INSTRUCTION BOOK

API327216

GA 30

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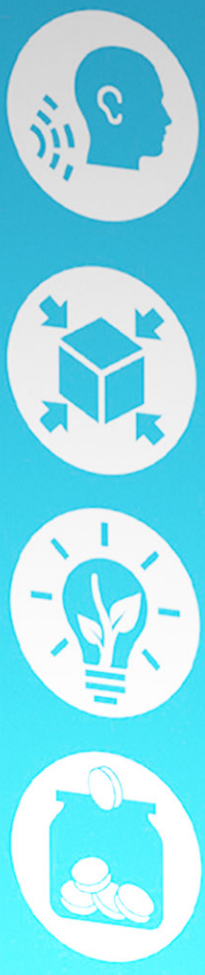

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GA 30

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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.

2021 - 09

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Table of contents

1 Safety precautions

1.1 Safety icons

Explanation

	Danger to life
	Warning
	Important note

1.2 General safety precautions

1. The operator must employ safe working practices and observe all related work safety requirements and regulations.
2. If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel. The personnel should apply safe working practices by use of personal protection equipment, appropriate tools and defined procedures.
4. The compressor is not considered capable of producing air of breathing quality. For air of breathing quality, the compressed air must be adequately purified according to the applicable legislation and standards.
5. Before any maintenance, repair work, adjustment or any other non-routine checks:
   - Stop the machine
   - Press the emergency stop button
   - Switch off the voltage
   - Depressurize the machine
   - Lock Out - Tag Out (LOTO):
     - Open the power isolating switch and lock it with a personal lock
     - Tag the power isolating switch with the name of the service technician.
   - On units powered by a frequency converter, wait 10 minutes before starting any electrical repair.
   - Never rely on indicator lamps or electrical door locks before maintenance work, always disconnect and check with measuring device.

	If the machine is equipped with an automatic restart after voltage failure function and if this function is active, be aware that the machine will restart automatically when the power is restored if it was running when the power was interrupted!

6. Never play with compressed air. Do not apply the air to your skin or direct an air stream at people. Never use the air to clean dirt from your clothes. When using the air to clean equipment, do so with extreme caution and wear eye protection.
7. The owner is responsible for maintaining the unit in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.
8. It is prohibited to walk or stand on the unit or on its components.

9. If compressed air is used in the food industry and more specifically for direct food contact, it is recommended, for optimal safety, to use certified Class 0 compressors in combination with appropriate filtration depending on the application. Please contact your customer center for advice on specific filtration.
10. The service switch should only be operated by a trained service specialist from the manufacturer.

1.3 Safety precautions during installation

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

Precautions during installation

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

12. The electrical connections must correspond to the applicable codes. The machines must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the compressor.
13. On machines with automatic start/stop system or if the automatic restart function after voltage failure is activated, a sign stating "This machine may start without warning" must be affixed near the instrument panel.
14. In multiple compressor systems, manual valves must be installed to isolate each compressor. Non-return valves (check valves) must not be relied upon for isolating pressure systems.
15. Never remove or tamper with the safety devices, guards or insulation fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure must be protected by a pressure relieving device or devices as required.
16. Piping or other parts with a temperature in excess of 70˚C (158˚F) and which may be accidentally touched by personnel in normal operation must be guarded or insulated. Other high temperature piping must be clearly marked.
17. For water-cooled machines, the cooling water system installed outside the machine has to be protected by a safety device with set pressure according to the maximum cooling water inlet pressure.
18. If the ground is not level or can be subject to variable inclination, consult the manufacturer.
19. If the device is a dryer and no free extinguishing system is present in the air net close to the dryer, safety valves must be installed in the vessels of the dryer.

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

1.4 Safety precautions during operation

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

Precautions during operation

1. Never touch any piping or components of the machine during operation.
2. Use only the correct type and size of hose end fittings and connections. When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury. Make sure that a hose is fully depressurized before disconnecting it.
3. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
4. Never operate the machine when there is a possibility of taking in flammable or toxic fumes, vapors or particles.
5. Never operate the machine below or in excess of its limit ratings.

6. Keep all bodywork doors shut during operation. The doors may be opened for short periods only, e.g. to carry out routine checks. Wear ear protectors when opening a door.
   On machines without bodywork, wear ear protection in the vicinity of the machine.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 80 dB(A) shall wear ear protectors.
8. Periodically check that:
   - All guards are in place and securely fastened
   - All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
   - No leaks occur
   - All fasteners are tight
   - All electrical leads are secure and in good order
   - Safety valves and other pressure relief devices are not obstructed by dirt or paint
   - Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse
   - Air cooling filters of the electrical cabinet are not clogged
9. If warm cooling air from compressors is used in air heating systems, e.g. to warm up a workroom, take precautions against air pollution and possible contamination of the breathing air.
10. On water-cooled compressors using open circuit cooling towers, protective measures must be taken to avoid the growth of harmful bacteria such as Legionella pneumophila bacteria.
11. Do not remove any of, or tamper with, the sound-damping material.
12. Never remove or tamper with the safety devices, guards or insulations fitted on the machine.
    Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure shall be protected by a pressure relieving device or devices as required.
13. Yearly inspect the air receiver. Minimum wall thickness as specified in the instruction book must be respected. Local regulations remain applicable if they are more strict.

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

1.5 Safety precautions during maintenance or repair

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

Precautions during maintenance or repair

1. Always use the correct safety equipment (such as safety glasses, gloves, safety shoes, etc.).
2. Use only the correct tools for maintenance and repair work.

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

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

1.6 Dismantling and disposal

Dismantling

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

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

Disposal of electrical and electronic appliances (WEEE)

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

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

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

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

Disposal of other used material

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

2 General description

2.1 Introduction

General

GA 11+ up to GA 30 are single-stage, oil-injected screw compressors driven by an electric motor. The compressors are air-cooled. The compressors are enclosed in sound-insulated bodywork.

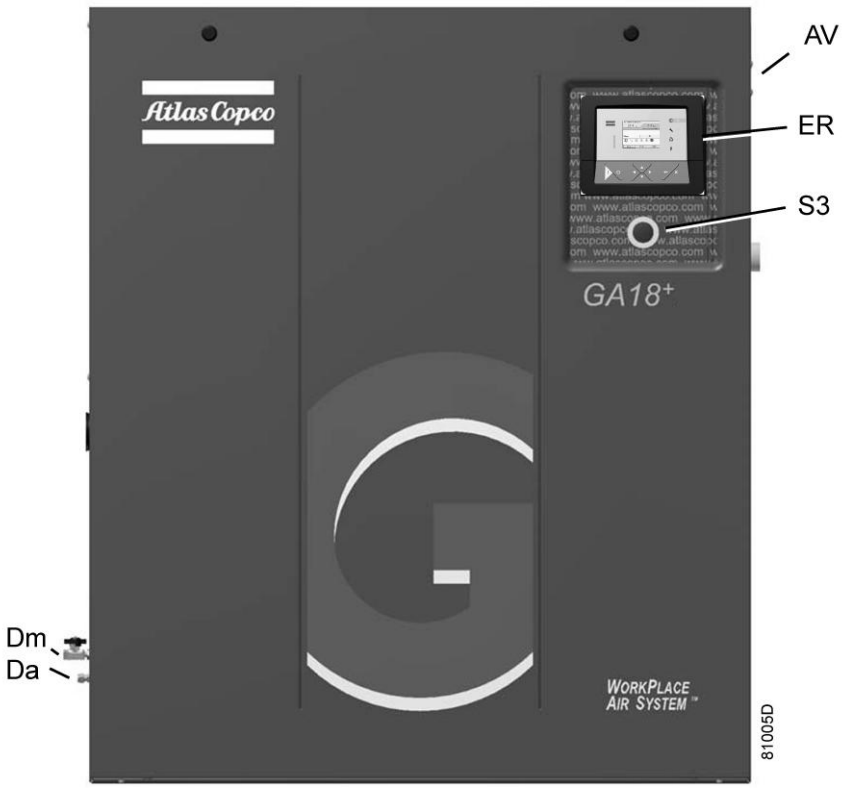
GA 11+ up to GA 26+ are controlled by the Elektronikon™ Graphic controller (see section Elektronikon™ Graphic controller), while the standard version of the GA 30 is equipped with an Elektronikon™ controller (see section Elektronikon™ controller). For the GA 30, the Elektronikon™ Graphic controller is available as option.

The controller and the emergency stop button are integrated in the door panel of the electric cubicle. An electric cabinet comprising the motor starter is located behind this panel.

A condensate trap with automatic drain system is provided.

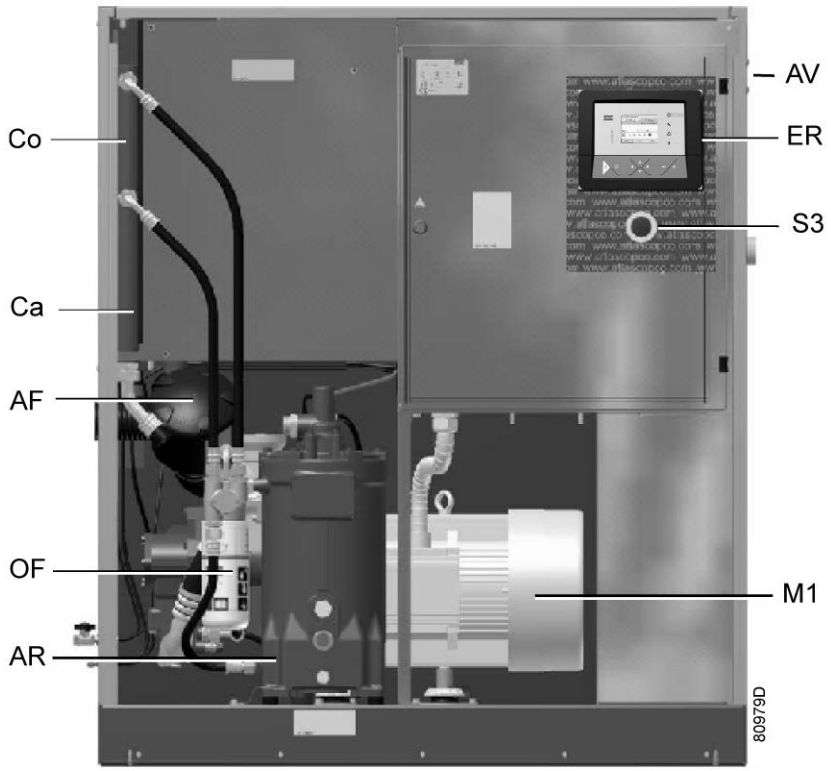
Workplace compressors have no dryer, while **Workplace Full-Feature (FF)** compressors are provided with an integrated air dryer.

GA Workplace



Front view, GA 18+ Workplace

AV	Location of air outlet valve
ER	Elektronikon controller
S3	Emergency stop button
Dm	Manual condensate drain
Da	Automatic condensate drain

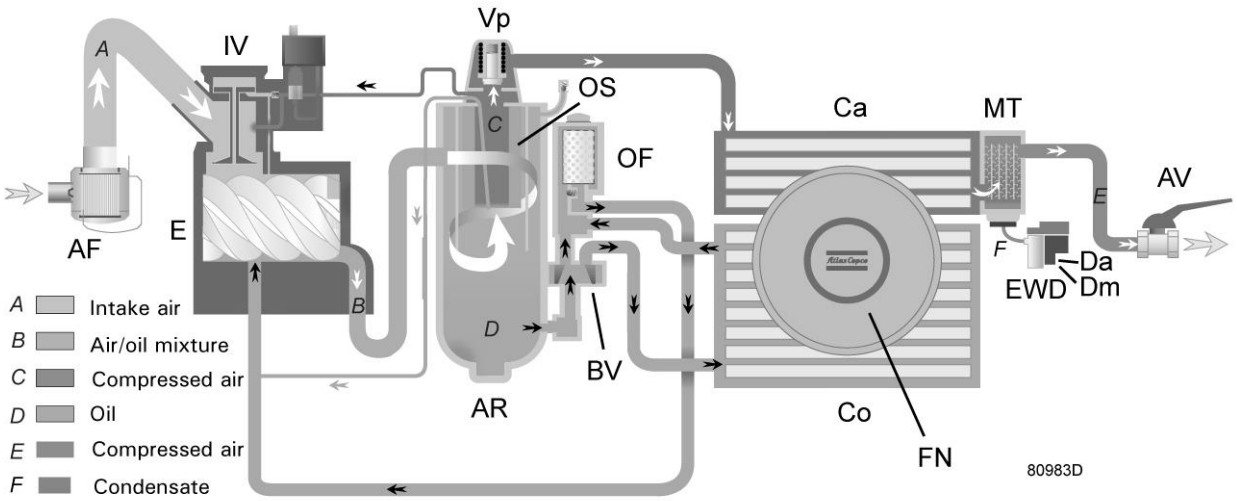


Front view, GA 11+ up to GA 30 Workplace

Ref.	**Name**
AF	Air filter
AR	Air receiver
AV	Location of air outlet valve
Ca	Air cooler
Co	Oil cooler
ER	Elektronikon controller
M1	Drive motor
OF	Oil filter
S3	Emergency stop button

2.2 Air flow

Flow diagrams



GA 11+ up to GA 30 Workplace

References

Ref.	Description
A	Intake air
B	Air/oil mixture
C	Hot compressed air
D	Oil

Description

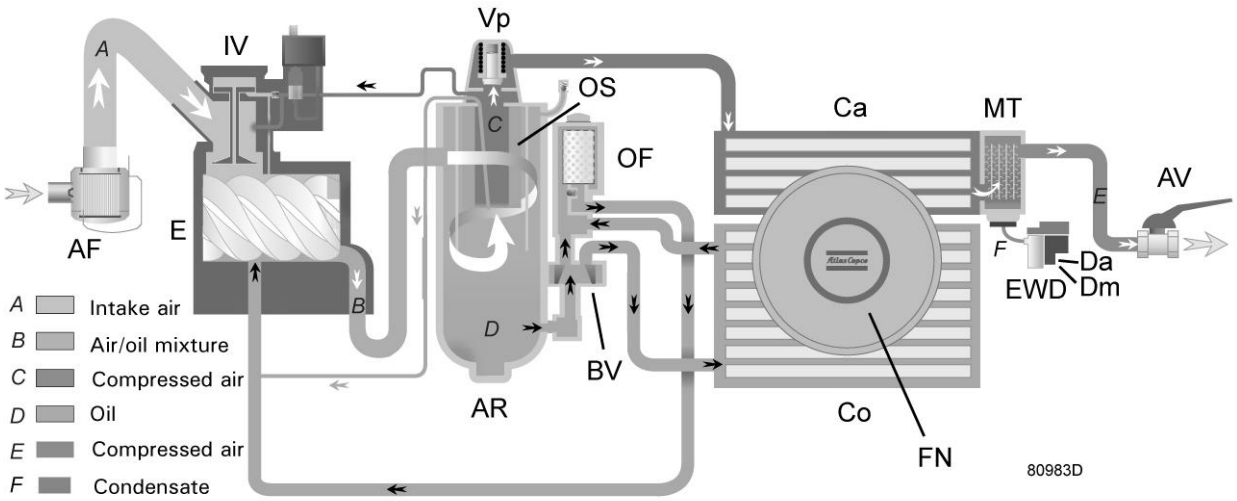
Air drawn through air inlet filter (AF) and open inlet valve (IV) into compressor element (E) is compressed. Compressed air and oil flow into the air receiver/oil separator (AR). The air is discharged via minimum pressure valve (Vp) and air cooler (Ca).

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

On Workplace compressors the air flows through condensate trap (MT) before it passes outlet valve (AV). On Workplace Full-Feature compressors the air flows through condensate trap (MT) and air dryer (DR) before it is discharged through outlet valve (AV).

2.3 Oil system

Flow diagram



Oil system

References	Description
A	Intake air
B	Air/oil mixture
C	Compressed air
D	Oil
E	Wet (100 % saturated) compressed air
F	Condensate

Description

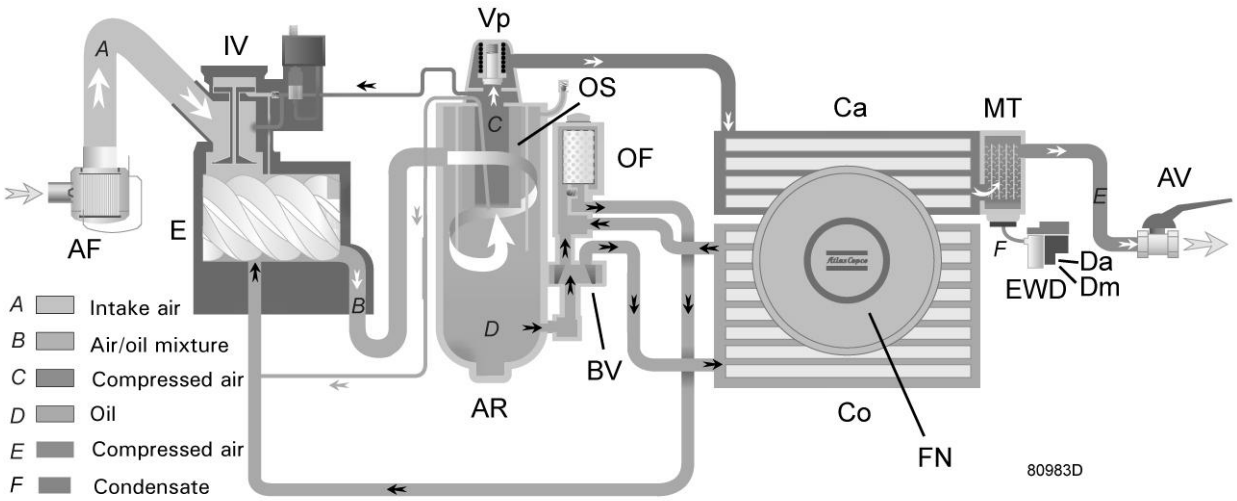
The air/oil mixture coming from the compressor element flows into the oil separator/tank, where most of the oil is separated by centrifugal action. The oil collects in the lower part of air receiver/oil separator (AR) which serves as oil tank. The remaining oil is removed by oil separator (OS).

Air pressure forces the oil from air receiver (AR) through oil cooler (Co) and filter (OF) towards compressor element (E).

The system comprises a thermostatic bypass valve (BV). Only when the oil is warm, the valve allows the oil to pass through the oil cooler.

2.4 Cooling system

Flow diagram



Cooling circuit

References	Description
A	Intake air
B	Compressed air/oil
C	Compressed air
D	Oil
E	Wet (100 % saturated) compressed air
F	Condensate

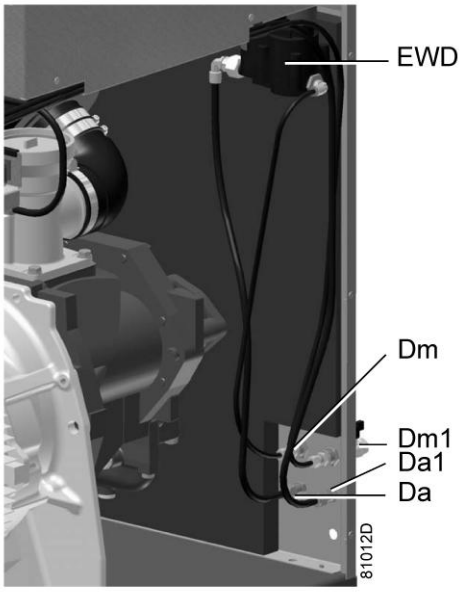
Description

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

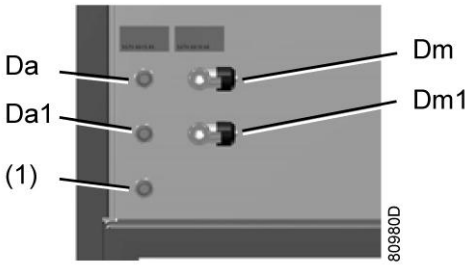
On air-cooled compressors, the cooling air flow is generated by fan (FN).

2.5 Condensate system

Condensate drains



Drain on air cooler



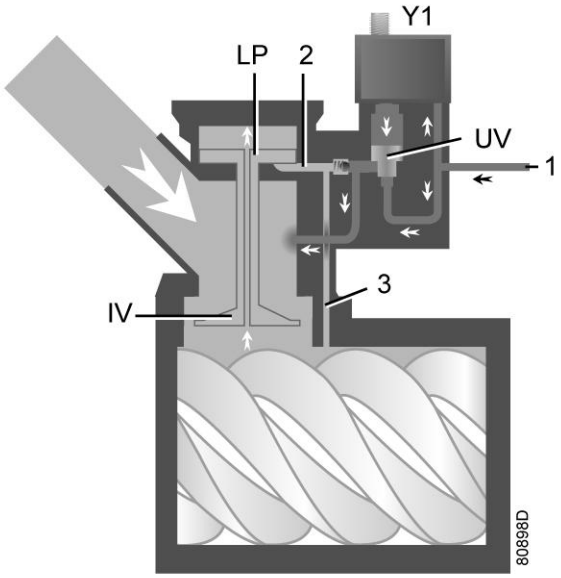
Drain connections, Workplace Full-Feature

Reference	Designation
Da	Automatic drain connection, compressor
Da1	Automatic drain connection, dryer (only on Full-Feature units)
Dm	Manual drain connection, compressor
Dm1	Manual drain connection, dryer (only on Full-Feature units)
(1)	Drain connection of the filters (option)

GA Workplace compressors are equipped with a condensate trap, integrated in the air cooler. The condensate trap is equipped with an electronic drain (EWD) for automatic draining of the condensate during operation. The electronic water drain is connected to the automatic drain outlet (Da) and to a manually operated valve (Dm) for draining after stopping the compressor.

2.6 Regulating system

Flow diagram



Regulating system (loaded condition)

Loading

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

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

Air delivery is 100%, the compressor runs loaded.

Unloading

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

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

Air output is stopped, the compressor runs unloaded.

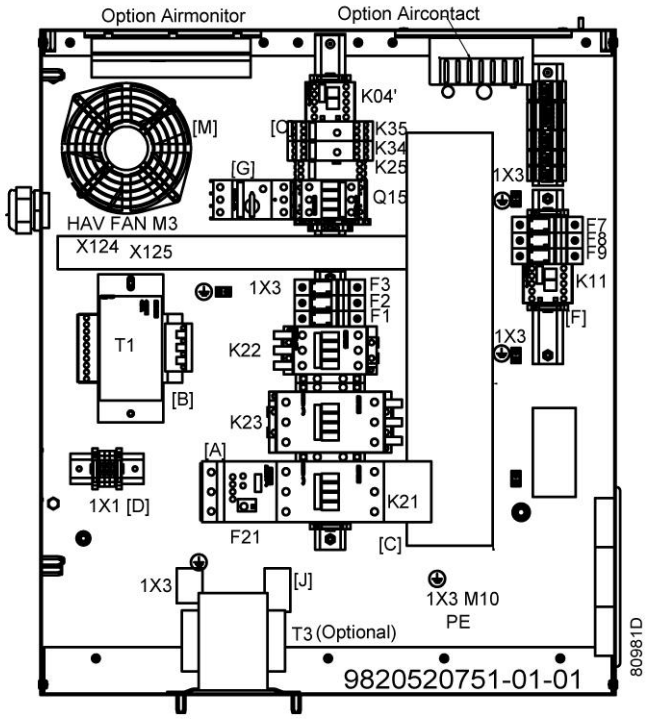
2.7 Electrical system

General

Also consult sections Electrical diagrams and Electrical connections.

Description

The electrical system comprises following components:



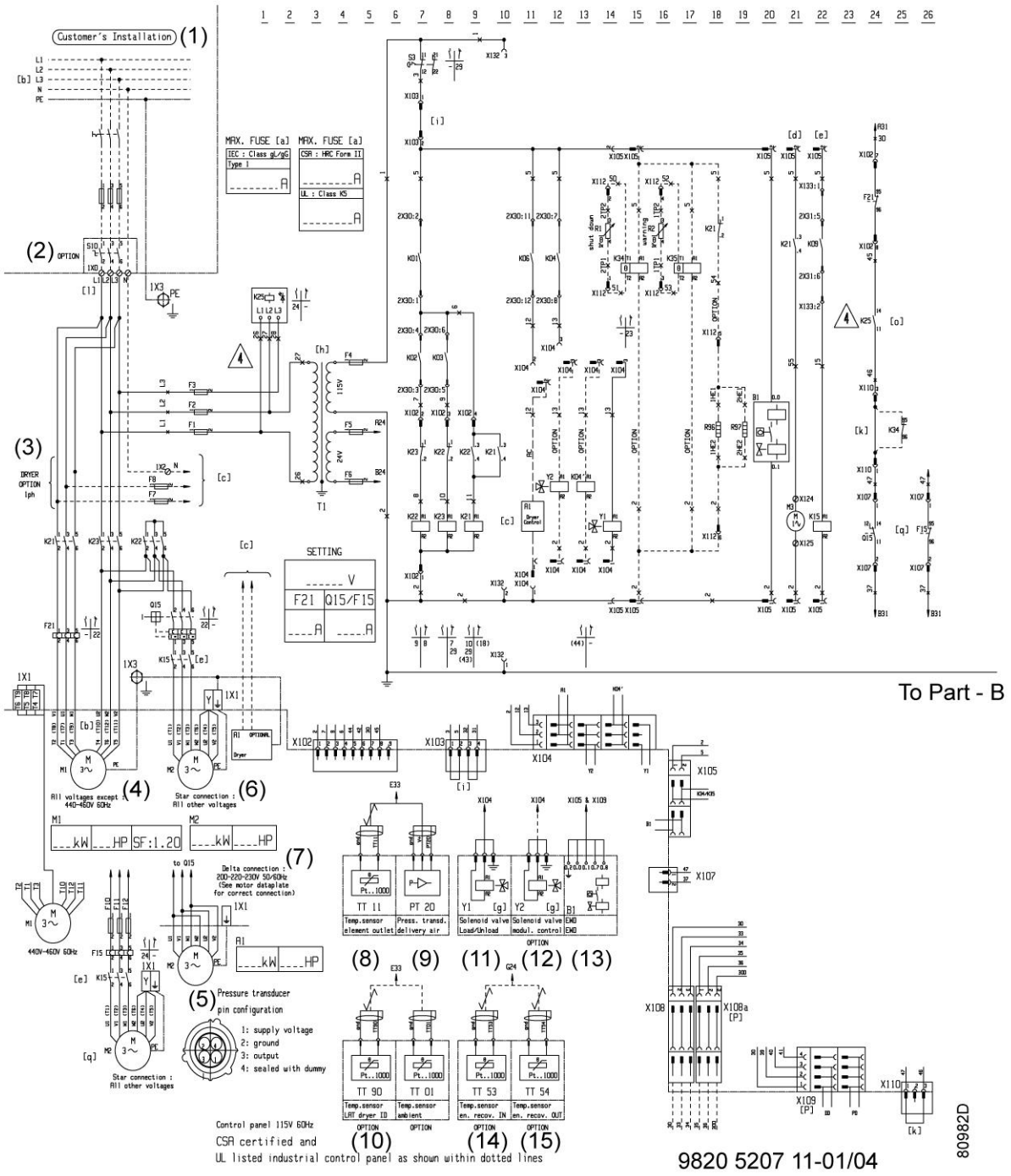
Electric cubicle, typical example

Reference	Designation
F1/2/3	Fuses
F4/5/6	Fuses
F21	Overload relay, compressor motor
Q15	Circuit breaker, fan motor (on air-cooled compressors)
K11	Auxiliary contactor for dryer (only on Full-Feature compressors)
K21	Line contactor
K22	Star contactor
K23	Delta contactor
K25	Phase sequence relay
T1/T3	Transformer

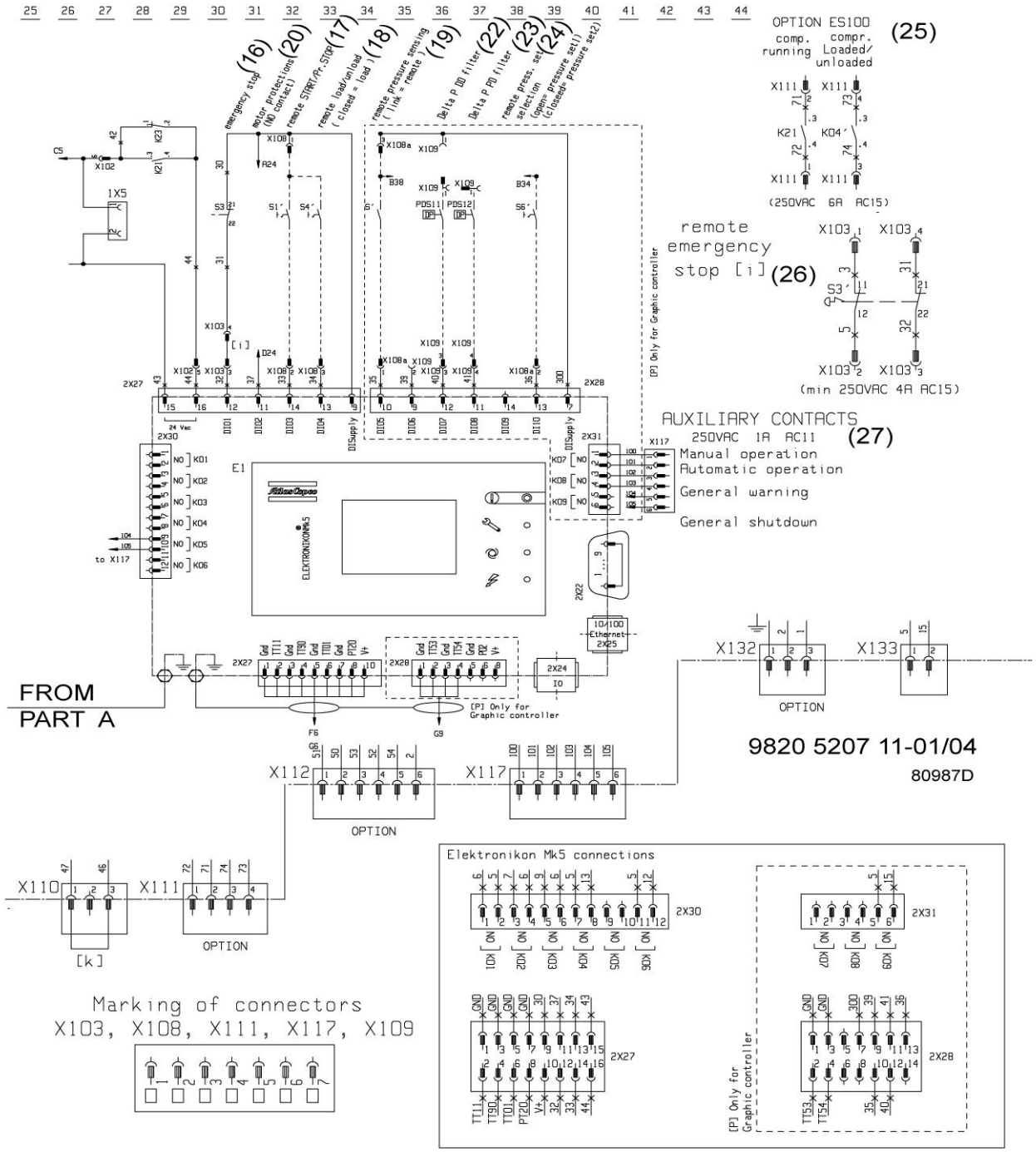
Reference	Designation
1X0	Terminal strip (voltage supply)
X103/X108	Connectors
PE	Earthing terminal

2.8 Electrical diagrams

Diagram



Service diagram (part A)



Service diagram (part B)

Reference	Designation
(1)	Customer’s installation
(2)	Main switch (option)
(3)	Dryer option (1 phase)
(4)	Motor connection (M1) for all voltages, except 440-460 V - 60 Hz
(5)	Motor connection (M1) for 440-460 V - 60 Hz

Reference	Designation
(6)	Star connection (M2) for all other voltages
(7)	Delta connection (M2) for 200-220-230 V - 50/60 Hz - See motor data plate for correct connection
(8)	Temperature sensor, element outlet
(9)	Pressure transducer, delivery air
(10)	Temperature sensor LAT ID dryer (option)
(11)	Solenoid valve Load/Unload
(12)	Solenoid valve modulating control (option)
(13)	EWD
(14)	Temperature sensor water in (Energy recovery - option)
(15)	Temperature sensor water out (Energy recovery - option)
(16)	Emergency stop
(17)	Remote start/stop
(18)	Remote load/unload (closed = load)
(19)	Remote pressure sensing (link = remote)
(20)	Motor protections (NO contact)
(22)	Pressure drop over DD filter (option)
(23)	Pressure drop over PD filter (option)
(24)	Remote pressure set selection (open = press. set 1, closed = press. set 2) (Only on compressors with Elektronikon® Graphic controller)
(25)	ES 100 (option)
(26)	Remote emergency stop
(27)	Auxiliary contacts (Only on compressors with Elektronikon® Graphic controller)

Designations

Reference	Sensors / solenoid valves / electronic water drain
PT20	Pressure sensor, air outlet
TT11	Temperature sensor, element outlet
TT90	Temperature sensor, dew-point (Full-Feature compressors)
TT01	Temperature sensor, ambient temperature
Y1	Loading solenoid valve

Reference	Motors
M1	Drive motor
M2	Fan motor (on air-cooled compressors)

Reference	Electric cabinet
B1	EWD (electronic water drain)
M3	cubicle fan
F1/9	Fuses

Reference	Electric cabinet
F21	Overload relay, drive motor
K21	Line contactor
K22	Star contactor
K23	Delta contactor
K25	Phase sequence relay
K15	Contactor, cooling fan
Q15	Circuit breaker, fan motor
T1	Transformer
1X0 -1X7	Terminal strips

Reference	Control module
E1	Elektronikon module
K01	Blocking relay
K02	Auxiliary relay, star contactor
K03	Auxiliary relay, delta contactor
K04	Auxiliary relay, loading/unloading
K05	Auxiliary relay, general shutdown
K06	Auxiliary relay, dryer
K07	Auxiliary relay, manual/automatic operation
K08	Auxiliary relay, warning
K09	Auxiliary relay, fan control compressor (option)
I	Start button
O	Stop button
S3	Emergency stop button

Reference	Optional equipment
A1	Dryer (Full-Feature)
K11	Dryer contactor
K04’	Auxiliary relay, load/unload (option ES100)
K21	Auxiliary contact, compressor running (option ES100)
PDS11	Dp switch for DD filter
PDS12	Dp switch for PD filter
R1/K34	Drive motor thermistor protection, shut-down
R2/K35	Drive motor thermistor protection, warning
R3/R4/R5/R7	Heaters, freeze protection
R96/97	Anti-condensation heaters
S10	Main power isolating switch
T3	Transformer, dryer
TSLL91	Thermostat, cubicle freeze protection
TT53/54	Temperature sensors, energy recovery

Reference	Optional equipment
Y2	Solenoid valve, modulating control

3 Elektronikon™ Graphic controller

3.1 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

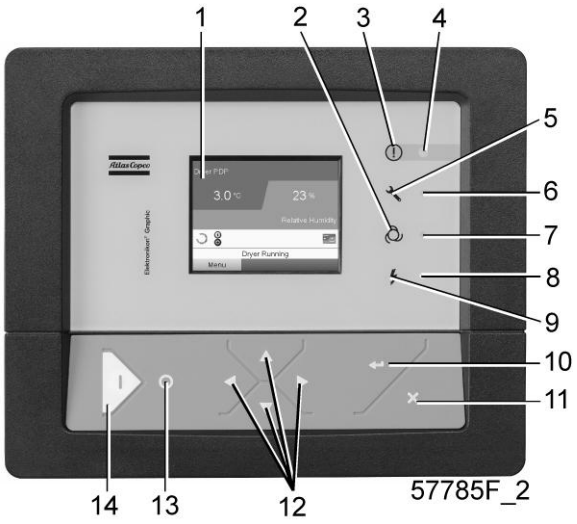
The controller has a built-in function to automatically restart the compressor when the voltage is restored after voltage failure.

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.

3.2 Control panel

Elektronikon regulator



Control panel

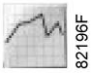
Parts and functions

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

3.3 Icons used

Status icons

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

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

Input icons

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

System icons

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

Menu icons

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

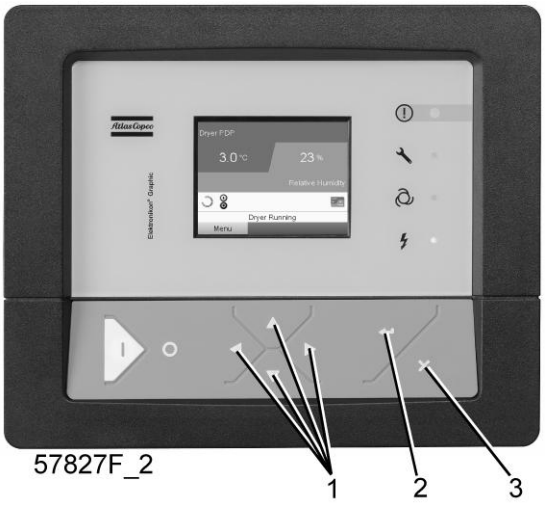
Icon	Description
 or 	Test
	Settings
	Service
	Event history (saved data)
	Access key / User password
	Network
	Setpoint
	Info

Navigation arrows

Icon	Description
	Up
	Down

3.4 Main screen

Control panel



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

Function

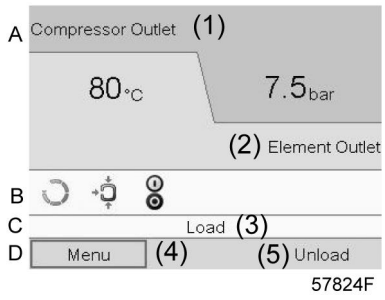
The Main screen is the screen that is shown automatically when the voltage is switched on and one of the keys is pushed. It is switched off automatically after a few minutes when no keys are pushed.

Typically, 5 different main screen views can be chosen:

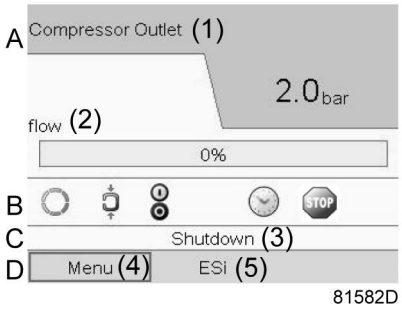
1. Two value lines
2. Four value lines
3. Chart (High resolution)
4. Chart (Medium resolution)
5. Chart (Low resolution)

Two and four value lines screens

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



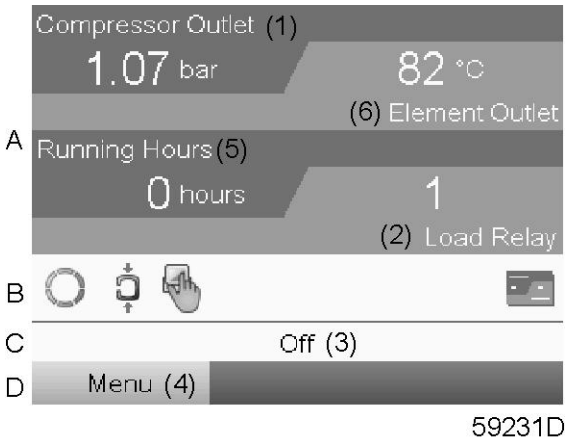
Typical Main screen (2 value lines), fixed speed compressors



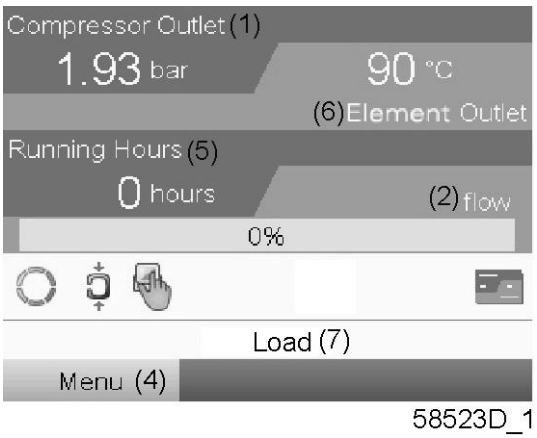
Typical Main screen (2 value lines), compressors with frequency converter

Text on figures

(1)	Compressor Outlet
(2)	Element Outlet (fixed speed compressors) Flow (compressors with frequency converter)
(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



Typical Main screen (4 value lines), compressors with frequency converter

Text on figures

(1)	Compressor Outlet
(2)	Load relay (one of the input signals of fixed speed compressors) Flow (compressors with frequency converter)
(3)	Off, Shutdown,... (text varies upon the compressors actual condition)
(4)	Menu
(5)	Running hours
(6)	Element outlet
(7)	Load, Unload, ... (text varies upon the compressors actual condition)

- **Section A** shows information regarding the compressor operation (e.g. the outlet pressure or the temperature at the compressor outlet). On compressors with a frequency converter, the load degree (flow) is given in % of the maximum flow.
- **Section B** shows Status icons. Following icon types are shown in this field:
  - Fixed icons
    These icons are always shown in the main screen and cannot be selected by the cursor (e.g. Compressor stopped or running, Compressor status (running, running unloaded or motor stopped).
  - Optional icons
    These icons are only shown if their corresponding function is activated (e.g. week timer, automatic restart after voltage failure , etc.)
  - Pop up icons
    These icons pop up if an abnormal condition occurs (warnings, shutdowns, service,...)

  To call up more information about the icons shown, select the icon concerned using the scroll keys and press the enter key.
- **Section C** is called the Status bar
  This bar shows the text that corresponds to the selected icon.
- **Section D** shows the Action buttons. These buttons are used:
  - To call up or program settings
  - To reset a motor overload, service message or emergency stop
  - To have access to all data collected by the regulator

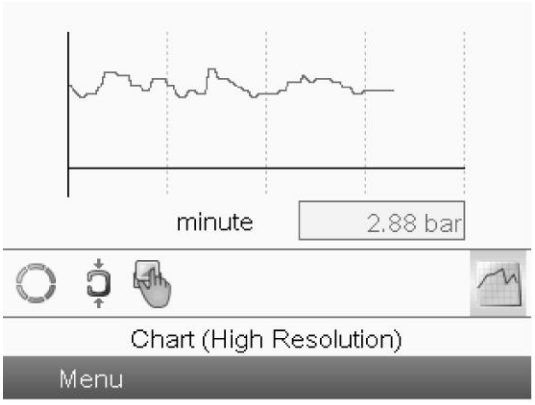
  The function of the buttons depends on the displayed menu. The most common functions are:

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

To activate an action button, highlight the button by using the Scroll keys and press the Enter key.
To go back to the previous menu, press the Escape key.

Chart views

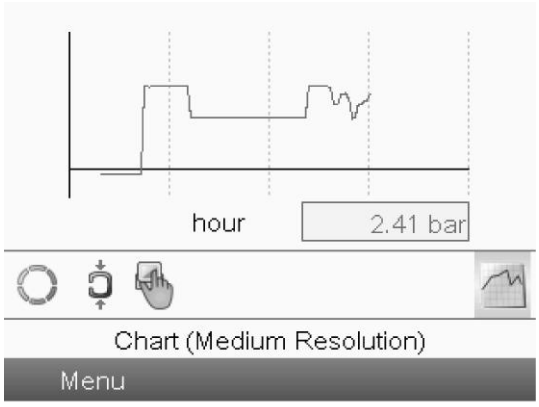
Instead of viewing values, it is also possible to view a graph of one of the input signals (see section Inputs menu) in function of the time.



59166D

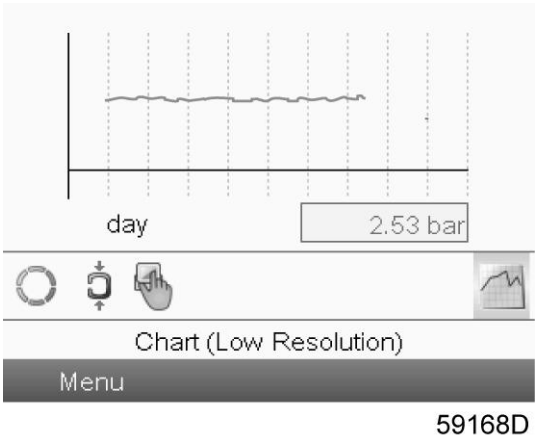
When Chart (High Resolution) is selected, the chart shows the variation of the selected input (in this case the pressure) per minute. Also the instantaneous value is displayed. The screen shows the last 4 minutes.

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



59167D

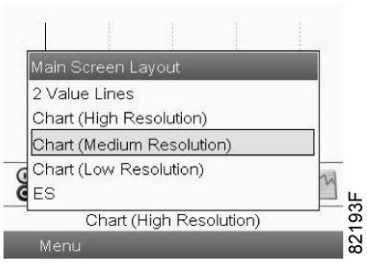
When the Chart (Medium Resolution) is selected, the chart shows the variation of the selected input per hour. The screen shows the last 4 hours.



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

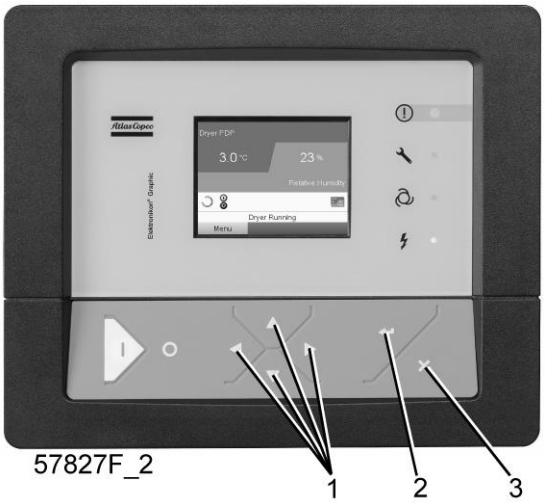
To change between the different screen layouts, select the far right icon in the control icons line (see value lines display icon or chart display icon in section Icons used) and press the Enter key. A screen similar to the one below opens:



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

3.5 Calling up menus

Control panel

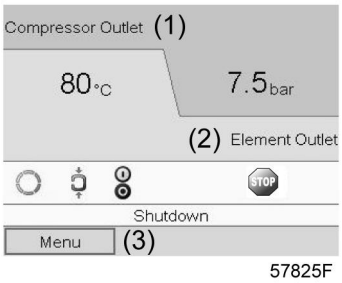


Control panel

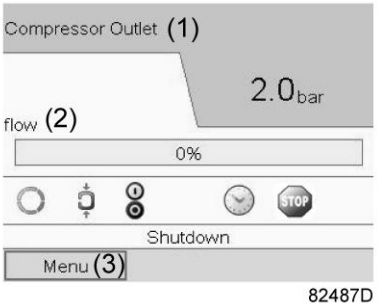
(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Description

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

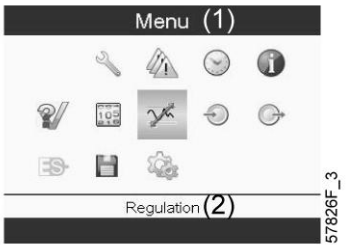


Typical Main screen (2 value lines), fixed speed compressors



Typical Main screen (2 value lines), compressors with frequency converter

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



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

3.6 Inputs menu

Menu icon, Inputs

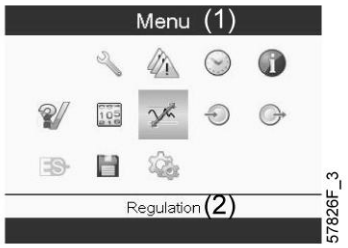
Function

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

Procedure

Starting from the main screen,

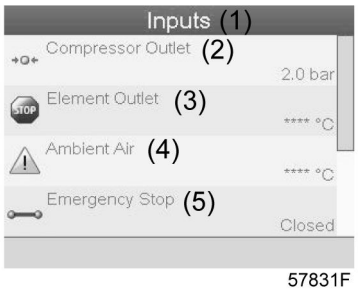
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

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



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.c. the Stop icon and the Warning icon in the screen shown above).

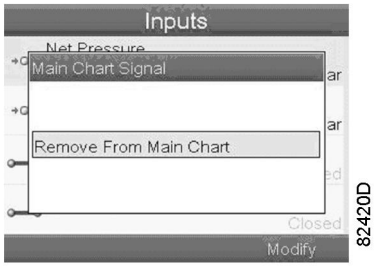
A small chart icon, shown below an item in the list means this input signal is shown on the chart at the main screen. Any analog input can be selected.

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).

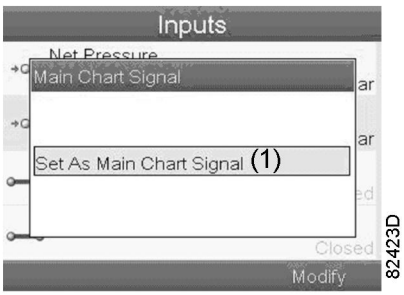
To change, press the Enter button again: a pop-up window opens:



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

3.7 Outputs menu

Menu icon, Outputs

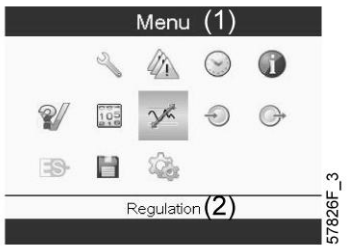
Function

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

Procedure

Starting from the Main screen,

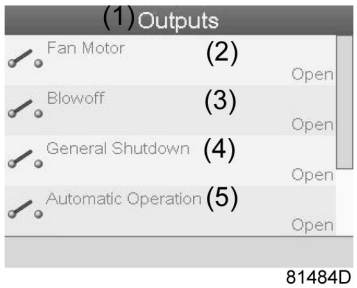
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

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



Outputs screen (typical)

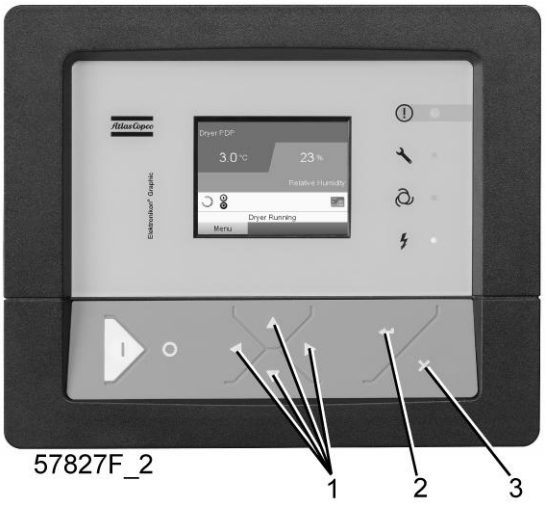
Text on image

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

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

3.8 Counters

Control panel



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

Menu icon, Counters

Function

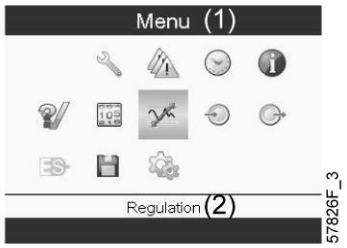
To call up:

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

Procedure

Starting from the Main screen (see Main screen),

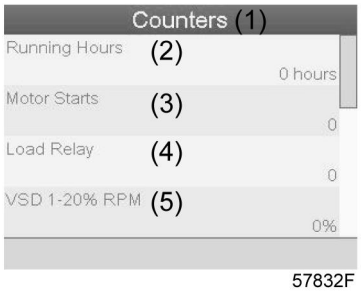
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on figure

(1)	Menu
(2)	Regulation

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



Text on figure

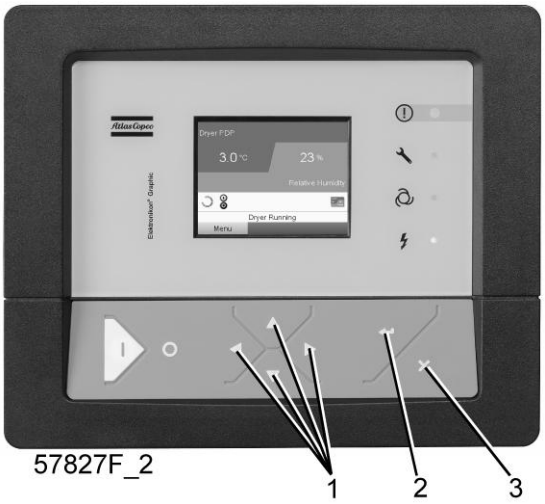
(1)	Counters
(2)	Running hours
(3)	Motor starts
(4)	Load relay
(5)	VSD 1-20 % rpm in % (the percentage of the time during which the motor speed was between 1 and 20 %) (compressors with frequency converter)

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.

3.9 Control mode selection

Control panel



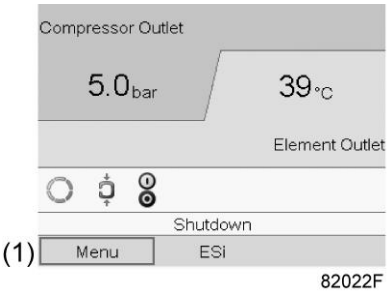
(1)	Scroll keys
(2)	Enter key
(3)	Escape key

Function

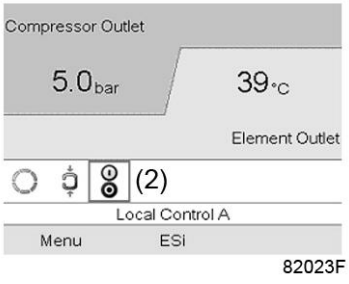
To select the control mode, i.e. whether the compressor is in local control, remote control or controlled via a local area network (LAN).

Procedure

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

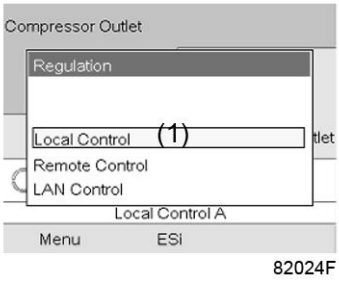


Next, use the scroll buttons to go to the regulation icon (2) and press the enter button:



There are 3 possibilities:

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



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

3.10 Service menu

Menu icon, Service

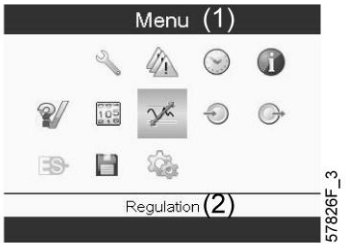
Function

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

Procedure

Starting from the Main screen,

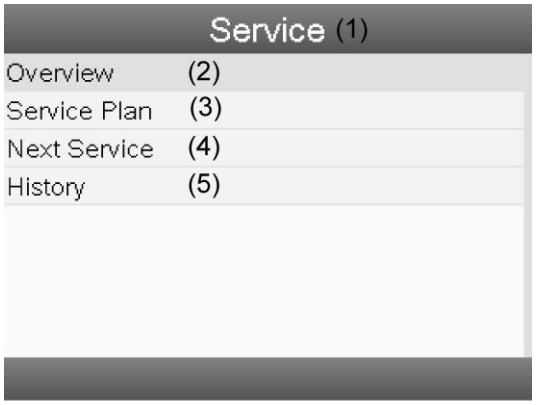
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

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



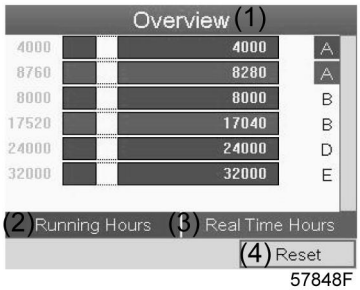
57847F_1

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



57848F

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.

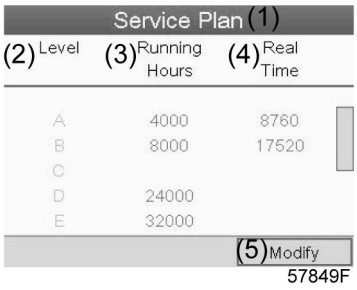
Service plans

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:

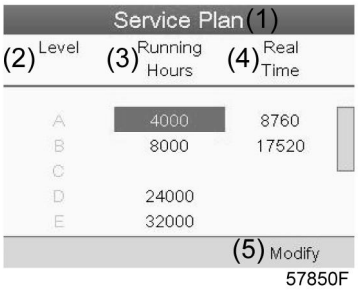


Text on image

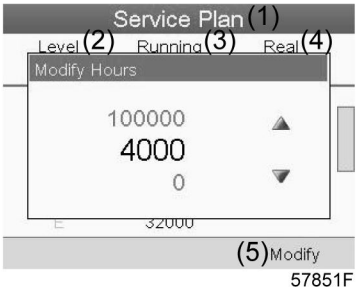
(1)	Service Plan
(2)	Level
(3)	Running hours
(4)	Real Time (hours)
(5)	Modify

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:



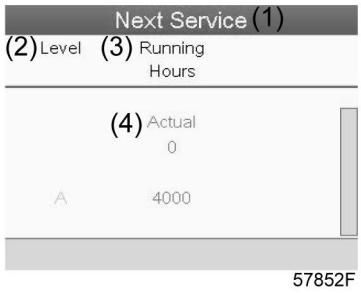
Press the Enter key. Following screen appears:



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.

3.11 Setpoint menu

Menu icon, Setpoint

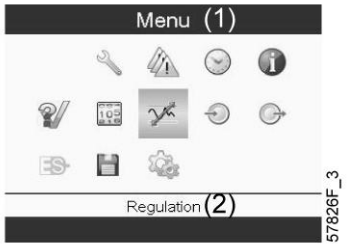
Function

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 section 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:

57834F

- 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:

57835F

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.

3.12 Event history menu

Menu icon, Event History

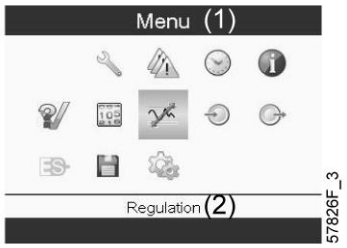

57818F

Function

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

Procedure

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



Text on image

(1)	Menu
(2)	Regulation

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

Example of Event History screen

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

3.13 Modifying general settings

Menu icon, Settings

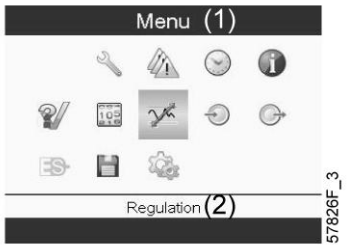
Function

To display and modify a number of settings.

Procedure

Starting from the Main screen,

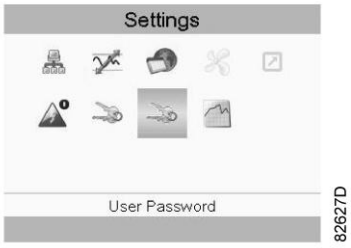
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu
(2)	Regulation

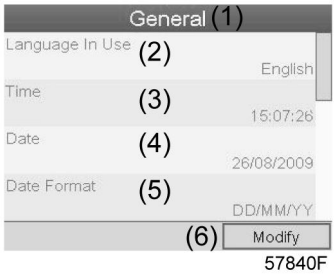
- Next, move the cursor to the Settings icon (see above, section menu icon), using the Scroll keys.
- Press the Enter key. Following screen appears:



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

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

For adapting certain parameters, a password may be necessary.
Example: Selecting the General Settings icon gives the possibility to change e.g. the language, the date, the date format, etc.:



Text on image

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

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

3.14 Info menu

Menu icon, Info

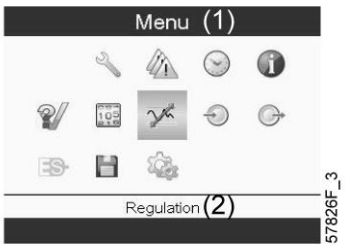
Function

To show the Atlas Copco internet address.

Procedure

Starting from the Main screen,

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



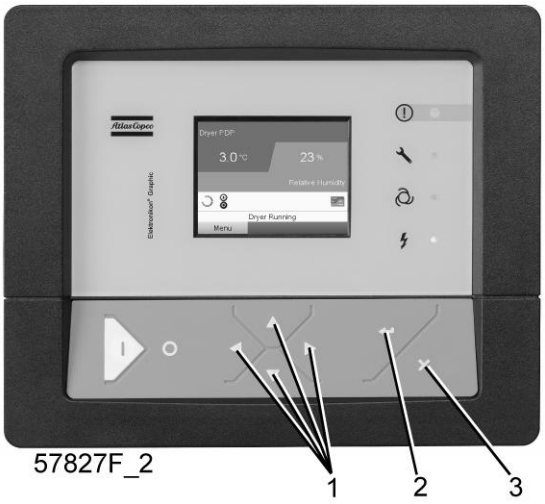
Text on image

(1)	Menu
(2)	Regulation

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

3.15 Week timer menu

Control panel



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

Menu icon, Week timer

Function

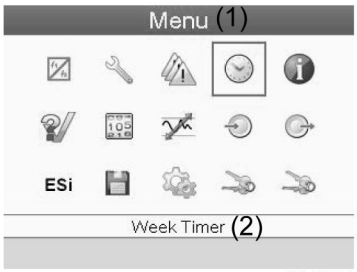
- To program time-based start/stop commands for the compressor
- To program time-based change-over commands for the net pressure band
- Four different week schemes can be programmed.
- A week cycle can be programmed, a week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four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

	Important remark: In the Elektronikon you can select different timers on one day.(up to 8 actions). It is however not possible to program 2 actions at the same time. The solution: leave at least 1 minute in between 2 actions. Example: Start Compressor: 5.00 AM, Pressure Setpoint 2: 5.01 AM (or later).

Procedure

Starting from the Main screen (see Main screen),

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



81485D

Text on figure

(1)	Menu
(2)	Week Timer

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

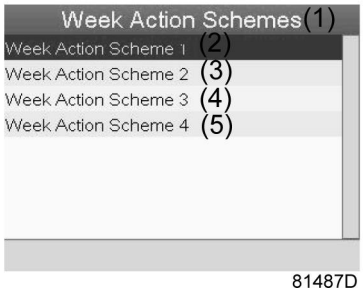
81486D

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

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

Programming week schemes

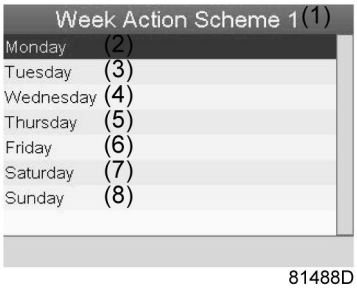
- Select Week action schemes and press Enter. A new window opens. The first item in the list is highlighted in red. Press the Enter key on the controller to modify Week Action Scheme 1.



81487D

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

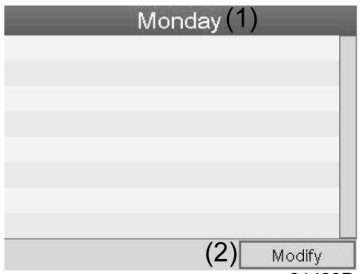
- A weekly list is shown. Monday is automatically selected and highlighted in red. Press the Enter key on the controller to set an action for this day.



81488D

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

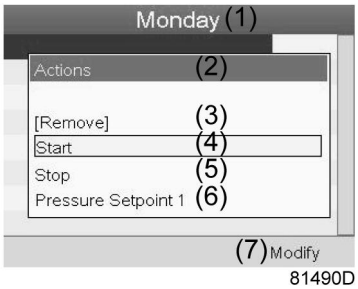
- A new window opens. The Modify action button is selected. Press the enter button on the controller to create an action.



81489D

(1)	Monday
(2)	Modify

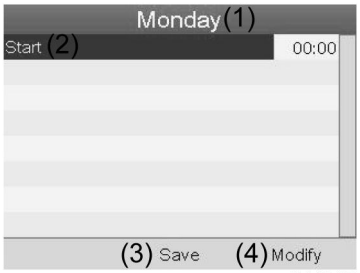
- A new pop-up window opens. Select an action from this list by using the Scroll keys on the controller. When ready press the Enter key to confirm.



81490D

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

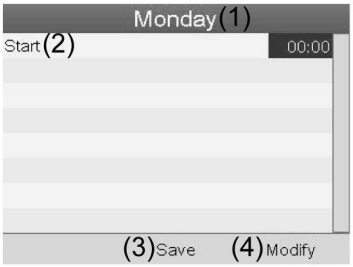
- A new window opens. The action is now visible in the first day of the week.



81491D

(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

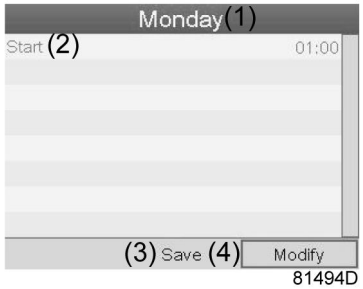
(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

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

81493D

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

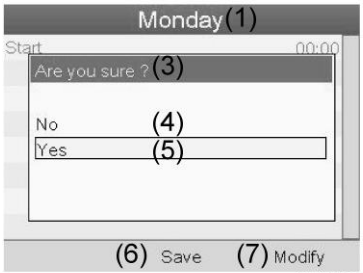
- Press the Escape key on the controller. The action button Modify is selected. Use the Scroll keys to select the action Save.



81494D

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

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

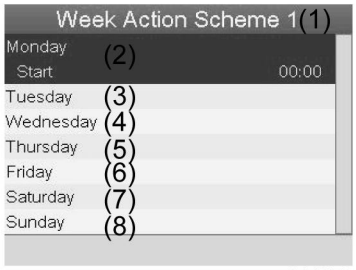


81495D

(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.



81497D

(1)	Week Action Scheme 1

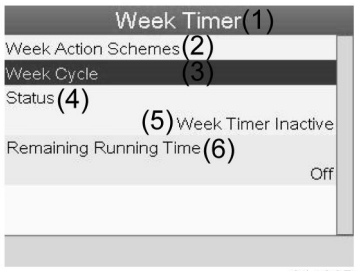
(2)	Monday - Start
(3)	Tuesday
(4)	Wednesday
(5)	Thursday
(6)	Friday
(7)	Saturday
(8)	Sunday

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

Programming the week cycle

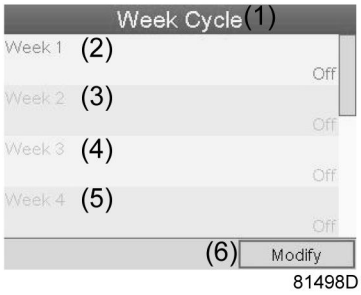
A week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four programmed week schemes can be chosen.

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



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

- A list of 10 weeks is shown.

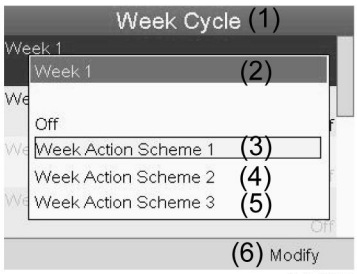


(1)	Week Cycle
(2)	Week 1
(3)	Week 2

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

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

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



81500D

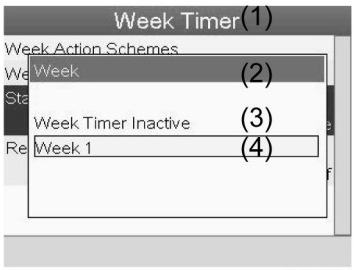
(1)	Week Cycle
(2)	Week 1
(3)	Week Action Scheme 1
(4)	Week Action Scheme 2
(5)	Week Action Scheme 3
(6)	Modify

- 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.

81501D

(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.



81502D

(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.

81503D

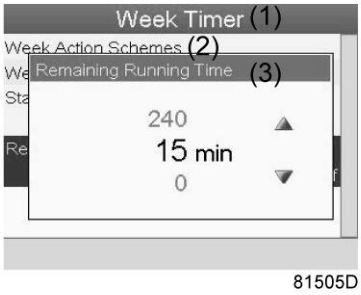
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Remaining Running Time

- 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.

81504D

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

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



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

3.16 Test menu

Menu icon, Test

or

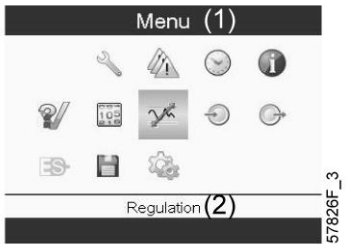
Function

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

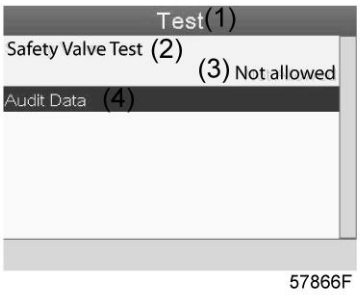
Procedure

Starting from the Main screen,

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



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



Text on image

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

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

3.17 User password menu

Menu icon, Password

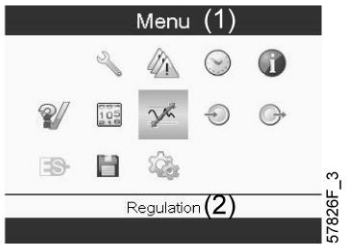
Function

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

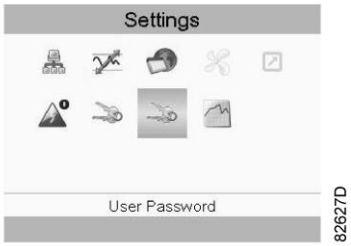
Procedure

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

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



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



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

3.18 Web server

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

Getting started

Make sure you are logged in as administrator.

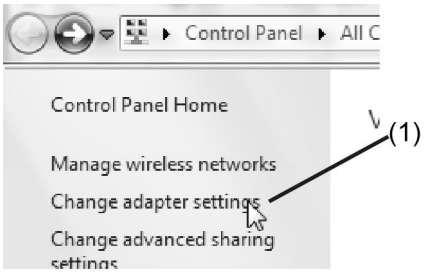
- Use the internal network card from your computer or a USB to LAN adapter.
- Use a UTP cable (CAT 5e) to connect to the controller (see picture below).

Configuration of the network card

- Go to Network and Sharing Center (1).

60651D

- Click on Change adapter settings (1).

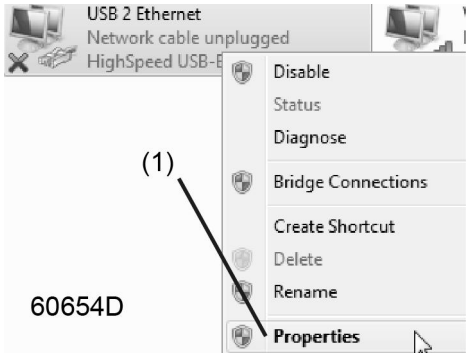


60652D

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

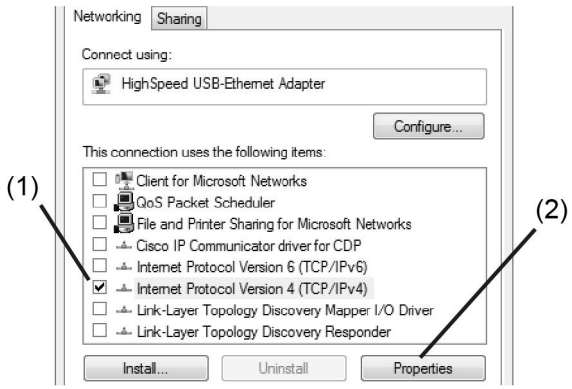
60653D

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



60654D

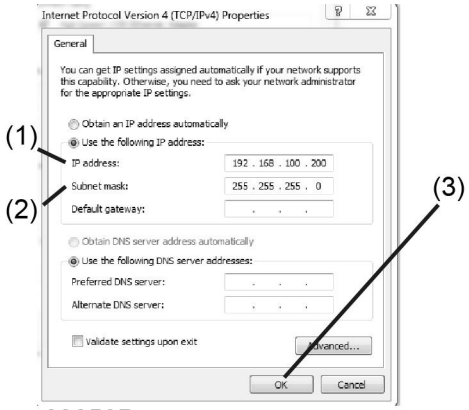
- Use the check box Internet Protocol version +4 (TCP/IPv4) (1) (see picture). To avoid conflicts, uncheck other properties if they are checked. After selecting TCP/IPv4, click on the Properties button (2) to change the settings.



60655D

- Use the following settings:
  - IP Address 192.168.100.200 (1)
  - Subnetmask 255.255.255.0 (2)

  Click OK (3) and close network connections.

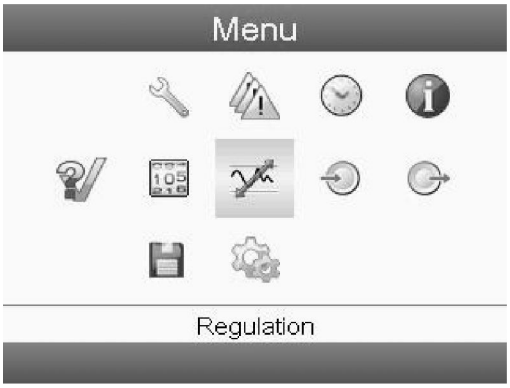


60656D

Configure a company network (LAN) connection

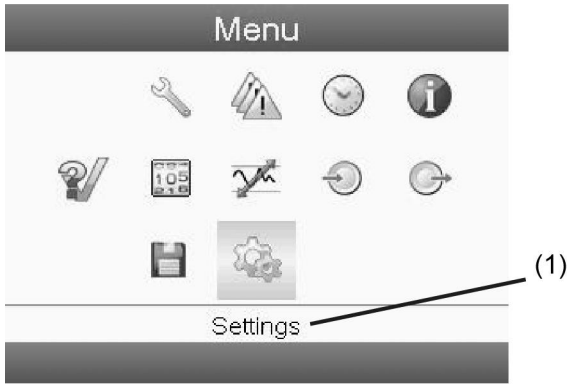
- Ask your IT department to generate a fixed IP address in your company's network.
- That IP address will be excluded from the DNS server, so it will be reserved for the controller.
- Also get the correct Gateway and Subnet mask settings. For example:
  - IP = 10.25.43.200
  - Gateway = 10.25.42.250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

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



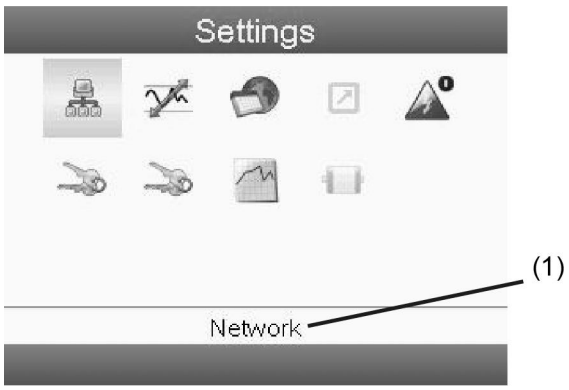
60657D

  - Go to Settings (1)



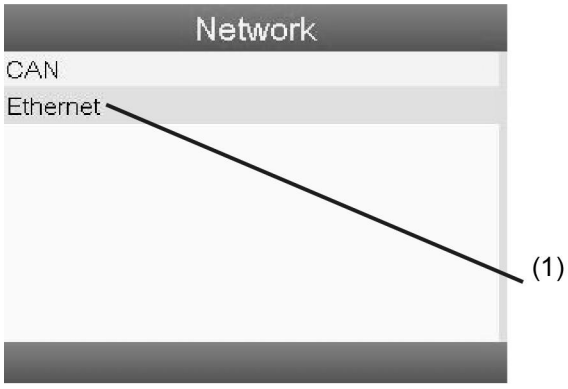
60658D

  - Go to Network (1)



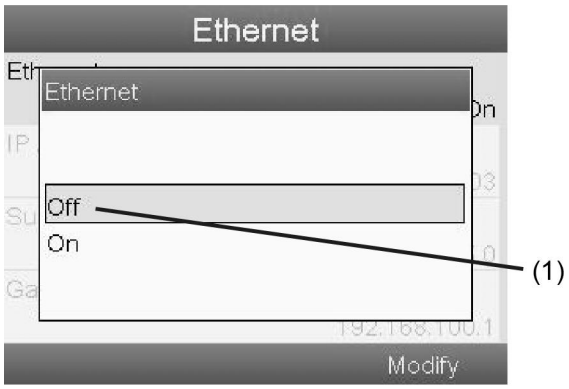
60659D

- Go to Ethernet (1)



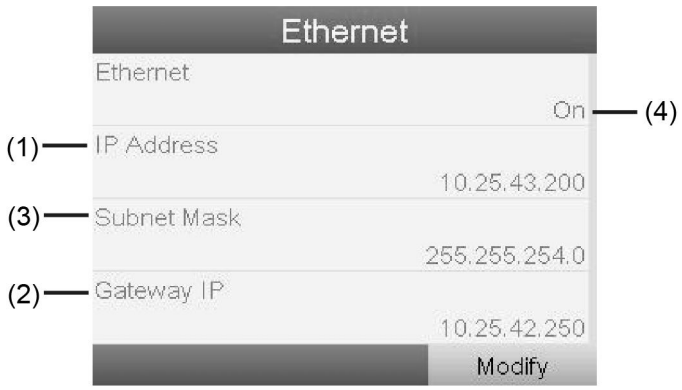
60660D

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



60661D

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



60662D

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

Configuration of the web server

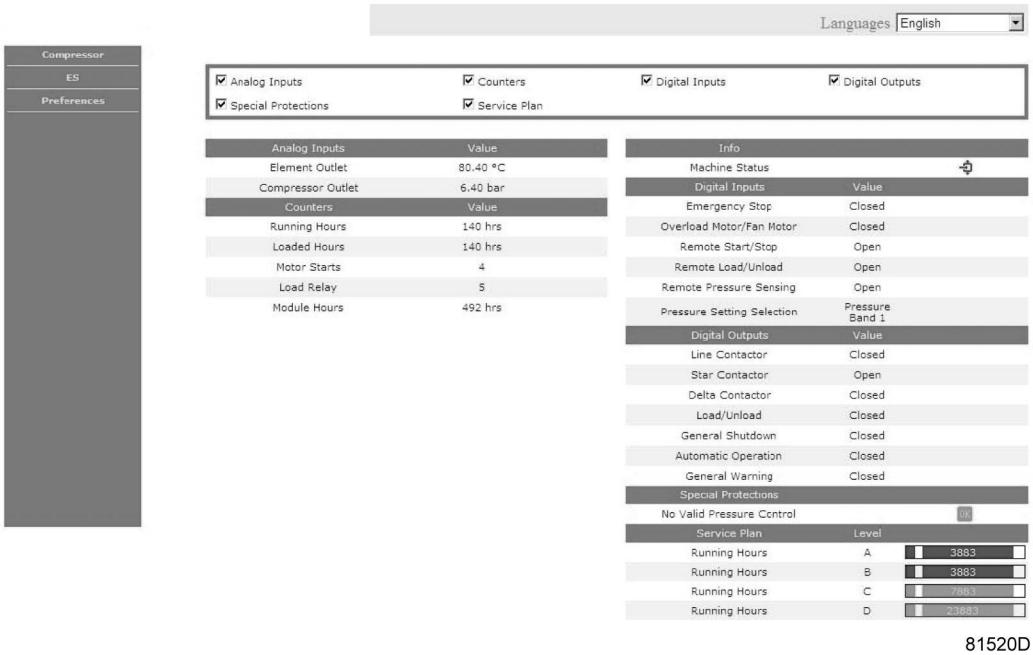
The internal web server is designed and tested for Microsoft® Internet Explorer.

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

Viewing the controller data

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

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



81520D

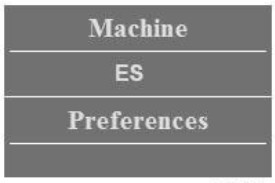
Screen shot (example!)

Navigation and options

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

81521D

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



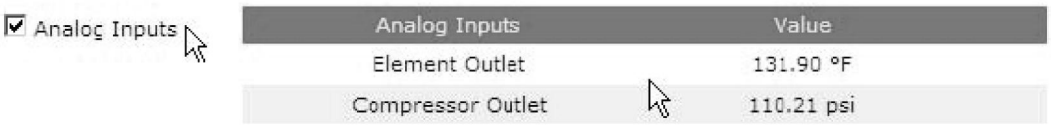
83810D

Unit settings

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

Analog inputs

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



81523D

Counters

Lists all current counter values from controller and unit.

81524D

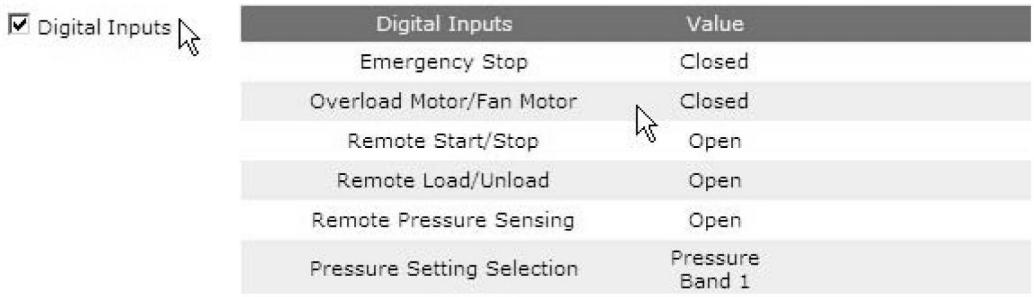
Info status

Machine status is always shown on the web interface.

81525D

Digital inputs

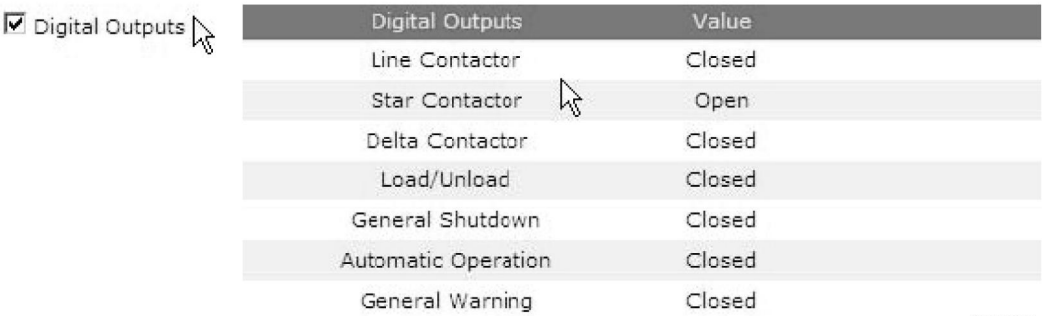
Lists all digital inputs and their status.



81526D

Digital outputs

Lists all digital outputs and their status.



81527D

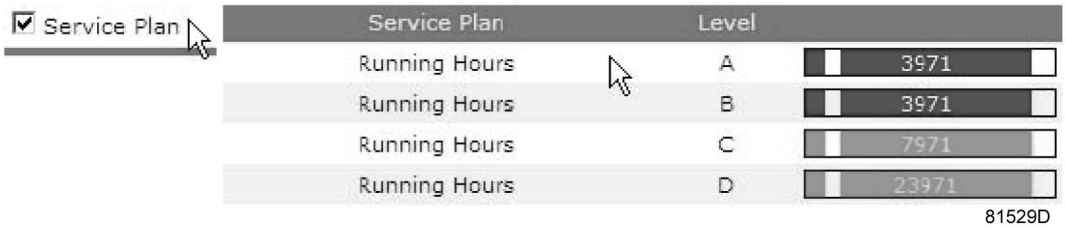
Special protections

Lists all special protections of the unit.

81528D

Service plan

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



3.19 Programmable settings

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

		Minimum setting	Factory setting	Maximum setting
Unloading pressures				
Unloading pressure (125 psi compressors)	bar(e)	4.1	8.6	9.1
Loading pressures				
Loading pressure (125 psi compressors)	bar(e)	4	8	9

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	0	3	20
Power recovery time (ARAVF)	sec	10	10	3600
Restart delay	sec	0	0	1200
Communication time-out	sec	10	30	60

Protections

		Minimum setting	Factory setting	Maximum setting
Compressor element outlet temperature (shutdown warning level)	˚C	50	114 (GA 30)	119
Compressor element outlet temperature (shutdown level)	˚C	111	120	120

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.

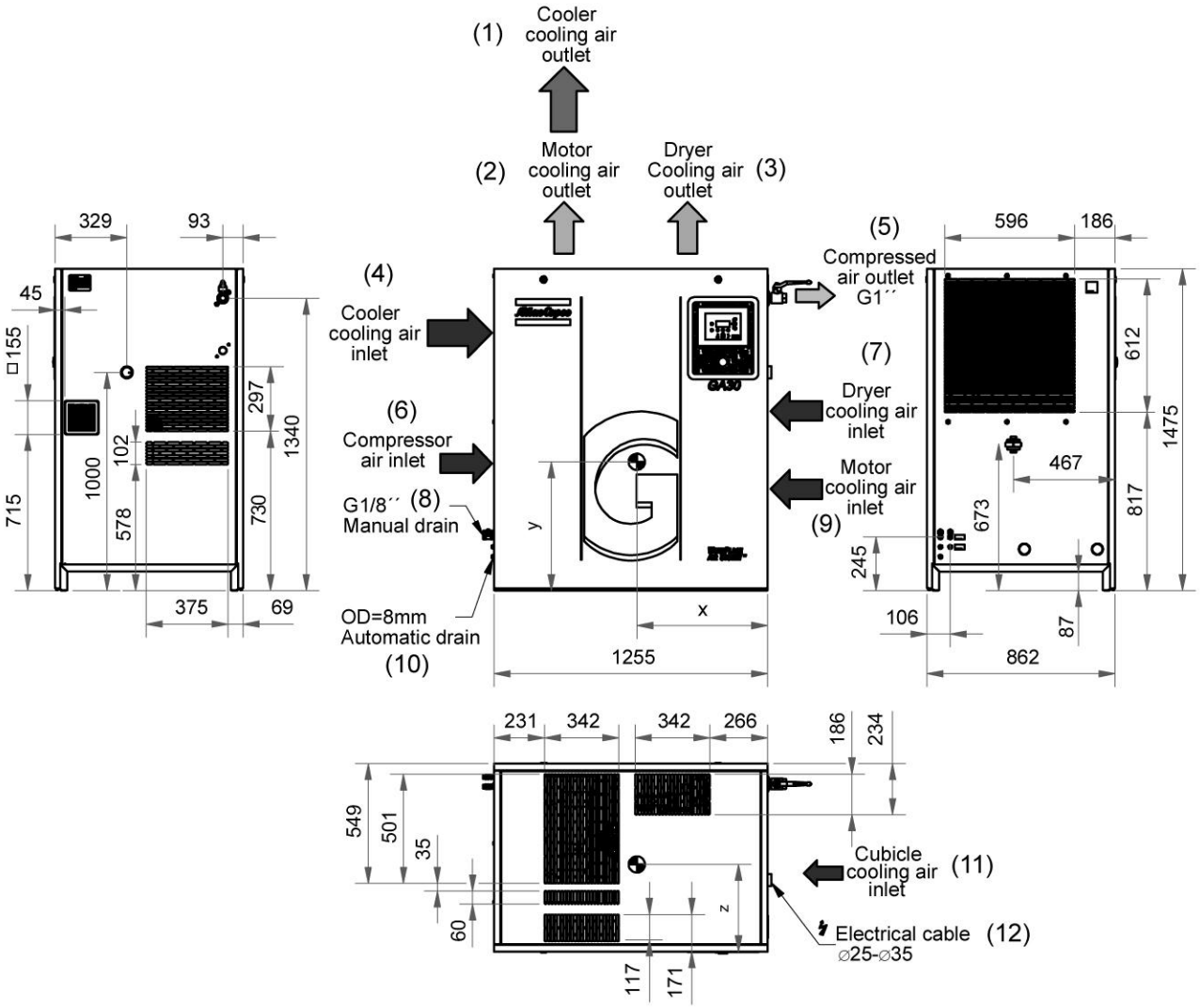
Terminology

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)).

4 Installation

4.1 Dimension drawings

Dimension drawings



	GA26+	GA26+FF	GA30	GA30FF
X	665	640	660	635
Y	555	590	550	585
Z	455	465	460	470
Weight (kg)	525	595	540	610

(13)

Dimensions GA 26+ and GA 30

Reference	Designation	Reference	Designation
1	Cooling air outlet, cooler	8	Manual drain
2	Cooling air outlet, motor	9	Cooling air inlet, motor

Reference	Designation	Reference	Designation
3	Cooling air outlet, dryer	10	Automatic drain
4	Cooling air inlet, cooler	11	Cooling air inlet, cubicle
5	Compressed air outlet	12	Supply cable
6	Compressor air inlet	13	Dimensions in mm, weight in kg (X = centre of gravity)
7	Cooling air inlet, dryer		

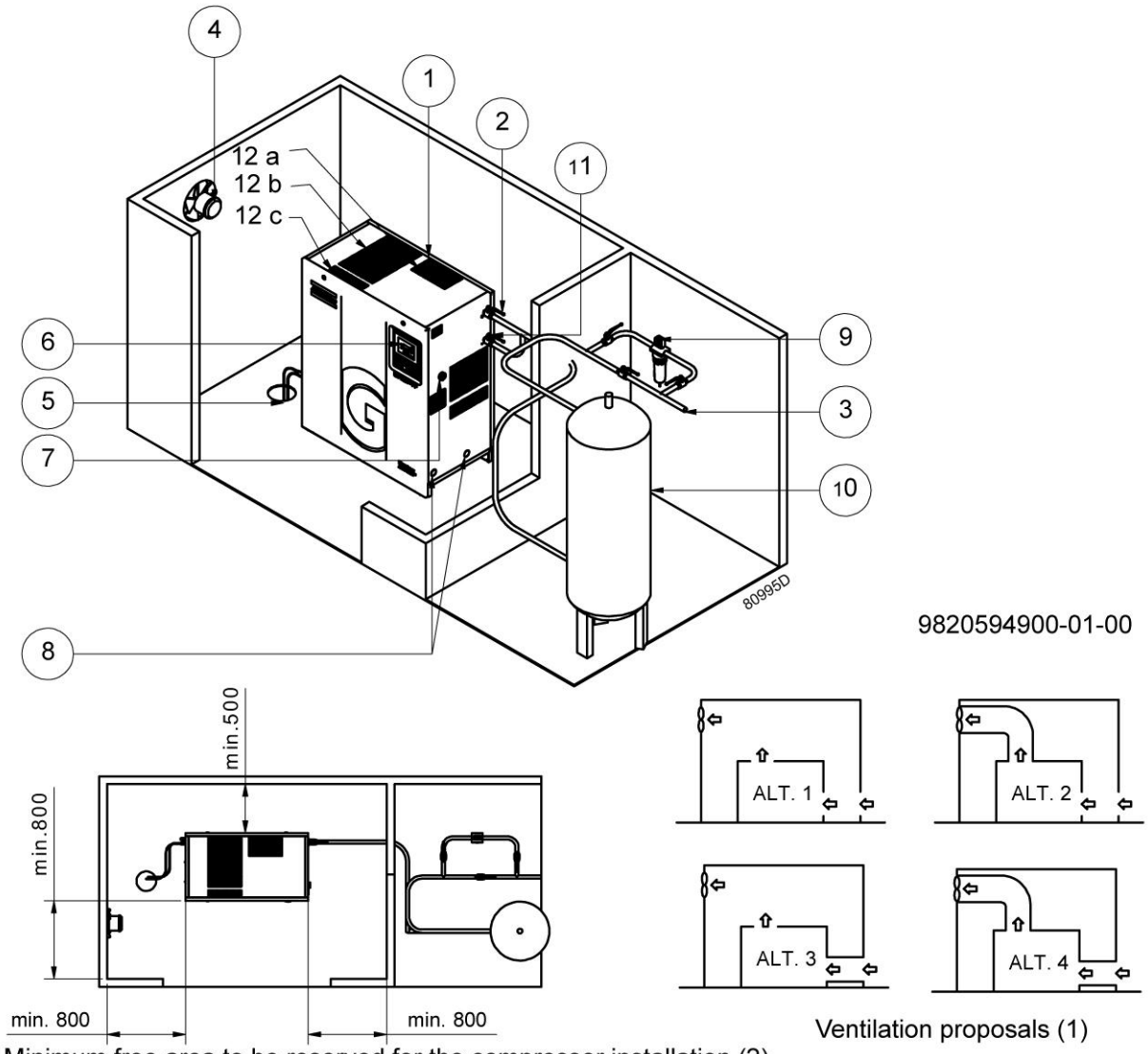
4.2 Installation proposal

Outdoor/altitude operation

If the compressor is installed where the ambient temperature can be below 0 ˚C (32 ˚F), precautions must be taken. In this case, and also if operating above 1000 m (3300 ft), consult Atlas Copco.

Moving/lifting

The compressor can be moved by a lift truck on the side of the frame. Take care not to damage the bodywork during lifting or transport. Make sure that the forks support the frame sufficiently.



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

Ventilation proposals (1)

Text on drawing

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

	All piping to be connected stress free to the compressor.

Installation guidelines

1. Install the compressor unit on a solid, level floor suitable for taking its weight.
2. Position of the compressed air outlet valve.
3. The pressure drop over the air delivery pipe can be calculated from:
   $\Delta p = (L \times 450 \times Q_c^{1.85}) / (d^5 \times P)$, with
   d = Inner diameter of the pipe in mm

Δp = Pressure drop in bar (recommended maximum: 0.1 bar (1.5 psi))
L = Length of the pipe in m
P = Absolute pressure at the compressor outlet in bar
Q_c= Free air delivery of the compressor in l/s
It is recommended that the connection of the compressor air outlet pipe is made on top of the main air net pipe in order to minimise carry-over of possible condensate residue.

4. Ventilation: the inlet grids and ventilation fan should be installed in such a way that any recirculation of cooling air to the compressor or dryer is avoided. The maximum air velocity through the grids is 5 m/s (16.5 ft/s).
   The maximum allowable pressure drop over the cooling air ducts is 30 Pa (0.12 in wc). If it exceeds this value, a fan is needed at the outlet of the ducts. Consult Atlas Copco.
   For ventilation alternatives 1 and 3, the required ventilation capacity to limit the compressor room temperature can be calculated as follows:
   - Q_v = 1.06 N/ΔT for Workplace versions

   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
   For ventilation alternatives 2 and 4: the fan capacity should match the compressor fan capacity at a pressure head equal to the pressure drop across the cooling air ducts.
   The ducting for the air outlet of the dryer (12a) also should be separated from the ducting for the cooling air outlet of the coolers (12b) and the cooling air outlet of the compressor compartement (12c). The maximum allowable pressure drop in ducting before or after the compressor is 30 Pa.
5. The drain pipes to the drain collector must not dip into the water of the drain collector. Atlas Copco has oil/water separators to separate the major part of the oil from the condensate to ensure that the condensate meets the requirements of the environmental codes.
6. Position of control panel.
7. Position of the main cable entry. 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. Provision for inlet and outlet of the energy recovery system (system is optional).
9. Filter, type DD for general purpose filtration. The filter traps solid particles 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 of a DD filter. This filter traps solid particles down to 0.01 micron with a maximum oil carry-over of 0.01 mg/m^3. If oil vapours and odours are undesirable, a QD type filter should be installed downstream of the PD filter.
   It is recommended to install bypass pipes over each filter together with ball valves, in order to isolate the filters during service operations without disturbing the compressed air delivery.
   - On GA compressors without dryer and Full-Feature compressors with IFD dryer, the filters for general purpose are optional.
10. The air receiver (optional) should be installed in a frost-free area on a solid, level floor.
    For normal air consumption, the volume of the air net (receiver and piping) can be calculated as follows:
    $V = (0.25 \times Q_c \times P1 \times To)/ (f_{max} \times \Delta P \times Ti)$, with
    V = volume of the air net in l
    Q_c = free air delivery of the compressor in l/s
    P1 = compressor air inlet pressure in bar absolute

f_{max} = cycle frequency = 1 cycle/ 30 s
$\Delta P = P_{unload} - P_{load}$ in bar
Ti = compressor air inlet temperature in K
To = air receiver temperature in K

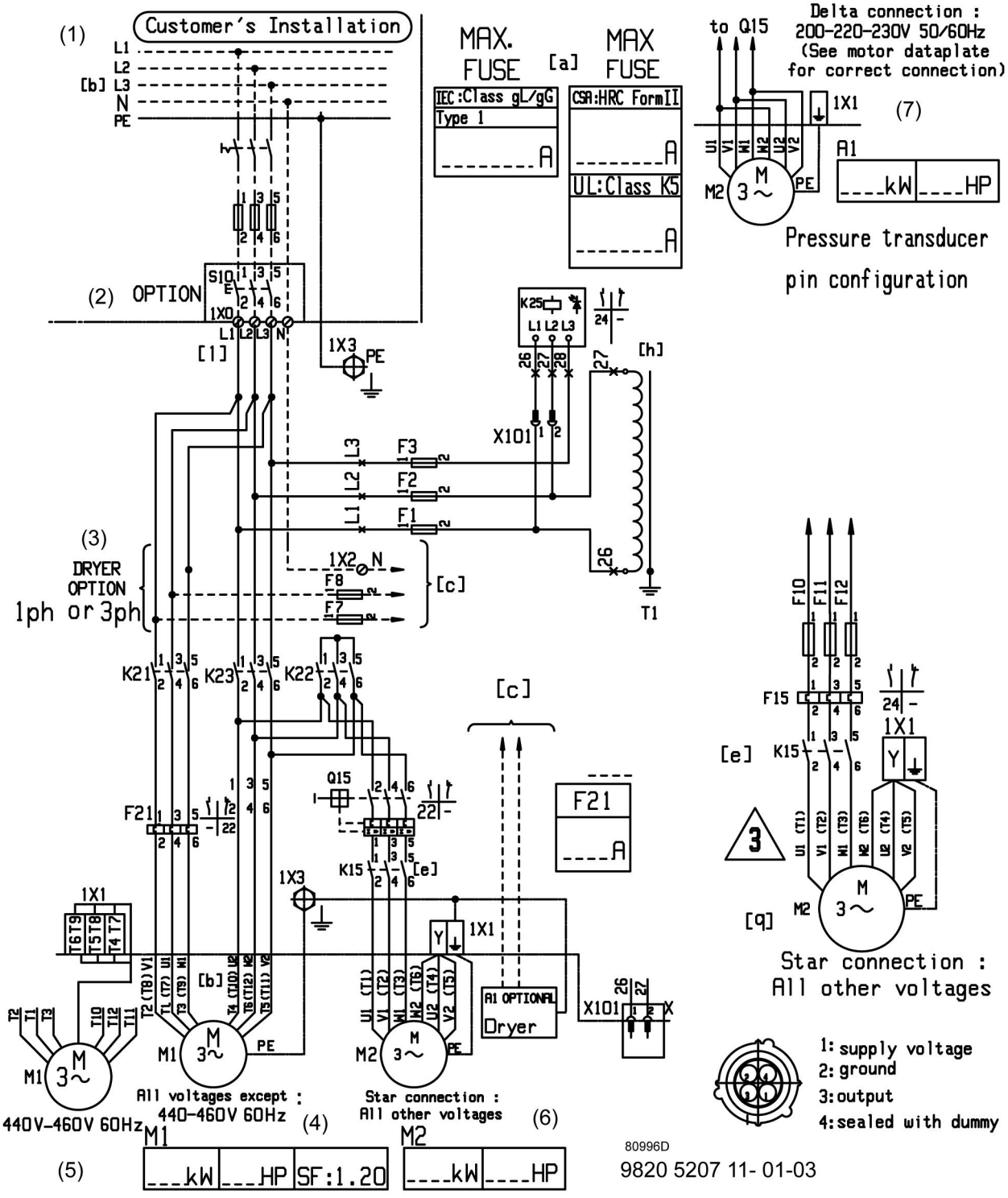
11. **Dryer bypass**

4.3 Electrical connections

Important remark

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

Electrical connections



Reference	Designation
(1)	Customer's installation
(2)	Main switch (option)
(3)	Dryer option (1 phase)
(4)	Motor connection (M1) for all voltages, except 440-460 V - 60 Hz

Reference	Designation
(5)	Motor connection (M1) for 440-460 V - 60 Hz
(6)	Star connection (M2) for all other voltages
(7)	Delta connection (M2) for 200-220-230 V - 50/60 Hz - See motor data plate for correct connection

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).

Compressor control modes on compressors with Elektronikon™ Graphic controller

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.
- **LAN control:** The compressor is controlled via a local network. 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)

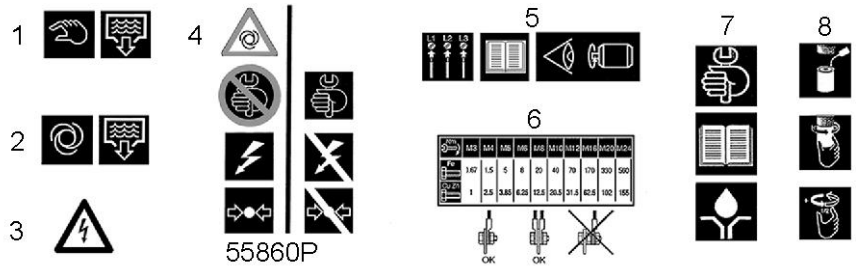
Example: K05 is a NO (NO = normally open) contact. It will be closed if all conditions are normal and will open in case of power failure or shutdown.

Maximum contact load: 10 A / 250 V AC.

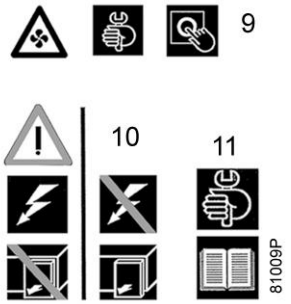
Stop the compressor and switch off the voltage before connecting external equipment. Consult Atlas Copco.

4.4 Pictographs

Description



Pictographs



Reference	Designation
1	Manual condensate drain
2	Automatic condensate drain
3	Warning: voltage
4	Warning: switch off the voltage and depressurize compressor before repairing
5	Warning: before connecting compressor electrically, consult Instruction book for motor rotation direction
6	Torques for steel (Fe) or brass (CuZn) bolts
7	Consult instruction book before greasing
8	Lightly oil gasket of oil filter, screw it on and tighten by hand (approx. half a turn)
9	Warning: stop the compressor before repairing fans
10	Warning: switch off the voltage before removing protecting cover inside electric cubicle
11	Consult the instruction book before carrying out maintenance

5 Operating instructions

5.1 Initial start-up

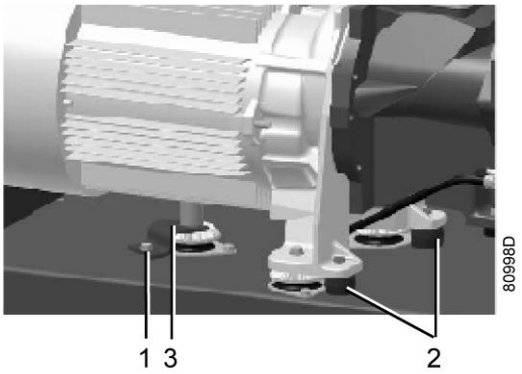
Safety

	The operator must apply all relevant Safety precautions.

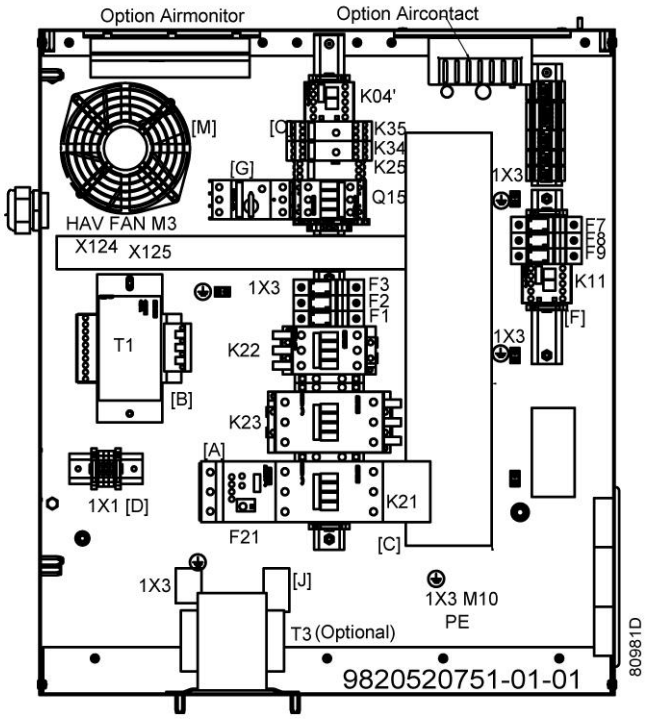
Procedure

	For the position of the air outlet valve and the drain connections, see sections Introduction and Condensate system.

1. Consult the sections Electric cable size,Installation proposals and Dimension drawings
2. **The following transport fixtures, painted red, must be removed:**
   - Bolts (1)
   - Bushes (2)
   - Supports (3)

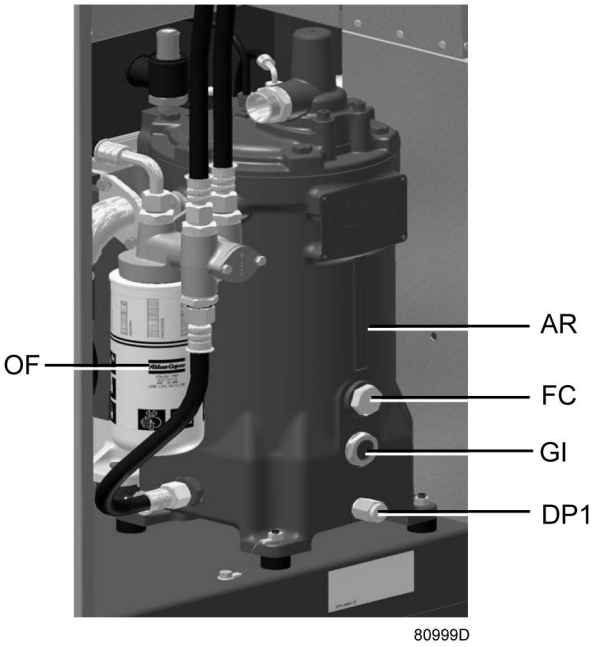


3. Check that the electrical connections correspond to the local codes and that all wires are clamped tight to their terminals.
   The installation must be earthed and protected against short circuits by fuses of the inert type in all phases. An isolating switch must be installed near the compressor.
4. Check transformer (T1) for correct connection.
   Check the settings of drive motor overload relay (F21).
   Check that the motor overload relay is set for manual resetting.
   Check the setting of circuit breaker Q15. Also check that the switch on the circuit breaker is in position I.



Cubicle GA 11 + up to GA 30

5. Fit the air outlet valve (AV); see section Introduction for the position of the valve.
   Close the valve.
   Connect the air net to the valve.
6. Fit the manual condensate drain valve(s) (Dm). Close the valve. Connect the valve to a drain collector.
7. Connect the automatic drain outlet (Da) to a drain collector.
   The drain pipes to the drain collector must not dip into the water. If the pipes have been fitted outside the room where freezing is possible, they must be insulated.
8. Check the oil level.
   The oil level in the sight glass should be in the upper region or higher.



Position of oil level sight-glass

9. **Provide labels, warning the operator that:**
   - The compressor may automatically restart after voltage failure (if activated, consult Atlas Copco).
   - The compressor is automatically controlled and may be restarted automatically.
10. Switch on the voltage. Start the compressor and stop it immediately. Check the rotation direction of the drive motor (M1) while the motor is coasting to a stop.
    Incorrect rotation direction of the drive motor may cause damage to the compressor.
    The compressors are provided with a phase sequence relay.
    If the compressor fails to start, check the display.
    If the display shows the motor icon and the Alarm LED is lit (compressors with an Elektronikon® Graphic controller), check the phase sequence relay:
    If the yellow LED is off, the rotation direction is wrong; if the LED is lit, reset the overload relay (F21).
    The correct rotation direction of the drive motor is clockwise when looking at the motor fan (seen from the non-drive end of the motor). An arrow is stuck on the motor.
    If the rotation direction of the drive motor is incorrect, switch off the voltage and reverse two incoming electric lines.
    On air-cooled compressors, check also the rotation direction of the **fan motor**.
    The correct rotation direction of the fan motor is counter-clockwise when looking at the fan from the top of the compressor. An arrow indicates the correct direction of rotation.
    If the rotation direction of the fan motor is incorrect, switch off the voltage and reverse two incoming electric connections at the terminals of circuit breaker (Q15).
11. Check the programmed settings. Consult section Programmable settings.
12. Start and run the compressor for a few minutes. Check that the compressor operates normally.
    During operation, the oil level should be in the centre of the sight glass.

5.2 Before starting

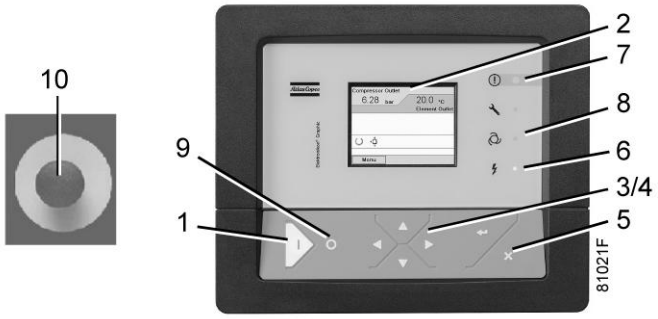
Procedure

-	Check the oil level, top up if necessary. See section Initial start-up.

5.3 Starting

Procedure

	For the position of the air outlet valve and the drain connections, see sections Introduction and Condensate system.

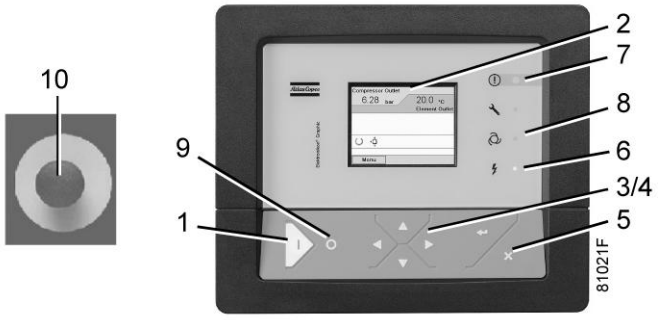


Control panel of the Elektronikon™ Graphic controller

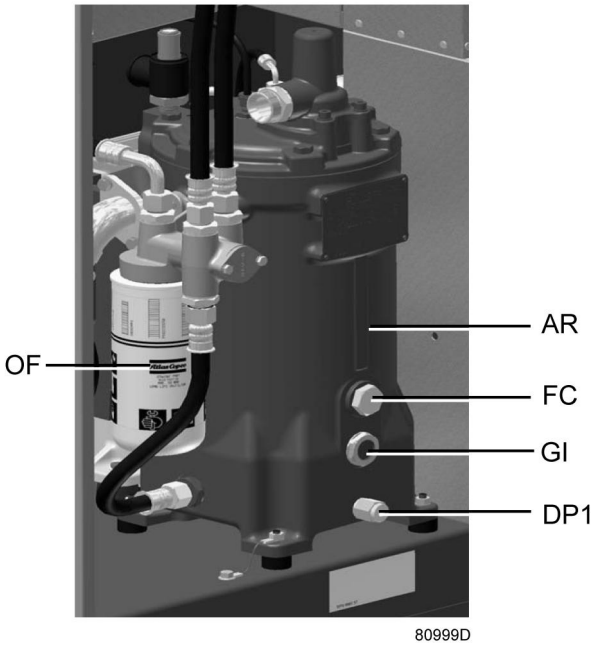
Step	Action
-	Switch on the voltage. Check that voltage on LED lights up.
-	Open the air outlet valve.
-	Close the condensate drain valve(s) (Dm).
-	Press start button on the control panel. The compressor starts running and the automatic operation LED lights up. After the motor running time in star (Y-time, see Parameters in section Programmable settings) has elapsed, the drive motor switches over from star to delta and the compressor starts running loaded.

5.4 During operation

Procedure



Control panel of the Elektronikon™ Graphic controller



Position of the oil level sight glass

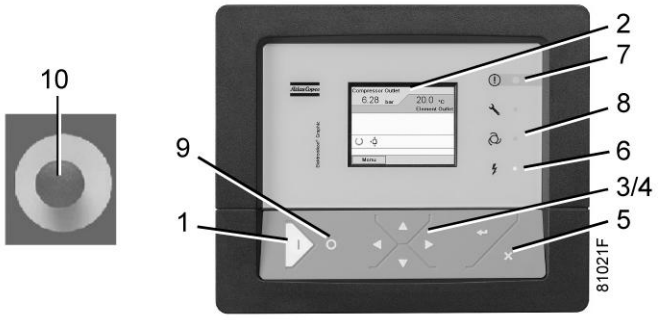
Regularly check the oil level. During operation, the oil level should be in the centre of the sight glass. If the level is too low: stop the compressor, wait until the compressor has stopped, depressurise the oil system by unscrewing oil filler plug (FC) one turn and wait a few minutes. Remove the plug and top up oil, until the sight-glass is full. Fit and tighten the plug (FC).

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

If provided, regularly check that condensate is discharged by the automatic drain(s) during operation. See section Condensate system. The amount of condensate depends on environmental and working conditions.

5.5 Checking the display

Procedure



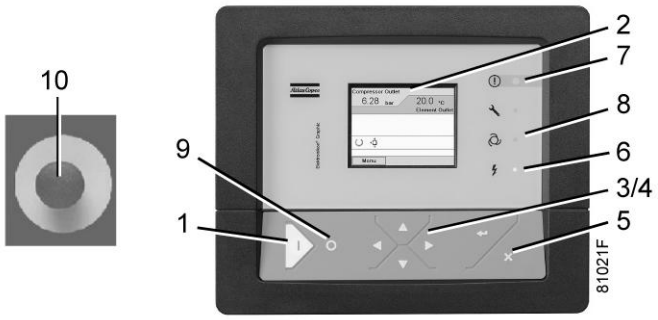
Control panel of the Elektronikon™ Graphic controller

Compressors with Elektronikon™ Graphic controller:

Check the display (2) regularly for readings and messages. The display normally shows the compressor outlet pressure, while the status of the compressor is indicated by means of a number of icons. Remedy the trouble if alarm LED (7) is lit or flashes, see section Icons used. The display (2) will show a service message if a service plan interval has been exceeded or if a service level for a monitored component has been exceeded. Carry out the service actions of the indicated plans or replace the component and reset the relevant timer, see section Service menu and Problem solving.

5.6 Stopping

Elektronikon controller



Control panel of the Elektronikon™ Graphic controller

Procedure

Step	Action
-	Press stop button on the control panel. The automatic operation LED goes out and the compressor stops after 45 seconds of unloaded operation.
-	**To stop the compressor in the event of an emergency,** press emergency stop push button on the control panel. The alarm LED flashes. On compressors with an Elektronikon® Graphic controller: • Remedy the problem cause and unlock the button by pulling it out. • Navigate to the Stop icon on the display by means of the navigation keys (3/4) and press the Select key. Press reset. **Do not use emergency stop push button for normal stopping!**
-	Close the air outlet valve (AV).
-	Open the condensate drain valve of the compressor (Dm) to drain the water trap completely. See section Condensate system.

If maintenance or repair work is necessary, consult Problem solving for all relevant safety precautions.

5.7 Taking out of operation

Procedure

Step	Action
-	Stop the compressor and close the air outlet valve.
-	Switch off the voltage and disconnect the compressor from the mains.
-	Depressurize the compressor by opening plug (FC). Consult section Oil and oil filter change to locate the filler plug.
-	Open the condensate drain valve(s) (Dm). Consult section Condensate system to locate the drain valve.
-	Shut off and depressurise the part of the air net which is connected to the outlet valve. Disconnect the compressor air outlet pipe from the air net.
-	Drain the oil.
-	Drain the condensate circuit and disconnect the condensate piping from the condensate net.

6 Maintenance

6.1 Preventive maintenance schedule

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 valve. • Depressurise 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 actions and checks must also include the shorter interval actions and checks.

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 Programmable settings and section Service menu. After servicing, the intervals must be reset.

Preventive maintenance schedule

Checklist

Period	Action
Daily	Check oil level. Check readings on display. Check that condensate is discharged during loaded operation of the compressor.
3-monthly (1)	Check coolers, clean if necessary. Remove the air filter element and inspect. If necessary, clean using an air jet. Replace damaged or heavily contaminated elements. Check the filter element of the electric cabinet (if applicable). Replace if necessary Press the test button on top of the electronic water drain (EWD). Open the manual drain valve(s) (Dm, Dm1) to clean the filter inside the EWD.

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

Programmed service intervals

Frequency (running hours)	Action
4000 (1)	If Atlas Copco Roto-Inject Fluid is used, change oil and oil filter. Replace the air filter element. Replace the filter element of the electric cabinet (where applicable). Clean coolers. Check pressure and temperature readings. Carry out a LED/display test. Check for leakages. Open the manual drain valve (Dm) to clean the filter of the automatic drain. See section Condensate system. Test temperature shut-down function.
yearly	Test safety valve.
8000 (2)	If Atlas Copco Roto-Xtend Duty Fluid is used, change oil and oil filter. Have the oil separator element replaced. Test safety valves. Replace the separator element also if the pressure drop over the separator exceeds 1 bar (14.5 psi). Check the pressure drop when the compressor is running loaded and preferably with a stable working pressure.

(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.

Important

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

6.2 Oil specifications

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

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

Relation between the operating conditions and the duty type

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

Roto-Inject Fluid NDURANCE

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

See the table below for recommended oil exchange intervals:

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

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

Roto Synthetic Fluid ULTRA

Roto Synthetic Fluid ULTRA is a **synthetic oil based 4000 hours lubricant**, specially developed for use in single stage oil injected screw compressors running in **demanding conditions**. Roto Synthetic Fluid ULTRA can be used for compressors operating at ambient temperatures between 0 ˚C (32 ˚F) and 40 ˚C (104 ˚F). For more extreme conditions, or when continuously operating at temperatures above 40 °C (104 °F), it is recommended to use Roto Synthetic Fluid XTEND DUTY.

See the table bloew for recommended oil exchange intervals:

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

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

Roto Synthetic Fluid XTEND DUTY

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

See the table below for oil exchange intervals:

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

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

* Whichever comes first.

6.3 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.

6.4 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 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.

6.5 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 2012/19/EC for Waste Electrical and Electronic Equipment (WEEE). As such, these parts must not be disposed of at a municipal waste collection point. Refer to local regulations for directions on how to dispose of this product in an environmental friendly manner.

7 Adjustments and servicing procedures

7.1 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

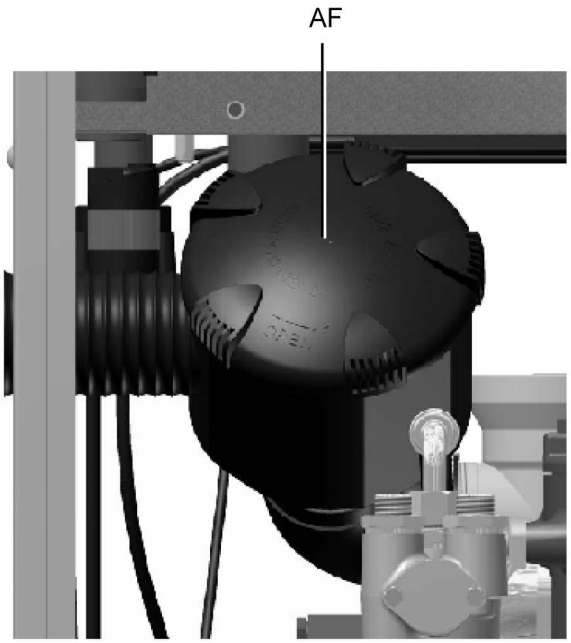
The bearing at the drive end side is lubricated by the oil system and requires no periodic maintenance.

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

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

7.2 Air filter

Location of air filter



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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 cover of air filter (AF) by turning it anti-clockwise. Remove the filter element. If necessary, clean the cover.
3. Fit the new element and the cover.
4. Reset the air filter service warning.
   For compressors equipped with an Elektronikon™ Graphic controller, see section Service menu.

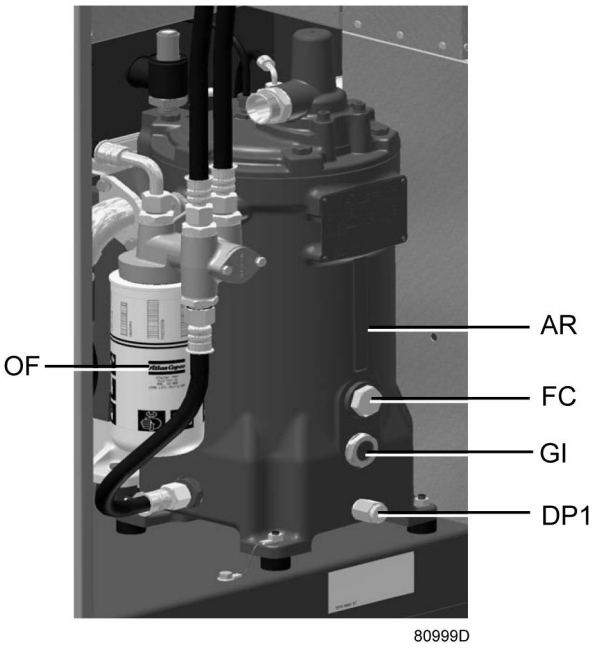
For compressors equipped with an Elektronikon™ Graphic controller, see section Service menu.

7.3 Oil and oil filter change

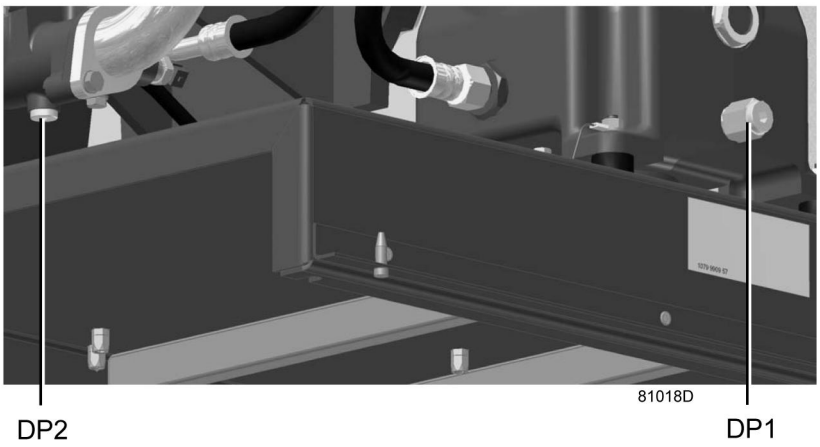
Warning

	The operator must apply all relevant Safety precautions. Always drain the compressor oil at all drain points. Used oil left in the compressor can contaminate the oil system and can shorten the lifetime of the new oil. Never mix lubricants of different brands or types as they may not be compatible and the oil mix will have inferior properties. A label, indicating the type of oil filled ex-factory, is stuck on the air receiver/oil tank.

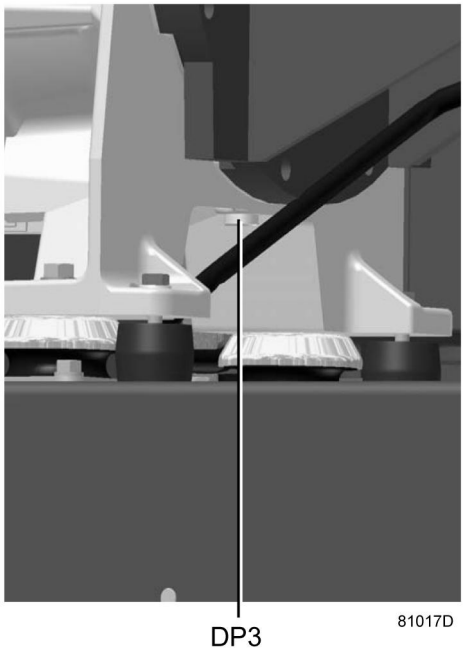
Procedure



Oil system components



Oil drain plugs



Oil drain plug, gear casing

1. Run the compressor until warm. Stop the compressor. Close the air outlet valve and switch off the voltage. Depressurise the compressor by opening manual drain valve(s) (Dm, Dm1). Wait a few minutes and depressurise the air receiver/oil tank (AR) by unscrewing oil filler plug (FC) just one turn to permit any pressure in the system to escape.
2. Loosen the top connection of the oil cooler and wait for 5 minutes.
3. Drain the oil by removing the drain plug on the air receiver (DP1).
   Also drain the oil on the element outlet housing (DP2) and on the gearbox (DP3)
4. Collect the oil and deliver it to the local collection service. Refit and tighten the drain and vent plugs after draining.
   Re-tighten the top connection of the oil cooler.

5. 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.
6. Remove filler plug (FC).
   Fill the air receiver/oil tank (AR) with oil until the level reaches the filler neck.
   Take care that no dirt drops into the system. Refit and tighten filler plug (FC).
7. Run the compressor loaded for a few minutes. Stop the compressor and wait a few minutes to allow the oil to settle.
8. Depressurise 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 level reaches the filler neck.
   Take care that no dirt enters the system. Tighten the filler plug.
9. Reset the service warning after carrying out all service actions in the relevant Service Plan:
   For compressors with Elektronikon™ Graphic controller, see section Service menu.

7.4 Coolers

General

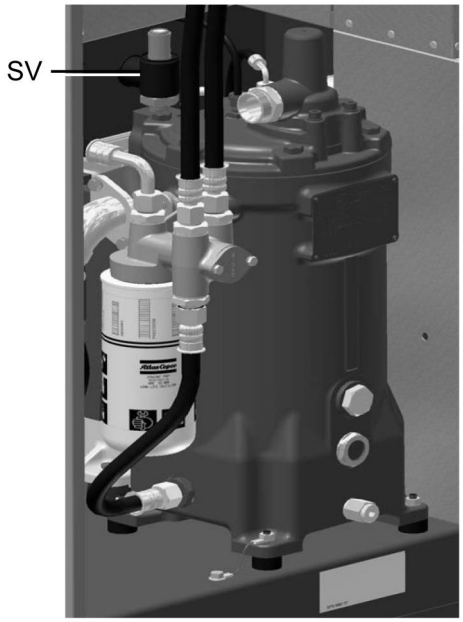
Keep the coolers clean to maintain their efficiency.

Instructions for air-cooled compressors

- Stop the compressor, close the air outlet valve and switch off the voltage.
- Remove the side baffle that encloses the fan compartment.
- Remove any dirt from the coolers with a fibre brush. Brush in the direction of the cooling fins. Also remove any dirt from the fan with a fibre brush.
- Next, clean with an air jet in the reverse direction to normal flow. Use low pressure air. If necessary, the pressure may be increased up to 6 bar(e) (87 psig).
- If it is necessary to wash the coolers with a cleaning agent, consult Atlas Copco.
- Mount the side baffle that encloses the fan compartment.

7.5 Safety valves

Location of safety valve



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Operating

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

Testing

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

The safety valve (SV) can be tested on a separate air line. If the valve does not open at the set pressure stamped on the valve, it needs to be replaced.

Warning

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

8 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 and lock it if necessary. If provided, open the manual condensate drain valves. Depressurize the compressor by opening the oil filler plug one turn. **For location of components, see sections:** Introduction, Condensate system and Initial start-up.
	Open and lock the isolating switch.
	The operator must apply all relevant Safety precautions.

Compressor

On compressors equipped with an Elektronikon™ Graphic controller: if the alarm LED is lit or flashes, consult sections Main screen and following.

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

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

-	Condition	Fault	Remedy
	Condensate is not discharged from condensate separator during loaded operation	Discharge flexible clogged	Check and correct as necessary
		Automatic drain malfunctioning	Open the manual drain valve(s) to clean the filter of the EWD. If necessary, disassemble and check.

-	Condition	Fault	Remedy
	Compressor air output or pressure below normal	Air consumption exceeds air delivery of compressor	Check equipment connected
		Choked air filter element	Replace filter element
		Solenoid valve malfunctioning	Replace valve

-	Condition	Fault	Remedy
		Leak in control air flexibles	Replace leaking flexibles
		Inlet valve does not fully open	Have valve checked
		Oil separator clogged	Have element replaced
		Air leakage	Have leaks repaired
		Safety valve leaking	Have valve replaced
		Compressor element out of order	Consult Atlas Copco

-	Condition	Fault	Remedy
	Excessive oil consumption; oil carry-over through discharge line	Oil level too high	Check for overfilling. Release pressure and drain oil to correct level
		Incorrect oil causing foam	Change to correct oil
		Oil separator defective	Have element checked. Replace if necessary.
		Scavenge line clogged	Check and remedy

-	Condition	Fault	Remedy
	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	Have element replaced

-	Condition	Fault	Remedy
	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 circulation of cooling air. If installed, check capacity of compressor room fan
		Oil cooler clogged	Clean cooler
		Thermostatic bypass valve malfunctioning	Have valve tested
		Air cooler clogged	Clean cooler
		Compressor element out of order	Consult Atlas Copco Customer Centre
		Oil filter clogged	Replace

9 Technical data

9.1 Readings on display

Elektronikon™

Control panel of the 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	Modulates between programmed unloading and loading pressures.
Compressor element outlet temperature	50-60 ˚C (90-108 ˚F) above cooling air temperature.

9.2 Electric cable size

Important warning

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

	• The voltage on the compressor terminals must not deviate more than 10% of the nominal voltage. It is however highly recommended to keep the voltage drop over the supply cables at nominal current below 5% of the nominal voltage (IEC 60204-1). If cables are grouped together with other power cables, it may be necessary to use cables of a larger size than those calculated for the standard operating conditions. • Use the original cable entry. See section Dimension drawings. • Local regulations remain applicable if they are stricter than the values proposed below.

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 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.

Cable size

Type	V	Hz	Approval	I_{tot} P (1)	Recommended wire section (2)	Recommended wire section (3)	Main fuses (A) (4)
GA 30	200	60	UL/cUL	130	4 x AWG2/0 (8 x AWG2)	8 x AWG1	225 (110)
GA 30	230	60	UL/cUL	124	4 x AWG2/0 (8 x AWG4)	8 x AWG1	225 (110)
GA 30	460	60	UL/cUL	62	4 x AWG3	4 x AWG2	125

Remarks :

(1): Current in the supply lines at maximum load (P: units without dryer, FF: units with integrated dryer)

(2): Minimal recommended wire section under standard conditions. Values between () valid in case of parallel supply cables where specified.

(3): Minimal recommended wire section under worst case conditions. Values between () valid in case of parallel supply cables where specified.

(4): Recommended maximum fuse value. Value between () valid in case of 6 fuses for parallel supply cables where specified.

9.3 Settings of fan motor circuit breaker

Circuit breaker

		GA 26+ and GA 30
Frequency (Hz)	**Voltage (V)**	**Fan motor circuit breaker Q15 (A)**
UL/cUL		
60	200-230-460	3.3 / 3.1 / 2.0

9.4 Settings for overload relay and fuses

		GA 30
Frequency (Hz)	**Voltage (V)**	**Setting F21 (A)**
UL/cUL		
60	200	80.0
60	230	76.2
60	460	38.1

9.5 Reference conditions and limitations

Reference conditions

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

Limits

Maximum working pressure		See section compressor data
Minimum working pressure	bar	4
Maximum ambient temperature	˚C	46
Minimum ambient temperature	˚C	0

9.6 Compressor data

Reference conditions

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

GA 30

	Units	125 psi
Frequency	Hz	60
Maximum unloading pressure	bar(e)	9.1
Nominal working pressure	bar(e)	8.6
Motor shaft speed	r/min	3560
Set point, thermostatic valve	˚C	40
Temperature of air leaving outlet valve (approx.)	˚C	27
Nominal motor rating	kW	30
Oil capacity	l	8.55
Sound pressure level, Workplace and Workplace Full-Feature (according to ISO 2151 (2004))	dB(A)	68

9.7 Technical data controller

General

Supply voltage	24 V AC /16 VA 50/60Hz (+40%/-30%) 24 V DC/0.7 A
Type of protection	IP54 (front) IP21 (back)
Ambient and temperature conditions	IEC60068-2
• 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	9 (Elektronikon™ Graphic controller - p.n. 1900 5200 10 …. 1900 5200 19)
Type	Relay (voltage free contacts)
Rated voltage AC	250 V AC / 10 A max.
Rated voltage DC	30 V DC / 10 A max.

Digital inputs

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

Analog inputs

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

10 Instructions for use

Oil separator vessel

This vessel can contain pressurized air. This can be potentially dangerous if the equipment is misused.
This vessel must only be used as a compressed air/oil separator tank and must be operated within the limits specified on the data plate.
No alterations must be made to this vessel by welding, drilling or other mechanical methods without the written permission of the manufacturer.
The pressure and temperature of this vessel must be clearly indicated.
The safety valve must correspond with pressure surges of 1.1 times the maximum allowable operating pressure. It should guarantee that the pressure will not permanently exceed the maximum allowable operating pressure of the vessel.
Use only oil as specified by the manufacturer.
Original bolts have to be used after opening for inspection. The maximum torque has to be taken into consideration: for M12 bolts 73 Nm (53.8 lbf.ft)), for M16 bolts 185 Nm (136.4 lbf.ft).

11 Guidelines for inspection

Guidelines

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

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

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

12 Pressure equipment directives

Components subject to 2014/68/EU Pressure Equipment Directive

The following table contains the necessary information for the inspection of all pressure equipment of category II and higher according to the Pressure Equipment Directive 2014/68/EU and all pressure equipment according to the Simple Pressure Vessel Directive 2014/29/EC.

Compressor type	Component	Description	Volume	Design pressure	Minimum and maximum design temperature	PED Class
GA 11+ up to GA 30	1622 6912 99	Vessel	16 l	15 bar(e)	0 ˚C/ 120 ˚C	II
	0830 1009 87	Safety valve	-	-	-	IV
	0830 1010 02	Safety valve	-	-	-	IV
	0830 1010 03	Safety valve	-	-	-	IV

Compressor type	Component	Description	Number of cycles (1)	Min. wall thickness	Visual inspection require-ments (2)	Hydrostatic inspection requirements (2)
GA 11+ up to GA 30	1622 6912 99	Vessel	2 x 10^6	6 mm	10 years	10 years
	0830 1009 87	Safety valve	-	-	-	-
	0830 1010 02	Safety valve	-	-	-	-
	0830 1010 03	Safety valve	-	-	-	-

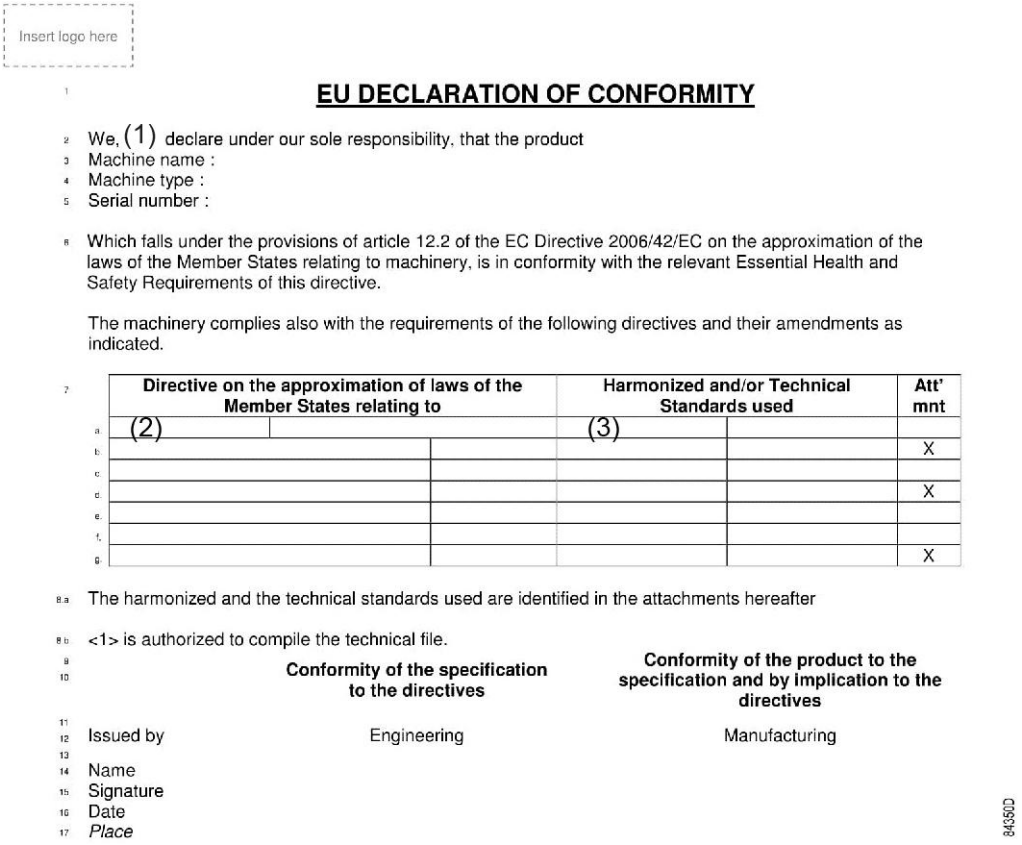
(1) The number of cycles refers to the number of cycles from 0 bar(e) to maximum pressure.

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

Overall rating

The compressors conform to PED smaller than category II.

13 Declaration of conformity



Insert logo here

EU 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.	(2)		(3)		
b.					X
c.					
d.					X
e.					
f.					
g.					X

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

<1> is authorized to compile the technical file.

	Conformity of the specification to the directives	Conformity of the product to the specification and by implication to the directives
Issued by	Engineering	Manufacturing

Name
Signature
Date
Place

84560D

Typical example of a Declaration of Conformity document

(1): Contact address:

Atlas Copco Airpower n.v.

P.O. Box 100

B-2610 Wilrijk (Antwerp)

Belgium

(2): Applicable directives

(3): Standards used

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

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

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