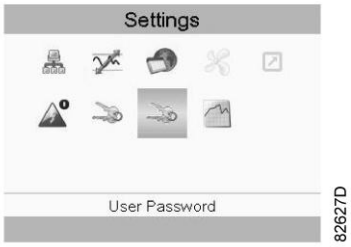
Procedure

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.

8.21 Web server

All Elektronikon 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

	If the compressor is equipped with a **SMART**BOX, the network connection of the Elektronikon is already in use. To allow the web server functionality, the network cable that is connected to the **SMART**BOX should be unplugged and replaced by the cable of the company network. If both the web server functionality and **SMART**BOX are required, please contact your local Atlas Copco Customer Centre for support.

Make sure you are logged in as administrator.

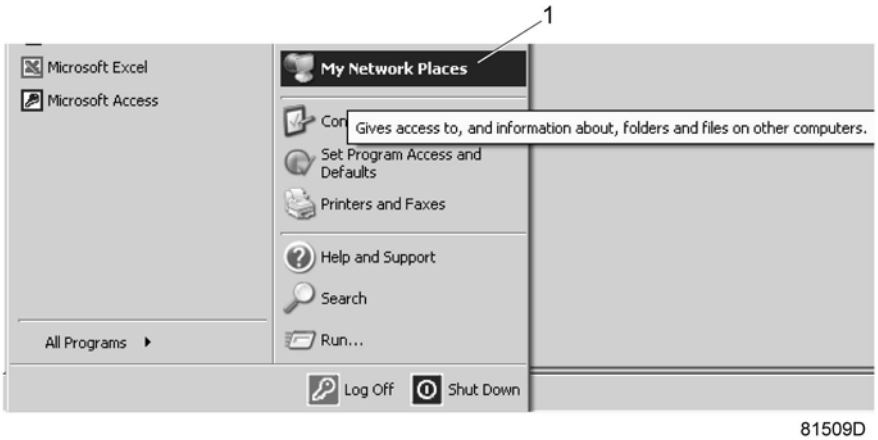
- Use the internal network card from your computer or a USB to LAN adapter (see picture below).

USB to LAN adapter

- Use a UTP cable (CAT 5e) to connect to the controller (see picture below).

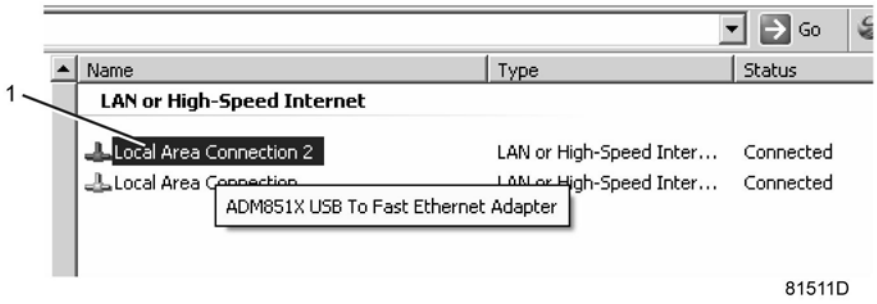
Configuration of the network card (in Windows XP)

- Go to My Network places (1).

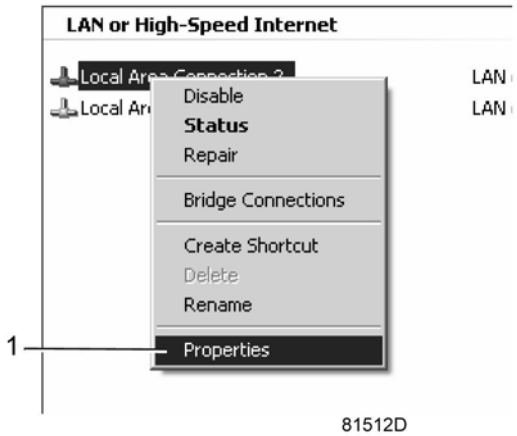


- Click on View Network connections (1).

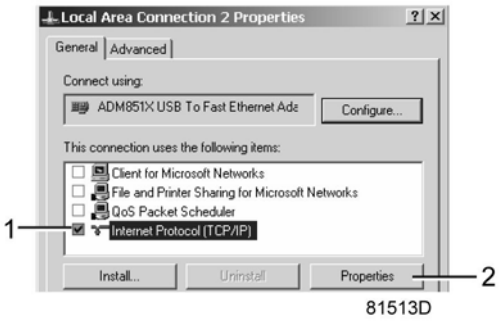
- Select the Local Area connection (1), which is connected to the controller.



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



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



- Use the following settings:
  - IP Address 192.168.100.200
  - Subnetmask 255.255.255.0

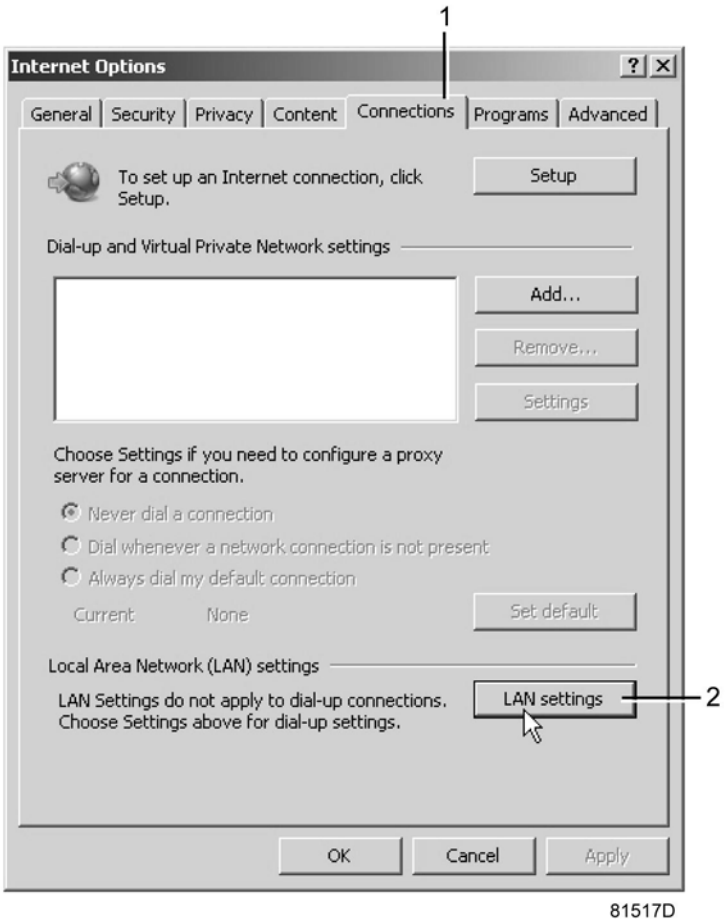
  Click OK and close network connections.

Configuration of the web server

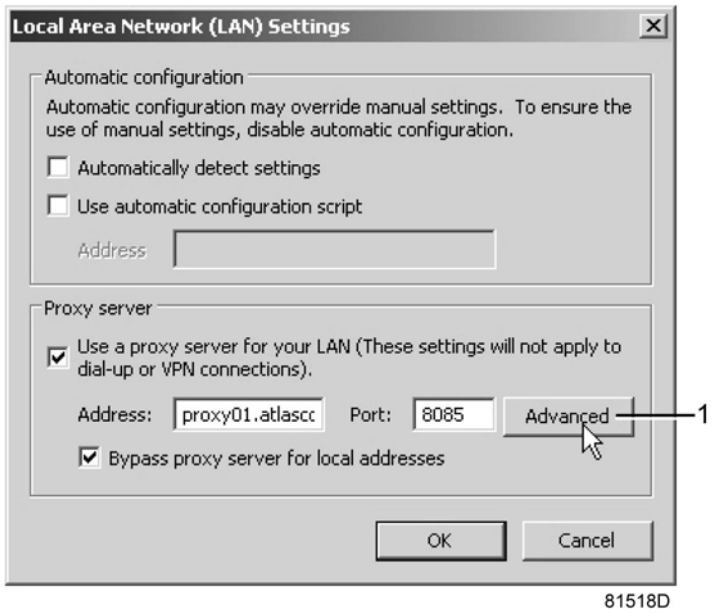
Configure the web interface (for Internet Explorer)

- Open Internet Explorer and click on Tools - Internet options (2).

- Click on the Connections tab (1) and then click on the LAN settings button (2).

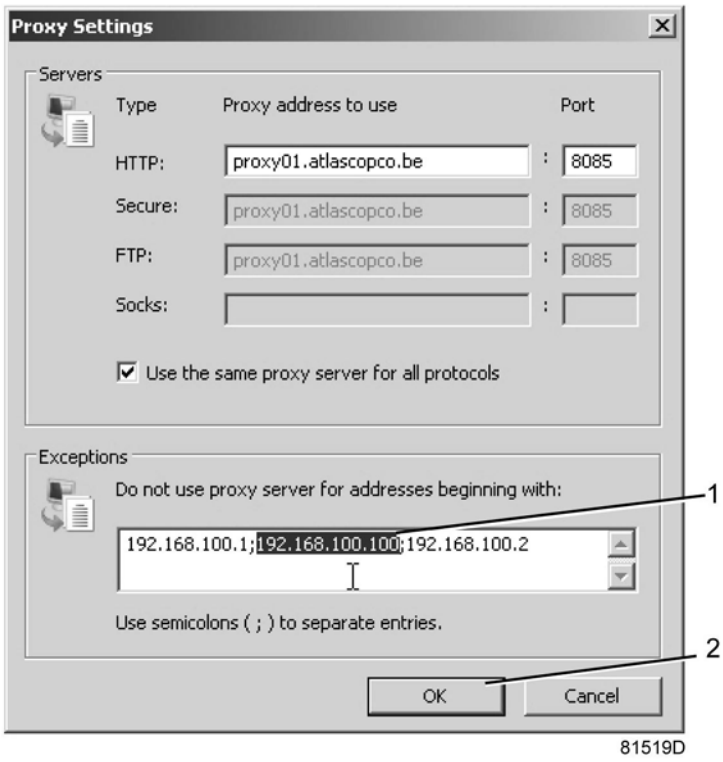


- In the Proxy server Group box, click on the Advanced button (1).



- In the Exceptions Group box, enter the IP address of your controller. Multiple IP addresses can be given but they must be separated with semicolons (;).

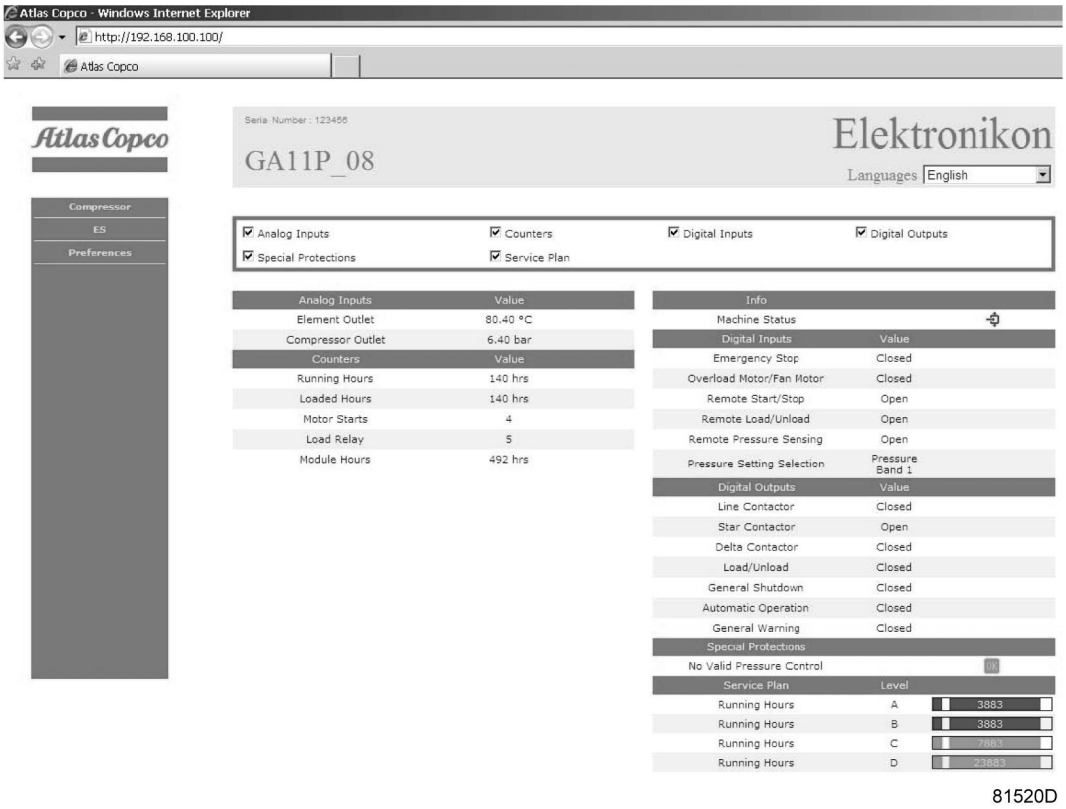
Example: Suppose that you already added two IP addresses (192.168.100.1 and 192.168.100.2). Now you add 192.168.100.100 and separate the 3 IP addresses by putting semicolons between them (1) (see picture).
Click OK (2) to close the window.



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:



81520D

Screen shot (example!)

Navigation and options

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

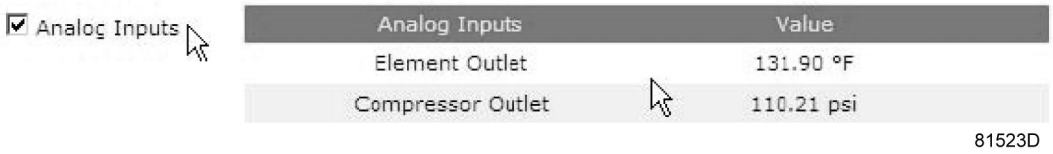
81521D

Compressor settings

All compressor 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.



Counters

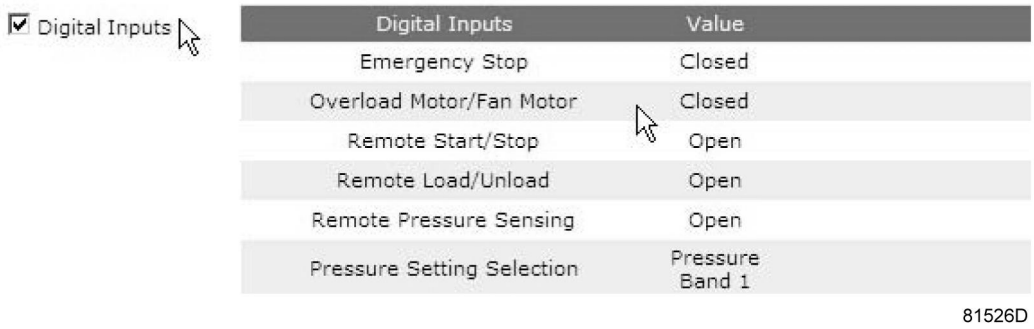
Lists all current counter values from controller and compressor.

Info status

Machine status is always shown on the web interface.

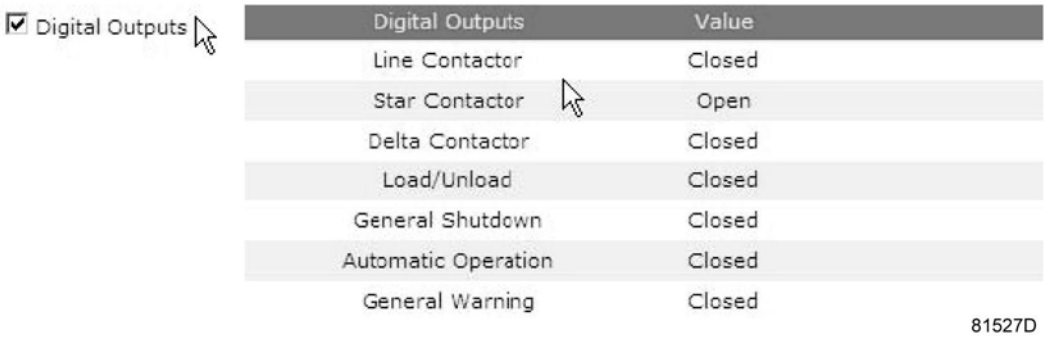
Digital inputs

Lists all Digital inputs and their status.



Digital outputs

Lists all Digital outputs and their status.



Special protections

Lists all special protections of the compressor.

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.

8.22 Programmable settings

Parameters: unloading/loading pressures for compressors without built-in refrigeration dryer

		Minimum setting	Factory setting	Maximum setting
Unloading pressures				
Unloading pressure (7.5 bar compressors)	bar(e)	6.1	7	7.5
Unloading pressure (7.5 bar compressors)	psig	88.5	101.5	108.8
Unloading pressure (8.5 bar compressors)	bar(e)	6.1	8.0	8.5
Unloading pressure (8.5 bar compressors)	psig	88.5	116.0	123.3
Unloading pressure (10 bar compressors)	bar(e)	6.1	9.5	10
Unloading pressure (10 bar compressors)	psig	88.5	137.8	145.0
Unloading pressure (13 bar compressors)	bar(e)	6.1	12.5	13
Unloading pressure (13 bar compressors)	psig	88.5	181.3	188.6
Unloading pressure (100 psi compressors)	bar(e)	6.1	6.9	7.4

		Minimum setting	Factory setting	Maximum setting
Unloading pressure (100 psi compressors)	psig	88.5	100	107
Unloading pressure (125 psi compressors)	bar(e)	6.1	8.6	9.1
Unloading pressure (125 psi compressors)	psig	88.5	125	132
Unloading pressure (150 psi compressors)	bar(e)	6.1	10.3	10.8
Unloading pressure (150 psi compressors)	psig	88.5	150	157
Unloading pressure (175 psi compressors)	bar(e)	6.1	12	12.5
Unloading pressure (175 psi compressors)	psig	88.5	175	181
Loading pressures				
Loading pressure (7.5 bar compressors)	bar(e)	6	6.4	7.4
Loading pressure (7.5 bar compressors)	psig	87	92.8	107.3
Loading pressure (8.5 bar compressors)	bar(e)	6	7.4	8.4
Loading pressure (8.5 bar compressors)	psig	87	107.3	121.8
Loading pressure (10 bar compressors)	bar(e)	6	8.9	9.9
Loading pressure (10 bar compressors)	psig	87	129.1	143.6
Loading pressure (13 bar compressors)	bar(e)	6	11.9	12.9
Loading pressure (13 bar compressors)	psig	87	172.6	187.1
Loading pressure (100 psi compressors)	bar(e)	6	6.3	7.3
Loading pressure (100 psi compressors)	psig	87	91	105
Loading pressure (125 psi compressors)	bar(e)	6	8	9
Loading pressure (125 psi compressors)	psig	87	116	130
Loading pressure (150 psi compressors)	bar(e)	6	9.7	10.7
Loading pressure (150 psi compressors)	psig	87	141	156
Loading pressure (175 psi compressors)	bar(e)	6	11.4	12.4
Loading pressure (175 psi compressors)	psig	87	166	180

Parameters: unloading/loading pressures for compressors with built-in refrigeration dryer

		Minimum setting	Factory setting	Maximum setting
Unloading pressures				
Unloading pressure (7.5 bar compressors)	bar(e)	6.1	7	7.3
Unloading pressure (7.5 bar compressors)	psig	88.5	101.5	105.9
Unloading pressure (8.5 bar compressors)	bar(e)	6.1	8.0	8.25
Unloading pressure (8.5 bar compressors)	psig	88.5	116.0	119.7
Unloading pressure (10 bar compressors)	bar(e)	6.1	9.5	9.8
Unloading pressure (10 bar compressors)	psig	88.5	137.8	142.1
Unloading pressure (13 bar compressors)	bar(e)	6.1	12.5	12.8
Unloading pressure (13 bar compressors)	psig	88.5	181.3	185.6
Unloading pressure (100 psi compressors)	bar(e)	6.1	6.9	7.1
Unloading pressure (100 psi compressors)	psig	88.5	100	104
Unloading pressure (125 psi compressors)	bar(e)	6.1	8.6	8.9

		Minimum setting	Factory setting	Maximum setting
Unloading pressure (125 psi compressors)	psig	88.5	125	129
Unloading pressure (150 psi compressors)	bar(e)	6.1	10.3	10.6
Unloading pressure (150 psi compressors)	psig	88.5	150	154
Unloading pressure (175 psi compressors)	bar(e)	6.1	12	12.2
Unloading pressure (175 psi compressors)	psig	88.5	175	179
Loading pressures				
Loading pressure (7.5 bar compressors)	bar(e)	6	6.4	7.2
Loading pressure (7.5 bar compressors)	psig	87	92.8	104.4
Loading pressure (8.5 bar compressors)	bar(e)	6	7.4	8.1
Loading pressure (8.5 bar compressors)	psig	87	107.3	117.5
Loading pressure (10 bar compressors)	bar(e)	6	8.9	9.7
Loading pressure (10 bar compressors)	psig	87	129.1	140.7
Loading pressure (13 bar compressors)	bar(e)	6	11.9	12.7
Loading pressure (13 bar compressors)	psig	87	172.6	184.2
Loading pressure (100 psi compressors)	bar(e)	6	6.3	7.1
Loading pressure (100 psi compressors)	psig	87	91	103
Loading pressure (125 psi compressors)	bar(e)	6	8	8.8
Loading pressure (125 psi compressors)	psig	87	116	128
Loading pressure (150 psi compressors)	bar(e)	6	9.7	10.5
Loading pressure (150 psi compressors)	psig	87	141	153
Loading pressure (175 psi compressors)	bar(e)	6	11.4	12.2
Loading pressure (175 psi compressors)	psig	87	166	178

Parameters

		Minimum setting	Factory setting	Maximum setting
Number of motor starts	starts/day	0	240	480
Minimum stop time	sec	10	20	30
Programmed stop time	sec	90	90	90
Power recovery time (ARAVF)	sec	60	60	3600
Restart delay	sec	40	40	1200
Communication time-out	sec	10	30	60

Protections

For water-cooled compressors also:		Minimum setting	Factory setting	Maximum setting
Compressor element outlet temperature (shutdown warning level)	˚C	50	110	114
Compressor element outlet temperature (shutdown warning level)	˚F	122	230	237
Compressor element outlet temperature (shutdown level)	˚C	111	115	115
Compressor element outlet temperature (shutdown level)	˚F	232	239	239

Service plan

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

Also see section Preventive maintenance schedule.

Consult Atlas Copco if a timer setting has 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 and Modifying general settings.
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 illogical settings, e.g. if the warning level is programmed at 95 ˚C (203 ˚F), the minimum limit for the shutdown level changes to 96 ˚C (204 ˚F). The recommended difference between the warning level and shutdown level is 10 ˚C (18 ˚F).
Delay at shutdown signal	Is the time for which the signal must exist before the compressor is shut down. If it is required to program this setting to another value, consult Atlas Copco.
Oil separator	Use only Atlas Copco oil separators. The recommended maximum pressure drop over the oil separator element is 1 bar (15 psi).
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. Consult Atlas Copco if a setting lower than 20 seconds is required.
Unloading/ Loading pressure	The regulator does not accept inconsistent settings, e.g. if the unloading pressure is programmed at 7.0 bar(e) (101 psi(g)), the maximum limit for the loading pressure changes to 6.9 bar(e) (100 psi(g)). The recommended minimum pressure difference between loading and unloading is 0.6 bar (9 psi(g)).

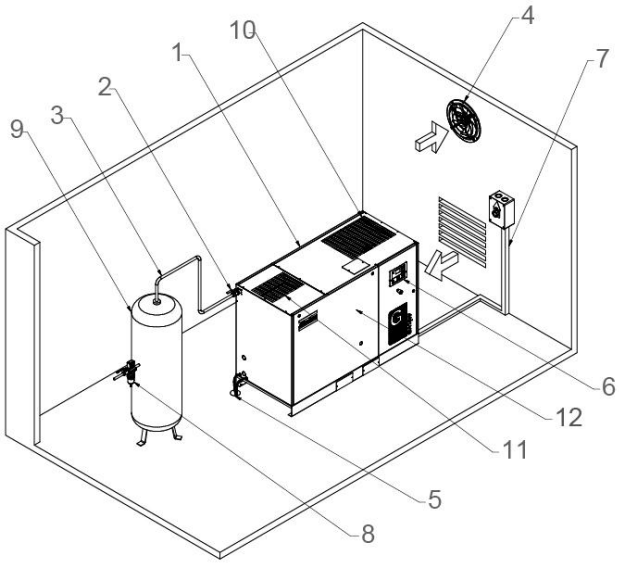
9 Installation

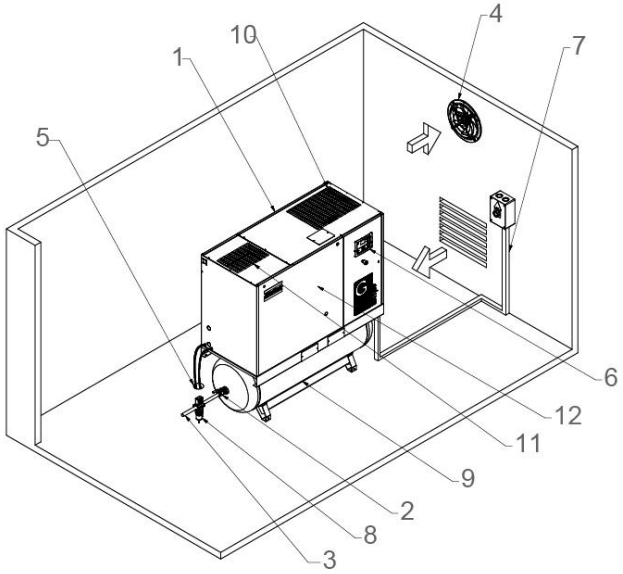
9.1 Dimension drawings

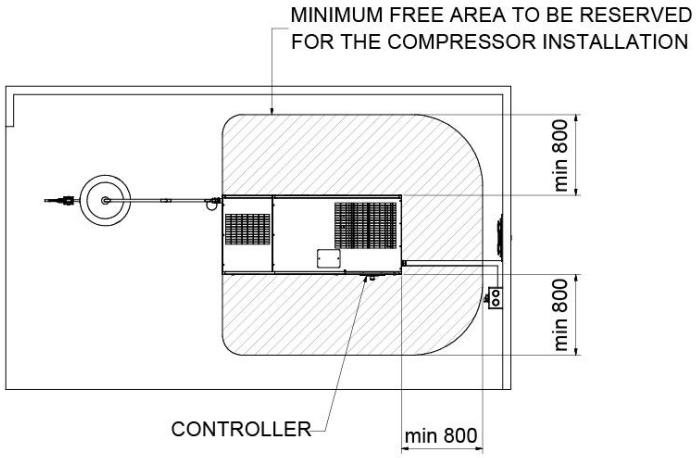
The dimension drawings can be found on the CD, delivered with the compressor.

Text on drawings	Translation or explanation
COOLING AIR OUTLET OF COMPRESSOR AND MOTOR	Cooling air outlet of compressor and motor
SERVICE PANEL	Service panel
SERVICE PANEL (OIL SEPARATOR)	Service panel for oil separator element
ELECTRIC CABLE PASSAGE	Electric cable passage
COMPRESSED AIR OUTLET (SUPPLIED LOOSE) IF APPLICABLE	Compressed air outlet valve supplied loose (if applicable)
MANUAL DRAIN	Manual drain
AUTOMATIC DRAIN (EWD WSD OPTION)	Automatic drain (EWD WSD option)
COOLING AIR INLET OF COMPRESSOR AND MOTOR	Cooling air inlet of compressor and motor
AUTOMATIC DRAIN (DRYER)	Automatic drain of the dryer
CENTER OF GRAVITY	(Position of) center of gravity
OIL LEVEL INDICATOR	Oil level indicator
SLOT FOR LIFTING	Slot for lifting
WATER OUTLET (ENERGY RECOVERY OPTION)	Water outlet (Energy recovery option)
WATER INLET (ENERGY RECOVERY OPTION)	Water inlet (Energy recovery option)
ANCHOR POINT (BOTTOM VIEW)	Anchor point (bottom view)
APPROX WEIGHT	Approximate weight
COMPRESSOR MOUNTING HOLES	Compressor mounting holes
* DOOR FULLY OPEN	*: Dimensions with door fully open
TIMER DRAIN	Timed drain
PREFILTER OPTION	Prefilter option
MAIN SWITCH OPTION	Main switch option
3 WAY VALVES (DRYER BYPASS OPTION)	3 way vales (dryer bypass option)
COOLING AIR OUTLET OF DRYER	Cooling air outlet of dryer

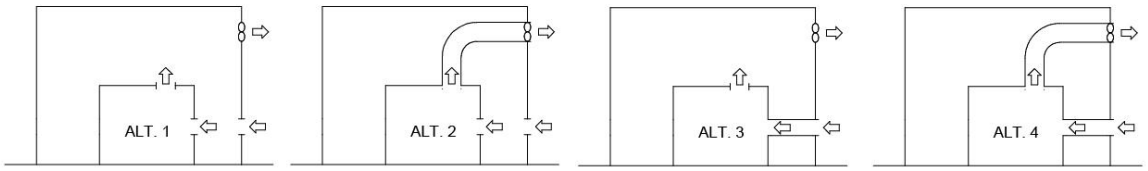
9.2 Installation proposal







VENTILATION PROPOSALS



1	Install the compressor unit on a solid, level floor suitable for taking the weight. Recommended minimum distance between top of the unit and ceiling is 900 mm (35 in). Distance between unit and walls stated are minimum. * Recommended distance is 500 mm for easy access. Air receiver may not be bolted to the ground.
2	Position of the compressed air outlet valve.
3	The pressure drop over the air delivery pipe can be calculated as follows: $\Delta p = (L \times 450 \times Q_c^{1.85}) / (d^5 \times P)$, 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 Q_c = Free air delivery of the compressor in l/s

4	Ventilation: the inlet grids and ventilation fan should be installed in such a way that any recirculation of cooling air to the compressor is avoided. The maximum air velocity through the grids is 5 m/s (16.5 ft/s). Cooling air ducts are not allowed. The maximum air temperature at the compressor intake is 46 ˚C (115 ˚F) (minimum 0 ˚C / 32 ˚F). **The ventilation capacity required to limit the compressor room temperature can be calculated from:** Q_v = 0.92 N/ΔT Q_v = Required ventilation capacity in m^3/s N = Shaft input of compressor in kW ΔT = Temperature increase in the compressor room in °C
5	The drain pipes to the drain collector must not dip into the water of the drain collector. Instal an oil/water separator to ensure that the condensate meets the requirements of the environmental codes. Consult Atlas Copco.
6	Control module with monitoring panel.
7 	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.
8	Filter type DD+ for general purpose filtration (particle removal down to 1 micron with a maximum oil carry over of 0.5 mg/m^3. A high efficiency filter type PD+ may be installed downstream the DD+ filter (particle removal down to 0.01 micron and maximum oil carry over of 0.01 mg/m^3. If oil vapors and odors are undesirable, a QD type filter can be installed downstream 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.
9	Air receiver. The air receiver must be equipped with a safety valve.
10	Cooling air outlet grating.
11	Cooling air outlet grating of the dryer (FF compressors).
12	Service panel

All pipes to be connected stress free to the compressor!

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

Floor-mounted unit: the compressor can be moved by a lift truck. Take care not to damage any installed connections under the frame while moving the truck or compressor. For lifting make sure that the forks are long enough to give a stable support for the compressor.

Tank-mounted unit: Move the compressor by a lift truck by positioning the forks below the lifting supports that are mounted between the feet of the air receiver. Make sure that the forks are positioned in the centre of the air receiver and lift carefully.

9.3 Electrical connections

Important remark

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

Instructions

1. Provide an isolating switch.
2. Check that the motor cables and wires inside the electric cabinet are clamped tight to their terminals.
3. Check the fuses and the setting of the overload relay. See section Settings of overload relay and fuses.
4. Connect the power supply cables to their terminals L1, L2, L3.
5. Connect neutral conductor to connector (N) if applicable.
6. Connect earth conductor bolt (PE).

On Full-Feature versions:

The supply voltage to the dryer must be 230 V single-phase. The voltage to the dryer is supplied over the contacts of relay (K11), which close when the compressor is started. For compressor supply voltages different from 3 x 400 V plus neutral and 3 x 230 V, the dryer is powered by a transformer.

Compressor control modes on compressors with Elektronikon® controller

Consult section Selection between local, remote and LAN control if it is desired to switch to another control mode.

The following control modes can be selected:

- **Local control:** The compressor will react to commands entered by means of the buttons on the control panel. Compressor start/stop commands via Clock function are active, if programmed.
- **Remote control:** The compressor will react to commands from external switches. Emergency stop remains active. Compressor start/stop commands via Clock function are still possible.
  Options:
  - Remote starting and stopping (switch S1')
  - Remote loading/unloading (manual switch S4')

  Contact Atlas Copco customer centre to activate it.

	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.

Compressor control modes on compressors with Elektronikon® Graphic controller

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

	Have the modifications checked by 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.

Compressor status indication on compressors equipped with an Elektronikon® controller

The Elektronikon controller is provided with an auxiliary relay (K05) for remote indication of a shutdown. This NO contact (NO = normally open) 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 status indication on compressors equipped with an Elektronikon® Graphic controller

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

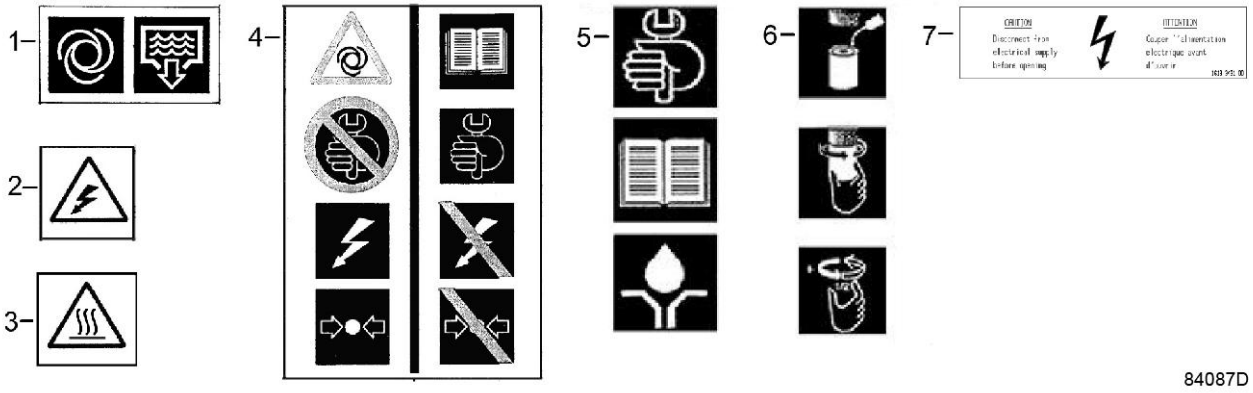
- Automatic operation (K07)
- Warning condition (K08)
- Shut-down condition (K05)

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.

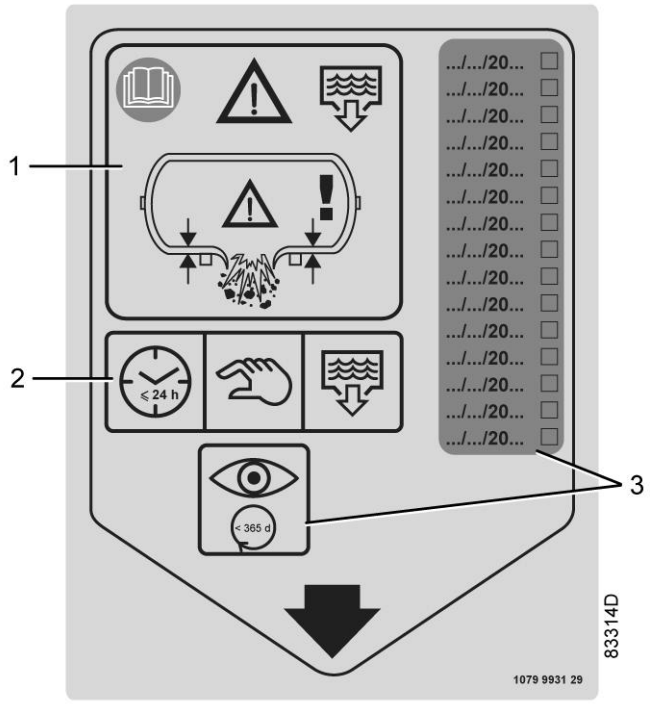
Stop the compressor and switch off the voltage before connecting external equipment. Consult Atlas Copco.

9.4 Pictographs



Reference	Designation
1	Automatic condensate drain outlet
2	Warning: voltage
3	Warning: hot surface
4	Warning: do not work on the compressor when the power is on and the compressor is pressurized. Instead, read the manual, disconnect the power and depressurize the compressor before working on it.
5	Consult the instruction book before carrying out maintenance or lubricating.
6	Lightly oil gasket of oil filter, screw it on and tighten by hand (approximately half a turn).
7	Warning: disconnect the compressor from the electrical supply before opening the cubicle door.

On the receiver of receiver mounted compressors, following label is present:



	1. Read the instruction book. Drain the condensate to reduce the risk of corrosion. 2. Drain the vessel daily by opening the manual drain valve. 3. Inspect the vessel wall thickness yearly and note down the inspection date.

10 Operating instructions

10.1 Initial start up

Procedure

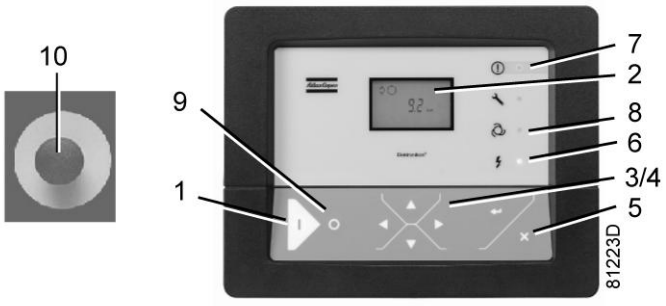
	Always apply all relevant Safety precautions.

-	Consult sections Installation proposal, Electric cable size and Settings of overload relay and fuses.
-	Check that the electrical connections correspond to the applicable codes and that all wires are clamped tight to their terminals. The installation must be earthed and protected against short circuits by fuses of the inert type in all phases. An isolating switch must be installed near the compressor.
-	Check transformer (T1) for correct connection. For Full-Feature units except for voltages 230 V and 400 V + N: check the dryer transformer (T2) for correct connection. Check the settings of drive motor overload relay (F21). Check that the motor overload relay is set for manual resetting.
-	Check the oil level. The sight glass (GI) must be between 1/4 and 3/4 full. Add oil if necessary (see section Oil and oil filter change).
-	**Provide labels, warning the operator that:** • The compressor is automatically controlled and may restart automatically. • The compressor may automatically restart after voltage failure (if the function is activated - consult Atlas Copco).
-	The compressors are equipped with a phase sequence relay to protect the compressor from running in the wrong direction. Switch on the voltage and start the compressor. If the compressor fails to start, check the display. If the display shows the pictograph for motor overload, check the phase sequence relay. If the rotation direction of the drive motor is incorrect or if the motor doesn't start, open the isolating switch and reverse two incoming electric lines. Incorrect rotation direction of the motor may cause damage to the compressor element.
-	Check the programmed settings. Consult section Programmable settings.Programmable settings
-	Start and run the compressor for a few minutes. Check that the compressor operates normally.

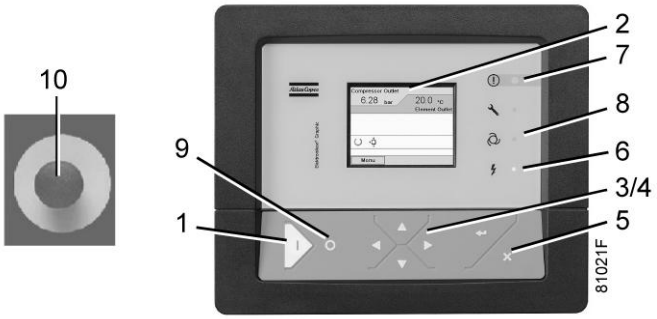
10.2 Starting

Procedure

	Check the oil level, top up if necessary. See section Initial start up. For the position of the air outlet valve and the drain connections, see sections Introduction.



Control panel Elektronikon®



Control panel Elektronikon® Graphic

Step	Action
1	Open the air outlet valve.
2	Switch on the voltage. Check that voltage on LED (6) lights up.
3	Press start button (1) on the control panel. The compressor starts running and the automatic operation LED (8) lights up.

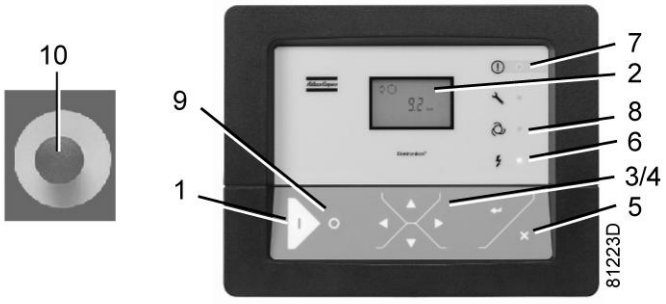
10.3 During operation

Warnings

	The operator must apply all relevant Safety precautions. Also consult section Problem solving.
	Removing the front panel (service panel) during operation will lead to an automatic shutdown of the unit after a certain time depending of the compressor version.
	Keep the doors closed during operation.
	When the motors are stopped and LED (8) (automatic operation) is alight, the motors may start automatically.

Checking the display

Compressors with an Elektronikon® controller:

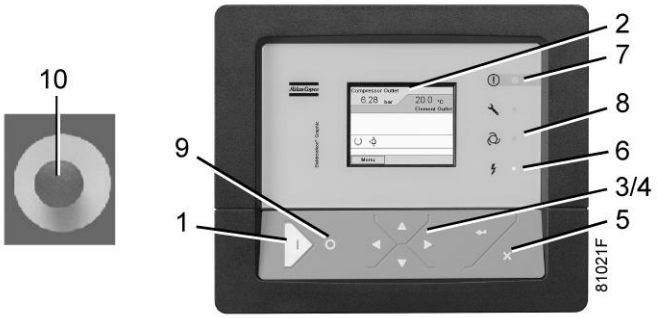


Control panel Elektronikon®

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 pictographs. Remedy the trouble if alarm LED (7) is lit or flashes, see sections Shutdown warning or Shutdown.

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. The service LED is on (see section Service warning). Carry out the service actions of the indicated plans or replace the component and reset the relevant timer.

Compressors with an Elektronikon® Graphic controller:



Control panel Elektronikon® Graphic

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 pictographs. Remedy the trouble if alarm LED (7) is lit or flashes, see sections Shutdown warning, Shutdown.

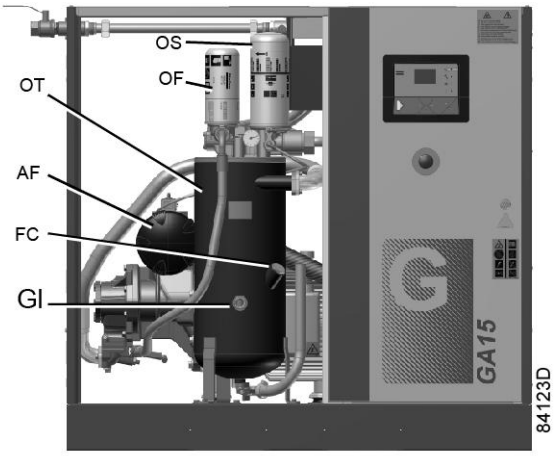
Remedy the trouble if alarm LED (7) is lit or flashes, see section . The display (2) will show a service message if a service plan interval has been exceeded or if a service level for a monitored component has been exceeded. Carry out the service actions of the indicated plans or replace the component and reset the relevant timer, see section Service menu.

Checking the oil level

	When the automatic operation LED (8) is lit, the regulator is automatically controlling the compressor, i.e. loading, unloading, stopping of the motors and restarting!

Regularly check the oil level. To do this, press the stop button (9). Three minutes after stopping, sight glass (Gl) should be between 1/4 and 3/4 full.

If the oil level is too low, press the emergency stop button (10), close the air outlet valve and open (if provided) the manual condensate drains. Next, depressurize the oil system by unscrewing oil filler plug (FC) one turn and wait a few minutes. Remove the plug and top up oil, until the sight glass is full. Fit and tighten the filler plug.



Position of oil level sight glass

On compressors with an Elektronikon® controller, unlock the emergency stop button (10) and press the reset button (5) before restarting.

On compressors with an Elektronikon® Graphic controller, unlock the emergency stop button (10), select the STOP icon on the display and press reset before restarting.

Air filter

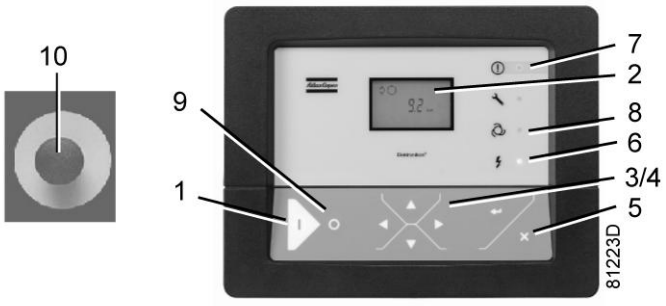
Especially if the compressor is installed in a dusty environment, inspect the air filter element regularly. Replace when necessary. See also Preventive maintenance schedule for periodic replacement instructions.

Drains

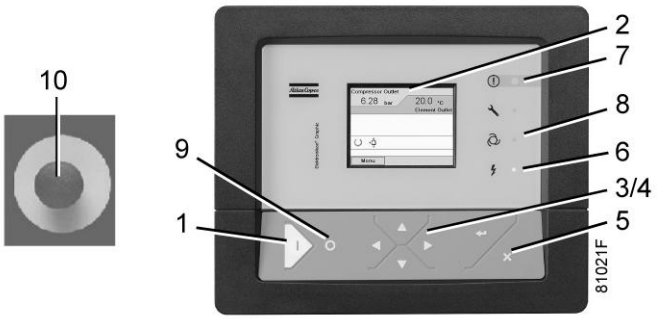
Regularly check that condensate is discharged during operation. See section. The amount of condensate depends on environmental and working conditions.

10.4 Stopping

Elektronikon regulator



Control panel Elektronikon®



Control panel Elektronikon® Graphic

Procedure

Step	Action
-	Press stop button (9). Automatic operation LED (8) goes out and the compressor stops after a programmed number of seconds of unloaded operation (programmed stop time).
-	**To stop the compressor in the event of an emergency,** press emergency stop button (10). Alarm LED flashes (7). On compressors with an Elektronikon® controller: remedy the problem cause, unlock the button by pulling it out or by rotating it (dependent on the model) and press the Escape button (5) to reset. On compressors with an Elektronikon® Graphic controller: • Remedy the problem cause and unlock the button by pulling it out or by rotating it (dependent on the model). • 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 emergency stop button (10) for normal stopping!**
-	Close air outlet valve (AV), see section Introduction.

10.5 Taking out of operation

Warning

	The operator must apply all relevant Safety precautions.

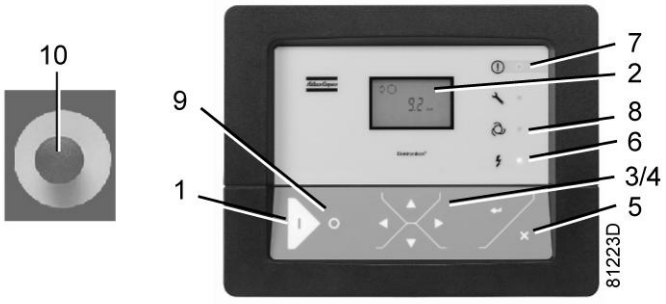
Procedure

Step	Action
1	Stop the compressor and close the air outlet valve.
2	Open the manual condensate drain (if provided).
3	Switch off the voltage and disconnect the compressor from the mains.
4	Unscrew the oil filler plug only one turn to permit any pressure in the system to escape.
5	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.
6	Drain the oil.
7	Drain the condensate circuit and disconnect the condensate piping from the condensate net.

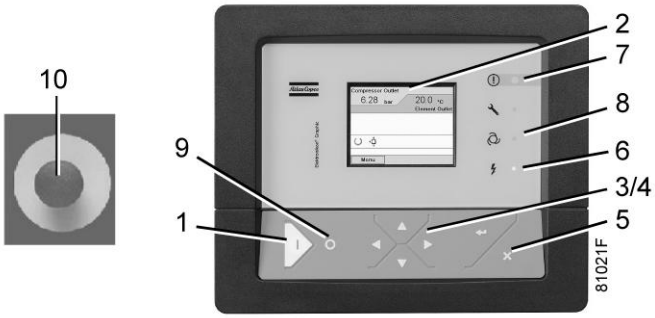
11 Maintenance

11.1 Preventive maintenance schedule

Control panel



Control panel Elektronikon®



Control panel Elektronikon® Graphic

Warning

	Before carrying out any maintenance, repair work or adjustments, proceed as follows: • Stop the compressor. • Press the emergency stop button. • Switch off the voltage. • Close the air outlet valve and open, if provided, the manual condensate drain valves. • Depressurize the compressor. For detailed instructions, see section Problem solving. The operator must apply all relevant Safety precautions. Failure to adhere to these maintenance recommendations can result in damage (fire, explosion) or injury.

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 gaskets, 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 actions for compressors with an Elektronikon® controller

Besides the daily and 3-monthly checks, the service operations are grouped in time intervals (running hours). The regulator has a programmable service timer. A service warning will appear when the service timer has reached the programmed time interval; see section Service warning. In this case, check the running hours. Carry out the service operations corresponding to the running hours as specified in the schedule below. Reset the service timer after servicing; see section Calling up/resetting the service timer.

Service plans for compressors with an Elektronikon® Graphic controller

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

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

Preventive maintenance schedule

Daily and 3-monthly check list

Period	Action
Daily	Check oil level. Check readings on display. Check that condensate is discharged during loading. Drain condensate. Check the service indicator on the DD and PD filters (if provided).
3-monthly (1)	Check coolers, clean if necessary. Remove the air filter element. Clean using an air jet and inspect. Replace damaged or heavily contaminated elements. Check the filter element of the electric cabinet (where applicable). Replace if necessary On Full-Feature units: Check condenser of dryer and clean if necessary. Check and clean the filter
Yearly	Replace DD and PD filters or whenever the pressure indicator points red (if provided). 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.

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

Preventive Maintenance schedule programmed in the Elektronikon

Running hours	Operation
4000 (1)	If Atlas Copco Roto-Foodgrade Fluid is used, replace oil and oil filter. If Atlas Copco Roto-Inject Fluid is used, replace oil and oil filter. Check the electrical connections. Tighten if required according to values indicated on service diagram. Replace the oil separator element. Replace the air filter element. Clean coolers. Check pressure and temperature readings. Carry out a LED/display test. Check for leakages. Check the condition of the air intake hose of the air filter. On Full-Feature units: clean condenser of dryer and replace the filter mesh of the drain. Test temperature shutdown function.
8000 (2)	If Atlas Copco Roto-Xtend Duty Fluid is used, replace the oil and the oil filter. Replace the non return valve of the scavenge line. Replace the minimum pressure valve and the thermostatic valve. Remove carefully. Replace the electronic drain (FF units). Apply the unloading valve kit. Test safety valve.

(1): or yearly, whichever comes first

(2): or every 2 years, 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.

Exchange interval for Roto-Inject Fluid

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 25 °C	up to 90 °C	4000 hours	1 year
from 25 °C up to 35 °C	from 90 °C up to 100 °C	3000 hours	1 year
more than 35 °C	more than 100 °C	2000 hours	1 year

Exchange interval for Roto-Xtend Duty Fluid

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 40 °C	up to 110 °C	8000 hours	2 year
more than 40°C	more than 110 °C	6000 hours	2 year

Exchange interval for Roto-Foodgrade Fluid

Ambient temperature	Element outlet temperature	Exchange interval *	Maximum time interval *
up to 25 °C	up to 90 °C	4000 hours	1 year
from 25 °C up to 35 °C	from 90 °C up to 100 °C	3000 hours	1 year
more than 35 °C	more than 100 °C	2000 hours	1 year

Important

	• Always consult Atlas Copco if a timer setting has to be changed. • For the change interval of oil and oil filter in extreme conditions of temperature, humidity or cooling air, consult your Atlas Copco Customer Centre. • Any leakage should be attended to immediately. Damaged hoses or flexible joints must be replaced. • Extending the use of the oil, exceeding the exchange intervals stated above may create a risk for fire hazard.

11.2 Oil specifications

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

Roto-Inject Fluid

Atlas Copco's Roto-Inject Fluid is a specially developed lubricant for use in single stage oil-injected screw compressors. Its specific composition keeps the compressor in excellent condition. Roto-Inject Fluid 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), oil lifetime is reduced significantly. In such case it is recommended to use Roto-Xtend Duty Fluid.

Roto-Xtend Duty Fluid

Atlas Copco's Roto-Xtend Duty Fluid is a high quality synthetic lubricant for oil-injected screw compressors which keeps the compressor in excellent condition. Because of its excellent oxidation stability, Roto-Xtend Duty Fluid can be used for compressors operating at ambient temperatures between 0 ˚C (32 ˚F) and 46 ˚C (115 ˚F).

Roto-Foodgrade Fluid

Special oil, delivered as an option.

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

11.3 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.

11.4 Service kits

Service kits

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

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

Consult the Spare Parts List for part numbers.

11.5 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 2002/96/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.

12 Adjustments and servicing procedures

12.1 Drive motor

General

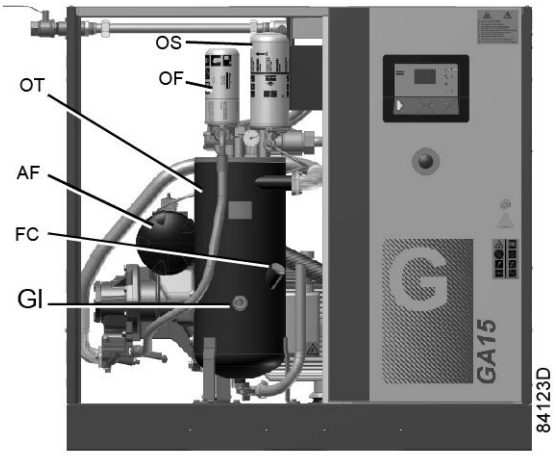
Keep the outside of the electric motor clean for efficient cooling. If necessary, remove dust with a brush and/or compressed air jet.

Bearing maintenance

The motor bearings do not need to be regreased during their normal service life.

12.2 Air filter

Location of air filter



Recommendations

1. Never remove the filtration 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

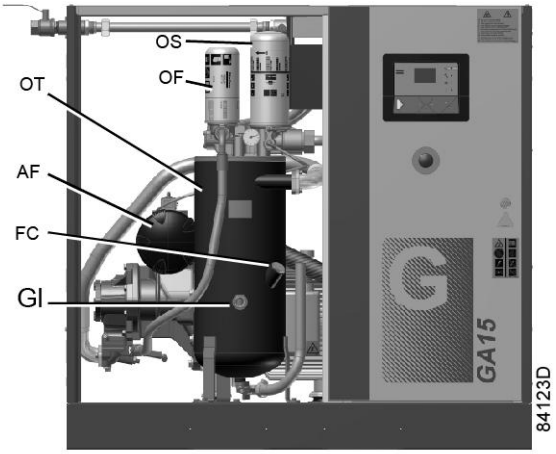
1. Stop the compressor. Switch off the voltage.
2. Remove the side panel.
3. Remove the cover of air filter (AF) by turning it anti-clockwise. Remove the filter element. If necessary, clean the cover.
4. Fit the new element and the cover.
5. Reset the air filter service warning.
   For compressors equipped with an Elektronikon® regulator, see section Service warning.
   For compressors equipped with an Elektronikon® Graphic regulator, see section Service menu.

12.3 Oil and oil filter change

Warning

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

Procedure



1. Run the compressor until warm. Stop the compressor. Close the air outlet valve and switch off the voltage. Depressurize the compressor by opening the manual drain valve(s). Wait a few minutes and depressurize the air receiver/oil tank by unscrewing oil filler plug (FC) just one turn to permit any pressure in the system to escape.
2. Open the filler plug (FC) and drain the oil by opening the valve at the bottom of the oil tank (OT). Also remove the drain plug near the element outlet. Close the drain valve and fit the plugs after draining.
3. Collect the oil and deliver it to the local collection service. Refit and tighten the drain and vent plugs after draining. Tighten the top connection of the oil cooler.
4. Remove the oil filter (OF). Clean the seat on the manifold. Oil the gasket of the new filter and screw it into place. Tighten firmly by hand.
5. Remove filler plug (FC).
   Insert an elbow coupling in the filler plug opening for easy filling. Fill the air receiver/oil tank (OT) with oil until the level reaches the middle of sight-glass (Gl).
   Fill the air receiver/oil tank (OT) with oil until the level reaches the filler neck.
   Take care that no dirt drops into the system. Refit and tighten filler plug (FC).
6. Run the compressor loaded for a few minutes. Stop the compressor and wait a few minutes to allow the oil to settle.
7. Depressurize the system by unscrewing filler plug (FC) just one turn to permit any pressure in the system to escape. Remove the plug.
   Add oil until the sight glass (Gl) is 3/4 full.
   Take care that no dirt enters the system. Tighten the filler plug.

8. Reset the service warning after carrying out all service actions in the relevant Service Plan:
   For compressors with Elektronikon® controller, see section Calling up/resetting the service timer.
   For compressors with Elektronikon® Graphic controller, see section Service menu.

12.4 Oil separator change

Warning

	The operator must apply all relevant Safety precautions.

Procedure

1. Run the compressor until warm. Stop the compressor, 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.
2. Wait 5 minutes and remove the oil separator (OS). Clean the seat on the manifold. Oil the gasket of the new separator and screw it into place. Tighten firmly by hand.
3. Reset the service timer:
   For compressors equipped with an Elektronikon® regulator, see section Service warning.
   For compressors equipped with an Elektronikon® Graphic regulator, see section Service menu.

12.5 Coolers

General

Keep the coolers clean to maintain their efficiency.

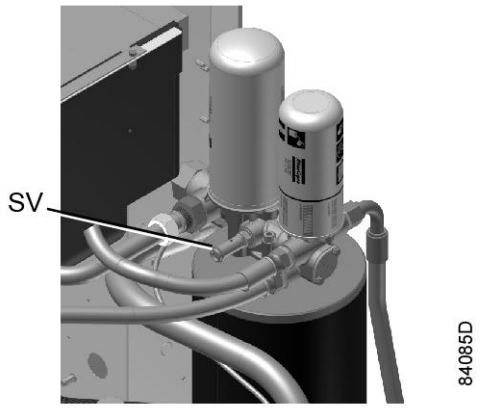
	Never use a high pressure water jet to clean the compressor.

Instructions for air-cooled compressors

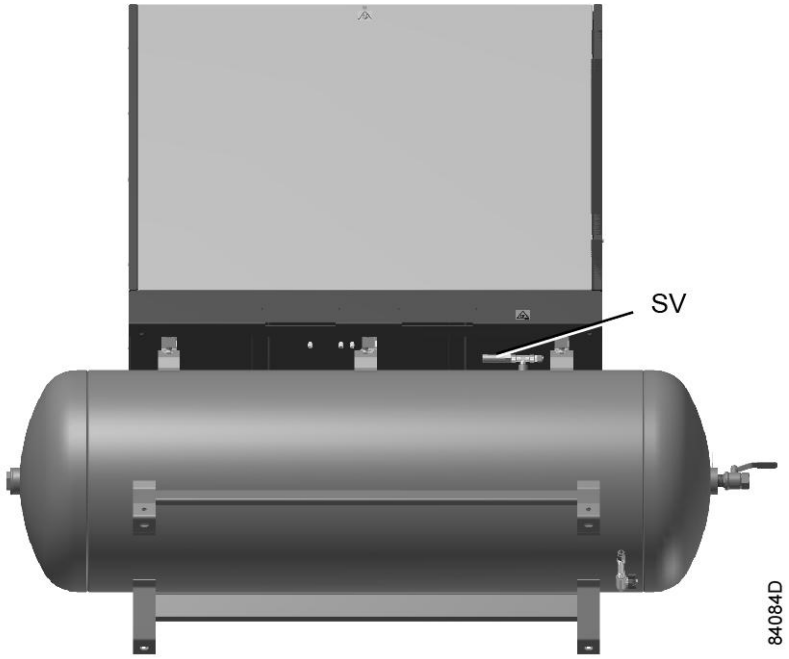
- Stop the compressor, close the air outlet valve and switch off the voltage.
- Cover all parts under the coolers.
- Remove any dirt from the coolers with a fibre brush. Never use a wire brush or metal objects.
- Next, clean with an air jet in the reverse direction to normal flow. Use low pressure air. 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.

12.6 Safety valves

Location of safety valve



Safety valve on oil tank



Safety valve on air receiver

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.

An additional safety valve is fitted on tank mounted versions. The valve 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.

12.7 Dryer maintenance instructions

Safety precautions

Refrigeration dryers of ID type contain refrigerant HFC.

When handling refrigerant, all applicable safety precautions must be observed. Please be specifically aware of the following points:

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

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

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

Local legislation

Local legislation may stipulate that:

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

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.

13 Problem solving

Warning

	Before carrying out any maintenance, repair work or adjustment, press the stop button, wait until the compressor has stopped, press the emergency stop button and switch off the voltage. Close the air outlet valve, open the manual drain valve. Depressurise the compressor by opening the oil filler plug (FC) one turn. For location of components, see sections Introduction, Condensate system and Initial start-up.
	Open and lock the isolating switch.
	The air outlet valve can be locked during maintenance or repair as follows: • 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.
	Always apply all relevant Safety precautions.

Faults and remedies, compressor

On compressors equipped with an Elektronikon® controller, if the alarm LED is lit or flashes, consult sections Shutdown warning , Shutdown and Service warning.

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	Fault	Remedy
Compressor starts running, but does not load after a delay time	Solenoid valve out of order	Replace valve
	Inlet valve stuck in closed position	Have valve checked
	Leak in control air tubes	Replace leaking tubes
	Minimum pressure valve leaking (when net is depressurized)	Have valve checked
Compressor does not unload, safety valve blows	Solenoid valve out of order	Replace valve
	Inlet valve does not close	Have valve checked
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 equipment connected
	Choked air filter element	Replace filter element
	Solenoid valve malfunctioning	Replace valve
	Leak in control air tubes	Replace leaking tubes
	Inlet valve does not fully open	Have valve checked
	Air leakage	Have leaks repaired
	Safety valve leaking	Have valve replaced
	Compressor element out of order	Consult Atlas Copco

Condition	Fault	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
Safety valve blows after loading	Inlet valve malfunctioning	Have valve checked
	Minimum pressure valve malfunctioning	Have valve checked
	Safety valve out of order	Have valve replaced
	Compressor element out of order	Consult Atlas Copco
	Oil separator element clogged	Replace oil separator element
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 recirculation of cooling air. If installed, check capacity of compressor room fan
	Oil cooler clogged	Clean cooler
	Bypass valve malfunctioning	Have valve tested
	Air cooler clogged	Clean cooler
	Compressor element out of order	Consult Atlas Copco Customer Centre

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

Condition	Fault	Remedy
	Fan blades or fan motor out of order	Check fan/fan motor
	Ambient temperature too high	Check and correct; if necessary, draw cooling air via a duct from a cooler place or relocate 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
	Condenser pressure too high or too low	See above
	Shortage of refrigerant	Have circuit checked for leaks and recharged if necessary

14 Technical data

14.1 Readings on display

Elektronikon® controller

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	Fluctuates between programmed unloading and loading pressures.
Compressor element outlet temperature	55-65 ˚C (99-117 ˚F) above cooling air temperature.
Dew point temperature	For compressors with built-in dryer: see section Compressor data.

14.2 Electric cable size and main 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. • 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.

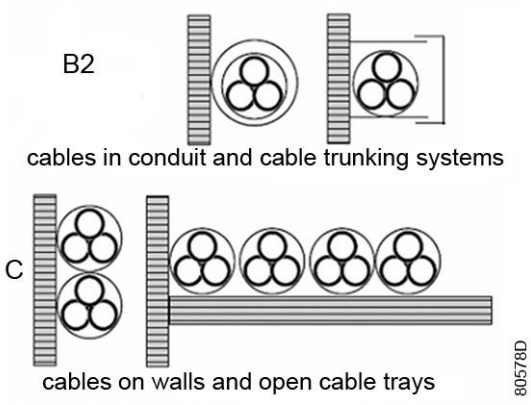
IEC versions

For **IEC** designed control panels, the below suggested **cable sections** are calculated according to 60364-5-52 (Electrical installations of buildings - selection and erection equipment - current-carrying capacities in wiring systems).

Standard conditions refer to multi core copper cables with 70˚C PVC or 90 °C XLPE/EPR insulation in cable conduits or cable trunking systems (installation method B2) at 30˚C ambient temperature and operating at nominal voltage. The cables may not be grouped with other power circuits or cables.

Worst case conditions refer to:

- Ambient temperature > 30˚C (86 ˚F)
- Cables in closed raceway, conduit or trunking system (installation method B2) at 46 ˚C ambient temperature
- Cables not grouped with other cables



Fuse calculations for IEC are done according to 60364-4-43 electrical installations of buildings, part 4: protection for safety- section 43: protection against overcurrent. Fuse sizes are calculated in order to protect the cable against short circuit. Fuse type aM is recommended but gG/gL is also allowed.

CSA/UL versions

For **UL** designed machines, calculations for **cable sections and fuses** are done according to UL508A (Industrial control panels).

For **CSA**, calculations for **cable sections and fuses** are done according to CSA 22.2 (Canadian electrical code).

Standard conditions: maximum 3 copper conductors in raceway or cable with 85-90˚C (185-194 ˚F) insulation at ambient temperature 30 ˚C (86 ˚F), operating at nominal voltage; cables not grouped with other cables.

Worst case conditions: ambient temperature > 30 ˚C (86 ˚F), maximum 3 copper conductors in raceway or cable with 85-90 ˚C (185-194 ˚F) insulation at 46 ˚C (115 ˚F) ambient temperature and operating at nominal voltage. Cables not grouped with other cables.

Fuse size is the maximum fuse size in order to protect the motor against short circuit. For CSA fuse HRC form II, for UL fuse class RK5.

If the local conditions are more severe then the described standard conditions, the cables and fuses for worst case conditions should be used.

UL/cUL versions

For **UL** designed industrial control panels, calculations for **cable sections and fuses** are done according to UL508a (Industrial control panels).

For **cUL**, calculations for **cable sections and fuses** are done according to CSA22.2 (Canadian electrical code).

Standard conditions: maximum 3 copper conductors in raceway or cable with 85-90˚C (185-194 ˚F) insulation at ambient temperature 30 ˚C (86 ˚F), operating at nominal voltage; cables not grouped with other cables.

Worst case conditions: ambient temperature > 30 ˚C (86 ˚F), max. 3 copper conductors in raceway or cable with 85-90 ˚C (185-194 ˚F) insulation at 46 ˚C (115 ˚F) ambient temperature and operating at nominal voltage. Cables not grouped with other cables.

Fuse size is the maximum fuse size in order to protect the motor against short circuit. For cUL fuse HRC form II, for UL fuse class RK5.

If the local conditions are more severe then the described standard conditions, the cables and fuses for worst case conditions should be used.

Recommended cable size

Type	V	Hz	Approval	$I_{tot}P$ (1)	$I_{tot}FF$ (1)	Recommended wire section (2)	Recommended wire section (3)	Main fuses P (A) (4)	Main fuses FF (A) (4)
GA 15	230	50	IEC	58.1	68.1	35 mm² / 16 mm²	35 mm² / 25 mm²	100	100
GA 15	230	60	IEC	59.3	69.3	35 mm² / 16 mm²	35 mm² / 25 mm²	100	100
GA 15	380	60	IEC	29.7	35.7	16 mm² / 10 mm²	16 mm² / 10 mm²	50	50

Type	V	Hz	Approval	I_{tot}P (1)	I_{tot}FF (1)	Recommended wire section (2)	Recommended wire section (3)	Main fuses P (A) (4)	Main fuses FF (A) (4)
GA 15	400	50	IEC	33.3	39	16 mm² / 6 mm²	16 mm² / 10 mm²	50	50
GA 15	460	60	IEC	29.6	34.6	10 mm² / 6 mm²	16 mm² / 6 mm²	50	50
GA 15	200	60	cULus / cCSAus	66.7	78.2	AWG4	AWG3	80	100
GA 15	230	60	cULus / cCSAus	59.3	69.3	AWG4	AWG3	80	100
GA 15	460	60	cULus / cCSAus	29.7	34.7	AWG8	AWG8	50	50
GA 15	575	60	cULus / cCSAus	26.3	30.3	AWG8	AWG8	40	40
GA 18	230	50	IEC	70.5	80.5	50 mm² / 25 mm²	50 mm² / 25 mm²	125	125
GA 18	230	60	IEC	71.3	81.3	50 mm² / 25 mm²	50 mm² / 25 mm²	125	125
GA 18	380	60	IEC	35.7	41.7	16 mm² / 10 mm²	25 mm² / 10 mm²	63	63
GA 18	400	50	IEC	40.7	46.4	16 mm² / 10 mm²	25 mm² / 10 mm²	63	63
GA 18	460	60	IEC	35.6	40.6	16 mm² / 10 mm²	16 mm² / 10 mm²	63	63
GA 18	200	60	cULus / cCSAus	79.9	91.4	AWG3	AWG2	100	125
GA 18	230	60	cULus / cCSAus	71.3	81.3	AWG3	AWG2	100	125
GA 18	460	60	cULus / cCSAus	35.7	40.7	AWG8	AWG6	50	60
GA 18	575	60	cULus / cCSAus	31.1	35.1	AWG8	AWG8	50	50
GA 22	230	50	IEC	82.5	92.5	70 mm² / 35 mm²	70 mm² / 35 mm²	160	160
GA 22	230	60	IEC	83.8	93.8	70 mm² / 35 mm²	70 mm² / 35 mm²	160	160
GA 22	380	60	IEC	42	48	25 mm² / 16 mm²	25 mm² / 16 mm²	80	80
GA 22	400	50	IEC	47.4	53.1	25 mm² / 10 mm²	25 mm² / 16 mm²	80	80
GA 22	460	60	IEC	41.9	46.9	16 mm² / 10 mm²	25 mm² / 10 mm²	80	80
GA 22	200	60	cULus / cCSAus	94.8	106.3	AWG1	AWG1/0	125	150
GA 22	230	60	cULus / cCSAus	83.7	93.7	AWG1	AWG1/0	125	150
GA 22	460	60	cULus / cCSAus	41.9	46.9	AWG6	AWG4	60	70

Type	V	Hz	Approval	$I_{tot}P$ (1)	$I_{tot}FF$ (1)	Recommended wire section (2)	Recommended wire section (3)	Main fuses P (A) (4)	Main fuses FF (A) (4)
GA 22	575	60	cULus / cCSAus	35.9	39.9	AWG8	AWG6	50	60
GA 26	230	50	IEC	99.3	109.3	70 mm² / 35 mm²	95 mm² / 50 mm²	160	160
GA 26	230	60	IEC	99.9	109.9	70 mm² / 35 mm²	95 mm² / 50 mm²	160	160
GA 26	380	60	IEC	50.2	56.2	35 mm² / 16 mm²	35 mm² / 25 mm²	125	125
GA 26	400	50	IEC	57	62.7	25 mm² / 16 mm²	35 mm² / 16 mm²	80	80
GA 26	460	60	IEC	50.1	55.1	25 mm² / 16 mm²	25 mm² / 16 mm²	80	80
GA 26	200	60	cULus / cCSAus	111.8	123.3	AWG1/0	AWG2/0	150	175
GA 26	230	60	cULus / cCSAus	99.6	109.6	AWG1/0	AWG2/0	150	175
GA 26	460	60	cULus / cCSAus	50	55	AWG4	AWG4	80	80
GA 26	575	60	cULus / cCSAus	41.9	45.9	AWG6	AWG6	60	60

Remarks :

(1): current in the supply lines at maximum load and nominal voltage

(2): suggested wire section under worst case conditions (Pack)

(3): suggested wire section under worst case conditions (Full-Feature)

(4): Maximum fuse value

Fuse specifications IEC: aM

Fuse specifications UL/cUL: HRC Form II - UL: Class RK5

14.3 Motor overload relay settings

Type	V	Hz	Approval	Setting F21 (A)	Setting Q15 (A)
GA 15	230	50	IEC	36	0.7
GA 15	230	60	IEC	36.6	0.7
GA 15	380	60	IEC	25.9	0.4
GA 15	400	50	IEC	20.6	0.4
GA 15	460	60	IEC	18.3	0.4
GA 15	200	60	cULus / cCSAus	41.2	0.7
GA 15	230	60	cULus / cCSAus	36.6	0.7
GA 15	460	60	cULus / cCSAus	18.3	0.5

Type	V	Hz	Approval	Setting F21 (A)	Setting Q15 (A)
GA 15	575	60	cULus / cCSAus	14.5	0.5
GA 18	230	50	IEC	43.5	1.1
GA 18	230	60	IEC	44.3	0.7
GA 18	380	60	IEC	25.9	0.4
GA 18	400	50	IEC	25.2	0.6
GA 18	460	60	IEC	22.1	0.4
GA 18	200	60	cULus / cCSAus	49.6	0.7
GA 18	230	60	cULus / cCSAus	44.3	0.7
GA 18	460	60	cULus / cCSAus	22.1	0.5
GA 18	575	60	cULus / cCSAus	17.5	0.5
GA 22	230	50	IEC	50.4	2.5
GA 22	230	60	IEC	51.9	1.2
GA 22	380	60	IEC	30.5	0.7
GA 22	400	50	IEC	29	1.3
GA 22	460	60	IEC	25.9	0.7
GA 22	200	60	cULus / cCSAus	58.8	1.3
GA 22	230	60	cULus / cCSAus	51.9	1.2
GA 22	460	60	cULus / cCSAus	25.9	0.7
GA 22	575	60	cULus / cCSAus	20.6	0.7
GA 26	230	50	IEC	61	2.5
GA 26	230	60	IEC	61	2.9
GA 26	380	60	IEC	36.6	1.7
GA 26	400	50	IEC	35.1	1.3
GA 26	460	60	IEC	30.5	1.7
GA 26	200	60	cULus / cCSAus	68.7	2.9
GA 26	230	60	cULus / cCSAus	61	2.9
GA 26	460	60	cULus / cCSAus	30.5	1.7
GA 26	575	60	cULus / cCSAus	24.4	1.7

14.4 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.

14.5 Reference conditions and limitations

Reference conditions

Air inlet pressure (absolute)	bar	1
Air inlet pressure (absolute)	psi	14.5
Air inlet temperature	˚C	20
Air inlet temperature	˚F	68
Relative humidity	%	0
Working pressure		See section Compressor data

Limits

Maximum working pressure		See section compressor data
Minimum working pressure	bar	6
Minimum working pressure	psi	87
Maximum air inlet temperature	˚C	46
Maximum air inlet temperature	˚F	115
Minimum ambient temperature	˚C	0
Minimum ambient temperature	˚F	32

14.6 Compressor data

Reference conditions

	All data specified below apply under reference conditions, see section Reference conditions and limitations.

GA 15

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure, Pack	bar(e)	7.5	8.5	10	13	7.4	9.1	10.8	12.5
Maximum (unloading) pressure, Pack	psig	109	123	145	189	107	132	157	181
Maximum (unloading) pressure, Full-Feature units	bar(e)	7.3	8.3	9.8	12.8	7.15	8.85	10.55	12.25
Maximum (unloading) pressure, Full-Feature units	psig	106	120	142	186	104	128	153	178

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Nominal working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Nominal working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pressure drop over dryer, Full-Feature units	psig	3	3	3	3	3	3	3	3
Motor shaft speed	r/min	2960	2960	2960	2960	3565	3565	3565	3565
Set point, thermostatic valve	˚C	60	60	60	60	60	60	60	60
Set point, thermostatic valve	˚F	140	140	140	140	140	140	140	140
Temperature of air leaving outlet valve (approx.), Pack	˚C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Pack	˚F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚C	20	20	20	20	20	20	20	20
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚F	68	68	68	68	68	68	68	68
Pressure dew point, Full-Feature units	˚C	5	5	5	5	5	5	5	5
Pressure dew point, Full-Feature units	˚F	41	41	41	41	41	41	41	41
Nominal motor power	kW	15	15	15	15	15	15	15	15
Nominal motor power	hp	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
Refrigerant type, Full-Feature units (except cCSAus)		R404A	R404A	R404A	R404A	R404A	R404A	R404A	R404A
Refrigerant type, Full-Feature units (cCSAus)						R134a	R134a	R134a	R134a
Refrigerant quantity, Full-Feature units (except cCSAus)	kg	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Refrigerant quantity, Full-Feature units (except cCSAus)	lb	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Refrigerant quantity, Full-Feature units (cCSAus)	kg					0.37	0.37	0.37	0.37

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Refrigerant quantity, Full-Feature units (cCSAus)	lb					0.81	0.81	0.81	0.81
Oil capacity	l	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Oil capacity	US gal	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Sound pressure level, Pack and Full-Feature (according to ISO 2151 (2004))	dB(A)	65	65	65	65	65	65	65	65

GA 18

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure, Pack	bar(e)	7.5	8.5	10	13	7.4	9.1	10.8	12.5
Maximum (unloading) pressure, Pack	psig	109	123	145	189	107	132	157	181
Maximum (unloading) pressure, Full-Feature	bar(e)	7.3	8.3	9.8	12.8	7.15	8.85	10.55	12.25
Maximum (unloading) pressure, Full-Feature	psig	106	120	142	186	104	128	153	178
Nominal working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Nominal working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pressure drop over dryer, Full-Feature units	psig	3	3	3	3	3	3	3	3
Motor shaft speed	r/min	2955	2955	2955	2955	3560	3560	3560	3560
Set point, thermostatic valve	˚C	60	60	60	60	60	60	60	60
Set point, thermostatic valve	˚F	140	140	140	140	140	140	140	140
Temperature of air leaving outlet valve (approx.), Pack	˚C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Pack	˚F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚C	20	20	20	20	20	20	20	20

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚F	68	68	68	68	68	68	68	68
Pressure dew point, Full-Feature units	˚C	5	5	5	5	5	5	5	5
Pressure dew point, Full-Feature units	˚F	41	41	41	41	41	41	41	41
Nominal motor power	kW	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Nominal motor power	hp	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
Refrigerant type, Full-Feature units (except cCSAus)		R404A	R404A	R404A	R404A	R404A	R404A	R404A	R404A
Refrigerant type, Full-Feature units (cCSAus)						R134a	R134a	R134a	R134a
Refrigerant quantity, Full-Feature units (except cCSAus)	kg	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Refrigerant quantity, Full-Feature units (except cCSAus)	lb	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Refrigerant quantity, Full-Feature units (cCSAus)	kg					0.67	0.67	0.67	0.67
Refrigerant quantity, Full-Feature units (cCSAus)	lb					1.48	1.48	1.48	1.48
Oil capacity	l	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Oil capacity	US gal	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Sound pressure level, Pack and Full-Feature (according to ISO 2151 (2004))	dB(A)	67	67	67	67	67	67	67	67

GA 22

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure, Pack	bar(e)	7.5	8.5	10	13	7.4	9.1	10.8	12.5
Maximum (unloading) pressure, Pack	psig	109	123	145	189	107	132	157	181
Maximum (unloading) pressure, Full-Feature	bar(e)	7.3	8.3	9.8	12.8	7.15	8.85	10.55	12.25
Maximum (unloading) pressure, Full-Feature	psig	106	120	142	186	104	128	153	178

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Nominal working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Nominal working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pressure drop over dryer, Full-Feature units	psig	3	3	3	3	3	3	3	3
Motor shaft speed	r/min	2950	2950	2950	2950	3565	3565	3565	3565
Set point, thermostatic valve	˚C	60	60	60	60	60	60	60	60
Set point, thermostatic valve	˚F	140	140	140	140	140	140	140	140
Temperature of air leaving outlet valve (approx.), Pack	˚C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Pack	˚F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚C	20	20	20	20	20	20	20	20
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚F	68	68	68	68	68	68	68	68
Pressure dew point, Full-Feature units	˚C	5	5	5	5	5	5	5	5
Pressure dew point, Full-Feature units	˚F	41	41	41	41	41	41	41	41
Nominal motor power	kW	22	22	22	22	22	22	22	22
Nominal motor power	hp	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Refrigerant type, Full-Feature units (except cCSAus)		R404A	R404A	R404A	R404A	R404A	R404A	R404A	R404A
Refrigerant type, Full-Feature units (cCSAus)						R134a	R134a	R134a	R134a
Refrigerant quantity, Full-Feature units (except cCSAus)	kg	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Refrigerant quantity, Full-Feature units (except cCSAus)	lb	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Refrigerant quantity, Full-Feature units (cCSAus)	kg					0.67	0.67	0.67	0.67

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Refrigerant quantity, Full-Feature units (cCSAus)	lb					1.48	1.48	1.48	1.48
Oil capacity	l	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Oil capacity	US gal	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Sound pressure level, Pack and Full-Feature (according to ISO 2151 (2004))	dB(A)	68	68	68	68	68	68	68	68

GA 26

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure, Pack	bar(e)	7.5	8.5	10	13	7.4	9.1	10.8	12.5
Maximum (unloading) pressure, Pack	psig	109	123	145	189	107	132	157	181
Maximum (unloading) pressure, Full-Feature	bar(e)	7.3	8.3	9.8	12.8	7.15	8.85	10.55	12.25
Maximum (unloading) pressure, Full-Feature	psig	106	120	142	186	104	128	153	178
Nominal working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Nominal working pressure	psig	102	116	138	181	100	125	150	175
Pressure drop over dryer, Full-Feature units	bar(e)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pressure drop over dryer, Full-Feature units	psig	3	3	3	3	3	3	3	3
Motor shaft speed	r/min	2960	2960	2960	2960	3565	3565	3565	3565
Set point, thermostatic valve	˚C	60	60	60	60	60	60	60	60
Set point, thermostatic valve	˚F	140	140	140	140	140	140	140	140
Temperature of air leaving outlet valve (approx.), Pack	˚C	30	30	30	30	30	30	30	30
Temperature of air leaving outlet valve (approx.), Pack	˚F	86	86	86	86	86	86	86	86
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚C	20	20	20	20	20	20	20	20

		7.5 bar	8.5 bar	10.0 bar	13.0 bar	100 psi	125 psi	150 psi	175 psi
Temperature of air leaving outlet valve (approx.), Full-Feature units	˚F	68	68	68	68	68	68	68	68
Pressure dew point, Full-Feature units	˚C	5	5	5	5	5	5	5	5
Pressure dew point, Full-Feature units	˚F	41	41	41	41	41	41	41	41
Nominal motor power	kW	26	26	26	26	26	26	26	26
Nominal motor power	hp	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9
Refrigerant type, Full-Feature units (except cCSAus)		R404A	R404A	R404A	R404A	R404A	R404A	R404A	R404A
Refrigerant type, Full-Feature units (cCSAus)						R134a	R134a	R134a	R134a
Refrigerant quantity, Full-Feature units (except cCSAus)	kg	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Refrigerant quantity, Full-Feature units (except cCSAus)	lb	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
Refrigerant quantity, Full-Feature units (cCSAus)	kg					0.85	0.85	0.85	0.85
Refrigerant quantity, Full-Feature units (CSAus)	lb					1.87	1.87	1.87	1.87
Oil capacity	l	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Oil capacity	US gal	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Sound pressure level, Pack and Full-Feature (according to ISO 2151 (2004))	dB(A)	69	69	69	69	69	69	69	69

14.7 Technical data Elektronikon® 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

• Operating temperature range • Storage temperature range	• -10°C…..+60°C (14 °F .....140 °F) • -30°C…..+70°C (-22 °F .....158 °F)
Permissible humidity	Relative humidity 90% No condensation
Noise emission	IEC61000-6-3
Noise immunity	IEC61000-6-2
Mounting	Cabinet door

Digital outputs

Number of outputs	6 (Elektronikon® controller - p.n. 1900 5200 00 …. 1900 5200 09) 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	4 (Elektronikon® controller - p.n. 1900 5200 00 …. 1900 5200 09) 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	1 (Elektronikon® controller - p.n. 1900 5200 00 …. 1900 5200 09) 2 (Elektronikon® Graphic controller - p.n. 1900 5200 10 …. 1900 5200 19)
Number of temperature inputs	3 (Elektronikon® controller - p.n. 1900 5200 00 …. 1900 5200 09) 5 (Elektronikon® Graphic controller - p.n. 1900 5200 10 …. 1900 5200 19)

15 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.
In case of misuse of the units (very low oil temperature or long interval of shut down), a certain amount of condensate can gather in the oil separator vessel which must be properly drained. To do so, disconnect the unit from the power line, wait until it is cooled down and depressurized and drain the water via the oil drain valve, positioned at the bottom of the oil separator vessel. Local legislation may require an periodic inspection.

Air receiver (tank-mounted units)

Depending on the conditions of use, condensate may accumulate inside the air receiver. Drain the condensate every day in order to reduce the risk of corrosion. This may be done manually by opening the drain valve, or by means of the automatic drain, if fitted to the tank. Nevertheless, a weekly check of correct functioning of the automatic valve is needed. This has to be done by opening the manual drain valve and check for condensate. Verify that no rust obstructions affect the drain system.
Yearly service inspection of the air receiver is needed, as internal corrosion can reduce the wall thickness with the consequent risk of bursting. The use of the air receiver is forbidden once the wall thickness reaches the minimum value as indicated in the service manual of the air receiver (part of the documentation delivered with the unit) or in section Pressure equipment directives. Local regulations remain applicable if they are more strict.
Lifetime of the air receiver mainly depends on the working environment. Installing the compressor in a dirty and corrosive environment is not allowed, as this can reduce the vessel lifetime dramatically.
Do not anchor the vessel or attached components directly to the ground or fixed structures. Fit the pressure vessel with vibration dampers to avoid possible fatigue failure caused by vibration of the vessel during use.
Use the vessel within the pressure and temperature limits stated on the nameplate and the testing report.
No alterations must be made to this vessel by welding, drilling or other mechanical methods.

16 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.

17 Pressure equipment directives

Components subject to 97/23/EC Pressure Equipment Directive

Compressor type	Part number	Description	PED class
GA 15 up to GA 26	6211 1115 69 2200 9507 63 2202 8410 01	Safety valve	IV

Component	Description	Approval	Volume	Design pressure	Design temperature	PED class
1625 4815 01	Oil separator vessel		29 l	15 bar	-10 / 120 °C	SPV
2204 1005 01	Air receiver	CE	500 l	16 bar	-10 / 120 °C	SPV
2204 1005 03	Air receiver	ASME/CRN	500 l	200 psi	-10 / 120 °C	
2204 1005 02	Air receiver	DIR	500 l	1400 kPa	-10 / 120 °C	

Component	Description	Minimum wall thickness	Inspection frequency (1)
1625 4815 01	Oil separator vessel	See the declaration of the manufacturer of the vessel	10 years
2204 1005 01 2204 1005 02 2204 1005 03	Air receiver Air receiver Air receiver	See the declaration of the manufacturer of the vessel See the declaration of the manufacturer of the vessel See the declaration of the manufacturer of the vessel	1 year

(1) 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.

The compressors conform to PED smaller than category II.

18 Declaration of conformity

EC DECLARATION OF CONFORMITY

We, (1) ....., declare under our sole responsibility, that the product
Machine name
Machine type
Serial number

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

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

	Directive on the approximation of laws of the Member States relating to		Harmonized and/or Technical Standards used	Att' mnt
a.	Pressure equipment	97/23/EC		
b.	Machinery safety	2006/42/EC	EN ISO 12100 – 1 EN ISO 12100 – 2 EN 1012 – 1	
c.	Simple pressure vessel	2009/105/EC		
d.	Electromagnetic compatibility	2004/108/EC	EN 61000-6-2 EN 61000-6-4	
e.	Low voltage equipment	2006/95/EC	EN 60034 EN 60204-1 EN 60439	
f.	Outdoor noise emission	2000/14/EC		
g.	Equipment and protective systems in potentially explosive atmospheres	94/9/EC		
h.	Medical devices General	93/42/EEC	EN ISO 13845 EN ISO 14971 EN 737-3	
i.				

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

(Product company) 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
Issued by	Product engineering	Manufacturing
Name		
Signature		
Date		

81679D

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

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.

In order to be First in Mind—First in Choice® for all your quality compressed air needs, Atlas Copco delivers the products and services that help to increase your business' efficiency and profitability.

Atlas Copco's pursuit of innovation never ceases, driven by our need for reliability and efficiency. Always working with you, we are committed to providing you the customized quality air solution that is the driving force behind your business.

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