

Atlas Copco

Oil-free scroll compressors



SF 2+, SF 4+, SF 6+

Instruction book



Atlas Copco

Oil-free scroll compressors

SF 2+, SF 4+, SF 6+

From following serial No. onwards: API 730 000

Instruction book

Original instructions

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

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Table of contents

1	Safety precautions.....	6
1.1	SAFETY ICONS.....	6
1.2	SAFETY PRECAUTIONS, GENERAL.....	6
1.3	SAFETY PRECAUTIONS DURING INSTALLATION.....	7
1.4	SAFETY PRECAUTIONS DURING OPERATION.....	8
1.5	SAFETY PRECAUTIONS DURING MAINTENANCE OR REPAIR.....	9
2	General description.....	11
2.1	INTRODUCTION.....	11
2.2	FLOW DIAGRAM.....	17
2.3	REFRIGERANT DRYER.....	19
2.4	DESICCANT DRYER.....	21
3	Elektronikon controller.....	25
3.1	GENERAL DESCRIPTION.....	25
3.2	CONTROL PANEL.....	26
3.3	ICONS USED ON THE DISPLAY.....	27
3.4	MAIN SCREEN.....	29
3.5	SHUT-DOWN WARNING.....	29
3.6	SHUT-DOWN.....	31
3.7	SERVICE WARNING.....	33
3.8	SCROLLING THROUGH ALL SCREENS.....	34
3.9	CALLING UP ELEMENT AND DEW POINT TEMPERATURES.....	37
3.10	DIGITAL INPUTS.....	38
3.11	CALLING UP RUNNING HOURS.....	39
3.12	CALLING UP MOTOR STARTS.....	40
3.13	CALLING UP MODULE HOURS.....	41
3.14	CALLING UP/RESETTING THE SERVICE TIMER	41

3.15	SELECTION BETWEEN LOCAL, REMOTE OR LAN CONTROL.....	42
3.16	CALLING UP/MODIFYING CAN ADDRESS CONTROL.....	43
3.17	CALLING UP/MODIFYING IP, GATEWAY AND SUBNETMASK.....	44
3.18	CALLING UP/MODIFYING PRESSURE BAND SETTINGS.....	46
3.19	MODIFYING PRESSURE BAND SELECTION.....	48
3.20	CALLING UP/MODIFYING SERVICE TIMER SETTINGS.....	48
3.21	CALLING UP/MODIFYING UNIT OF TEMPERATURE.....	49
3.22	CALLING UP/MODIFYING UNIT OF PRESSURE.....	49
3.23	AUTOMATIC RESTART AFTER VOLTAGE FAILURE.....	50
3.24	ACTIVATING PASSWORD PROTECTION.....	50
3.25	CALLING UP/MODIFYING PROTECTION SETTINGS.....	51
3.26	TEST SCREENS.....	52
3.27	WEB SERVER.....	53
3.28	PROGRAMMABLE SETTINGS.....	59
4	Elektronikon Graphic Controller.....	61
4.1	GENERAL.....	61
4.2	CONTROL PANEL.....	63
4.3	ICONS USED.....	64
4.4	MAIN SCREEN.....	67
4.5	CALLING UP MENUS.....	71
4.6	SHUTDOWN WARNING.....	72
4.7	SHUTDOWN.....	76
4.8	INPUTS MENU.....	76
4.9	OUTPUTS MENU.....	79
4.10	COUNTERS.....	80
4.11	CONTROL MODE SELECTION.....	81
4.12	SERVICE MENU.....	82
4.13	SETPOINT MENU.....	86
4.14	EVENT HISTORY MENU.....	88



4.15	GENERAL SETTINGS MENU.....	89
4.16	INFO MENU.....	90
4.17	WEEK TIMER MENU.....	91
4.18	TEST MENU.....	99
4.19	USER PASSWORD MENU.....	100
4.20	WEB SERVER.....	101
4.21	PROGRAMMABLE SETTINGS.....	110
5	Installation.....	113
5.1	DIMENSION DRAWINGS.....	113
5.2	INSTALLATION PROPOSAL.....	114
5.3	ELECTRICAL CONNECTIONS.....	116
5.4	PICTOGRAPHS.....	117
6	Operation.....	118
6.1	INITIAL START-UP.....	118
6.2	STARTING.....	119
6.3	DURING OPERATION.....	120
6.4	STOPPING.....	120
6.5	TAKING OUT OF OPERATION.....	121
7	Preventive maintenance.....	122
7.1	PREVENTIVE MAINTENANCE SCHEDULE.....	122
7.2	SERVICE KITS.....	124
7.3	DISPOSAL OF USED MATERIAL.....	124
8	Adjustments and servicing procedures.....	125
8.1	AIR FILTER.....	125
8.2	AIR COOLER.....	125
8.3	DRIVE MOTOR.....	125

8.4	SAFETY VALVE	126
8.5	BELT REPLACEMENT.....	126
8.6	TEMPERATURE PROTECTION.....	128
8.7	CLEANING THE COMPRESSOR ELEMENT.....	128
8.8	REPLACEMENT OF THE OUTLET PIPE.....	129
8.9	REFRIGERANT DRYER MAINTENANCE.....	131
8.10	DESICCANT DRYER MAINTENANCE.....	131
9	Problem solving.....	133
10	Technical data.....	137
10.1	READINGS ON CONTROL PANEL.....	137
10.2	ELECTRIC CABLE SIZE.....	137
10.3	SETTINGS FOR OVERLOAD RELAY AND FUSES.....	138
10.4	TEMPERATURE PROTECTION AND SAFETY VALVE SETTINGS.....	139
10.5	REFERENCE CONDITIONS AND LIMITATIONS.....	140
10.6	COMPRESSOR DATA.....	140
11	Instructions for use.....	142
12	Guidelines for inspection.....	143
13	Pressure equipment directives.....	144
14	Declaration of conformity.....	145

1 Safety precautions

1.1 Safety icons

Explanation

	Danger to life
	Warning
	Important note

1.2 Safety precautions, general

General precautions

1. The operator must employ safe working practices and observe all related work safety requirements and regulations.
2. If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
4. Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.
5. Before any maintenance, repair work, adjustment or any other non-routine checks, stop the compressor, press the emergency stop button, switch off the voltage and depressurize the compressor. In addition, the power isolating switch must be opened and locked.
6. Never play with compressed air. Do not apply the air to your skin or direct an air stream at people. Never use the air to clean dirt from your clothes. When using the air to clean equipment, do so with extreme caution and wear eye protection.
7. The owner is responsible for maintaining the unit in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.
8. It is not allowed to walk or stand on the compressor or its components.

1.3 Safety precautions during installation



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

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.

Precautions during installation

1. The machine must only be lifted using suitable equipment in accordance with local 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. 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 minimise the entry of moisture at the inlet air. Consult section Reference conditions and limitations.
3. Any blanking flanges, plugs, caps and desiccant bags must be removed before connecting the pipes.
4. 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.
5. The aspirated air must be free of flammable fumes, vapours and particles, e.g. paint solvents, that can lead to internal fire or explosion.
6. Arrange the air intake so that loose clothing worn by people cannot be sucked in.
7. 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.
8. No external force may be exerted on the air outlet valve. The connected pipe must be free of strain.
9. 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 that the isolating switch is open and locked before any maintenance or repair. As a further safeguard, 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 start equipment.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.

15. Piping or other parts with a temperature in excess of 80°C (176°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.
16. 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.
17. If the ground is not level or can be subject to variable inclination, consult the manufacturer.



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

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.

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.

Precautions during operation

1. Never touch any piping or components of the compressor 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.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 90 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
 - There are no leaks
 - 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
9. If warm cooling air from compressors is used in air heating systems, e.g. to warm up a working area, take precautions against air pollution and possible contamination of the breathing air.
10. Do not remove any of, or tamper with, the sound dampening material.

11. Never remove or tamper with the safety devices, guards or insulation fitted to 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.
12. Be aware of possible blow off of safety valves during operation. For the location of the safety valves, consult the description in this instruction book.
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](#).

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.

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.

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.
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 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 vapours 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 any 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 to avoid spontaneous ignition of the oil vapour (if applicable) 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. Protect the motor, air filter, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam-cleaning.
18. Make sure that all sound-damping material, e.g. 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.
19. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.
20. **The following safety precautions are stressed when handling refrigerant:**
 - Never inhale refrigerant vapours. 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.
21. Protect hands to avoid injury from hot machine parts, e.g. during draining of oil.
22. Be aware of eventual sharp edges on certain parts of the machine.



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

2 General description

2.1 Introduction

General

SF 2⁺, SF 4⁺ and SF 6⁺ are stationary, single stage, oil-free compressors, driven by an electric motor.

The compressors are controlled by an Atlas Copco Elektronikon controller. See sections [Elektronikon controller](#) and following for details.

The compressors are enclosed in a sound dampening enclosure and are air cooled.

Available versions:

- The Pack version (P) comprises the motor, the compressor element, the air cooled aftercooler and the regulation and protection components.
- The Full Feature (FF) version is a Pack version, completed with an integrated refrigerant dryer.

The basic version (referred to as the floor mounted version (FM)) does not include an air receiver.

Available options:

- Air receiver of 30 l (7.93 US gal), 270 l (71.3 US gal) or 500 l (132 US gal). The 30 l receiver consists of a module with three 10 l (2.64 US gal) receivers. The 30 l receiver option includes an electronic drain.
- Electronic drain on the air receiver on the receiver mounted version (270 l and 500 l).
- Water separator on the outlet on floor mounted compressors without refrigerant dryer.
- Prefilter mats on the air inlet
- Phase sequence relay on 3-phase units.
- FF version: desiccant dryer (CD): for a dew point down to - 40 °C.
- Elektronikon Graphic controller (controller with graphic display). This option is useful if more than one compressor is connected to the same air net. See sections [General](#) and following for details.

SF Pack

An Elektronikon controller module, fitted in the front panel, controls the compressor.

The electric components are located in the cubicle behind the front panel door.

A check valve (CV) prevents loss of compressed air when the compressor is stopped.

A temperature sensor and a safety valve (SV) protect the compressor element against overheating and too high pressure respectively.

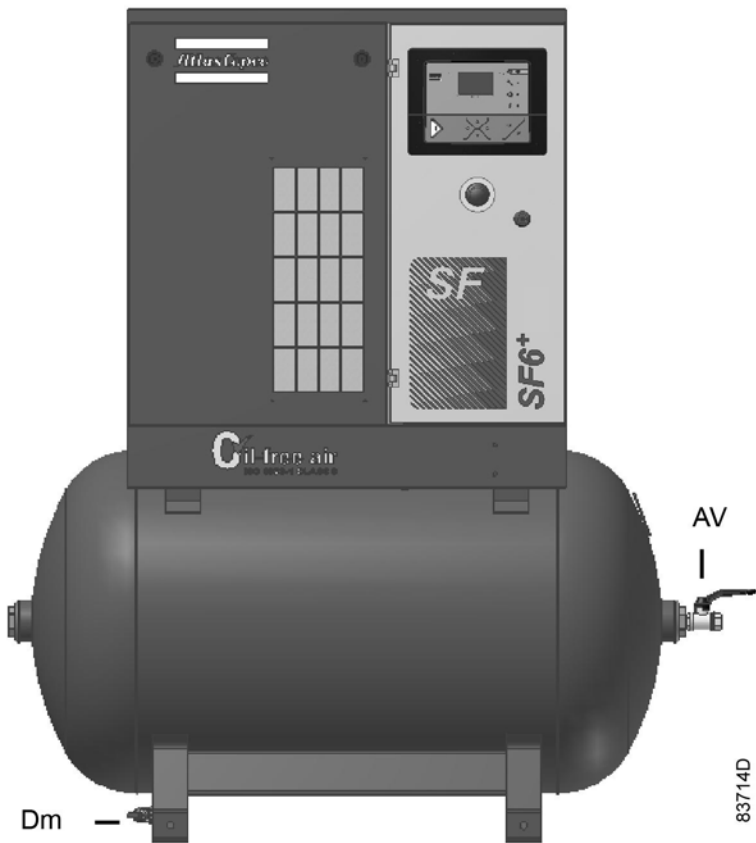
The compressed air is cooled by an air cooler (Ca).

Single phase units are equipped with a vent valve for easy starting.



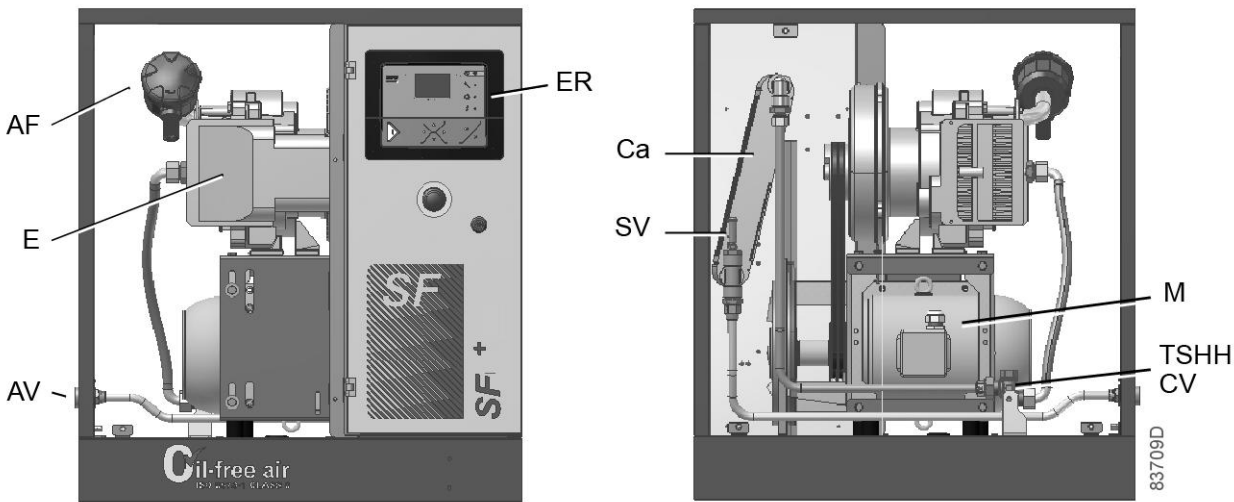
SF 4⁺ P - floor mounted - general view

ER	Elektronikon controller	S3	Emergency stop button
AV	Air outlet valve		



SF 6+ P on a 270 l receiver

AV	Air outlet valve	Dm	Manual drain valve
----	------------------	----	--------------------



SF 4+ Pack- details

AF	Inlet air filter	AV	Air outlet valve
Ca	Air cooler	E	Compressor element
M	Motor	ER	Elektronikon controller
SV	Safety valve	TSHH	Temperature sensor
CV	Check valve		

SF Full-Feature

An Elektronikon controller module, fitted in the front panel, controls the compressor and the dryer.

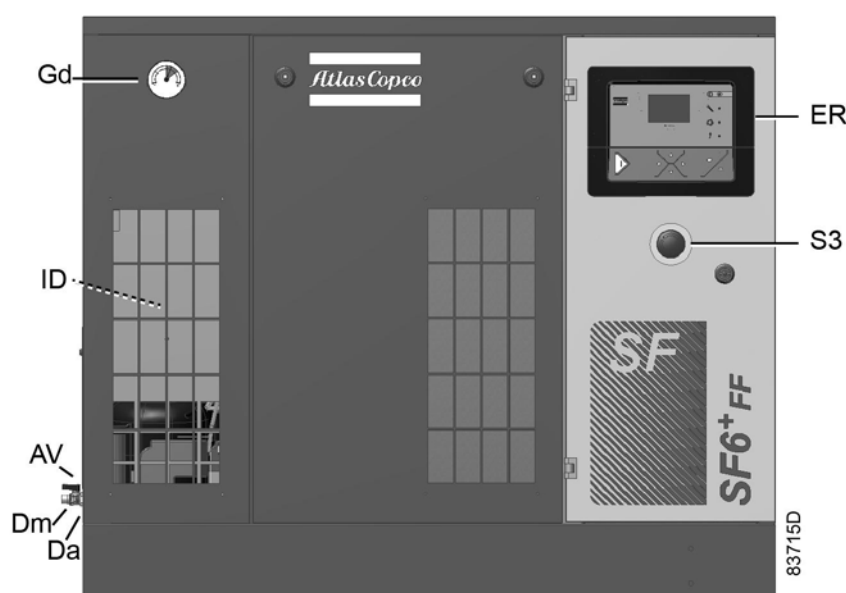
The electric components are located in the cubicle behind the front panel door.

A check valve (CV) prevents loss of compressed air when the compressor is stopped.

A temperature sensor and a safety valve (SV) protect the compressor element against overheating and too high pressure respectively.

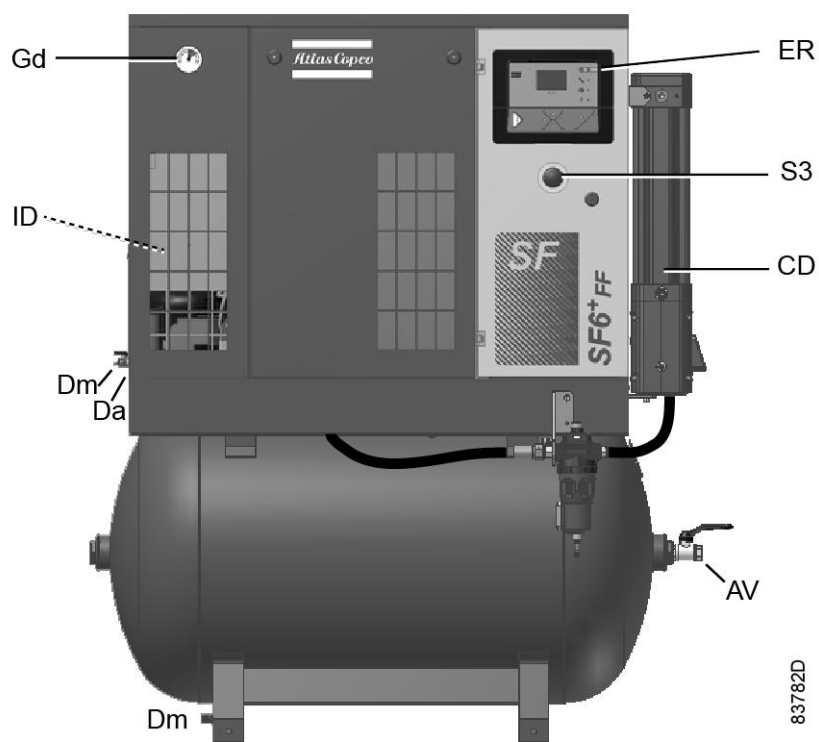
The compressed air is cooled by an air cooler (Ca) before it enters the dryer.

Single phase units are equipped with a vent valve for easy starting.



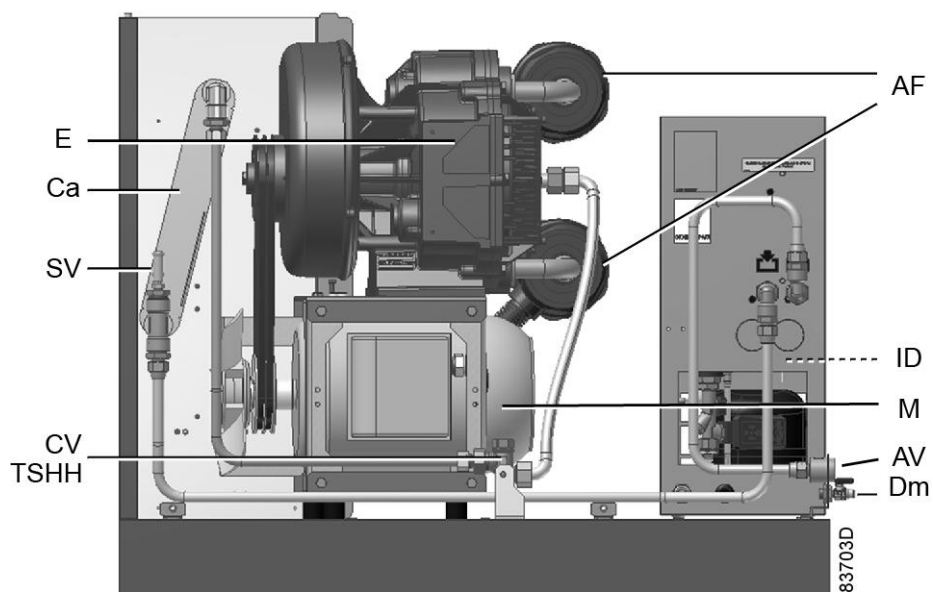
⁺ FF floor mounted - general view

ER	Elektronikon controller	Gd	Dew point gauge
S3	Emergency stop button	ID	Refrigerant dryer
AV	Air outlet valve	Da	Automatic drain outlet
Dm	Manual drain valve		



SF 6+ FF with optional CD dryer on a 270 l receiver

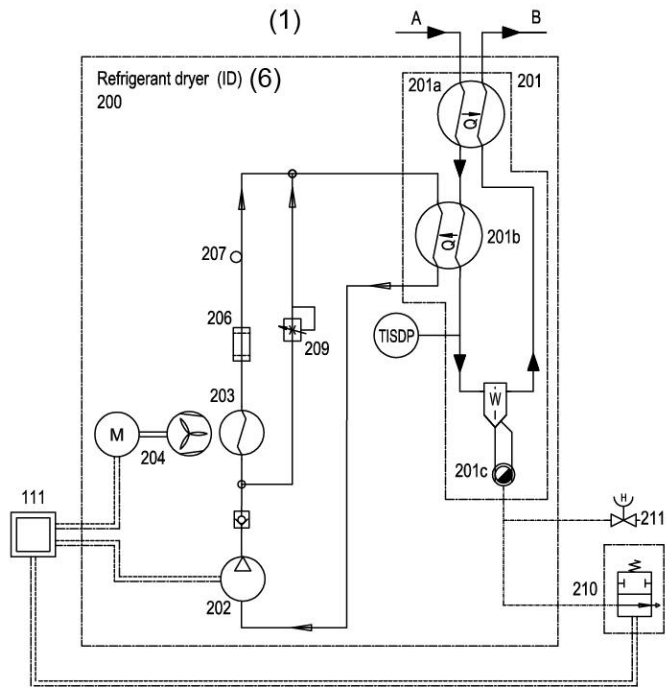
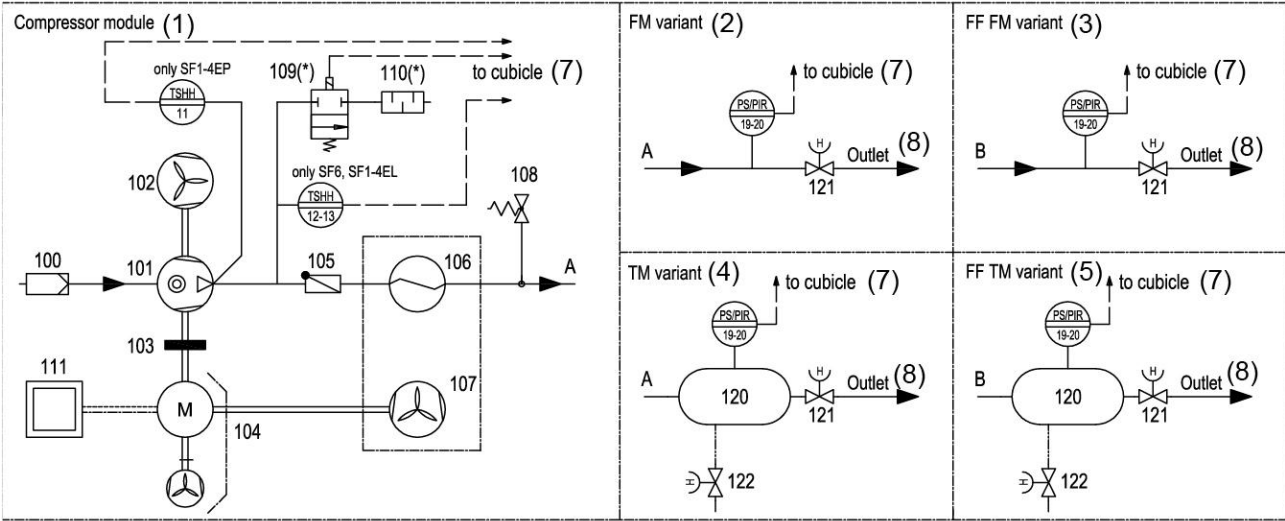
ER	Elektronikon controller	Gd	Dew point gauge
S3	Emergency stop button	ID	Refrigerant dryer
AV	Air outlet valve	Da	Automatic drain outlet
Dm	Manual drain valve	CD	Desiccant dryer



SF 6+ FF - details

AF	Inlet air filter	AV	Air outlet valve
Ca	Air cooler	E	Compressor element
M	Motor	CV	Check valve
SV	Safety valve	Dm	Manual drain valve
ID	Refrigerant dryer	TSHH	Temperature sensor

2.2 Flow diagram

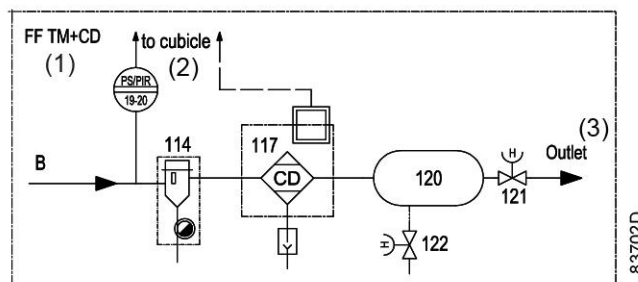


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Flow diagram

(1)	Compressor module	(5)	Units with dryer on air receiver
(2)	Units without dryer and air receiver	(6)	Refrigerant dryer
(3)	Units with dryer, without receiver	(7)	To cubicle
(4)	Units without dryer on air receiver	(8)	Compressed air outlet



SF FF on air receiver with optional CD dryer

(1)	FF units on air receiver with optional CD dryer
(2)	To cubicle
(3)	Compressed air outlet

Air flow

Air is drawn through air filter (100) and is compressed by the compressor element (101). Next, the compressed air flows through the check valve (105) and the air cooler (106).

Single phase units are equipped with a solenoid valve (109) and a silencer (110) for easy starting at low voltage.

On floor mounted versions without refrigerant dryer, the air flows then directly to the outlet valve (121). On receiver mounted units, the compressed air flows into the air receiver (120), onto which the outlet valve AV (121) is fitted.

On compressors with refrigerant dryer, the compressed air flows to the refrigerant dryer (ID), where the water vapor condensates by cooling down. The water is removed via the integrated water separator (201c) and the electronic drain (210).

For details on the operation of the ID dryer, see section [Refrigerant dryer](#).

On floor mounted versions with no additional dryer, the air flows then directly to the outlet valve (121). On receiver mounted units, the compressed air flows into the air receiver (120), onto which the outlet valve AV (121) is fitted.

On Full-Feature compressors equipped with a CD dryer, the air from the refrigerant dryer passes a PD 20⁺ filter (114) and flows into the CD desiccant dryer (117). Next, the dry air flows into the receiver (120).

For details on the operation of the CD dryer, see section [Desiccant dryer](#)

Cooling

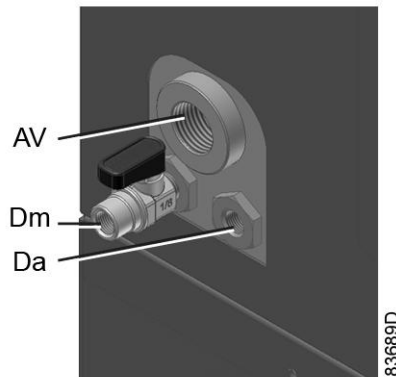
The compressor element (101) is cooled by an integrated radial fan (102). An axial fan (107) fitted on the motor shaft provides cooling air for the air cooler (106).

On compressors with integrated refrigerant dryer, a separate fan (204) delivers cooling air for the dryer.

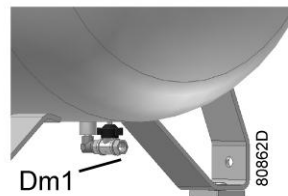
Condensate management

Floor mounted compressors without refrigerant dryer have no drain. A water separator is available as option.

The dryer of compressors equipped with a refrigerant dryer has an integrated water separator (201c) and an electronic water drain (210). The water separator has a manual drain valve (211) and a connection for the automatic drain. For more details, consult section [Refrigerant dryer](#).



The receiver of receiver mounted compressors has a manual drain valve (122) at the bottom. An electronic condensate drain is available as option.



On Full Feature compressors equipped with an optional CD desiccant dryer, a PD 20⁺ filter (114) equipped with an automatic drain ensures that no water droplets enter the dryer.

Regulating system and protection

The compressor is controlled by an Elektronikon[®] controller. See the dedicated sections for more details. A pressure transducer (PIR) and a temperature sensor (TSHH) respectively monitor the air pressure and the compressor element outlet temperature.

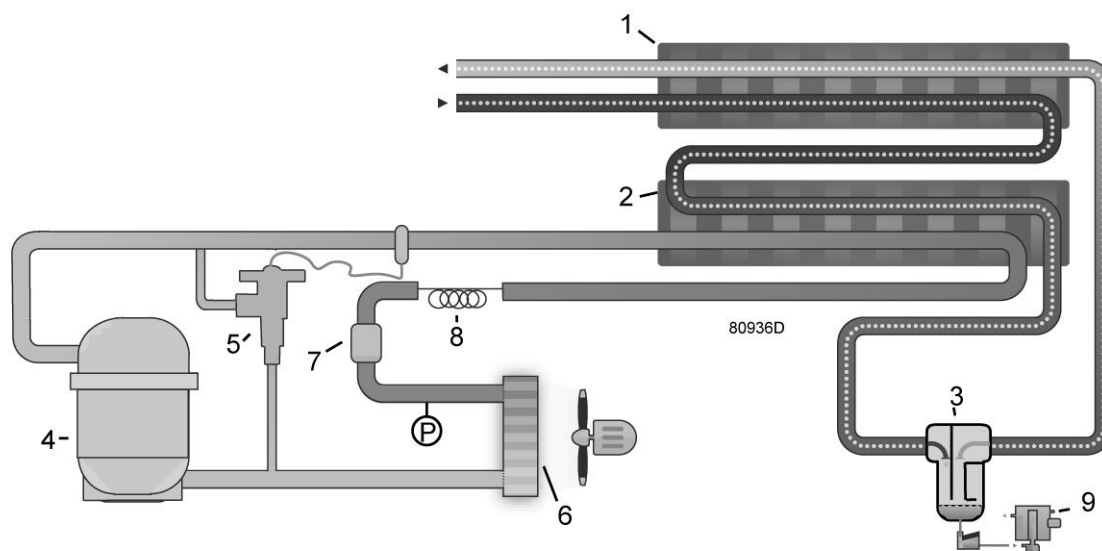
A safety valve (108) protects the compressor element against too high pressure.

2.3 Refrigerant dryer

Operation

The refrigerant dryer removes moisture from the compressed air by cooling it down to near freezing temperature. The water is removed via an automatic drain.

Compressed air circuit



Compressed air enters heat exchanger (1) and is cooled by the outgoing, cold, dried air. Water in the incoming air starts to condense. The air then flows through the evaporator heat exchanger (2) where the refrigerant evaporates, causing the compressed air to be cooled further to close to the evaporating temperature of the refrigerant. More water in the air condenses. The cold air then flows through water separator (3), where the condensate is separated from the air. The condensate is automatically drained by the electronic condensate drain (9).

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

Refrigerant circuit

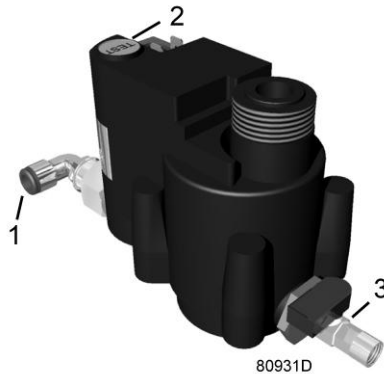
Compressor (4) delivers hot, high-pressure refrigerant gas which flows through condenser (6) where most of the refrigerant condenses.

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

The refrigerant enters evaporator (2) where it withdraws heat from the compressed air by further evaporation at constant pressure. The heated refrigerant leaves the evaporator and is sucked in again by the compressor.

The condenser (6) pressure must be kept as constant as possible to obtain stable operation. Fan control switch (P) therefore stops and starts the condenser cooling fan. If, under partial or no load, the evaporator (2) pressure drops to approximately 2.25 bar(e) (32.63 psig), the hot gas bypass valve (5) opens and hot, high-pressure gas is fed to the evaporator circuit to prevent the evaporator pressure from dropping any further.

Electronic condensate drain



The dryer is equipped with an electronic condensate drain. The condensate, separated by the condensate trap, accumulates inside the drain. Once the condensate reaches a certain level, it is discharged through the drain outlet (1).

The condensate can also be drained by pressing the test button (2).

The drain filter can be cleaned by opening the manual drain valve (3), see section [Preventive Maintenance schedule](#).

2.4 Desiccant dryer

The optional desiccant dryer is used in combination with a compressor with a refrigerant dryer in order to achieve a lower dew point.

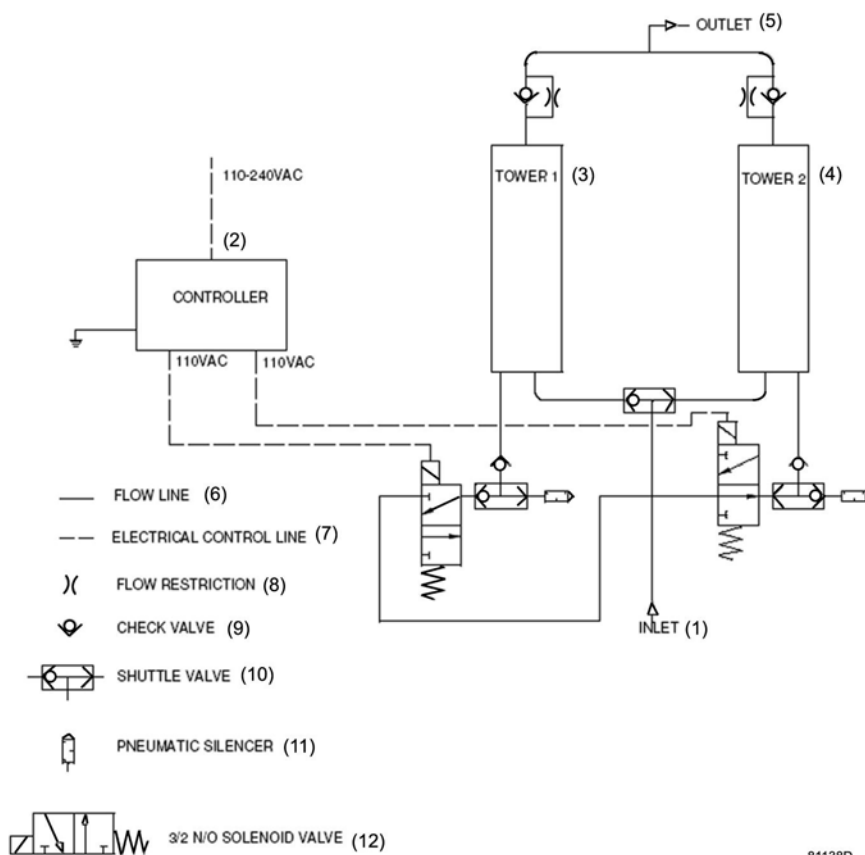
Description

A desiccant dryer (CD) is a heatless adsorption dryer. The dryer basically consists of two cylinders (towers), containing adsorption material (desiccant). The desiccant is a very porous grain material, able to adsorb large amounts of water vapor. The air is dried when it passes the desiccant material.



CD 3⁺

Operation



81138D

Flow diagram CD 3⁺

Reference	Designation	Reference	Designation
1	Compressed air inlet	7	Electrical control line
2	Dryer controller	8	Flow restriction
3	Left desiccant tower	9	Check valve
4	Right desiccant tower	10	Selector valve
5	Compressed air outlet	11	Pneumatic silencer
6	Flow line	12	Solenoid valve

The operation cycle of the dryer is repetitive and is controlled by a factory set timer. While the desiccant in one tower dries the compressed air, the desiccant in the second tower is being regenerated. Regeneration of the desiccant is achieved by means of purge air from the drying tower.

The compressed air entering the dryer is led to one of the towers by means of the bottom selector valve. The position of the selector valve depends on the position (activated or not) of the solenoid valves. As the air flows upwards through the tower, the desiccant adsorbs the water vapor and the compressed air is dried.

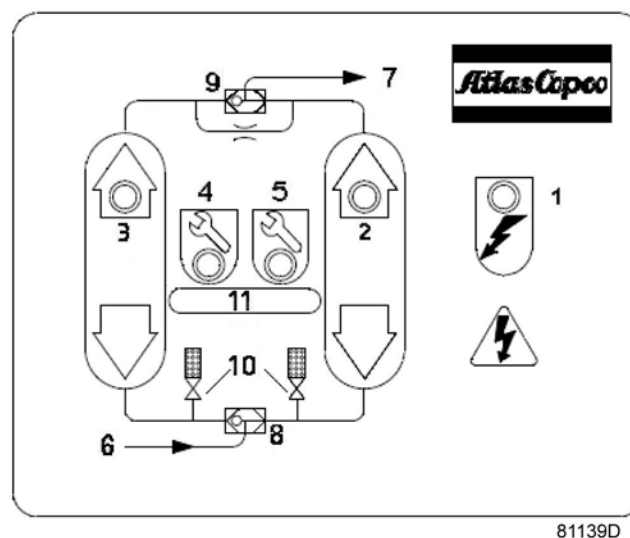
When it reaches the top of the tower, the dried air leaves the dryer via the check valve.

A small portion of the dried air passes a nozzle, expands to atmospheric pressure and flows downwards through the other tower, regenerating (drying) the desiccant. The size of the nozzle depends on the operating pressure. Alternative nozzles for use at other operating pressures are available. Please consult the spare parts list for ordering information. The regeneration air is released via the corresponding solenoid valve and a silencer. The solenoid valves are controlled by the timer.

After a preset time interval, the function of the towers is reversed. The fully regenerated tower will now dry the air, while the desiccant in the other tower will be regenerated.

When the compressor stops, the drying cycle stops as well: purge air flow stops, both solenoid valves are closed. When the compressor restarts, the drying cycle will resume where it was stopped.

Control panel



Reference	Designation	Reference	Designation
1	LED <Power On>	7	Air outlet
2	LED <Right tower drying>	8	Inlet selector valve

Reference	Designation	Reference	Designation
3	LED <Left tower drying>	9	Outlet selector valve
4	LED <Service warning>	10	Solenoid valves
5	LED <Service alarm>	11	Service reset
6	Air inlet		

3 Elektronikon controller

3.1 General description

Control panel



Introduction

The Elektronikon® controller has following functions:

- Controlling the compressor
- Protecting the compressor
- Monitoring components subject to service
- Automatic restart after voltage failure (see section [Activating automatic restart](#) for details)

Controlling the compressor

The regulator maintains the net pressure between programmable limits by automatically starting and stopping the compressor. A number of programmable settings, e.g. the starting and stopping pressures and the maximum allowed motor starting frequency are taken into account.

The regulator stops the compressor whenever possible to reduce the power consumption and restarts it automatically when the net pressure decreases.

Protecting the compressor

Warning / Shutdown

If the compressor element temperature exceeds the factory-set warning level, the compressor will be stopped for a short time and a warning will appear on the display of the regulator. In case of repetitive stops due to a too high temperature, a manual reset will be necessary before restarting the compressor.

The compressor will also be stopped when the drive motor is overloaded.



Before remedying, consult the Safety precautions.

Service warning

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

Automatic restart after voltage failure

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

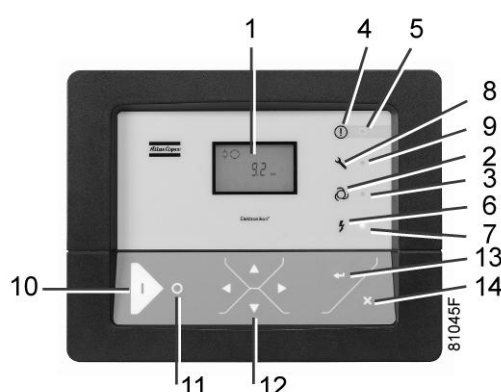
This function is inactive in compressors leaving the factory. If desired, the function can be activated.

Consult the Atlas Copco Customer Center if a change is considered (password protected function).



If activated, and if the regulator is in the automatic operation mode, the compressor will automatically restart when the supply voltage to the module is restored within a programmed time period.

3.2 Control panel


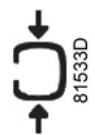
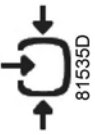
























Control panel of the Elektronikon controller


Reference	Designation	Function
1	Display	Shows icons and operating conditions.
2	Automatic operation symbol	
3	LED, Automatic operation	Indicates that the regulator is automatically controlling the compressor: the compressor is stopped and restarted depending on the air consumption and the limitations programmed in the regulator.
4	Warning symbol	
5	LED, Warning	Is lit if a warning condition exists.
6	Voltage symbol	
7	LED, Voltage on	Indicates that the voltage is switched on.
8	Service symbol	
9	LED, Service	Is lit when service is needed.
10	Start button	This button starts the compressor. Automatic operation LED (3) lights up. The Elektronikon is operative.
11	Stop button	This button is used to stop the compressor. Automatic operation LED (3) goes out.

Reference	Designation	Function
12	Scroll buttons	Use these buttons to scroll through the menu .
13	Enter button	Use this button to confirm the last action.
14	Escape button	Use this button to go to the previous screen or to end the current action.

3.3 Icons used on the display

Function	Icon	Description
Compressor status		When the compressor is stopped, the icon stands still. When the compressor is running, the icon is rotating.
		Motor stopped
		Motor running
Machine control mode		Remote start/stop
		LAN control
Automatic restart after voltage failure		Automatic restart after voltage failure is active.
Timer		
Active protection functions		Emergency stop
Service		Service required

Function	Icon	Description
Units	 81116D	Pressure unit (Mega Pascal)
	 81115D	Pressure unit (pounds per square inch)
	 81114D	Pressure unit (bar)
	 81108D	Temperature unit (°C)
	 81107D	Temperature unit (°F)
	 81109D	Hours (always shown together with seconds)
	 81113D	Percent
	 81112D	The value shown must be multiplied by 10 to get the actual value.
	 81111D	The value shown must be multiplied by 100 to get the actual value.
	 81110D	The value shown must be multiplied by 1000 to get the actual value.
	 81542D	Motor (overload) or phase sequence incorrect (for units with phase sequence relay installed)
	 81543D	Compressor element temperature
	 81544D	Filter
	 81545D	Drain
	 81104D	Energy saving (dryer)
	 81117D	Ambient temperature

Function	Icon	Description
		Dew point temperature

3.4 Main screen


When the voltage is switched on, the first screen is a [test screen](#). The next screen is the Main screen, shown automatically.



Main screen

The Main screen shows:

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

	Consult Atlas Copco if the pressure on the display is preceded by a "t".
---	--

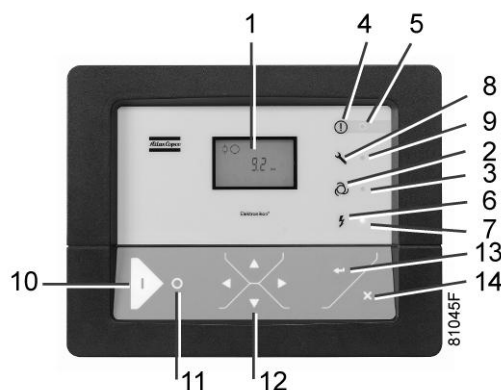
3.5 Shut-down warning

Description

A shutdown warning will appear in the event of:

- Too high compressor element temperature.
- Too high dew point temperature (on compressors with integrated dryer).

Compressor element temperature



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



Compressor element temperature: 32.8 °C

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

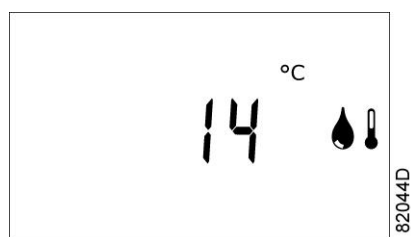
Press the Stop button (11) to stop the compressor

Switch off the voltage, inspect the compressor and remedy.

The warning message will disappear as soon as the warning condition disappears.

Dew point temperature

On compressors with integrated dryer, warning LED (5) will light up and the related pictograph will appear flashing if the dew point temperature exceeds the warning level.



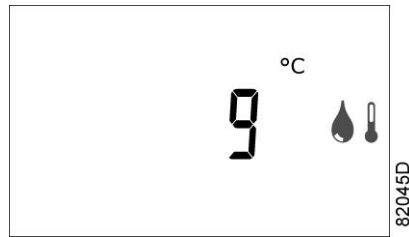
Main screen, dew point temperature warning

The related pictograph



is flashing.

Press the Scroll buttons (12) until the actual dew point temperature appears.



Warning screen, dew point temperature

Above screen shows that the dew point temperature is 9°C.

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

Press the Stop button (11) to stop the compressor

Switch off the voltage, inspect the compressor and remedy if necessary.

The warning message will disappear as soon as the warning condition disappears.

3.6 Shut-down

Description

The compressor will shut down in following cases:

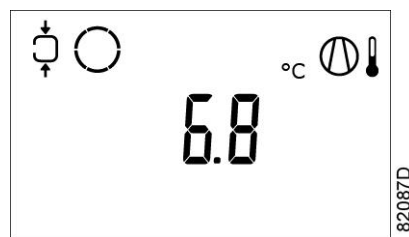
- When the compressor element temperature exceeds the warning level repeatedly.
- In case of error of the outlet pressure sensor.
- In case of overload of the drive motor.

Note:

If the compressor is equipped with a phase sequence relay, the motor will not start if the phase sequence is incorrect.

Compressor element temperature

- If the compressor element temperature exceeds the programmed shutdown level repeatedly, the compressor will shut down, warning LED (5) will flash, automatic operation LED (3) will go out and the following screen will appear:



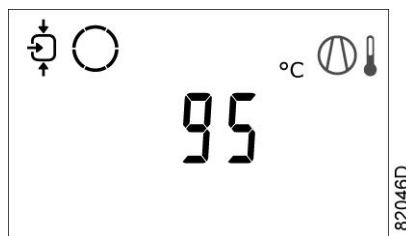
Main screen with shutdown indication, compressor element temperature

The related pictograph



will appear flashing.

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



Shutdown screen, compressor element temperature

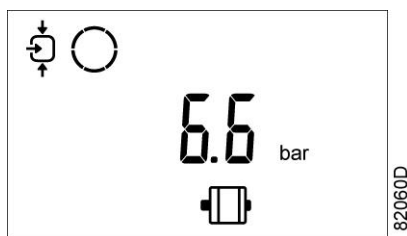
In above example, the screen shows that the compressor element temperature is 95 °C.

In such case,

- Switch off the voltage and remedy the trouble.
- After remedying and when the shutdown condition has disappeared by pressing the Escape button (14) for a reset, switch on the voltage and restart the compressor.

Motor overload

In the event of motor overload, the compressor will shut down, warning LED (5) will flash, automatic operation LED (3) will go out and the following screen will appear:



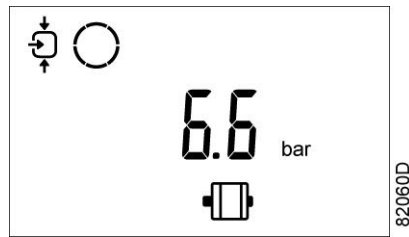
Main screen with shutdown indication, motor overload

In such case,

- Switch off the voltage and remedy the trouble.
- After remedying and when the shutdown condition has disappeared by pressing the Escape button (14) for a reset, switch on the voltage and restart the compressor.

Phase sequence incorrect

If the compressor is equipped with a phase sequence relay, the motor will not start if the phase sequence is incorrect. Warning LED (5) will flash, automatic operation LED (3) will go out and the following screen will appear:



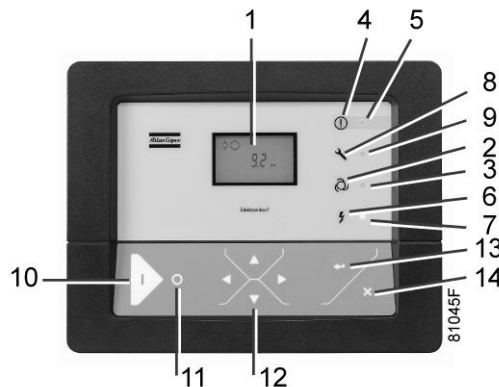
Main screen with shutdown indication, motor overload

In such case,

- Switch off the voltage and change the phase sequence of the supply line.
- Switch on the voltage and restart the compressor.

3.7 Service warning

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



Control panel

- If the service timer exceeds the programmed time interval, warning LED (9) will light up. See [Calling up/modifying service timer settings](#).
- Press the Scroll buttons (12) to scroll to <d.4> and till the service symbol is shown. Press the Enter button (13): the actual reading of the service timer appears and is shown in <hrs> or <x1000 hrs> (if the service timer value is higher than 9999).



Example of service timer screen

The screen shows that the reading of the service timer is 4002 hours.

- Stop the compressor, switch off the voltage and carry out the required service actions. See section [Preventive Maintenance schedule](#).

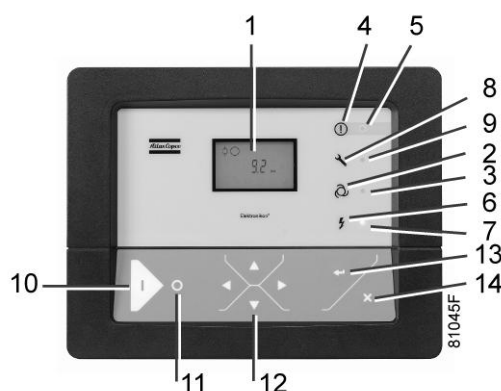


- The long interval service actions must also include the short interval actions.
- The setting of the service timer can be changed in function of the operating conditions.

- After servicing, reset the service timer. See section [Calling up/resetting the service timer](#).

3.8 Scrolling through all screens

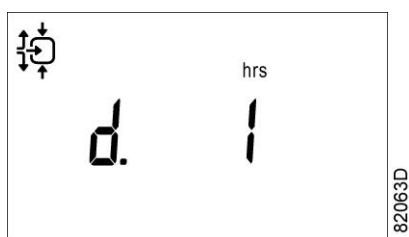
Scrolling



Control panel

Scroll buttons (12) can be used to scroll through all screens. The screens can be differentiated into measured data screens, digital input screens (<d.in>), register screens (<d.1>, ...), parameter screens (<P.1>, <P.2>, ...), protections screens (<Pr.3>, ...) and test screens (<t.1>, ...).

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



Example of a register screen

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

Overview of the screens

Digital input screens	Designation	Related topic
<d.in>	Digital input status	See section Digital inputs
<d.1>	Running hours (hrs or x 1000 hrs)	See section Calling up running hours

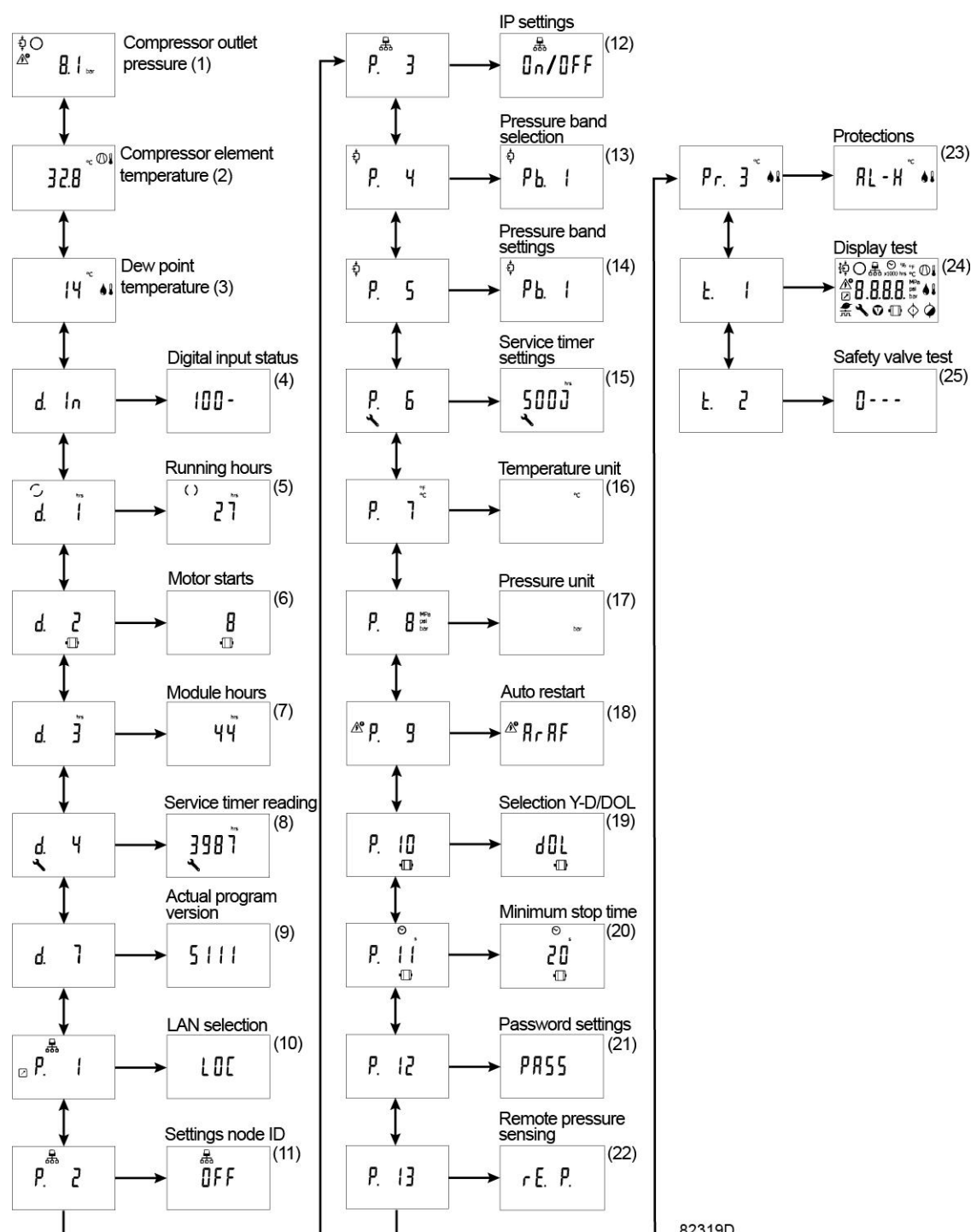
Digital input screens	Designation	Related topic
<d.2>	Motor starts (x 1 or x 1000)	See section Calling up motor starts
<d.3>	Module hours (hrs or x 1000 hrs)	See section Calling up module hours
<d.4>	Service timer reading (hrs or x 1000 hrs)	See section Calling up/resetting the service timer
<d.7>	Actual program version	-

Parameter screens	Designation	Related topic
<P.1>	Selection between local, remote or LAN control	See section Selection between Local, Remote or LAN control
<P.2>	Setting a node ID for LAN control and the channels for Mk 4 and Mk 5	See section Calling up/modifying CAN address control
<P.3>	Settings for IP, gateway and Subnet mask	See section Calling up/modifying IP Gateway and Subnetmask
<P.4>	Pressure band settings	See section Calling up/modifying pressure band settings
<P.5>	Setting a pressure band selection	See section Modifying pressure band selection
<P.6>	Modifying a service timer	See section Calling up/modifying service timer settings
<P.7>	Setting the unit for temperature	See section Calling up/modifying unit of temperature
<P.8>	Setting the unit for pressure	See section Calling up/modifying unit of pressure
<P.9>	Selection for function: Automatic restart after voltage failure (active or not, only for Atlas Copco)	See section Activating automatic restart
<P.10>	Selection between Y-D or DOL starting (not applicable)	-
<P.11>	Setting of minimum stop time (not applicable)	-
<P.12>	Setting a password	See section Activating password protection
<P.13>	Remote pressure sensing (not applicable)	-

Protections screens	Designation	Related topic
<Pr.3>	Protections screens	See section Calling up/modifying protection settings

Test screens	Designation	Related topic
<t.1>	Display test	See section Test screens
<t.2>	Safety valve test	See section Test screens
<t.3>	Drain test (not applicable)	

Menu flow



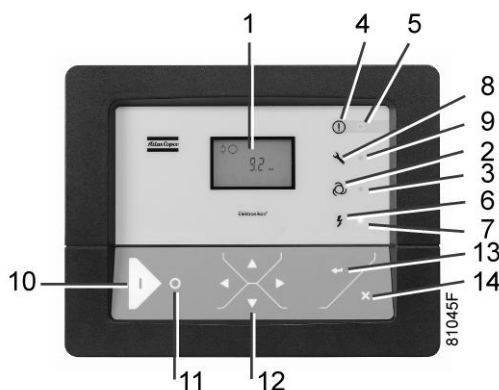
82319D

Simplified menu flow

Reference	Description	Reference	Description
(1)	Compressor outlet pressure	(15)	Service timer settings
(2)	Compressor element temperature	(16)	Temperature unit
(3)	Dew point temperature	(17)	Pressure unit

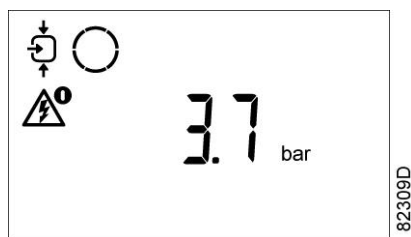
Reference	Description	Reference	Description
(4)	Digital input status	(18)	Auto restart
(5)	Running hours	(19)	Selection Y-D/DOL
(6)	Motor starts	(20)	Minimum stop time
(7)	Module hours	(21)	Password settings
(8)	Service timer reading	(22)	Remote pressure sensing
(9)	Actual program version	(23)	Protections
(10)	LAN selection	(24)	Display test
(11)	Settings node ID	(25)	Safety valve test
(12)	IP settings		
(13)	Pressure band selection		
(14)	Pressure band settings		

3.9 Calling up element and dew point temperatures



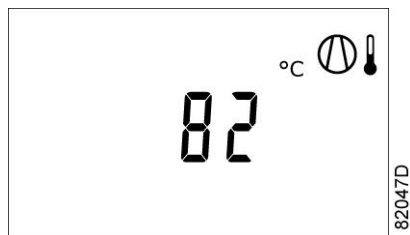
Control panel

Starting from the Main screen:



Main screen

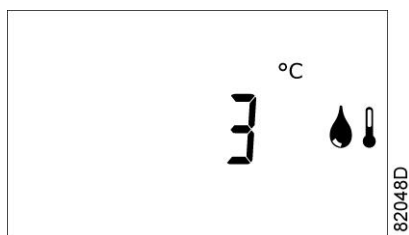
- Press Scroll button (12). The compressor element temperature will be shown:



Compressor element temperature

The screen shows that the compressor element temperature is 82 °C.

Press Scroll button (12) again. The dew point temperature will be shown:

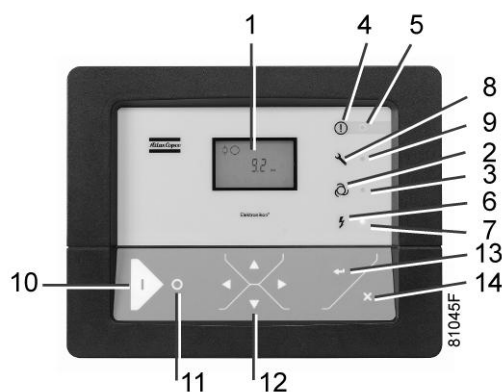


Dew point temperature

The screen shows that the dew point temperature is 3 °C.

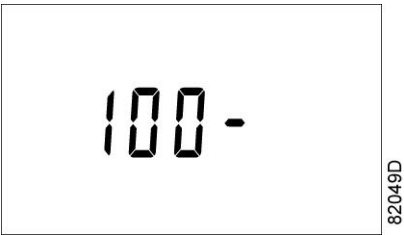
Press the Escape button (14) or wait a some time to return to the Main screen.

3.10 Digital inputs



Control panel

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



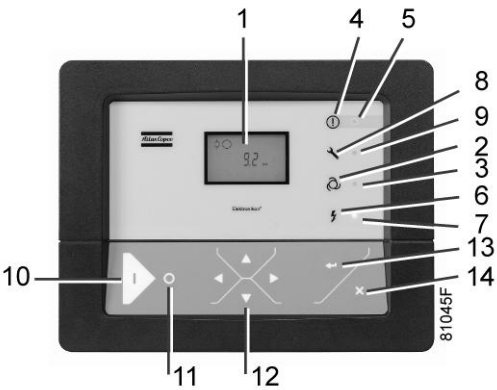
Digital inputs

The screen shows (from left to right) the status of the emergency stop contact, the compressor motor overload protection (or incorrect phase sequence for units equipped with a phase sequence relay) and the remote start/stop contact

1 means the contact is closed, 0 means the contact is open.

Contact	Description	Value	Status
1	Emergency stop switch	0	Emergency stop button pressed
		1	Emergency stop button released
2	Compressor motor overload relay	0	Overload protection tripped
		1	No problem
3	Remote start/stop	0	Stop
		1	Start

3.11 Calling up running hours



Control panel

Starting from the Main screen:

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

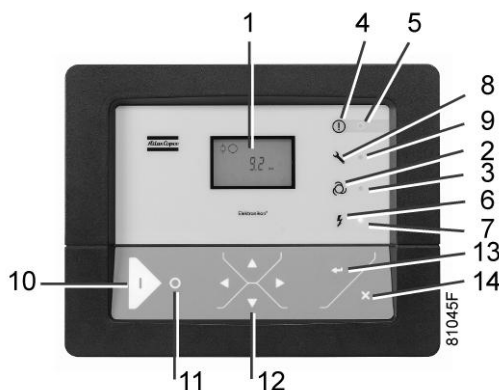


Running hours

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

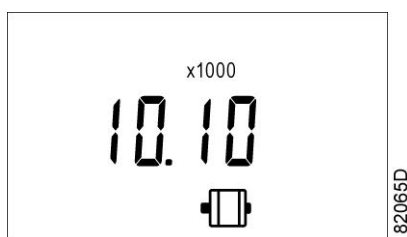
3.12 Calling up motor starts

Control panel



Control panel

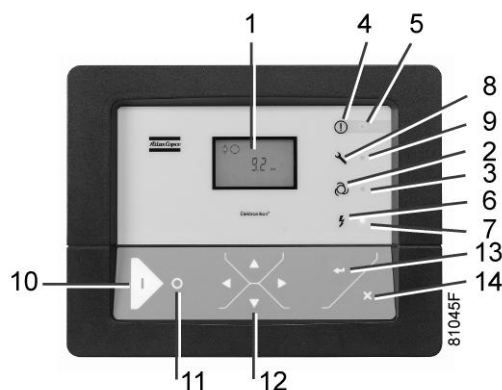
Starting from the Main screen, press the Scroll button (12) until <d. 2> is shown and then press the Enter button (13). A screen similar to the following appears:



Number of motor starts

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

3.13 Calling up module hours



Control panel

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

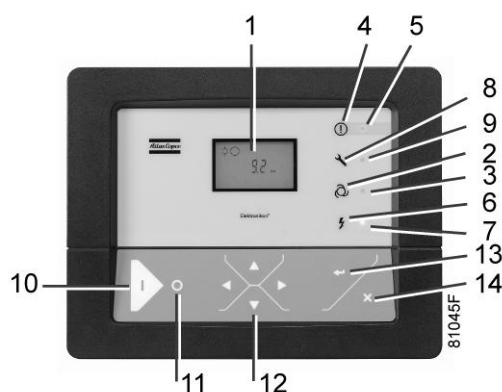


Module hours

In the example shown, the screen shows the unit used <hrs> and the value 5000: the regulator module has been in operation for 5000 hours.

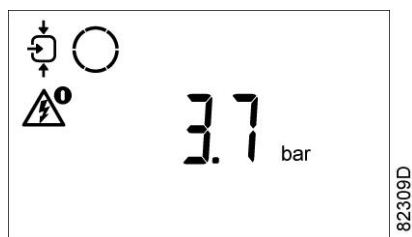
3.14 Calling up/resetting the service timer

Calling up the service timer



Control panel

Starting from the Main screen:



Main screen

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



Service timer reading

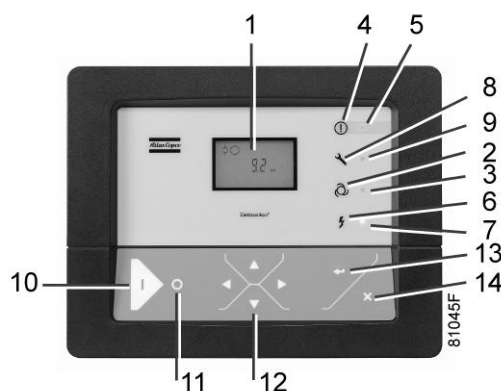
In the example shown, the screen shows the unit used (hrs) and the value (1191). The compressor has run 1191 hours since the previous service.

Resetting the service timer

After servicing, see section [Service warning](#), the timer has to be reset:

- Scroll to register screen <d.4> and press the Enter button (13).
- The reading (the number of elapsed hours since the last reset) will appear.
- Press the Enter button (13) and - if a password is set - enter the password. The icon will flash (indicating that resetting is possible).
- Press the Enter button (13) to reset the timer to <0.000> or press the Escape button (14) to cancel the operation.

3.15 Selection between Local, Remote or LAN control



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

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

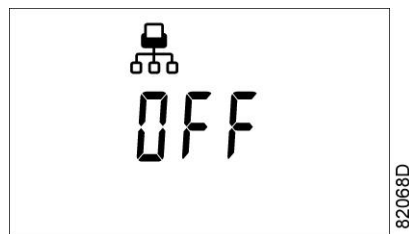
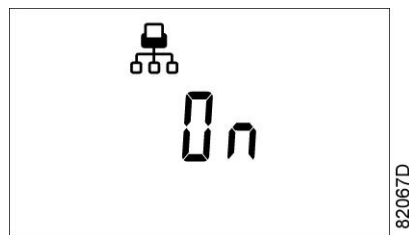
3.16 Calling up/modifying CAN address control

Calling up

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

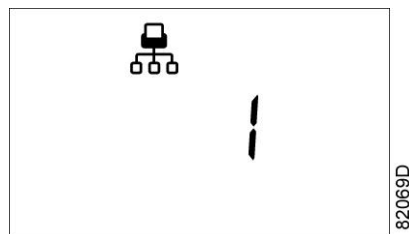
If necessary enter the password. The next screen shows that the function is ON or OFF. Press the Enter button (13) to change this mode. Use the Scroll buttons (12) to select <On> or <OFF> and press Enter to program.

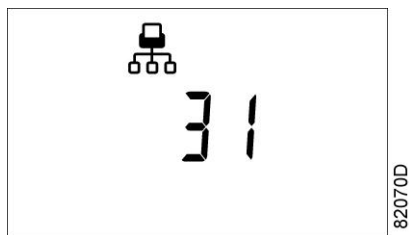
When this function is ON, use the Scroll buttons up or down (12) to see the node ID.



Modifying the Node ID

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





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



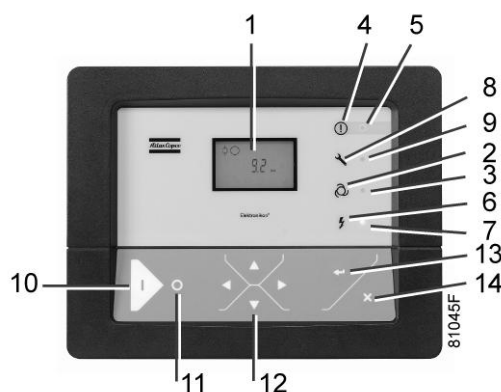
Press the Enter button (13) to modify the setting. The upmost left value will blink. Change this value by using the Scroll buttons (12). Press the Enter button (13) to confirm. Change the other values in the same way, as required.

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



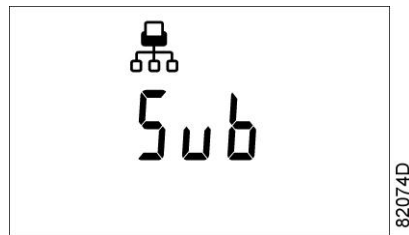
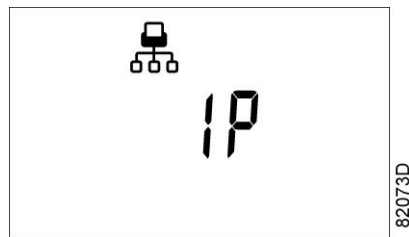
3.17 Calling up/modifying IP, Gateway and Subnetmask

Calling up



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

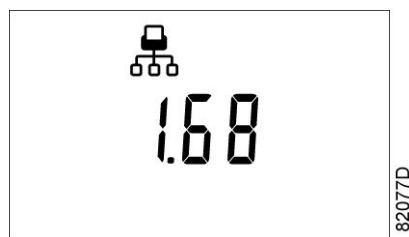
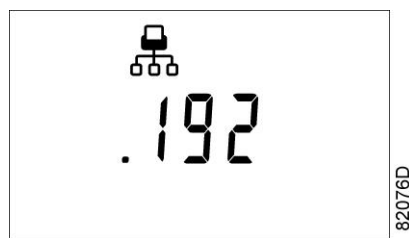
The next screen shows either <OFF> or <On>. If <On>, press the Enter button (13) to modify it to <OFF>. Use the Scroll buttons up or down (12) to scroll between the items in this list (<IP> for IP address, <Sub> for Subnetmask or <GAtE> for Gateway):

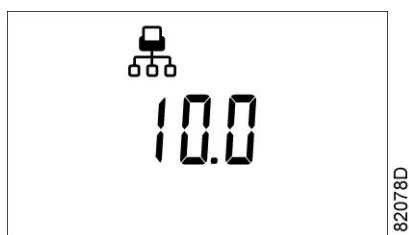


Modifying

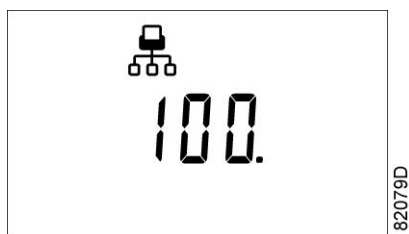
Press the Enter button (13) and if necessary enter the password. The first digits are blinking. Use the Scroll buttons up or down (12) to modify the settings and press the Enter button (13) to confirm. Modify the next digits the same way. The standard IP address is set as 192.168.100.100.

When the function is ON, the parameters cannot be modified. Change the function to OFF to change the IP address, subnetmask or gateway.





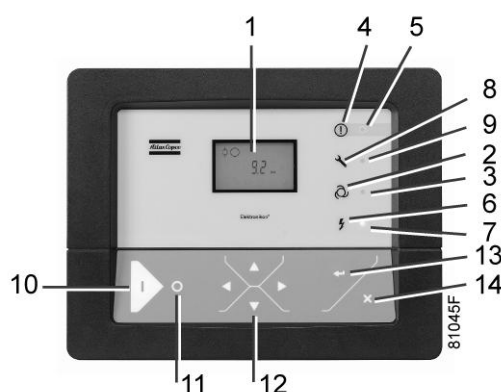
82078D



82079D

3.18 Calling up/modifying pressure band settings

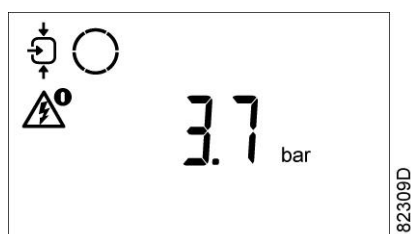
Calling up the settings



81045F

Control panel

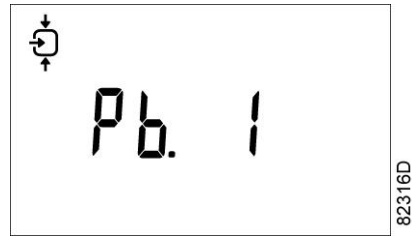
Starting from the Main screen:



82309D

Main screen

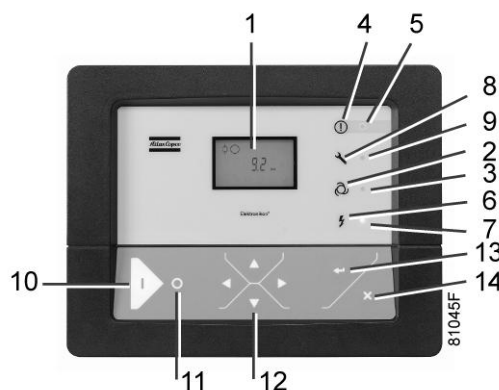
- Press the Scroll button (12) until <P.4> is shown and then press the Enter button (13). Pressure band 1 <Pb.1> is shown on the display. Button (12) can be used to scroll to pressure band 2 <Pb.2>.
- Press the Enter button (13) on the desired pressure band. The motor start level of the selected pressure band appears. Scroll buttons (12) can be used to scroll to the motor stop level.

*Pressure band selection**Motor start**Motor stop*

Modifying the settings

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

3.19 Modifying pressure band selection

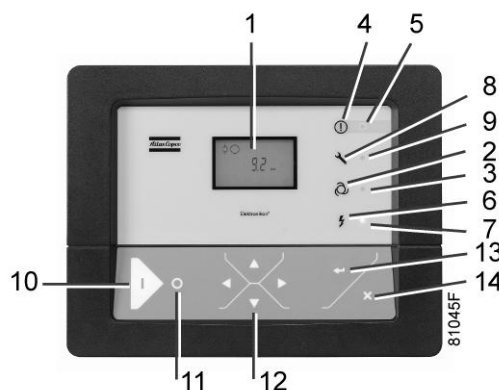


Control panel

Starting from the Main screen:

- Press the Scroll buttons (12) until <P.5> is shown and then press the Enter button (13). The active pressure band 1 <Pb.1> is shown on the display.
- Press the Enter button (13) to modify the pressure band selection (a password may be required). The active pressure band <Pb.1> starts blinking.
- Press Scroll buttons (12) to modify the active pressure band. Press the Enter button (13) to confirm or the Escape button (14) to cancel.

3.20 Calling up/modifying service timer settings

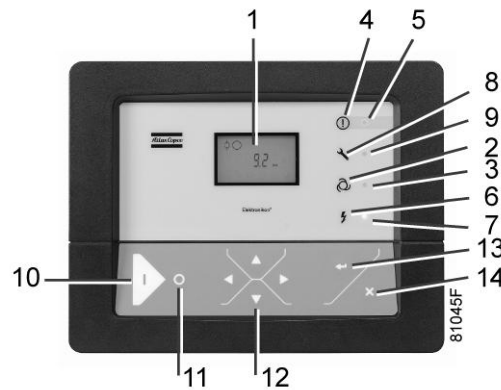


Control panel

Starting from the Main screen:

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

3.21 Calling up/modifying unit of temperature

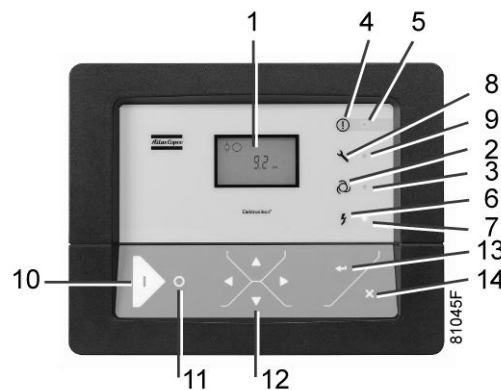


Control panel

Starting from the Main screen:

- Press the Scroll buttons (12) until <P.7> is shown and then press the Enter button (13). The actual used unit is shown. Possible settings are <°C> and <°F>.
- Press the Enter button (13) (unit blinks) and use the Scroll buttons (12) to select another unit of temperature.
- Press the Enter button (13) to program the new unit or press the Escape button (14) to return to the parameter screen without changes.

3.22 Calling up/modifying unit of pressure



Control panel

Starting from the Main screen:

- Press the Scroll buttons (12) until <P.8> and the possible settings are shown (<Mpa>, <psi>, and <bar>). Press the Enter button (13) and the actual used unit is shown.
- Press the Enter button (13) (unit starts blinking) and use the Scroll buttons (12) to select another unit of pressure.
- Press the Enter button (13) to program the new unit of pressure. Press the Escape button (14) to return to the parameter screens.

3.23 Automatic restart after voltage failure

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

This parameter, accessible in screen <P. 9>, is inactive and can only be modified after entering a code. Consult Atlas Copco to activate this function.



Automatic restart after voltage failure

3.24 Activating password protection

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

Starting from the Main screen:

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



Password

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




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

3.25 Calling up/modifying protection settings

Available protections

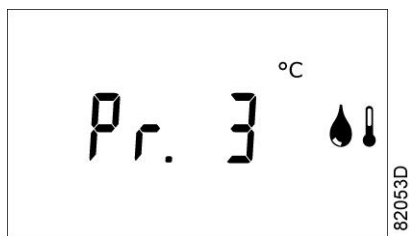
The protection screens are labelled <Pr.>. The pictograph shown with the protection screen indicates the purpose of the protection.

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

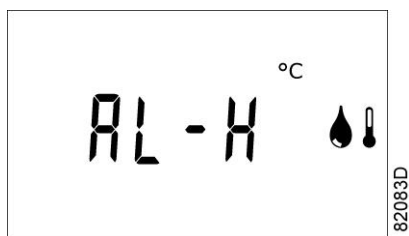
Pictograph	Designation
	<Pr. 3> with the dew point temperature pictograph shows the dew point temperature protections.

For <Pr. 3> a high warning level, shown on the display as <AL-H>, is available.

Example of protection screens

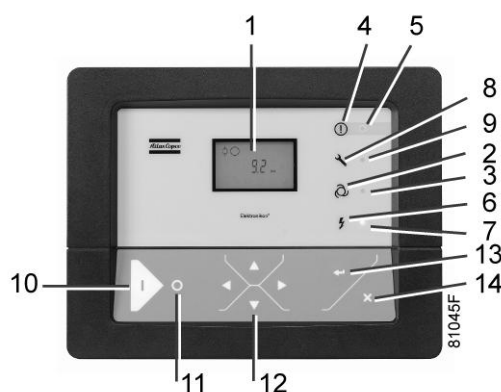


Protection screen (high) dew point temperature



High warning level

Calling up / changing the settings




Control panel

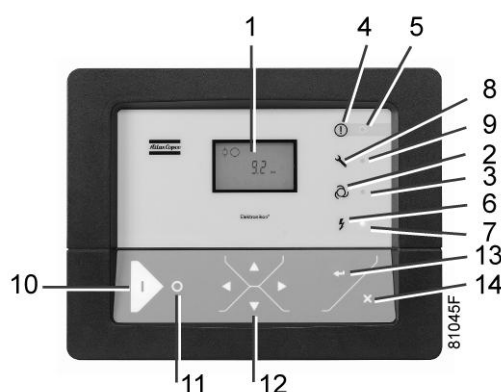
Starting from the Main screen (the example given describes the dew point temperature protection):

Press the Scroll buttons (12) until <Pr.>, followed by number "3" and the dew point temperature pictograph is shown and press the Enter button (13):

- The warning level for the high temperature warning level <AL-H> becomes visible. Press the Enter button (13) to display the value.
- After entering an optional password, the value starts blinking and the Scroll buttons (12) can be used to modify the value.
- Press the Enter button (13) to program the new value.

	<p>Programmable settings can only be modified within allowed limits.</p>
---	--

3.26 Test screens



Control panel

Display test

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

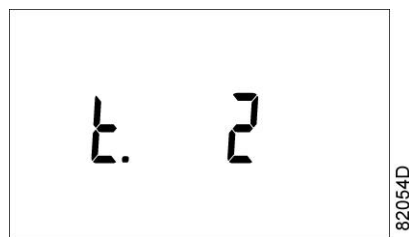
The display now shows all icons that can be displayed:



Display test

Safety valve test

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



Safety valve test

3.27 Web server

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



USB to LAN adapter

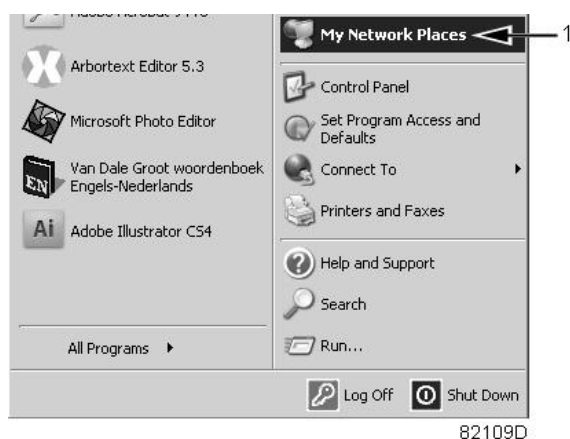
- Use a UTP cable (CAT 5e) to connect to the controller.



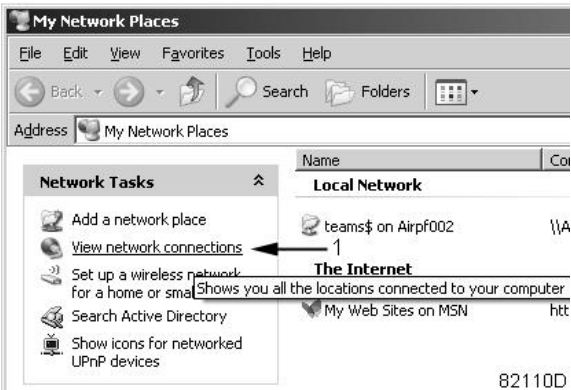
UTP cable

Configuration of the network card

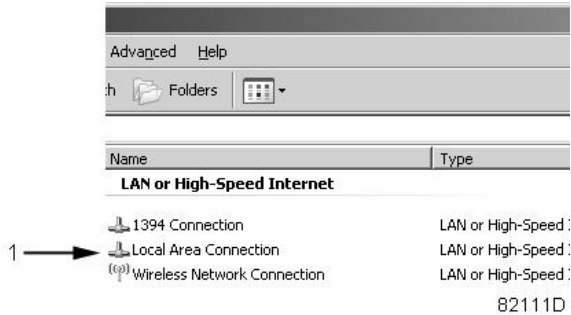
1. Go to My Network Places (1).



2. Click View network connections (1).



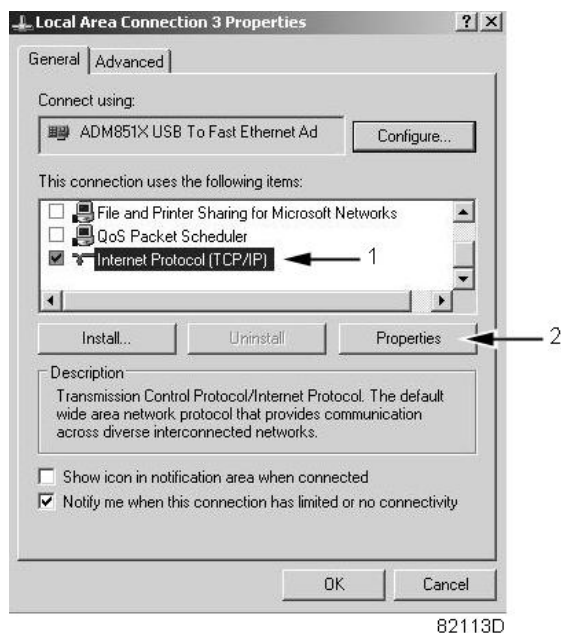
3. Select the Local Area Connection (1) which is connected to the controller.



4. Click with the right-mouse button and select Properties (1) from the drop-down menu.



5. Select the checkbox Internet Protocol (TCP/IP) (1). To avoid conflicts, deselect other properties if they are selected. Click the Properties button (2) to change the settings.



6. Use the following settings:
- IP Address 192.168.100.200
 - Subnetmask 255.255.255.0
- Click OK and close network connections.

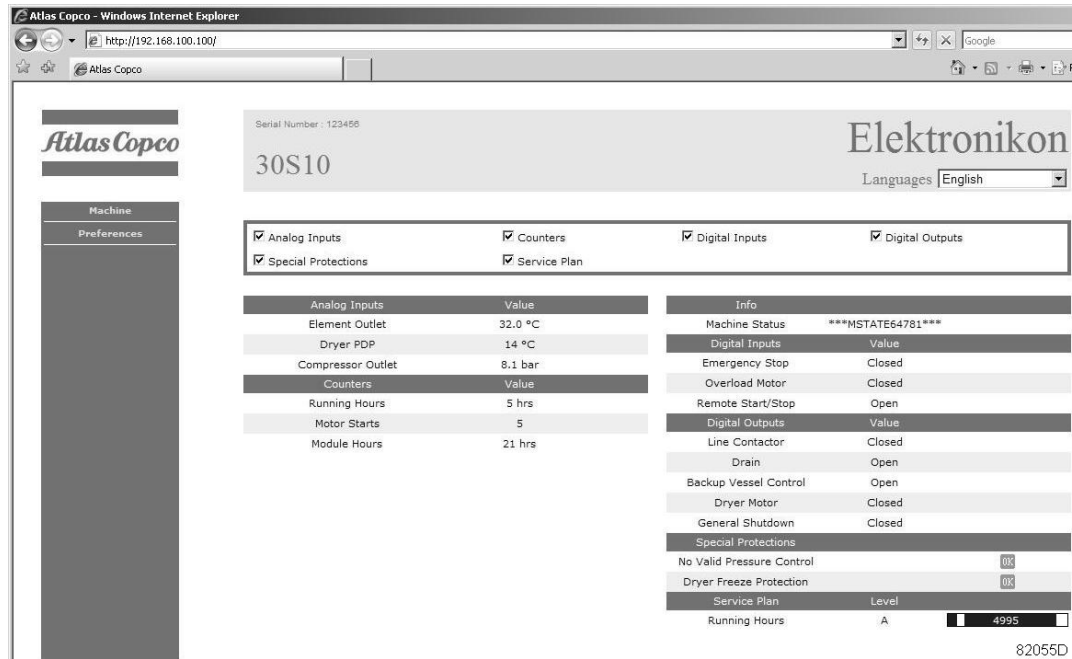
Configuration of the web server

Configure the web interface

	The internal web server is designed and tested for Microsoft® Internet Explorer 6, 7 and 8. Other web browsers like Opera and Firefox do not support this internal web server. When using Opera or Firefox, a redirect page opens. Click on the hyperlink to connect to the download server from Microsoft® to download the latest version of Internet Explorer, and install this software.
--	---

Viewing the controller data

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:

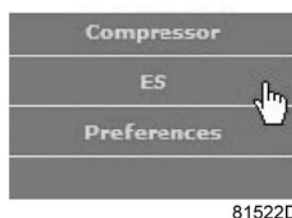


Navigation and options

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



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



Compressor settings

All compressor settings can be hidden or shown. Put a mark for each setting. Only the machine status is fixed and can not be removed from the main screen.

- **Analog inputs** (The units of measure can be changed via the Preferences button in the navigation menu).

<input checked="" type="checkbox"/> Analog Inputs	Analog Inputs	Value
	Element Outlet	32.0 °C
	Dryer PDP	14 °C
	Compressor Outlet	8.1 bar

82119D

- **Counters:** Gives an overview of all actual counters from controller and compressor.

<input checked="" type="checkbox"/> Counters	Counters	Value
	Running Hours	5 hrs
	Motor Starts	5
	Module Hours	21 hrs

82056D

- **Info status:** Machine status is always shown on the web interface.

Info
Machine Status ****MSTATE64781****

82122D

- **Digital inputs:** Gives an overview of all digital inputs and their status.

<input checked="" type="checkbox"/> Digital Inputs	Digital Inputs	Value
	Emergency Stop	Closed
	Overload Motor	Closed
	Remote Start/Stop	Open

82120D

- **Digital outputs:** Shows a list of all digital outputs and their status.

<input checked="" type="checkbox"/> Digital Outputs	Digital Outputs	Value
	Line Contactor	Closed
	Drain	Open
	Backup Vessel Control	Open
	Dryer Motor	Closed
	General Shutdown	Closed

82057D

- **Special protections:** Gives an overview of all special protections of the compressor.

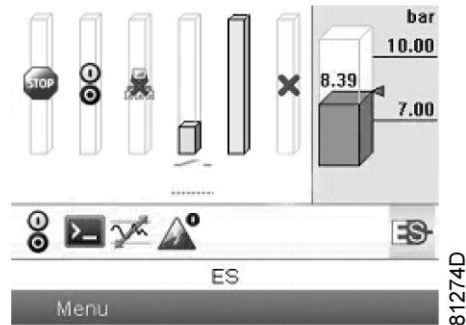
<input checked="" type="checkbox"/> Special Protections	Special Protections
	No Valid Pressure Control OK
	Dryer Freeze Protection OK

82121D

- **Service plan:** Shows all levels of the service plan and their status. This screen only shows the running hours. It is also possible to show the actual status of the service interval.



- **ES screen controller:** If an ESi license is provided, the button ES is shown in the navigation menu. At the left, all compressors in the ES are shown and, at the right side, the ES status is shown.



3.28 Programmable settings

Parameters: starting/stopping pressures for Pack compressors

Parameter	Unit	Minimum setting	Factory setting	Maximum setting
Starting pressure				
Starting pressure (8 bar compressors)	bar(e)	0.5	6	8
Starting pressure (8 bar compressors)	psig	7.2	87	116
Starting pressure (10 bar compressors)	bar(e)	0.5	8	10
Starting pressure (10 bar compressors)	psig	7.2	116	145
Stopping pressure				
Stopping pressure (8 bar compressors)	bar(e)	0.5	8	8
Stopping pressure (8 bar compressors)	psig	7.2	116	116
Stopping pressure (10 bar compressors)	bar(e)	0.5	10	10
Stopping pressure (10 bar compressors)	psig	7.2	145	145

Parameters: starting/stopping pressures for FF compressors

Parameter	Unit	Minimum setting	Factory setting	Maximum setting
Starting pressure				
Starting pressure (8 bar compressors)	bar(e)	0.5	5.8	7.8
Starting pressure (8 bar compressors)	psig	7.2	84	113
Starting pressure (10 bar compressors)	bar(e)	0.5	7.8	9.8

Parameter	Unit	Minimum setting	Factory setting	Maximum setting
Starting pressure (10 bar compressors)	psig	7.2	113.1	142.1
Stopping pressure				
Stopping pressure (8 bar compressors)	bar(e)	0.5	7.8	7.8
Stopping pressure (8 bar compressors)	psig	7.2	113.1	113.1
Stopping pressure (10 bar compressors)	bar(e)	0.5	9.8	9.8
Stopping pressure (10 bar compressors)	psig	7.2	142.1	142.1

There will always be a difference of at least 0.1 bar (1.45 psi) between the programmed starting and stopping pressure.

Parameters

Parameter	Unit	Minimum setting	Factory setting	Maximum setting
Number of motor starts	starts/day	720	8640	8640
Restart delay	sec.	0	0	1200
Communication time-out	sec.	10	30	60

Service plan

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

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

Terminology

Term	Explanation
ARAVF	Automatic restart after voltage failure. See section General description and Activating automatic restart .
Restart delay	This parameter allows to program that not all compressors are restarted at the same time after a power failure (ARAVF active).
Delay at shut-down 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.
Motor start/stop	The regulator does not accept illogical settings, e.g. if the 'motor stop' is programmed at 7.0 bar(e) (101 psi(g)), the maximum limit for the 'motor start' changes to 6.9 bar(e) (100 psi(g)). The recommended minimum pressure difference between 'motor start/stop' is 0.6 bar (9 psi(g)).

4 Elektronikon Graphic Controller

4.1 General

Control panel



Elektronikon® Graphic controller

Introduction

The 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 starting and stopping one or more compressor modules. A number of programmable settings, e.g. the starting and stopping pressures and the maximum allowed motor starting frequency 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.



A number of time based automatic start/stop commands can 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

Shutdown

Several sensors are provided on the compressor. If one of the measured signals exceeds the programmed shutdown 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 section [Inputs menu](#).



Before remedying, consult the applicable safety precautions.

Shutdown warning / shutdown

If the compressor element temperature exceeds the factory set warning level, the compressor element will be stopped for a short time and a warning will appear on the controller display (1) and the general alarm LED (2) will light up.

In case of repetitive stops due to a too high temperature, a manual reset will be necessary before restarting the compressor.

The compressor will also be stopped when the motor is overloaded.

A warning message will also appear if, on compressors with integrated dryer, 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.

The running hours will be recalculated with respect to the ambient temperature. This algorithm is activated when the compressor is operated above 30 °C (86 °F) ambient.

Automatic restart after voltage failure

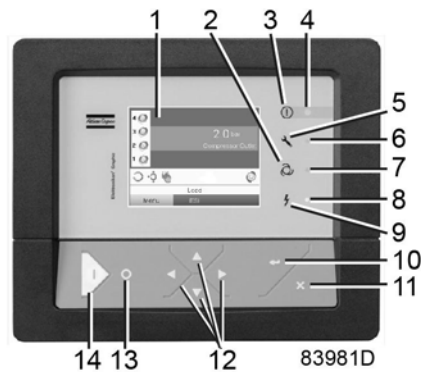
The controller has a built-in function to automatically restart the compressor when the voltage is restored after voltage failure. For compressors leaving the factory, this function is made inactive. If desired, the function can be activated.

Consult the Atlas Copco Customer Centre if a change is considered (password protected function).



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 within the programmed time interval.

4.2 Control panel















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 shutdown, 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. The compressor is stopped and restarted
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 controller is operative.





4.3 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
	 57789F	Motor running
Machine control mode	 57790F or  59161F	Local start / stop
	 57791F	Remote start / stop
	 57792F	Network control
Automatic restart after voltage failure	 57793F	Automatic restart after voltage failure is active
Week timer	 57794F	Week timer is active
Active protection functions	 57795F	Emergency stop
	 57796F	Shutdown
	 57797F	Warning









Name	Icon	Description
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
 57798F	Pressure
 57800F	Temperature
 57801F	Digital input
 57802F	Special protection







System icons

Icon	Description
 57803F	Compressor element (LP, HP, ...)
 57804F	Dryer
 57805F	Fan
 57807F	Drain



Icon	Description
 57808F	Filter
 57809F	Motor
 57810F	Failure expansion module
 81105D	Network problem
 57812F	General alarm
 83982D	The compressor module is running and can be stopped
 83983D	The compressor module is stopped and is ready to start
 83984D	The compressor module is awaiting the minimum stop time to expire

Menu icons

Icon	Description
 57813F	Inputs
 57814F	Outputs
 57812F	Alarms (Warnings, shutdowns)
 57815F	Counters
<div>  57816F </div> <div>or</div> <div>  82641D </div>	Test
 57817F	Settings

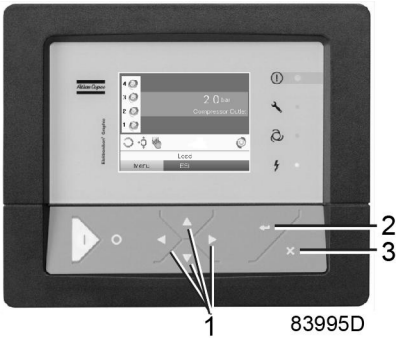
Icon	Description
 57798F	Service
 57818F	Event history (saved data)
 57819F	Access key / User password
 57792F	Network
 57820F	Setpoint
 57867F	Info

Navigation arrows

Icon	Description
 57821F	Up
 57822F	Down

4.4 Main screen

Control panel



1	Scroll keys
2	Enter key
3	Escape key

Function

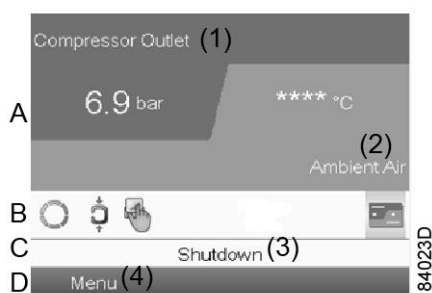
The Main screen is the screen that is shown automatically when the voltage is switched on and one of the keys is pushed. It is switched off automatically after a few minutes when no keys are pushed.

Typically, 6 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)
6. Scroll animation

Two and four value lines screens

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



Typical Main screen (2 value lines)

Text on image

(1)	Compressor Outlet
(2)	Ambient Air
(3)	Load, Shutdown, ... (text varies upon the compressors actual condition)
(4)	Menu



Typical Main screen (4 value lines), fixed speed compressors

Text on image

(1)	Compressor Outlet
-----	-------------------

(2)	Element 2 Outlet
(3)	Off, Shutdown,... (text varies upon the compressors actual condition)
(4)	Menu
(5)	Element 1 Outlet
(6)	Ambient Air

- **Section A** shows information regarding the compressor operation (e.g. the outlet pressure, the ambient temperature or the temperature at one of the compressor element outlets).
- **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).
 - 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. Depending on the situation, these buttons are used:
 - To call up or program settings
 - To reset a motor overload, service message or emergency stop
 - To have access to all data collected by the regulator
 The function of the buttons depends on the displayed menu. The most common functions are:

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

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

Chart views

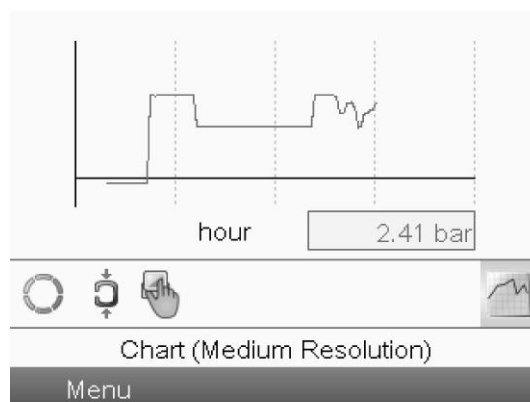
Instead of viewing values, it is also possible to view a graph of one of the input signals (see section [Inputs menu](#)) in function of the time.



59166D

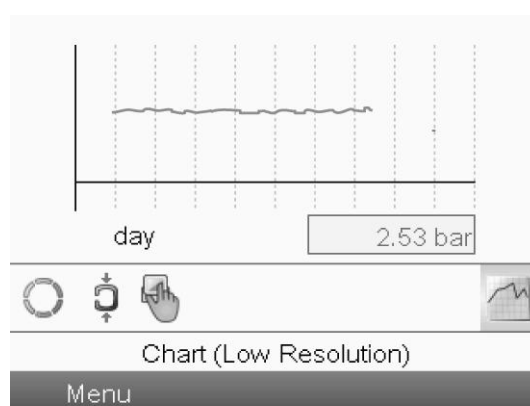
When Chart (High Resolution) is selected, the chart shows the variation of the selected input (in this case the pressure) per minute. Also the instantaneous value is displayed. The screen shows the last 4 minutes.

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



59167D

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

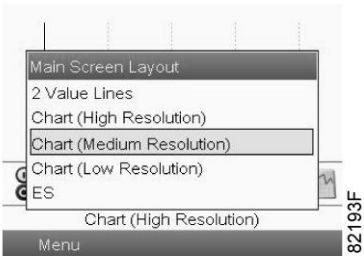


59168D

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

Selection of a main screen view

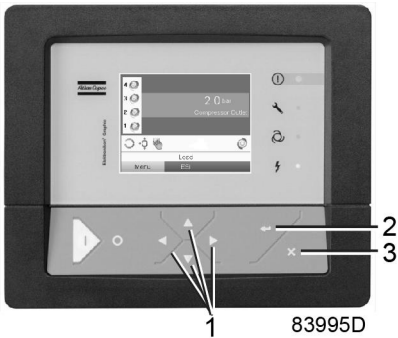
To change between the different screen layouts, select the far right icon in the control icons line (see value lines display icon or chart display icon in section [Icons used](#)) and press the Enter key. A screen similar to the one below opens:



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

4.5 Calling up menus

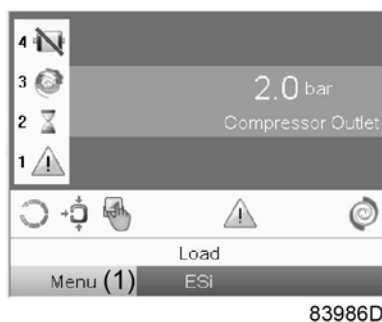
Control panel



1	Scroll keys
2	Enter key
3	Escape key

Procedure

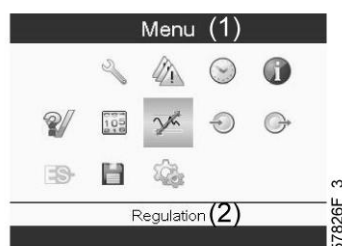
When the voltage is switched on, the [Main screen](#) is switched on automatically:



83986D

Typical Main screen (2 value lines)

- To go to the Menu screen, select action button Menu (1) by means of the Scroll keys and press the Enter key.
Following screen appears:



57826F_3

Text on image

(1)	Menu	(2)	Regulation
-----	------	-----	------------

- The menu screen shows a number of icons. Each icon indicates a menu item. By default, the 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 the required icon (see further). Pressing the Escape key returns to the Main screen.

4.6 Shutdown warning

Description

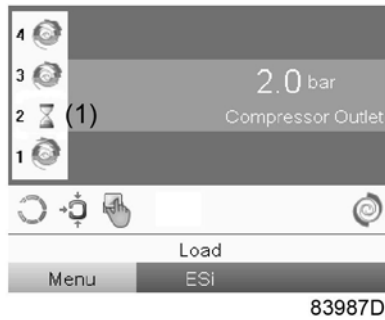
A shutdown warning will appear in the event of:

- Too high element temperature
- Too high ambient temperature
- Too high dew point temperature (on compressors with integrated refrigerant dryer)

High element temperature

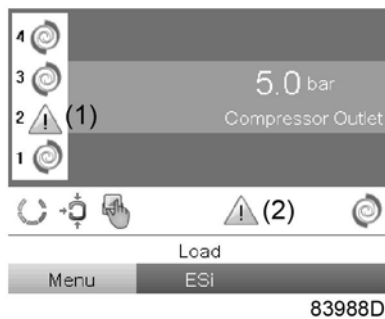
When a compressor element temperature exceeds the warning level, the element stops during a Minimum Stop Time . It will be restarted automatically after this time has elapsed and if the temperature is below this limit.

As long as the element is stopped, an hourglass icon (1) replaces the element concerned in the main screen:



Element 2 is stopped during a Minimum Stop Time due to a high element temperature

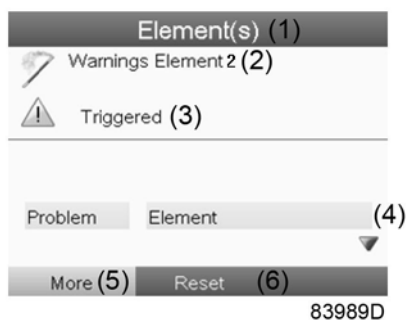
If the element temperature exceeds the factory set shutdown warning repeatedly, the element will shut down, alarm LED (4) (see section [Control panel](#)) will lit and following screen will appear:



Element 2 is shutdown due to repeatedly high element temperature warnings

If this occurs:

1. Switch off the voltage and remedy the problem cause.
2. Switch on the voltage and reset the element manually by selecting the warning icon (or go to warning menu - elements) and press Reset:



Warning element screen (element 2 is triggered)

Text on image

(1)	Element(s)	(4)	Problem Element
(2)	Warning Element 2	(5)	More
(3)	Triggered	(6)	Reset

Each time an element is reset manually, this will be logged in the Element Problem Reset counter:



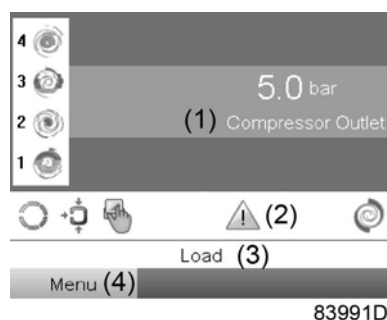
Counter screen where one element was reset manually

Text on image

(1)	Information	(4)	Element Warnings
(2)	Trigger level	(5)	Element Problem Resets
(3)	High Temperature Warnings	(6)	Modify

High ambient temperature

If the ambient temperature is above the factory setting (40 °C - 104 °F), a warning is triggered and a warning icon (1) is shown on the main screen:

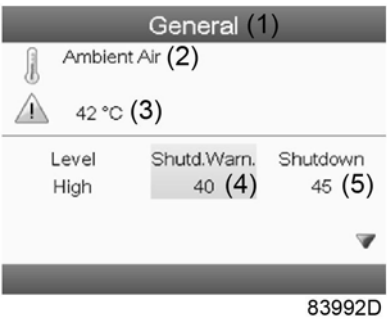


Main screen with high ambient temperature warning

Text on image

(1)	Compressor outlet (pressure)	(3)	Load
(2)	Warning icon	(4)	Menu

If this warning is triggered, the description of this warning can be found in the protection menu. Following screen is shown:



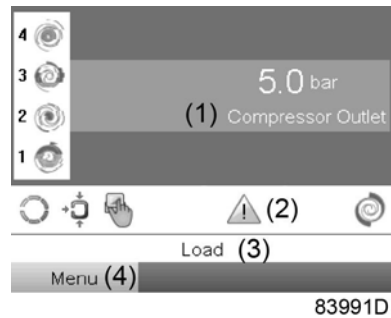
Description of high ambient alarm in the protection menu

Text on image

(1)	General	(4)	Shutd. Warn.
(2)	Ambient air	(5)	Shutdown
(3)	High temperature warning		

Dew point temperature

On compressors with integrated dryer, alarm LED (4) will be lit and the related alarm icon will be flashing if the dew poin temperature exceeds the warning level:



Main screen with dew point exceeding the limit

Text on image

(1)	Compressor outlet (pressure)	(3)	Load
(2)	Warning icon	(4)	Menu

Go to the Input menu to see the actual dew point temperature. Press the Stop button (13 - see section [Control panel](#)) to stop the compressor, switch off the voltage, inspect the compressor and remedy if necessary.

The warning message will disappear as soon the warning condition disappears.

4.7 Shutdown

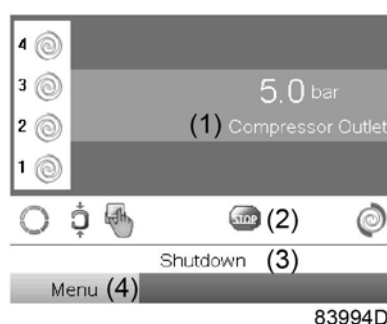
Description

The compressor will shut down in case of:

- Too high ambient temperature
- Motor overload
- Outlet pressure sensor error

High ambient temperature

If the ambient temperature is above the factory set shutdown temperature (45 °C - 113 °F), the compressor will be stopped and a stop icon will be shown on the main screen of the controller:



Main screen - shutdown by too high ambient temperature

Text on image

(1)	Compressor outlet	(3)	Shutdown
(2)	Stop icon	(4)	Menu

Motor overload

A motor overload relay protects the motor of each compressor module. The motor is shutdown if the motor current is too high.

4.8 Inputs menu

Menu icon, Inputs



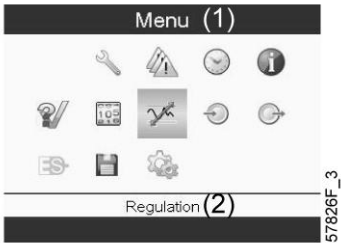
Function

- 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](#),

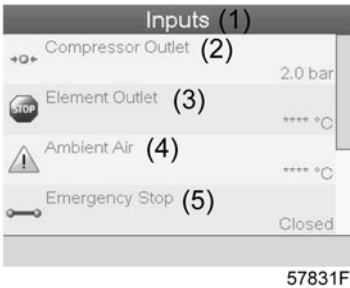
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



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	(4)	Ambient air
(2)	Compressor outlet	(5)	Emergency stop(Closed)
(3)	Element outlet		

- 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 (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:

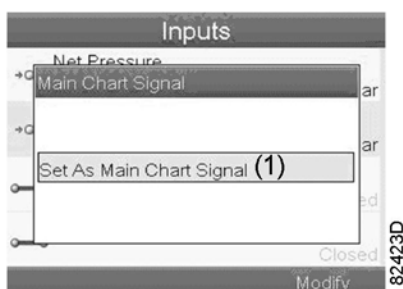


Press Enter again to remove this input from the chart. Another confirmation pop up opens:



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:



Text on image

(1)	Set As Main Chart Signal		
-----	--------------------------	--	--

4.9 Outputs menu

Menu icon, Outputs



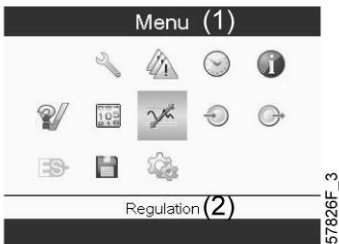
Function

To call up information regarding the actual status of some outputs such as the condition of the Fan motor overload contact, the general warning 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
-----	------	-----	------------

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



Outputs screen (typical)

Text on image

(1)	General	(4)	General warning
(2)	General shutdown	(5)	Cabinet fan
(3)	Fan motor		

- 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.

4.10 Counters

Menu icon, Counters



Function

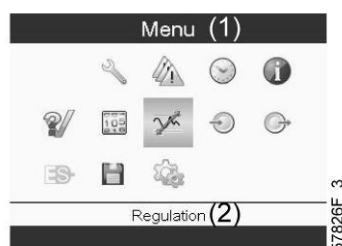
To call up:

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

Procedure

Starting from the [Main screen](#),

- Using the Scroll keys, move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on image

(1)	Menu	(2)	Regulation
-----	------	-----	------------

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



Text on image

(1)	Counters	(4)	Fan starts
(2)	Shutdowns element 2	(5)	Module hours
(3)	Load relay		

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

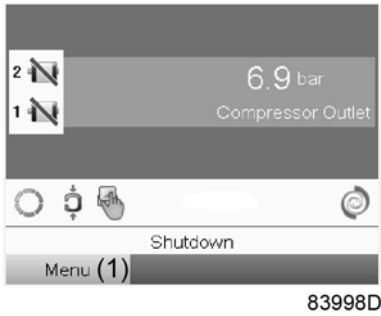
4.11 Control mode selection

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 action button Menu (1) is selected:



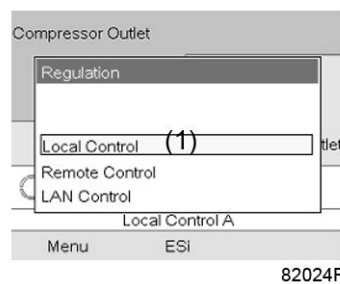
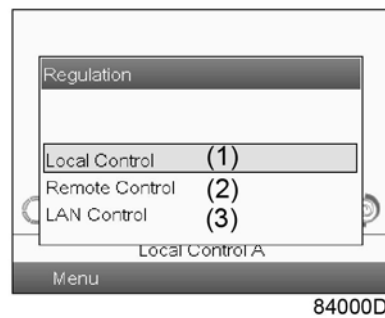
Text on image

(1)	Menu		
-----	------	--	--

- Next, use the scroll buttons to go to the control mode icon (2) and press the Enter key (see section [Icons used](#) for the meaning of the icons):



- There are 3 possibilities:
 - Local control (1)
 - Remote control (2)
 - LAN control (3)



After selecting the required control mode, press the Enter key on the controller to confirm your selection. The new control mode selection is now visible on the main screen.

4.12 Service menu

Menu icon, Service



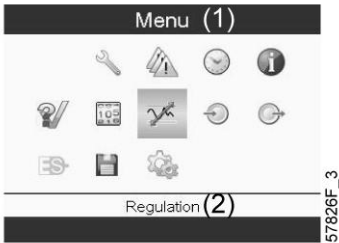
Function

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

Procedure

Starting from the [Main screen](#),

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



Text on image

(1)	Menu	(2)	Regulation
-----	------	-----	------------

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



Text on image

(1)	Service	(4)	Next service
(2)	Overview	(5)	History
(3)	Service plan		

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

Overview



Text on image

(1)	Overview	(3)	Real Time (hours)
(2)	Running 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 2500 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 2500 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.

A new algorithm is implemented for a better protection of the compressor elements. The running hours will be recalculated depending on the ambient temperature. A compressor continuously running in an ambient temperature between 30 °C (86 °F) and 35 °C (95 °F) is working in harder conditions than an element running at 20 °C (68 °F). Therefore a service done earlier (a time reduction of 30 % is applied in this temperature zone) will protect the element in a better way. In the zone between 35 °C (95 °F) and 40 °C (104 °F), the time reduction is 60 %.

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 2500 running hours or 8305 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 controller.

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

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

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

Service Plan (1)		
Level (2)	Running(3) Hours	Real (4) Time
A	500	2190
B	2500	8760
C	5000	17520
D	5000	17520
E	10000	35040
F	10000	35040
		(5) Modify
84002D		

Text on image

(1)	Service plan	(4)	Real time hours
(2)	Level	(5)	Modify
(3)	Running hours		

Modifying a service plan

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

Service Plan (1)		
Level (2)	Running(3) Hours	Real (4) Time
A	500	2190
B	2500	8760
C	5000	17520
D	5000	17520
E	10000	35040
F	10000	35040
		(5) Modify
84002D		

Press the Enter key. Following screen appears:

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

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

Note: Running hours can be modified in steps of 100 hours, real time hours can be modified in steps of 1 hour.

Next Service

Next Service (1)		
Level (2)	Running (3) Hours	
	Actual (4)	
	0	
A	500	

84003D

Text on image

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

In the example above, the A Service level is programmed at 500 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.

4.13 Setpoint menu

Menu icon, Setpoint



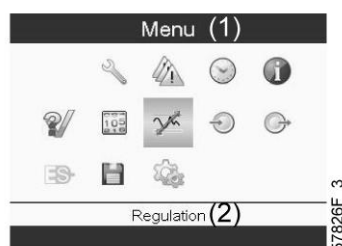
Function

It is possible to program 2 different pressure bands. This menu is also used to select the active pressure band.

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 Setpoint icon (see above, section Menu icon)
- Press the Enter key. Following screen appears:



Text on image

(1)	Regulation	(4)	Pressure band 2 High
(2)	Pressure band 1 High	(5)	Pressure band 2 Low
(3)	Pressure band 1 Low	(6)	Modify

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



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



Text on image

(1)	Regulation	(2)	Stopping pressure
-----	------------	-----	-------------------

- 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.

4.14 Event history menu

Menu icon, Event History



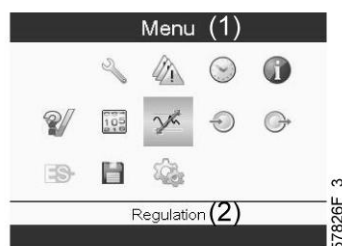
Function

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

Procedure

Starting from the [Main screen](#),

- Using the Scroll keys, 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).
- Press the Enter key. 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.

4.15 General settings menu

Menu icon, Settings



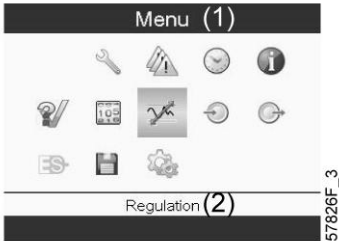
Function

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
-----	------	-----	------------

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



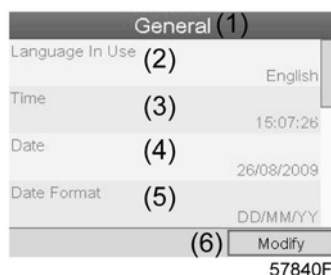
This screen shows again a number of icons. By default, the User Password icon is selected. The status bar shows the description that corresponds with the selected icon. Each icon covers one or more items , such as

- Access level
- Elements
- Dryer
- Fan
- Filter(s)
- Motor/Starter
- General
- Automatic restart after voltage failure
- Network
- Regulation

- Remote

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	(4)	Date
(2)	Language In Use	(5)	Date Format
(3)	Time	(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.

4.16 Info menu

Menu icon, Info



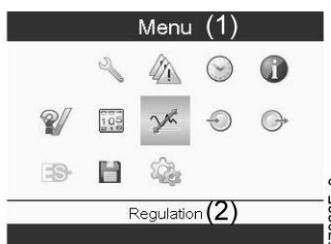
Function

Shows 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 internet address appears on the screen.

4.17 Week timer menu

Menu icon, Week timer



Function

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


Important remark:

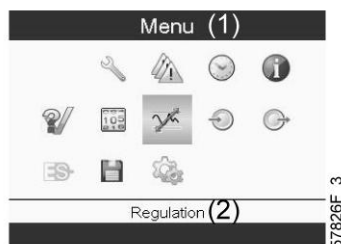
You can select different timers on one day.(up to 8 actions). It is however not possible to program 2 actions at the same time. The solution: leave at least 1 minute in between 2 actions.

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

Procedure

Starting from the [Main screen](#),

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



Text on image

(1)	Menu	(2)	Regulation
-----	------	-----	------------

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



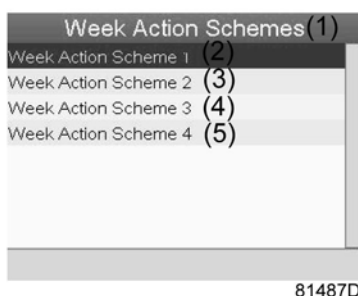
Text on image

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

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

Programming week schemes

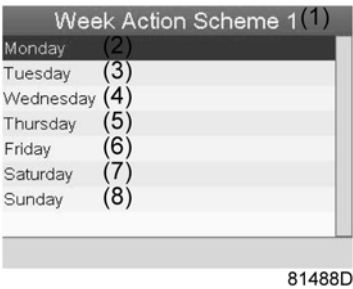
- Select Week action schemes and press Enter. A new window opens. The first item in the list is highlighted in red. Press the Enter key on the controller to modify Week Action Scheme 1.



Text on image

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

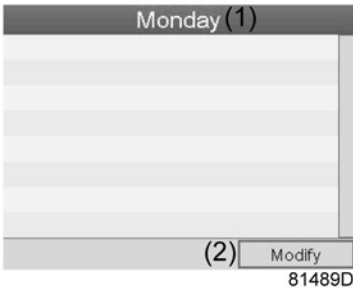
- A weekly list is shown. Monday is automatically selected and highlighted in red. Press the Enter key on the controller to set an action for this day.



Text on image

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

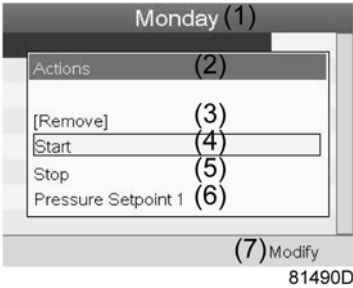
- A new window opens. The Modify action button is selected. Press the enter button on the controller to create an action.



Text on image

(1)	Monday	(2)	Modify
-----	--------	-----	--------

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



Text on image

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

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



Text on image

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

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



- A new 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.



Text on image

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

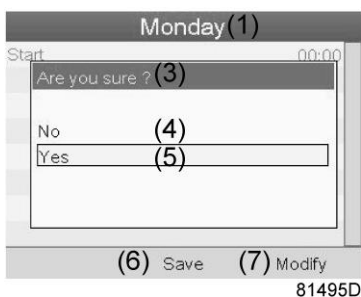
- Press the Escape key on the controller. The action button Modify is selected. Use the Scroll keys to select the action Save.



Text on image

(1)	Monday	(3)	Save
(2)	Start	(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.

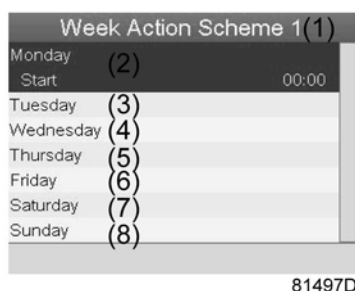


Text on image

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

Press the Escape key to leave this window.

- The action is shown below the day the action is planned.



Text on image

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

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

Programming the week cycle

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

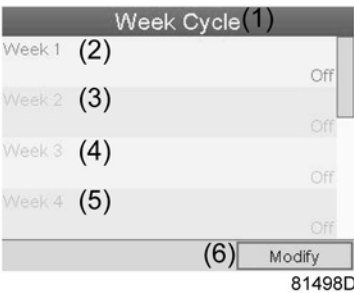
- Select Week Cycle from the main Week Timer menu list.



Text on image

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

- A list of 10 weeks is shown.

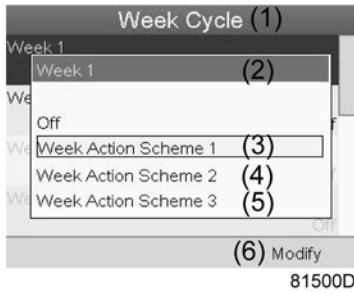


Text on image

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

Press the Enter key twice to modify the first week.

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



Text on image

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

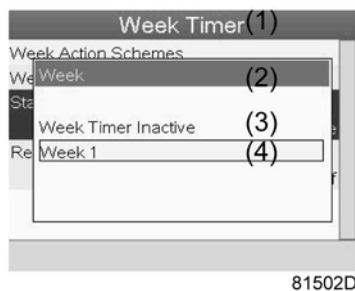
- Check the status of the Week Timer
Use the Escape key on the controller to go back to the main Week Timer menu. Select the status of the Week Timer.



Text on image

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

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



Text on image

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

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



Text on image

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

- 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.



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



Text on image

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

4.18 Test menu

Menu icon, Test



or



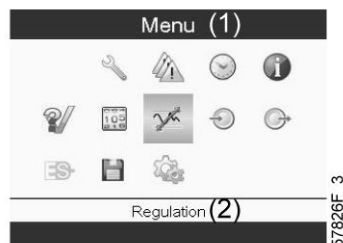
Function

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

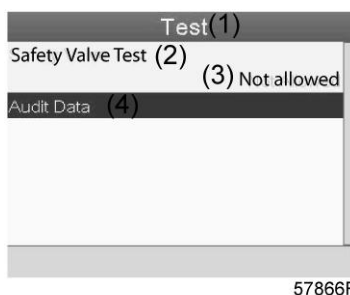
Procedure

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, move the cursor to the test icon (see above)
- Press the Enter key, following screen appears:



Text on image

(1)	Test	(3)	Not allowed
(2)	Safety Valve Test	(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.

4.19 User password menu

Menu icon, Password



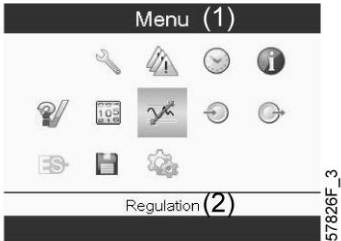
Function

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

Procedure

Starting from the [Main screen](#),

- 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, select the Settings icon (see section [General settings menu](#)).
- 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.

4.20 Web server

The controller has 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 on the display of the controller.

Getting started



If the compressor is equipped with a **SMARTBOX**, the network connection of the Elektronikon is already in use. To allow the web server functionality, the network cable that is connected to the **SMARTBOX** should be unplugged and replaced by the cable of the company network.

If both the web server functionality and **SMARTBOX** are required, please contact your local Atlas Copco Customer Centre for support.

Make sure you are logged in as administrator.

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



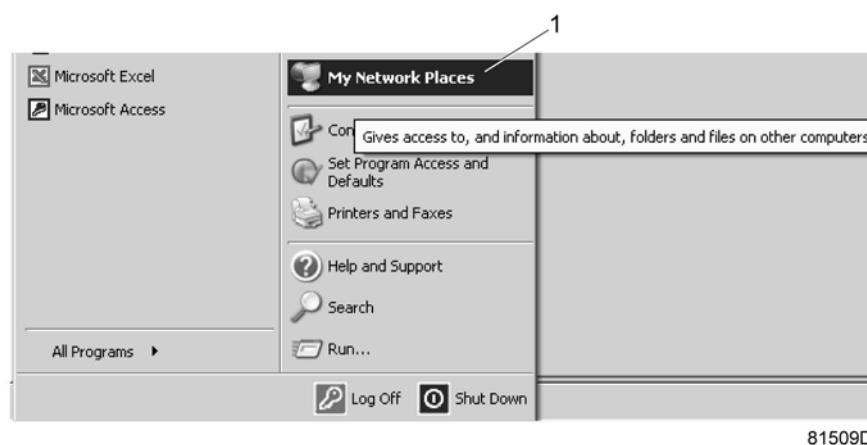
USB to LAN adapter

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

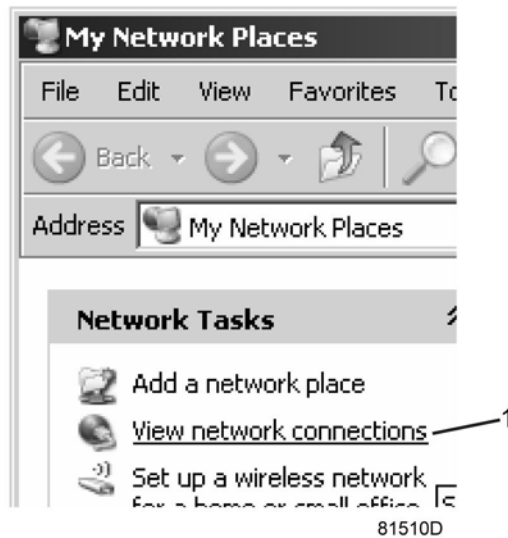


Configuration of the network card (in Windows)

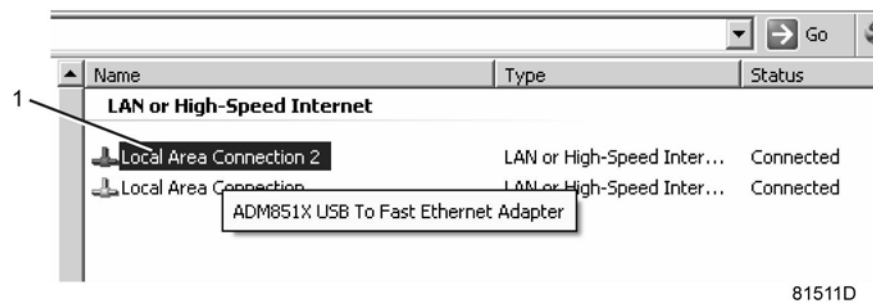
- Go to My Network places (1).



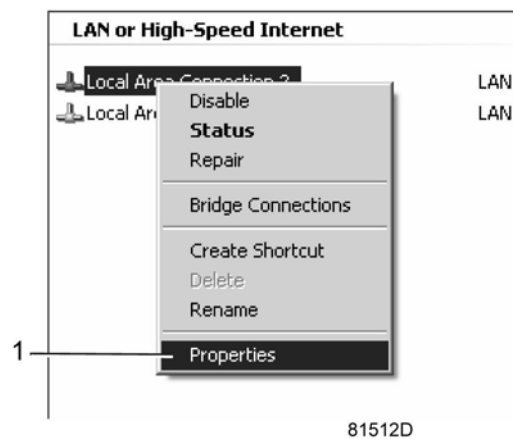
- Click on View Network connections (1).



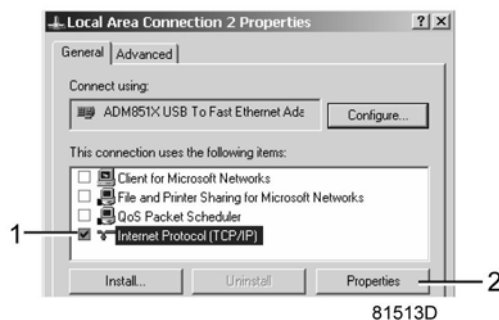
- Select the Local Area connection (1), which is connected to the controller.



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



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

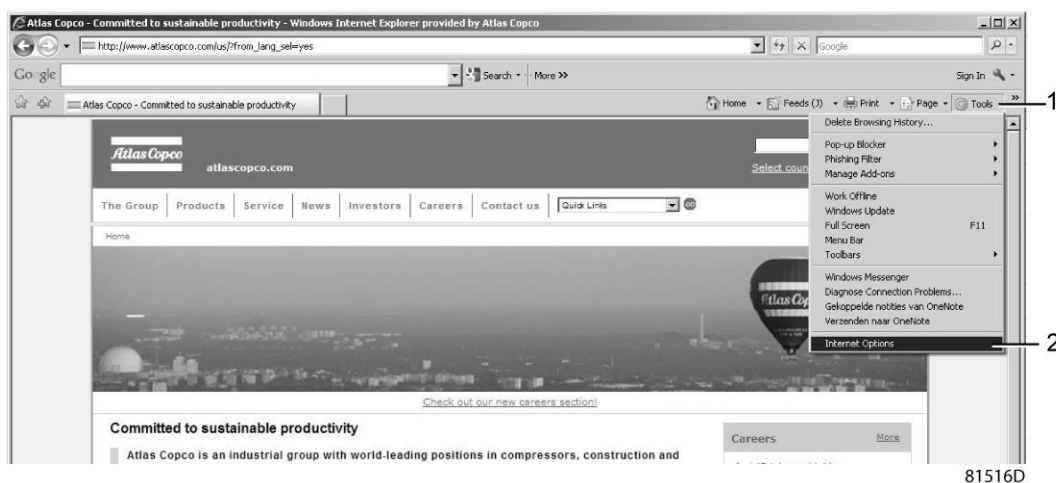


- Use the following settings:
 - IP Address 192.168.100.200
 - Subnetmask 255.255.255.0
- Click OK and close network connections.

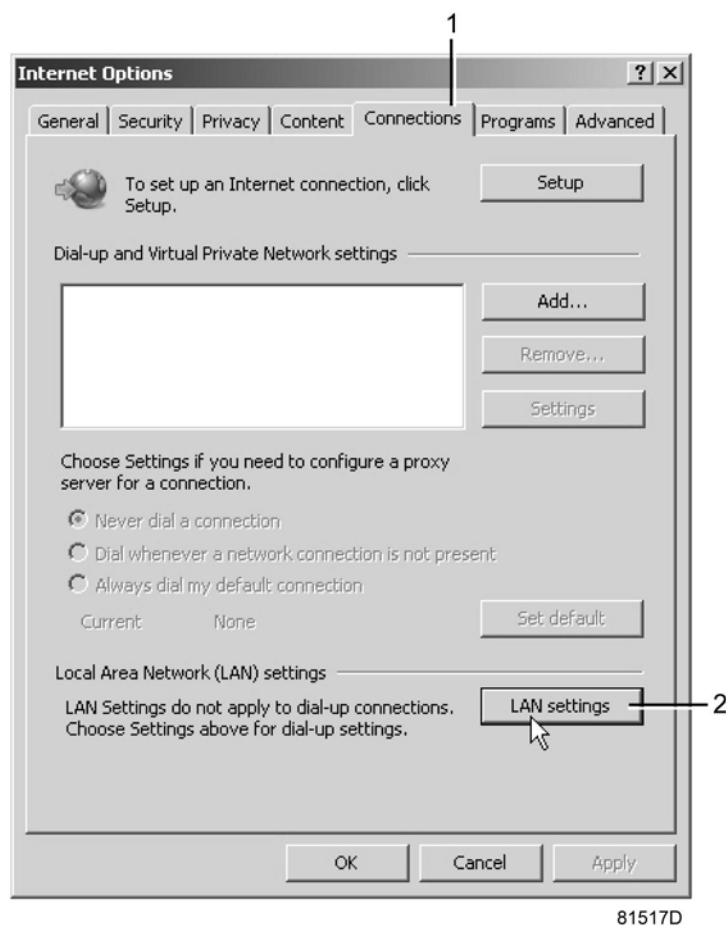
Configuration of the web server

Configure the web interface (for Internet Explorer)

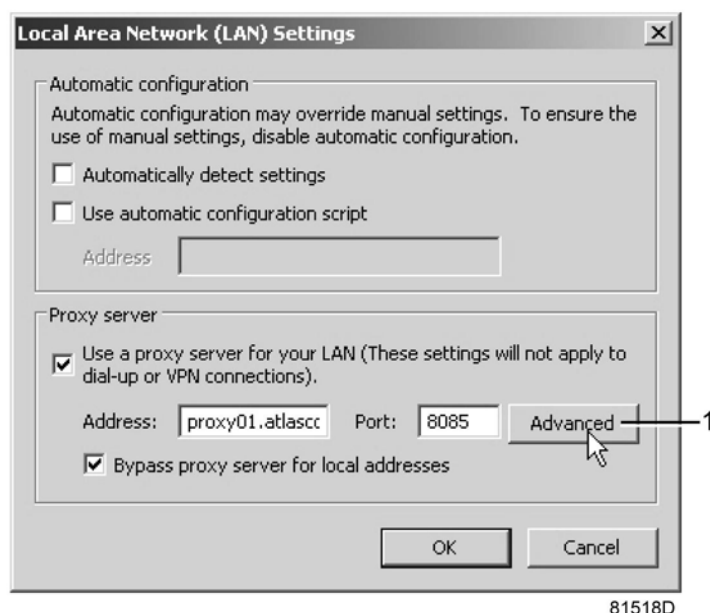
- Open Internet Explorer and click on Tools - Internet options (2).



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



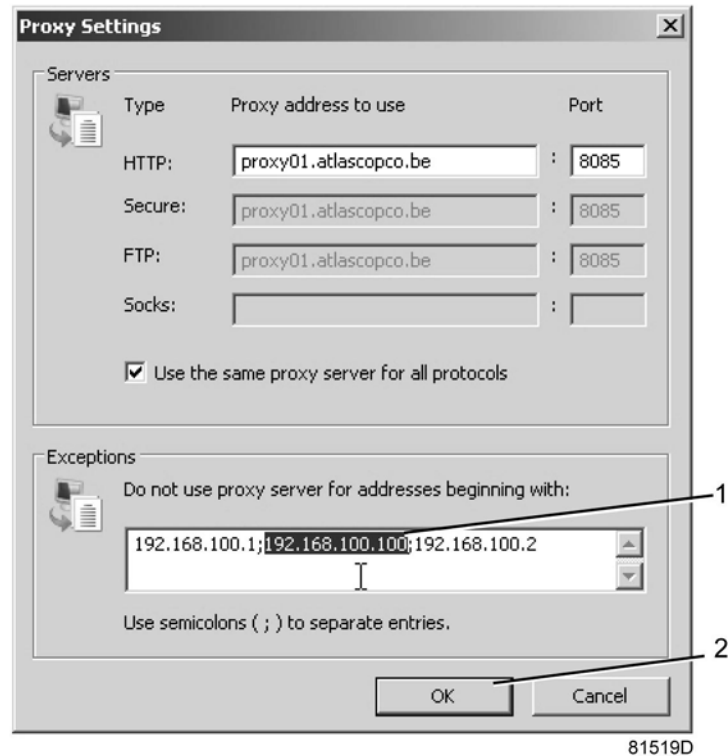
- In the Proxy server Group box, click on the Advanced button (1).



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

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

Click OK (2) to close the window.



Viewing the controller data



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

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

Serial Number : 123456

Elektronikon

Languages English

Machine

Preferences

☒ Analog Inputs ☒ Counters ☒ Digital Inputs ☒ Digital Outputs

☒ Special Protections ☒ Service Plan

Analog Inputs	Value
Compressor Outlet	6.9 bar
Element 1 Outlet	104 °C
Element 2 Outlet	105 °C
Dryer PDP	5 °C
Ambient Air	25 °C

Counters	Value
Running Hours	0 hrs
Running Hours Element 1	0 hrs
Running Hours Element 2	0 hrs
Starts Element 1	0
Starts Element 2	0
Shutdowns Element 1	1
Shutdowns Element 2	1
Load Relay	0
Dryer Starts	0

Info	Value
Machine Status	Shutdown
Digital Inputs	
Emergency Stop	Closed
Remote Start/Stop	Open
Auxiliary Equipment Overload	Closed
Overload Motor Element 1	Open
Overload Motor Element 2	Open
Pressure Setting Selection	Pressure Band 1
Digital Outputs	
Element 1 Motor	Open
Element 2 Motor	Open
General Shutdown	Open
Dryer Motor	Open
Fan Motor	Open

84008D

Screen shot (typical)

Navigation and options

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



Compressor settings

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

Analog inputs

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

☒ Analog Inputs

Analog Inputs	Value
Compressor Outlet	6.9 bar
Element 1 Outlet	104 °C
Element 2 Outlet	96 °C
Dryer PDP	15 °C
Ambient Air	16 °C

84009D

Counters

Lists all current counter values from controller and compressor.

☒ Counters

Counters	Value
Running Hours	0 hrs
Running Hours Element 1	0 hrs
Running Hours Element 2	0 hrs
Starts Element 1	0
Starts Element 2	0
Shutdowns Element 1	1
Shutdowns Element 2	1
Load Relay	0
Dryer Starts	0
Fan Starts	0
Module Hours	6 hrs

84010D

Info status

Machine status is always shown on the web interface.

Info	
Machine Status	Shutdown

84011D

Digital inputs

Lists all Digital inputs and their status.

<input checked="" type="checkbox"/> Digital Inputs	Digital Inputs	Value
	Emergency Stop	Closed
	Remote Start/Stop	Open
	Auxiliary Equipment Overload	Closed
	Overload Motor Element 1	Open
	Overload Motor Element 2	Open
	Pressure Setting Selection	Pressure Band 1

84012D

Digital outputs

Lists all Digital outputs and their status.

<input checked="" type="checkbox"/> Digital Outputs	Digital Outputs	Value
	Element 1 Motor	Open
	Element 2 Motor	Open
	General Shutdown	Open
	Dryer Motor	Open
	Fan Motor	Open
	General Warning	Open
	Cabinet Fan	Open

84013D

Special protections

Lists all special protections of the compressor.

<input checked="" type="checkbox"/> Special Protections	Special Protections	
	Dryer Dewpoint Protection	OK
	No Valid Pressure Control	OK
	Dryer Freeze Protection	OK
	Expansion Module Communication	OK
	Warnings Element 1	OK
	Warnings Element 2	OK

84014D

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.

<input checked="" type="checkbox"/> Service Plan	Service Plan	Level
	500	A
	2190	A
	2500	B
	8760	B
	5000	C
	17520	C
	5000	D
	17520	D
	10000	E
	35040	E
	10000	F
	35040	F

84015D

4.21 Programmable settings

Compressors without built-in refrigeration dryer

		Minimum setting	Factory setting	Maximum setting
Starting pressure				
Starting pressure (8 bar compressors)	bar(e)	4	7	8
Starting pressure (8 bar compressors)	psig	58	101.5	116
Starting pressure (10 bar compressors)	bar(e)	4	9	10
Starting pressure (10 bar compressors)	psig	58	130.5	145

		Minimum setting	Factory setting	Maximum setting
Stopping pressure				
Stopping pressure (8 bar compressors)	bar(e)	4	8	8
Stopping pressure (8 bar compressors)	psig	58	116	116
Stopping pressure (10 bar compressors)	bar(e)	4	10	10
Stopping pressure (10 bar compressors)	psig	58	145	145

Compressors with built-in refrigeration dryer

		Minimum setting	Factory setting	Maximum setting
Starting pressure				
Starting pressure (8 bar compressors)	bar(e)	4	6.8	7.8
Starting pressure (8 bar compressors)	psig	58	98.6	113.1
Starting pressure (10 bar compressors)	bar(e)	4	8.8	9.8
Starting pressure (10 bar compressors)	psig	58	127.6	142.1

		Minimum setting	Factory setting	Maximum setting
Stopping pressure				
Stopping pressure (8 bar compressors)	bar(e)	4	7.8	7.8
Stopping pressure (8 bar compressors)	psig	58	113.1	113.1
Stopping pressure (10 bar compressors)	bar(e)	4	9.8	9.8
Stopping pressure (10 bar compressors)	psig	58	142.1	142.1

Parameters

		Minimum setting	Factory setting	Maximum setting
Allowed number of motor starts per day		72	720	720
Power recovery time (Automatic restart function)	s	60	60	3600
Restart delay	s	0	0	1200
Communication time-out	s	10	30	60

Protections

		Minimum setting	Factory setting	Maximum setting
Ambient temperature warning level	°C	0	40	40
Ambient temperature warning level	°F	32	104	104
Ambient temperature shutdown level	°C	0	45	45
Ambient temperature shutdown level	°F	32	113	113

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 [Service menu](#).

Terminology

Term	Explanation
ARAVF	Automatic Restart After Voltage Failure. See section General .
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 your supplier.
Restart delay	This parameter allows to programme that not all compressors are restarted at the same time after a power failure (ARAVF active).
Delay at shut-down 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 your supplier.
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 your supplier if a setting lower than 20 seconds is required.
Starting / stopping pressure	The regulator does not accept inconsistent settings, e.g. if the stopping pressure is programmed at 7.0 bar(e) (101 psi(g)), the maximum limit for the starting pressure changes to 6.9 bar(e) (100 psi(g)). The recommended minimum pressure difference between starting and stopping is 0.6 bar (9 psi(g)).

5 Installation

5.1 Dimension drawings

The dimension drawings can be found on the DVD or the USB, supplied with the compressor.

Model	Dimension drawing number
SF 2-6 P FM EL metric	9820 6376 02-02
SF 2-6 P FM EL imperial	9820 6376 02-05
SF 2-6 FF FM EL metric	9820 6376 03-02
SF 2-6 FF FM EL imperial	9820 6376 03-05
SF 2-6 P TM EL metric	9820 6376 04-02
SF 2-6 P TM EL imperial	9820 6376 04-05
SF 2-6 FF TM EL metric	9820 6376 05-02
SF 2-6 FF TM EL imperial	9820 6376 05-05
SF 2-6 P-FF 30 I EL metric	9820 6376 06-02
SF 2-6 P-FF 30 I EL imperial	9820 6376 06-05
SF1-6 FF TM EL CD metric	9820 6376 09-01
SF1-6 FF TM EL CD imperial	9820 6376 09-02

Legend

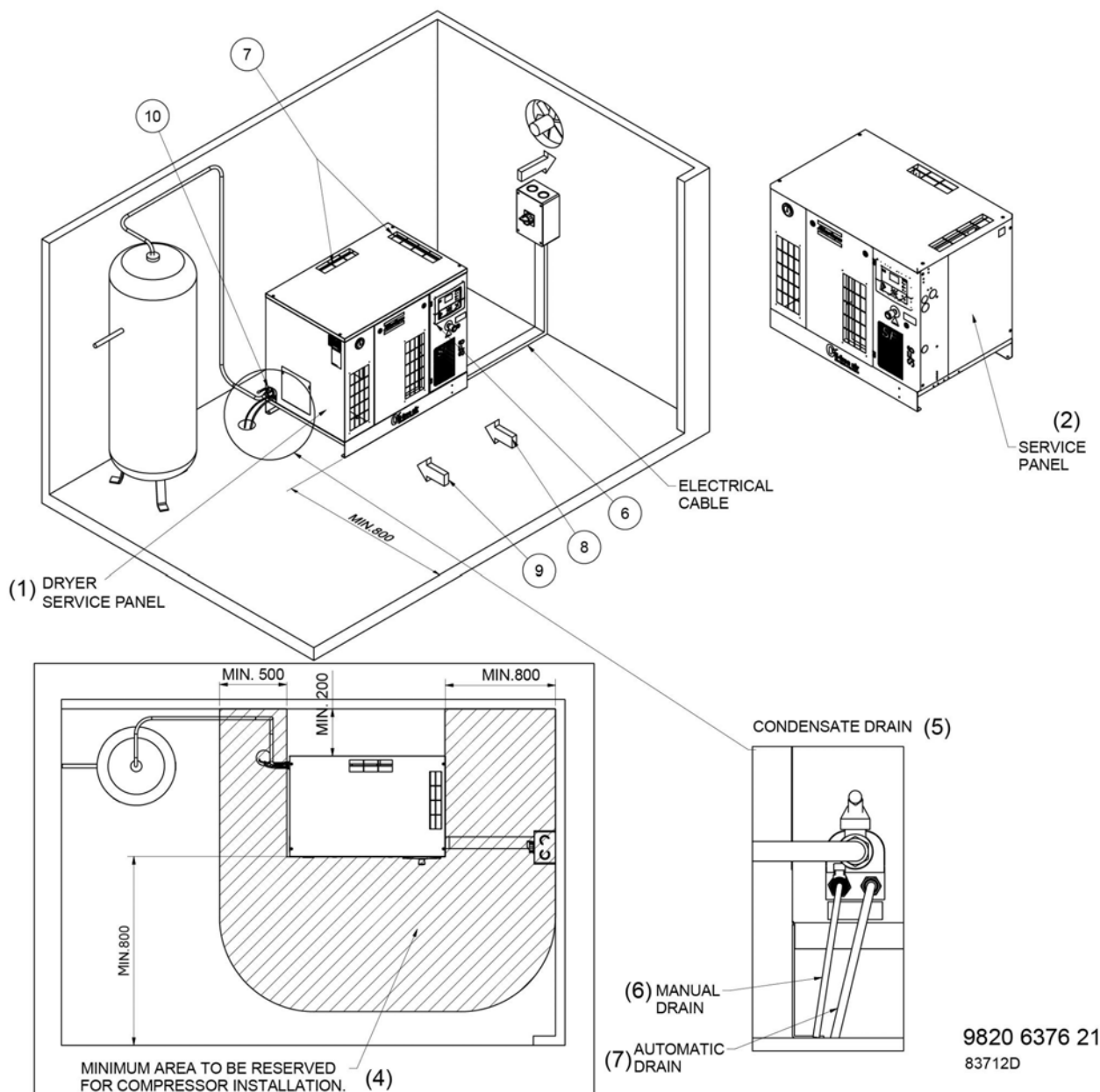
P	Without refrigerant dryer	FF	With integrated refrigerant dryer
FM	Floor mounted	TM	On air receiver
30 I	With integrated 30 I air receiver	EP	Electro-pneumatic control
CD	With CD dryer	EL	With Elektronikon controller

Hereby a list of commonly used terms with their translation:

Text on drawings	Translation or Explanation
COOLING AIR OUTLET	Cooling air outlet
COMPRESSED AIR OUTLET	Compressed air outlet
COOLING AIR INLET	Cooling air inlet
POWER SUPPLY CABLE	Power supply cable
DRYER MANUAL DRAIN	Manual drain valve of the dryer
AUTOMATIC DRAIN	Automatic drain outlet
CENTRE OF GRAVITY	Location of centre of gravity
DRYER SERVICE PANEL	Service panel for the dryer
DOOR FULLY OPEN	Dimensions with fully open door
COOLING AIR INLET OF DRYER	Cooling air inlet for the dryer
ANCHOR POINTS	Location of anchoring points
AIR RECEIVER MANUAL DRAIN	Manual drain of the air receiver

Text on drawings	Translation or Explanation
THE DIMENSIONS FOR 500 L VESSEL...	Dimensions of the 500 l vessel are indicated between () where they are different from the dimensions of the 270 l vessel.
THE DIMENSIONS FOR FULL FEATURE UNIT...	Dimensions of the Full Feature units are indicated between ()

5.2 Installation proposal



1	Dryer service panel	5	Condensate drain
2	Service panel	6	Manual drain
3	Supply cable	7	Automatic drain
4	Minimum area to be reserved for servicing purposes		

Recommendations

1. Install the compressor on a level horizontal industrial floor, suitable for taking the weight of the compressor. The location must be frost-free and preferably low dust location. The compressor unit must be installed on a level floor.
2. Delivery pipe. The pressure drop in the 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
3. Ventilation: the inlet grids and ventilation fan should be installed in such a way that any recirculation of cooling air to the compressor is avoided. The maximum air velocity through the grids is 5 m/s (16.5 ft/s). The maximum allowable pressure drop over the cooling air ducts is 30 Pa (0.12 in wc). The maximum air temperature at the compressor intake opening is 40 °C (104 °F).
Take care that the temperature of the ambient air and the cooling air may never be lower than 0 °C (32 °F) to avoid freezing of condensate.

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

- $Q_v = 1.06 N / \Delta t$ for compressors without integrated dryer.
- $Q_v = (1.06 N + 0.2) / \Delta t$ for compressors with integrated dryer.

with

Q_v = required ventilation capacity in m³/s

N = shaft input of the compressor in kW

Δt = temperature increase in the compressor room in °C

4. Air receiver: an optional air receiver can be necessary to limit the cycle frequency. Recommended maximum is 20 starts per hour.
5. **Optional filters can be installed in the pressure line downstream the air outlet valve, e.g.:**
 - A DD⁺ filter for general purpose filtration. The filter traps solid particles down to 1 micron.
 - A PD⁺ filter for filtration down to 0.01 micron. A PD filter must always be installed downstream a DD filter.
6. Control cubicle with monitoring panel.
7. Compressor and dryer cooling air outlet
8. Compressor cooling air inlet
9. Refrigerant dryer cooling air inlet
10. Connect condensate drain outlet to a sewer. It is recommended to provide a funnel to allow visual inspection of the condensate flow. If the condensate piping has been led outside the compressor room where it may be exposed to freezing temperatures, the piping must be insulated. The condensate drain pipe from the compressor to the sewer must not dip into the water of the sewer.
11. The PD⁺ filter, installed upstream of the membrane dryer or the desiccant dryer, is a high efficiency filter which traps particles down to 0.01 micron and occasionally remaining water droplets.

12. All piping to be connected free of stress.

5.3 Electrical connections

Attention



The electrical installation must correspond to the applicable codes. The mains supply and earthing lines must be of suitable size.
The installation must be earthed and protected by fuses in each phase. Install an isolating switch near the compressor.
Make sure that this switch is open to isolate the compressor from the mains before carrying out any connection.

Supply cable

Consult section [Cable size](#) for the section of the power supply cable.

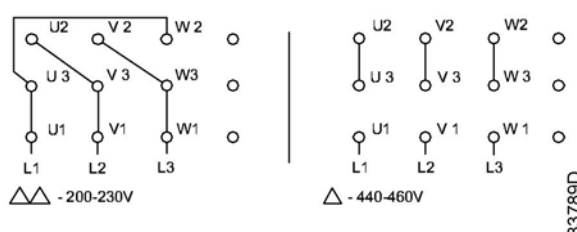
An electric cable is provided on the unit. Fit a suitable plug on the cable.

Plug in the cable.

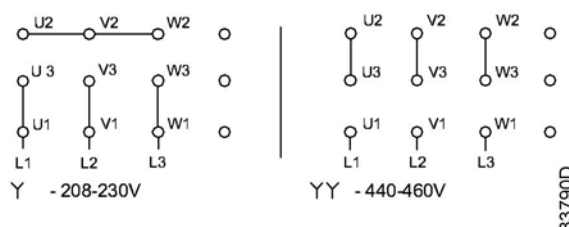
Three voltage units

The compressors leave the factory wired for 230 V. If the compressor is to be used on 460 V, rewire the motor as follows:

1. Take all necessary precautions.
2. Change the connection in the motor terminal box according following instructions:
 - For SF 2, SF 2⁺, SF 4 and SF 4⁺:



- For SF 6 and SF 6⁺:



3. Change also the voltage connection on auxiliary transformer T1.
4. Replace the fuses.
5. Adjust the overload relay settings (see section [Settings of overload relay and fuses](#)).

Pictographs



2920 7110 21

6 Operation

6.1 Initial start-up

Safety



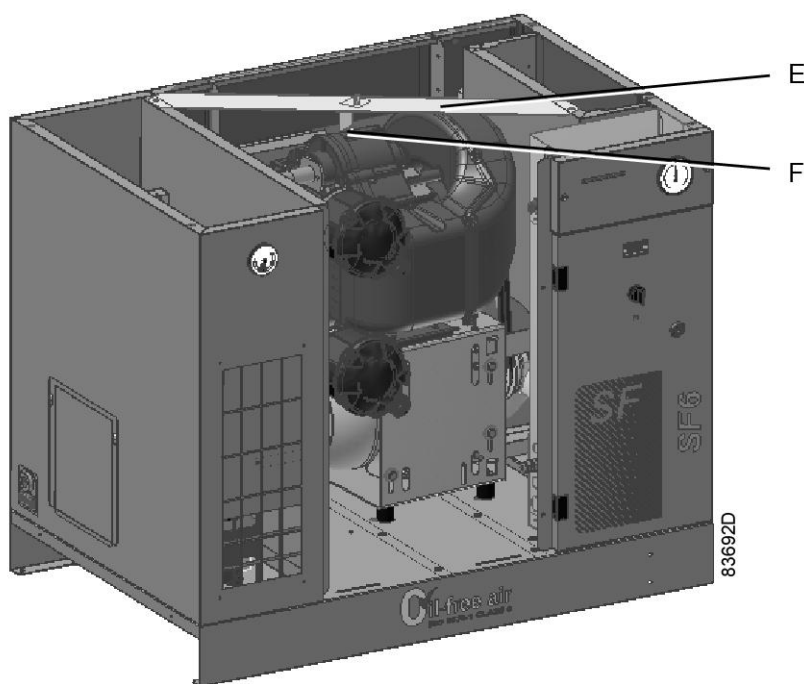
The operator must apply all relevant [Safety precautions during operation](#).



The maximum recommended motor starting frequency is starts is 20 starts per hour. In order to keep the number of starts at an acceptable level, the compressor must be connected to an air receiver with a suitable size.

Initial start-up

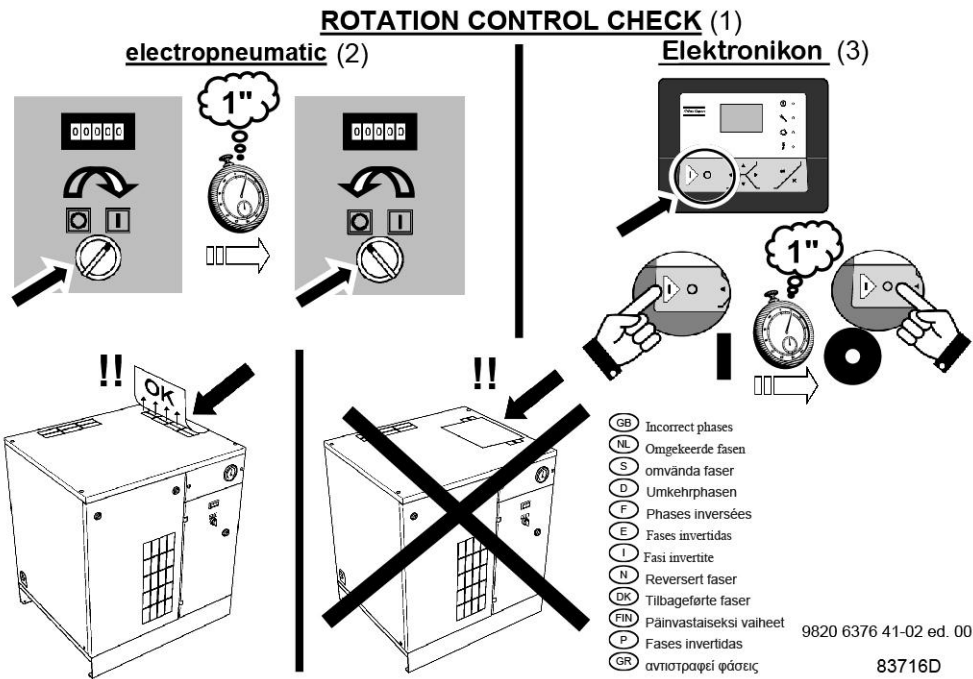
1. Remove the yellow painted transport brackets (E, F) (if applicable)



Transport brackets on SF 6 and SF 6⁺

2. Close the air outlet valve (AV - see section [Introduction](#)).
3. Check the settings of overload relay (F21 - see section [Settings of overload relay and fuses](#)).
Check the drive motor connections. Connect the compressor to the electricity net.
4. Close the condensate drain valve(s). See sections [Introduction](#) and [Flow diagram](#) for their location.
5. Switch on the voltage. Press the start button on the Elektronikon® controller and immediately press the stop button.
On 3-phase units, check the rotation direction of drive motor. For this purpose, a sheet with start-up instructions is fitted to the outlet grating. When the rotation direction is correct, the paper will be

blown upwards. If the direction is wrong, stop the compressor immediately and reverse two incoming electric lines.



(1)	Rotation control check
(2)	Electropneumatic controlled compressors
(3)	Compressors with Elektronikon controller

A compressor equipped with a phase sequence relay will not start if the phase sequence is wrong. In that case, reverse two incoming electric lines to solve the issue.

A wrong phase sequence will be indicated on the Elektronikon® display as a motor overload. See section [Shutdown](#) for more information.

6.2 Starting

Control panel



ER	Elektronikon® controller	S3	Emergency stop button
Gd	Dew point gauge		

Procedure

1. Close the manual condensate drain valve(s) if present.
2. Open the air outlet valve (AV).
3. Switch on the voltage.
4. Press the start button on the Elektronikon® controller.
5. The motor starts and stops automatically depending on the air pressure.
6. On compressors equipped with a refrigerant dryer, the dew point of the refrigerant dryer will be reached after a few minutes.
7. On compressors equipped with an additional (membrane or desiccant) dryer, the latter will start drying the compressed air. Note that at the first startup, it can take several minutes before its dew point has stabilized to a final value.

6.3 During operation

Procedure

1. Check the Elektronikon® display to check pressure setting.
2. On compressors with a built-in refrigerant dryer, check the Elektronikon® display or the temperature gauge (Gd) on the control pane to check the dew point.
Check that condensate is discharged regularly by the automatic drain of the dryer. The amount of condensate depends on the operating conditions of the unit and the humidity of the air.
Open the manual drain valve from time to time to remove eventual impurities (see also section [Preventive Maintenance schedule](#)).
3. On compressors equipped with the optional desiccant dryer (CD), regularly check the pressure difference indicator of the PD 20⁺ filter in front of the compressor. Replace the filter element if the indicator shows red. Open the manual drain valve from time to time to remove eventual impurities (see also section [Preventive Maintenance schedule](#)). Check the status of the LED's on the dryer control panel at regular intervals.
If the Warning/Alarm LED is alight, consult the section Problem solving.
4. On receiver mounted compressors, open the manual drain valve of the air receiver regularly to remove the water (specially in case of compressors without dryer). See also section [Preventive Maintenance schedule](#).



The dew point will deviate from nominal when the nominal conditions are exceeded. If the dew point remains too high or unstable, consult section [Problem solving](#).

6.4 Stopping

Control panel



ER	Elektronikon® controller	S3	Emergency stop button
Gd	Dew point gauge		

Procedure

1. Press the stop button on the Elektronikon® controller.
2. Switch off the voltage.
3. Close air outlet valve (AV - see section Introduction).



The refrigerant air dryer and the air receiver remain under pressure. If it is necessary to depressurize, open the manual drain valve(s).


6.5 Taking out of operation

Procedure

1. Stop the compressor and close the air outlet valve.
2. Switch off the voltage and disconnect the compressor from the mains.
3. Depressurise the compressor.
On compressors with refrigerant dryer and on compressors with an air receiver, open the manual drain valve(s) (Dm / Dm1).
4. If provided, shut off and depressurize the part of the air net which is connected to the outlet valve.
Disconnect the compressor from the air net.
5. If provided, disconnect the compressor condensate piping from the local condensate drain system.

7 Preventive maintenance

7.1 Preventive maintenance schedule

	<p>Before carrying out any maintenance, repair work or adjustments, proceed as follows:</p> <ul style="list-style-type: none"> • Stop the compressor. • Switch off the voltage and open the isolating switch. Press the emergency stop button (S3) • Close the air outlet valve. • Depressurize the compressor by opening the manual drain valve(s). <p>The operator must apply all relevant Safety precautions during maintenance or repair.</p>
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Warranty - Product Liability

Use only authorized parts.

Any damage or malfunction caused by bad maintenance is not covered by Warranty or Product Liability.

General

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

Intervals

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

	<p>The longer interval checks and actions must also include the shorter interval checks.</p>
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Preventive maintenance schedule

Period (note 1)	Running hours (note 1)	Operation
Daily	--	<ul style="list-style-type: none"> • Check readings on the display. • Compressors with integrated air receiver and/or compressors with integrated refrigerant dryer: Check if condensate is discharged regularly. • Receiver mounted compressors: Drain the condensate manually at the end of the day. • Compressors with integrated dryer: Check the dew point. • Compressors with optional CD dryer: check the dryer display for any messages (see section Desiccant dryer).
Every 3 months (note 2)	500	<p>Inspect the air inlet filter(s) (AF). Inspect the prefilter mats on the cooling air intake openings (if fitted). Check for cleanness and damage. Clean if dirty, replace if damaged. Clean the compressor and check the air cooler . If necessary, clean by air jet.</p>

Period (note 1)	Running hours (note 1)	Operation
Every 6 months	--	<ul style="list-style-type: none"> Manually operate the safety valve. Check for any damaged wiring or loose connections. Check for air leaks.
Every 6 months (note 2)	--	Compressors with integrated dryer: <ul style="list-style-type: none"> If dirty, brush or blow off the finned surface of the dryer's condenser. Inspect and clean the electronic drain: <ul style="list-style-type: none"> Functioning of the drain can be checked by pushing the TEST button of the drain. Cleaning of the drain filter can be done by opening the manual drain valve during a few seconds.
Yearly	2500	<ul style="list-style-type: none"> Replace the air inlet filter(s) (AF) and the prefilter mats on the cooling air intake openings (if fitted) (note 2). Test the safety valve. Have temperature protection and motor overload tested. Check tension and condition of the V-belt(s). Compressors with CD dryer: Replace the PD 20+ filter cartridge.
Every 2 years	5000	<ul style="list-style-type: none"> Replace the V-belt(s). Replace check valve.
Every 2 years	5000	8 bar and 116 psi compressors: Have the orbiting scroll bearing greased (see note 3).
Every 2 years	5000	10 bar and 145 psi compressors: <ul style="list-style-type: none"> Replace the element outlet pipe and the plastic insert. See section Outlet pipe replacement. (Only on SF 2+ and SF 4+). Clean fan (FN1 - see Flow diagram), fan duct and element cooling fins (see note 2). Have orbiting scroll bearing and pin crank bearings greased (see note 3). Replace tip seals and dust seal (see also note 4).
Every 4 years	10000	8 bar and 116 psi compressors: <ul style="list-style-type: none"> Replace the element outlet pipe and the plastic insert. See section Outlet pipe replacement. (Only on SF 2+ and SF 4+). Clean fan (FN1 - see Flow diagram), fan duct and element cooling fins (see note 2). Have orbiting scroll bearing and pin crank bearings greased (see note 3). Replace tip seals and dust seal (see also note 4).
Every 2 years	10000	Compressors with CD dryer: Replace the desiccant cartridges.
Every 4 years	20000	Compressors with CD dryer: <ul style="list-style-type: none"> Replace the exhaust valve diaphragm and the solenoid valves Replace shuttle valve and o-rings

Notes:

- Maintenance must be done according the number of running hours or according the running period, whichever comes first.
- More frequently in a dusty environment.
- Important note:** Greasing of the bearings of the compressor element must be done with **special grease**, a **special grease gun** and according a **specific procedure**.

In high ambient conditions, the bearings must be greased more frequently: for every 5 °C (9 °F) increase above 30 °C (86 °F), the maintenance interval should be reduced with 30 %.

Contact your supplier for details.

4. In extremely dry conditions (relative humidity below 15 %), the tip seals and dust seals need to be replaced more frequently.

7.2 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.

Consult the Spare Parts List for part numbers.

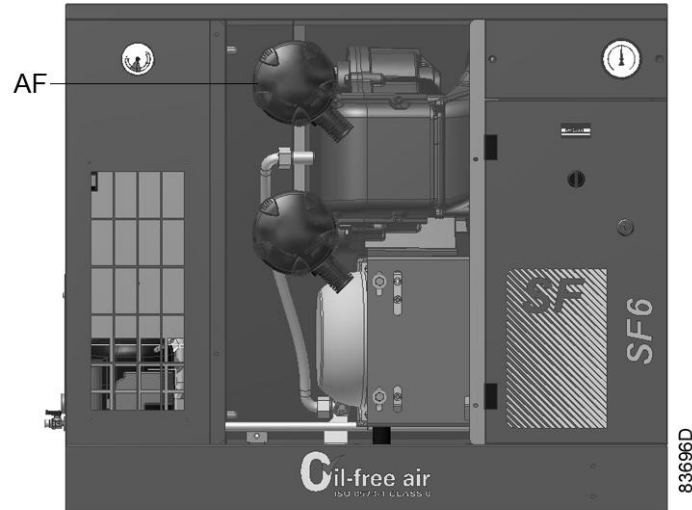
7.3 Disposal of used material

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

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

8 Adjustments and servicing procedures

8.1 Air filter



Air filter (AF)

Procedure

1. Stop the compressor, close the air outlet valve and switch off the voltage.
2. Remove the filter cover and the filter element. Discard damaged or clogged elements. Clean the cover.
3. Fit the new element and reinstall the filter cover.

SF 6⁺ has 2 air filters.

8.2 Air cooler

Cleaning

Keep the cooler clean to maintain cooling efficiency. If necessary, remove any dirt with a fibre brush. Never use a wire brush or metal objects.

Next, clean by air jet in reverse direction of normal flow.

If it is necessary to wash the cooler with a cleansing agent, consult Atlas Copco.

8.3 Drive motor

Instructions

The motor bearings are greased for life and do not require special attention.

Keep the motor free from dust for optimal cooling.

8.4 Safety valve

Testing



Testing shall only be carried out by competent personnel

1. Stop the compressor, close the air outlet valve and switch off the voltage.
2. Depressurize the compressor.
3. Remove the safety valve. See section [Introduction](#) for the location of the safety valve (SV).
4. Test the safety valve on a separate compressed air circuit by gradually increasing the pressure. If the safety valve does not open at the specified pressure, it must be replaced. See section [Temperature protection and safety valve settings](#) for the opening pressure of the safety valve.



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

8.5 Belt replacement

Procedure

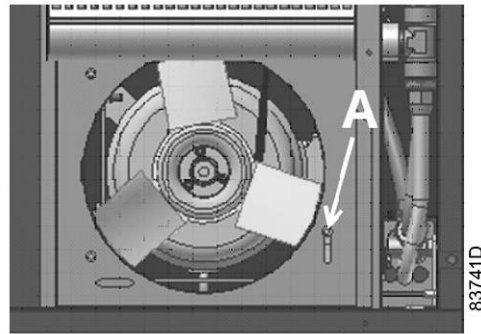


If more than one belt is used, the belts must be replaced as a set, even if only one of them seems worn.
Use Atlas Copco belts only. The number of the belt set is mentioned in the Parts list.

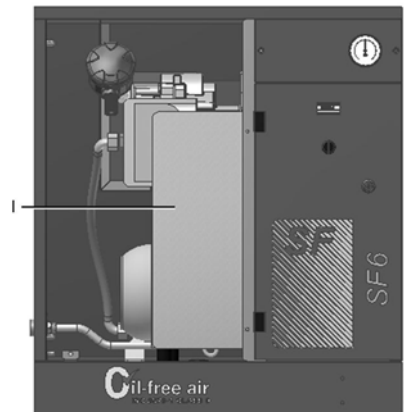
1. Remove the service panel (S).



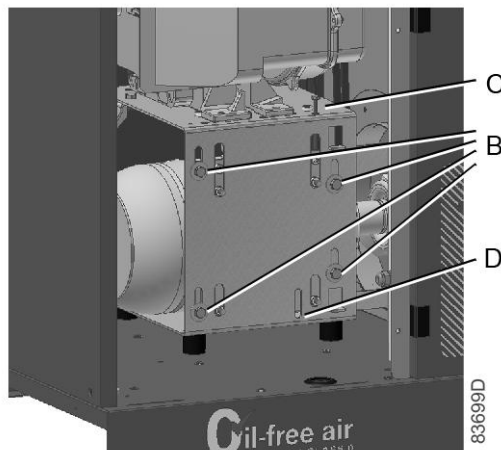
2. Loosen screw (A).



3. Remove the front panel.
4. Remove the inlet baffle (I)



5. Loosen screws (B).



6. Loosen screw (C).
7. Use slot (D) to lift the motor plate.
8. Install the new belt(s) in the pulley grooves.
9. Set the tension of the belt(s) by screwing bolt (C) out. Refer to the label on the motor plate for tensioning data:



10. Tighten screws (B). Reinstall the inlet baffle.
11. Check the belt tension after the first 500 running hours.

8.6 Temperature protection

Description

The compressor element is protected by a PT 1000 sensor in the element outlet. The sensor is connected to the Elektronikon controller.

When the maximum temperature is exceeded, the compressor is stopped. It will restart automatically if the temperature drops again and if pressure is required. If this happens 4 times within a time span of 1 hour, the element will be shut down and must be reset manually.



When the compressor is stopped due to repeated overheating, the compressor will not restart until the failure is acknowledged and the compressor is restarted manually. See section [Shutdown](#).
Never run the compressor without temperature protection.

8.7 Cleaning the compressor element



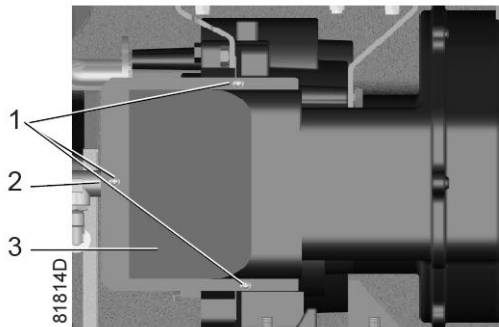
- Compressor element cooling channels can be hot when the compressor has just been turned off.
- Do not clean the cooling channels with organic solvent since this will damage the surface treatment.

The purpose of cleaning the cooling channels of a scroll element is to prevent the cooling channels to silt up and as such reduce the cooling efficiency. A reduced cooling efficiency can lead towards a premature compressor element failure.

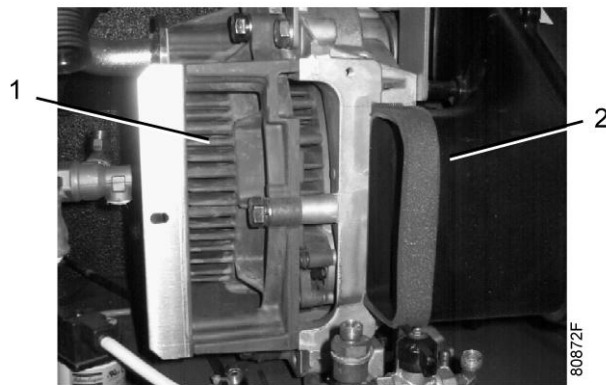
Procedure:

1. Stop the compressor and switch off the power.
2. Close the air outlet valve and depressurise the compressor.
3. Remove the fan duct:
 - Unscrew the 3 bolts (1).

- Remove clip (2) (if applicable).



- Remove fan duct (3).
4. Clean cooling channels:
- Remove dust from the cooling channels (1) by means of air jet (see next figure).
 - Clean the fan duct (2).



5. Reassemble the fan duct:
- Put the fan duct in place.
 - Fit the 3 bolts and the clip.

The unit is now again ready for use.

8.8 Replacement of the outlet pipe

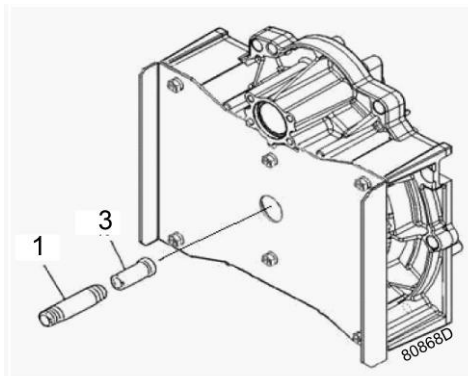
(only applicable to SF 2⁺ and SF 4⁺)

Description

The element outlet pipe (1) of the 2.2 kW and the 3.7 kW elements contains a plastic insert (3). Due to the heat of the compressed air, the plastic insert can become brittle after time. It is recommended to replace the outlet pipe together with the insert when that is the case. Both parts are available as a kit (outlet pipe set). Consult the Spare Parts List for part number.

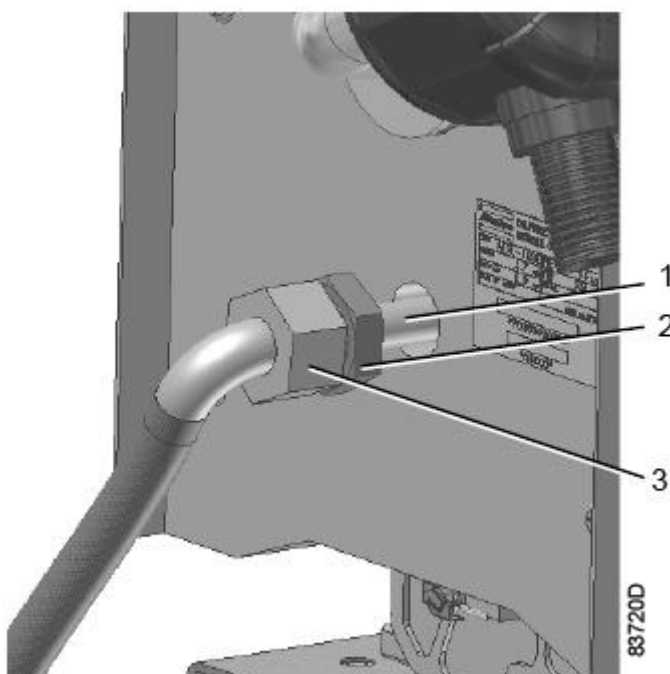
The outlet pipe set contains two parts:

- The plastic insert (3)
- The metal outlet pipe (1)



Replacement procedure

1. Stop the compressor, depressurize and switch off the voltage.
2. Loosen coupling (3) while immobilizing nipple (2) with a wrench.



3. Remove the outlet pipe together with the nipple.
4. Fit the nipple to the new outlet pipe and tighten. Use only PTFE tape.
5. Fit the plastic insert in place as indicated on the drawing and assemble the outlet pipe with a maximum torque of 5 Nm (3.7 lbf.ft). Do not end turning counterclockwise in order to avoid leaks. Use only PTFE tape.
- Warning:** If the outlet pipe is tightened too hard, the thread of the element can get damaged or the insert can break, resulting in overheating of the compressor element!
6. Fasten coupling (3) while holding nipple (2) with a wrench.

The outlet pipe of the 5.5 kW element does not contain an insert and does not require any maintenance. In case of disassembly, please apply the same torque and procedure as described above.

8.9 Refrigerant dryer maintenance

Safety precautions

The dryer circuit contains refrigerant. **When handling refrigerant, all applicable Safety precautions during maintenance or repair must be observed. Specifically be aware of following points:**

- Contact of liquid refrigerant with the skin can cause freezing. Wear special gloves. If contacted with the skin, the skin should be rinsed with water. On no account may clothing be removed.
- Fluid refrigerant can also cause freezing of the eyes. Wear safety glasses.
- Avoid inhalation of refrigerant vapors. Check that the working area is adequately ventilated.

Be aware that internal components of the dryer such as the pipes can reach a temperature of up to 110°C (230°F). Therefore, wait until the dryer has cooled down before removing the side panels.

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

Local legislation

Local legislation may stipulate that:

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

General

The following remarks should be kept in mind:

- Keep the dryer clean.
- Brush or blow off the finned surface of condenser regularly.
- Inspect and clean the electronic condensate drain regularly.
 - a. Functioning of the drain can be checked by pushing the TEST button of the drain, consult section Air dryer.
 - b. Cleaning of the drain filter can be done by opening the manual drain valve during a few seconds.

Device settings

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



Connecting pressure measuring devices in the refrigerant circuit can change the amount of refrigerant in the system. This results in a less optimal working of the dryer.

8.10 Desiccant dryer maintenance

General recommendations and precautions

The desiccant dryer does not need extensive maintenance. Nevertheless, before carrying out any maintenance or corrective activity, read the following recommendations and safety precautions and act accordingly:

- Switch off all electrical power.
- Depressurize the compressor.
Leave the dryer operating during 15 minutes to fully depressurize.
- Use original spare parts only. Consult the Parts List for part numbers. For preventive maintenance, dedicated service kits are available.
- Check for correct operation after maintenance.



Under no circumstances must compressed air be allowed to flow through the dryer when the electrical power is switched off. This will result in terminal failure of the desiccant cartridges and regeneration will no longer be possible.

See section [Preventive Maintenance schedule](#) for scheduled activities to be performed.

9 Problem solving



Before carrying out any maintenance or repair, perform following steps:

- Stop the compressor and switch off the voltage.
- Open and lock the isolating switch to prevent an accidental start.
- Isolate the compressor by closing the outlet valve.
- Depressurize the system by opening the drain valve(s).

Compressor

Condition	Fault	Remedy
The compressor does not start.	Pressure too high.	Compressor will start again when the pressure drops to the starting pressure.
	Loose connection.	Check all electrical connections.
Safety valve blows.	Pressure too high	Check settings and correct.
	Safety valve opens too soon.	Replace valve.
Compressor capacity or pressure below normal.	Air consumption exceeds capacity of compressor.	Check equipment connected.
	Choked air inlet filter.	Remove and check filter. Replace if necessary.
	Safety valve leaking.	Replace valve.
	Compressor element out of order.	Consult your supplier.
Compressor module overheating or compressor shutdown on high air temperature.	Insufficient compressor cooling.	Improve ventilation of compressor room. Clean compressor element fins and fan, see Cleaning the compressor element .
	Cooling fan out of order.	Check and correct.
Condensate trap continuously discharging air and water	Automatic drain out of order	Have the drain checked. Replace as necessary

Refrigerant dryer

For compressors with a built-in refrigerant dryer also:

Condition	Fault	Remedy
Dew point too high	Air inlet temperature too high	Check and correct; see section Reference conditions and limitations
	Fuses blown	Check fuses and remedy the cause.
	Shortage of refrigerant	Have circuit repaired or recharged.
	Refrigerant compressor does not run	See below
	Evaporator pressure is too high	See below
	Condenser pressure is too high	See below

Condition	Fault	Remedy
Condenser pressure too high or too low	Fan control switch out of order	Have switch replaced
	Condenser fan motor out of order	Have fan motor inspected
	Ambient temperature too high	Improve ventilation of compressor room, see section Installation proposal
	Condenser externally clogged	Clean condenser
Motor of refrigerant compressor stops or does not start	The internal thermal protection of the motor has tripped	Compressor will restart when the motor windings have cooled down.
	Electric power supply to refrigerant compressor interrupted	Check and correct as necessary
Evaporator pressure is too high or too low	Condenser pressure too high or too low	See above
	Shortage of refrigerant	Have circuit repaired or recharged
	Hot gas bypass valve incorrectly set or out of order	Have the valve adjusted or replaced
Condensate trap continuously discharging air and water	Automatic drain out of order	Have the drain checked. Replace as necessary
Electronic condensate drain inoperative	Drain system clogged	Clean the filter of the automatic drain by opening the manual drain valve. Check functioning of the drain by pushing the test button.

Desiccant dryer

Checklist for the CD dryer:

Symptom	Possible cause	Corrective action
High dew point	The dryer has not had the time to regenerate completely.	Close the valve installed between the dryer and the application (if permitted) and have the desiccant regenerated.
	Liquid water at dryer inlet	Check PD filter and the drains. Fit an extra water separator if required.
	Excessive flow	Check actual flow against maximum specified.
	Low inlet pressure	Check pressure against specification, and use inlet flow correction factors where required.
	High inlet temperature	Check temperature against specification, and use inlet flow correction factors where required.
	Silencer blocked or damaged	Replace silencer.
	Air leaks	Tighten joints or fit new seals.
	Dirty purge plug	Clean purge plug.
	Wrong size purge plug	Contact your supplier
	Shuttle valve stuck in one position	Check if the exhaust valves closes off: no air must leave from the silencer of the tower that is drying. If air escapes from the silencer, check the connections for air leaks. If no solution: check the membranes.
The dryer produces a lot of noise.	Check the silencer and its fixation to the unit.	Replace the silencer or correct its fixation.
Insufficient air leaves the dryer.	Too much purge air escapes.	Check the condition of the solenoid valve and replace if necessary. Check the fitting of the solenoid valve and tube to the bonnet for air leaks. Check if the correct purge nozzle is installed.
Excessive purge air flow	Shuttle valve stuck in one position	Check if the exhaust valves closes off: no air must leave from the silencer of the tower that is drying. If air escapes from the silencer, check the connections for air leaks.
	Membrane damaged	Check the membrane of the tower that is having the high purge air flow.
	Shuttle O-ring damaged	If the shuttle does not seal, there will be a leak path between inlet air and exhaust. Open the valve block and inspect the shuttle O-ring. Replace O-ring if needed.
Inlet pressure drops every cycle	Shuttle O-ring damaged	If the shuttle does not seal, there will be a leak path between inlet air and exhaust. Open the valve block and inspect the shuttle O-ring. Replace O-ring if needed.

Symptom	Possible cause	Corrective action
Low outlet pressure	Blocked filter	Check/replace filter elements.
	Blocked filter desiccant cartridge	Check/replace desiccant cartridge.
	Excessive purge air flow	See excessive purge air flow.
Dryer won't pressurize	Incorrect start-up	Keep downstream isolation valve closed. Open upstream valve slowly. Power the dryer once pressurized.
Package won't electrically energize	Faulty wiring to controller	Check electrical wiring.
	Wrong supply	Check the voltage supply.
	Power LED does not illuminate	Replace controller.

10 Technical data

10.1 Readings on control panel

Description



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



ER	Elektronik® controller	S3	Emergency stop button
Gd	Dew point gauge		

Regularly check the Elektronik® display. Important information can be found here, like the working pressure, starting and stopping pressure, dew point, hour meter and service messages.

If the compressor is equipped with an optional CD dryer, also regularly check the service panel of the dryer for messages.

10.2 Electric cable size

Attention



Local regulations remain applicable if they are stricter than the values proposed below. The voltage drop must not exceed 5% of the nominal voltage. It may be necessary to use cables of a larger size than those stated to comply with this requirement.


Cable size

		SF 2 ⁺	SF 4 ⁺	SF 6 ⁺
Frequency	Voltage	Cable size	Cable size	Cable size
IEC				
50 Hz	200 V 3~	--	6 mm ²	6 mm ²
50 Hz	230 V 1~	6 mm ²	--	--
50 Hz	230 V 3~	4 mm ²	6 mm ²	6 mm ²
50 Hz	400 V 3~	1.5 mm ²	1.5 mm ²	2.5 mm ²
50 Hz	400 V 3~ + N	1.5 mm ²	1.5 mm ²	2.5 mm ²

		SF 2 ⁺	SF 4 ⁺	SF 6 ⁺
Frequency	Voltage	Cable size	Cable size	Cable size
60 Hz	380 V 3~	1.5 mm ²	1.5 mm ²	2.5 mm ²
UL/CUL				
60 Hz	200 V 3~	AWG 12	AWG 10	AWG 8
60 Hz	230 V 1~	--	--	--
60 Hz	230 V 3~	AWG 12	AWG 10	AWG 8
60 Hz	460 V 3~	AWG 12	AWG 10	AWG 8
60 Hz	575 V 3~	AWG 14	AWG 14	AWG 14

10.3 Settings for overload relay and fuses

Attention

	<p>The indicated fuse value is the maximum value with regard to the short circuit protection of the starter. The cable size used may specify fuses of a lower value.</p> <p>Fuse specifications IEC: gL/gG</p> <p>Fuse specifications CSA: HRC Form II - UL: Class 5</p>
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Settings

		SF 2 ⁺	SF 2 ⁺
Frequency	Voltage	Overload relay	Maximum fuse
IEC			
50 Hz	230 V 1~	16.2 A	25 A
	230 V 3~	9.7 A	40 A
	400 V 3~	5.6 A	10 A
	400 V + N 3~	5.6 A	10 A
60 Hz	380 V 3~	5.8 A	10 A
UL/CUL			
60 Hz	200 V 3~	10.1 A	15/15/20 A [*]
	230 V 1~	16.3 A	25/25/30 A [*]
	230 V 3~	9.1 A	15/15/15 A [*]
	460 V 3~	4.6 A	8/8/8 A [*]
	575 V 3~	3.6 A	6/6/6 A [*]

*: Maximum fuses according HRCII-C, according Class K5 for units without refrigerant dryer and according Class K5 for units with refrigerant dryer respectively.

		SF 4 ⁺	SF 4 ⁺	SF 6 ⁺	SF 6 ⁺
Frequency	Voltage	Overload relay	Maximum fuse	Overload relay	Maximum fuse
IEC					

		SF 4 ⁺	SF 4 ⁺	SF 6 ⁺	SF 6 ⁺
Frequency	Voltage	Overload relay	Maximum fuse	Overload relay	Maximum fuse
50 Hz	200 V 3~	17.3 A	50A	25.7A	50 A
50 Hz	230 V 3~	15.0 A	40 A	22.3 A	40 A
50 Hz	400 V 3~	8.7 A	16 A	12.8 A	25 A
50 Hz	400 V + N 3~	8.7 A	16 A	12.8 A	25 A
60 Hz	380 V 3~	8.7 A	16 A	12.8 A	25 A
UL/CUL					
60 Hz	200 V 3~	16.6 A	25/25/30 A [*]	25.2 A	40/40/45 A [*]
60 Hz	208 V	--	--	24.3 A	40/40/45 A [*]
60 Hz	230 V 3~	15.2 A	25/25/30 A [*]	24.0 A	40/40/45 A [*]
60 Hz	460 V 3~	7.6 A	10/10/15 A [*]	12.0 A	20/20/20 A [*]
60 Hz	575 V 3~	5.9 A	10/10/10 A [*]	8.8 A	15/15/15 A [*]

*: Maximum fuses according HRCII-C, according Class K5 for units without refrigerant dryer and according Class K5 for units with refrigerant dryer respectively.

10.4 Temperature protection and safety valve settings

Temperature sensor settings (TSHH)

Compressor element outlet temperature	Shutdown temperature
SF 2+ (8 bar / 116 psi)	165 °C (329 °F)
SF 2+ (10 bar / 145 psi)	170 °C (338 °F)
SF 4+ (8 bar / 116 psi)	195 °C (383 °F)
SF 4+ (10 bar / 145 psi)	200 °C (392 °F)
SF 6+ (8 bar / 116 psi)	200 °C (392 °F)
SF 6+ (10 bar / 145 psi)	200 °C (392 °F)

Safety valve (SV)

Pressure version	Set pressure	Unit
8 bar compressors	8.8	bar(e)
116 psi compressors	135	psi(g)
10 bar compressors	11	bar(e)
145 psi compressors	160	psi(g)

10.5 Reference conditions and limitations

Reference conditions

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

Limits

Maximum working pressure		See section Compressor data .
Maximum air inlet temperature	°C	40
Maximum air inlet temperature	°F	104
Minimum ambient temperature	°C	0
Minimum ambient temperature	°F	32

10.6 Compressor data



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

Compressor type		SF 2 ⁺	SF 2 ⁺
		8 bar 116 psi	10 bar 145 psi
Maximum working pressure (Pack)	bar(e)	8	10
Maximum working pressure (Pack)	psi(g)	116	145
Maximum working pressure (Full-Feature)	bar(e)	7.75	9.75
Maximum working pressure (Full-Feature)	psi(g)	112	141
Reference working pressure	bar(e)	7	10
Reference working pressure	psi(g)	100	145
Air temperature at outlet valve (SF Pack), approx.	°C	25	25
Air temperature at outlet valve (SF Pack), approx.	°F	77	77
Air temperature at outlet valve (SF FF), approx.	°C	20	20
Air temperature at outlet valve (SF FF), approx.	°F	68	68
Motor shaft speed (50 Hz)	r/min	2885	2885
Motor shaft speed (60 Hz)	r/min	3520	3520
Nominal motor power	kW	2.2	2.2
Nominal motor power	hp	3	3

Compressor type		SF 2 ⁺	SF 2 ⁺
		8 bar 116 psi	10 bar 145 psi
Sound pressure level	dB(A)	56	56
Refrigerant type (Full-Feature)		R134a	R134a
Dew point (refrigerant dryer)	°C	4	4
Dew point (refrigerant dryer)	°F	39	39

Compressor type		SF 4 ⁺	SF 4 ⁺	SF 6 ⁺	SF 6 ⁺
		8 bar 116 psi	10 bar 145 psi	8 bar 116 psi	10 bar 145 psi
Maximum working pressure (Pack)	bar(e)	8	10	8	10
Maximum working pressure (Pack)	psi(g)	116	145	116	145
Maximum working pressure (Full-Feature)	bar(e)	7.75	9.75	7.75	9.75
Maximum working pressure (Full-Feature)	psi(g)	112	141	112	141
Reference working pressure	bar(e)	7	10	7	10
Reference working pressure	psi(g)	100	145	100	145
Air temperature at outlet valve (SF Pack), approx.	°C	32	32	35	35
Air temperature at outlet valve (SF Pack), approx.	°F	90	90	95	95
Air temperature at outlet valve (SF FF), approx.	°C	21	21	22	22
Air temperature at outlet valve (SF FF), approx.	°F	70	70	72	72
Motor shaft speed (50 Hz)	r/min	2900	2900	2905	2905
Motor shaft speed (60 Hz)	r/min	3510	3510	3515	3515
Nominal motor power	kW	3.7	3.7	5.5	5.5
Nominal motor power	hp	5	5	7.5	7.5
Sound pressure level	dB(A)	58	58	59	59
Refrigerant type (Full-Feature)		R134a	R134a	R134a	R134a
Dew point (refrigerant dryer)	°C	3	3	3	3
Dew point (refrigerant dryer)	°F	37	37	37	37

11 Instructions for use

Air receiver

This section applies to compressors including air receiver(s).

-	The vessel can contain pressurized air; this can be potentially dangerous if the equipment is misused.
-	The vessel shall only be used to store compressed air and shall not be subject to rapid fluctuation of pressure.
-	The vessel shall only be used within the pressure and temperature limits stated on the data plate and the testing report, which should be kept in a safe place.
-	No alterations must be made to this vessel by welding, drilling or other mechanical methods without the written permission of the manufacturer.
-	Make sure that the vessel is equipped with suitable and appropriate safety and control fittings and replace them with new ones if necessary (consult the Parts list). The discharge capacity of the safety valve used must be higher than the capacity of the compressor.
-	Do not store the vessel near heating sources and inflammable substances and avoid storing the vessel in badly ventilated rooms.

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

12 Guidelines for inspection

Guidelines

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

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

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

13 Pressure equipment directives

Components subject to Pressure Equipment Directive 97/23/EC (until 20/07/2016) or 2014/68/EU (from 20/07/2016 onwards)

Components subject to 97/23/EC / 2014/68/EU Pressure Equipment Directive greater than or equal to category II

Pressure version	Part number	Description	PED Class
8 bar	0830 1008 54	Safety valve	IV
116 psi	0830 1008 49	Safety valve	IV
10 bar	0830 1007 68	Safety valve	IV
145 psi	0830 1008 35	Safety valve	IV

Overall rating

The compressors conform to PED smaller than category I.

14 Declaration of conformity

EC DECLARATION OF CONFORMITY

1

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

3 Machine name:

4 Machine type:

5 Serial number:

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

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

7

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

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

9 (1) is authorized to compile the technical file.

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

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

11 Issued by Engineering

Manufacturing

12 Name

13 Signature

14 Date

84350D

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.

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

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