

GA 90, GA 110, GA 132, GA 160, GA 200, GA 250, GA 315

Atlas Copco

GA 90, GA 110, GA 132, GA 160, GA 200, GA 250, GA 315

Instruction book

Original instructions

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Table of contents

1	Safety precautions.....	5
1.1	SAFETY ICONS.....	5
1.2	SAFETY PRECAUTIONS, GENERAL.....	5
1.3	SAFETY PRECAUTIONS DURING INSTALLATION.....	5
1.4	SAFETY PRECAUTIONS DURING OPERATION.....	7
1.5	SAFETY PRECAUTIONS DURING MAINTENANCE OR REPAIR.....	8
2	General description.....	10
2.1	INTRODUCTION.....	10
2.2	AIR AND OIL SYSTEM.....	14
2.3	COOLING AND CONDENSATE SYSTEM.....	17
2.4	REGULATING SYSTEM.....	19
3	Elektronikon regulator.....	22
3.1	ELEKTRONIKON [®] REGULATOR.....	22
3.2	CONTROL PANEL.....	24
3.3	FUNCTION KEYS.....	25
3.4	SCROLL KEYS.....	26
3.5	EMERGENCY STOP BUTTON.....	26
3.6	CONTROL PROGRAMS.....	27
3.7	CALLING UP MENUS.....	30
3.8	MAIN SCREEN MENU.....	31
3.9	STATUS DATA MENU.....	32
3.10	MEASURED DATA MENU.....	35
3.11	COUNTERS MENU.....	36
3.12	TEST MENU.....	37
3.13	MODIFY PARAMETERS MENU.....	37
3.14	MODIFYING PARAMETERS.....	38

3.15	MODIFYING PROTECTION SETTINGS.....	39
3.16	MODIFYING SERVICE PLANS.....	40
3.17	PROGRAMMING CLOCK FUNCTION.....	41
3.18	MODIFYING CONFIGURATION SETTINGS.....	45
3.19	SERVICE MENU.....	47
3.20	SAVED DATA MENU.....	49
3.21	PROGRAMMABLE SETTINGS FOR GA90 UP TO GA500.....	49
4	Installation.....	54
4.1	DIMENSION DRAWING.....	54
4.2	INSTALLATION PROPOSAL.....	61
4.3	ELECTRIC CABLE SIZE.....	67
4.4	PICTOGRAPHS.....	69
4.5	COOLING WATER REQUIREMENTS.....	70
5	Operating instructions.....	75
5.1	INITIAL START-UP.....	75
5.2	BEFORE STARTING.....	81
5.3	STARTING.....	82
5.4	DURING OPERATION.....	84
5.5	CHECKING THE DISPLAY.....	85
5.6	MANUAL LOADING/UNLOADING.....	86
5.7	STOPPING.....	87
5.8	TAKING OUT OF OPERATION.....	88
5.9	USE OF AIR RECEIVER.....	89
6	Maintenance.....	90
6.1	PREVENTIVE MAINTENANCE SCHEDULE.....	90
6.2	MOTORS.....	91
6.3	OIL SPECIFICATIONS.....	92

6.4	OIL CHANGE.....	93
6.5	OIL FILTER CHANGE.....	98
6.6	STORAGE AFTER INSTALLATION.....	101
6.7	SERVICE KITS.....	101
7	Adjustments and servicing procedures.....	103
7.1	AIR FILTERS.....	103
7.2	COOLERS.....	105
7.3	SAFETY VALVE.....	106
8	Problem solving.....	108
8.1	PROBLEM SOLVING.....	108
9	Technical data.....	111
9.1	READINGS ON DISPLAY.....	111
9.2	REFERENCE CONDITIONS.....	112
9.3	LIMITS.....	112
9.4	SETTINGS OF SAFETY VALVE.....	113
9.5	SETTINGS FOR OVERLOAD RELAY AND FUSES.....	113
9.6	SETTINGS OF CIRCUIT BREAKERS.....	115
9.7	COMPRESSOR DATA.....	121
10	Pressure equipment directives.....	129
11	Documentation.....	130

1 Safety precautions

1.1 Safety icons

Explanation

	Danger for life
	Warning
	Important note

1.2 Safety precautions, general

General precautions

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

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.
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Precautions during installation

1. The machine must only be lifted using suitable equipment in accordance with the applicable safety regulations. Loose or pivoting parts must be securely fastened before lifting. It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Lifting acceleration and deceleration must be kept within safe limits. Wear a safety helmet when working in the area of overhead or lifting equipment.
2. Place the machine where the ambient air is as cool and clean as possible. If necessary, install a suction duct. Never obstruct the air inlet. Care must be taken to minimize the entry of moisture at the inlet air.
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](#).

These precautions apply to machinery processing or consuming air or inert gas.

Processing of any other gas requires additional safety precautions typical to the application which are not included herein.

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

1.4 Safety precautions during operation



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

Precautions during operation

1. Never touch any piping or components of the 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.
On compressors without bodywork, wear ear protection in the vicinity of the machine.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 80 dB(A) shall wear ear protectors.
8. Periodically check that:
 - All guards are in place and securely fastened
 - All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
 - 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 workroom, take precautions against air pollution and possible contamination of the breathing air.
10. Do not remove any of, or tamper with, the sound-damping material.
11. Never remove or tamper with the safety devices, guards or insulations fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure shall be protected by a pressure-relieving device or devices as required.



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

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

1.5 Safety precautions during maintenance or repair



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

Precautions during maintenance or repair

1. Always use the correct safety equipment (such as safety glasses, gloves, safety shoes, etc.).
2. Use only the correct tools for maintenance and repair work.
3. Use only genuine spare parts.
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 the oil system. Oil tanks must be completely purged, e.g. by steam-cleaning, before carrying out such operations. Never weld on, or in any way modify, pressure vessels.
12. Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of the oil vapour when air is admitted.
13. Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
14. Make sure that no tools, loose parts or rags are left in or on the machine.
15. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
16. Before clearing the machine for use after maintenance or overhaul, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly. If removed, check that the coupling guard of the compressor drive shaft has been reinstalled.
17. Every time the separator element is renewed, examine the discharge pipe and the inside of the oil separator vessel for carbon deposits; if excessive, the deposits should be removed.
18. Protect the motor, air filter, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam-cleaning.
19. Make sure that all sound-damping material and vibration dampers, e.g. damping material on the bodywork and in the air inlet and outlet systems of the compressor, is in good condition. If damaged, replace it by genuine material from the manufacturer to prevent the sound pressure level from increasing.
20. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.
21. **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.



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

These precautions apply to machinery processing or consuming air or inert gas.

Processing of any other gas requires additional safety precautions typical to the application which are not included herein.

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

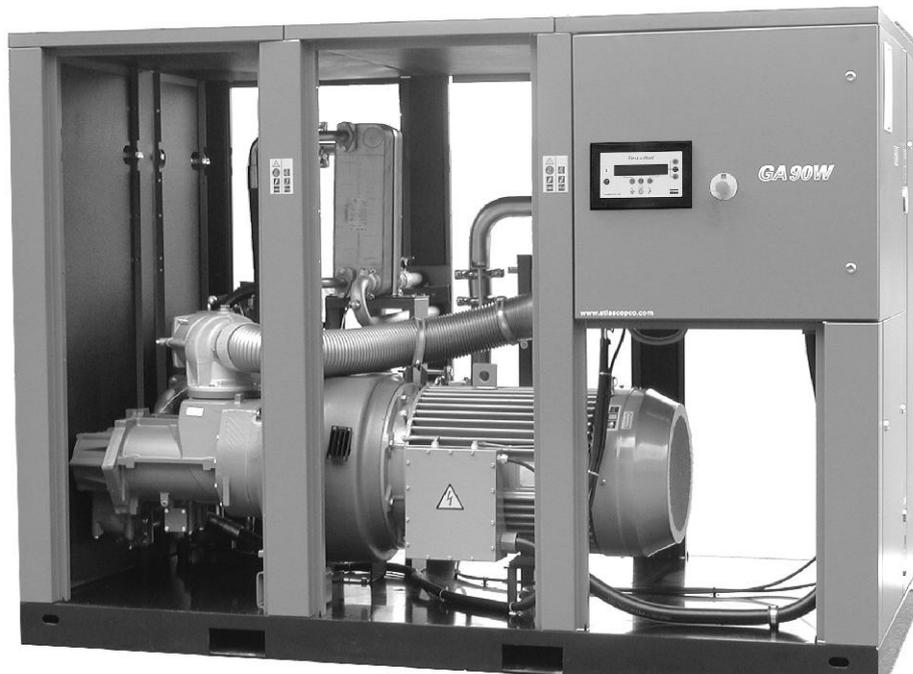
2 General description

2.1 Introduction

General



General view of GA90 up to GA160



55464F

General view of GA90W up to GA160 W



55465F

General view of GA200, GA250 and GA315 60 Hz

GA(W) and GR(W) are oil-injected screw compressors, driven by an electric motor and enclosed in sound-insulated bodywork.

GA110 up to GA500 and GR110 up to GR200 are air-cooled compressors.

GA110 W up to GA500 W and GR110 W up to GR200 W are water-cooled compressors.

GA are single-stage compressors.

The following features are available as an option:

Full-Feature

A refrigerant dryer is fully integrated into the bodywork of the compressor. This "all-in-one" feature reduces the required space for installation and provides savings on piping installation costs.

DD filter

The compressor is provided with an integrated filter of the DD type to limit carry-over of solid particles and oil. By integrating a DD filter, the compressor delivers Quality Air according to ISO 8573-1, Class 2.4.2.

OSD

The OSD (Oil Separating Device) separates oil residues from condensate. The clean water can be discharged down the drain without any further treatment. The separated oil is collected and can be disposed of according to prevailing regulations.

Electronic drain

The EWD (Electronic Water Drain) assures proper draining of condensate and prevents water from entering the compressed air net. For any malfunction of the draining process, the EWD generates a warning message on the display of the Elektronikon regulator.

Energy recovery

The compressor is provided with an Atlas Copco energy recovery system to recover the major part of the compression heat in the form of hot water without any influence on the compressor performance.

Oil containing frame

This frame is installed under the machine and will collect oil from occasional leakage and avoid oil spreading over the floor.

Modulating control

The modulating control system is designed to maintain a narrow net pressure band by throttling the air inlet, thus reducing the air flow (50% - 100%).

Heavy-duty air intake filter

A two-stage heavy-duty air intake filter is provided and allows the compressor to operate in heavily contaminated surroundings (e.g. cement or mining industry). The larger dust particles are collected in the first stage of the filter. The filter efficiency (SAE fine) is 99% at 1 micrometer (0.0004 in) and 99.9% at 3 micrometer (0.0012 in).

Protection from rain

The rain protection prevents rain from entering the machine. At the same time it protects the display of the Elektronikon regulator against sun and rain.

High ambient temperature (HAT)

The compressor is specially designed for continuous operation under humid and high ambient temperature conditions. The maximum ambient temperature is 50°C (122°F).

Phase Sequence Relay

The phase sequence relay prevents the drive motor from rotating in the wrong direction.

PT 1000/100 Thermal motor protection

Not available for GA 110, GA 250, GA315 , GA 355, GA 500, GR 160 and GR 200.

The PT1000/100 thermal protection provides protection for the drive motor. Five sensors are installed in the motor, two to measure the temperature of the bearings and three to measure the temperature of the windings. The readings can be called up on the display of the Elektronikon regulator. A message will appear on the display and the general alarm LED will light up if one of the temperatures exceeds the shut-down warning setting.

Pipe connections

This compressor can be equipped with:

ISO connections for GA 90 up to GA 160, GA 315 50 Hz, GA 355 up to GA 500 and GR 110 up to GR200.

NPT connections for GA 90 up to GA 160 and GR 110 up to GR200.

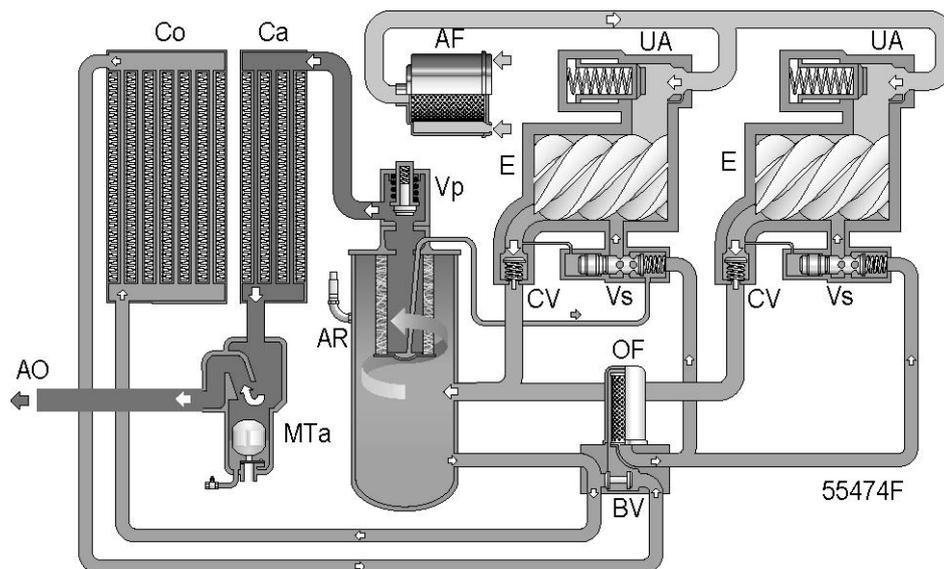
Tube coolers

Not available for GA 110 and GR 110 up to GR 200.

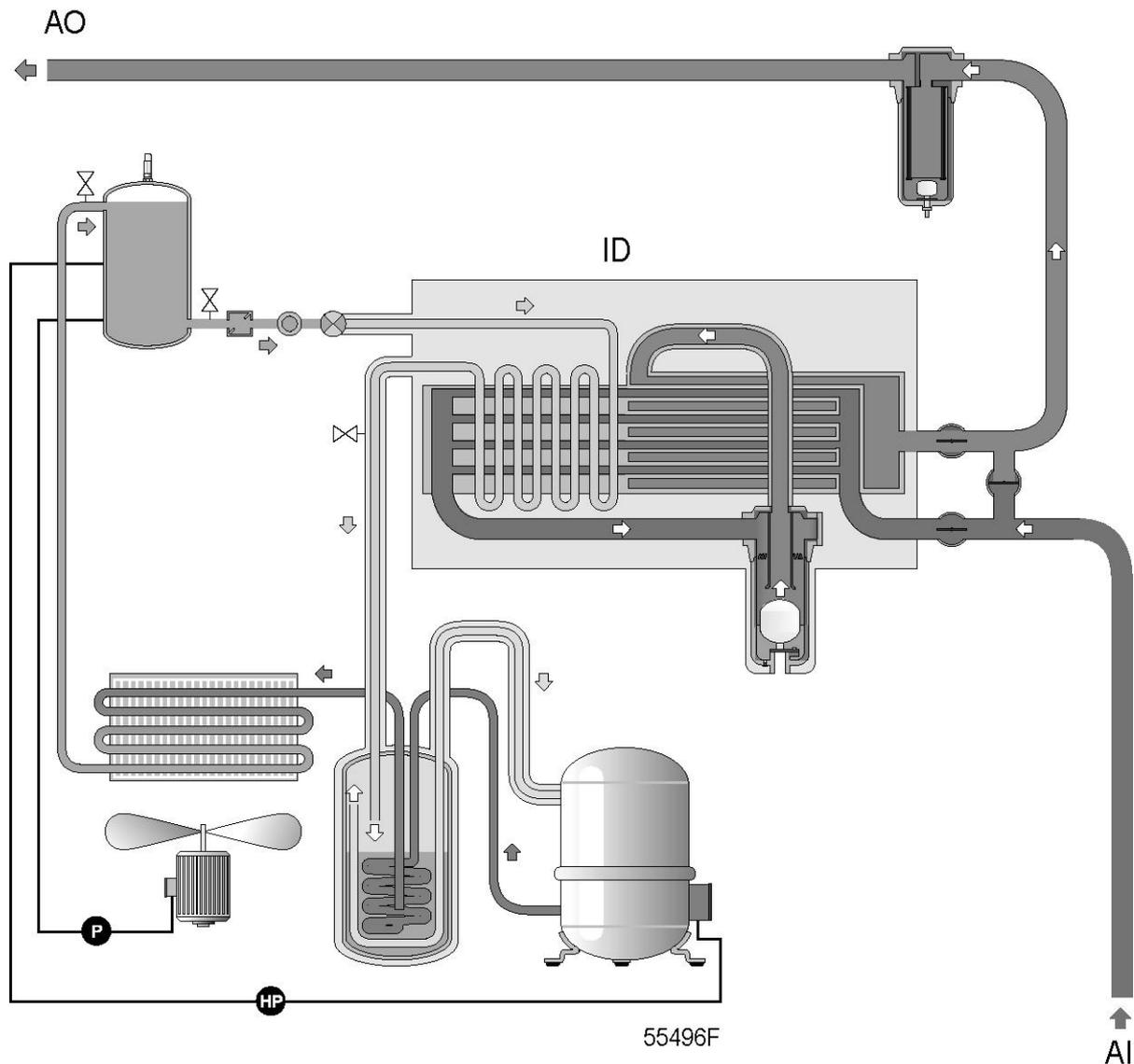
The compressor is equipped with tube and shell coolers.

SPM monitoring

A number of vibration sensors are provided on the drive motor and compressor elements. The readings can be called up on the display of the Elektronikon regulator.



Flow diagram of GA200, GA250 and GA315 60 Hz



Flow diagram of air dryer on GA Full-Feature compressors

Air flow

Air drawn through filters (AF) and unloaders (UA) is compressed in compressor elements (E). Compressed air and oil are discharged through check valves (CV) to air receiver/oil separators (AR) where oil is separated from the compressed air. The air is blown through minimum pressure valves (Vp) to air coolers (Ca).

On GA Pack compressors, the cooled air is discharged through condensate traps (MTa) and outlet (AO) towards the air net.

On GA Full-Feature compressors, the cooled air is discharged through condensate trap (MTa) and outlet (AO) towards the air net via the integrated air dryer.

Check valves (CV) prevent blow-back of compressed air.

Minimum pressure valve (Vp) prevents the receiver pressure from dropping below a minimum pressure. The valve has a built-in check valve.

Oil system

Air pressure forces the oil from receivers (AR) through oil coolers (Co), filters (OF) and oil stop valves (Vs) to compressor elements (E) and the lubrication points.

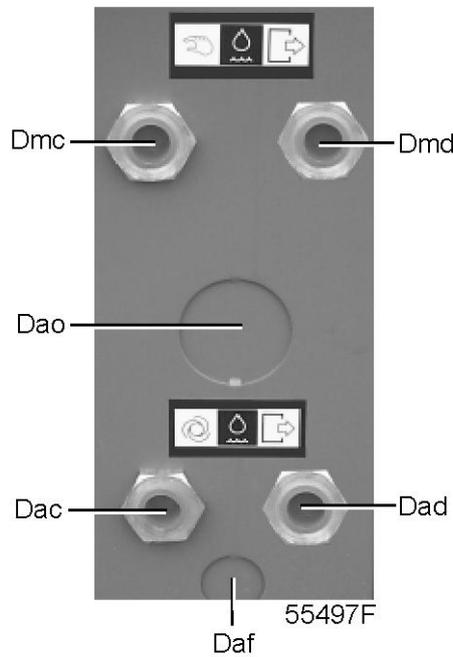
Oil stop valves (Vs) prevent the compressor elements from flooding with oil when the compressor is stopped.

Valves (BV) by-pass oil coolers (Co) when starting the compressor from a cold condition, so ensuring rapid warming of the oil to normal working temperature.

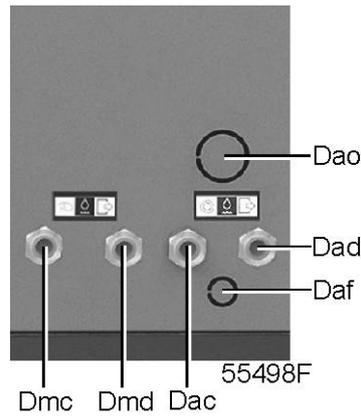
In air receivers (AR) most of the oil is removed from the air centrifugally. Almost all of the remaining oil is removed by the separator elements.

2.3 Cooling and condensate system

Condensate drain system



Condensate drains of GA 90 up to GA 160



Condensate drains of GA 200, GA 250 and GA 315 60 Hz

Dac	Automatic condensate drain, compressor
Dad	Automatic condensate drain, dryer (Full-Feature compressors only)
Daf	Automatic condensate drain, DD filter (option)
Dao	Automatic condensate drain, OSD (option)
Dmc	Manual condensate drain
Dmd	Manual condensate drain, dryer (Full-Feature compressors only)

Condensate traps are installed downstream of the air coolers to prevent condensate from entering the air outlet pipe. The traps are provided with a float valve for automatically draining condensate and with a manual drain valve.

On Full-Feature compressors a condensate trap is also installed downstream of the dryer. This trap is also provided with a float valve for automatically draining condensate and with a manual drain valve.

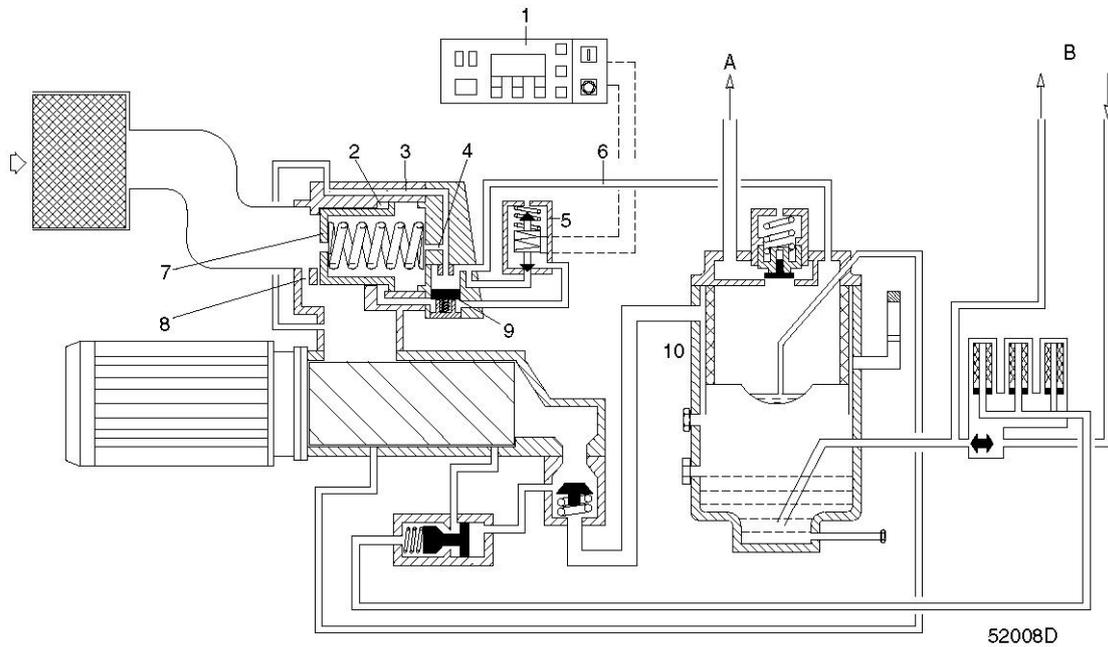
Cooling system

On air-cooled compressors, the air and oil coolers are cooled by fans.

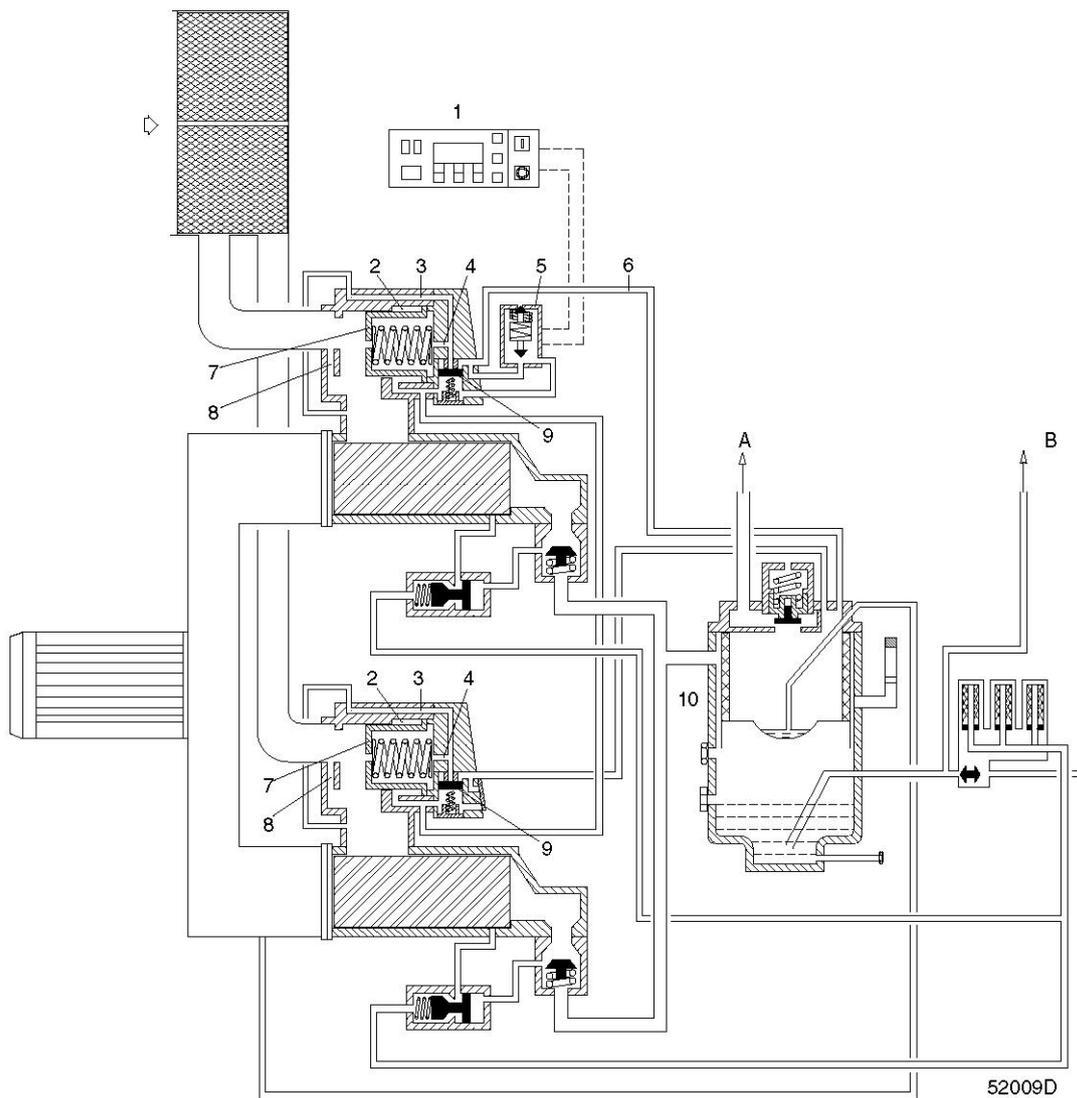
Water-cooled compressors are provided with a cooling water system, including combined oil and air coolers.

2.4 Regulating system

Flow diagrams



Flow diagram of GA 90 up to GA 160



Flow diagram of GA 200 (W), GA 250 (W) and GA 315 (W) 60 Hz

Reference	Designation
A	To air cooler
B	To/from oil cooler

Regulating system

The compressor is controlled by [Elektronikon® regulator](#) (1)

The regulator keeps the net pressure within programmable pressure limits by automatically loading and unloading the compressor depending on the air consumption. It also protects the compressor and monitors components subject to service.

Unloading

If the air consumption is less than the air delivery of the compressor, the net pressure increases. When the net pressure reaches the upper limit of the working pressure (unloading pressure), solenoid valve (5) is de-energised. The plunger of the valve moves downwards by spring force:

Description for GA 90 up to GA 250 and GA 315 60 Hz

Phase	Description
1	The plunger of solenoid valve (5) shuts off the supply of receiver pressure towards chamber (2).
2	Control pressure present in chamber (2) is vented to atmosphere through loading solenoid valve (5). Unloading valve (7) closes by spring force.
3	Valve (9) is pushed downwards releasing receiver pressure through flexible (6) and channels (3 and 4) towards the air inlet.
4	A small flow of air remains drawn in through hole (8) and channel (3), and is blown from receiver (10) via flexible (6) to the air inlet.
5	Air delivery is stopped (0%), the compressor runs unloaded.

Loading

When the net pressure decreases to the lower limit of the working pressure (loading pressure), solenoid valve (5) is energised. The plunger of solenoid valve (5) moves upwards against spring force:

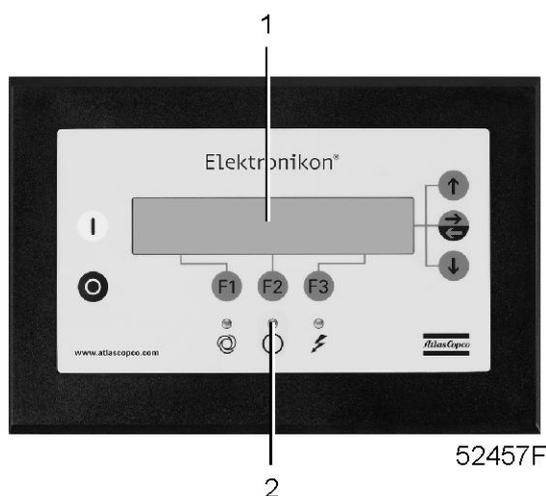
Description for GA 90 up to GA 250 and GA 315 60 Hz

Phase	Description
1	The plunger of solenoid valve (5) opens the supply of receiver pressure towards chamber (2). Unloading valve (7) opens against spring force.
2	Receiver pressure also pushes valve (9) upwards, shutting off blow-off channels (3 and 4).
3	Air delivery is resumed (100%), the compressor runs loaded.

3 Elektronikon regulator

3.1 Elektronikon® regulator

Control panel



Introduction

In general, the Elektronikon regulator has following functions:

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

Automatic control of compressor operation

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

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



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

Protecting the compressor

Shut-down

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

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

	Before remedying, consult the Safety precautions .
---	--

Shut-down warning

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

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

The message disappears as soon as the warning condition disappears.

Service warning

A number of service operations are grouped (called Level A, B, C, ...). Each level 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 level.

Automatic restart after voltage failure

The regulator has a built-in function to automatically restart the compressor if 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.

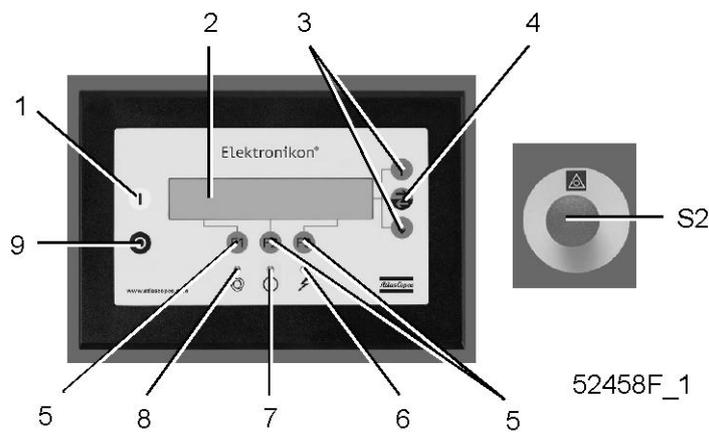
	<p>If activated and provided the regulator was in the automatic operation mode, the compressor will automatically restart if the supply voltage to the module is restored within a programmed time period.</p> <p>The power recovery time (the period within which the voltage must be restored to have an automatic restart) can be set between 1 and 3600 seconds or to "Infinite". If the power recovery time is set to "Infinite", the compressor will always restart after a voltage failure, no matter how long it takes to restore the voltage. A restart delay can also be programmed, allowing e.g. two compressors to be restarted one after the other.</p>
---	---

Permissive start

After a start command (either automatic start by the electronic regulator or manual start), the permissive start function is operative: if the oil injection pressure at the compressor element exceeds the programmed level, the compressor will not start (indicated as "Start failure").

3.2 Control panel

Elektronikon regulator



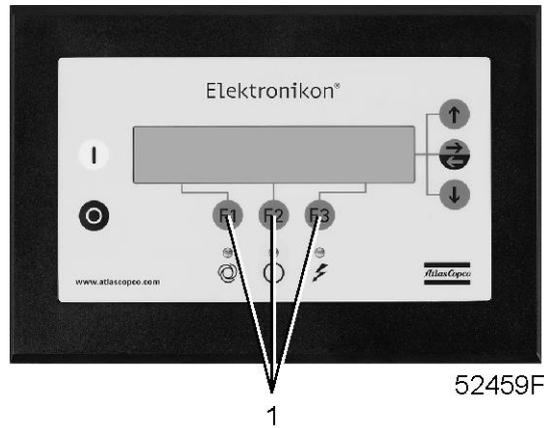
Control panel

Parts and functions

Reference	Designation	Function
1	Start button	Button to start the compressor. LED (8) lights up indicating that the Elektronikon regulator is operative.
2	Display	Shows messages about the compressor operating condition, a service need or a fault.
3	Scroll keys	Keys to scroll upwards or downwards through the display.
4	Tabulator key	Key to select the parameter indicated by the horizontal arrow. Only the parameters followed by an arrow pointing to the right can be modified.
5	Function keys	Keys to control and program the compressor.
6	Voltage on LED	Indicates that the voltage is switched on.
7	General alarm LED	Is lit if a shut-down warning condition exists or maintenance is required.
7	General alarm LED	Flashes if a shut-down condition exists, if an important sensor is out of order or after an emergency stop.
8	Automatic operation LED	Indicates that the regulator is automatically controlling the compressor.
9	Stop button	Button to stop the compressor. LED (8) goes out.
S2	Emergency stop button	Push button to stop the compressor immediately in the event of an emergency. After remedying the trouble, unlock the button by pulling it out.

3.3 Function keys

Control panel



Function keys

The keys (1) are used:

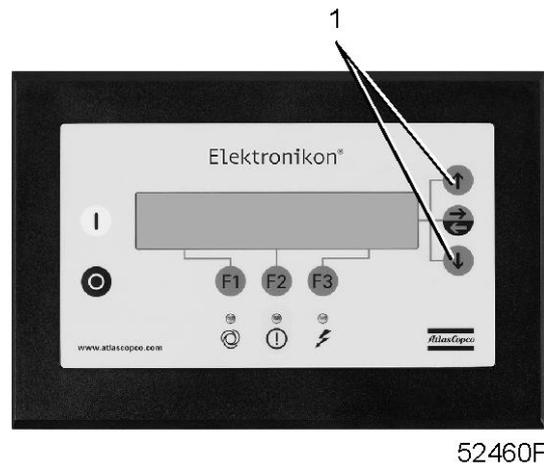
- To manually load/unload the compressor (not for VSD compressors)
- To call up or to program settings
- To reset a motor overload, shut-down or service message, or an emergency stop
- To access all data collected by the regulator

The functions of the keys vary depending on the displayed menu. The actual function is indicated just above the relevant key. The most common functions are listed below:

Designation	Function
“Add”	To add compressor start/stop commands (day/hour)
“Back”	To return to a previously shown option or menu
“Cancel”	To cancel a programmed setting when programming parameters
“Delete”	To delete compressor start/stop commands
“Help”	To find the Atlas Copco internet address
“Limits”	To show limits for a programmable setting
“Load”	To load the compressor manually
“Mainscreen”	To return from a menu to the main screen
“Menu”	Starting from the main screen, to have access to the submenus
“Menu”	Starting from a submenu, to return to a previous menu
“Modify”	To modify programmable settings
“Program”	To program modified settings
“Reset”	To reset a timer or message
“Return”	To return to a previously shown option or menu
“Unload”	To unload the compressor manually
“Extra”	To find the module configuration of the regulator

3.4 Scroll keys

Control panel



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The keys (1) allow the operator to scroll through the display.

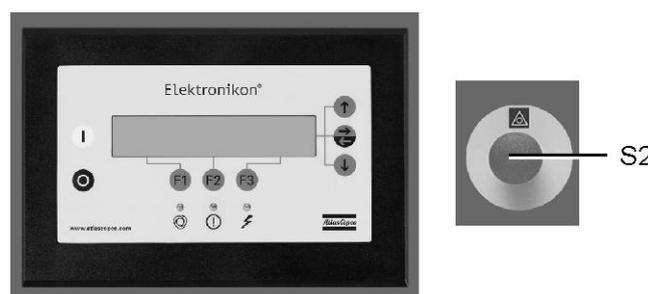
As long as a downwards pointing arrow is shown at the utmost right position of the display, the scroll key with the same symbol can be used to see the next item.

As long as an upwards pointing arrow is shown at the utmost right position of the display, the scroll key with the same symbol can be used to see the previous item.

When the scroll key is kept pressed, the scrolling is continued.

3.5 Emergency stop button

Control panel



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In case of emergency, press button (S2) to stop the compressor immediately.

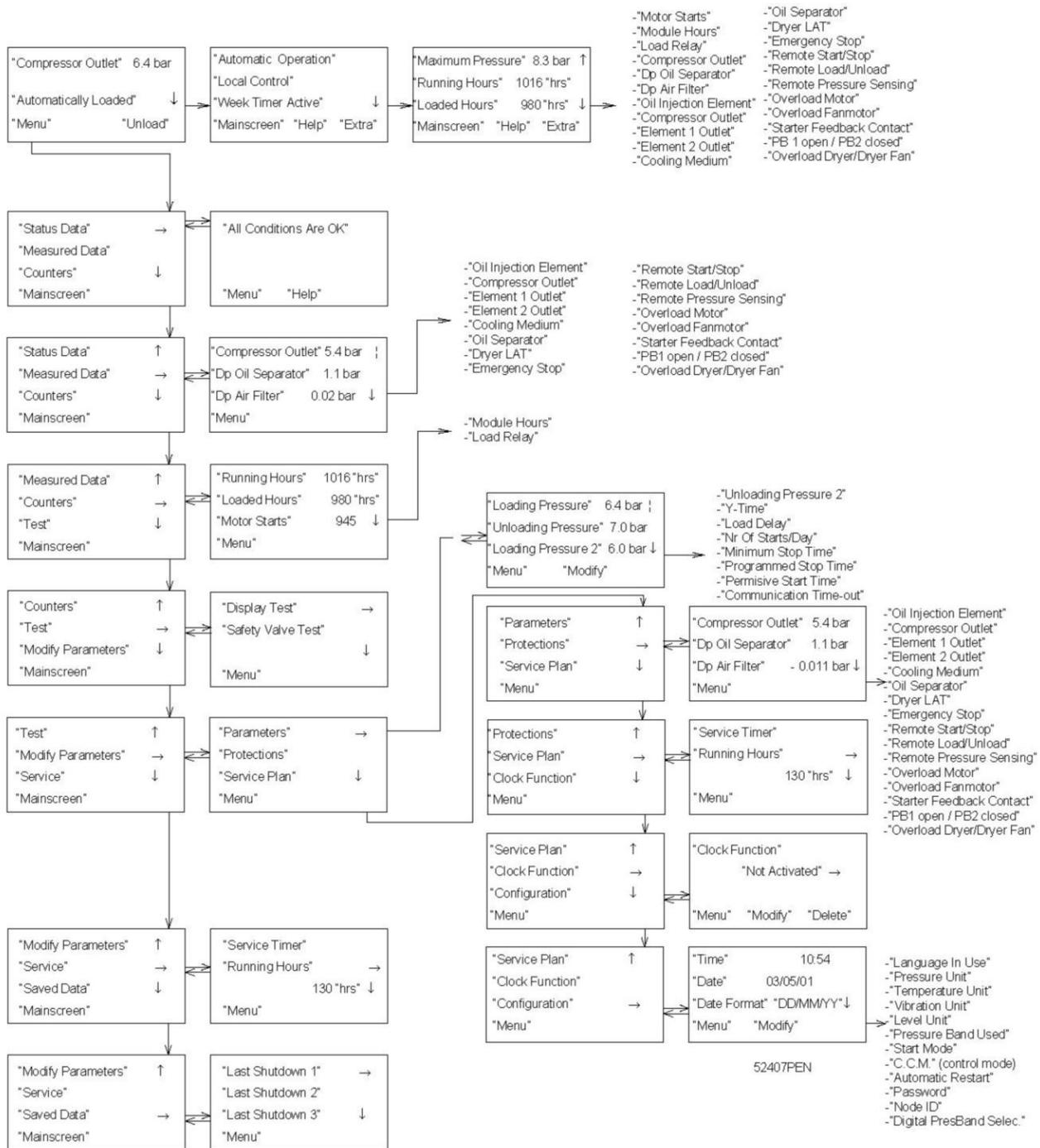
At the occurrence of an emergency stop, the compressor element is stopped immediately and the solenoid valve will be deactivated by Elektronikon® regulator. No unload status is reached. The check valve prevents oil flow back from reversed rotation of the compressor element.

	Before starting any maintenance or repairs, wait until the compressor has stopped and open the isolating switch (customer's installation) to switch off the voltage to the compressor.
	Close the air outlet valve and open the manual condensate drain valves to depressurize the air system.
	Apply all relevant Safety precautions .

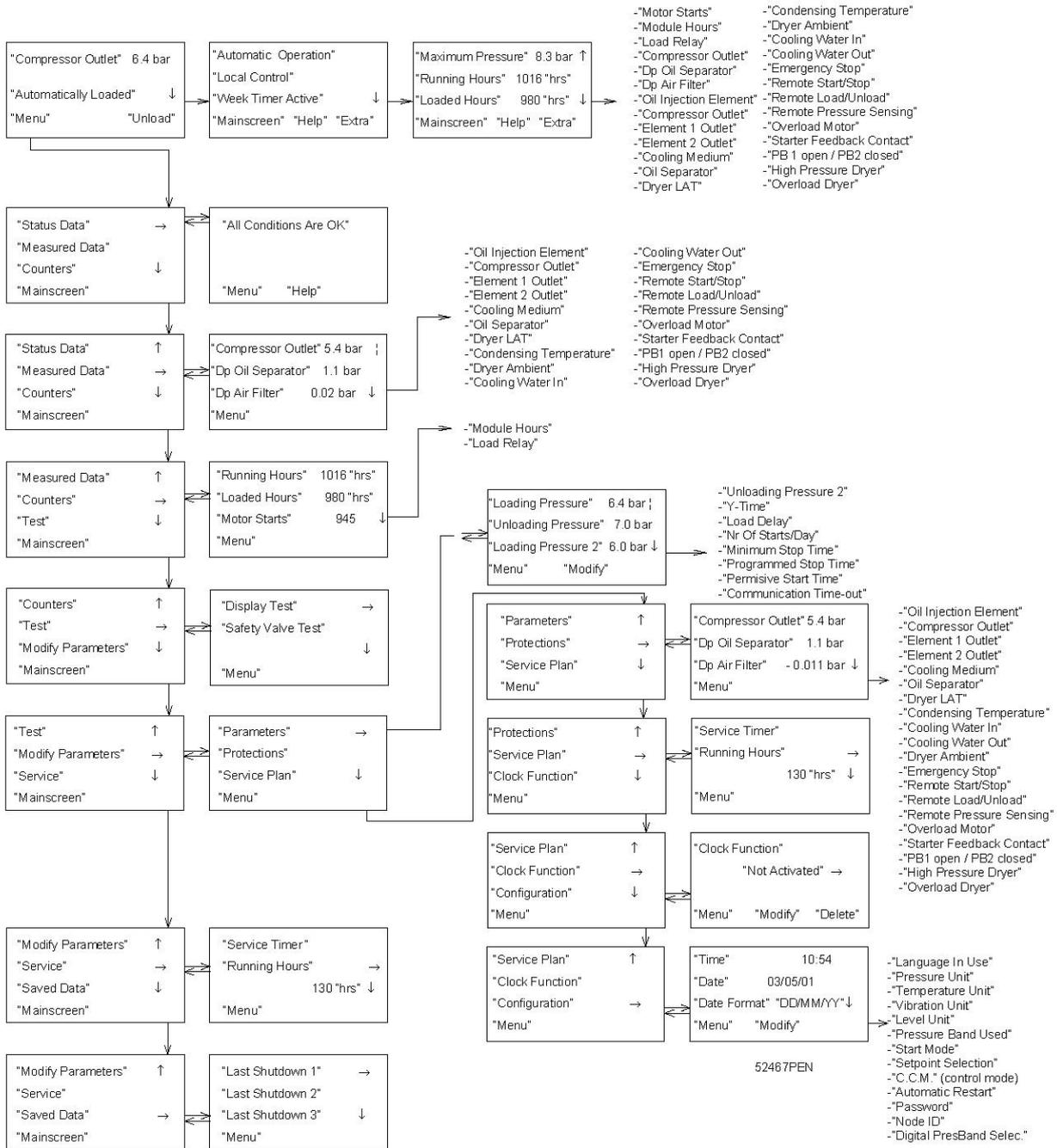
3.6 Control programs

Function

In order to facilitate programming and controlling, menu-driven control programs have been implemented in the regulator.



Menu flow for GA 90 up to GA 315 (simplified example)



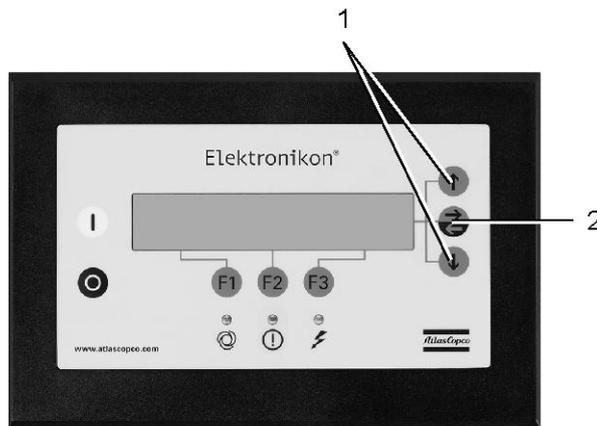
Menu flow for GA 90 W up to GA 315 W (simplified example)

Program	Function
Main screen	Shows in brief the operational status of the compressor. Is the gateway to all functions.
“Status Data”	Calls up the status of the compressor protection functions (shut-down, shut-down warning and service warning). Resets a shut-down, motor overload and service condition.
“Measured Data”	Calls up the data currently measured and the status of a number of inputs.

Program	Function
“Counters”	Calls up: <ul style="list-style-type: none"> • running hours • regulator (module) hours • number of motor starts
“Test”	Display test.
“Modify Parameters”	Modifying the settings for: <ul style="list-style-type: none"> • Parameters (e.g. loading and unloading pressures) • Protections (e.g. temperature shut-down level) • Service plans (timers for service plans) • Clock functions (automatic compressor start/stop/pressure band commands) • Configuration (time, date, display language,...)
“Service”	Calls up service plans and resets the timers after carrying out the service actions in a service plan.
“Saved Data”	Calls up the saved data: last shut-down, last emergency stop data.
“Unload”/“Load”	Loads and unloads the compressor manually.

3.7 Calling up menus

Description



52471F

Control panel

When the voltage is switched on, the Main screen is shown automatically.

Example of Main screen of GA 90 up to GA 500

“Compressor Outlet”		7.5 bar	
.			
“Automatically Loaded”			↓
“Menu”		“Unload”	
F1	F2	F3	

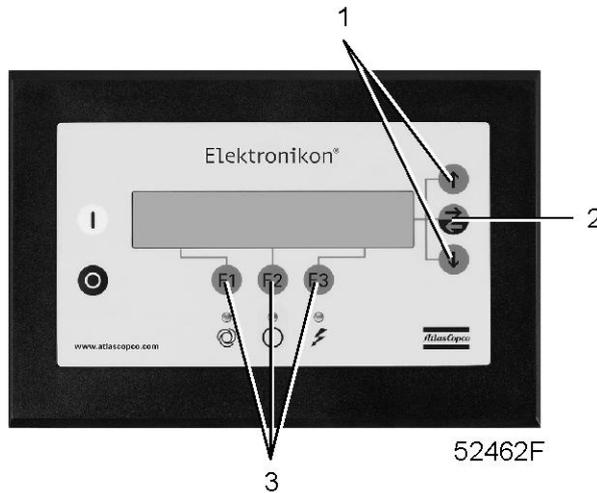
After pressing the “Menu” (F1) key, the option “Status Data” will be followed by a horizontal arrow:

- Either press the tabulator key (2) to select this menu,
- or use the arrow down key (1) until the desired submenu is followed by a horizontal arrow and then press the tabulator key (2) to select this menu.

The arrow down key (1) can be used for a quick look at the actual compressor status.

3.8 Main screen menu

Function



Control panel

The Main screen menu shows the status of the compressor operation and is the gateway to all functions implemented in the regulator.

Procedure

The Main screen is shown automatically when the voltage is switched on.

If the function or arrow keys (1, 2 and 3) are not used for some minutes, the regulator will automatically return to the Main screen.

Whenever displayed on a submenu screen, press the “Mainscreen” (F1) key to return to the Main screen.

Example of Main screen of GA 90 up to GA 500

“Compressor Outlet”		7.5 bar	
.			
“Automatically Loaded”			↓
“Menu”		“Unload”	
F1	F2	F3	

The display indicates:

- The name of the sensor and its actual reading

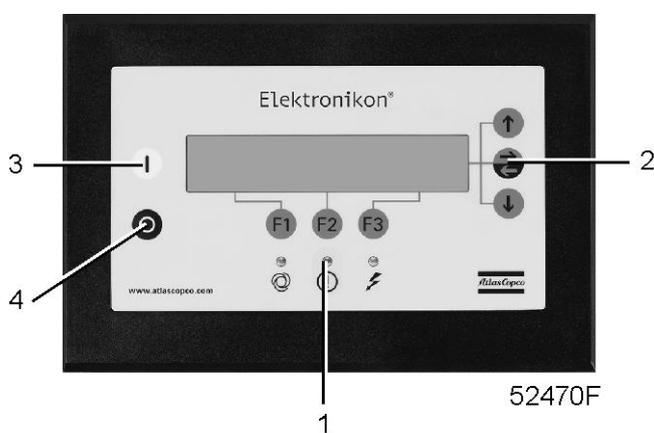
- Messages regarding the compressor operating condition
- Just above the function keys (3), the actual functions of these keys

3.9 Status data menu

Warning

	Before starting any maintenance or repairs, press the stop button (4), wait until the compressor has stopped, press the red emergency stop button and open the isolating switch (customer's installation) to switch off the voltage to the compressor.
	Close the air outlet valve and depressurize the air system.

Function



Control panel

The Status data submenu gives information regarding the status of the compressor protection functions (shut-down, shut-down warning and service warning) and allows resetting of a shut-down, motor overload and service condition.

Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1): the option “Status Data” will be followed by a horizontal arrow.
- Press the tabulator key (2).

No message exists

- General alarm LED (1) is out and the message on the display will indicate that all conditions are normal:

"All Conditions Are OK"			
.			
.			
"Menu"	"Help"		
F1	F2	F3	

A shut-down message exists

- In case the compressor is shut down, LED (1) will blink.
- In case of a shut-down due to too high a temperature at the outlet of the compressor element:

"Element Outlet"		114 °C	
.			
"Shutdown"	"Maximum"	110 °C	
"Menu"***	"Help"	***"Reset"	
F1	F2	F3	

- The indicators (***) are blinking. The screen shows the actual reading and the shut-down setting.
- It remains possible to scroll through other menus, e.g. to check the values of other parameters. When returning to the "Status Data" menu, the option "Shutdowns" will blink. This option can be selected by pressing the tabulator key (2) to return to the above shut-down screen.

Shut-down reset

- Switch off the voltage and remedy the trouble. After remedying and when the shut-down condition has disappeared, switch on the voltage and press the key "Reset" (F3).
- Press the keys "Menu" and "Mainscreen" to return to the Main screen and restart the compressor by means of start button (3).

A shut-down warning message exists

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

- If a shut-down warning exists, LED (1) is alight. The Main screen will change into a screen similar to the one below:

"Compressor Outlet"		7.0 bar	
.			
***	"Shutdown Warning"	***	↓
"Menu"***		***"Unload"	
F1	F2	F3	

- The message "Shutdown Warning" appears.
- Press the key "Menu" (F1) and the tabulator key (2) to select the "Status data" menu; the option "Protection" is blinking.
- Scroll to this option and select it by pressing the tabulator key (2). A screen similar to the one below appears:

"Element 1 Outlet"		103 °C	
.			
"Shutd. Warn." "Maximum"		100 °C	
"Menu"***		***	
F1	F2	F3	

- The screen indicates that the temperature at the outlet of compressor element 1 exceeds the programmed shut-down warning level.
- If necessary, stop the compressor by means of stop button (4) and wait until it has stopped.
- Switch off the voltage, inspect and remedy.
- The warning message will disappear automatically as soon as the warning condition disappears.

A service warning exists

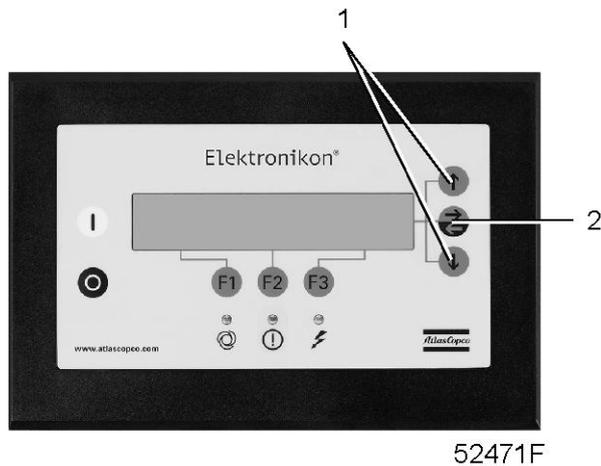
- LED (1) is alight. The Main screen will change into a screen similar to the one below:

"Compressor Outlet"		7.0 bar	
.			
"*Service Required*"			
"Menu"***		***"Unload"	
F1	F2	F3	

- The indicators (***) are blinking and the service warning message appears.
- Press the key Menu (F1) and the tabulator key (2) to select the "Status data" menu: the option "Service" is blinking.
- Scroll to this option and select it by pressing the tabulator key (2); two options may blink:
 - "Inputs": if the programmed service level of a component is exceeded (e.g. the maximum pressure drop of the air filter).
 - "Plan": if a service plan interval is exceeded.
- Stop the compressor and switch off the voltage.
- In case the service message was referring to "Inputs" (air filter): replace the filter, switch on the voltage, scroll in the "Status Data" menu to "Inputs" and press the "Reset" key to reset the service message.
- In case the service message was referring to "Plan": carry out the service actions related to the indicated plans. Reset the timers of the related plans. Contact your Atlas Copco Customer Centre. See [Service menu](#).

3.10 Measured data menu

Control panel



Function

To call up information regarding the actually measured data and the status of some inputs such as the motor overload protection. Consult the menu flow in section [Control programs](#).

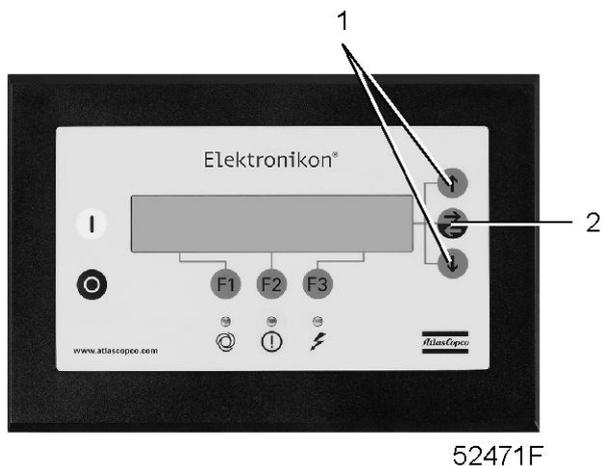
Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Measured Data” is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- By pressing the scroll keys (1), a number of actually measured data can be found.
- If one of the sensors is linked to a shut-down, service or warning function, both the actually measured value as well as the corresponding shut-down, warning or service level can be called up by pressing key (2).

3.11 Counters menu

Control panel



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Function

To call up:

- The running hours
- The loaded hours
- The number of motor starts
- The number of hours the regulator (module) has been under tension
- The number of load cycles

Procedure

Starting from the Main screen (see [Main screen menu](#)):

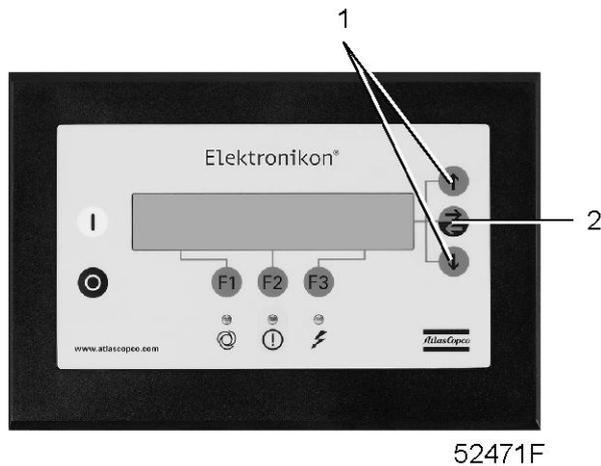
- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Counters” is followed by a horizontal arrow.
- Press the tabulator key (2) to activate the menu.
- By pressing the arrow key (1), the above-mentioned data can be found.

Example of a Counters screen

.			
“Running Hours”		2455 “hrs”	
“Loaded Hours”		1973 “hrs”	
“Motor Starts”		945	↓
“Menu”			
F1	F2	F3	

3.12 Test menu

Control panel



Function

To carry out a display test, i.e. to check whether the display and LEDs are still intact.

Procedure

- Starting from the Main screen (see [Main screen menu](#)), press the “Menu” (F1) key.
- Press arrow down key (1) until “Test” is followed by a horizontal arrow.
- Activate the menu by pressing the key (2).

To perform a display test:

- If necessary, scroll through the menu until “Display Test” is followed by a horizontal arrow.
- Press the key (2).
- During testing, the regulator will generate a series of patterns on the display which enable the operator to check that each pixel still functions normally; the LEDs are lit at the same time.
- Press the “Menu” key (F1) to return to the submenu.

3.13 Modify parameters menu

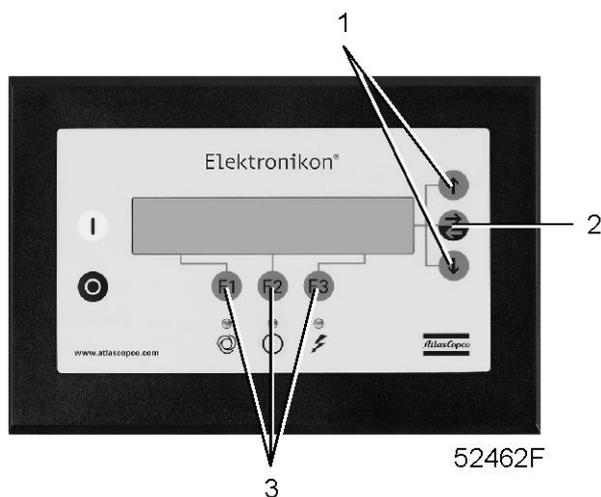
Function

To modify a number of programmable settings:

- Parameters (see section [Modifying parameters](#)).
- Protections (see section [Modifying protections](#)).
- Service plan settings (see section [Modifying service plan settings](#)).
- Clock function settings (see section [Modifying clock function settings](#)).
- Configuration settings (see section [Modifying configuration settings](#)).

3.14 Modifying parameters

Control panel



Function

To modify a number of parameters. Consult the menu flow in section [Control programs](#).

Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Modify Parameters” is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- The first item “Parameters” will be followed by a horizontal arrow.
- Press the tabulator key (2): the first items and their settings will appear.
- Press the arrow down key (1) until the parameter to be modified is followed by a horizontal arrow.

Modifying the loading pressure setpoint

If desired, the operator can program two pressure bands (Loading pressure/Unloading pressure and Loading pressure 2/Unloading pressure 2).

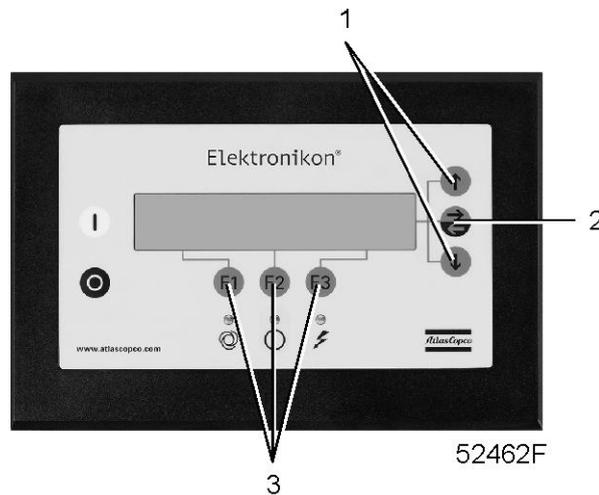
- Consult the section Procedure to select “Loading Pressure”.
- The screen shows the current setting. To modify this setting, press the key “Modify” (F2); the setting will blink.
- The key “Limits” (F2) can be used to find out the limitations for the parameter.
- Use the scroll keys (1) to change the setting.
- Press the key “Program” (F1) to program the new value or the key “Cancel” (F3) to cancel the modification operation.
- The procedure to modify other parameters pressure is similar.



The regulator will not accept new values beyond the limitations. Press the key “Limits” to check the limitations for the parameter. Consult [Programmable settings](#) for the most important settings.

3.15 Modifying protection settings

Control panel



Function

To modify protection settings:

- “Shutdown”, e.g. for the compressor element outlet temperature
- “Shutdown warning”, e.g. for the compressor element outlet temperature
- “Warning”, e.g. for the dew-point temperature
- “Service warning”, e.g. for the maximum pressure drop over the air filter

To check various compressor conditions, e.g. the status of the emergency stop button. Some parameters cannot be modified.

Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the “Menu” (F1) key.
- Press the arrow down key (1) until “Modify parameters” is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- Press the arrow down key (1) until “Protections” is followed by a horizontal arrow.
- Press the tabulator key (2): the first items will appear.
- Press the arrow down key (1) until the item to be modified is followed by a horizontal arrow and press the tabulator key (2).

Modifying settings for the compressor element temperature

- Consult the section Procedure above to select the parameter “Element 1 outlet”.
- The screen (see example below) shows the current temperature on the first line and the shut-down setting on the third line. To modify the setting, press the “Modify” (F2) key; the setting will flash.
- The “Limits” (F2) key can be used to find out the limits for the parameter.
- Use the scroll keys (1) to change the setting.
- Press “Program” (F1) to program the new value or “Cancel” (F3) to cancel the modification operation.
- The screen (see example below) shows a horizontal arrow indicating that the shut-down warning value can be modified (the procedure is similar to the description above).

- The procedure to modify other items is similar. For some settings, a delay can be programmed.

Example of the screen for GA compressors

"Element 1 outlet"		94 °C	
			→
"Shutdown"	"Maximum"	120 °C	
"Menu"	"Modify"		
F1	F2	F3	



The regulator will not accept new values beyond the limits. Press the key "Limits" to check the limits for the parameter. Consult [Programmable settings](#) for the most important settings.

3.16 Modifying service plans

Function

To modify the hour intervals for the service levels.

Service plans

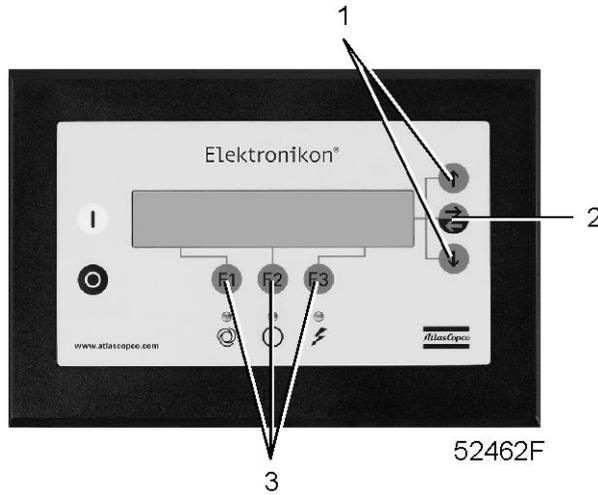
The service actions to be carried out are grouped in plans called Service level A, B, C or D. When reaching an interval, a message will appear on the screen indicating which Service plans are to be carried out.



Always consult your Atlas Copco Customer Centre in case any timer should be changed. The intervals must not exceed the programmed nominal values.

3.17 Programming clock function

Control panel



Function

To program:

- Time-based start/stop commands for the compressor
- Time-based change-over commands for the net pressure band

Programming start, stop and pressure band commands

In this example, the compressor will be programmed as follows:

- On Monday at 06:15 starting in pressure band 1
- On Friday at 18:00 changing over to pressure band 2
- On Saturday at 18:00 stopping

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Modify Parameters” is followed by a horizontal arrow.
- Activate the menu by pressing tabulator key (2).
- Use the arrow down key (1) to scroll until the option “Clock Function” is followed by a horizontal arrow.
- Activate the menu by pressing tabulator key (2); following screen appears:

“Clock Function”			→
		“Not Activated”	
“Menu”	“Modify”	“Delete”	
F1	F2	F3	

- Press the tabulator key (2), following screen appears:

"Monday"			→
"Tuesday"			
"Wednesday"			↓
"Menu"		"Delete"	
F1	F2	F3	

- Use the scroll keys (1) until the day on which a command must be programmed is followed by a horizontal arrow. Press the tabulator key (2); following screen appears:

--:--	-----		→
--:--	-----		
--:--	-----		↓
"Menu"	"Modify"	"Delete"	
F1	F2	F3	

- Press the key "Modify" (F2). The first two dashes will flash. Use the scroll keys (1) to enter "06". Press the tabulator key (2) to jump to the following two dashes. Use the scroll keys to enter "15". Press the tabulator key to jump to the row of dashes. Use the scroll keys to enter the command "Start Compressor".
- Press the key "Program" to program the command : "06:15 Start Compressor".
- Press the arrow down key (1); the horizontal arrow indicates that the second line is accessible. Press the key "Modify" and modify this line in a similar way to the following command: "06:15 Pressure Band 1".
- Press the key "Menu" (F1) and scroll to "Friday":

"Thursday"			↑
"Friday"			→
"Saturday"			↓
"Menu"		"Delete"	
F1	F2	F3	

- Programming the command to change over at 18 o'clock to "Pressure Band2" is carried out in a similar way as described above.
- Press the key "Menu" (F1) and scroll to "Saturday". Programming the command "18:00 Compressor Stop" is carried out in a similar way as described above.

Activating/deactivating the timer

- The timer can only be activated if at least one start/stop command is programmed.
- Starting from the Main screen, press the key "Menu" (F1).
- Use arrow down key (1) until the option "Modify Parameters" is followed by a horizontal arrow.
- Press the tabulator key (2) to activate the menu.
- Use the arrow down key until the option "Clock Function" is followed by a horizontal arrow, press the tabulator key (2), following screen appears:

"Clock Function"			→
.		"Not Activated"	
"Menu"	"Modify"	"Delete"	
F1	F2	F3	

- Press the key "Modify", "Not Activated" starts blinking.
- Press the arrow down key (1) "Not Activated" changes to "Activated".
- Press the key "Program".

	<p>It is necessary to program the start/stop commands in successive order timewise. Program the commands from Monday till Sunday, e.g.:</p> <ul style="list-style-type: none"> • 07.30 Start Compressor • 07.30 Pressure Band 1 • 08.30 Pressure Band 2 • 18.00 Stop Compressor
	<p>Make sure that the timer function is activated ("Activated"). If not, the programmed start/stop commands will not be executed.</p>
	<p>The timer can be deactivated again. In this case, the programmed start/stop commands will not be executed (but remain in the memory of the regulator).</p>

Modifying a command

Suppose the command to stop the compressor on Saturday 18:00 is to be modified, i.e. stopping at 17 o'clock instead of 18 o'clock.

- Starting from the Main screen, press the key "Menu" (F1), press the arrow down key (1) until the option "Modify Parameters" is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- Use the arrow down key (1) to scroll until the option "Clock Function" is followed by a horizontal arrow. Press the tabulator key, following screen appears:

"Clock Function"			→
.		"Not Activated"	
"Menu"	"Modify"	"Delete"	
F1	F2	F3	

- Press the tabulator key (2), following screen appears:

"Monday"			→
"Tuesday"			
"Wednesday"			↓
"Menu"		"Delete"	
F1	F2	F3	

- Scroll through the display until "Saturday" is followed by a horizontal arrow. Press the tabulator key (2). If necessary, scroll through the commands until the command to be modified is followed by a horizontal

arrow. Press the key “Modify”, the first two digits of the command start blinking. Modify as required using the scroll keys, i.e. in the example above change “18” into “17” using the arrow up key (1).

- If necessary, press the tabulator key (2) to go to the next field to be modified, the minutes indication and the start/stop/pressure band indication.
- Press the key “Program” to program the new command or the key “Cancel” to quit without reprogramming.

Adding a command at the end of an existing list

- Starting from the Main screen, press the key “Menu” (F1), press the arrow down key until the option “Modify Parameters” is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- Use the arrow down key (1) to scroll until the option “Clock Function” is followed by a horizontal arrow. Press the tabulator key, following screen appears:

“Clock Function”			→
		“Not Activated”	
.			
“Menu”	“Modify”	“Delete”	
F1	F2	F3	

Suppose the command to stop the compressor at 18:00 must be added to the list of Monday

- Press the tabulator key (2), following screen appears:

“Monday”			→
“Tuesday”			
“Wednesday”			↓
“Menu”		“Delete”	
F1	F2	F3	

- Scroll through the display until “Monday” is followed by a horizontal arrow. Press the tabulator key (2). Scroll through the compressor start/stop/pressure band commands until the first empty command line is indicated by the horizontal arrow.
- Press the key “Modify”; the first two digits start blinking. Enter “18:00 Compressor Stop” using the scroll keys (1) to modify a field and the tabulator key (2) to jump from one field to another.
- Press the key “Program” to program the new command or the key “Cancel” to quit without reprogramming.

Adding a command between two existing commands

Suppose the command “17:00 Pressure Band 2” must be added to the following list:

- 06:00 Start Compressor
- 06:00 Pressure Band 1
- 18:00 Stop Compressor

The regulator does not allow to enter a new command which is situated before the last command in the list timewise.

Scroll through the display until the command before which the new command must be entered is followed by a horizontal arrow (in the example above: “18:00 Stop Compressor”) and press the key “Modify”.

Change this command to the new command (in the example above “17:00 Pressure Band 2”)

Press the arrow down key and add the last command of the list (in the example above “18:00 Stop Compressor” and press the key “Program”.

Deleting a command

- Starting from the Main screen, press the key “Menu” (F1), press the arrow down key until the option “Modify Parameters” is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- Use the scroll keys (1) to scroll until the option “Clock Function” is followed by a horizontal arrow. Press the tabulator key, following screen appears:

“Clock Function”			→
		“Not Activated”	
“Menu”	“Modify”	“Delete”	
F1	F2	F3	

Deleting all commands

- Press the key “Delete” in the screen above. A question to confirm the deleting operation will appear.

Deleting all commands of a specific day

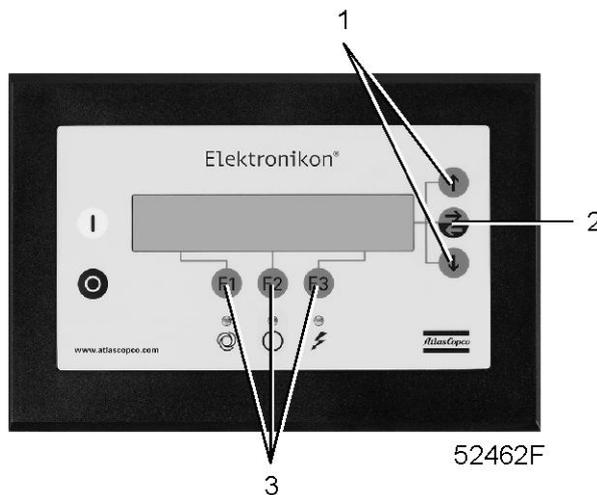
- Scroll through the display until the desired day is followed by a horizontal arrow. Press the key “Delete”, a question to confirm the deleting operation will appear.

Deleting a specific command

- Scroll through the display until the command to be deleted is followed by a horizontal arrow. Press the key “Delete”, a question to confirm the deleting operation will appear.

3.18 Modifying configuration settings

Control panel



Function

To modify a number of parameters. Consult the menu flow in section [Control programs](#).

Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Modify Parameters” is followed by an arrow pointing to the right.
- Activate the menu by pressing tabulator key (2).
- Press the arrow down key (1) to scroll until “Configuration” is followed by a horizontal arrow.
- Activate the menu by pressing tabulator key (2): the first item will appear. Scroll through the display until the option to be modified is followed by a horizontal arrow. Select the option by pressing the tabulator key (2).
- In case of the option “Time”, the second line on the screen indicates the actual setting, e.g. “14:30”. To modify this setting, press the key “Modify” (F2); the first field “14” will blink.
- Use the scroll keys (1) to change the setting, then press the tabulator key (2) to go to the next field “30”. The setting of this field can now be modified using the scroll keys (1).
- Press the key “Program” (F1) to program the new value or the key “Cancel” (F3) to cancel the modification operation (the original value will be retained).
- The procedure to modify other parameters is similar.

Programming compressor control modes

The compressor can be controlled locally, remotely or via a local area network (LAN).

Procedure

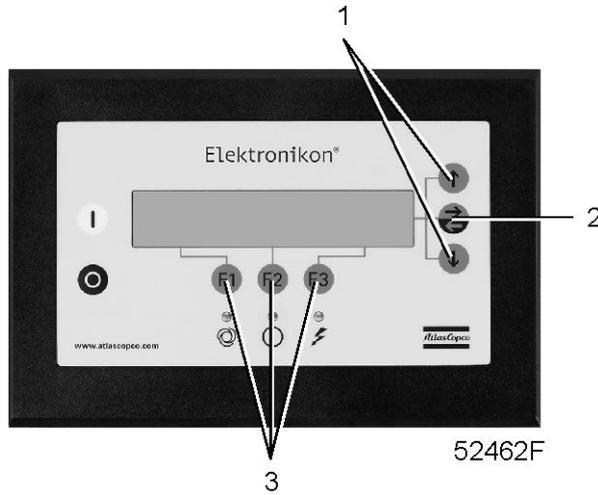
- Activate the menu “Configuration” as described above.
- Scroll through the display until the option “C.C.M.” is indicated and press the “Modify” key. Following screen appears:

.			
“C.C.M.”		“Local Control”	
.			
“Program”		“Cancel”	
F1	F2	F3	

- “Local Control” is blinking, use the scroll keys (1) to select the desired control mode.
- Press the key “Program” to program the new control mode or “Cancel” to quit without reprogramming.

3.19 Service menu

Control panel



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 previously.

Service plans

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

When a service plan interval is reached, a message will appear on the screen, see section [Status data](#). After carrying out the service actions related to the indicated levels, the timers are to be reset.

Example

Service plans	Intervals
Service plan A	Every 4000 running hours
Service plan B	Every 8000 running hours
Service plan C	Every 16000 running hours

Service actions according to	Intervals
Service plan A	4000 running hours
Service plan A and B	8000 running hours
Service plan A	12000 running hours
Service plan A, B and C	16000 running hours
...	...

Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Service” is followed by a horizontal arrow.
- Activate the menu by pressing tabulator key (2).
- A screen similar to the one below appears:

“Service Timer”			
“Running Hours”			→
		7971 “hrs”	↓
“Menu”		“Reset”	
F1	F2	F3	

- The screen shows that the total compressor running time is 7971 hours.
- Press the tabulator key (2), following screen appears:

“Next Timer”			
“Level”		A B	
		8000 “hrs”	↓
“Back”		“Reset”	
F1	F2	F3	

- The screen shows that the next service plans to be carried out are plans A and B and that these plans are to be carried out every 8000 running hours.
- Press the arrow down key (1) to find out which service plans were carried out previously, following screen appears:

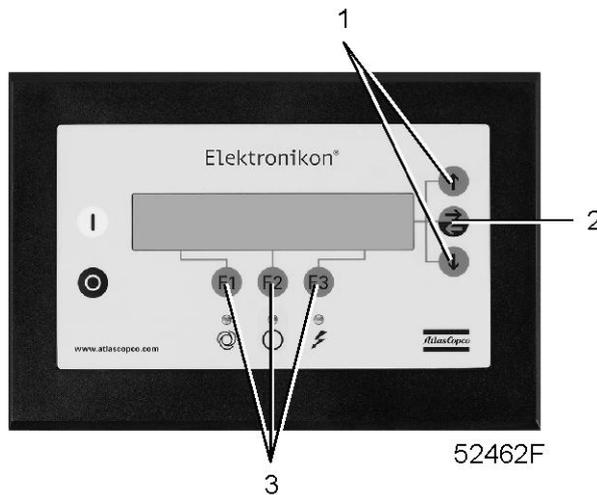
“Previous Timer”			↑
“Level”		A	
		4008 “hrs”	
“Back”			
F1	F2	F3	

- The screen shows that plan A was carried out at 4008 running hours.
- Stop the compressor, switch off the voltage and carry out the service operations related to the indicated service plans, see section [Preventive maintenance schedule](#).
- Switch on the voltage and scroll to the “Next Timer” service screen.
- Press the “Reset” button (F3). Confirm the question for resetting.

	The “Reset” button only appears when the “Next Timer” level is almost reached.
	After pressing the arrow down key in the “Service Timer” screen, the “Life Time” hours are shown, i.e. the number of hours elapsed since initial programming ex-factory. This timer is not taken into account.

3.20 Saved data menu

Control panel



Function

To call up some data saved by the regulator. These data are:

- Last shut-down data
- Last emergency stop data

Procedure

Starting from the Main screen (see [Main screen menu](#)):

- Press the key “Menu” (F1).
- Press the arrow down key (1) until “Saved Data” is followed by a horizontal arrow.
- Activate the menu by pressing the tabulator key (2).
- The first option is shown “Last shutdown 1”.
- Press the tabulator key (2) to find out the date, time and other data reflecting the status of the compressor at the last shut-down.
- If desired, scroll through the other items.

3.21 Programmable settings for GA90 up to GA500

Regulation settings

	<p>On GA90 up to GA250 and GA315 60 Hz Full-Feature compressors, the maximum working pressure is 0.25 bar/3.6 psi lower than stated below</p> <p>On GA90 up to GA250 and GA315 60 Hz Full-Feature compressors with a DD filter installed, the maximum working pressure is 0.6 bar/8.7 psi lower than stated below</p>
--	---

Parameters

		Minimum setting	Factory setting	Maximum setting
Motor running time in star	sec	10	10	20
Load delay time (star-delta)	sec	0	0	20
Load delay time (no star-delta)	sec	10	10	20
Number of motor starts (star-delta)	starts/day	0	72	72
Number of motor starts (no star-delta)	starts/day	0	3	3
Minimum stop time (for compressors with a maximum working pressure lower than 13 bar (188 psi))	sec	20	20	99
Minimum stop time (for compressors with a maximum working pressure of 13 bar (188.5 psi) and 13.8 bar (200 psi))	sec	20	90	99
Programmed stop time	sec	30	30	30
Permissive start timer	sec	0	30	255
Power recovery time (ARAVF)	sec	15	15	3600
Start delay time (ARAVF)	sec	0	3	255
Communication time-out	sec	10	20	60
Unloading pressure, 7.5 bar compressor	bar(e)	4.5	7.0	7.505
Unloading pressure, 110 psi compressor	psig	65.3	101.5	108.8
Unloading pressure, 8.5 bar compressor	bar(e)	4.5	8.0	8.505
Unloading pressure, 125 psi compressor	psig	65.3	116.0	123.3
Unloading pressure, 10 bar compressor	bar(e)	4.5	9.5	10.005
Unloading pressure, 145 psi compressor	psig	65.3	137.8	145
Unloading pressure, 13 bar compressor	bar(e)	4.5	12.5	13.005
Unloading pressure, 190 psi compressor	psig	65.3	181.3	188.5
Unloading pressure, 6.9 bar compressor	bar(e)	4.5	6.9	7.405
Unloading pressure, 100 psi compressor	psig	65.3	100.1	107.3
Unloading pressure, 8.6 bar compressor	bar(e)	4.5	8.6	9.105
Unloading pressure, 125 psi compressor	psig	65.3	124.7	132
Unloading pressure, 10.4 bar compressor	bar(e)	4.5	10.3	10.805
Unloading pressure, 150 psi compressor	psig	65.3	10.3	156.6
Unloading pressure, 13.8 bar compressor	bar(e)	4.5	13.3	13.805
Unloading pressure, 200 psi compressor	psig	65.3	149.4	200
Loading pressure, 7.5 bar compressor	bar(e)	4.5	6.4	7.505
Loading pressure, 110 psi compressor	psig	65.3	92.8	108.8
Loading pressure, 8.5 bar compressor	bar(e)	4.5	7.4	8.505
Loading pressure, 125 psi compressor	psig	65.3	107.3	123.3
Loading pressure, 10 bar compressor	bar(e)	4.5	8.9	10.005
Loading pressure, 145 psi compressor	psig	65.3	129.1	145.1
Loading pressure, 13 bar compressor	bar(e)	4.5	11.9	13.005
Loading pressure, 190 psi compressor	psig	65.3	172.6	188.6
Loading pressure, 6.9 bar compressor	bar(e)	4.5	6.3	7.405
Loading pressure, 100 psi compressor	psig	65.3	91.4	107.4

		Minimum setting	Factory setting	Maximum setting
Loading pressure, 8.6 bar compressor	bar(e)	4.5	8.0	9.105
Loading pressure, 125 psi compressor	psig	65.3	91.4	132.1
Loading pressure, 10.4 bar compressor	bar(e)	4.5	9.7	10.805
Loading pressure, 150 psi compressor	psig	65.3	140.7	156.7
Loading pressure, 13.8 bar compressor	bar(e)	4.5	12.7	13.805
Loading pressure, 200 psi compressor	psig	65.3	184.2	200.2

Protection settings for GA90 up to GA250 and GA315 60 Hz

		Minimum setting	Factory setting	Maximum setting
Compressor outlet pressure (shut-down warning level)	bar	0	16.5	17.0
Compressor outlet pressure (shut-down warning level)	psi	0	239.3	246.5
Compressor outlet pressure (shut-down level)	bar	0	17.0	17.0
Compressor outlet pressure (shut-down level)	psi	0	246.5	246.5
Oil injection pressure, element (start protection)	bar	2.0	2.5	13.2
Oil injection pressure, element (start protection)	psi	29	36.2	191.4
Compressor outlet temperature (without DD filter) (shut-down warning level)	°C	0	66	120
Compressor outlet temperature (without DD filter) (shut-down warning level)	°F	32	150.8	248
Compressor outlet temperature (without DD filter) (shut-down level)	°C	0	80	120
Compressor outlet temperature (without DD filter) (shut-down level)	°F	32	176	248
Compressor outlet temperature (with DD filter) (shut-down warning level)	°C	0	66	100
Compressor outlet temperature (with DD filter) (shut-down warning level)	°F	32	150.8	212
Compressor outlet temperature (with DD filter) (shut-down level)	°C	0	80	100
Compressor outlet temperature (with DD filter) (shut-down level)	°F	32	176	212
Compressor outlet temperature (delay at signal)	sec	5	5	5
Compressor element outlet temperature (shut-down warning level) (without energy recovery)	°C	80	100	110

		Minimum setting	Factory setting	Maximum setting
Compressor element outlet temperature (shut-down warning level) (without energy recovery)	°F	176	212	228
Compressor element outlet temperature (shut-down level) (without energy recovery)	°C	80	110	110
Compressor element outlet temperature (shut-down level)(without energy recovery)	°F	176	230	230
Compressor element outlet temperature (shut-down warning level) (with energy recovery)	°C	80	114	120
Compressor element outlet temperature (shut-down warning level) (with energy recovery)	°F	176	237.2	248
Compressor element outlet temperature (shut-down level) (with energy recovery)	°C	80	120	120
Compressor element outlet temperature (shut-down level) (with energy recovery)	°F	176	248	248
Delay at shut-down signal	sec	5	5	5
Oil separator temperature	°C	0	120	120
Oil separator temperature	°F	32	248	248
Delay at start, motor overload	sec	0	1	1
Delay at signal, motor overload	sec	0	1	1
Delay at start, fan motor overload	sec	0	1	3
Delay at signal, fan motor overload	sec	0	1	3
Delay at start, starter feedback contact = open	sec	0	13	60
Delay at signal, starter feedback contact = closed	sec	0	2	3
Delay at start, electric condensate drain	sec	0	15	60
Delay at signal, electric condensate drain	sec	5	5	5
Delay at signal, dryer/dryer fan overload	sec	0	1	3
On Full-Feature compressors also:				
Dryer LAT temperature (shut-down warning)	°C	3	15	50
Dryer LAT temperature (shut-down warning)	°F	37.4	59	122
Dryer LAT temperature (shut-down)	°C	3	16	50
Dryer LAT temperature (shut-down)	°F	37.4	60.8	122
Delay at start	sec	0	255	255
Delay at signal	sec	0	3	10

Service settings

Service plans

		Minimum setting	Factory setting	Maximum setting
Service plan A (operating hours)	hr		4000	
Service plan B (operating hours)	hr		8000	
Service plan C (operating hours)	hr		16000	
Service plan D (running hours)	hr		24000	
Service plan I (operating hours)	hr		2000	

Analog inputs for GA90 up to GA250 and GA315 60 Hz

		Minimum setting	Factory setting	Maximum setting
Service warning level for oil separators	bar	0	0.8	0.8
Service warning level for oil separators	psi	0	11.6	11.6
Delay at signal, oil separator	sec	0	60	255
Service warning level for air filters	bar	-0.1	-0.05	-0.05
Service warning level for air filters	psi	-1.45	-0.7	-0.7
Delay at signal, air filter	sec	0	60	255
Service warning level for DD filter	bar	0.1	0.35	0.35
Service warning level for DD filter	psi	1.45	5.1	5.1
Delay at signal, DD filter	sec	0	60	255

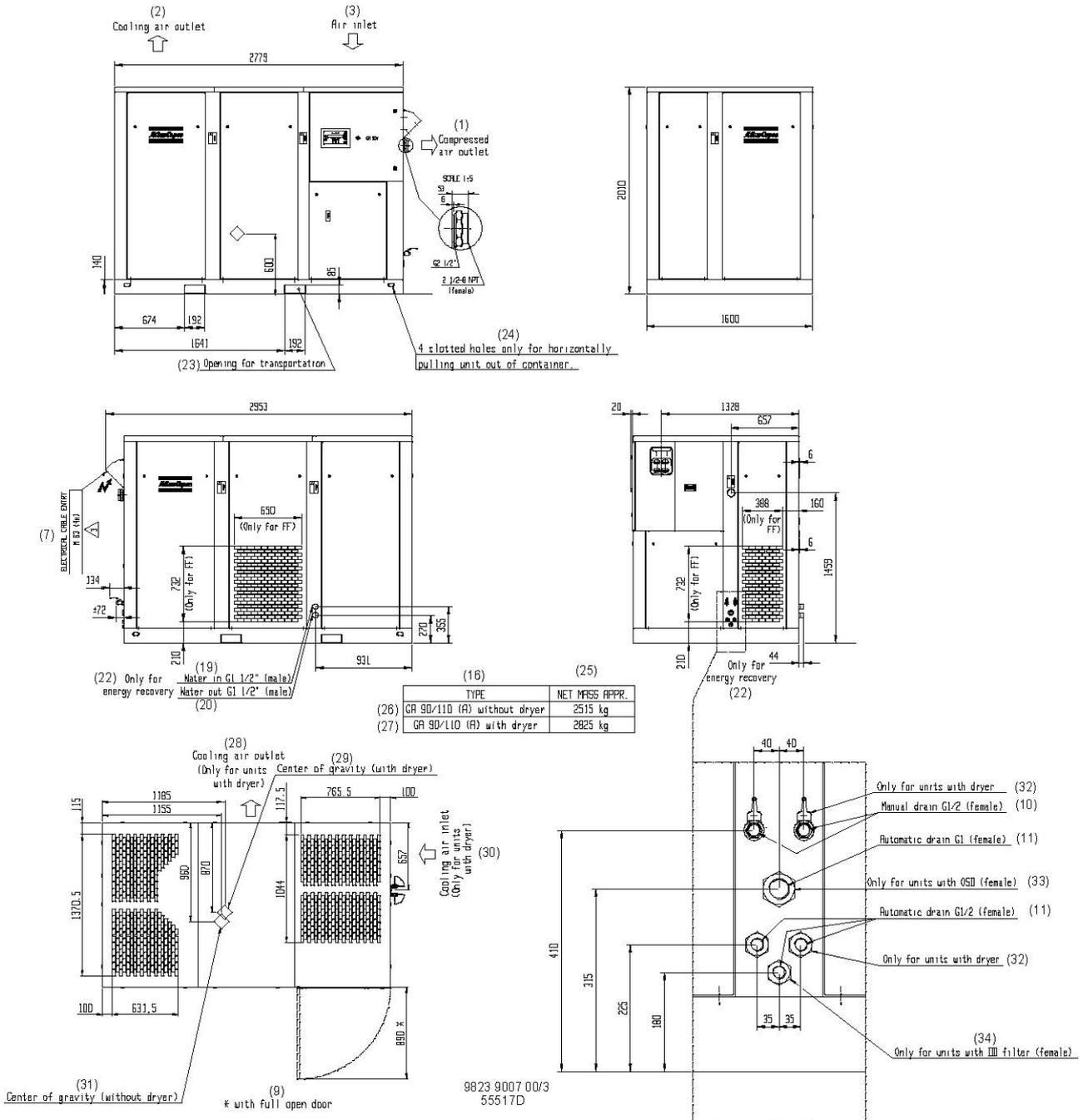
Terminology

Term	Explanation
ARAVF	Automatic restart after voltage failure. See Elektronikon regulator.
Compressor element outlet	The regulator does not accept illogical settings, e.g. if the warning level is programmed at 95°C/203°F, the minimum limit for the shut-down level changes to 96°C/204°F. The recommended difference between the warning level and shut-down level is 10°C/18°F.
Required stop period/Minimum stop time	Once the compressor has automatically stopped, it will remain stopped for the minimum stop time (approx. 20 seconds), whatever the net air pressure. In automatic operation, the compressor will not be stopped by the regulator until a standstill period of at least the sum of the minimum stop time and required stop period is expected. However, if the decrease in air net pressure should require a new start of the compressor, the regulator will start the compressor after the minimum stop time.
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. See Elektronikon regulator. To activate the automatic restart function, consult Atlas Copco.
Unloading/ Loading pressure	The regulator does not accept illogical settings, e.g. if the unloading pressure is programmed at 7.0 bar(e)/101 psig, the maximum limit for the loading pressure changes to 6.9 bar(e)/100 psig. The recommended minimum pressure difference between loading and unloading is 0.6 bar/9 psig.
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.
Permissive start level	The compressor will not start if this level is exceeded at the moment of starting. If the level remains too high for 30 seconds, the message "Start failure" will appear on the display.

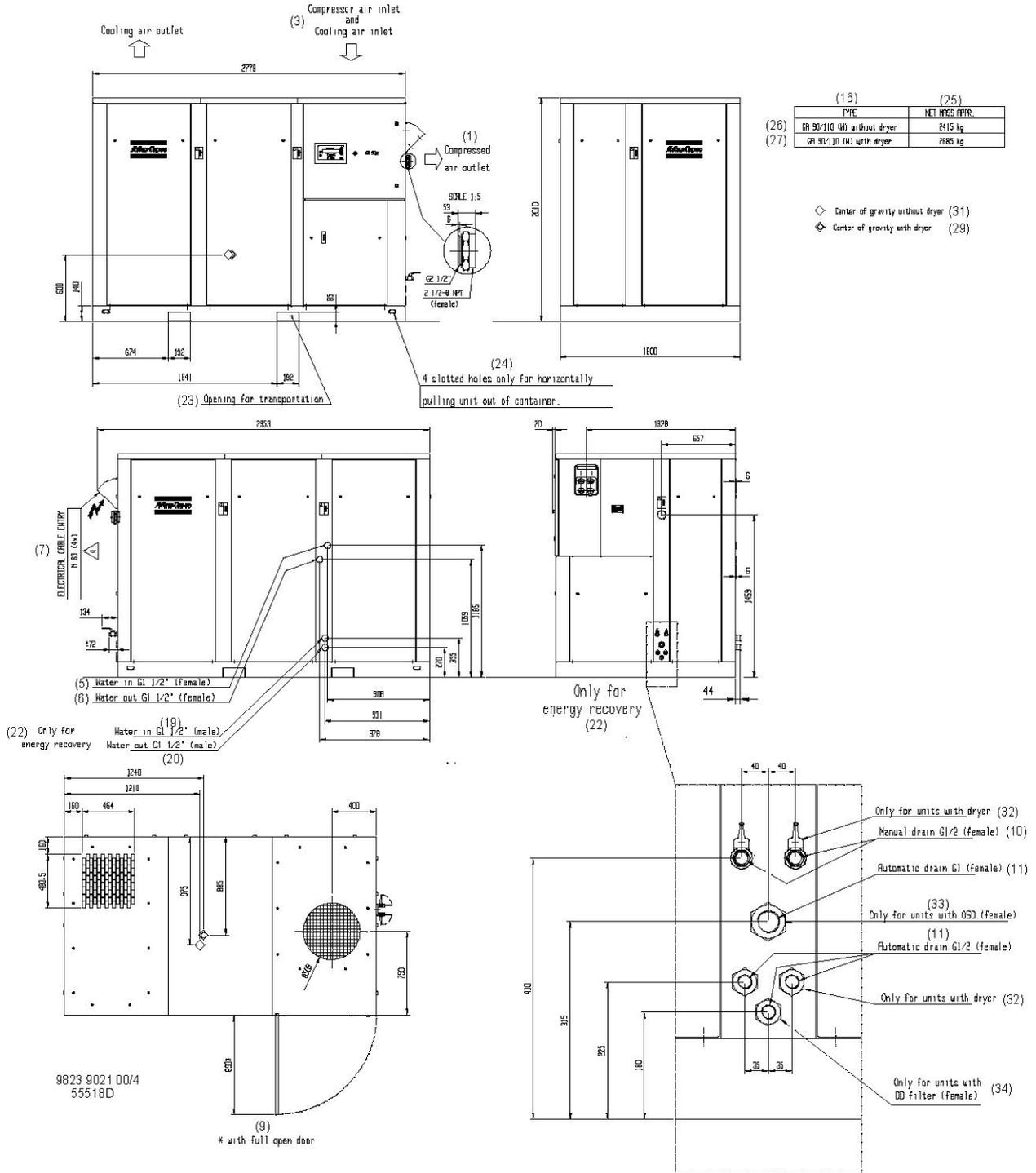
4 Installation

4.1 Dimension drawing

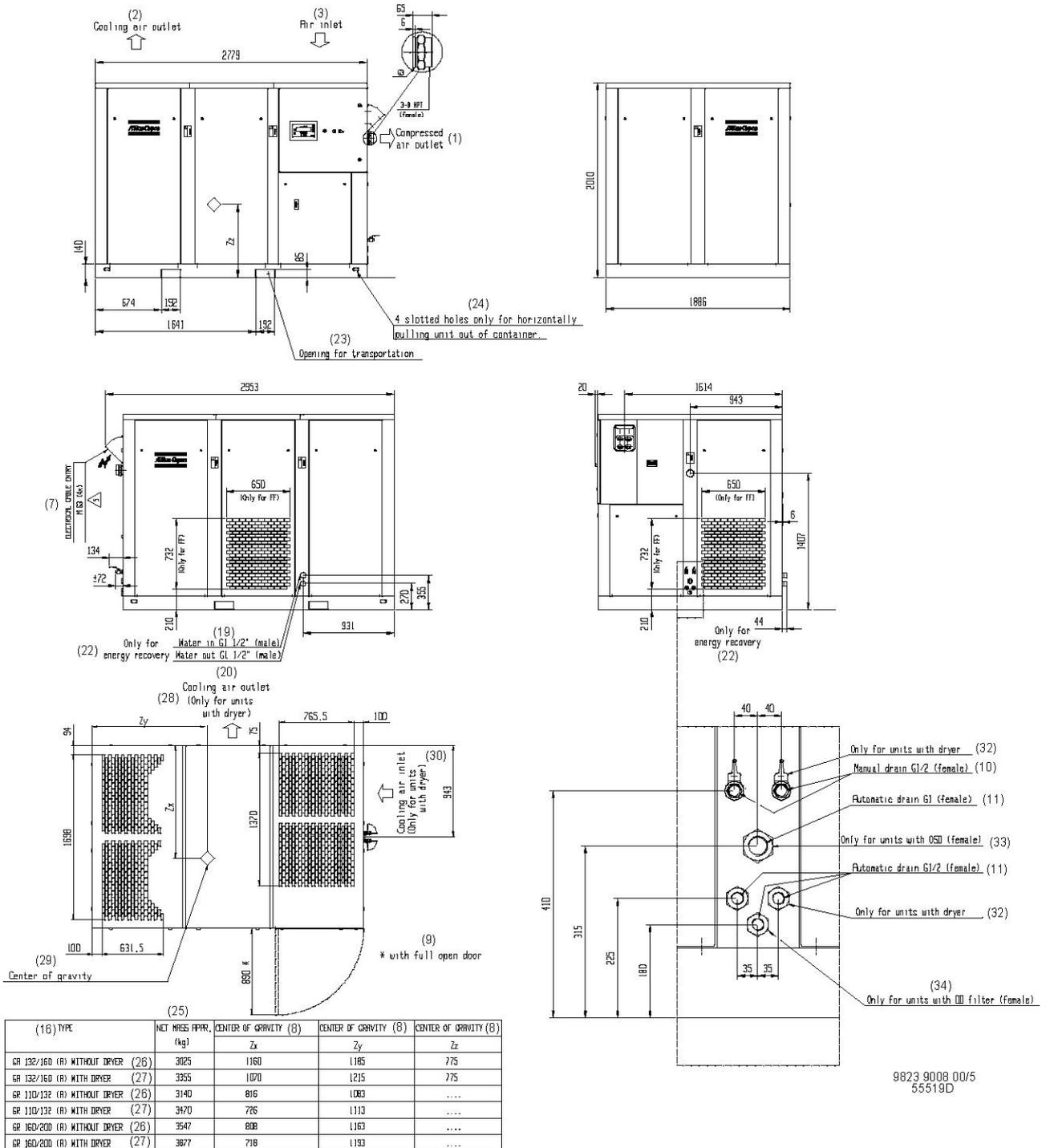
Compressor dimensions



Dimension drawing of GA90/110 air-cooled



Dimension drawing of GA90/110 water-cooled

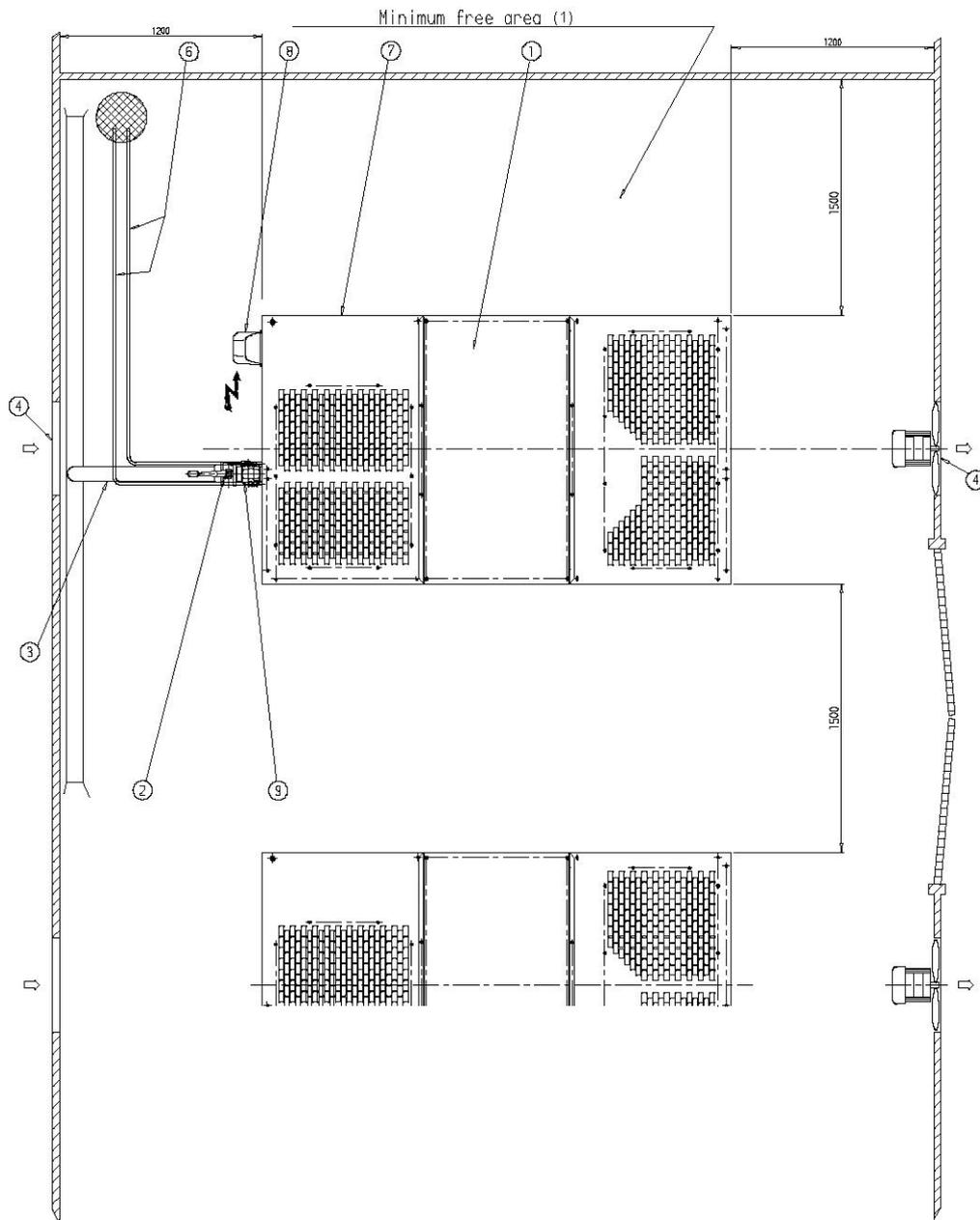


Dimension drawing of GA132/160 and GR110 up to GR200, air-cooled

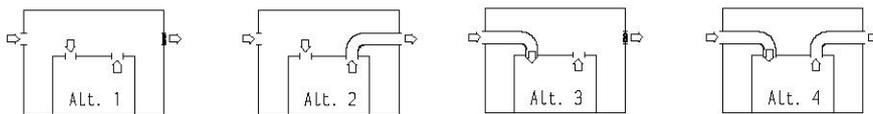
Reference	Designation
(6)	Water out
(7)	Voltage supply entrance
(8)	Centre of gravity
(9)	With door fully open
(10)	Manual drain
(11)	Automatic drain
(18)	Centre of gravity (with energy recovery)
(19)	Energy recovery, water in
(20)	Energy recovery, water out
(21)	Automatic drain, only for units with OSD
(22)	Only for energy recovery
(23)	Opening for transportation
(24)	Slotted holes for horizontally pulling unit out of container
(25)	Net mass, approximately
(26)	For units without dryer
(27)	For units with dryer
(28)	Cooling air outlet for units with dryer
(29)	Centre of gravity (with dryer)
(30)	Cooling air inlet for units with dryer
(31)	Centre of gravity (without dryer)
(32)	Only for units with dryer
(33)	Only for units with OSD
(34)	Only for units with DD filter
(35)	Outlet motor cables medium-voltage motor
(36)	Low voltage
(37)	Medium voltage
(38)	For feature dryer add
(39)	Without motor
(40)	For feature DD filter add

4.2 Installation proposal

Compressor room example

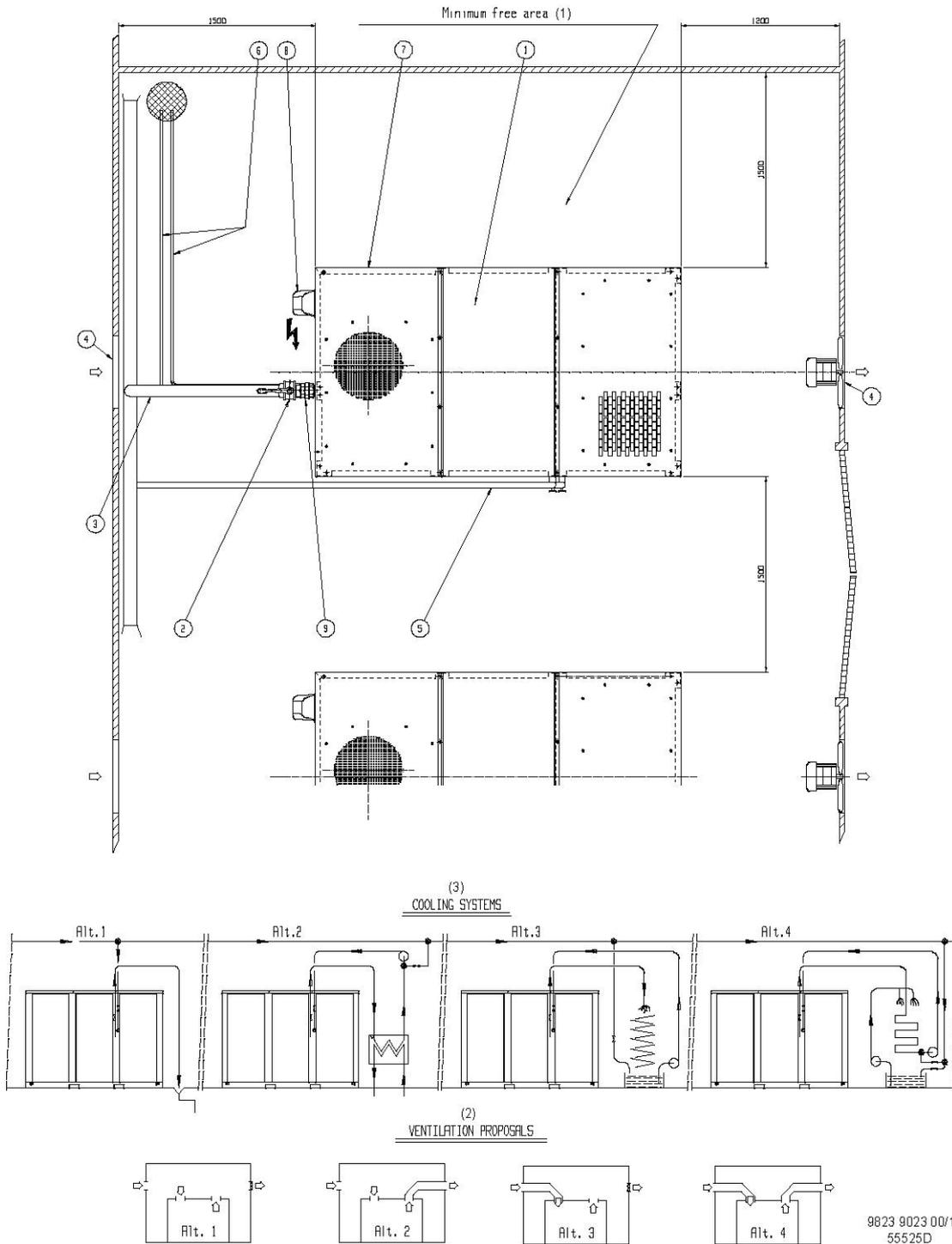


VENTILATION PROPOSALS (2)

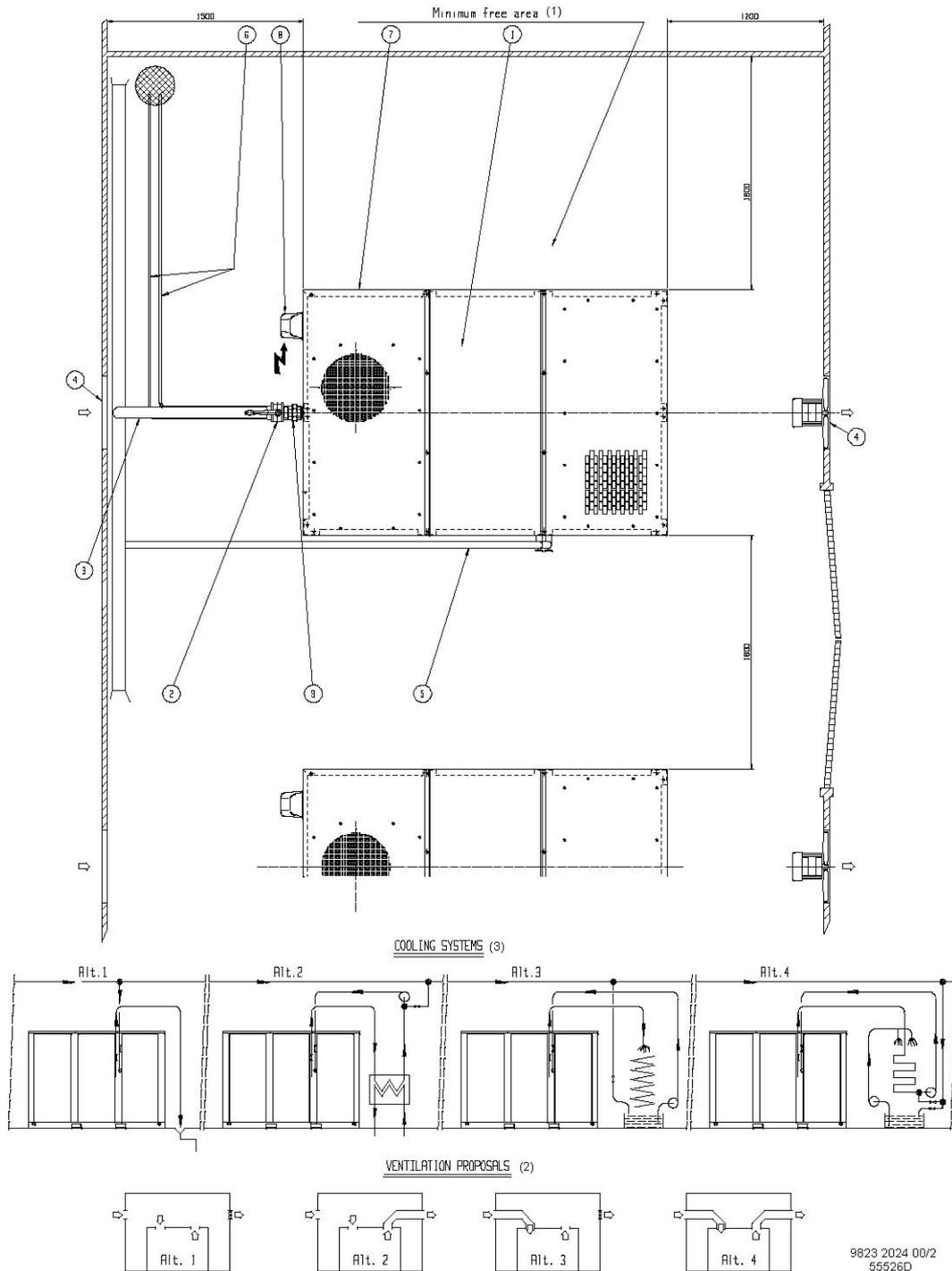


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55527D

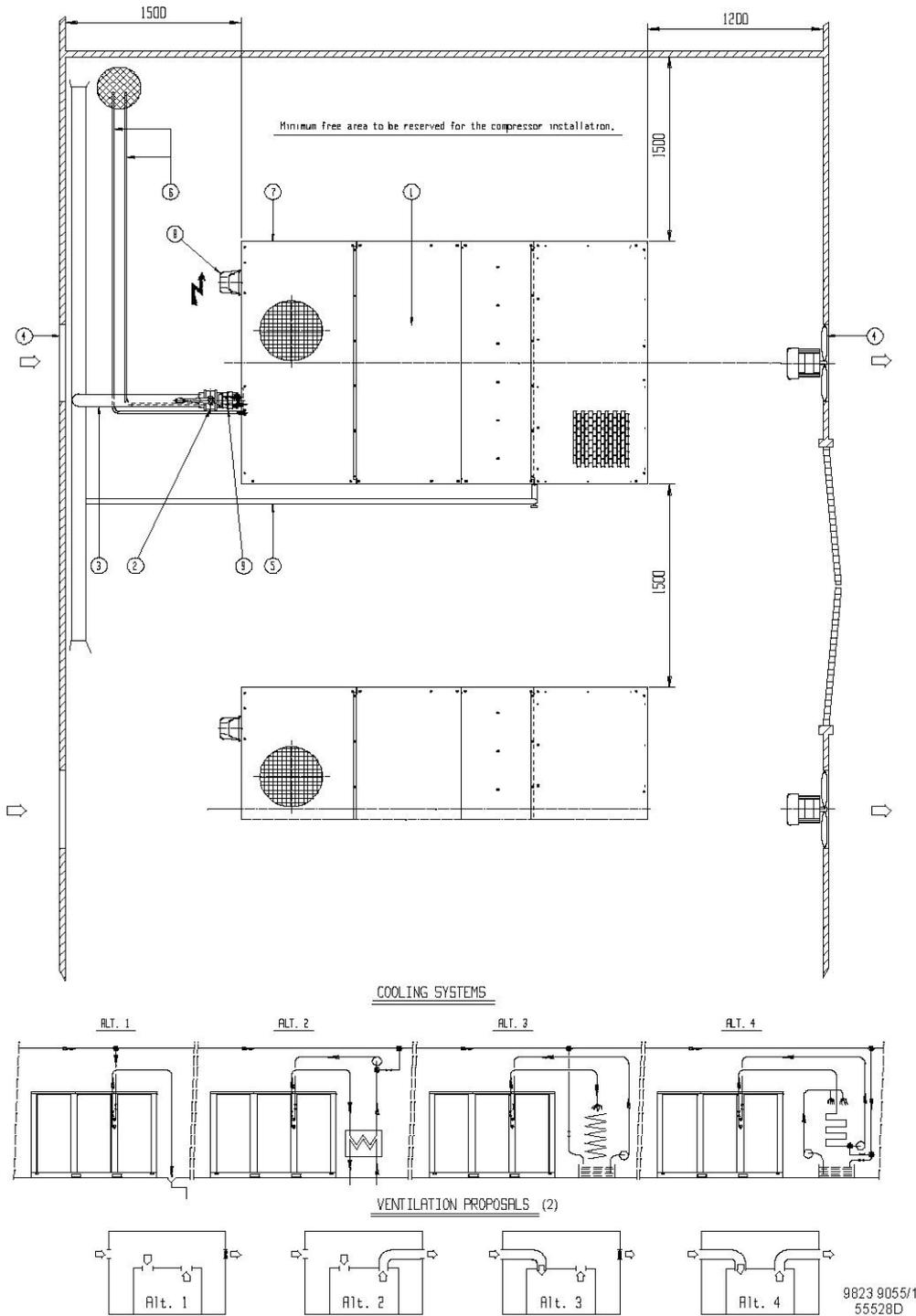
Compressor room example of GA 90 up to GA 160 air-cooled



Compressor room example of GA 90 up to GA 160 water-cooled



Compressor room example of GA 200, GA 250 and GA 315 60 Hz air-cooled



Compressor room example of GA 200, GA 250 and GA 315 60 Hz water-cooled

Text on drawing

Reference	Designation
(1)	Minimum free area
(2)	Ventilation proposals
(3)	Cooling systems

Description

Phase	Description
1	Install the compressor on a level floor suitable for taking its weight. For ventilation alternative 1 (indicated as Alt. 1), the minimum distance between the top of the bodywork and the ceiling is 1200 mm (47 in).
2	Remove the plastic plug (if provided) from the compressor air outlet pipe and fit the air outlet valve (to be provided by the customer) to the pipe. Close the valve and connect it to the net.
3	<p>The pressure drop over the air outlet pipe can be calculated as follows:</p> $dp = (L \times 450 \times Q_c^{1.85}) / (d^5 \times p)$ <p>d = Inner diameter of the outlet pipe in mm dp = Pressure drop (recommended maximum = 0.1 bar) L = Length of outlet pipe in m p = Absolute pressure at the compressor outlet in bar(a) Q_c = Free air delivery of the compressor in l/s</p> <p>It is recommended that the connection of the compressor air outlet pipe is made on top of the main air net pipe in order to minimise carry-over of possible condensate residue. As a rule of thumb, the following formula can be used to calculate the recommended volume of the air net:</p> $V = (30 \times C \times p \times Q) / D_p$ <p>C = Correction factor D_p = Pressure difference between unloading and loading pressures in bar (recommended minimum = 0.6) p = Compressor inlet pressure in bar absolute Q = Free air delivery of compressor in l/s V = Recommended air net volume in l</p>

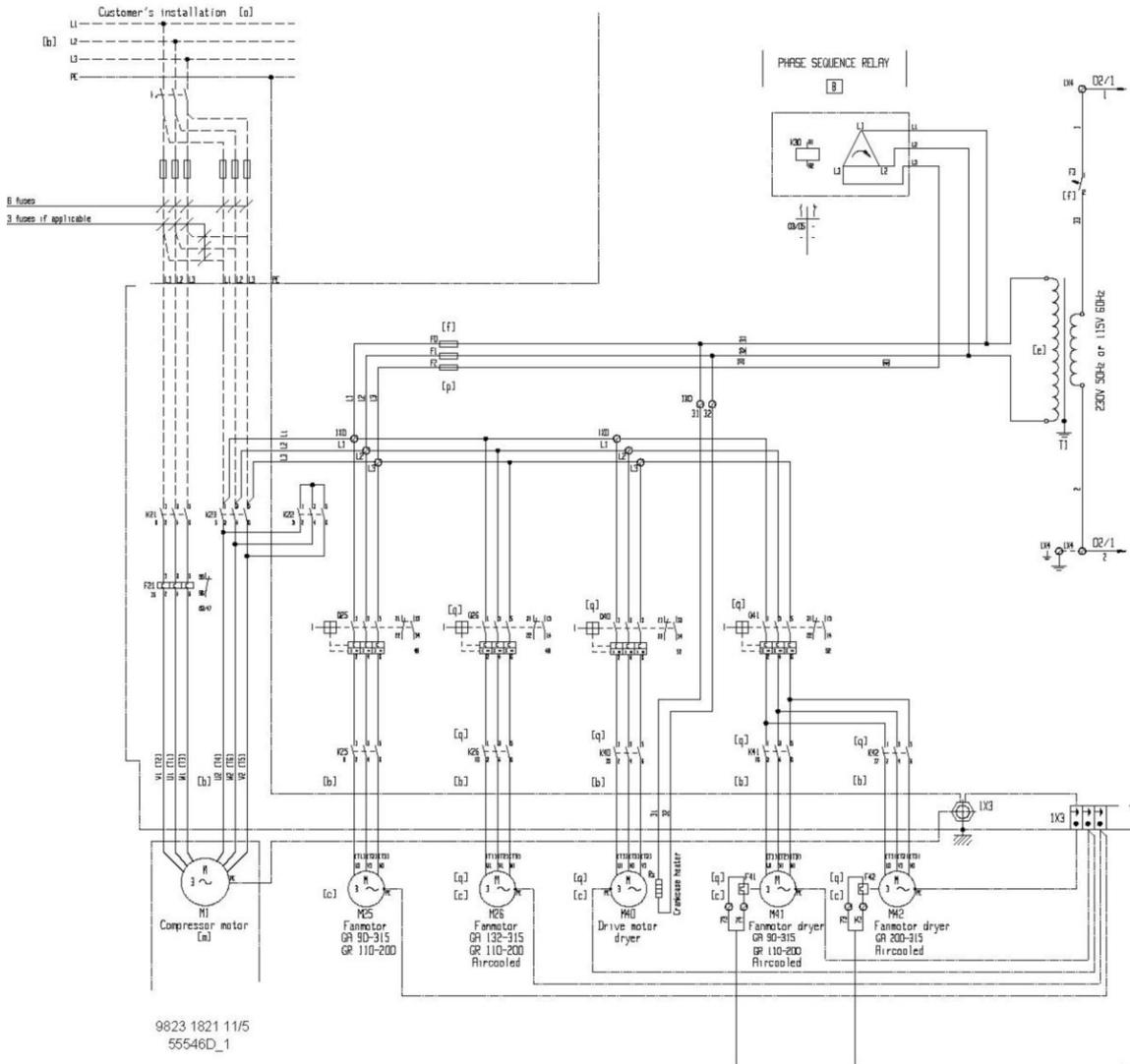
Correction factors

Air consumption divided by compressor free air delivery	Correction factor C
0.9	0.10
0.8	0.15
0.7	0.20
0.5	0.25
0.3	0.20
0.2	0.15
0.1	0.10

Phase	Description
4	<p>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).</p> <p>The required ventilation to limit the compressor room temperature can be calculated as follows:</p> <p>On air-cooled compressors: $Q_v = 0.92 N/dT$ On water-cooled compressors: $Q_v = 0.1 N/dT$ Q_v = Required ventilation capacity in m^3/s N = Shaft input of compressor in kW dT = Temperature increase in compressor room</p> <p>If cooling air ducts are installed, the maximum allowable pressure drop over the ducts is 30 Pa (0.12 in wc). The maximum pressure drop depends on the ambient temperature. The fan capacity should match the compressor fan capacity at a pressure head equal to the pressure drop caused by the cooling air outlet ducts. Consult Atlas Copco.</p>
5	<p>A water shut-off valve and water drain valve in the compressor water inlet pipe and outlet pipe can be installed by the customer. If water shut-off valves are installed, a safety device with set pressure according to the maximum cooling water inlet pressure has to be installed between the compressor water outlet pipe and the shut-off valve. When operating the unit, the operator must ensure that the cooling water system cannot be blocked.</p> <p>The above mentioned also applies for the energy recovery cooling system.</p> <p>Remove the plastic plugs (if provided) from the compressor water pipes and connect the pipes to the cooling water circuit.</p>
6	<p>Remove the plastic plugs (if provided) from the condensate outlets and fit the manual condensate drain valve. Lay out the drain piping towards the condensate collector. The drain pipes must not dip into the water of the drain collector. It is recommended to provide a funnel to allow visual inspection of the condensate flow.</p>
7	<p>Location of the Elektronikon regulator.</p>
8	<p>See Electric cable size for the recommended size of the supply cables. Check that the electrical connections correspond to the local codes. The installation must be earthed and protected against short circuits by fuses in all phases. An isolating switch must be installed near the compressor.</p>
9	<p>Location of a pipe coupling</p>

4.3 Electric cable size

Electrical connections



Electrical connections of GR 110 up to GR 200, GA 90 up to GA 250 and GA 315 60 Hz compressors

Cable size

GA 90 up to GA 250 50 Hz and GR 50 Hz compressors

Compressor	Supply voltage	Cable size
GA 90	230 V	2x (3x120 mm ² +70 mm ²)
GA 90	400 V	2x (3x50 mm ² +25 mm ²)
GA 90	500 V	2x (3x35 mm ² +20 mm ²)
GA 110	230 V	2x (3x150 mm ² +70 mm ²)

Compressor	Supply voltage	Cable size
GA 110	400 V	2x (3x70 mm ² +35 mm ²)
GA 110	500 V	2x (3x50 mm ² +25 mm ²)
GA 132	230 V	2x (3x240 mm ² +120 mm ²)
GA 132	400 V	2x (3x95 mm ² +50 mm ²)
GA 132	500 V	2x (3x70 mm ² +35 mm ²)
GA 160	230 V	4x (3x95 mm ² +50 mm ²)
GA 160	400 V	2x (3x120 mm ² +70 mm ²)
GA 160	500 V	2x (3x95 mm ² +50 mm ²)
GA 200	400 V	2x (3x185 mm ² +95 mm ²)
GA 200	500 V	2x (3x120 mm ² +70 mm ²)
GA 250	400 V	2x (3x240 mm ² +120 mm ²)
GA 250	500 V	2x (3x150 mm ² +70 mm ²)

GA 90 up to GA 315 60 Hz and GR 60 Hz IEC compressors

Compressor	Supply voltage	Cable size
GA 90	220 - 230 V	2x (3x150 mm ² +70 mm ²)
GA 90	380 V	2x (3x70 mm ² +35 mm ²)
GA 90	440 - 460V	2x (3x50 mm ² +25 mm ²)
GA 110	220 - 230 V	2x (3x185 mm ² +95 mm ²)
GA 110	380 V	2x (3x95 mm ² +50 mm ²)
GA 110	440 - 460V	2x (3x70 mm ² +35 mm ²)
GA 160	380 V	2x (3x120 mm ² +70 mm ²)
GA 160	440 - 460V	2x (3x95 mm ² +50 mm ²)
GA 200	380 V	2x (3x185 mm ² +95 mm ²)
GA 200	440 - 460V	2x (3x150 mm ² +70 mm ²)
GA 250	380 V	2x (3x240 mm ² +120 mm ²)
GA 250	440 - 460V	2x (3x185 mm ² +95 mm ²)
GA 315	380 V	4x (3x95 mm ² +50 mm ²)
GA 315	440 - 460V	2x (3x240 mm ² +120 mm ²)

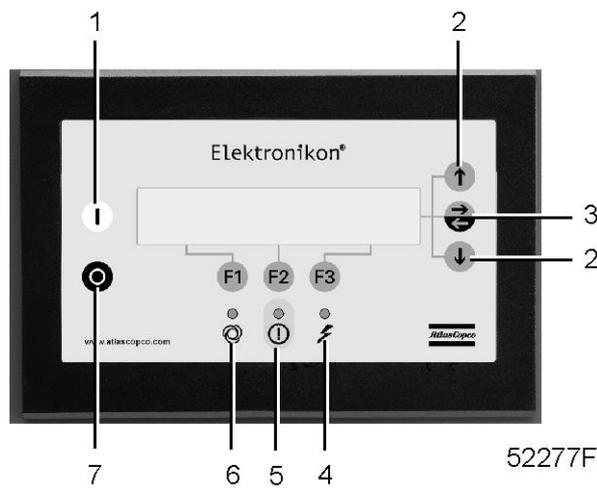
GA 90 up to GA 315 60 Hz and GR 60 Hz, CSA/UL compressors

Compressor	Supply voltage	Cable size
GA 90	440 - 460V	2x (3xAWG00+AWG4)
GA 90	575 V	2x (3xAWG2+AWG6)
GA 110	440 - 460V	2x (3xAWG00+AWG3)
GA 110	575 V	2x (3xAWG1+AWG6)
GA 160	440 - 460V	2x (3xMCM250+AWG2) or (4X3XAWG2+AWG)
GA 160	575 V	2x(3XAWG000+AWG3)
GA 200	440 - 460V	2x (3xMCM500+AWG0)

Compressor	Supply voltage	Cable size
GA 200	575 V	2x (3xMCM300+AWG2)
GA 250	440 - 460V	4x (3xAWG3/0+AWG3)
GA 250	575 V	2x (3xMCM350+AWG0)
GA 315	440 - 460V	4x (3xAWG4/0+AWG3)
GA 315	575 V	4x (3xAWG2/0+AWG4)

4.4 Pictographs

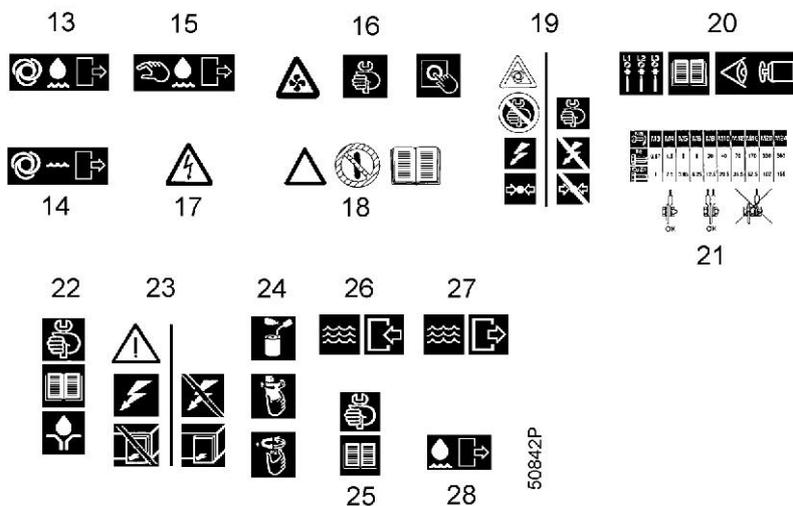
Control panel



Pictographs of control panel

Reference	Description
1	Start
2	Keys to scroll through display
3	Key to go to next field on display
4	Voltage on
5	Alarm
6	Automatic operation
7	Stop

Other locations



Reference	Description
13	Automatic condensate drain
14	Automatic condensate drain for optional oil/water separator (type OSD)
15	Manual condensate drain
16	Stop the compressor before maintenance or repair
17	Warning: under tension
18	Read Instruction book before starting the compressor
19	Switch off the voltage and depressurize the compressor before maintenance or repair
20	Before connecting the compressor electrically, consult the Instruction book for the motor rotation direction
21	Torques for steel (Fe) or brass (CuZn) bolts
22	Consult the Instruction book before greasing
23	Switch off the voltage before removing the protecting cover inside the electric cabinet
24	Oil the gaskets, screw on the filters and tighten by hand (approx. one half turn)
25	Consult the Instruction book before maintenance or repair
26	Cooling water inlet
27	Cooling water outlet
28	Oil outlet

4.5 Cooling water requirements

Recommendations

The cooling water quality must meet certain minimum requirements.

No general recommendation can encompass the effects of all combinations of the various compounds, solids and gases typically found in cooling water in interaction with different materials.

Only non-treated water must be used.

This recommendation is a general guide line for acceptable coolant quality.

Type of system

First, it is important to consider whether you are dealing with a closed system or an open system. In a closed system, the same cooling water circulates through a system without contact with air.

An open system is a pass-through system, or a circulating system with a cooling tower. In the latter case, the composition of the water that enters the cooler must be considered, and not the composition of the make-up water. Due to the evaporative effect in the cooling tower, much higher concentrations of ions can be obtained in the circulating water than in the make-up water.

Ryznar stability index (RSI)

The Ryznar Stability Index (RSI) is a parameter for predicting whether water will tend to dissolve or precipitate calcium carbonate. The adhesion of scaling deposits and their effect are different on different materials, but the equilibrium of the water (scaling or corrosive) is only determined by its actual pH value and by the saturation pH value (pH_s).

The saturation pH value is determined by the relationship between the calcium hardness, the total alkalinity, the total solids concentration and the temperature.

The Ryznar Index is calculated as follows :

$$RSI = 2 * pH_s - pH$$

Symbol	Explanation
pH	Measured pH (at room temperature) of water sample
pH_s	pH at saturation

The pH_s is calculated by using :

$$pH_s = (9.3 + A + B) - (C + D)$$

Symbol	Explanation
A	Depends on the total solids concentration (mg/l)
B	Depends on the highest cooling water temperature ($^{\circ}C/^{\circ}F$), ($T=75^{\circ}C/167^{\circ}F$)
C	Depends on the calcium hardness (ppm $CaCO_3$)
D	Depends on the HCO_3^- concentration or M-alkalinity (mval/l)

The values of A, B, C and D can be found in the following table.

Total dissolved solids (mg/l)	A	Temperature ($^{\circ}C$)	B	Ca-hardness (ppm $CaCO_3$)	C	M-alkalinity (mval/l)	D
50 - 300	0.1	0 - 1	2.6	10 - 11	0.6	0.20 - 0.22	1.0
400-1000	0.2	2 - 6	2.5	12 - 13	0.7	0.24 - 0.26	1.1
		7 - 9	2.4	14 - 17	0.8	0.28 - 0.34	1.2
		10 - 13	2.3	18 - 22	0.9	0.36 - 0.44	1.3
		14 - 17	2.2	23 - 27	1.0	0.46 - 0.54	1.4
		18 - 21	2.1	28 - 34	1.1	0.56 - 0.70	1.5
		22 - 27	2.0	35 - 43	1.2	0.72 - 0.88	1.6

Total dissolved solids (mg/l)	A	Temperature (°C)	B	Ca-hardness (ppm CaCO ₃)	C	M-alkalinity (mval/l)	D
		28 - 31	1.9	44 - 55	1.3	0.90 - 1.10	1.7
		32 - 37	1.8	56 - 69	1.4	1.12 - 1.38	1.8
		38 - 44	1.7	70 - 87	1.5	1.40 - 1.76	1.9
		45 - 50	1.6	88 - 110	1.6	1.78 - 2.20	2.0
		51 - 56	1.5	111 - 138	1.7	2.22 - 2.78	2.1
		57 - 63	1.4	138 - 174	1.8	2.80 - 3.54	2.2
		64 - 71	1.3	175 - 220	1.9	3.54 - 4.40	2.3
		72 - 80	1.2	230 - 270	2.0	4.6 - 5.4	2.4
				280 - 340	2.1	5.6 - 7.0	2.5
				350 - 430	2.2	7.2 - 8.8	2.6
				440 - 550	2.3	9.0 - 11.0	2.7
				560 - 690	2.4	11.2 - 13.8	2.8
				700 - 870	2.5	14.0 - 17.6	2.9
				880 - 1000	2.6	17.8 - 20.0	3.0

Interpretation of the value obtained

RSI	Water condition	Action
RSI<3.9	Very high scale formation	Water cannot be used.
4.0<RSI<5.5	High boiler scale formation	Regular inspection and descaling operation necessary.
5.6<RSI<6.2	Slight boiler scale formation	Water treatment not necessary. Occasional inspection recommended.
6.3<RSI<6.8	Neutral water	Water treatment not necessary. Occasional inspection recommended.
6.9<RSI<7.5	Slight corrosion at higher temperature	Water treatment not necessary. Occasional inspection recommended.
7.6<RSI<9.0	Strong corrosion	Regular inspection necessary, use of corrosion inhibitor recommended.
9.1<RSI<11	Very strong corrosion	Regular inspection necessary, use of corrosion inhibitor required.
RSI>11	Very strong corrosion in complete water system	Water should not be used.

The table indicates that distilled or demineralised water should never be used, as their RSI is > 11.

The RSI only indicates the equilibrium of scaling - descaling. A cooling water showing good RSI conditions can still be unsuitable due to other factors.

From the table above, the RSI index should be between 5.6 and 7.5; otherwise, contact a specialist.

pH

The effect of pH is already calculated in the Ryznar index, but the pH itself has some additional limitations :
6.8 < pH

Total dissolved solids (TDS)

This is the sum of all the ions in the water. It can be derived from the dry residue after evaporation (but not including suspended solids), or it can be estimated from the electrical conductivity.

In a closed system, the following limits apply : TDS < 3000 mg/l (< 3800 microS/cm)

For an open system, the following limits apply : TDS < 450 mg/l (< 580 microS/cm)

Chlorides (Cl⁻)

Chloride ions will create pitting corrosion on stainless steel. Their concentration should be limited:

Closed cooling system : chlorides < 500 ppm

Open cooling system : chlorides < 150 ppm

However, if the water is scaling, lower limits should be used. (See The Ryznar stability index (RSI)).

Free chlorine (Cl₂)

A level of 0.5 ppm should not be exceeded for long periods.

For shock treatments, a maximum limit of 2 ppm for maximum 30 minutes/day applies.

Sulphates (SO₄⁻)

Closed cooling system : sulphates < 400 ppm

Open cooling system : sulphates < 150 ppm

Carbonate hardness

Closed cooling system : 50-1000 ppm CaCO₃

Open cooling system : 50-500 ppm CaCO₃

HCO₃⁻ / SO₄²⁻ should be > 1

Ammonia

< 0.5 ppm

Copper

< 1 ppm

Iron and manganese

< 1 ppm

Organics

No algae

No oil

Suspended solids

Non-soluble particles, size < 1 mm.

< 10 ppm

5 Operating instructions

5.1 Initial start-up

Warning

	The operator must apply all relevant Safety precautions .
	Switch off the voltage before making any adjustment.

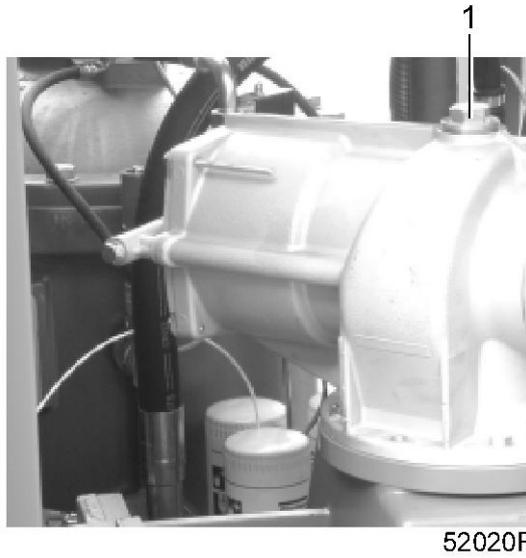
Outdoor/altitude operation

If the compressor is installed outdoors or if the air inlet temperature can be below freezing point, precautions must be taken. In this case, and also if operating at high altitude, consult Atlas Copco.

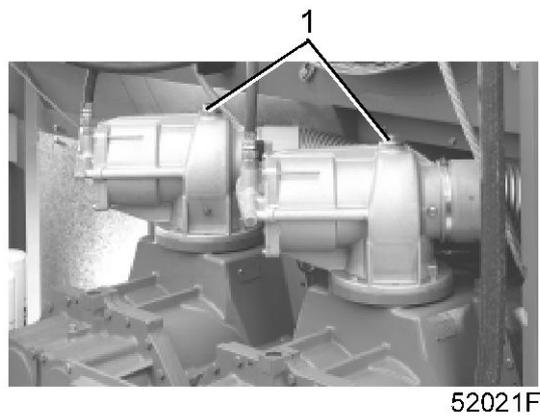
Moving/lifting

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

General preparations



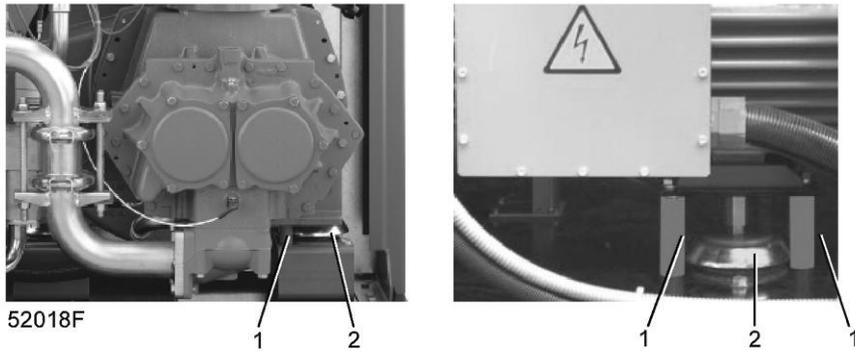
Plugs to fill compressor elements of GA 90 up to GA 160 and GR 110 up to GR 200 at initial start-up



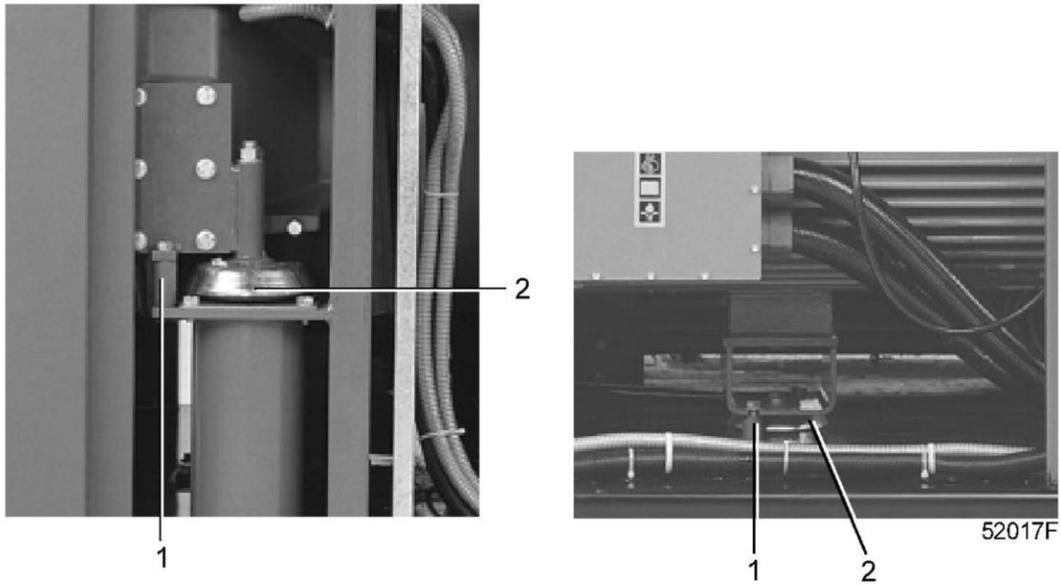
Plugs to fill compressor elements of GA 200, GA 250 and GA3 15 60 Hz at initial start-up

Step	Action
1	Install the compressor, see the sections Dimension drawing , Installation proposal and Electric cable size .
2	Affix the sticker, giving brief operating instructions, next to the control panel. Stick labels near the control panel to warn the operator that: <ul style="list-style-type: none"> • the compressor may start automatically after a voltage failure • the compressor is automatically started and stopped • the compressor may be remotely controlled
3	A number of VCI (Volatile Corrosion Inhibitor) plates are provided inside the bodywork to protect the compressor against corrosion. Remove the plates.
4	Remove filler plugs (1). On GA90 up to GA250 and GA315 60 Hz and GR110 up to GR200, pour approx. 1 l (0.26 US gal/0.22 Imp gal) of oil into the compressor elements. Refit the plugs.
5	Check that the compressor is filled with oil; the pointer of the oil level indicator should be in the green range (see the section Oil change).

Protection during transport



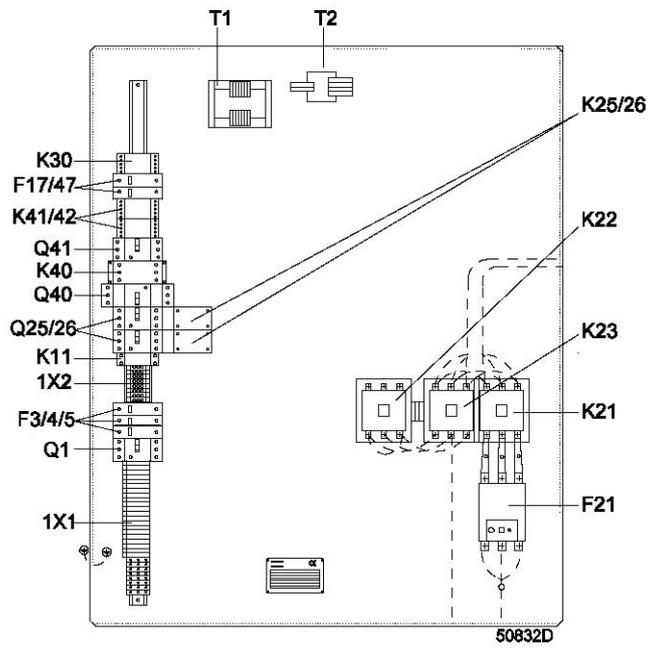
Transport fixtures for GA 90 up to GA 160



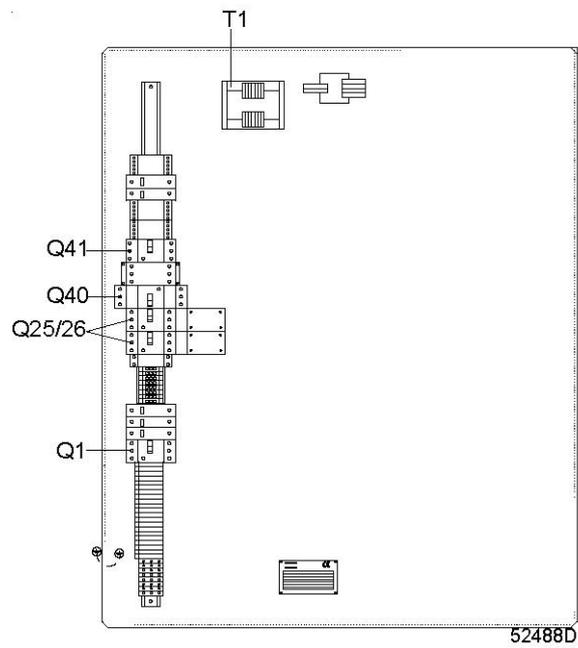
Transport fixtures for GA 200, GA 250 and GA 315 60 Hz

Step	Action
1	The gear casing supports, motor support and air receiver supports are secured to the frame, immobilising the vibration dampers during transport.
2	Remove the bushes (1) from the gear casing supports and the motor support.
3	Remove the brackets fitted next to the air receiver supports.

Electric cabinet



Example of a cubicle with starter



Example of a cubicle without starter

Step	Action
1	Check that the electrical connections correspond to the local codes. The installation must be earthed and protected by fuses in all phases. An isolating switch must be fitted.
2	Check the wires on transformers (T1/T2) for correct connection.
3	Check the setting of the circuit breakers (see the section Settings of circuit breakers).
4	Check that overload relay (F21) is set for automatic resetting and check its setting (see the section Setting of overload relay and fuses).

Water circuit

Step	Action
1	Check that the cooling water drain valves (customer's installation) in the inlet and outlet lines are closed.
2	Check that the water shut-off valves (customer's installation) are open.
3	Open the water regulating valve and check for water flow.

Integrated air dryer

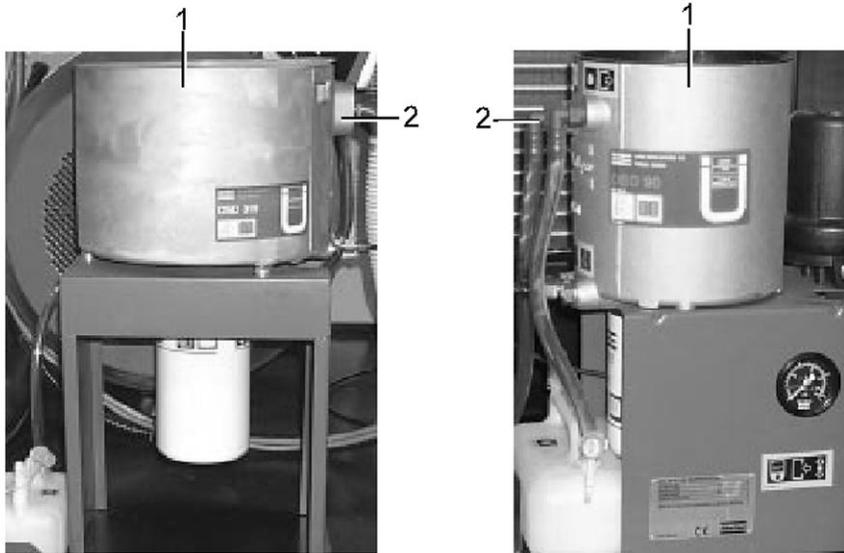
Step	Action
1	Check that by-pass valve (2) is closed.
2	Check that valves (1 and 3) are open.



52023F

Oil separating device

Step	Action
1	Remove the cover and fill vessel (1) with water to the level of water outlet (2).
2	Refit the cover.



52022F

Start up

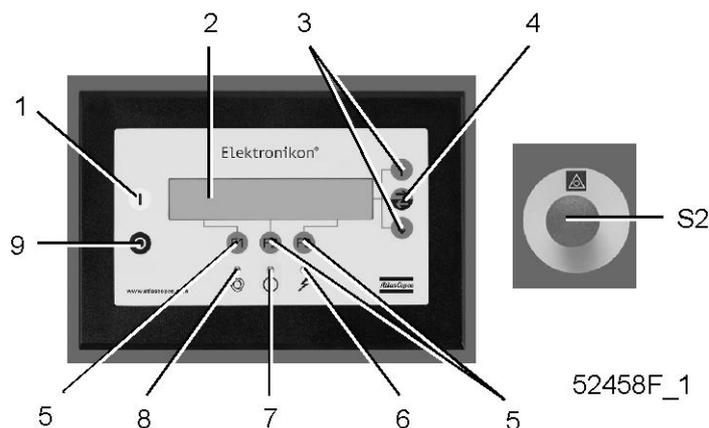
Step	Action
1	Close the drain valves (see the section Cooling and condensate system).
2	Switch on the voltage.
3	Start the compressor and stop it immediately. Check the rotation direction of the drive motor while the motor is coasting to a stop.
4	If the rotation direction is wrong, press the emergency stop button, switch off the voltage and reverse two incoming electric lines. The correct direction of rotation is indicated for the drive motor by an arrow on the gear casing and for the fan motors by arrows on the motor housings.
4	Run the compressor for a few minutes and check that it is operating normally.

5.2 Before starting

Warning

	The operator must apply all relevant Safety precautions .
	If the water system was drained, make sure the drain valves are closed.

Control panel



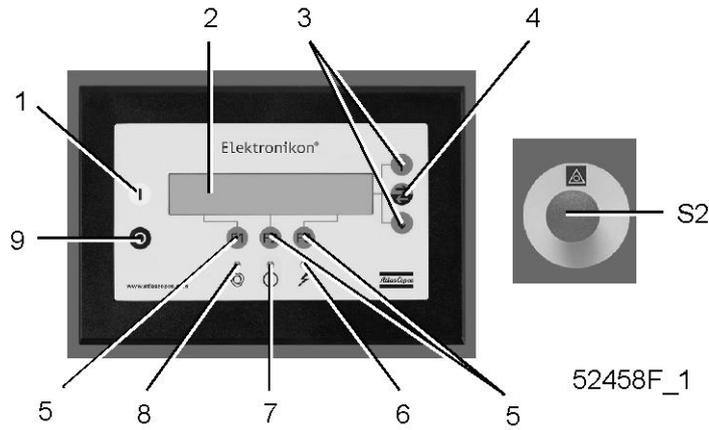
Step	Action
1	Switch on the voltage. Voltage on LED (6) lights up.
2	Close the condensate drain valves (see the section Cooling and condensate system).
3	Open the air outlet valve.
4	Check the oil level indicator (see the section Oil change). The pointer should be in the green range or orange range.
5	On compressors with integrated dryer, check that the by-pass valve is closed and that the inlet and outlet valves of the dryer are open (see the section Initial start-up). Open the water shut-off valves and the water regulating valve.

5.3 Starting

Warning

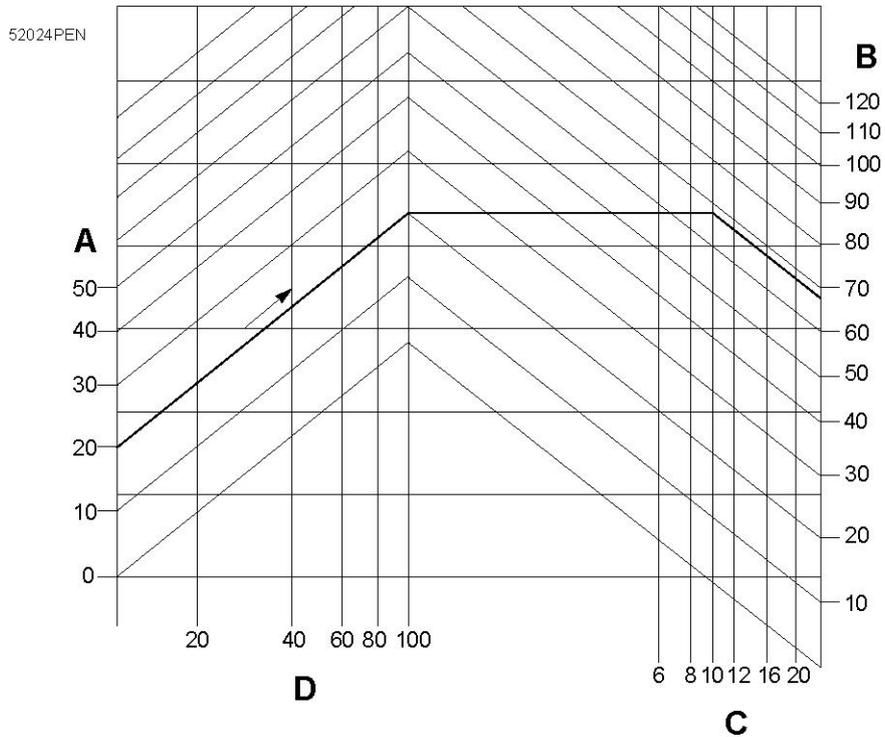
	The operator must apply all relevant Safety precautions .
	On Full-Feature compressors, switch on the voltage 4 hours before starting in order to energise the crankcase heater of the refrigerant compressor.

Control panel



Control panel of MkIV regulator

Step	Action
1	Press start button (1). The compressor starts running in unloaded condition. Automatic operation LED (8) lights up.
2	Approx. 10 seconds later (programmable), the compressor starts running loaded. The message on display (2) changes from “Automatically unloaded” to “Automatically loaded”.
3	On water-cooled compressors, regulate the cooling water flow with the compressor running loaded. Adjust the water flow to obtain the most suitable air temperature at the outlet of the compressor elements. The temperature must be between 2 and approx. 7 °C (4 and approx. 13 °F) above the relevant temperature in the diagram.



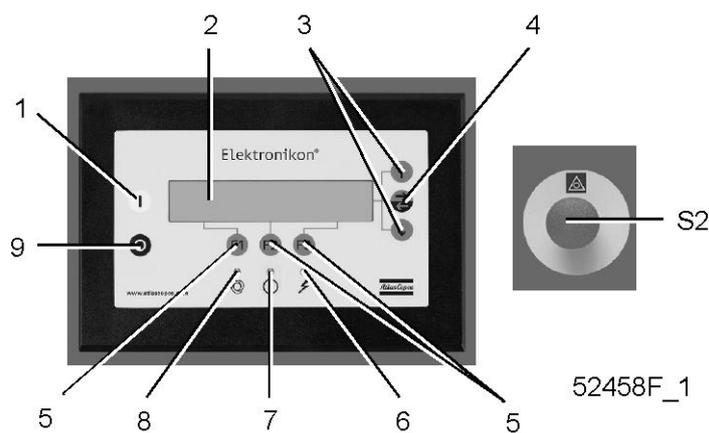
Reference	Name
A	Air inlet temperature in °C
B	Condensation temperature in °C
C	Effective working pressure in bar
D	Relative air humidity in %

5.4 During operation

Warning

	The operator must apply all relevant Safety precautions .
	The operator should immediately stop the machine in case of oil leaks internally in the machine as well as externally and consult a competent technician to resolve the cause. The machine should not be restarted before the problem has been remedied

Control panel



Control panel of MKIV regulator

1. When the automatic operation LED (8) is lit, the starting and stopping of the motor is controlled automatically.
2. Check the readings on display (2).
3. To unload the compressor manually, press the “Unload” key (5). To put the compressor back into automatic operation, press the “Load” key (5).
4. Regularly check that the vessel of the OSD is filled; if necessary, gently top up with water to the level of the water outlet and re-install the cover (see [Initial start-up](#)).
5. On Full-Feature compressors, regularly check the pressure dew-point on the display of the control panel. The pressure dew-point will deviate from nominal if the air inlet conditions or volume differ from nominal.



If the compressor is stopped, it may start automatically.

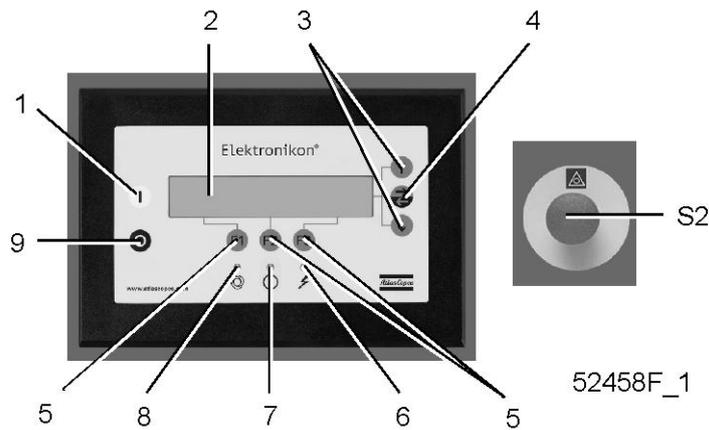
5.5 Checking the display

Warning



Before carrying out any maintenance, repair work or adjustment, stop the compressor, press the emergency stop button and switch off the voltage. Close the air outlet valve and open the manual condensate drain valve.

Control panel



Step	Action
1	Regularly check the display for readings and messages. Normally, the main display is shown, indicating the compressor outlet pressure, the status of the compressor and the functions of the keys below the display.
2	Always check the display and remedy the problem if alarm LED (7) is lit or flashing.
3	The display will show a service message if a service plan interval has been exceeded or if a service level for a monitored component has been exceeded. Carry out the service actions of the indicated service plans or replace the component and reset the relevant timer.
4	Regularly check the actual compressor status by pressing the arrow down key from the main screen.

Example of the main menu

"Status data"			→
"Measured Data"			
"Counters"			↓
"Mainscreen"			
F1	F2	F3	

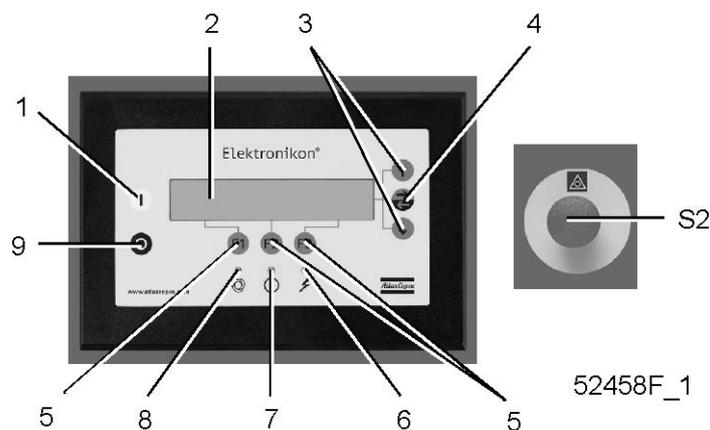
Example of the main display

Main display of GA compressors

"Compressor outlet"		7.5 bar	
"Automatically loaded"			↓
"Menu"		"Unload"	
F1	F2	F3	

5.6 Manual loading/unloading

Control panel



Control panel of Elektronikon MkIV regulator

Example of the main display

Main display of GA compressors

"Compressor outlet"		7.5 bar (109 psi)	
.			
"Automatically loaded"			↓
"Menu"		"Unload"	
F1	F2	F3	

Automatic operation

Normally, the compressor runs in automatic operation, i.e. the electronic regulator loads, unloads, stops and restarts the compressor automatically. LED (8) is then lit.

Manually unloading

Press "Unload" key (F3), LED (8) goes out. The message "Manually Unloaded" appears on the display. The compressor remains running unloaded unless it is loaded again manually.

Manually loading

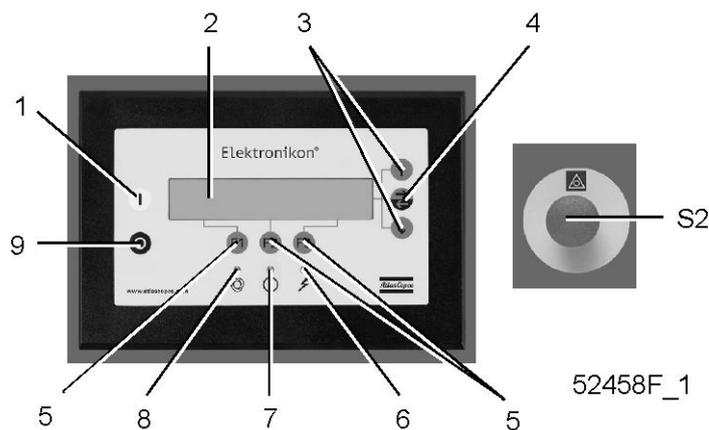
Press "Load" key (F3), LED (8) lights up. The command "Load" does not force the compressor into loaded condition, but it will switch the compressor to automatic operation again; the compressor will be loaded if the air net pressure drops below the programmed level.

5.7 Stopping

Important

	<p>After pressing stop button (9), the compressor will run unloaded for 30 seconds. The compressor stops after this period. A start command during this period is ignored. After stopping, the compressor is prevented from restarting within a programmable time (20 seconds). A start command given during this minimum stop time will be memorised; the automatic operation LED lights up. The compressor will start when the minimum stop time has elapsed.</p>
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Control panel



Control panel of Elektronikon MkIV regulator

Reference	Name
1	Press stop button (9). LED (8) goes out. The message “Programmed stop” appears. The compressor runs unloaded for 30 seconds and then stops.
2	To stop the compressor in the event of an emergency, press button (S2). Alarm LED (7) blinks. After remedying the fault, unlock the button by pulling it out
3	Close the air outlet valve.
4	Open the condensate drain valves. For compressors equipped with electronic water drains, press the test buttons on top of the electronic drains until the air system between the air receiver and the outlet valve is fully depressurised.
5	Switch off the voltage.
6	On water cooled compressors, close the water shut-off valves.
7	On water cooled compressors, if the compressor is installed in a room where freezing temperatures are expected, drain the cooling system by opening the drain valves in the water inlet and outlet pipes (customer's installation).

5.8 Taking out of operation

Disconnecting the compressor

At the end of the service life of the compressor, proceed as follows:

Step	Action
1	Stop the compressor and close the air outlet valve.
2	Switch off the voltage and disconnect the compressor from the mains.
3	Depressurize the compressor by opening the drain valve and loosening the oil filler plug one turn. For compressors equipped with electronic water drains, press the test buttons on top of the electronic drains until the air system between the air receiver and the outlet valve is fully depressurized.

Step	Action
4	Shut off and depressurize the part of the air net which is connected to the outlet valve. Disconnect the compressor air outlet pipe from the air net.
5	Drain the oil and condensate circuits. On water cooled compressors, drain the water circuits.
6	Disconnect the compressor condensate piping from the condensate drain net.
7	On water cooled compressors, disconnect the cooling water pipes from the compressor.

5.9 Use of air receiver

Instructions

Step	Action
1	This vessel can contain pressurized air; please be aware of its potential danger in case of misuse.
2	This vessel shall only be used as compressed air/oil separator and must be operated within the specified limits as mentioned on the dataplate.
3	No alterations shall be made to this vessel by welding, drilling or other methods of mechanical working without written permission of the manufacturer.
4	Original bolts have to be used after opening for inside inspection. Maximum torque has to be taken into consideration.
5	Devices for pressure and temperature control must always remain attached to this vessel.
6	This vessel has been designed and built to guarantee an operational lifetime in excess of 20 years and an infinite number of pressure load cycles. Therefore there is no intrinsic need for in-service inspection of the vessel when used within its design limits and in its intended application. National legislation however may require in-service inspection.

6 Maintenance

6.1 Preventive maintenance schedule

Warning

	<p>Before carrying out any maintenance, repair work or adjustment, proceed as follows:</p> <ul style="list-style-type: none"> • Stop the compressor. • Press emergency stop button (S2). • Close the air outlet valve and open the manual condensate drain valves. • For compressors equipped with electronic water drains, press the test buttons on top of the electronic drains until the air system between the air receiver and the outlet valve is fully depressurised. • Switch off the voltage. • Open and lock the isolating switch. <p>The operator must apply all relevant Safety precautions.</p>
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Warranty - Product Liability

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

General

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

Preventive maintenance schedule

Period	Running hours	Operation
Daily	8	Check readings on display.
Daily	8	Check that condensate is discharged during loading.
Daily	8	Check oil level. Before starting, the level should be in the middle of the sight-glass.
Weekly	--	Drain condensate from the air receiver, if installed
Weekly	50	On compressors equipped with an OSD, check the oil level in the oil collectors. If necessary, empty the collectors and take the oil to the local collection service. Keep the covers of the vessels in place to prevent possible evaporation.
3-Monthly	--	On compressors equipped with an OSD, remove, dismantle and clean the float valve of the condensate traps.
3-Monthly	--	Clean compressor.
3-Monthly	--	Check for possible leaks.
3-Monthly	500	Check the coolers; clean them if necessary. See the section Coolers .
3-Monthly	--	Remove air filter elements and inspect
Yearly	--	Have safety valve tested

Period	Running hours	Operation
Yearly	--	Have all flexibles inspected
Yearly	4000	Replace oil filters
Yearly	4000	If Roto-Inject Fluid is used, change oil
Yearly	8000	If Roto-Xtend Duty Fluid is used, change oil
2-Yearly	8000	Have oil separator element replaced
When displayed	--	Carry out service action according to the displayed service plans.

	<p>When operating in a dusty atmosphere, inspect the air filters more frequently. Use always Atlas Copco filters.</p> <p>The separator element must also be replaced when the pressure difference over the element exceeds 0.8 bar (12 psi). Check the pressure drop when the compressor is running loaded and preferably with a stable working pressure.</p> <p>Damaged flexibles must be replaced immediately.</p>
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Service agreements

Atlas Copco Customer Centres have a range of service agreements to suit your needs:

- An Inspection Plan
- A Preventive Maintenance Plan
- A Total Responsibility Plan

Contact your Customer Centre to set up a tailor-made service agreement. It will ensure optimum operational efficiency, minimise downtime and reduce the total life cycle costs.

Service plan

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

When a level is reached, a message will appear on the screen. After carrying out all service actions, the interval timers must be reset using the “Reset” key in the “Service” menu. Consult your Atlas Copco Service Centre.

6.2 Motors

Warning

	<p>Stop the compressor and switch off the voltage. The operator must apply all relevant Safety precautions.</p>
	<p>Never mix greases of different brands or types.</p>

Fan motors

The bearings of the fan motors are greased for life. The bearings of the fan motor must be replaced after 25000 operating hours.

ABB drive motor

ABB motors must be greased with Unirex N2 or N3

50 Hz

Compressor type	Interval	Amount
GA 90	4000 h	70 gr (2.45 oz)
GA 110	4000 h	70 gr (2.45 oz)
GA 132	4000 h	90 gr (3.15 oz)
GA 160	4000 h	90 gr (3.15 oz)
GA 200	4000 h	90 gr (3.15 oz)
GA 250	4000 h	90 gr (3.15 oz)

60 Hz

Compressor type	Interval	Amount
GA 90	4000 h	70 gr (2.45 oz)
GA 110	4000 h	90 gr (3.15 oz)
GA 160	4000 h	90 gr (3.15 oz)
GA 200	4000 h	90 gr (3.15 oz)
GA 250	4000 h	90 gr (3.15 oz)
GA 315	4000 h	90 gr (3.15 oz)

WEG drive motor

WEG motors must be greased with Polyrex EM

60 Hz

Compressor type	Interval D-end	Amount D-end	Interval N-end	Amount N-end
GA 90	8000 h	45 gr (1.58 oz)	8000 h	35 gr (1.23 oz)
GA 110	8000 h	45 gr (1.58 oz)	8000 h	35 gr (1.23 oz)
GA 160	8000 h	45 gr (1.58 oz)	8000 h	35 gr (1.23 oz)
GA 200	8000 h	45 gr (1.58 oz)	8000 h	35 gr (1.23 oz)
GA 250	4000 h	60 gr (2.1 oz)	4000 h	45 gr (3.15 oz)
GA 315	4000 h	60 gr (2.1 oz)	4000 h	45 gr (3.15 oz)

6.3 Oil specifications

Atlas Copco Roto-Inject Fluid

Roto-Inject Fluid is a high-quality lubricant for single-stage, oil-injected rotary screw compressors. See the section [Service kits](#).

Atlas Copco Roto-Xtend Duty Fluid

Atlas Copco Roto-Xtend Duty Fluid is a high-quality synthetic lubricant for oil-injected scroll and screw compressors which keeps the compressor in excellent condition. Roto-Xtend Duty Fluid can be used for compressors operating at ambient temperatures between 0 °C (32 °F) and 46 °C (115 °F) (see section [Service kits](#)).

Important



Never mix oils of different brands or types.

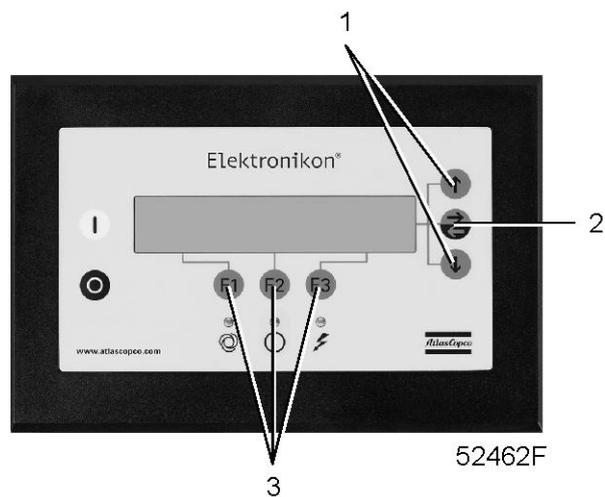
6.4 Oil change

Warning



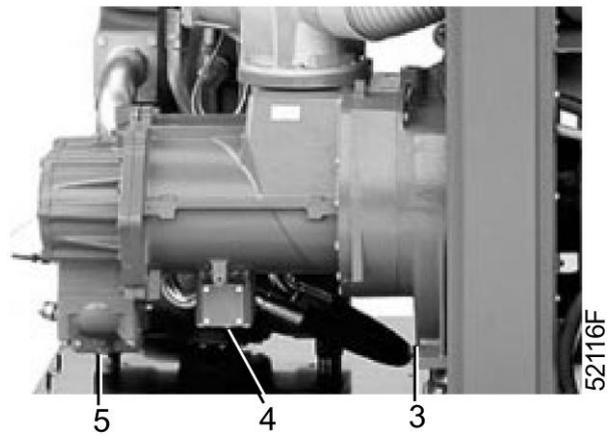
The operator must apply all relevant [Safety precautions](#).

Control panel

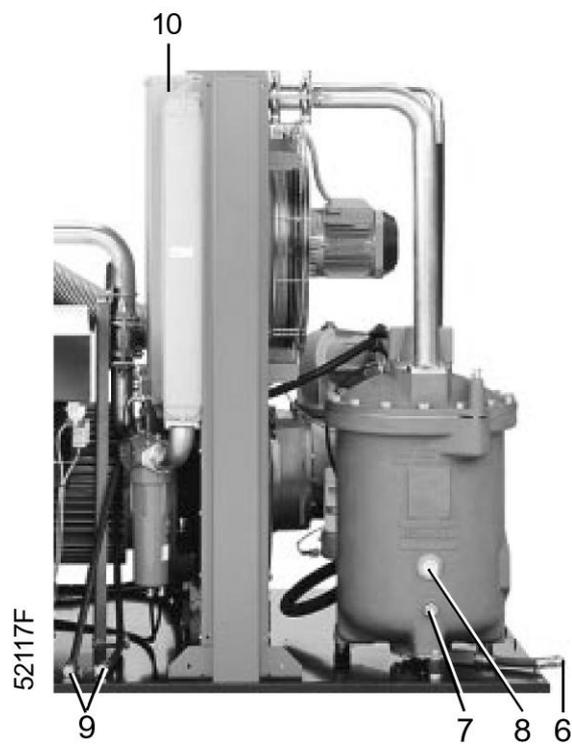


Control panel of MkIV regulator

Vent, filler and drain plugs



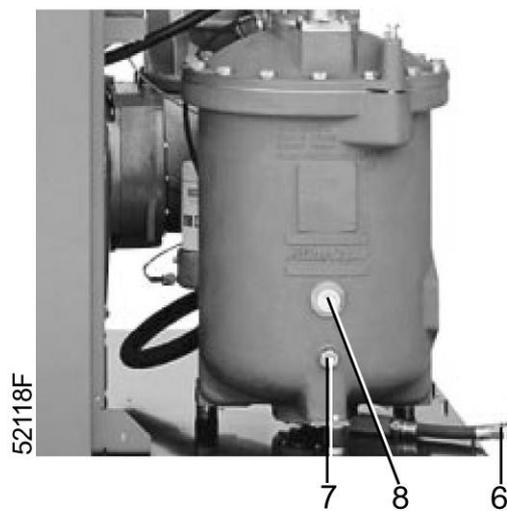
Oil drain plugs on GA 90 up to GA 250, GA 315 60 Hz and GA 132 VSD up to GA 315 VSD compressor elements



Vent, filler and drain plugs on air-cooled GA 90 up to GA 160 and GA 132 VSD up to GA 315 VSD compressors



Vent, filler and drain plugs on air-cooled GA 200 up to GA 315 compressors



Filler and drain plugs on water-cooled GA 90 up to GA 160 and GA 132 VSD up to GA 315 VSD compressors



Filler and drain plugs on GA 200 up to GA 500 compressors



55561F

Vent plug on water-cooled GA 90 up to GA 250, GA 315 60 Hz and GA 132 VSD up to GA 315 VSD compressors

Procedure

Step	Action
1	Run the compressor until warm. Stop the compressor, close the air outlet valve and switch off the voltage. Wait a few minutes and depressurise by unscrewing plug (8) only one turn to permit any pressure in the system to escape.
2	Loosen the vent plugs on top of the oil coolers.
3	Drain the oil by removing the drain plugs. Plugs are fitted on the: <ul style="list-style-type: none"> • Air receiver (6) • Oil stop valve (4) • Check valve (5) • Gearbox (3) • Oil coolers (9) of air-cooled compressors • Flexible between the oil filter housing and oil coolers of water-cooled compressors On air-cooled GA 315 50 Hz and air-cooled GA 355 up to GA 500, loosen the clip fixing the flexible to the frame. Lift the flexible until all the oil is drained. Tighten the plugs after draining.
4	Remove filler plug (8). Fill the air receiver with oil until the level reaches the filler opening. Refit and tighten plug (8) Tighten the vent plug of the oil cooler.
5	Run the compressor loaded for a few minutes to allow the oil cooler by-pass valve to open. Stop the compressor and wait a few minutes.
6	Depressurise the system by unscrewing plug (8) only one turn to permit any pressure in the system to escape. Remove the plug. Fill the air receiver with oil until the level reaches the filler opening. Tighten filler plug (8).

Step	Action
7	<p>After carrying out all service actions in the relevant "Service Plan", reset the service warning as follows:</p> <ul style="list-style-type: none"> • Press the "Menu" key (3). • Press key (1) until "Service" is followed by an arrow pointing to the right. Activate the menu by pressing key (2). • Press key (1) until the related "Service Plan" is followed by an arrow pointing to the right and activate by pressing key (2). • Press the "Reset" key (3); the timer is reset to 0.

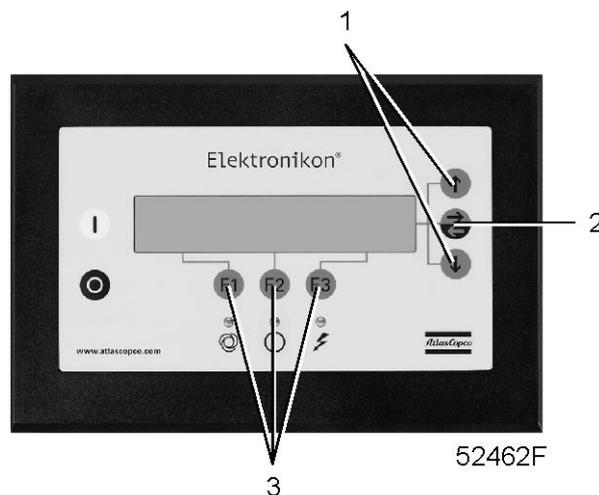
6.5 Oil filter change

Warning



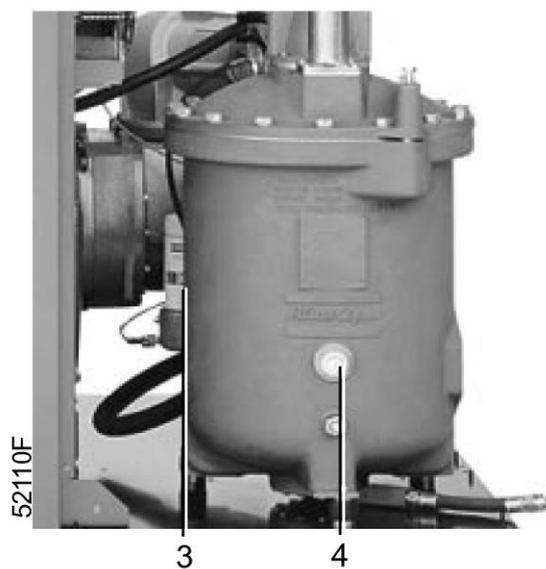
Stop the compressor and switch off the voltage. The operator must apply all relevant [Safety precautions](#).

Control panel



Control panel, MkIII regulator

Position of oil filters



Position of oil filter on GA 90 up to GA 160, GA 132 VSD up to GA 315 VSD and GR 110 up to 200



Position of oil filter on GA 200 up to GA 500

Procedure

Step	Action
1	Stop the compressor, close the air outlet valve and switch off the voltage. Wait a few minutes and depressurise by unscrewing plug (4) only one turn to permit any pressure in the system to escape.
2	Use an oil pan to avoid possible oil spillage. Unscrew oil filters (3) only one turn and wait a few minutes to let the oil of the filter flow back into the oil separator. Remove the oil filters.
3	Clean the filter seats on the manifold. Oil the gaskets of the new filters and screw the filters into place until the gaskets contact their seats. Then tighten by hand.
4	Tighten plug (4).
5	Reset the message and service timer: <ul style="list-style-type: none"> • Press the "Menu" key (3). • Press key (1) until "Service" is followed by an arrow pointing to the right. Activate the menu by pressing key (2). • Press key (1) until "Oil filter" is followed by an arrow pointing to the right. Activate the menu by pressing key (2). • Press the "Reset" key (3); the timer is reset to 0.

6.6 Storage after installation

Procedure

Run the compressor, e.g. twice a week, until warm. Load and unload the compressor a few times to operate the components of the unloading/loading system.



If the compressor is going to be stored without running from time to time, protective measures must be taken. Consult the Atlas Copco Customer Centre.

6.7 Service kits

General

Service kits comprise all parts needed for servicing components and offer the benefits of genuine Atlas Copco parts while keeping the maintenance budget low. All service kits are indicated in the relevant Parts Lists.

Atlas Copco Roto-Inject Fluid

Roto-Inject Fluid can be ordered in the following quantities:

- 20-litre can: 2901 0522 00
- 209-litre drum: 2901 0045 01

See the section [Oil specifications](#).

Atlas Copco Roto-Xtend Duty Fluid

Roto-Xtend Duty Fluid can be ordered in the following quantities:

- 5-litre can: 2901 1700 00
- 20-litre can: 2901 1701 00
- 209-litre drum: 2901 1702 00

See [Oil specifications](#).

7 Adjustments and servicing procedures

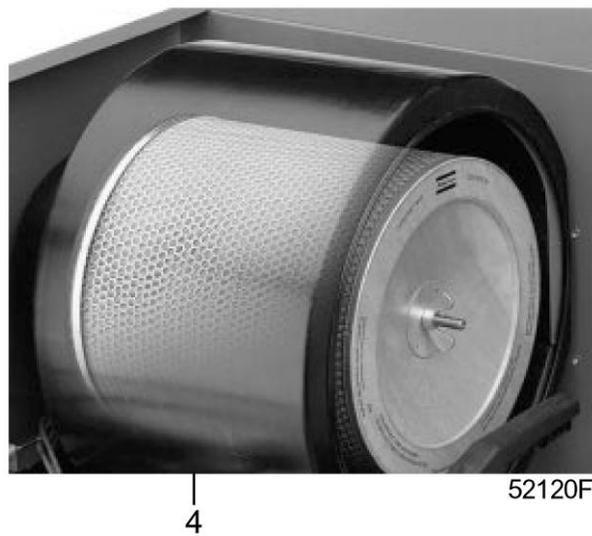
7.1 Air filters

Warning

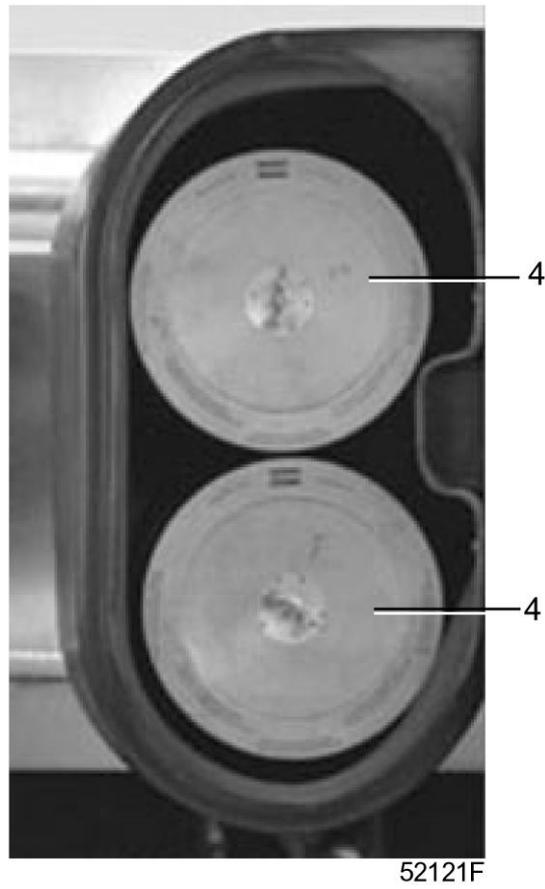


Stop the compressor, close the air outlet valve, press the emergency stop button and switch off the voltage. The operator must apply all relevant [Safety precautions](#).

Position of air filters

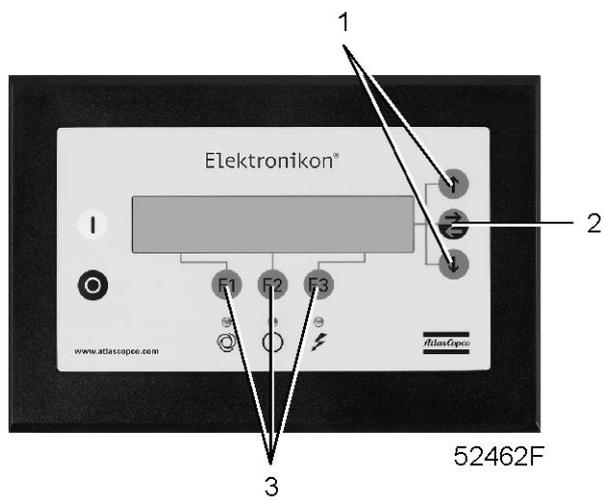


Air filters, GA90 up to GA160 and GR110 up to GR200



Air filters, GA200, GA250 and GA315 60 Hz

Control panel of MkIII regulator



Control panel of MkIV regulator

Procedure

Step	Action
1	Remove the filter elements (4).
2	Fit the new filter elements (4).
3	Reset the message and service timer: <ul style="list-style-type: none"> • Press the “Menu” key (3). • Press key (1) until “Service” is followed by an arrow pointing to the right. Activate the menu by pressing key (2). • Press key (1) until “Air filters” is followed by an arrow pointing to the right. Activate the menu by pressing key (2). • Press “Reset” key (3); the timer is reset to 0.

7.2 Coolers

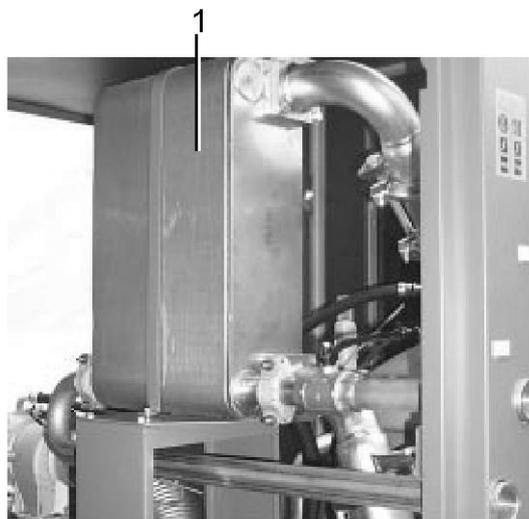
Warning

	Stop the compressor, press the emergency stop button and switch off the voltage. The operator must apply all relevant Safety precautions .
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Procedure



Cooler block of air-cooled GA 90 up to GA 250, GA 315 60 Hz and GR compressors



51348F

Cooler block of water-cooled GA 90 up to GA 255, GA 315 60 Hz and GA 132 VSD up to GA 315 VSD compressors

Keep the cooler block clean to maintain the cooling efficiency.

On air-cooled compressors proceed as follows:

Step	Action
1	Unscrew bolts (1) and rotate the fan away from the cooler block.
2	Remove any dirt from the coolers with a fibre brush, brush in the direction of the fins. Also remove any dirt from the fans.
3	Clean the coolers with an air jet in the reverse direction to normal flow. Use low pressure air; if necessary, the pressure may be increased up to 6 bar (e) (87 psig)
4	If it is necessary to clean the coolers with a cleaning agent, consult Atlas Copco.
5	Reposition and fix the fan. Make sure that the fan rotates freely.

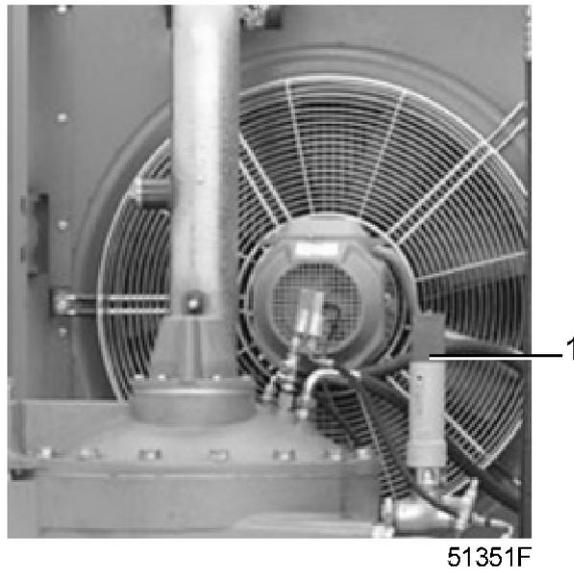
On water-cooled compressors, consult the Atlas Copco Customer Centre if it is necessary to clean the coolers.

7.3 Safety valve

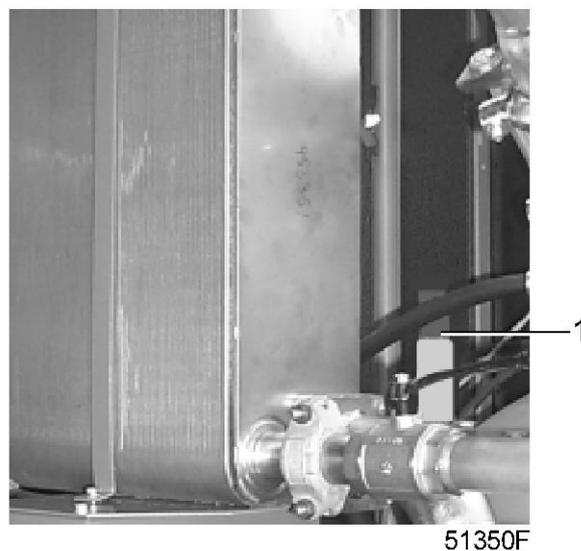
Warning

	Stop the compressor and switch off the voltage. The operator must apply all relevant Safety precautions .
	Never run the compressor without safety valves.
	No adjustments are allowed.

Testing



Location of safety valve on air-cooled GA 90 up to GA 250 and GA 315 60 Hz and GR compressors



Location of safety valve on water-cooled GA 90 up to GA 250, GA 315 60 Hz, and GA 132 VSD up to GA 315 VSD compressors

The valve can be tested on a separate compressed air line.

Consult the Atlas Copco Customer Centre if the valve does not open at the correct pressure (see the section [Settings of safety valve](#)).

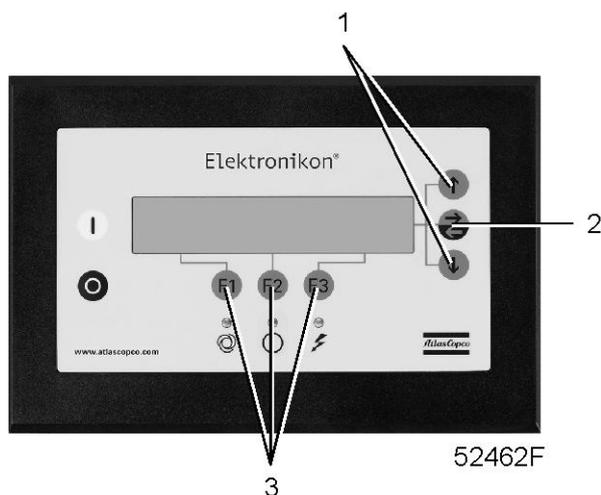
8 Problem solving

8.1 Problem solving

Warning

	Before carrying out any maintenance, repair work or adjustment, stop the compressor, press the emergency stop button and switch off the voltage. Close the air outlet valve and open the manual condensate drain valves.
	Open and lock the isolating switch.
	The operator must apply all relevant Safety precautions .

Control panel



Faults and remedies

A service message appears on the display

Stop the compressor and carry out the indicated service actions.

Reset the message:

- Press the "Menu" key (3).
- Press key (1) until "Service" is followed by an arrow pointing to the right. Activate the menu by pressing key (2).
- Press the "Reset" key (3); the timer is reset to 0.

A shut-down warning message appears on the display

The alarm LED will light up indicating that the temperature at the outlet of the compressor elements is too high. The message disappears as soon as the cause of the problem is remedied.

Unit is shut down

The alarm LED will flash indicating either that the outlet temperature is too high or that the motor overload relay has tripped. Remedy the problem. It may be necessary to reset the display after remedying the fault: press the “Reset” key (2), the message “All protection functions are OK” will appear, after which the compressor can be restarted.

Excessive oil consumption

Have the compressor inspected by the Atlas Copco Customer Centre.

Condition	Fault	Remedy
Condensate is not discharged from condensate traps during loading.	Discharge pipe of condensate trap clogged.	Check and correct as necessary.
	Float valve of condensate traps malfunctioning.	Remove float valve assembly, clean and check.
	EWD (electronic water drain) malfunctioning.	Consult Atlas Copco.

Condition	Fault	Remedy
Compressor air delivery or pressure below normal.	Air consumption exceeds air delivery of compressor.	Check equipment connected.
	Choked air filters.	Replace filters.
	Air leakage.	Check and correct.

Condition	Fault	Remedy
Compressor element outlet temperature or delivery air temperature above normal.	Oil level too low.	Check and correct.
	Oil coolers clogged.	Consult the section Coolers .
	Air cooler clogged.	Consult the section Coolers .
	On air-cooled compressors, insufficient cooling air or cooling air temperature too high.	Check and correct as necessary.
	On water-cooled compressors, cooling water flow too low.	Increase flow.
	On water-cooled compressors, restriction in cooling water system.	Consult Atlas Copco Customer Centre.

Condition	Fault	Remedy
Turbulence in separator vessel of oil/water separator (OSD).	Discharge pipe of condensate trap clogged.	Check and correct as necessary.
	Float valve of condensate traps malfunctioning.	Remove float valve assembly, clean and check.

Condition	Fault	Remedy
Condensate is not discharged through OSD outlets.	Strainer/restrictors at the inlets of the separator vessels clogged.	Clean the strainer/restrictors. Consult Atlas Copco.
	Flexibles between condensate traps and OSD clogged.	Replace flexibles.

9 Technical data

9.1 Readings on display

Important

	The readings are valid when operating under reference conditions. See the section Reference conditions
	Normally the main display is shown (see the section Function keys), indicating the actual air outlet pressure and the actual compressor status. The arrow down key allows the operator to call up other information such as actually measured pressures and temperatures.

Important readings

Compressor outlet pressure	bar(e) (psig)	Depends on programmed unloading and loading pressures
Pressure drop over air filters	bar	Below 0.05
Pressure drop over air filters	psi	Below 0.73
Pressure difference over oil separator	bar	Below 0.8
Pressure difference over oil separator	psi	Below 12
Oil injection pressure at the compressor elements	bar(e) (psig)	Depends on programmed unloading and loading pressures
Compressor outlet temperature, air-cooled Pack compressors	°C	Approx. 29
Compressor outlet temperature, air-cooled Pack compressors	°F	Approx. 84
Compressor outlet temperature, air-cooled Full-Feature compressors	°C	Approx. 26
Compressor outlet temperature, air-cooled Full-Feature compressors	°F	Approx. 79
Compressor outlet temperature, water-cooled GA90 up to GA250 and GA315 60 Hz Pack compressors	°C	Approx. 25
Compressor outlet temperature, water-cooled GA90 up to GA250 and GA315 60 Hz Pack compressors	°F	Approx. 77
Compressor outlet temperature, water-cooled Full-Feature compressors	°C	Approx. 22
Compressor outlet temperature, water-cooled Full-Feature compressors	°F	Approx. 72
Compressor element outlet temperature, GA90 up to GA250 and GA315 60 Hz compressors	°C	Between 55 and 100
Compressor element outlet temperature, GA90 up to GA250 and GA315 60 Hz compressors	°F	Between 131 and 212
Cooling air inlet temperature	°C	Below 40
Cooling air inlet temperature	°F	Below 104

Cooling water temperature, GA90 up to GA250 and GA315 60 Hz and GR compressors	°C	Below 50
Cooling water temperature, GA90 up to GA250 and GA315 60 Hz and GR compressors	°F	Below 122
Pressure dew-point	°C	Approx. 3
Pressure dew-point	°F	Approx. 37
Pressure drop over DD filter	bar	Below 0.35
Pressure drop over DD filter	psi	Below 5

9.2 Reference conditions

Reference conditions

Absolute inlet pressure	bar(a)	1
Absolute inlet pressure	psi	14.5
Relative air humidity	%	0
Air inlet temperature	°C	20
Air inlet temperature	°F	68
Nominal working pressure		See Compressor data
Cooling water inlet temperature	°C	20
Cooling water inlet temperature	°F	68

9.3 Limits

Limits

Maximum air inlet/ambient temperature	°C	40
Maximum air inlet/ambient temperature	°F	104
Minimum air inlet/ambient temperature	°C	0
Minimum air inlet/ambient temperature	°F	32
Maximum cooling air temperature	°C	40
Maximum cooling air temperature	°F	104
Minimum cooling air temperature	°C	0
Minimum cooling air temperature	°F	32
Maximum working pressure		See section Compressor data
Maximum cooling water inlet temperature	°C	40
Maximum cooling water inlet temperature	°F	104
Maximum cooling water outlet temperature (open systems)	°C	50
Maximum cooling water outlet temperature (open systems)	°F	122
Maximum cooling water outlet temperature (recirculating systems)	°C	60

Maximum cooling water outlet temperature (recirculating systems)	°F	140
Maximum cooling water inlet pressure	bar(e)	10
Maximum cooling water inlet pressure	psig	145

9.4 Settings of safety valve

Compressor type	Setting
For GA compressors with a maximum working pressure of 7.5 or 8.5 bar	11 bar (e)
For GA compressors with a maximum working pressure of 109 or 123 psi	160 psig
For GA compressors with a maximum working pressure of 6.9, 8.6, 10, 10.4, 13 or 13.8 bar	15 bar (e)
For GA compressors with a maximum working pressure of 100, 125, 145, 150, 188 or 200 psi	217 psig

9.5 Settings for overload relay and fuses

50 Hz IEC compressors with ABB motors

GA 90 up to GA 250 and GR 110 up to GR 200

Compressor type	Supply voltage (V)	Overload relay (A)	Fuses Class gL/gG (Type 2) (A) 2X3 fuses 2X3 cables to contactor	Fuses Class gL/gG (Type 2) (A) 3 fuses 2X3 cables to contactor	Fuses Class gL/gG (Type 2) (A) 3 fuses 3 cables to contactor (bridges to be installed by customer)
GA 90	230	197	2x (3x250)	3x400	--
GA 90	400	110	2x (3x160)	3x224	--
GA 90	500	87	2x (3x125)	--	3x200
GA/GR 110	230	229	2x (3x300)	--	--
GA/GR 110	400	134	2x (3x200)	3x300	--
GA/GR 110	500	107	2x (3x160)	--	3x224
GA/GR 132	230	270	2x (3x355)	--	--
GA/GR 132	400	161	2x (3x224)	2x315	--
GA/GR 132	500	128	2x (3x200)	3x250	--
GA/GR 160	230	345	2x (3x500)	--	--
GA/GR 160	400	191	2x (3x250)	3x400	--
GA/GR 160	500	154	2x (3x200)	3x300	--
GA/GR 200	400	233	2x (3x315)	--	--
GA/GR 200	500	186	2x (3x250)	3x400	--

Compressor type	Supply voltage (V)	Overload relay (A)	Fuses Class gL/gG (Type 2) (A) 2X3 fuses 2X3 cables to contactor	Fuses Class gL/gG (Type 2) (A) 3 fuses 2X3 cables to contactor	Fuses Class gL/gG (Type 2) (A) 3 fuses 3 cables to contactor (bridges to be installed by customer)
GA 250	400	289	2x (3x355)	--	--
GA 250	500	234	2x (3x300)	--	--

60Hz IEC compressors with ABB motors

GA 90 up to GA 315 and GR 110 up to GR 200

Compressor type	Supply voltage (V)	Overload relay (A)	Fuses Class gL/gG (Type 2) (A) 2X3 fuses 2X3 cables to contactor	Fuses Class gL/gG (Type 1) (A) 3 fuses 2X3 cables to contactor	Fuses Class gL/gG (Type 1) (A) 3 fuses 3 cables to contactor (bridges to be installed by customer)
GA 90	220-230	208	2x (3x300)	--	--
GA 90	380	122	2x (3x160)	3x250	--
GA 90	440-460	104	2x (3x160)	--	3x224
GA/GR 110	220-230	257	2x (3x355)	--	--
GA/GR 110	380	149	2x (3x200)	3x300	--
GA/GR 110	440-460	129	2x (3x160)	3x300	--
GA/GR 160	380	195	2x (3x250)	3x400	--
GA/GR 160	440-460	169	2x (3x224)	--	--
GA/GR 200	380	242	2x (3x355)	--	--
GA/GR 200	440-460	204	2x (3x300)	--	--
GA 250	380	284	2x (3x400)	--	--
GA 250	440-460	246	2x (3x315)	--	--
GA 315	380	319	2x (3x400)	--	--
GA 315	440-460	278	2x (3x355)	--	--

60 Hz CSA/UL compressors with Siemens or Weg motor

GA 90 up to GA 315 and GR 110 up to GR 200

Compressor type	Supply voltage (V)	Overload relay (A)	Fuses CSA HRC UL Class 5 (A) 2x3 fuses 2x3 cables to contactor	Fuses UL Class K5(A) 3 fuses 2x3 cables to contactor	Fuses UL Class K5(A) 3 fuses 3 cables to contactor (bridges to be installed by customer)
GA 90	440-460	100	2x (3x125)	3x200	--
GA 90	575	76	2x (3x100)	--	3x150
GA/GR 110	440-460	121	2x (3x150)	3x250	--
GA/GR 110	575	93	2x (3x125)	--	3x200
GA/GR 160	440-460	167	2x (3x200)	3x325)	--
GA/GR 160	575	128	2x (3x175)	3x250	--
GA 200	440-460	215	2x (3x300)	3x450)	--
GA 200	575	165	2x (3x250)	3x350	--
GA 250	440-460	245	2x (3x300)	3x500)	--
GA 250	575	187	2x (3x250)	3x400	--
GA 315	440-460	274	2x (3x350)	3x600	--
GA 315	575	209	2x (3x250)	3x400	--

9.6 Settings of circuit breakers

For cooler cooling fan (air-cooled 50 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	230	Q25/Q26	12.4
GA 90	400	Q25/Q26	7.2
GA 90	500	Q25/Q26	5.7
GA/GR 110	230	Q25/Q26	12.4
GA/GR 110	400	Q25/Q26	7.2
GA/GR 110	500	Q25/Q26	5.7
GA/GR 132	230	Q25/Q26	12.4
GA/GR 132	400	Q25/Q26	7.2
GA/GR 132	500	Q25/Q26	5.7
GA/GR 160	230	Q25/Q26	12.4
GA/GR 160	400	Q25/Q26	7.2
GA/GR 160	500	Q25/Q26	5.7
GA/GR 200	230	Q25/Q26	17.1
GA/GR 200	400	Q25/Q26	9.9
GA/GR 200	500	Q25/Q26	7.7
GA 250	230	Q25/Q26	17.1
GA 250	400	Q25/Q26	9.9

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 250	500	Q25/Q26	7.7

For cooler cooling fan (air-cooled 60 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	220-230	Q25/Q26	14.3
GA 90	380	Q25/Q26	8.6
GA 90	440-460	Q25/Q26	7.2
GA 90	575	Q25/Q26	5.7
GA/GR 110	220-230	Q25/Q26	14.3
GA/GR 110	380	Q25/Q26	8.6
GA/GR 110	440-460	Q25/Q26	7.2
GA/GR 110	575	Q25/Q26	5.7
GA/GR 160	220-230	Q25/Q26	14.3
GA/GR 160	380	Q25/Q26	8.6
GA/GR 160	440-460	Q25/Q26	7.2
GA/GR 160	575	Q25/Q26	5.7
GA/GR 200	220-230	Q25/Q26	20.2
GA/GR 200	380	Q25/Q26	11.7
GA/GR 200	440-460	Q25/Q26	9.9
GA/GR 200	575	Q25/Q26	7.7
GA 250	220-230	Q25/Q26	20.2
GA 250	380	Q25/Q26	11.7
GA 250	440-460	Q25/Q26	9.9
GA 250	575	Q25/Q26	7.7
GA 315	220-230	Q25/Q26	20.2
GA 315	380	Q25/Q26	11.7
GA 315	440-460	Q25/Q26	9.9
GA 315	575	Q25/Q26	7.7

For bodywork ventilation fan (water-cooled 50 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	230	Q25	2.5
GA 90	400	Q25	1.4
GA 90	500	Q25	1.1
GA/GR 110	230	Q25	2.5
GA/GR 110	400	Q25	1.4
GA/GR 110	500	Q25	1.1
GA/GR 132	230	Q25	2.5
GA/GR 132	400	Q25	1.4

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA/GR 132	500	Q25	1.1
GA/GR 160	230	Q25	2.5
GA/GR 160	400	Q25	1.4
GA/GR 160	500	Q25	1.1
GA/GR 200	230	Q25	2.5
GA/GR 200	400	Q25	1.4
GA/GR 200	500	Q25	1.1
GA 250	230	Q25	2.5
GA 250	400	Q25	1.4
GA 250	500	Q25	1.1

For bodywork ventilation fan (water-cooled 60 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	220-230	Q25	2.1
GA 90	380	Q25	1.4
GA 90	440-460	Q25	1.1
GA 90	575	Q25	1.1
GA/GR 110	220-230	Q25	2.1
GA/GR 110	380	Q25	1.4
GA/GR 110	440-460	Q25	1.1
GA/GR 110	575	Q25	1.1
GA/GR 160	220-230	Q25	2.1
GA/GR 160	380	Q25	1.4
GA/GR 160	440-460	Q25	1.1
GA/GR 160	575	Q25	1.1
GA/GR 200	220-230	Q25	2.1
GA/GR 200	380	Q25	1.4
GA/GR 200	440-460	Q25	1.1
GA/GR 200	575	Q25	1.1
GA 250	220-230	Q25	2.1
GA 250	380	Q25	1.4
GA 250	440-460	Q25	1.1
GA 250	575	Q25	1.1
GA 315	220-230	Q25	2.1
GA 315	380	Q25	1.4
GA 315	440-460	Q25	1.1
GA 315	575	Q25	1.1

For dryer motor (50 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	230	Q40	19
GA 90	400	Q40	11
GA 90	500	Q40	9
GA/GR 110	230	Q40	19
GA/GR 110	400	Q40	11
GA/GR 110	500	Q40	9
GA/GR 132	230	Q40	28
GA/GR 132	400	Q40	16
GA/GR 132	500	Q40	13
GA/GR 160	230	Q40	28
GA/GR 160	400	Q40	16
GA/GR 160	500	Q40	13
GA 200	400	Q40	27
GA 200	500	Q40	22
GA 250	400	Q40	27
GA 250	500	Q40	22

For dryer motor (60 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	220-230	Q40	25
GA 90	380	Q40	15
GA 90	440-460	Q40	13
GA 90	575	Q40	10
GA 110	220-230	Q40	25
GA 110	380	Q40	15
GA 110	440-460	Q40	13
GA 110	575	Q40	10
GA/GR 160	380	Q40	22
GA/GR 160	440-460	Q40	19
GA/GR 160	575	Q40	15
GA 200	380	Q40	38
GA 200	440-460	Q40	33
GA 200	575	Q40	25
GA 250	380	Q40	38
GA 250	440-460	Q40	33
GA 250	575	Q40	25
GA 315	380	Q40	38
GA 315	440-460	Q40	33

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 315	575	Q40	25

For dryer cooling fan motor (50 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	230	Q41	2.5
GA 90	400	Q41	1.4
GA 90	500	Q41	1.1
GA/GR 110	230	Q41	2.5
GA/GR 110	400	Q41	1.4
GA/GR 110	500	Q41	1.1
GA/GR 132	230	Q41	2.5
GA/GR 132	400	Q41	1.4
GA/GR 132	500	Q41	1.1
GA/GR 160	230	Q41	2.5
GA/GR 160	400	Q41	1.4
GA/GR 160	500	Q41	1.1
GR 200	500	Q41	1.1
GA 200	400	Q41	6.2
GA 200	500	Q41	5.1
GA 250	400	Q41	6.2
GA 250	500	Q41	5.1

For dryer cooling fan motor (60 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 90	220-230	Q41	3.6
GA 90	380	Q41	2.2
GA 90	440-460	Q41	1.9
GA 90	575	Q41	1.4
GA/GR 110	220-230	Q41	3.6
GA/GR 110	380	Q41	2.2
GA/GR 110	440-460	Q41	1.9
GA/GR 110	575	Q41	1.4
GA/GR 160	220-230	Q41	3.6
GA/GR 160	380	Q41	2.2
GA/GR 160	440-460	Q41	1.9
GA/GR 160	575	Q41	1.4
GA 200	380	Q41	8.8
GA 200	440-460	Q41	7.7
GA 200	575	Q41	5.9

Compressor type	Supply voltage (V)	Circuit breakers	Setting (A)
GA 250	380	Q41	8.8
GA 250	440-460	Q41	7.7
GA 250	575	Q41	5.9
GA 315	380	Q41	8.8
GA 315	440-460	Q41	7.7
GA 315	575	Q41	5.9

For control circuit (50 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Transformer T1 250 VA	Transformer T1 400 VA	Transformer T1 630 VA	Transformer T1 800 VA
GA 90	230	Q1	1.5	2.4	3.6	4.5
GA 90	400	Q1	0.9	1.4	2.2	2.8
GA 90	500	Q1	0.7	1.1	1.8	2.2
GA/GR 110	230	Q1	1.5	2.4	3.6	4.5
GA/GR 110	400	Q1	0.9	1.4	2.2	2.8
GA/GR 110	500	Q1	0.7	1.1	1.8	2.2
GA/GR 132	230	Q1	1.5	2.4	3.6	4.5
GA/GR 132	400	Q1	0.9	1.4	2.2	2.8
GA/GR 132	500	Q1	0.7	1.1	1.8	2.2
GA/GR 160	230	Q1	1.5	2.4	3.6	4.5
GA/GR 160	400	Q1	0.9	1.4	2.2	2.8
GA/GR 160	500	Q1	0.7	1.1	1.8	2.2
GA/GR 200	400	Q1	0.9	1.4	2.2	2.8
GA/GR 200	500	Q1	0.7	1.1	1.8	2.2
GA 250	400	Q1	0.9	1.4	2.2	2.8
GA 250	500	Q1	0.7	1.1	1.8	2.2

For control circuit (60 Hz)

Compressor type	Supply voltage (V)	Circuit breakers	Transformer T1 250 VA	Transformer T1 400 VA	Transformer T1 630 VA	Transformer T1 800 VA
GA 90	220-230	Q1	1.6	2.4	3.7	4.7
GA 90	380	Q1	0.9	1.4	2.2	2.8
GA 90	440-460	Q1	0.8	1.2	1.9	2.4
GA 90	575	Q1	0.6	0.9	1.4	1.8
GA/GR 110	220-230	Q1	1.6	2.4	3.7	4.7
GA/GR 110	380	Q1	0.9	1.4	2.2	2.8
GA/GR 110	440-460	Q1	0.8	1.2	1.9	2.4
GA/GR 110	575	Q1	0.6	0.9	1.4	1.8

Compressor type	Supply voltage (V)	Circuit breakers	Transformer T1 250 VA	Transformer T1 400 VA	Transformer T1 630 VA	Transformer T1 800 VA
GA/GR 160	220-230	Q1	1.6	2.4	3.7	4.7
GA/GR 160	380	Q1	0.9	1.4	2.2	2.8
GA/GR 160	440-460	Q1	0.8	1.2	1.9	2.4
GA/GR 160	575	Q1	0.6	0.9	1.4	1.8
GA/GR 200	380	Q1	0.9	1.4	2.2	2.8
GA/GR 200	440-460	Q1	0.8	1.2	1.9	2.4
GA/GR 200	575	Q1	0.6	0.9	1.4	1.8
GA 250	380	Q1	0.9	1.4	2.2	2.8
GA 250	440-460	Q1	0.8	1.2	1.9	2.4
GA 250	575	Q1	0.6	0.9	1.4	1.8
GA 315	380	Q1	0.9	1.4	2.2	2.8
GA 315	440-460	Q1	0.8	1.2	1.9	2.4
GA 315	575	Q1	0.6	0.9	1.4	1.8

9.7 Compressor data

Attention

	On compressors with a DD filter installed, the maximum working pressure is 0.35 bar (5.07 psi) lower than the maximum working pressure stated below. The nominal working pressure is 0.1 bar (1.45 psi) lower than the nominal pressure stated below.
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Data for GA 7.5 bar (109 psi) 50 Hz compressors

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Maximum working pressure, GA Pack	bar(e)	7.5	7.5	7.5	7.5	7.5	7.5
Maximum working pressure, GA Pack	psig	109	109	109	109	109	109
Maximum working pressure, GA Full-feature	bar(e)	7.25	7.25	7.25	7.25	7.25	7.25
Maximum working pressure, GA Full-feature	psig	105	105	105	105	105	105
Nominal working pressure	bar(e)	7.0	7.0	7.0	7.0	7.0	7.0
Nominal working pressure	psig	102	102	102	102	102	102
Motor shaft speed	r/min	1490	1490	1490	1490	1490	1490
Power input, GA Pack	kW	103	124	147	178	224	272
Power input, GA Pack	hp	138	166	197	239	300	365
Power input, GA Full-feature	kW	110	131	156	188	241	289
Power input, GA Full-feature	hp	148	176	209	252	323	388
Power input, GA W Pack	kW	100	121	142	173	216	264
Power input, GA W Pack	hp	134	162	190	232	290	354

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Power input, GA W Full-Feature	kW	106	127	150	182	232	280
Power input, GA W Full-Feature	hp	142	170	201	244	311	375
Oil capacity, GA	l	69	75	93	100	130	130
Oil capacity, GA	US gal	18.2	19.8	24.6	26.4	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	20.5	22	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.26	3.5	4.55	4.55
Oil capacity, GA W	l	63	63	85	85	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	22.4	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	18.7	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	2.98	3.96	3.96
Sound pressure level, GA	dB(A)	72	72	74	74	75	75
Sound pressure level, GA W	dB(A)	71	71	71	71	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.0	3.6	4.2	5.6
Maximum cooling water flow	cfm	4.2	5.3	6.4	7.6	8.9	11.9
Minimum cooling water flow	l/s	0.7	0.8	0.9	1.1	1.3	1.6
Minimum cooling water flow	cfm	1.5	1.7	1.9	2.3	2.8	3.4

Data for GA 8.5 bar (123 psi) 50 Hz compressors

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Maximum working pressure, GA Pack	bar(e)	8.5	8.5	8.5	8.5	8.5	8.5
Maximum working pressure, GA Pack	psig	123	123	123	123	123	123
Maximum working pressure, GA Full-Feature	bar(e)	8.25	8.25	8.25	8.25	8.25	8.25
Maximum working pressure, GA Full-Feature	psig	120	120	120	120	120	120
Nominal working pressure	bar(e)	8.0	8.0	8.0	8.0	8.0	8.0
Nominal working pressure	psig	116	116	116	116	116	116
Motor shaft speed	r/min	1490	1490	1490	1490	1490	1490
Power input, GA Pack	kW	103	124	149	179	223	277
Power input, GA Pack	hp	138	166	200	240	299	371
Power input, GA Full-Feature	kW	110	131	158	189	239	294
Power input, GA Full-Feature	hp	148	176	212	253	321	394
Power input, GA W Pack	kW	100	121	144	174	207	262
Power input, GA W Pack	hp	134	162	193	233	278	351
Power input, GA W Full-Feature	kW	106	127	152	183	222	277
Power input, GA W Full-Feature	hp	142	170	204	245	298	371
Oil capacity, GA	l	69	75	93	100	130	130
Oil capacity, GA	US gal	18.2	19.8	24.6	26.4	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	20.5	22	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.26	3.5	4.55	4.55
Oil capacity, GA W	l	63	63	85	85	113	113

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Oil capacity, GA W	US gal	16.6	16.6	22.4	22.4	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	18.7	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	2.98	3.96	3.96
Sound pressure level, GA	dB(A)	72	72	74	74	75	75
Sound pressure level, GA W	dB(A)	71	71	71	71	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.0	3.6	4.2	5.6
Maximum cooling water flow	cfm	4.2	5.3	6.4	7.6	8.9	11.9
Minimum cooling water flow	l/s	0.7	0.8	0.9	1.1	1.3	1.6
Minimum cooling water flow	cfm	1.5	1.7	1.9	2.3	2.8	3.4

Data for GA 10 bar (145 psi) 50 Hz compressors

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Maximum working pressure, GA Pack	bar(e)	10	10	10	10	10	10
Maximum working pressure, GA Pack	psig	145	145	145	145	145	145
Maximum working pressure, GA Full-Feature	bar(e)	9.75	9.75	9.75	9.75	9.75	9.75
Maximum working pressure, GA Full-Feature	psig	141	141	141	141	141	141
Nominal working pressure	bar(e)	9.5	9.5	9.5	9.5	9.5	9.5
Nominal working pressure	psig	138	138	138	138	138	138
Motor shaft speed	r/min	1490	1490	1490	1490	1490	1490
Power input, GA Pack	kW	102	124	146	178	224	273
Power input, GA Pack	hp	137	166	196	239	300	366
Power input, GA Full-Feature	kW	108	131	155	187	240	290
Power input, GA Full-Feature	hp	145	176	208	251	322	389
Power input, GA W Pack	kW	99	121	141	173	216	265
Power input, GA W Pack	hp	133	162	189	232	290	355
Power input, GA W Full-Feature	kW	104	127	149	181	231	281
Power input, GA W Full-Feature	hp	139	170	200	243	310	377
Oil capacity, GA	l	69	75	93	100	130	130
Oil capacity, GA	US gal	18.2	19.8	24.6	26.4	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	20.5	22	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.26	3.5	4.55	4.55
Oil capacity, GA W	l	63	63	85	85	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	22.4	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	18.7	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	2.98	3.96	3.96
Sound pressure level, GA	dB(A)	72	72	74	74	75	75
Sound pressure level, GA W	dB(A)	71	71	71	71	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.0	3.6	4.2	5.6
Maximum cooling water flow	cfm	4.2	5.3	6.4	7.6	8.9	11.9

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Minimum cooling water flow	l/s	0.7	0.8	0.9	1.1	1.3	1.6
Minimum cooling water flow	cfm	1.5	1.7	1.9	2.3	2.8	3.4

Data for GA 13 bar (189 psi) 50 Hz compressors

	Units	GA90	GA110	GA132	GA160	GA200	GA250
Maximum working pressure, GA Pack	bar(e)	13	13	13	13	13	13
Maximum working pressure, GA Pack	psig	189	189	189	189	189	189
Maximum working pressure, GA Full-Feature	bar(e)	12.75	12.75	12.75	12.75	12.75	12.75
Maximum working pressure, GA Full-Feature	psig	185	185	185	185	185	185
Nominal working pressure	bar(e)	12.5	12.5	12.5	12.5	12.5	12.5
Nominal working pressure	psig	181	181	181	181	181	181
Motor shaft speed	r/min	1490	1490	1490	1490	1490	1490
Power input, GA Pack	kW	104	124	149	182	241	289
Power input, GA Pack	hp	139	166	200	244	323	388
Power input, GA Full-Feature	kW	110	130	158	191	258	306
Power input, GA Full-Feature	hp	148	174	212	256	346	410
Power input, GA W Pack	kW	101	121	144	177	233	281
Power input, GA W Pack	hp	135	162	193	237	312	377
Power input, GA W Full-Feature	kW	106	126	152	185	250	298
Power input, GA W Full-Feature	hp	142	169	204	248	335	400
Oil capacity, GA	l	69	75	93	100	130	130
Oil capacity, GA	US gal	18.2	19.8	24.6	26.4	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	20.5	22	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.26	3.5	4.55	4.55
Oil capacity, GA W	l	63	63	85	85	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	22.4	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	18.7	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	2.98	3.96	3.96
Sound pressure level, GA	dB(A)	72	72	74	74	75	75
Sound pressure level, GA W	dB(A)	71	71	71	71	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.0	3.6	4.2	5.6
Maximum cooling water flow	cfm	4.2	5.3	6.4	7.6	8.9	11.9
Minimum cooling water flow	l/s	0.7	0.8	0.9	1.1	1.3	1.6
Minimum cooling water flow	cfm	1.5	1.7	1.9	2.3	2.8	3.4

Data for GA 6.9 bar (100 psi) 60 Hz compressors

	Units	GA90	GA110	GA160	GA200	GA250	GA315
Maximum working pressure, GA Pack	bar(e)	7.4	7.4	7.4	7.4	7.4	7.4

	Units	GA90	GA110	GA160	GA200	GA250	GA315
Maximum working pressure, GA Pack	psig	107	107	107	107	107	107
Maximum working pressure, GA Full-Feature	bar(e)	7.15	7.15	7.15	7.15	7.15	7.15
Maximum working pressure, GA Full-Feature	psig	104	104	104	104	104	104
Nominal working pressure	bar(e)	6.9	6.9	6.9	6.9	6.9	6.9
Nominal working pressure	psig	100	100	100	100	100	100
Motor shaft speed	r/min	1790	1790	1790	1790	1790	1790
Power input, GA Pack	kW	109	133	178	217	254	291
Power input, GA Pack	hp	146	178	239	291	341	390
Power input, GA Full-Feature	kW	116	140	188	234	271	309
Power input, GA Full-Feature	hp	156	188	252	314	363	414
Power input, GA W Pack	kW	105	128	171	208	245	282
Power input, GA W Pack	hp	141	172	229	279	329	378
Power input, GA W Full-Feature	kW	112	134	181	225	262	300
Power input, GA W Full-Feature	hp	150	180	243	302	351	402
Oil capacity, GA	l	69	75	100	130	130	130
Oil capacity, GA	US gal	18.2	19.8	26.4	34.3	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	22	28.6	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.5	4.55	4.55	4.55
Oil capacity, GA W	l	63	63	85	113	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	29.8	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	24.9	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	3.96	3.96	3.96
Sound pressure level, GA	dB(A)	76	76	78	76	76	76
Sound pressure level, GA W	dB(A)	71	71	71	72	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.6	4.2	5.6	6.9
Maximum cooling water flow	cfm	4.2	5.3	7.6	8.9	11.9	14.6
Minimum cooling water flow	l/s	0.7	0.8	1.1	1.3	1.6	1.8
Minimum cooling water flow	cfm	1.5	1.7	2.3	2.8	3.4	3.8

Data for GA 8.6 bar (125 psi) 60 Hz compressors

	Units	GA90	GA110	GA160	GA200	GA250	GA315
Maximum working pressure, GA Pack	bar(e)	9.1	9.1	9.1	9.1	9.1	9.1
Maximum working pressure, GA Pack	psig	132	132	132	132	132	132
Maximum working pressure, GA Full-Feature	bar(e)	8.85	8.85	8.85	8.85	8.85	8.85
Maximum working pressure, GA Full-Feature	psig	128	128	128	128	128	128
Nominal working pressure	bar(e)	8.6	8.6	8.6	8.6	8.6	8.6
Nominal working pressure	psig	125	125	125	125	125	125

	Units	GA90	GA110	GA160	GA200	GA250	GA315
Motor shaft speed	r/min	1790	1790	1790	1790	1790	1790
Power input, GA Pack	kW	109	128	175	220	257	294
Power input, GA Pack	hp	146	172	235	295	345	394
Power input, GA Full-Feature	kW	116	136	184	236	273	312
Power input, GA Full-Feature	hp	156	182	247	316	366	418
Power input, GA W Pack	kW	105	124	168	211	248	285
Power input, GA W Pack	hp	141	166	225	283	333	382
Power input, GA W Full-Feature	kW	112	131	176	227	264	303
Power input, GA W Full-Feature	hp	150	176	236	304	354	406
Oil capacity, GA	l	69	75	100	130	130	130
Oil capacity, GA	US gal	18.2	19.8	26.4	34.3	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	22	28.6	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.5	4.55	4.55	4.55
Oil capacity, GA W	l	63	63	85	113	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	29.8	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	24.9	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	3.96	3.96	3.96
Sound pressure level, GA	dB(A)	76	76	78	76	76	76
Sound pressure level, GA W	dB(A)	71	71	71	72	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.6	4.2	5.6	6.9
Maximum cooling water flow	cfm	4.2	5.3	7.6	8.9	11.9	14.6
Minimum cooling water flow	l/s	0.7	0.8	1.1	1.3	1.6	1.8
Minimum cooling water flow	cfm	1.5	1.7	2.3	2.8	3.4	3.8

Data for GA 10.4 bar (150 psi) 60 Hz compressors

	Units	GA90	GA110	GA160	GA200	GA250	GA315
Maximum working pressure, GA Pack	bar(e)	10.8	10.8	10.8	10.8	10.8	10.8
Maximum working pressure, GA Pack	psig	157	157	157	157	157	157
Maximum working pressure, GA Full-Feature	bar(e)	10.55	10.55	10.55	10.55	10.55	10.55
Maximum working pressure, GA Full-Feature	psig	153	153	153	153	153	153
Nominal working pressure	bar(e)	10.3	10.3	10.3	10.3	10.3	10.3
Nominal working pressure	psig	149	149	149	149	149	149
Motor shaft speed	r/min	1790	1790	1790	1790	1790	1790
Power input, GA Pack	kW	110	132	178	222	260	303
Power input, GA Pack	hp	148	177	239	298	349	406
Power input, GA Full-Feature	kW	117	139	187	238	277	320
Power input, GA Full-Feature	hp	157	186	251	319	371	429
Power input, GA W Pack	kW	106	127	171	211	248	285
Power input, GA W Pack	hp	142	170	229	283	333	382

	Units	GA90	GA110	GA160	GA200	GA250	GA315
Power input, GA W Full-Feature	kW	113	133	179	227	264	303
Power input, GA W Full-Feature	hp	152	178	240	304	354	406
Oil capacity, GA	l	69	75	100	130	130	130
Oil capacity, GA	US gal	18.2	19.8	26.4	34.3	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	22	28.6	28.6	28.6
Oil capacity, GA	cu.ft	2.42	2.63	3.5	4.55	4.55	4.55
Oil capacity, GA W	l	63	63	85	113	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	29.8	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	24.9	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	3.96	3.96	3.96
Sound pressure level, GA	dB(A)	76	76	78	76	76	76
Sound pressure level, GA W	dB(A)	71	71	71	72	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.6	4.2	5.6	6.9
Maximum cooling water flow	cfm	4.2	5.3	7.6	8.9	11.9	14.6
Minimum cooling water flow	l/s	0.7	0.8	1.1	1.3	1.6	1.8
Minimum cooling water flow	cfm	1.5	1.7	2.3	2.8	3.4	3.8

Data for GA 13.8 bar (200 psi) 60 Hz compressors

	Units	GA90	GA110	GA160	GA250	GA315
Maximum working pressure, GA Pack	bar(e)	13.8	13.8	13.8	13.8	13.8
Maximum working pressure, GA Pack	psig	200	200	200	200	200
Maximum working pressure, GA Full-Feature	bar(e)	13.55	13.55	13.55	13.55	13.55
Maximum working pressure, GA Full-Feature	psig	197	197	197	197	197
Nominal working pressure	bar(e)	13.3	13.3	13.3	13.3	13.3
Nominal working pressure	psig	193	193	193	193	193
Motor shaft speed	r/min	1790	1790	1790	1790	1790
Power input, GA Pack	kW	111	134	178	269	307
Power input, GA Pack	hp	149	180	239	361	412
Power input, GA Full-Feature	kW	118	141	187	285	323
Power input, GA Full-Feature	hp	158	189	251	382	433
Power input, GA W Pack	kW	107	129	171	260	298
Power input, GA W Pack	hp	143	173	229	349	400
Power input, GA W Full-Feature	kW	113	136	179	276	314
Power input, GA W Full-Feature	hp	152	182	240	370	421
Oil capacity, GA	l	69	75	100	130	130
Oil capacity, GA	US gal	18.2	19.8	26.4	34.3	34.3
Oil capacity, GA	Imp gal	15.2	16.5	22	28.6	28.6

	Units	GA90	GA110	GA160	GA250	GA315
Oil capacity, GA	cu.ft	2.42	2.63	3.5	4.55	4.55
Oil capacity, GA W	l	63	63	85	113	113
Oil capacity, GA W	US gal	16.6	16.6	22.4	29.8	29.8
Oil capacity, GA W	Imp gal	13.9	13.9	18.7	24.9	24.9
Oil capacity, GA W	cu.ft	2.21	2.21	2.98	3.96	3.96
Sound pressure level, GA	dB(A)	76	76	78	76	76
Sound pressure level, GA W	dB(A)	71	71	71	72	72
Maximum cooling water flow	l/s	2.0	2.5	3.6	5.6	6.9
Maximum cooling water flow	cfm	4.2	5.3	7.6	11.9	14.6
Minimum cooling water flow	l/s	0.7	0.8	1.1	1.6	1.8
Minimum cooling water flow	cfm	1.5	1.7	2.3	3.4	3.8

10 Pressure equipment directives

PED instructions GA90 up to GA160

Product : GA90-160

This machine is a pressure assembly of cat. III according to 97/23/EC.

Parts of article 3.3 of 97/23/EC are subject to good engineering practice.

Parts of category I according to 97/23/EC are integrated into the machine and fall under the exclusion of article I, section 3.6.

Parts subject to the Simple Pressure Vessel Directive 87/404/EEC are excluded from 97/23/EC according to article I, section 3.3.

The following pressure bearing parts are of category higher than I :

Oil separator vessel : Cat III

For GA 90 and GA 110: design pressure 15 bar(e), content 147 l

For GA 132 and GA 160: design pressure 15 bar(e), content 189 l

Design standard : ASME section VIII div. 1.

Safety valve : Cat IV

Design code : AD-Merkblätter, A2

PED instructions GA200 up to GA500

Product : GA 200-500

This machine is a pressure assembly of cat. IV according to 97/23/EC.

Parts of article 3.3 of 97/23/EC are subject to good engineering practice.

Parts of category I according to 97/23/EC are integrated into the machine and fall under the exclusion of article I, section 3.6.

Parts subject to the Simple Pressure Vessel Directive 87/404/EEC are excluded from 97/23/EC according to article I, section 3.3.

The following pressure bearing parts are of category higher than I :

Oil separator vessel : Cat IV

For GA 200, GA 250 and GA315 60Hz, 1 vessel: design pressure 15 bar(e), content 305 l

Design standard : ASME section VIII div. 1.

Safety valve : Cat IV

Design code : AD-Merkblätter, A2

11 Documentation

Declaration of conformity

Typical example of a Declaration of Conformity document



EC DECLARATION OF CONFORMITY

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

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

7	Directive on the approximation of laws of the Member States relating to	Harmonized and/or Technical Standards used	Att'mnt
a.	Pressure equipment	97/23/EC	
b.	Machinery safety	2006/42/EC EN ISO 12100 – 1 EN ISO 12100 – 2 EN 1012 – 1	
c.	Simple pressure vessel	87/404/EEC	
d.	Electromagnetic compatibility	2004/108/EC EN 61000-6-2 EN 61000-6-4	
e.	Low voltage equipment	2006/95/EC EN 60034 EN 60204-1 EN 60439	
f.	Outdoor noise emission	2000/14/EC	
g.	Equipment and protective systems in potentially explosive atmospheres	94/9/EC	
h.	Medical devices General	93/42/EEC EN ISO 13845 EN ISO 14971 EN 737-3	
i.			

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

9	Conformity of the specification to the Directives (incl. Technical File)		Conformity of the product to the specification and by implication to the directives	
10				
11	Issued by	Product engineering	Manufacturing	
12	Name			
13	Signature			
14	Date			

Form 6009 xxxx xx
ed. xx, xxxx-xx-xx

Atlas Copco Airpower n.v.

A company within the Atlas Copco Group

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V.A.T. 403.982.231

For info, please contact your local Atlas Copco representative

p.1(22)

Declaration of incorporation

Typical example of a Declaration of Incorporation document



DECLARATION OF INCORPORATION

- 1
- 2 We, Atlas Copco Airpower n.v., declare under our sole responsibility, that the product
- 3 Machine name
- 4 Machine type
- 5 Serial number
- 6 must not be put into service until the machine in which it is intended to be incorporated into or assembled with, is in conformity with the relevant Essential Health and Safety Requirements of the EC-Directive 2006/42/EC and its amendments on the approximation of the laws of the Member States relating to Machinery.

EC DECLARATION OF CONFORMITY

- 7
- 8 We, Atlas Copco Airpower N.V., undertakes, in response to a reasoned request by the national authorities, to transmit the relevant information on the partly completed machinery. The information on the relevant parts can be obtained prejudice to the intellectual property rights of Atlas Copco Airpower N.V."
- 9 We, Atlas Copco Airpower n.v., hereby declare that the product 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, as a component/quasi machine is in conformity with the relevant Essential Health and Safety Requirements of this directive.
- 9 The machinery complies also with the requirements of the following directives and their amendments as indicated.

	Directive on the approximation of laws of the Member States relating to	Harmonized and/or Technical Standards used	Att' mnt
a.	Pressure equipment	97/23/EC	
b.	Machinery safety	2006/42/EC EN ISO 12100 - 1 EN ISO 12100 - 2 EN 1012 - 1 EN 60204-11	
c.	Simple pressure vessel	87/404/EEC	
d.	Electromagnetic compatibility	2004/108/EC EN 61000-6-2 EN 61000-6-4	
e.	Low voltage equipment	2006/95/EC EN 60034 EN 60204-1 EN 60439	
f.	Outdoor noise emission	2000/14/EC	
g.	Equipment and protective systems in potentially explosive atmospheres	94/9/EC	
h.	Medical devices General	93/42/EEC EN ISO 13845 EN ISO 14971 EN 737-3	
i.			

- 11 The harmonized and the technical standards used are identified in the attachments hereafter
- 12 **Conformity of the specification to the Directives (incl. Technical File)**
- 13 **Conformity of the product to the specification and by implication to the directives**
- 14 Issued by
- 15 Product engineering
- 16 Manufacturing
- 17 Name
- 18 Signature
- 19 Date

Atlas Copco Airpower n.v. A company within the Atlas Copco Group

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What sets Atlas Copco apart as a company is our conviction that we can only excel in what we do if we provide the best possible know-how and technology to really help our customers produce, grow and succeed.

There is a unique way of achieving that - we simply call it the Atlas Copco way. It builds on **interaction**, on long-term relationships and involvement in the customers' process, needs and objectives. It means having the flexibility to adapt to the diverse demands of the people we cater for.

It's the **commitment** to our customers' business that drives our effort towards increasing their productivity through better solutions. It starts with fully supporting existing products and continuously doing things better, but it goes much further, creating advances in technology through **innovation**. Not for the sake of technology, but for the sake of our customer's bottom line and peace-of-mind.

That is how Atlas Copco will strive to remain the first choice, to succeed in attracting new business and to maintain our position as the industry leader.

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