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ATLAS COPCO GA55 INSTRUCTION BOOK

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Atlas Copco Stationary Air Compressors

GA55 - GA75 - GA55 W - GA75 W - GA90C - GA90C W

Instruction Book

OWNERSHIP DATA

Unit type: . . . . . .
Motor type: . . . . . .
Delivery date: . . . . . .
Service Plan: . . . . . .

Owner's machine No.: . . . . . .
Unit serial No.: . . . . . .
Motor serial No.: . . . . . .
First start-up date: . . . . . .

Selected lubricants
Compressor: . . . . . .
Bearing grease type, electric motor: . . . . . .

Capacity: . . . . . .

Printed Matter Nos.
Atlas Copco instruction book: . . . . . .
Atlas Copco parts list: . . . . . .
Atlas Copco logbook: . . . . . .

Motor instruction book: . . . . . .
Motor parts list: . . . . . .

Local Atlas Copco Representative
Name: . . . . . .
Address: . . . . . .
Telephone: . . . . . Contact persons: Service: . . . . . .
Telex: . . . . . Parts: . . . . . .

SAFETY PRECAUTIONS

To be read attentively and acted accordingly before installing, operating or repairing the unit.

These recommendations 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.

In addition to normal safety rules which should be observed with stationary air compressors and equipment, the following safety directions and precautions are of special importance.

When operating this unit, the operator must employ safe working practices and observe all related local work safety requirements and ordinances.

The owner is responsible for maintaining the unit in a safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.

Installation, operation, maintenance and repair shall only be performed by authorized, trained, competent personnel.

Normal ratings (pressures, temperatures, time settings, etc.) shall be durably marked.

Any modification on the compressor shall only be performed in agreement with Atlas Copco and under supervision of authorized, competent personnel.

If any statement in this book, especially with regard to safety, does not comply with local legislation, the stricter of the two shall apply.

These precautions are general and cover several machine types and equipment; hence some statements may not apply to the unit(s) described in this book.

Installation

Apart from general engineering practice in conformity with the local safety regulations, the following directives are specially stressed:

1. A compressor shall be lifted only with adequate equipment in conformity with local safety rules.

   Loose or pivoting parts shall be securely fastened before lifting. It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Lifting acceleration and retardation shall be kept within safe limits.

   Wear a safety helmet when working in the area of overhead or lifting equipment.

2. Any blanking flanges, plugs, caps and desiccant bags shall be removed before connecting up the pipes. Distribution pipes and connections shall be of correct size and suitable for the working pressure.

3. Place the unit where the ambient air is as cool and clean as possible. If necessary, install a suction duct. Never obstruct the air inlet. Care shall be taken to minimize the entry of moisture with the inlet air.

4. The aspirated air shall be free from flammable fumes or vapours, e.g. paint solvents, that can lead to internal fire or explosion.

5. Air-cooled units shall 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 inlet.

6. Arrange the air intake so that loose clothing of 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 material.

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 unit shall bear an obvious sign reading:

   DANGER: This machine is remotely controlled and may start without warning.

   As a further safeguard, persons switching on remotely controlled units 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. On units with automatic start-stop system, a sign stating **"This machine may start without warning"** shall be attached near the instrument panel.

11. In multiple compressor systems manual valves shall be installed to isolate each compressor. Non-return valves (check valves) shall not be relied upon for isolating pressure systems.

12. Never remove or tamper with the safety devices, guards or insulations fitted on the unit. Every pressure vessel or auxiliary installed outside the unit to contain air above atmospheric pressure shall be protected by a pressure-relieving device or devices as required.

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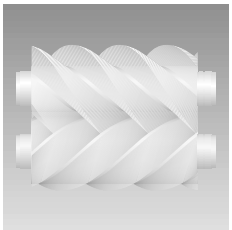

Atlas Copco Stationary Air Compressors

GA55 - GA75 - GA55 W - GA75 W - GA90C - GA90C W

Instruction Book

Important

1. This book applies exclusively to compressors from serial number AII-465 000 onwards.
2. This book must be used together with the “User manual for Elektronikon regulator for GA5 up to GA90C”.

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  Any unauthorized use or copying of the contents or any part thereof is prohibited. This applies in particular to trademarks, model denominations, part numbers and drawings.

- This instruction book meets the requirements for instructions specified by the machinery directive 89/392/EEC and is valid for CE as well as non-CE labelled machines.

No. 2920 1381 02

Registration code: APC G55-90C/’96 / 38 / 985
Replaces No. 2920 1381 01

2000-05

www.atlascopco.com

2920138102

Atlas Copco

This instruction book describes how to handle the machines to ensure safe operation, optimum efficiency and long service life.

Read this book before putting the machine into operation to ensure correct handling, operation and proper maintenance from the beginning. The maintenance schedule comprises measures for keeping the machine in good condition.

Keep the book available for the operator and make sure that the machine is operated and that maintenance is carried out according to the instructions. Record all operating data, maintenance performed, etc. in an operator's logbook available from Atlas Copco. Follow all relevant safety precautions, including those mentioned on the cover of this book.

Repairs must be carried out by trained personnel from Atlas Copco who can be contacted for any further information.

In all correspondence always mention the type and the serial number, shown on the data plate.

For all data not mentioned in the text, see sections "Preventive maintenance schedule" and "Principal data".

The company reserves the right to make changes without prior notice.

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1 Leading particulars

1.1 General description

GA are stationary, single-stage, oil-injected screw compressors driven by an electric motor. GA55, GA75 and GA90C are air-cooled, whereas GA55 W, GA75 W and GA90C W are water-cooled.

GA Pack
GA Pack are enclosed in a sound-insulated bodywork. The compressors are controlled by the Atlas Copco Elektronikon® regulator. This electronic control module is fitted to the door of the front panel. The Elektronikon regulator reduces the power consumption and it allows the operator to easily program and monitor the compressor. The control panel includes the start, stop and emergency stop buttons. An electric cabinet comprising the motor starter is located behind this panel. The compressors are provided with an automatic condensate drain system.

GA Full-feature
GA Full-feature are GA Pack compressors, additionally provided with an air dryer (1-Fig. 1.4) integrated in the bodywork. The dryer removes moisture from the compressed air by cooling the air to near freezing point and automatically draining the condensate. See section 1.4.

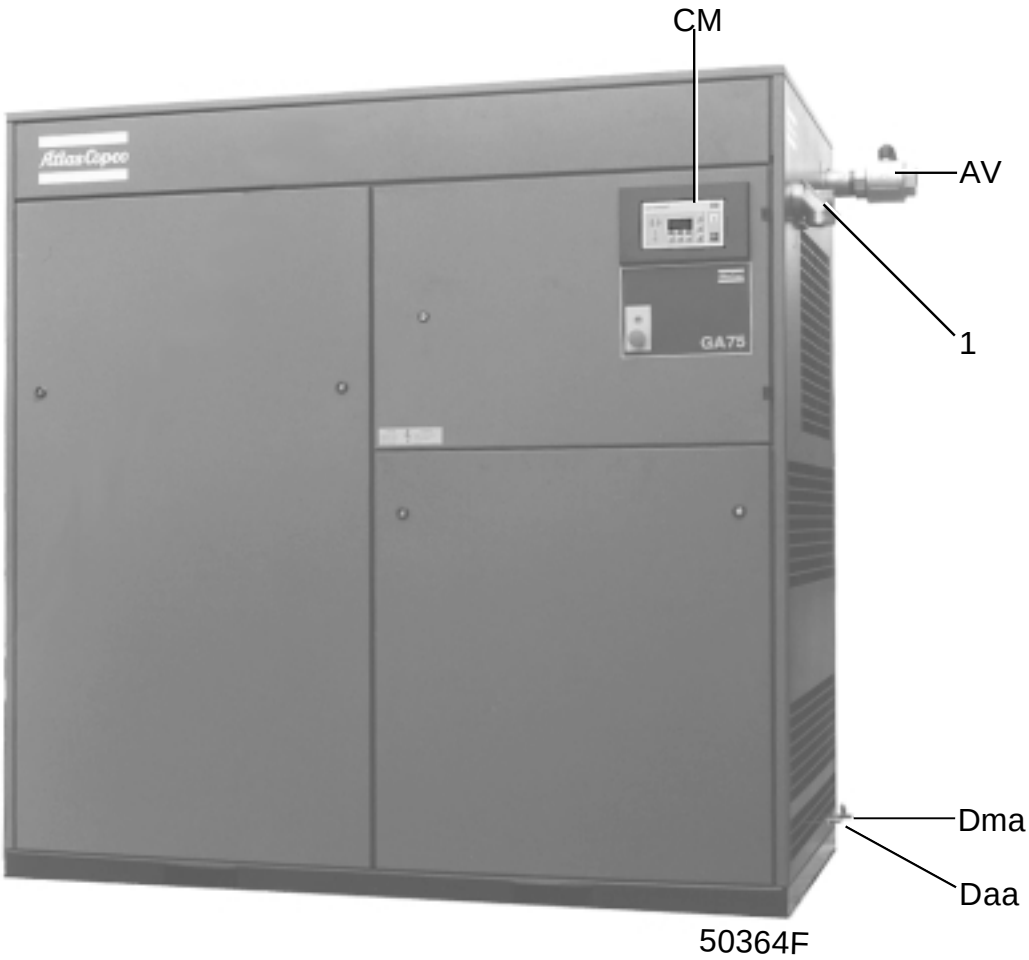


Fig. 1.1 General view of GA75

1.1.1 Air flow (Fig. 1.6)

Air drawn through filter (AF) and open inlet valve (IV) into compressor element (E) is compressed. Compressed air and oil flow into air receiver/oil separator (AR) via check valve (CV). The air is discharged through outlet valve (AV) via minimum pressure valve (Vp), air cooler (Ca) and condensate trap (MTa).

Check valve (CV) prevents blow-back of compressed air when the compressor is stopped. Minimum pressure valve (Vp) prevents the receiver pressure from dropping below a minimum pressure.

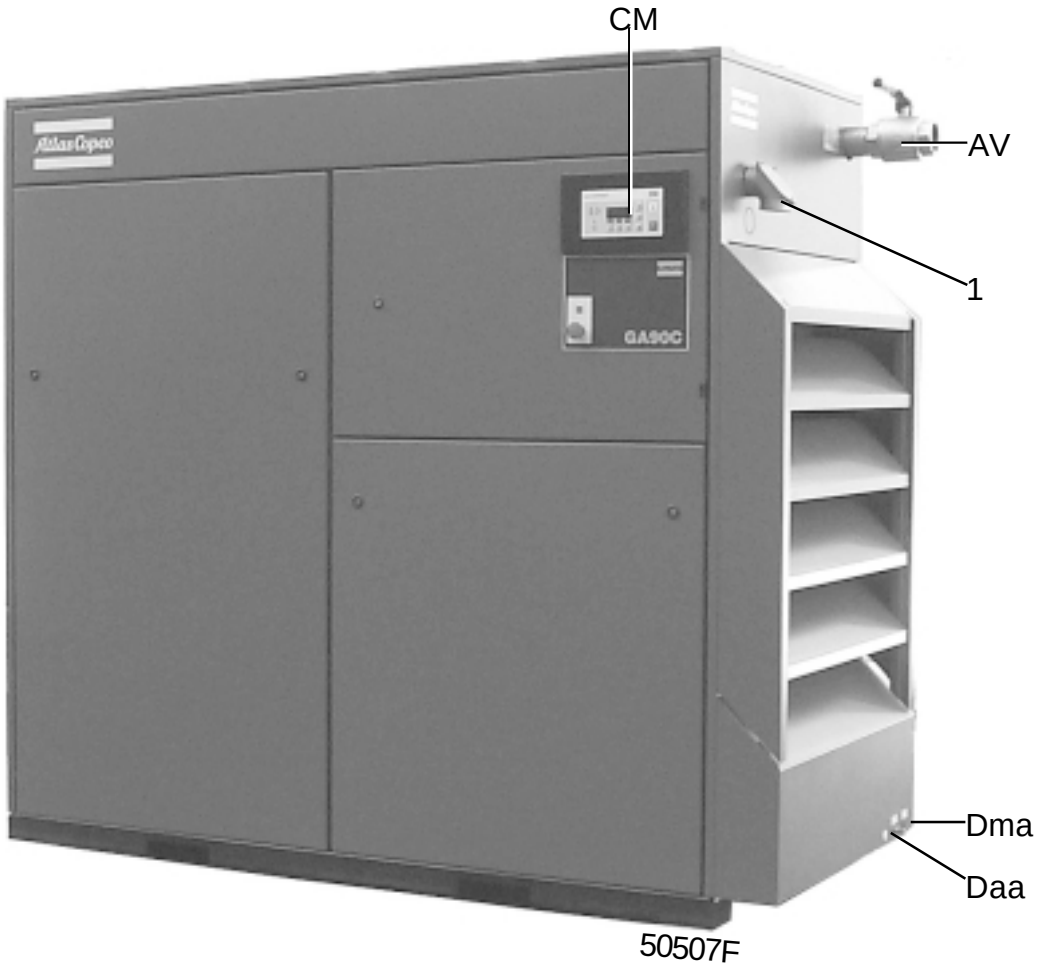


Fig. 1.2 General view of GA90C

AV	Air outlet valve
CM	Control module
Daa	Automatic condensate drain outlet
Dma	Manual condensate drain valve
1	Electric cable entry

Figs. 1.1 and 1.2 General views of GA75 and GA90C

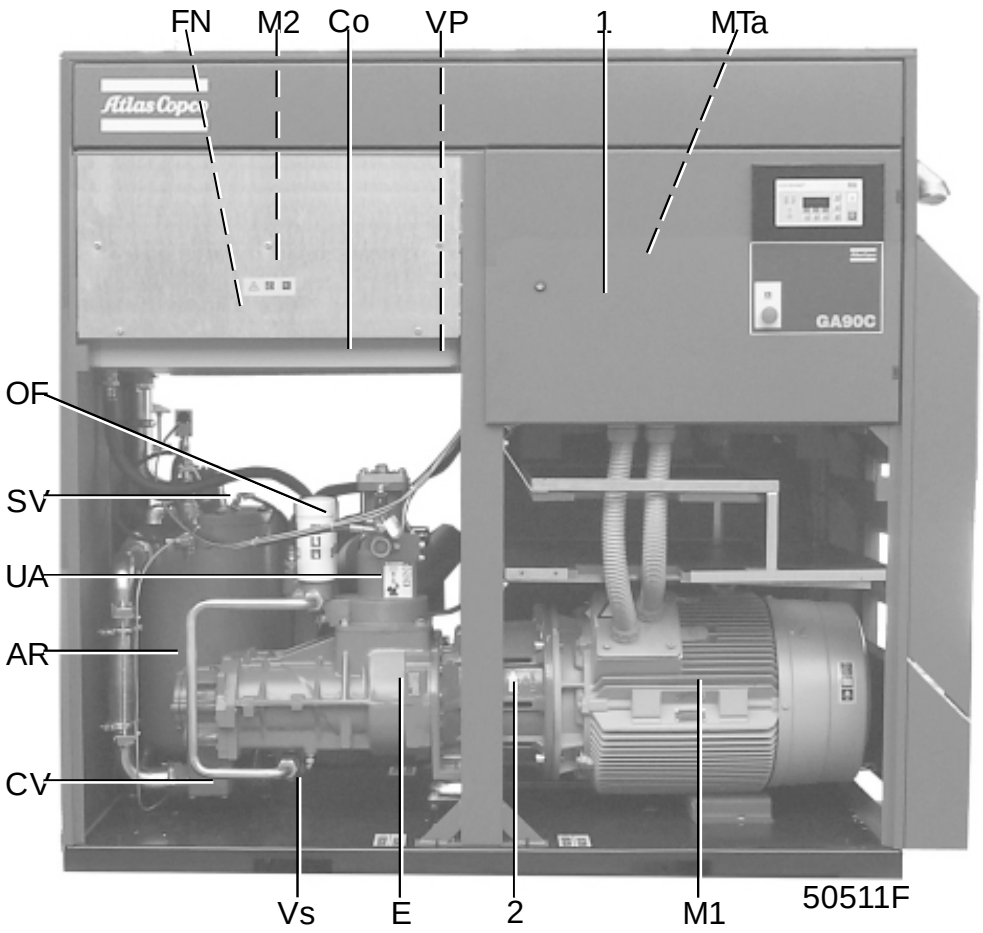
1.1.2 Oil system (Fig. 1.6)

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

The oil system is provided with a by-pass valve (BV). When the oil temperature is below 40 degrees celsius **1)**, by-pass valve (BV) shuts off the oil supply from oil cooler (Co). Air pressure forces the oil from air receiver/oil separator (AR) through oil filters (OF) and oil stop valve (Vs) to compressor element (E) and its lubrication points. Oil cooler (Co) is by-passed.

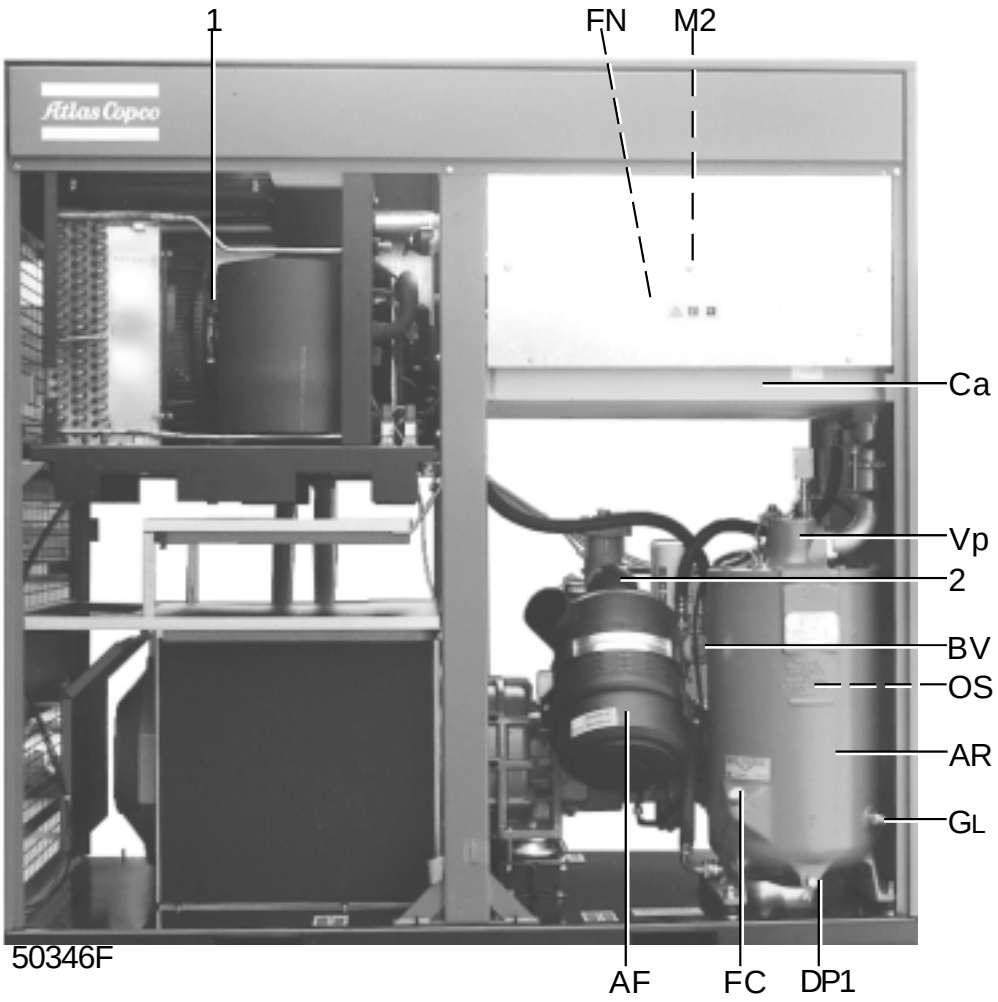
By-pass valve (BV) starts opening the oil supply from cooler (Co) when the oil temperature has increased to the above-mentioned value. At approx. 55 degrees celsius **1)** all the oil flows through the oil cooler.

Oil stop valve (Vs) prevents the compressor element from flooding with oil when the compressor is stopped. The valve is opened by element outlet pressure when the compressor is started.



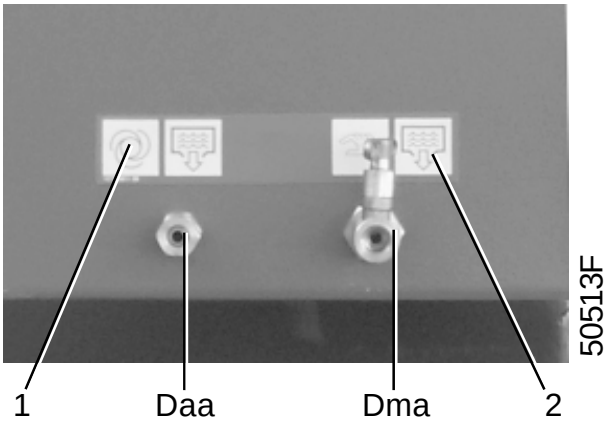
AR	Air receiver	MTa	Condensate trap	VP	Vent plug
Co	Oil cooler	M1	Drive motor	Vs	Oil stop valve
CV	Check valve	M2	Fan motor	1	Electric cabinet
E	Compressor element	OF	Oil filters	2	Arrow, motor rotation direction (depends on compressor type)
FN	Fan	SV	Safety valve		
		UA	Unloader		

Fig. 1.3 Front view of GA90C



AF	Air filter	FC	Oil filler plug	OS	Oil separator element
AR	Air receiver	FN	Fan	Vp	Minimum pressure valve
BV	Oil cooler by-pass valve	Gl	Oil level gauge	1	Dryer
Ca	Air cooler	M2	Fan motor	2	Air inlet pipe
DP1	Oil drain plug, air receiver				

Fig. 1.4 Rear view of GA75 Full-feature



Daa	Automatic condensate drain outlet
Dma	Manual condensate drain valve
1	Pictograph, automatic condensate drain outlet
2	Pictograph, manual condensate drain valve

Fig. 1.5 Condensate drains

1.1.3 Cooling and condensate drain systems (Fig. 1.6)

The cooling system comprises air cooler (Ca) and oil cooler (Co). On air-cooled compressors, the cooling air is generated by fan (FN). Water-cooled compressors have a cooling water system (Fig. 3.7). The water flows through the inlet pipe, the tubestacks of the air cooler and oil cooler, and the outlet pipe.

A condensate trap (MTa) is provided in the air outlet system. The trap is equipped with a valve for automatic condensate draining during operation (Daa-Fig. 1.5) and a manually operated valve for draining after stopping the compressor (Dma-Fig. 1.5).

1.2 Unloading/loading system (Fig. 1.6)

1.2.1 Unloading

If the air consumption is less than the air output of the compressor, the net pressure increases. When the net pressure reaches the unloading pressure, solenoid valve (Y1) is de-energized. The plunger of the valve returns by spring force:

1. The control pressure present in the chambers of loading plunger (LP) and unloading valve (UV) is vented to atmosphere via solenoid valve (Y1).
2. Loading plunger (LP) moves upwards and causes inlet valve (IV) to close the air inlet opening.
3. Unloading valve (UV) is opened by receiver pressure. The pressure from air receiver (AR) is released towards unloader (UA).
4. The pressure is stabilized at a low value. A small amount of air is kept drawn in and is blown to the unloader.

Air output is stopped (0 %), the compressor runs unloaded.

1.2.2 Loading

When the net pressure decreases to the loading pressure, solenoid valve (Y1) is energized. The plunger of solenoid valve (Y1) moves upwards against spring force:

1. Control pressure is fed from air receiver (AR) via solenoid valve (Y1) to loading plunger (LP) and unloading valve (UV).
2. Unloading valve (UV) closes the air blow-off opening. Loading plunger (LP) moves downwards and causes inlet valve (IV) to open fully.

Air output is resumed (100 %), the compressor runs loaded.

1.3 Elektronikon regulator

The control system consists of an electronic regulator and a control panel.

1.3.1 Regulator (CM-Fig. 1.1)

The regulator has following functions:

1.3.1.1 Automatic control of the compressor

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

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

Warning: *A number of time-based automatic start/stop commands may be programmed.* ***2)*** *Take into account that a start command will be executed (if programmed and activated), even after manually stopping the compressor.*

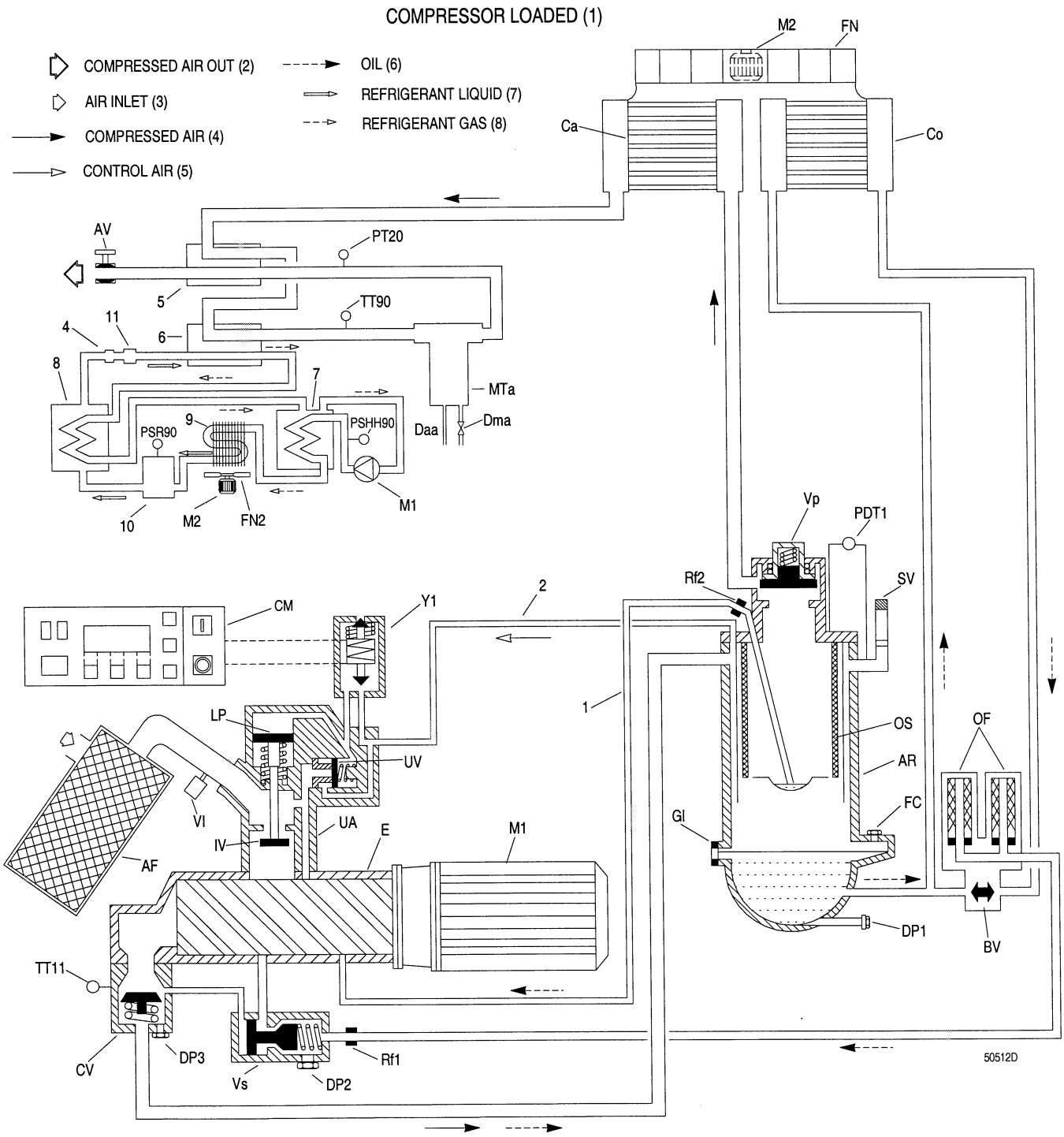
1.3.1.2 Protecting the compressor

Shut-down
If the compressor element outlet temperature exceeds the programmed shut-down level, the compressor will be stopped. This will be indicated on display (4-Fig. 1.9). The compressor will also be stopped in case of overload of drive motor (M1-Fig. 1.3) or fan motor (M2-Fig. 1.3). **3)**

Shut-down warning
If the compressor element outlet temperature exceeds a programmed value below the shut-down level, this will also be indicated to warn the operator before the shut-down level is reached.

Service warning
The regulator continuously monitors the oil, oil filters, oil separator and air filter. Each input is compared to programmed limits (temperatures, pressures and/or running hours). If these limits are exceeded, a message will appear on display (4-Fig. 1.9) to warn the operator to replace the indicated component.

Warning
A warning message also appears if:
On water-cooled compressors the cooling water outlet temperature exceeds the warning level.
On Full-feature compressors the dewpoint temperature exceeds the warning level.

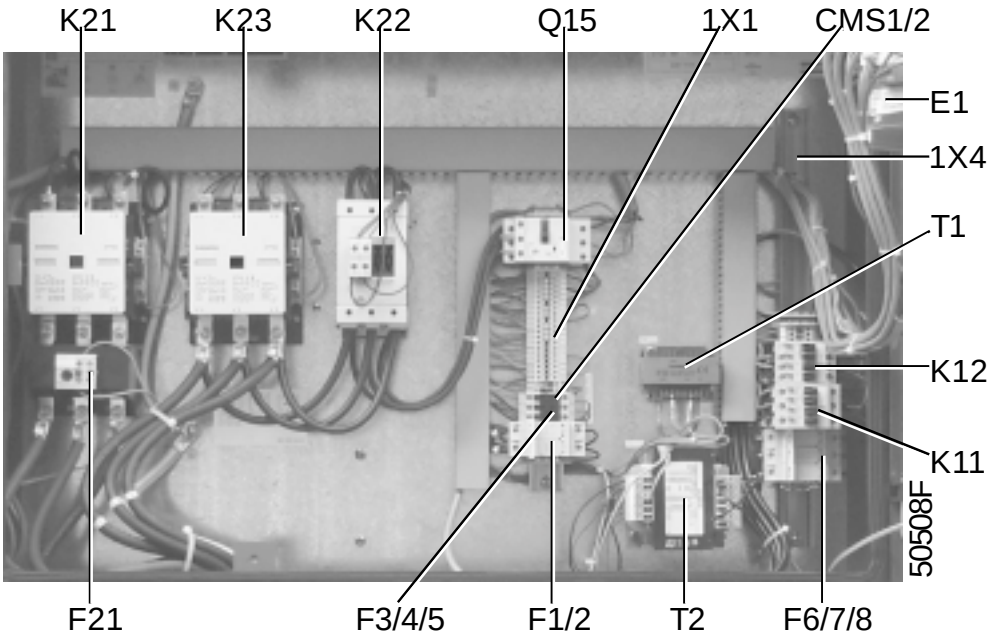

COMPRESSOR LOADED (1)
COMPRESSED AIR OUT (2)
AIR INLET (3)
COMPRESSED AIR (4)
CONTROL AIR (5)
OIL (6)
REFRIGERANT LIQUID (7)
REFRIGERANT GAS (8)
M2
FN
Ca
Co
AV
PT20
5
TT90
11
4
6
8
7
MTa
9
PSR90
PSHH90
Daa
Dma
M1
10
M2
FN2
Vp
PDT1
Rf2
SV
2
CM
Y1
1
LP
OS
OF
UV
AR
VI
FC
GI
UA
E
M1
IV
AF
DP1
BV
TT11
DP3
Rf1
CV
Vs
DP2
50512D

AF	Air filter
AR	Air receiver/oil separator
AV	Air outlet valve
BV	Oil cooler by-pass valve
Ca	Air cooler
CM	Control module
Co	Oil cooler
CV	Check valve
Daa	Automatic condensate drain outlet
Dma	Manual condensate drain valve
DP1	Oil drain plug, air receiver
DP2	Oil drain plug, oil stop valve
DP3	Oil drain plug, check valve
E	Compressor element
FC	Oil filler plug
FN	Fan
Gl	Oil level gauge
IV	Inlet valve
LP	Loading plunger
MTa	Condensate trap
M1	Drive motor
M2	Fan motor
OF	Oil filters
OS	Oil separator element
PDT1	Pressure sensor, oil separator pressure difference
PT20	Pressure sensor, air outlet
Rf1,2	Restrictors
SV	Safety valve
TT11	Temperature sensor, compressor element outlet
UA	Unloader
UV	Unloading valve
VI	Air filter service indicator
Vp	Minimum pressure valve
Vs	Oil stop valve
Y1	Loading solenoid valve
1	Oil scavenging flexible
2	Flexible, control or blow-off air

On Full-feature also:

FN2	Fan, condenser
M1	Refrigerant compressor
M2	Motor, condenser fan
PSHH90	High pressure shut-down switch
PSR90	Condenser fan control switch
TT90.	Sensor, pressure dewpoint
4	Filter
5	Air/air heat exchanger
6	Air/refrigerant heat exchanger (evaporator)
7	Liquid separator
8	Refrigerant/refrigerant heat exchanger
9	Condenser
10	Liquid receiver
11	Expansion valve

Fig. 1.6 Flow diagram (typical example of GA Full-feature)

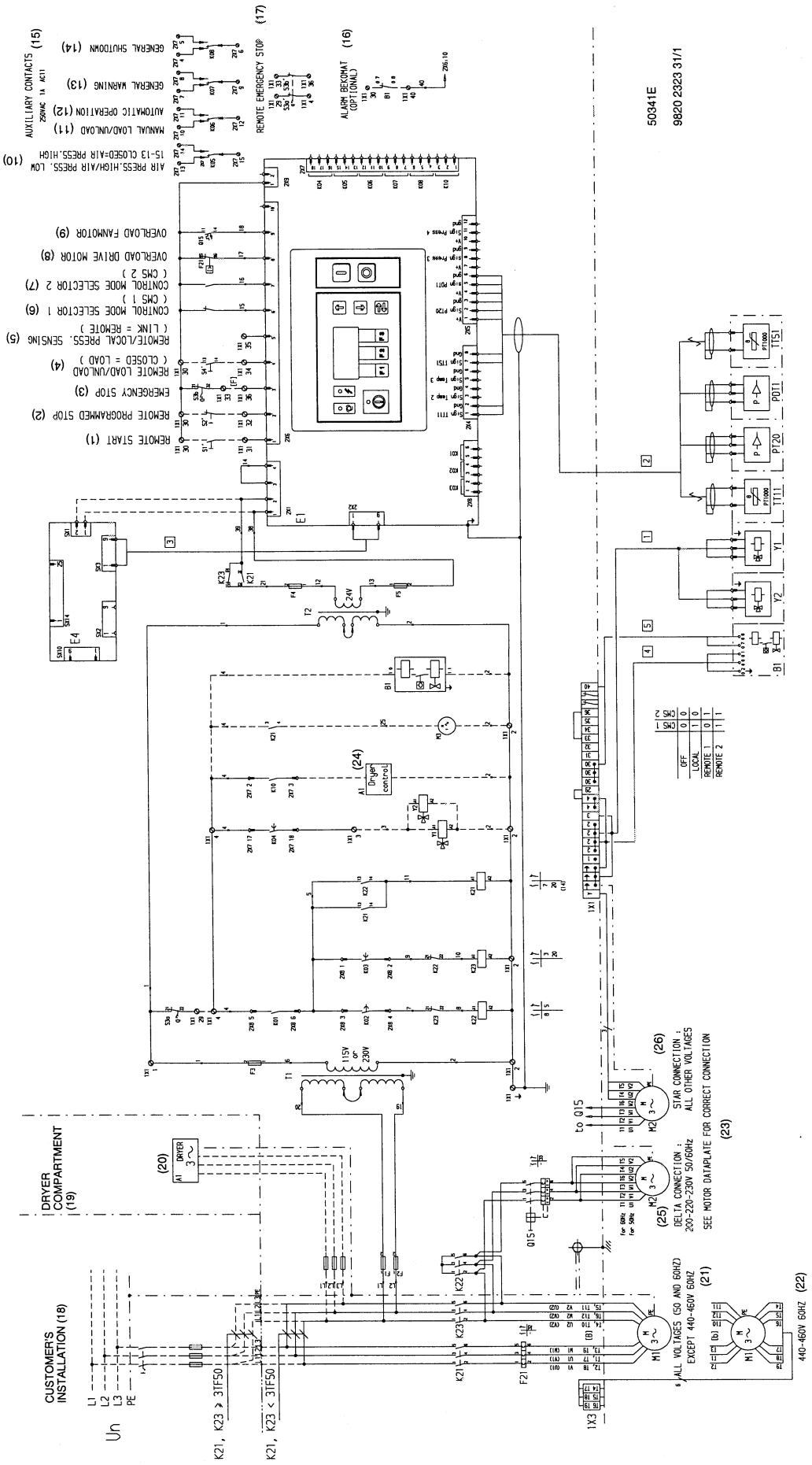


CMS1/2	Switches, compressor control module
E1	Electronic control module
F1/5	Fuses
F21	Overload relay, drive motor
K21	Line contactor
K22	Star contactor
K23	Delta contactor
Q15	Circuit breaker, fan motor **3)**
T1/T2	Transformers
1X1	Terminal strip

On Full-feature also:

F6/7/8	Fuses
K11	Contactor, refrigerant compressor
K12	Contactor, condenser fan
1X4	Terminal strip

Fig. 1.7 Electric cubicle of 50 Hz compressors (typical example)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9820 2323 31/1
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DRYER COMPARTMENT (19)
DRYER (20)
CUSTOMER'S INSTALLATION (18)
ALL VOLTAGES (50 AND 60HZ) EXCEPT 440-460V 60HZ (21)
440-460V 60HZ (22)
K21, K23 ≥ 3TF50
K21, K23 < 3TF50

SENSORS/LOADING SOLENOID VALVE

PDT1	Pressure sensor, pressure difference over oil separator
PT20	Pressure sensor, air outlet
TT11	Temperature sensor, compressor element outlet
TT51	Temperature sensor, cooling water outlet **4)**
Y1	Loading solenoid valve

CUBICLE

F1/5	Fuses
F21	Overload relay, drive motor
K21	Line contactor
K22	Star contactor
K23	Delta contactor
Q15	Circuit breaker, fan motor **3)**
T1/T2	Transformers
1X1/3	Terminal strips

CONTROL MODULE (E1)

I	Start button
K01	Blocking relay
K02	Auxiliary relay, star contactor
K03	Auxiliary relay, delta contactor
K04	Auxiliary relay, loading-unloading
K05	Auxiliary relay, high/low pressure
K06	Auxiliary relay, manual/ automatic operation
K07	Auxiliary relay, general warning
K08	Auxiliary relay, general shut-down
K10	Auxiliary relay, dryer control
0	Stop button
S3	Emergency stop button

MOTORS

M1	Drive motor
M2	Fan motor **3)**
M3	Fan motor**,** electric cabinet **5)**

OPTIONAL EQUIPMENT

A1	Dryer
B1	Electronic condensate drain
E4	Communication module
Y2	Solenoid valve, modulating control

Fig. 1.8 Electrical diagram of 50 Hz compressors with star-delta starter (typical example)

1.3.1.3 Automatic restart after voltage failure

For compressors leaving the factory, this function is made inactive. If desired, the function can be activated. Consult Atlas Copco.

Warning: *If activated and provided the module 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.*

The power recovery time (the period within which the voltage must be restored to have an automatic restart) can be set between 1 and 254 seconds or to symbol 00!. If the power recovery time is set to 00!, the compressor will always restart after a voltage failure, no matter how long it takes to restore the voltage.

1.3.2 Control panel (Fig. 1.9)

Ref.	Designation	Function
1	Automatic operation LED	Indicates that the regulator is automatically controlling the compressor: the compressor is loaded, unloaded, stopped and restarted depending on the air consumption and the limitations programmed in the regulator.
2	Voltage on LED	Indicates that the voltage is switched on.
3	General alarm LED	Is alight if a warning or shut-down warning condition exists or if a sensor is out of order.

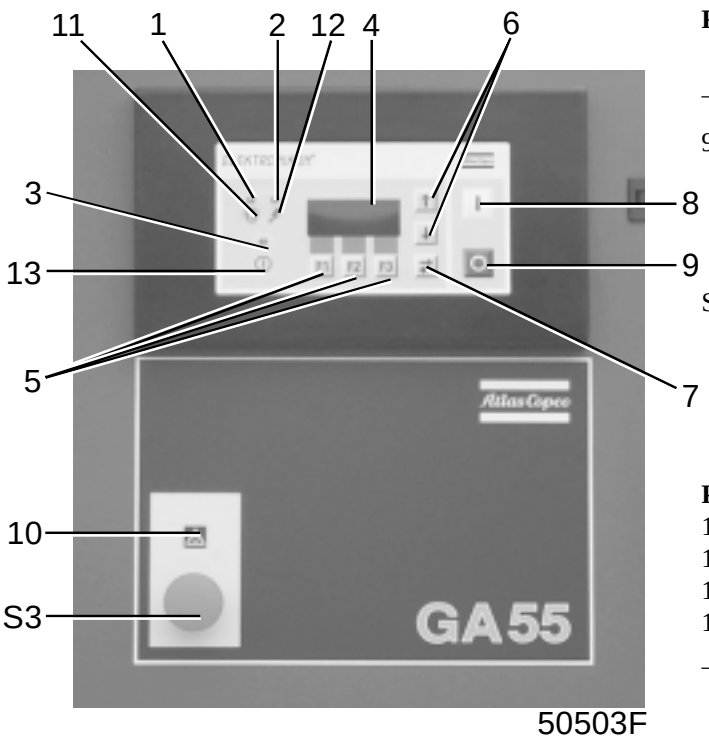


Fig. 1.9 Control panel

Ref.	Designation	Function
		Blinks in case of shut-down, if a sensor with shut-down function (e.g. TT11) is out of order or after an emergency stop. Consult the User manual for Elektronikon regulator, section “Status data submenu”.
4	Display	Indicates messages concerning the compressor operating condition, a service need or a fault. Consult the User manual for Elektronikon regulator, sections “Status data submenu” and “Service submenu”.
5	Function keys	Keys to control and program the compressor. See below.
6	Scroll keys	Keys to scroll through the display.
7	Tabulator key	Key to go to the next field of the display.
8	Start button	Push button to start the compressor. LED (1) lights up indicating that the regulator is operative (in automatic operation). The LED goes out after unloading the compressor manually.
9	Stop button	Push button to stop the compressor. LED (1) goes out. The compressor will stop after running in unloaded condition for 30 seconds.
S3	Emergency stop button	Push button to stop the compressor immediately in case of emergency. After remedying the trouble, unlock the button by pulling it out (on earlier production units by turning it to the left).

Pictographs

10 Emergency stop
11 Automatic operation
12 Voltage on
13 Alarm

1.3.3 Function keys (Fig. 1.9)

The keys are used:
- To manually load/unload the compressor
- To call up or to program settings
- To reset a motor overload, shut-down or service message, or an emergency stop
- To have access to all data collected by the regulator

The functions of the keys vary depending on the displayed menu. The actual function is abbreviated and indicated on the bottom line of the display just above the relevant key. The most common abbreviations are listed below.

Abbreviation	Designation	Function
Add	Add	To add compressor start/stop commands (day/hour)
Canc	Cancel	To cancel a programmed setting when programming parameters
Del	Delete	To delete compressor start/stop commands
Lim	Limits	To show limits for a programmable setting
List	List	To list programmed start/stop commands (day/hour)
Load	Load	To load the compressor manually
Main	Main	To return from a menu to the main display (Fig. 1.10)
Menu	Menu	Starting from the main display (Fig. 1.10), to initiate the main menu (Fig. 1.11) which gives access to submenus Starting from a submenu, to return to the main menu (Fig. 1.11)

Abbre-viation	Desig-nation	Function
Mod	Modify	To modify programmable settings
More	More	To have a quick look at the compressor status
Prog	Program	To program modified settings
Rset	Reset	To reset a timer or message
Rtrn	Return	To return to a previously shown option or menu
Slct	Select	To select a submenu or to read more details of a selection shown on display
Unld	Unload	To unload the compressor manually

1.3.4 Menu-driven control programs

To facilitate programming and controlling the compressor, menu-driven programs are implemented in the electronic module.

The User manual for Elektronikon regulator for GA5 up to GA90C deals elaborately with all regulator functions.

Program/Function	Description
MAIN DISPLAY	Shows in short the operation status of the compressor. It is the gateway to all functions. See Fig. 1.10.
More	Allows a quick look at the actual status of the compressor. See section 3.4.
Load/Unld	To manually load/unload the compressor.
MAIN MENU	See Fig. 1.11. It is the gateway to following menus:
Status data	Calling up the status of the compressor protection functions (service warning, shut-down and shut-down warning). Resetting of a shut-down and motor overload. See section 1.3.1.
Measured data	Calling up actually measured values and the status of the motor overload protection.
Hours	Calling up the running hours, loading hours, regulator hours and number of motor starts.
Service	Calling up and resetting the service messages for the oil, oil filter, oil separator, air filter.
Test	Allows a display test.
Modify settings	Modifying the settings for regulation (e.g. loading and unloading pressures), for protection (e.g. temperature shut-down level) and for service (e.g. for the oil).
Timer	Programming automatic compressor start/stop commands.
Configuration	Programming the time, date, display language, units, motor start mode and date format.
Saved data	Calling up the saved data: last shut-down, last emergency stop, longest load, longest unload.

Selecting a menu
When the voltage is switched on, the MAIN DISPLAY (Fig. 1.10) is shown automatically. The other menus are selected by pressing one of function keys (5-Fig. 1.9). Pushing the key <<Menu>> initiates the MAIN MENU (Fig. 1.11), giving access to most other functions via submenus; the submenus can be selected by pressing the key <<Slct>> (select).

Whenever displayed on the bottom line of the screen, press the key <<Menu>> to return from a submenu to the MAIN MENU. Whenever displayed, press the key <<Main>> to return from a menu to the MAIN DISPLAY.

Delivery air		
bar		7.0
Auto loaded		
Menu	More	Unld
F1	F2	F3

Fig. 1.10 Example of the main display

Status data		↓
Main	Slct	
F1	F2	F3

Fig. 1.11 Example of a main menu

1.4 Air dryer on GA Full-feature (Fig. 1.6)

1.4.1 Compressed air circuit

Compressed air enters heat exchanger (5) and is cooled by the outgoing, dried air. Moisture in the incoming air starts to condense. The air then flows through heat exchanger (6) where the refrigerant evaporates and withdraws heat from the air. This cools the air to close to the evaporating temperature of the refrigerant. More water in the air condenses. The cold air then flows through condensate trap (MTa) which separates condensate from air. The condensate is automatically drained through outlet (Daa). The cold, dried air then flows through heat exchanger (5), where it is warmed up by the incoming air.

1.4.2 Refrigerant circuit

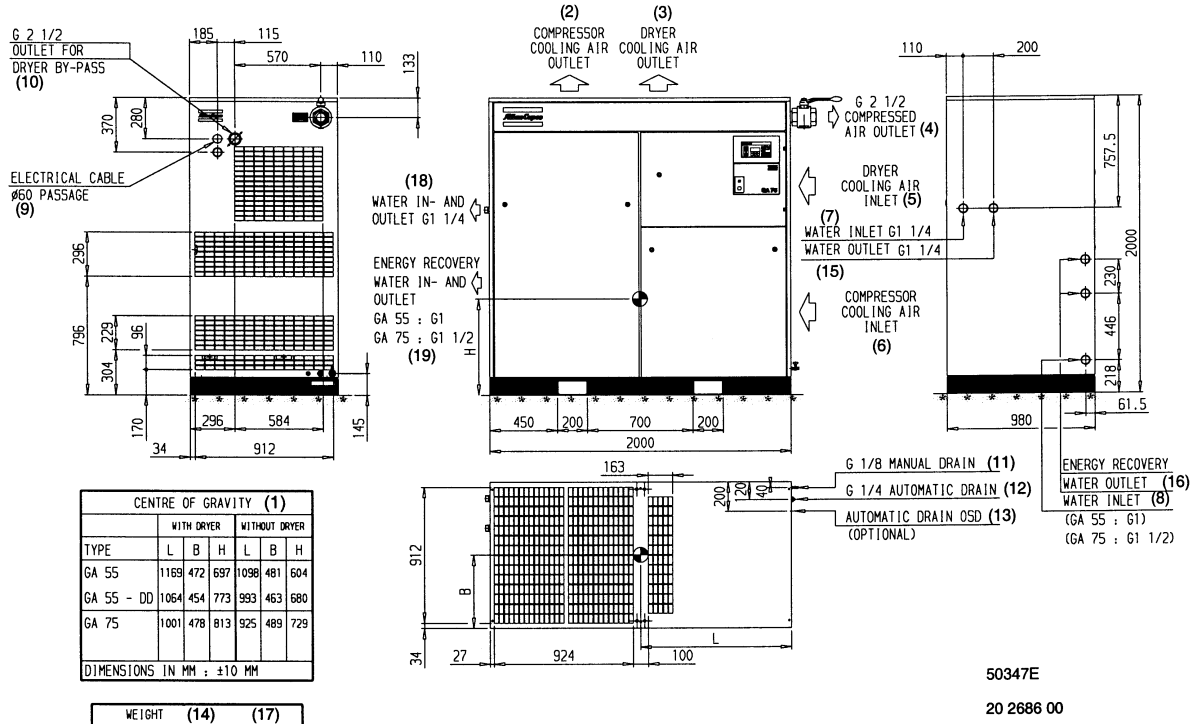
Compressor (M1) delivers high-pressure refrigerant gas which flows via liquid separator (7) through condenser (9) where most of the refrigerant condenses. The liquid flows to expansion valve (11) where it expands to evaporating pressure. The refrigerant enters evaporator (6) where it withdraws heat from compressed air by further evaporation. The refrigerant gas is sucked in by compressor (M1).

Footnotes chapter 1

1) The valve starts opening at 60 degrees celsius and is fully open at 75 degrees celsius for 13 bar and 175 psi compressors.
2) See User manual for Elektronikon regulator, section “Timer submenu”.
3) Air-cooled compressors only.
4) Water-cooled compressors only.
5) For high-temperature versions only (consult Atlas Copco).

2 Installation

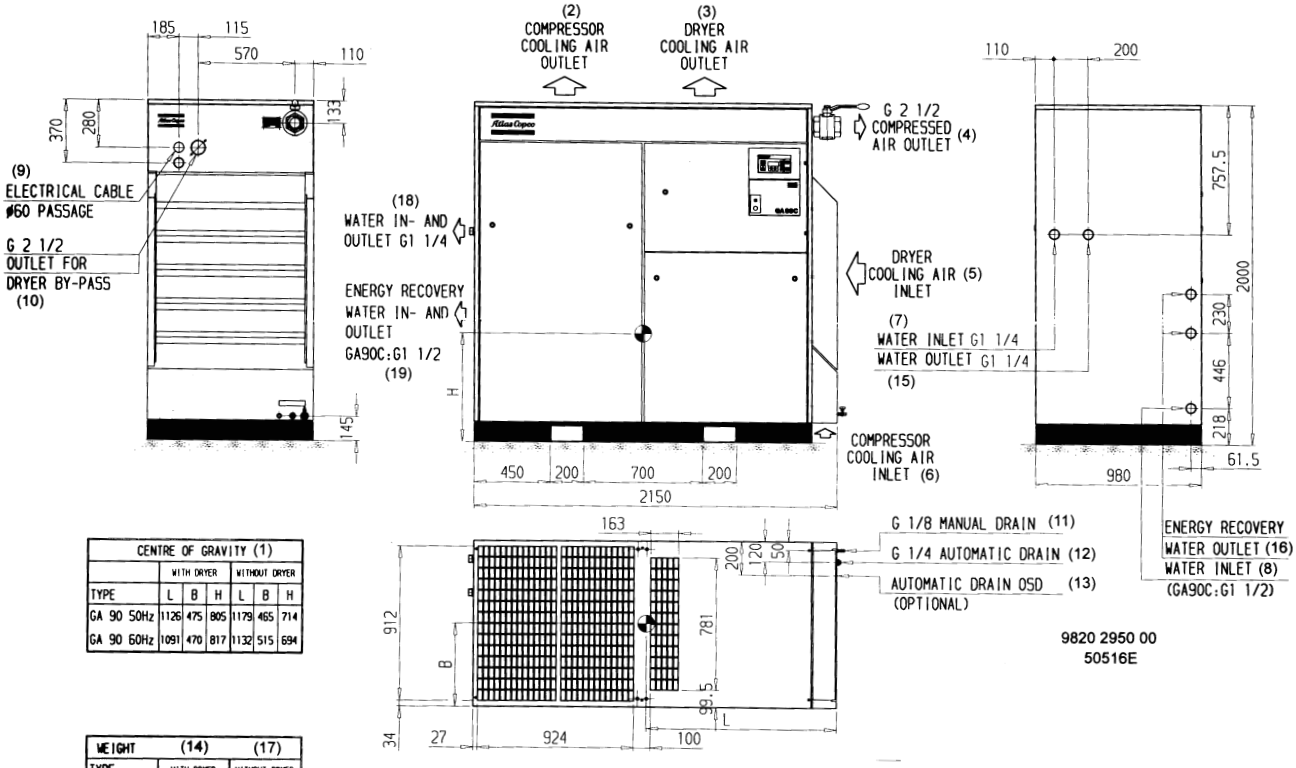
2.1 Dimension drawings (Figs. 2.1 and 2.2)



CENTRE OF GRAVITY (1)						
	WITH DRYER			WITHOUT DRYER		
TYPE	L	B	H	L	B	H
GA 55	1169	472	697	1098	481	604
GA 55 - DD	1064	454	773	993	463	680
GA 75	1001	478	813	925	489	729
DIMENSIONS IN MM : ±10 MM						

WEIGHT	(14)	(17)
TYPE	WITH DRYER	WITHOUT DRYER
GA 55	1425	1260
GA 55 - DD	1406	1241
GA 75	1550	1375
WEIGHTS IN KG (OIL INC.) : ±20 KG		

Fig. 2.1 Dimension drawing, GA55/75



CENTRE OF GRAVITY (1)						
	WITH DRYER			WITHOUT DRYER		
TYPE	L	B	H	L	B	H
GA 90 50Hz	1126	475	805	1179	465	714
GA 90 60Hz	1091	470	817	1132	515	694

WEIGHT	(14)	(17)
TYPE	WITH DRYER	WITHOUT DRYER
GA 90 50Hz	1625	1453
GA 90 60Hz	1783	1619
WEIGHTS IN KG (OIL INC.) : ±20 KG		

Fig. 2.2 Dimension drawing, GA90C

2.2 Installation proposal (Fig. 2.3)

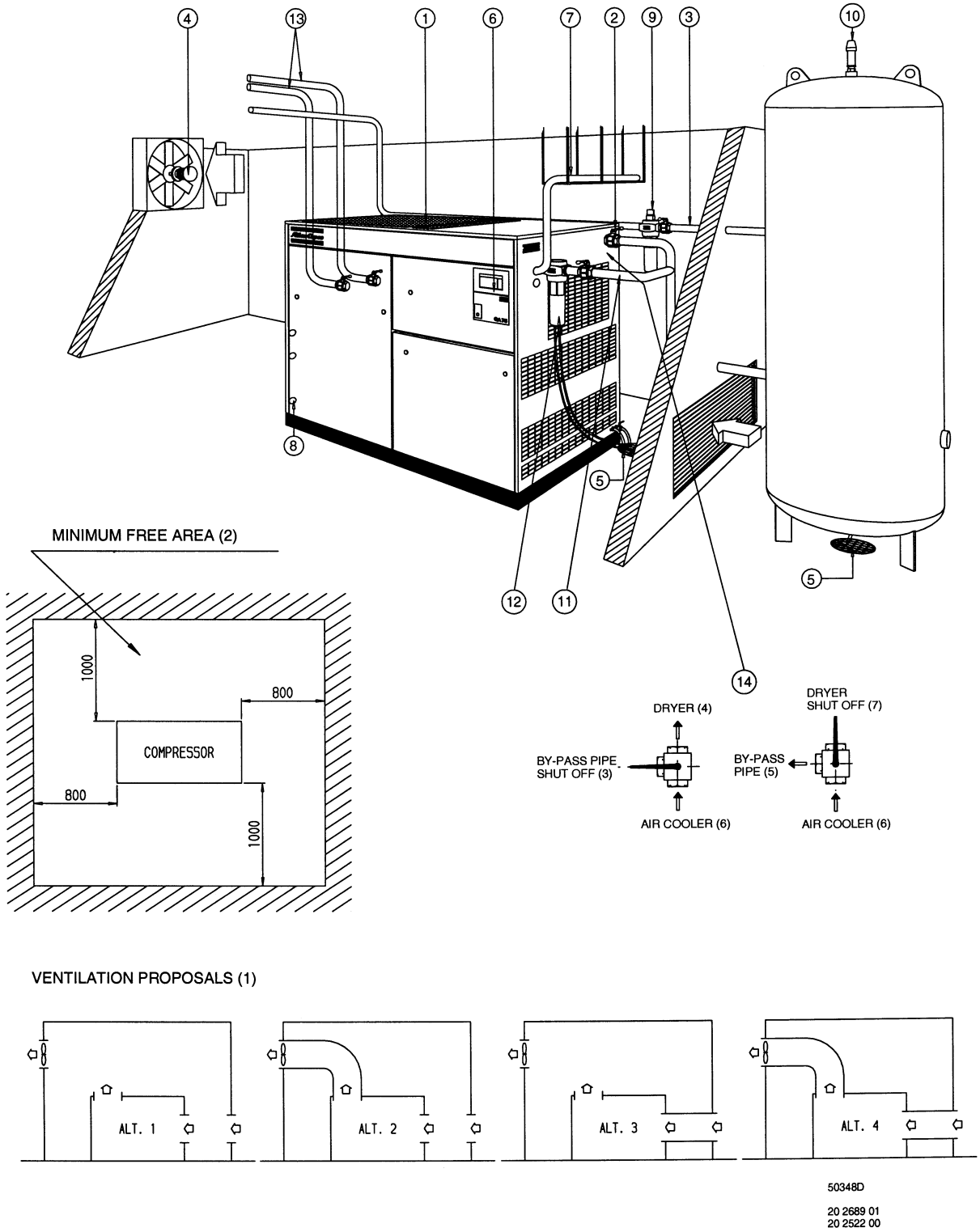


Fig. 2.3 Installation proposal (typical example of GA55/75)

Ref. on Fig. 2.3	Description/recommendation

1 Install the compressor on a solid, level floor suitable for taking the weight.

2 Position of compressed air outlet valve.

3 The maximum total pipe length (including interconnecting piping between compressor and receiver) can be calculated as follows:

$L = (dp \times d^5 \times p) / (450 \times Qc^{1.85})$

L = pipe length in m
dp = maximum allowable pressure drop (recommended 0.1 bar)
d = inner diameter of pipe in mm
p = compressor outlet pressure in bar absolute
Qc = free air delivery of compressor in l/s

4 Ventilation: the inlet grids and ventilation fan should be installed in such a way that any recirculation of cooling air to the compressor or dryer is avoided. The air velocity to the grids must be limited to 5 m/s. The maximum allowable pressure drop over the cooling air ducts is 50 Pa.

- For alternatives 1 and 3, the required ventilation capacity to limit the compressor room temperature can be calculated as follows:

  Qv = 1.06 N / dT for GA Pack air-cooled compressors
  Qv = (1.06 N + 6) / dT for GA Full-feature air-cooled compressors

  Qv = 0.16 N / dT for GA Pack water-cooled compressors
  Qv = (0.16 N + 6) / dT for GA Full-feature water-cooled compressors

  Qv = required ventilation capacity in m^3/s
  N = nominal motor power in kW
  dT = temperature increase in compressor room

- For alternatives 2 and 4: the fan capacity should match the compressor fan capacity at a pressure head equal to the pressure drop over the air ducts.

5 The drain pipes to the drain collector must not dip into the water of the drain collector. Atlas Copco has oil/water separators (type OSD) to separate the major part of the oil from the condensate to ensure that the condensate meets the requirements of the environmental codes.

Ref. on Fig. 2.3	Description/recommendation

6 Position of control panel.

7 Position of mains cables.

8 Provision for inlet and outlet of energy recovery system (system is optional).

9 Filter, type DD, for general purpose filtration (optional). The filter traps solid particles down to 1 micron with max. oil carry-over of 0.5 mg/m^3. A high-efficiency filter, type PD (optional), may be installed downstream of a DD filter. This filter traps solid particles down to 0.01 micron with max. oil carry-over of 0.01 mg/m^3. If oil vapour and odours are undesirable, a filter of the QD type (optional) should be installed downstream of the PD filter.

10 The air receiver (optional) should be installed in a frost-free room on a solid, level floor.

For normal air consumption, the volume of the air net (receiver and piping) can be calculated as follows:

$V = (0.25 \times Qc \times p1 \times To) / f_{max} \times dp \times T1$

V = volume of air net in l
Qc = free air delivery of compressor in l/s
p1 = compressor air inlet pressure in bar absolute
f_{max} = cycle frequency = 1 cycle/30 s
dp = difference between unloading and loading pressures
T1 = compressor air inlet temperature in K
To = air receiver temperature in K

By-pass system for compressors with dryer (optional)

11 Dryer by-pass pipe.

12 Condensate trap.

14 Dryer by-pass valve (inside the bodywork).

For water-cooled compressors

13 Position of cooling water pipes.

2.3 Electric cable size 1)

2.3.1 For GA55/GA55 W 2) 3)

Supply voltage (V)	Frequency - Approval	LC cable GA Pack (mm²/AWG)	MC cable GA Pack (mm²/AWG)	LC cable GA Full-feature (mm²/AWG)	MC cable GA Full-feature (mm²/AWG)
230	50 - IEC	2 x 35	2 x 50	2 x 50	2 x 50
400	50 - IEC	50	70	50	70
500	50 - IEC	35	50	35	50
220-230	60 - IEC	2x 35	2x 50	2x 50	2x 50
220-230	60 - CSA/UL	2x AWG3	2x AWG0	2x AWG2	2x AWG00
380	60 - IEC	50	70	70	70
380	60 - CSA/UL	AWG2	AWG00	AWG1	AWG000
440-460	60 - IEC	35	50	50	50
440-460	60 - CSA/UL	AWG3	AWG0	AWG2	AWG00
575	60 - IEC	25	35	35	35
575	60 - CSA/UL	AWG4	AWG2	AWG4	AWG1

2.3.2 For GA75/GA75 W 2) 3)

Supply voltage (V)	Frequency - Approval	LC cable GA Pack (mm²/AWG)	MC cable GA Pack (mm²/AWG)	LC cable GA Full-feature (mm²/AWG)	MC cable GA Full-feature (mm²/AWG)
230	50 - IEC	2x 70	2x 70	2x 70	2x 70
400	50 - IEC	2x 25	2x 35	2x 25	2x 35
500	50 - IEC	50	70	50	70
220-230	60 - IEC	2x 70	2x 70	2x 70	2x 95
220-230	60 - CSA/UL	2x AWG1	2x AWG000	2x AWG0	2x AWG0000
380	60 - IEC	2x 25	2x 35	2x 25	2x 35
380	60 - CSA/UL	2x AWG4	2x AWG2	2x AWG4	2x AWG1
440-460	60 - IEC	2x 25	2x 25	2x 25	2x 25
440-460	60 - CSA/UL	2x AWG4	2x AWG3	2x AWG4	2x AWG2
575	60 - IEC	50	50	50	50
575	60 - CSA/UL	AWG2	AWG00	AWG4	AWG1

2.3.3 For GA90C/GA90C W 2) 3)

Supply voltage (V)	Frequency - Approval	LC cable GA Pack (mm²/AWG)	MC cable GA Pack (mm²/AWG)	LC cable GA Full-feature (mm²/AWG)	MC cable GA Full-feature (mm²/AWG)
230	50 - IEC	2x 70	2x 95	2x 70	2x 95
400	50 - IEC	2x 35	2x 35	2x 35	2x 35
500	50 - IEC	70	70	70	95

Supply voltage (V)	Frequency - Approval	LC cable GA Pack (mm^2/AWG)	MC cable GA Pack (mm^2/AWG)	LC cable GA Full-feature (mm^2/AWG)	MC cable GA Full-feature (mm^2/AWG)
220-230	60 - IEC	2x 70	2x 95	2x 95	2x 95
220-230	60 - CSA/UL	2x AWG0	2x AWG4/0	2x AWG0	2x AWG250
380	60 - IEC	2x 35	2x 35	2x 35	2x 50
380	60 - CSA/UL	2x AWG3	2x AWG1	2x AWG3	2x AWG0
440-460	60 - IEC	70	95	95	95
440-460	60 - CSA/UL	AWG0	AWG4/0	AWG0	AWG250
575	60 - IEC	50	70	70	70
575	60 - CSA/UL	AWG1	AWG2/0	AWG1	AWG3/0

2.4 Electrical connections (Figs. 1.7 and 1.8)

- Provide an isolating switch.
- Check the fuses and the setting of the overload relay. See section 7.
- If terminals 1, 3 and 5 of motor contactors (K21) and (K23) are not bridged, connect power supply cables to terminals 1, 3 and 5 of contactor (K21) and to terminals 1, 3 and 5 of contactor (K23).
- If terminals 1, 3 and 5 of motor contactors (K21) and (K23) are bridged, connect the power supply cables to terminals 1, 3 and 5 of contactor (K21).
- Connect the earth conductor to earth bolt (PE) and the neutral conductor (if provided) to connector (N).

2.5 Pictographs

1 Water outlet
2 Manual condensate drain
3 Water inlet
4 Automatic condensate drain
5 Before connecting compressor electrically, consult Instruction book for motor rotation direction
6 Switch off voltage and depressurize compressor before repairing
7 Torques for steel (Fe) or brass (CuZn) bolts
8 Lightly oil gasket of oil filter, screw it on and tighten by hand (approx. half a turn)
9 Consult Instruction book before greasing
10 Switch off voltage before removing protecting cover inside electric cubicle
11 Consult Instruction book before carrying out maintenance
12 Stop compressor before cleaning coolers
13 Warning: voltage
14 Warning: potential risk of sudden releasing of spring underneath cover of unloader during disassembling, have possible repair carried out by Atlas Copco

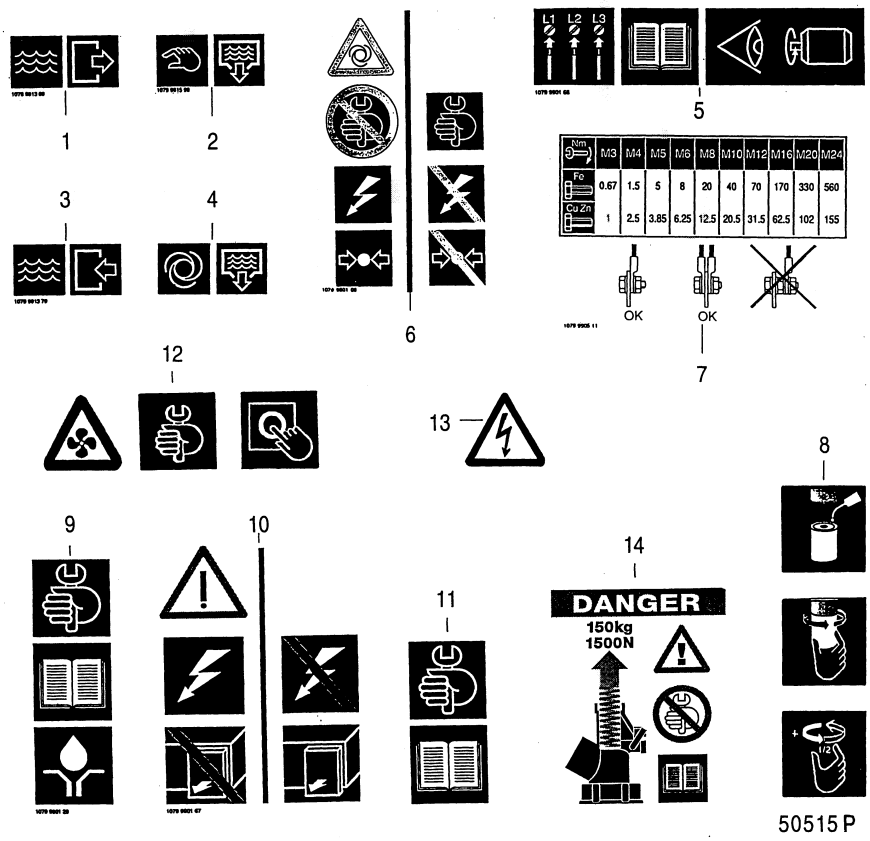


Fig. 2.4 Pictographs (typical examples)

2.6 Cooling water requirements

Following requirements are given as a general rule to prevent cooling water problems. If in any doubt, consult Atlas Copco.

Recommended maxima - mg/l	Recirculating system	Open system
Chloride (Cl^-)	< 600	< 150
Sulphate (SO_4^{--})	< 400	< 250
Total solids	< 3000	< 750
Suspended solids (as SiO_2)	< 10	< 10
Free chlorine (Cl_2)	< 4	< 2
Ammonia (NH_4^+)	< 0.5	< 0.5
Copper	< 0.5	< 0.5
Iron	< 0.2	< 0.2
Manganese	< 0.1	< 0.1
Oxygen	< 3	< 3
Carbonate hardness (as $CaCO_3$)	50-1000	50-500
Organics ($KMnO_4$ Consumption)	< 25	< 10

No algae
No oil

Remark
Chloride and sulphate are interactive. In pass-through systems the sum of the squares must not exceed 85,000. For recirculating systems with proper controls and treatment, the sum of the squares may be up to 520,000. Note that the sulphate value must include any sulphite present.

Footnotes chapter 2

1) If the size does not comply with local legislation, the stricter of the two shall apply.
2) For IEC approval:
- LC stands for loose conductors in the air; values according to DIN VDE 0113 - EN 60204 T1 - IEC 204-1.
- MC stands for cables in open cable trunking system, in cable trays or on walls; same values for loose conductors in a conduit or in a cable trunking system; values according to EN 60204-1 Table 5.

3) For CSA/UL approval:
- LC stands for loose copper conductors in the air.
- MC stands for not more than 3 loose copper conductors in a raceway or in a cable; values according to CE Code handbook Table 1 and Table 2.
- For CSA/UL conductors with AWG size, the sizes are valid for cables with insulation of 85/90 degrees celsius.

3 Operating instructions

3.1 Initial start-up

3.1.1 Safety

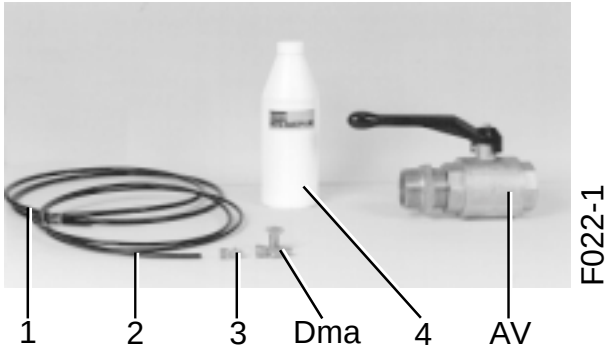
The operator must apply all relevant safety precautions, including those mentioned in this book.

3.1.2 User manual

Read the “User manual for Elektronikon regulator for GA5 up to GA90C” to familiarize yourself with all regulator functions.

3.1.3 Outdoor/altitude operation

If the compressor is installed outdoors or if the air inlet temperature can be below 0 degrees celsius, precautions must be taken. In this case, and also if operating at high altitude, consult Atlas Copco.



AV	Air outlet valve
Dma	Manual condensate drain valve
1	Condensate drain flexible for automatic drain
2	Condensate drain flexible for manual drain
3	Connection between flexible (2) and valve (Dma)
4	Bottle containing Atlas Copco Roto-injectfluid

Fig. 3.1 Components delivered loose with compressor (typical examples)

3.1.4 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 will be lifted perpendicularly. Lift smoothly and avoid twisting.

3.1.5 External compressor status indication

The electronic regulator is provided with auxiliary contacts (K05, K06, K07 and K08-Fig. 1.8) at the back of electronic module (E1-Fig. 1.7) for external indication of:
- low or high air pressure (K05), 15-13 closed means high air pressure
- manual load/unload or automatic operation (K06)
- warning condition (K07)
- shut-down condition (K08)

Maximum load for these contacts: 1 A / 250 V AC. Stop the compressor and switch off the voltage before connecting external equipment. Consult Atlas Copco.

3.1.6 Compressor control modes

The electronic regulator has two switches (CMS1/2-Fig. 1.7) to select following compressor control modes (0 = open / 1 = closed):

CMS1	CMS2	Compressor mode
0	0	The compressor is **switched off.**
1	0	The compressor is in **local control mode** (remote control is made inactive): the compressor will react to commands entered by the buttons on the control panel. Compressor start/stop commands via function **Timer** (see section 1.3.1) are active, if programmed.
0	1	The compressor is in **remote control mode** (local control is made inactive): the compressor will react to commands from external switches. Emergency stop (S3) remains active. Compressor start/stop commands via function **Timer** (see section 1.3.1) are still possible. **For remote starting and stopping:** Connect a remote start button (normally open contact) between terminals 30 and 31 and connect a remote stop button (normally closed contact) between terminals 30 and 32 of terminal strip (1X1-Fig. 1.7). Bridge terminals 30 and 34: In this mode, the outlet pressure is still sensed by pressure transducer (PT20-Fig. 1.6), resulting in loading and unloading of the compressor at the pressures programmed in the electronic regulator. If terminals 30 and 34 are not bridged, the compressor is switched out of automatic load/unload operation and remains running unloaded. **For remote loading/unloading (via external pressure switch):** Bridge terminals 30 and 35 and connect a load/unload switch between terminals 30 and 34. This results in loading and unloading of the compressor at the closing and opening pressures of the external pressure switch respectively.
1	1	Compressor is **computer-controlled** via communication module (E4-Fig. 1.8). **10)** Consult Atlas Copco.

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

Start-up
1. Following transport fixations, painted red, must be removed (Figs. 3.2 and 3.3):
   - bushes (2) from both gear casing supports
   - bushes (5) from both air receiver supports
   - support (3)
2. Check that the electrical connections correspond to the local codes. Check the connections for correct tightness. The installation must be earthed and protected against short circuits by fuses of the inert type in all phases. An isolating switch must be installed near the compressor.
3. Check transformer (T1-Fig. 1.7) for correct connection, the settings of drive motor overload relay (F21) and fan motor circuit breaker (Q15) **2)**, and that overload relay (F21) is set for automatic resetting.
4. Fit the air outlet valve (AV-Fig. 1.1). Close the valve. Connect the air net to the valve.
5. Connect the manual condensate drain valve (Dma-Fig. 1.5). Close the valve. Connect the valve to a drain collector. See also Fig. 2.3, reference 5.

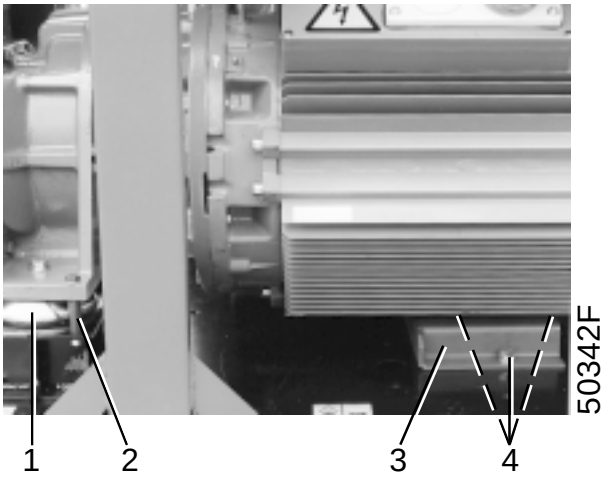


Fig. 3.2 Gear casing/motor

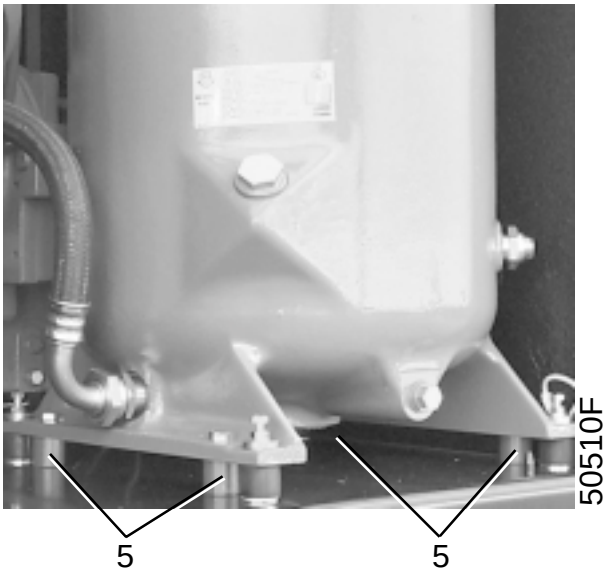


Fig. 3.3 Air receiver

1 Vibration damper
2 Bush, to be removed
3 Support, to be removed
4 Bolt
5 Bush, to be removed

Figs. 3.2 and 3.3 Transport fixations

6. Connect the automatic condensate drain outlet (Daa-Fig. 1.5) to the drain collector.
7. On water-cooled compressors, drain valves should be fitted by the customer in the water inlet and outlet pipes. Also provide and open the water inlet and regulating valve. Consult section 2.6 for the water requirements.
8. Check the oil level. The pointer of the level gauge (Gl-Fig. 3.5) should register in the green or orange range. The bottle with Atlas Copco Roto-injectfluid (4-Fig. 3.1) can be used for topping up. Check section 3.2 for lubrication of the compressor element.
9. Labels are delivered with the compressor, warning the operator that:
   - the compressor automatically restarts after voltage failure (see section 1.3.1)
   - the compressor is automatically controlled and may be restarted, even after manually stopping (see section 1.3.1)

   Stick these labels on an obvious place near the control panel. **Read these warnings (as well as the warnings mentioned in section 1.3.1) and take them into account.**
10. Switch on the voltage. Start the compressor and stop it immediately. Check the rotation direction of the motors.
    First check the drive motor (M1-Fig. 1.3). The correct rotation direction is indicated by an arrow (2-Fig. 1.3) provided on the gear casing (rotation direction depends on compressor type). If the rotation direction is wrong, switch off the voltage and reverse two incoming electric lines.
    Then check fan motor (M2-Fig. 1.3) on air-cooled compressors. Rotation arrows, visible through the grating in the roof, are provided on the plate below the fan. If necessary, switch off the voltage and reverse two incoming electric connections at the terminals of circuit breaker (Q15-Fig. 1.7).
11. Check the programmed settings. **1)**
12. Start and run the compressor for a few minutes. Check that the compressor operates normally.

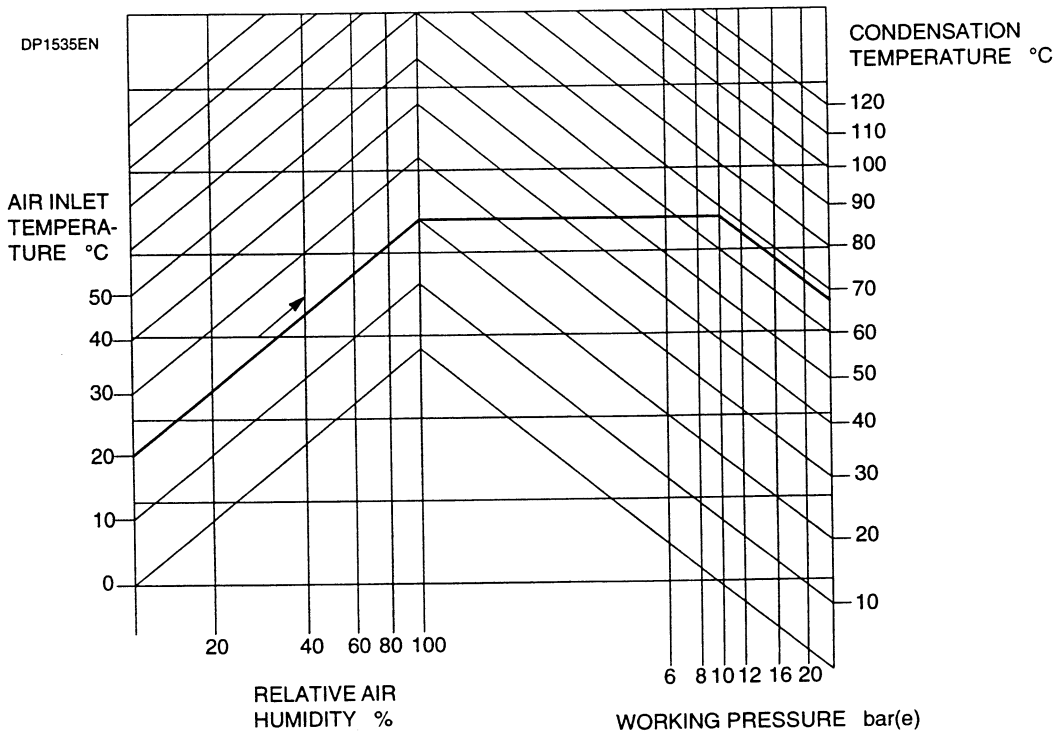
3.2 Before starting

If the compressor has not run for the past 6 months, it is strongly recommended to improve the lubrication of the compressor element at starting: Disconnect inlet pipe (2-Fig. 1.4), remove unloader (UA-Fig. 1.3) and pour 3/4 l of oil into the compressor element. Reinstall the unloader and reconnect the pipe. Make sure that all connections are tight.

1. Check the oil level (Gl-Fig. 3.5). The pointer should register in the green range or in the orange range.
2. If the coloured part of the air filter service indicator (VI-Fig. 3.6) shows full out, replace the air filter element (AF). Reset the service indicator by pushing its knob and reset the service warning **11)**.

On water-cooled compressors also:

3. Check that the cooling water drain valves (customer's installation) in the inlet and outlet pipes are closed.



Example:
If operating at a pressure of 10 bar(e) in an ambient temperature of 20 degrees celsius and at a relative air humidity of 100 %, the minimum temperature to prevent condensate from forming is 68 degrees celsius. Regulate the cooling water flow during loaded operation to obtain a temperature between 70 and approx. 75 degrees celsius at the outlet of the compressor element.

Fig. 3.4 Minimum compressor element temperature for water-cooled units

4. Open the cooling water inlet valve (customer's installation).
5. Open the water flow regulating valve (customer's installation). This step can be overlooked if, after previous operation, the setting of this valve has not been disturbed.

3.3 Starting (Fig. 1.9)

Important

For GA Full-feature, switch on the voltage 4 hours before starting to energize the crankcase heater of the refrigerant compressor.

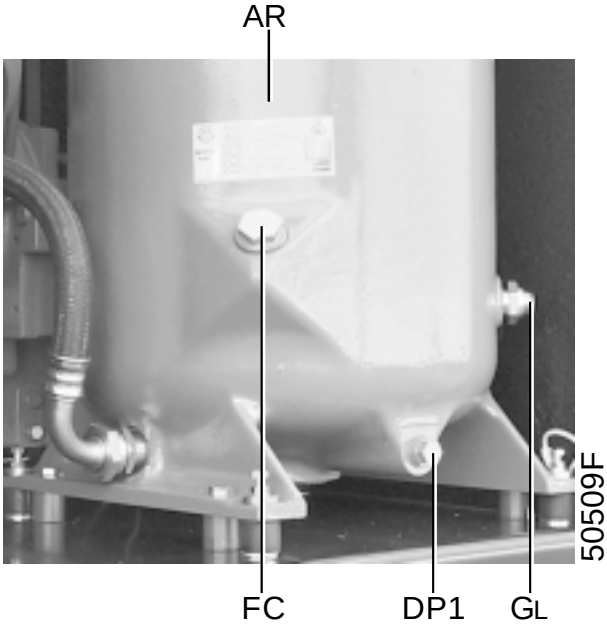
1. Switch on the voltage. Check that voltage on LED (2) lights up. The message <<compressor off>> appears.
2. Open the air outlet valve (AV-Fig. 1.1).
3. Close the condensate drain valve (Dma-Fig. 1.5).
4. Press start button I (8). The compressor starts running and automatic operation LED (1) lights up. Ten seconds **3)** after starting, the drive motor switches over from star to delta. At the same time **3)** the compressor starts running loaded. The message on display (4) changes from <<Auto unloaded>> to <<Auto loaded>>.

On water-cooled compressors also:

5. If necessary, regulate the cooling water flow **during loaded running** to obtain the most suitable temperature at the outlet of the compressor element, i.e. between 2 and 7 degrees celsius above the relevant temperature in Fig. 3.4. For optimum operation, the cooling water outlet temperature **4)** must never exceed the value specified in section 7.5. Consult Atlas Copco if condensate should be formed during frequent unloading periods.

3.4 During operation

1. Check the oil level **during loaded operation**: the pointer of the level gauge (Gl-Fig. 3.5) must register in the green range.
   If the level is in the LOW range, press button O (9-Fig. 1.9), wait until the compressor has stopped and switch off the voltage. Depressurize the oil system by unscrewing the oil filler plug (FC-Fig. 3.5) one turn, wait a few minutes and add oil until the level reaches the filler plug. Tighten the plug.



AR	Air receiver
DP1	Oil drain plug, air receiver
FC	Oil filler plug
Gl	Oil level gauge

Fig. 3.5 Air receiver

2. If the coloured part of the air filter service indicator (VI-Fig. 3.6) shows full out, stop the compressor, switch off the voltage and replace the air filter element (AF-Fig. 3.6). Reset the indicator by pushing its knob and reset the service warning **11)**.
3. If automatic operation LED (1-Fig. 1.9) is alight, the regulator is automatically controlling the compressor, i.e. loading, unloading, stopping of the motors and restarting.

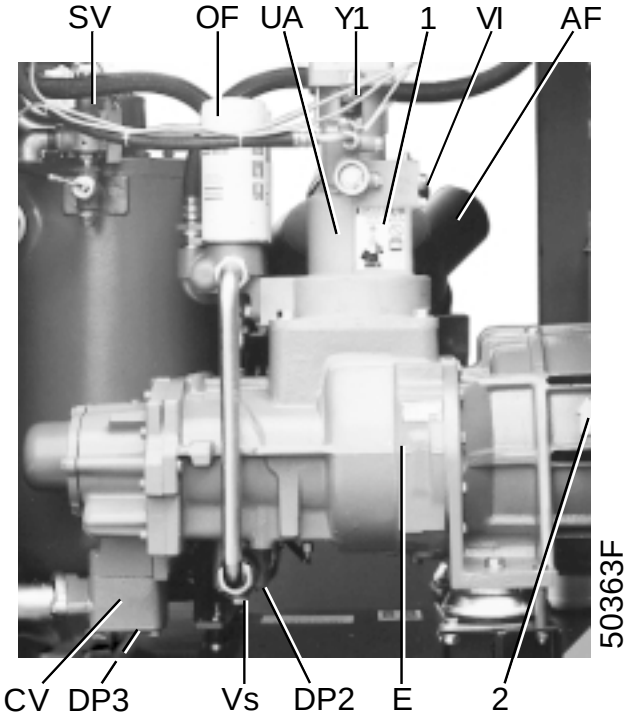
3.4.1 Checking the display

1. Regularly check the display (4-Fig. 1.9) for readings and messages. Normally, the main display (Fig. 1.10) is shown, indicating the compressor outlet pressure, the status of the compressor and the abbreviations of the functions of the keys below the display.
2. Always check the display (4-Fig. 1.9) and remedy the trouble if alarm LED (3) is alight or blinks. Consult the User manual for Elektronikon regulator, section “Status data submenu”.
3. The display (4-Fig. 1.9) will show a service message if one of the monitored components is to be serviced; replace the component and reset the relevant timer. Consult the User manual for Elektronikon regulator, section “Service submenu”.

Warning: *Before carrying out any maintenance, repair or adjustment, stop the compressor, press emergency stop button (S3-Fig. 1.9), switch off the voltage and depressurize the compressor.*

Notes

- Whenever a warning, service request, sensor error or motor overload message is displayed, the free spaces on the display between the function keys (5-Fig. 1.9) are filled with blinking indicators (**).
- When more than one message needs to be displayed (e.g. both warning and service), the messages will be displayed one after the other for 3 seconds.



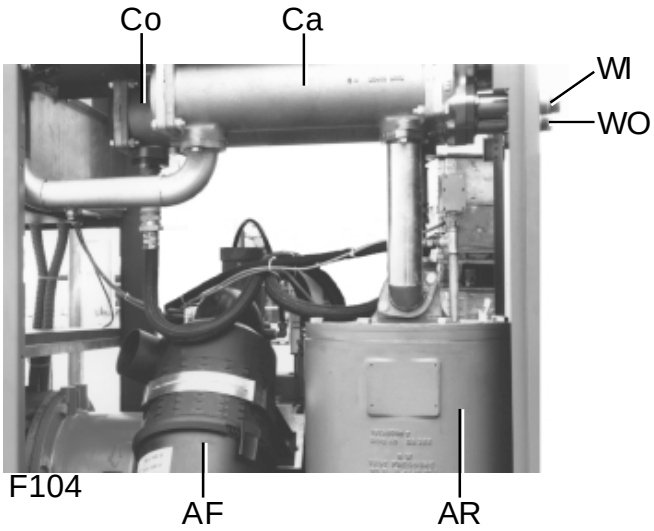
AF	Air filter
CV	Check valve
DP2	Oil drain plug, oil stop valve
DP3	Oil drain plug, check valve
E	Compressor element
OF	Oil filters
SV	Safety valve
UA	Unloader
VI	Service indicator, air filter
Vs	Oil stop valve
Y1	Loading solenoid valve
1	Warning: potential risk of sudden releasing of spring underneath cover of unloader during disassembling, have possible repair carried out by Atlas Copco
2	Arrow, motor rotation direction (depends on compressor type)

Fig. 3.6 View on receiver/compressor element

4. Regularly press the key <<More>> (5-Fig. 1.9) **6)** to call up information about the actual compressor condition:
   - the status of controlling the compressor (automatic or manual, local or remote)
   - the status of the compressor start/stop timer (on or off) **5)**
   - the maximum allowable unloading pressure
   - the outlet pressure
   - the pressure difference over the oil separator
   - the compressor element outlet temperature
   - the actual cooling water outlet temperature **7)**
   - the status of the overload protection of both the drive motor and fan motor **8)** (normal or not)
   - the total running and loading hours
   - the dewpoint temperature (on Full-feature compressors)

3.5 Manual control (Fig. 1.9) 9)

Normally, the compressor runs in automatic operation, i.e. the electronic regulator loads, unloads, stops and restarts the compressor automatically. LED (1) is then alight.



AF	Air filter
AR	Air receiver
Ca	Air cooler
Co	Oil cooler
WI	Water inlet
WO	Water outlet

Fig. 3.7 View on coolers (GA55/75 W)

If required, the compressor can be unloaded manually. In this case, the compressor is switched out of automatic operation, i.e. the compressor remains running unloaded unless it is loaded again manually.

Manually unloading
Press the key <<Unld>> (unload) (5). LED (1) goes out. The message <<Manual Unloaded>> appears on the display.

Manually loading
Press the key <<Load>> (5). LED (1) lights up. The command <<Load>> does not force the compressor in loaded condition, but it will switch the compressor to automatic operation again, i.e. the compressor will be loaded if the air net pressure drops below the programmed level.

Manually starting
In automatic operation, the regulator limits the number of motor starts. If the compressor is stopped manually, it must not be restarted manually within 6 minutes after the last stop.

3.6 Stopping

1. Press stop button O (9-Fig. 1.9). LED (1) goes out. The message <<Programmed stop>> appears. The compressor runs unloaded for 30 seconds and then stops.
2. **To stop the compressor in case of emergency**, press button (S3-Fig. 1.9). Alarm LED (3) blinks. After remedying the fault, unlock the button by pulling it out (on earlier production units by turning it to the left) and press key <<Rset>> (5) before restarting. The message <<All conditions are OK>> appears. Press keys <<Menu>> and <<Main>>.
3. Close air outlet valve (AV-Fig. 1.1) and switch off the voltage.
4. Open condensate drain valve (Dma-Fig. 1.5).

On water-cooled compressors only
5. Close the cooling water inlet valve.
6. **If freezing temperatures may be expected, drain the cooling system completely.**

3.7 Taking out of operation at end of compressor service life

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

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.

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. Isolate and disconnect the water system from the cooling water net.
6. Drain the oil, water and condensate circuits.
7. Disconnect the condensate piping from the condensate net.

Footnotes chapter 3

1) Consult User manual for Elektronikon regulator, section "Programmable settings".
2) Air-cooled compressors only.
3) Programmable.
4) Consult User manual for Elektronikon regulator, section "Modifying protection settings".
5) The compressor is automatically started and stopped if these start/stop commands are programmed and activated; consult section 1.3.1.
6) If the function <<More>> is not indicated on the bottom line of display (4-Fig. 1.9), press key <<Menu>> (5) until function <<Main>> appears above key (F1), then press the key <<Main>>.
7) For water-cooled compressors.
8) For air-cooled compressors.
9) If the <<Load>> or <<Unld>> (unload) function is not indicated on the bottom line of display (4), press key <<Menu>> (5) until the function <<Main>> appears above key (F1), then press the key <<Main>>.
10) Optional.
11) Using key <<Rset>> in submenu <<Service>>: see User manual for Elektronikon regulator, section "Service submenu".

4 Maintenance

Attention
Before carrying out any maintenance or repair on the compressor, press stop button (9-Fig. 1.9), wait until the compressor has stopped (approx. 30 seconds), press emergency stop button (S3) and switch off the voltage. Close the air outlet valve and depressurize the air system. Apply all relevant safety precautions, including those mentioned in this book.

The air outlet valve can be locked during maintenance or repair as follows:
- Close the valve.
- Remove the bolt fixing the handle.
- Lift the handle and turn it until the slot of the handle fits over the blocking edge on the valve body.
- Lock the handle using the special bolt and wrench delivered loose with the compressor.

4.1 Drive motor (M1)

For SIEMENS motors, the bearings must be regreased every 4,000 operating hours preferably with grease ESSO UNIREX N3. Quantity: 40 g.

For ABB motors, the bearings must be regreased every 4,000 operating hours **3)** with a high-temperature ball bearing grease ASONIC HQ 72-102. Quantity: 16 g per bearing. The lubrication points are marked. See section 4.6.

4.2 Preventive maintenance schedule for the compressor 1)

Attention
For overhauling or carrying out preventive maintenance, service kits are available. See section 4.6. Atlas Copco offers several types of Service contracts, relieving you of all preventive maintenance work. For more details, consult your nearest Atlas Copco representative.

The schedule comprises a summary of the maintenance instructions. **Read the respective section before taking maintenance measures. The "longer interval" checks must also include the "shorter interval" checks.** When servicing, replace all disengaged packings, e.g. gaskets, O-rings, washers.

Period 2)	Running hours 2)	See section	See notes below table	Operation
Daily				**Before starting**
“	—	3.2	-	Check oil level (Gl)
				During operation
“	—	3.4/7.1	-	Check readings on display
“	—	—	-	Check that condensate is discharged (Daa) during loading
“	—	3.4	-	Check oil level (Gl)
“	—	3.4	-	Check air filter service indicator (VI)
—	—	3.3	-	Regulate cooling water flow (water-cooled compressors)
				After stopping
—	—	3.6	-	Drain condensate (Dma)
3-monthly	—	5.3	3	Operate safety valve (SV)
“	**500**	5.2	-	Check coolers (Co/Ca) and condenser of dryer; clean if necessary
“	**500**	5.1	1	Remove air filter element (AF). Clean by air jet and inspect
“	—	—	-	Remove, dismantle and clean float valve of condensate trap (MTa)
“	—	—	10	Check for possible leakages
“	—	—	7	Carry out a LED/display test
Yearly	—	5.3	-	Have safety valve (SV) tested
“	—	—	8	Have the temperature shut-down function tested
“	—	—	-	Have the operation of the electrical interlockings, motor breakers, etc. tested by an electrician
“	**2000**	—	6	Check restrictors (Rf1, Rf2) for cleanness
“	**4000**	4.6/5.1	-	Replace air filter element (AF)
“	**4000**	4.3/4.4/4.6	4	If Atlas Copco Roto-injectfluid is used, change oil and oil filters
				For GA 7.5-8-10 bar and 100-125-150 psi
“	**1000**	4.3/4.4	-	If oil as specified in section 4.3.2 is used, change oil and oil filter
				For GA 13 bar and 175 psi
“	**500**	4.3/4.4	-	If oil as specified in section 4.3.2 is used, change oil and oil filter
“	—	—	9	Have all flexibles/flexible joints inspected
—	—	4.1	-	Re-grease bearings of drive motor as specified
2-yearly	**8000**	—	5	Have oil separator (OS) replaced

Notes

1. More frequently when operating in a dusty atmosphere. Replace damaged or heavily contaminated elements.
2. Use genuine Atlas Copco filters.
3. By unscrewing the cap one or two turns and retightening it or by pulling the valve lifting lever.
4. Recommended oil: Atlas Copco Roto-injectfluid. For the change interval in extreme conditions of temperature, humidity or cooling air, consult Atlas Copco.
5. Or when the pressure drop over the separator exceeds 1 bar. See section 3.4.1 to call up this value. Check the pressure drop when the compressor is running loaded and preferably with a stable working pressure.
6. One restrictor (Rf2-Fig. 1.6) is located in the oil scavenging line, the other (Rf1) upstream of oil stop valve (Vs).
7. Consult the User manual for Elektronikon regulator, section “Test submenu”.
8. Consult the User Manual for the Elektronikon regulator before modifying the temperature protection settings, section “Modify settings submenu”.

Decrease the shut-down warning level and shut-down level for the compressor element outlet temperature to the minimum settings. Run the compressor: when reaching the setting, the unit must shut down. Afterwards, reset the warning and shut-down levels to their original values.

9. Damaged flexibles or flexible joints must be replaced.
10. Any leakage should be attended to immediately.

4.3 Oil specifications

Attention
Never mix oils of different brands or types. Use only non-toxic oils.

4.3.1 Atlas Copco Roto-injectfluid

It is strongly recommended to use Atlas Copco Roto-injectfluid. This is special oil for screw compressors which keeps the compressor in excellent condition.

See also section 4.6.

4.3.2 Mineral oil

Although Roto-injectfluid is recommended, mineral oil can be used after taking following precautions:

- the previously used oil should first be drained and the system flushed
- the oil filters should be replaced
- the oil must meet the requirements as specified below

High-quality, mineral oil with oxidation inhibitors and anti-foam and anti-wear properties. The viscosity grade must correspond to the ambient temperature and ISO 3448, as follows:

Ambient temperature	Viscosity grade	Viscosity index
Consistently above 25 degrees celsius	ISO VG 68	Minimum 95
Between 25 and 0 degrees celsius	ISO VG 46	Minimum 95

4.4 Oil and oil filter change (Figs. 3.5 and 3.6)

1. Run the compressor unloaded for 3 minutes.
2. Stop the compressor. Switch off the voltage. Unscrew oil filler plug (FC) only one turn to permit any pressure in the system to escape.
3. Remove vent plug (VP-Fig. 1.3), wait 5 minutes, remove drain plug (DP2) and catch the oil in a receptacle.
4. Remove the oil filters (OF).
5. Clean the filter seats on the manifold. Oil the gaskets of the new elements. Screw the elements into place until the gaskets contact their seats, then tighten by hand (approx. half a turn).
6. Drain the oil by removing drain plugs (DP1 and DP3). Collect the oil in a collector and deliver it to the local oil collection service.
7. Reinstall plugs (DP1 up to DP3) and fill the air receiver with oil until the level reaches the filler plug opening. Reinstall plugs (FC and VP) and tighten.
8. Run the compressor for a few minutes. Stop the compressor and wait a few minutes to allow the oil to settle. Depressurize the system. Fill the air receiver with oil until the level reaches the filler plug opening. Tighten filler plug (FC).
9. Reset the oil and oil filter service warnings **4)**.

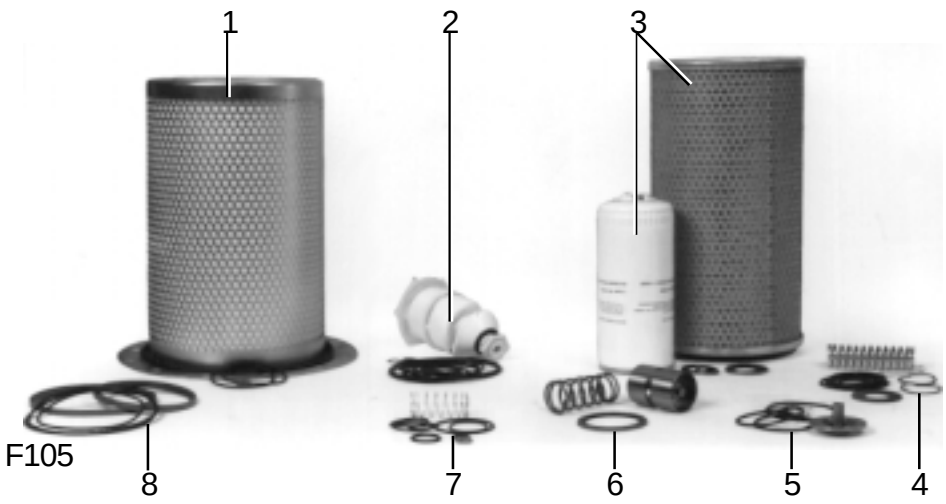
4.5 Storage after installation

Run the compressor twice a week until warm. Load and unload the compressor a few times. If the compressor is stored without running from time to time, protective measures must be taken. Consult Atlas Copco.

4.6 Service kits

Service kits are available offering the benefits of genuine Atlas Copco parts while keeping the maintenance budget low. The kits comprise all parts needed for servicing.

Service kit for oil filters and air filter	Ordering number
For GA55-GA55 W	2901 0416 00
For GA75-GA75 W-GA90C	2901 0431 00
For GA90C-GA90C W	2901 0431 00



1	Oil separator kit	4	Minimum pressure valve kit	7	Oil stop valve kit
2	Condensate trap kit	5	Check valve kit	8	Unloading valve kit
3	Filter kit	6	By-pass valve kit		

Fig. 4.1 Preventive maintenance kits (typical examples)

Service kit for oil separator	Ordering number
For all GA	2901 0432 00

Roto-inject fluid
Atlas Copco Roto-injectfluid (see section 4.3.1) can be ordered in following quantities:

Quantity	Ordering number
20-litre can	2901 0522 00
209-litre drum	2901 0045 01

Motor grease
For ABB motors, the ordering number for a motor grease cartridge is 2901 0338 01 (see section 4.1).

Footnotes chapter 4

1) Use only authorized parts. Any damage or malfunction by the use of unauthorized parts is not covered by Warranty or Product Liability.
2) Whichever interval comes first. The local Atlas Copco Sales Company may overrule this schedule depending on the working conditions of the compressor.
3) Every 3,400 operating hours for GA75 60 Hz.
4) Using key <<Rset>> in submenu <<Service>>: see User manual for Elektronikon regulator, section “Service submenu”.

5 Adjustments and servicing procedures

5.1 Air filter (AF-Fig. 1.4)

1. Stop the compressor. Switch off the voltage. Release the snap clips and remove the dust trap and air filter element. Clean the trap. Discard the filter element.
2. Refit the new element and the trap.
3. Reset the service indicator (VI-Fig. 3.6) by pushing the knob in the extremity of the body.
4. Reset the air filter service warning **1)**.

5.2 Coolers

Keep the coolers clean to maintain the cooling efficiency.

On air-cooled compressors
Remove any dirt from the coolers with a fibre brush. Never use a wire brush or metal objects. Then clean by air jet in reverse direction of normal flow while covering all compressor parts under the coolers. If it is necessary to wash the coolers with a cleansing agent, consult Atlas Copco.

On water-cooled compressors
Consult Atlas Copco for cleaning.

5.3 Safety valve (SV-Fig. 3.6)

Operate the safety valve, depending on the type of valve:
- by unscrewing the cap one or two turns and retightening it
- or by pulling the valve lifting lever

Testing
The valve can be tested on a separate compressed air line. If the valve does not open at the pressure specified in section 7.2, consult Atlas Copco.

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

Footnotes chapter 5

1) Using key <<Rset>> in submenu <<Service>>: see User manual for Elektronikon regulator, section “Service submenu”.

6 Problem solving

Consult the User manual for Elektronikon regulator (section “Status data submenu”) if a service message or fault message appears on the display (4-Fig. 1.9) or when alarm LED (3-Fig. 1.9) is alight or blinks.

Before starting repairs:
Press stop button (9-Fig. 1.9), wait until the compressor has stopped (approx. 30 seconds), press stop button (S3-Fig. 1.9) and switch off the voltage.
Close the air outlet valve and depressurize the air system. Furthermore, apply all relevant safety precautions, including those mentioned in this book.
The air outlet valve can be locked as described in section 4.

Mechanical faults and suggested remedies (Fig. 1.6)

1 Push button I is pressed, compressor starts running, but does not load after a delay time.
a Solenoid valve (Y1) out of order.
a Replace valve.
b Inlet valve (IV) stuck in closed position.
b Have valve checked.
c Leak in control air flexibles.
c Replace leaking flexible.
d Minimum pressure valve (Vp) leaking (when net is depressurized).
d Have valve checked.

2 Compressor does not unload, safety valve blows.
a Solenoid valve (Y1) out of order.
a See 1a.
b Inlet valve (IV) does not close.
b See 1b.

3 Condensate is not discharged from condensate trap during loading.
a Discharge flexible clogged.
a Check and correct as necessary.
b Float valve malfunctioning.
b Remove float valve assembly, clean and check.

4 Compressor air output or pressure below normal.
a Air consumption exceeds air output of compressor.
a Check equipment connected.
b Choked air inlet filter element (AF).
b Replace filter element.
c Solenoid valve (Y1) malfunctioning.
c See 1a.
d Leak in control air flexibles.
d See 1c.
e Inlet valve (IV) does not fully open.
e See 1b.
f Oil separator element (OS) clogged.
f Have element replaced.
g Air leakage.
g See 1c.

h Safety valve (SV) leaking.
h Have valve replaced.
i Compressor element (E) out of order.
i Consult Atlas Copco.

5 Excessive oil flow through air inlet filter after stopping.
a Check valve (CV) leaking or oil stop valve (Vs) jammed.
a Have defective parts replaced. Replace air filter element (AF).

6 Safety valve (SV) blows after loading.
a Inlet valve (IV) malfunctioning.
a See 1b.
b Minimum pressure valve (Vp) malfunctioning.
b See 1d.
c Oil separator element (OS) clogged.
c See 4f.
d Safety valve (SV) out of order.
d See 4h.
e Dryer piping clogged because of ice formation.
e Have refrigerant system checked by Atlas Copco.

7 Element outlet 1) or air outlet temperature above normal.
a Insufficient cooling air or cooling air temperature too high.
a Check for cooling air restriction or improve ventilation of compressor room. Avoid recirculation of cooling air. If installed, check capacity of compressor room fan. On water-cooled compressors, check cooling water flow; if necessary, have system cleaned.
b Oil level too low.
b Check and correct as necessary.
c Oil cooler (Co) clogged.
c Clean cooler.
d By-pass valve (BV) malfunctioning.
d Have valve tested.
e Air cooler (Ca) clogged.
e Clean cooler.
f Compressor element (E) out of order.
f See 4i.

Footnotes chapter 6

1) A warning message will appear on display (4-Fig. 1.9).

7 Principal data

7.1 Readings on display (4-Fig. 1.9) 8)

Ref. **Air outlet pressure**
Reading: Modulates between programmed unloading and loading pressures
Shown: On main display (Fig. 1.10)
Sensor: PT20-Fig. 1.6

Ref. **Compressor element outlet temperature**
Reading: Approx. 60 degrees celsius above cooling air temperature or above cooling water inlet temperature
Shown: When using the key <<More>> (5-Fig. 1.9) **9)**
Sensor: TT11-Fig. 1.6

Ref. **Pressure difference over oil separator**
Reading: Below 1 bar
Shown: When using the key <<More>> (5-Fig. 1.9) **9)**
Sensor: PDT1-Fig. 1.6

Ref. **Cooling water outlet temperature**
Reading: Below 50 degrees celsius
Shown: When using the key <<More>> (5-Fig. 1.9) **9)**
Sensor: TT51

7.2 Settings of safety valve

Compressor type	Safety valve set pressure(e)
GA 7.5-8 bar	12 bar(e)
GA 10 bar	12 bar(e)
GA 13 bar	14.5 bar(e)
GA 100 psi	200 psig
GA 125 psi	200 psig
GA 150 psi	200 psig
GA 175 psi	215 psig
GA 7.5-8 bar/ISPESL approved	11 bar(e)
GA 10 bar/ISPESL approved	11 bar(e)
GA 13 bar/ISPESL approved	14 bar(e)

Always check the set pressure stamped on the valve.

7.3 Maximum settings of overload relay, circuit breaker and fuses

7.3.1 For GA55/GA55 W

Supply voltage (V)	Frequency	Circuit breaker Q15 **11)** (A)	Overload relay F21 (A)	Fuses (A)	Fuses CSA HRCII-C (A)	Fuses UL Class K5 (A)
230	50 Hz - IEC	8.3	124	250	-	-
400	50 Hz - IEC	4.8	71	160	-	-
500	50 Hz - IEC	3.8	57	125	-	-
220-230	60 Hz - IEC	8.3	123	250	-	-
220-230	60 Hz - CSA/UL	8.3	123	-	200	200
440-460	60 Hz - IEC	4.6	61	125	-	-
440-460	60 Hz - CSA/UL	4.6	57	-	100	100
575	60 Hz - IEC	3.7	47	100	-	-
575	60 Hz - CSA/UL	3.7	45	-	80	70

7.3.2 For GA75/GA75 W

Supply voltage (V)	Frequency	Circuit breaker Q15 **11)** (A)	Overload relay F21 (A)	Fuses (A)	Fuses CSA HRCII-C (A)	Fuses UL Class K5 (A)
230	50 Hz - IEC	8.3	160	315	-	-
400	50 Hz - IEC	4.8	92	200	-	-
500	50 Hz - IEC	3.8	74	160	-	-
220-230	60 Hz - IEC	8.3	165	300	-	-
220-230	60 Hz - CSA/UL	8.3	165	-	300	300
440-460	60 Hz - IEC	4.6	82	150	-	-
440-460	60 Hz - CSA/UL	4.6	77	-	150	150
575	60 Hz - IEC	3.7	63	125	-	-
575	60 Hz - CSA/UL	3.7	61	-	125	100

7.3.3 For GA90C/GA90C W

Supply voltage (V)	Frequency	Circuit breaker Q15 **11)** (A)	Overload relay F21 (A)	Fuses (A)	Fuses CSA HRCII-C (A)	Fuses UL Class K5 (A)
230	50 Hz - IEC	12.5	184	355	-	-
400	50 Hz - IEC	7.3	106	250	-	-
500	50 Hz - IEC	5.8	85	200	-	-
220-230	60 Hz - IEC	14	190	400	-	-
220-230	60 Hz - CSA/UL	14	190	-	400	400
380	60 Hz - IEC	7.6	112	250	-	-

Supply voltage (V)	Frequency	Circuit breaker Q15 **11)** (A)	Overload relay F21 (A)	Fuses (A)	Fuses CSA HRCII-C (A)	Fuses UL Class K5 (A)
440-460	60 Hz - IEC	6.9	95	200	-	-
440-460	60 Hz - CSA/UL	6.9	95	-	200	200
575	60 Hz - IEC	5.5	76	160	-	-
575	60 Hz - CSA/UL	5.5	76	-	160	160

7.4 Settings of dryer switches (on GA Full-feature)

Fan control switch (PSR90)

- Cut-out pressure	bar(e)	16.9
- Switch-on pressure	bar(e)	18
Shut-down switch (PSHH90)	bar(e)	29

7.5 Compressor specifications

7.5.1 Reference conditions

Air inlet pressure (absolute)	bar	1
Air inlet temperature	celsius	20
Relative humidity	%	0
Working pressure	bar(e)	See nominal values below

On water-cooled units also:

Cooling water inlet temperature	celsius	20

7.5.2 Limitations

Maximum working pressure	bar(e)	See maximum values below
Minimum working pressure	bar(e)	4
Maximum air inlet temperature	celsius	40
Minimum air inlet temperature	celsius	0

On water-cooled units also:

Max. cooling water outlet temperature	celsius	50
Max. cooling water inlet pressure	bar(e)	5

7.5.3 GA55/GA55 W Pack 1) 7)

Compressor type		7.5 bar	8 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure	bar(e)	7.5	8	10	13	7.4	9.1	10.8	12.5
Nominal working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Temperature of air leaving outlet valve, approx.	celsius	30	30	30	30	30	30	30	30
Drive motor, ABB type M2AA SMD **10)**		225	225	225	225	225	225	225	225
Drive motor, SIEMENS type 1LA6 **10)**		228-2	228-2	228-2	228-2	228-2	228-2	228-2	228-2
Motor shaft speed	r/min	2975	2975	2975	2975	3575	3575	3575	3575
Power input, GA	kW	61.2	65.5	66.6	66.1	66.4	66.9	65.2	65.8
Power input, GA W	kW	58.7	62.9	64.1	63.6	63.6	64.1	62.4	62.9
Oil capacity, GA	l	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Oil capacity, GA W	l	26	26	26	26	26	26	26	26
Mean sound pressure level **2)**	dB(A)	67	67	67	67	67	67	67	67
Cooling water consumption, GA W **3)**	l/min	50	54	54	54	54	54	54	54
Cooling water consumption, GA W **4)**	l/min	75	77	81	81	81	81	81	81

7.5.4 GA55/GA55 W Full-feature 1) 7)

Compressor type		7.5 bar	8 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure	bar(e)	7.25	7.75	9.75	12.75	7.15	8.85	10.55	12.25
Nominal working pressure	bar(e)	7	7.75	9.5	12.5	6.9	8.6	10.3	12
Temperature of air leaving outlet valve, approx.	celsius	25	25	25	25	25	25	25	25
Drive motor, ABB type M2AA SMD **10)**		225	225	225	225	225	225	225	225
Drive motor, SIEMENS type 1LA6 **10)**		228-2	228-2	228-2	228-2	228-2	228-2	228-2	228-2
Motor shaft speed	r/min	2975	2975	2975	2975	3575	3575	3575	3575
Power input, GA	kW	64.8	68.0	70.1	69.2	70.9	70.4	69.5	69.8
Power input, GA W	kW	62.3	65.5	67.6	66.6	68.0	67.6	66.7	67.0
Oil capacity, GA	l	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Oil capacity, GA W	l	26	26	26	26	26	26	26	26
Mean sound pressure level **2)**	dB(A)	67	67	67	67	67	67	67	67
Cooling water consumption, GA W **3)**	l/min	50	54	54	54	54	54	54	54
Cooling water consumption, GA W **4)**	l/min	75	77	81	81	81	81	81	81
Refrigerant type		R404a	R404a	R404a	R404a	R404a	R404a	R404a	R404a
Refrigerant charge	kg	6	6	6	6	6	6	6	6
Pressure dewpoint, Full-feature **5)**	celsius	3	3	3	3	3	3	3	3

7.5.5 GA75/GA75 W Pack 1) 7)

Compressor type		7.5 bar	8 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure	bar(e)	7.5	8	10	13	7.4	9.1	10.8	12.5
Nominal working pressure	bar(e)	7	8	9.5	12.5	6.9	8.6	10.3	12
Temperature of air leaving outlet valve, approx.	celsius	30	30	30	30	30	30	30	30
Drive motor, ABB type M2A SMC **10)**		250	250	250	250	250	250	250	250
Drive motor, SIEMENS type 1LA6 **10)**		258-2	258-2	258-2	258-2	258-2	258-2	258-2	258-2
Motor shaft speed	r/min	2975	2975	2975	2975	3575	3575	3575	3575
Power input, GA	kW	87.7	82.2	89.6	89.1	89.8	90.1	89.3	88.6
Power input, GA W	kW	85.7	79.6	87.0	86.6	87.0	87.3	86.5	85.7
Oil capacity, GA	l	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Oil capacity, GA W	l	26	26	26	26	26	26	26	26
Mean sound pressure level **2)**	dB(A)	70	69	69	69	69	69	69	69
Cooling water consumption, GA W **3)**	l/min	74	68	74	74	74	74	74	74
Cooling water consumption, GA W **4)**	l/min	110	98	110	110	110	110	110	110

7.5.6 GA75/GA75 W Full-feature 1) 7)

Compressor type		7.5 bar	8 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	50	60	60	60	60
Maximum (unloading) pressure	bar(e)	7.25	7.75	9.75	12.75	7.15	8.85	10.55	12.25
Nominal working pressure	bar(e)	7	7.75	9.5	12.5	6.9	8.6	10.3	12
Temperature of air leaving outlet valve, approx.	celsius	25	25	25	25	25	25	25	25
Drive motor, ABB type M2A SMC **10)**		250	250	250	250	250	250	250	250
Drive motor, SIEMENS type 1LA6 **10)**		258-2	258-2	258-2	258-2	258-2	258-2	258-2	258-2
Motor shaft speed	r/min	2975	2975	2975	2975	3575	3575	3575	3575
Power input, GA	kW	93.4	85.9	94.4	93.1	95.9	95.1	95.0	93.8
Power input, GA W	kW	91.4	83.4	91.8	90.6	93.1	92.2	92.1	91.0
Oil capacity, GA	l	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Oil capacity, GA W	l	26	26	26	26	26	26	26	26
Mean sound pressure level **2)**	dB(A)	70	69	69	69	69	69	69	69
Cooling water consumption, GA W **3)**	l/min	74	68	74	74	74	74	74	74
Cooling water consumption, GA W **4)**	l/min	110	98	110	110	110	110	110	110
Refrigerant type		R404a	R404a	R404a	R404a	R404a	R404a	R404a	R404a
Refrigerant charge	kg	6	6	6	6	6	6	6	6
Pressure dewpoint, Full-feature **5)**	celsius	4	4	4	4	4	4	4	4

7.5.7 GA90C/GA90C W Pack 1)

Compressor type		7.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	60	60	60	60
Maximum (unloading) pressure	bar(e)	7.5	10	13	7.4	9.1	10.8	12.5
Nominal working pressure	bar(e)	7	9.5	12.5	6.9	8.6	10.3	12
Temperature of air leaving outlet valve, approx.	celsius	30	30	30	30	30	30	30
Drive motor		ABB M2AA 250	ABB M2AA 250	ABB M2AA 250	SIEMENS 1LA6 250	SIEMENS 1LA6 250	SIEMENS 1LA6 250	SIEMENS 1LA6 250
Motor shaft speed	r/min	2970	2970	2970	3575	3575	3575	3575
Power input, GA	kW	98.7	100.3	100.4	100.1	102.1	101.8	101.2
Power input, GA W	kW	95	96.6	96.7	95.2	97.3	96.9	96.4
Oil capacity, GA	l	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Mean sound pressure level GA **2)**	dB	74	74	74	76	76	76	76
Mean sound pressure level GA W **2)**	dB	73	74	74	76	76	76	76
Cooling water consumption **3)**	l/min	95	95	95	99	99	99	99
Cooling water consumption **4)**	l/min	142	142	142	149	149	149	149

7.5.8 GA90C/GA90C W Full-feature 1)

Compressor type		7.5 bar	10 bar	13 bar	100 psi	125 psi	150 psi	175 psi
Frequency	Hz	50	50	50	60	60	60	60
Maximum (unloading) pressure	bar(e)	7.25	9.75	12.75	7.15	8.85	10.55	12.25
Nominal working pressure	bar(e)	7	9.5	12.5	6.9	8.6	10.3	12
Temperature of air leaving outlet valve, approx.	celsius	25	25	25	25	25	25	25
Drive motor		ABB M2AA 250	ABB M2AA 250	ABB M2AA 250	SIEMENS 1LA6 250	SIEMENS 1LA6 250	SIEMENS 1LA6 250	SIEMENS 1LA6 250
Motor shaft speed	r/min	2970	2970	2970	3575	3575	3575	3575
Power input, GA	kW	104.2	105.7	105.7	106.8	108.7	108.3	107.8
Power input, GA W	kW	100.5	102	102	102	103.9	103.5	102.9
Oil capacity, GA	l	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Cooling water consumption **3)**	l/min	95	95	95	99	99	99	99
Cooling water consumption **4)**	l/min	142	142	142	149	149	149	149
Mean sound pressure level GA **2)**	dB	74	74	74	76	76	76	76
Mean sound pressure level GA W **2)**	dB	73	74	74	76	76	76	76
Refrigerant type		R404a	R404a	R404a	R404a	R404a	R404a	R404a
Refrigerant charge	kg	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Pressure dewpoint, Full-feature **5)**	celsius	4	4	4	4	4	4	4

7.6 Conversion list of SI units into US/British units

1 bar = 14.504 psi
1 g = 0.035 oz
1 kW = 1.341 hp (UK and US)
1 l = 0.264 US gal

1 l = 0.220 Imp gal (UK)
1 l = 0.035 cu.ft
1 l/s = 2.117 cfm
1 mm = 0.039 in

1 mbar = 0.401 in water column
1 N = 0.225 lbf
1 Nm = 0.738 lbf.ft
x degrees celsius = (32 + 1.8 x) degrees fahrenheit **6)**

Footnotes chapter 7

1) At reference conditions.
2) According to PNEUROP PN8NTC2.2. With a tolerance of 2 dB.
3) At water inlet temperature below 25 degrees celsius and temperature rise = 15 degrees celsius.
4) At water inlet temperature between 25 and 40 degrees celsius and temperature rise = 10 degrees celsius.
5) At 20 degrees celsius / 100% relative humidity.
6) A temperature difference of 1 degree celsius = a temperature difference of 1.8 degrees fahrenheit.
7) An 8 bar version is available as option.
8) See User manual for Elektronikon regulator, sections “Main display” and “More function”.
9) See also section 3.4.1.
10) For later production 60 Hz CSA/UL versions, a SIEMENS drive motor is provided.
11) On air-cooled compressors only.

Notes:

Notes:

Notes:

13. Pipework or other parts with a temperature in excess of 80 degrees celsius and which may be accidentally touched by personnel in normal operation shall be guarded or insulated. Other high-temperature pipework shall be clearly marked.
14. If the ground is not level or can be subject to variable inclination, consult Atlas Copco.
15. The electrical connections shall correspond to the local codes. The units shall be grounded and protected against short circuits by fuses.

Operation

1. Air hoses shall be of correct size and suitable for the working pressure. Never use frayed, damaged or deteriorated hoses. 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.

   Never play with compressed air. Do not apply it to your skin or direct an air stream at people. Never use it to clean dirt from your clothes. When using it to clean equipment, do so with extreme caution and use eye protection.
2. The compressor is not considered as capable of producing air of breathing quality. For breathing air quality, the compressed air must be adequately purified according to local legislation and standards.
3. Never operate the unit when there is a possibility of taking in flammable or toxic fumes.
4. Never operate the unit at pressures below or in excess of its limit ratings as indicated on the Principal Data sheet.
5. Keep all bodywork doors shut during operation. The doors may be opened for short periods only, e.g. to carry out checks. Wear ear protectors when opening a door.
6. People staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) shall wear ear protectors.
7. Periodically check that:
   a. All guards are in place and securely fastened
   b. All hoses and/or pipes inside the unit are in good condition, secure and not rubbing
   c. There are no leaks
   d. All fasteners are tight
   e. All electrical leads are secure and in good order
   f. Safety valves and other pressure-relief devices are not obstructed by dirt or paint
   g. Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse
8. 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.
9. Do not remove any of, or tamper with, the sound-damping material.

Maintenance

Maintenance and repair work shall only be carried out under supervision of someone qualified for the job.

1. Use only the correct tools for maintenance and repair work.
2. Use only genuine spare parts.
3. All maintenance work, other than routine attention, shall only be undertaken when the unit is stopped, the main power supply is switched off and the machine has cooled down. Take positive precaution to ensure that the unit cannot be started inadvertently.

   In addition, a warning sign bearing a legend such as **"work in progress; do not start"** shall be attached to the starting equipment.
4. Before removing any pressurized component, effectively isolate the unit from all sources of pressure and relieve the entire system of pressure.
5. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapours of cleaning liquids.
6. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.
7. 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.

   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.

   Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
8. Make sure that no tools, loose parts or rags are left in or on the unit.
9. Before clearing the unit for use after maintenance or overhaul, check that operating pressures, temperatures and time settings are correct and that the control and shut-down devices function correctly. If removed, check that the coupling guard of the compressor drive shaft has been reinstalled.
10. 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.
11. Protect the motor, air filter, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam-cleaning.
12. Make sure that all sound-damping material, e.g. on the bodywork and in the air inlet and outlet systems of the compressor, is in good condition. If damaged, replace it by genuine Atlas Copco material to prevent the sound pressure level from increasing.
13. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.
14. The following safety precautions are stressed when handling refrigerant:
    a. Never inhale refrigerant vapours. Check that the working area is adequately ventilated; if required, use breathing protection.
    b. 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.
    c. Always wear safety glasses.
15. Protect hands to avoid injury from hot machine parts, e.g. during draining of oil.

Note: With stationary machine units driven by an internal combustion engine, allowance has to be made for extra safety precautions, e.g. spark arrestors, fuelling care, etc. Consult Atlas Copco.

All responsibility for any damage or injury resulting from neglecting these precautions, or by non-observance of ordinary caution and due care required in handling, operating, maintenance or repair, even if not expressly mentioned in this book, will be disclaimed by Atlas Copco.

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.

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