

Atlas Copco Stationary Air Compressors

GA30 - GA37 - GA45 - GA55C
GA30 W - GA37 W - GA45 W

Instruction book

Important

1. From following serial number onwards: AII-360 000
2. This book must be used together with the "User manual for Elektronikon regulator for GA5 up to GA90C"

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- This instruction book meets the requirements for instructions specified by the machinery directive 98/37/EC and is valid for CE as well as non-CE labelled machines.

No. 2920 1389 01
Replaces 2920 1389 00

Registration code: APC G30-55C/98 / 38 / 993

1999-11

Web-site: <http://www.atlascopco-compressors.com>



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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. GA30-GA37-GA45-GA55C are air-cooled, whereas GA30 W-GA37 W-GA45 W are water-cooled.

1.1.1 Compressor variants

GA Standard Pack (Fig. 1.3)

GA Standard Pack are enclosed in a sound-insulated bodywork. The control panel (Fig. 1.14) is fitted to the door at the front side. It includes the start button and the stop/emergency stop button.

The relay-controlled regulator and the motor starter are located in an electric cabinet behind the door.

GA Pack (Fig. 3.3)

GA Pack are enclosed in a sound-insulated bodywork. The compressors are controlled by the Atlas Copco Elektronikon® regulator. This electronic control module (Fig. 1.9) is fitted to the door of the front panel. The Elektronikon regulator reduces the power consumption and 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 (Figs. 1.1 and 1.2)

GA Full-feature are GA Pack compressors, additionally provided with an air dryer 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 1.5.

1.1.2 Main options

Modulating control

This regulating system matches the air capacity of the compressor to the air consumption between 100 % output and a minimum output. 1)

Energy recovery

This system recovers the major part of the compression heat in the form of hot water.

Electronic drain

This system electronically controls draining of condensate.

OSD

OSD are separators which separate the major part of the oil from the condensate.

WSD

WSD are separators which separate condensate from compressed air. They can be integrated in the bodywork of GA Standard Pack compressors.

Relay expansion box

The relay expansion box has potential-free contacts for external indication of following compressor operating conditions: automatic operation, warning, shut-down.

Dryer by-pass kit

This kit allows the operator to by-pass the dryer in case of dryer maintenance or repair.

Public works version

This kit is designed for compressors operating outdoors. It consists of separately available kits:

- Frost protection kit to prevent freezing of condensate and to allow the compressor to start in freezing temperatures.
- Rain protection kit to prevent rain from entering the compressor.
- Main power isolation switch with lockable handle for easy isolation of the compressor from the mains.
- Reverse rotation protection relay which prevents the compressor from starting if the phases of the mains are not connected correctly.

The compressors may be delivered ex-factory with a lifting device for easy lifting and handling of the compressor.

Oil containing frame

This additional frame, which can be put under the compressor, prevents oil from spreading over the floor in case of oil leakage.

Tropical thermostat

If operating in tropical climate conditions (high temperature and humidity), a thermostat with a higher setting can be fitted in the oil circuit to avoid condensation. Consult Atlas Copco.

Dryer kit

This kit contains an air dryer and can be fitted inside the bodywork of GA Pack.

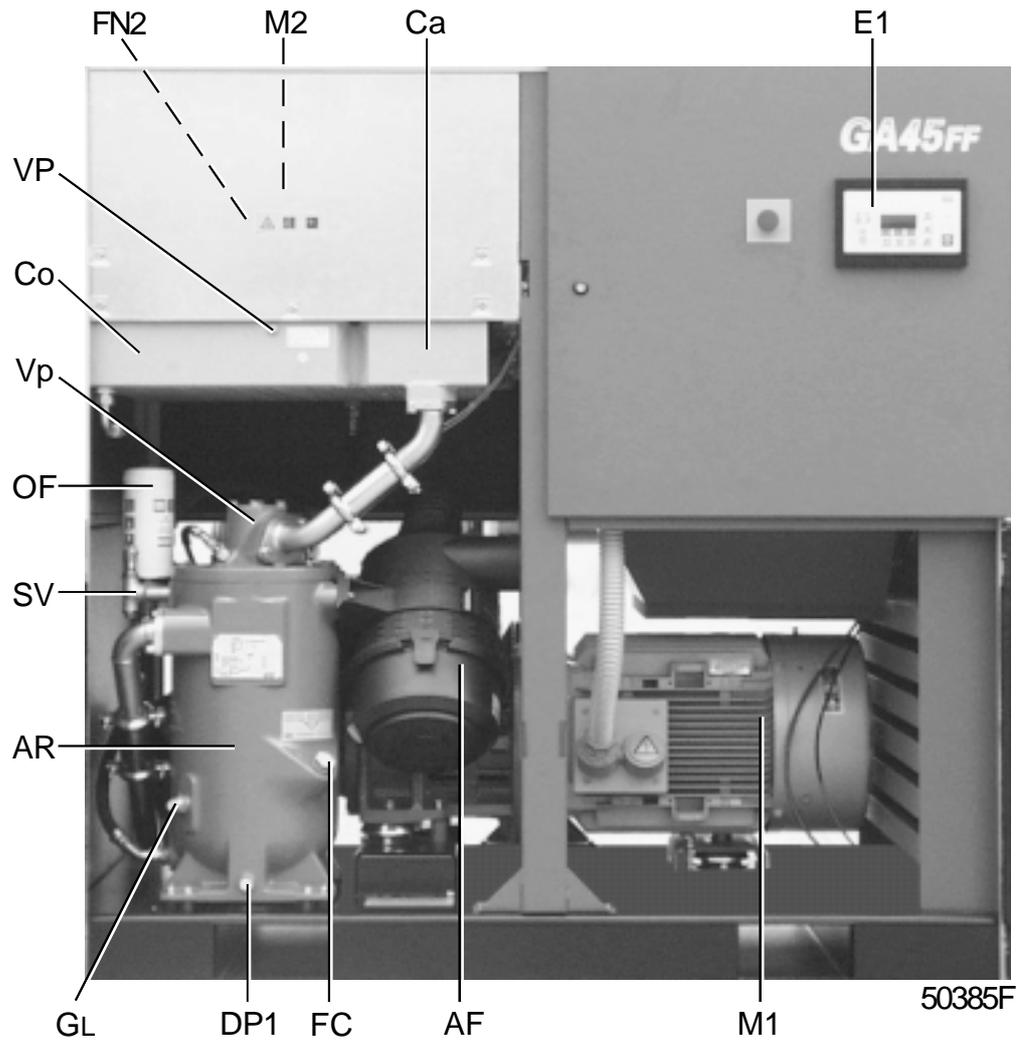


Fig. 1.1 Front view GA45 Full-feature

AF	Air filter	DP2	Oil drain plug, oil stop valve	M2	Fan motor
AR	Air receiver/oil separator	DP3	Oil drain plug, check valve	OF	Oil filter
AV	Air outlet valve	E	Compressor element	SV	Safety valve
BV	Oil cooler by-pass valve	E1	Elektronikon regulator	UA	Unloader
Ca	Air cooler	FC	Oil filler plug	Vp	Minimum pressure valve
Co	Oil cooler	FN2	Fan	VP	Oil cooler vent plug
CV	Check valve	Gl	Oil level gauge	Vs	Oil stop valve
DP1	Oil drain plug, oil separator	M1	Drive motor	l	Dryer

Figs. 1.1 and 1.2 GA45 Full-feature

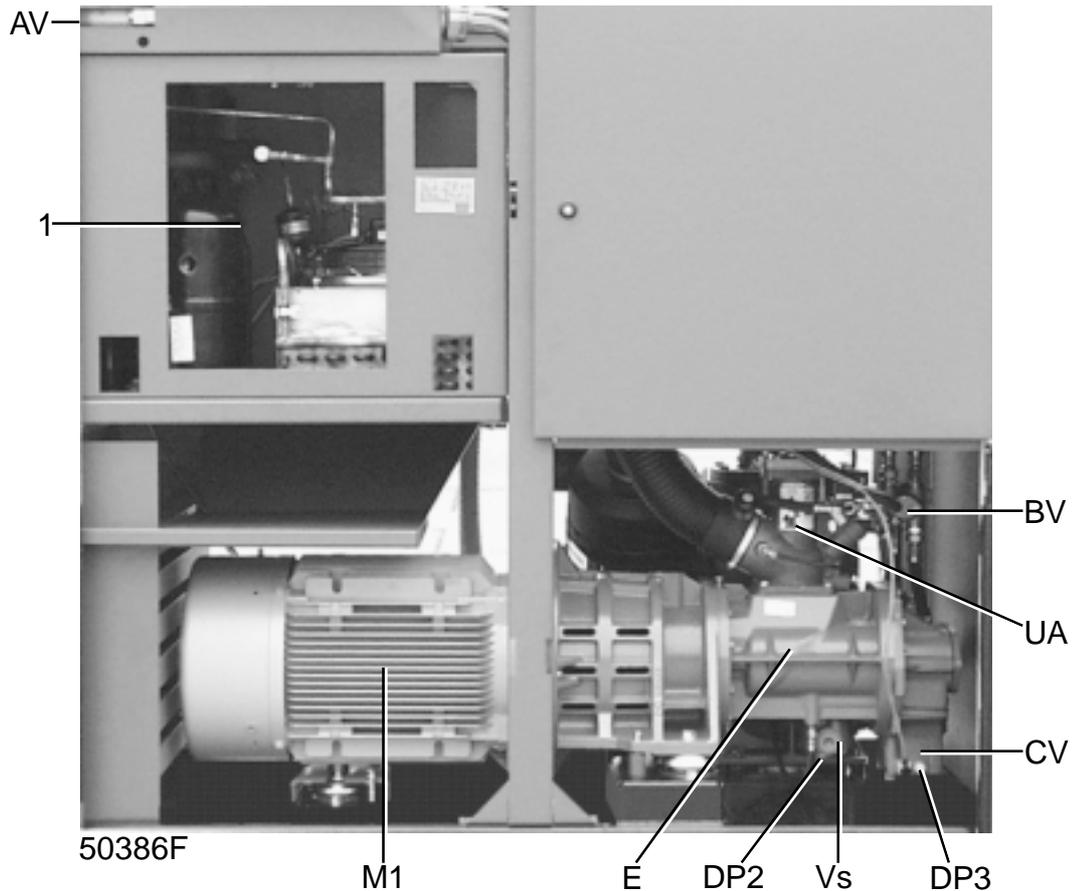


Fig. 1.2 Rear view GA45 Full-feature

1.1.3 Air flow (Figs. 1.5 and 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 (MT).

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.

1.1.4 Oil system (Figs. 1.5 and 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 (2), 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 filter (OF) and oil stop valve (Vs) to compressor element (E) and the lubrication points. Oil cooler (Co) is by-passed.



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Fig. 1.3 GA55C Standard Pack

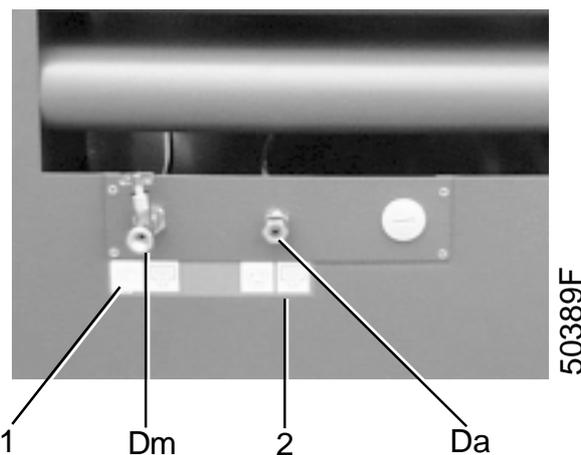
By-pass valve (BV) starts opening the oil supply from cooler (Co) when the oil temperature has increased to the above-mentioned value. At approx. 55 degrees celsius **2**) all the oil flows through the oil cooler.

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.

1.1.5 Cooling and condensate drain systems (Figs. 1.5 and 1.6)

The cooling system comprises air cooler (Ca) and oil cooler (Co). On air-cooled compressors, the cooling air is generated by fan (FN2). Water-cooled compressors are provided with a cooling water system.

A condensate trap (MT) is provided in the air outlet system **3**). The trap is equipped with a valve for automatic condensate draining during operation (Da-Fig. 1.4) and a manually operated valve for draining after stopping the compressor (Dm-Fig. 1.4).



- Da Automatic condensate drain
- Dm Condensate drain valve
- 1 Pictograph, manual condensate drain
- 2 Pictograph, automatic condensate drain

Fig. 1.4 Condensate outlets

AIR-COOLED FULL-FEATURE UNLOADED (1)

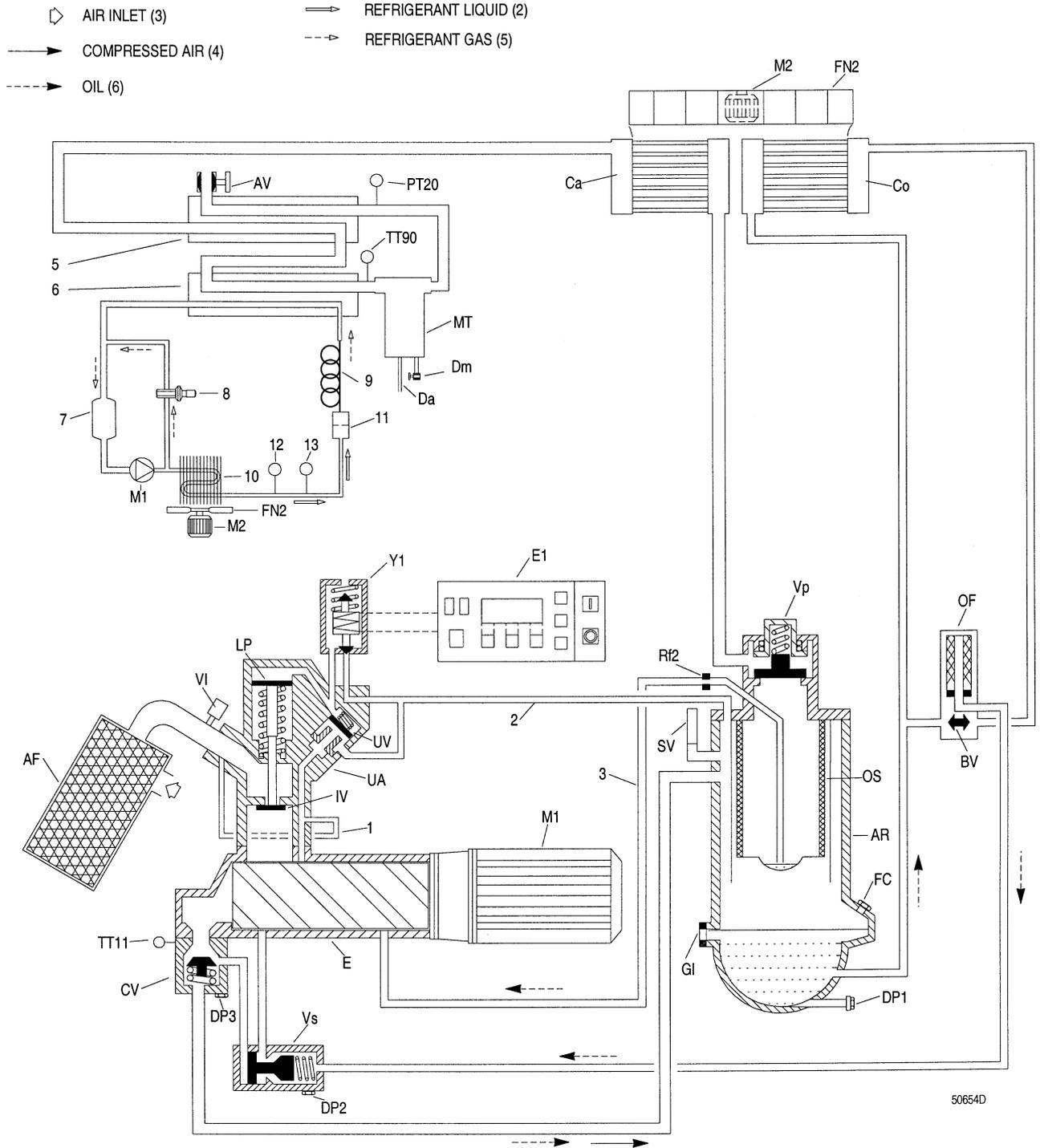


Fig. 1.5 GA Full-feature during unloading

WATER-COOLED PACK LOADED (9)

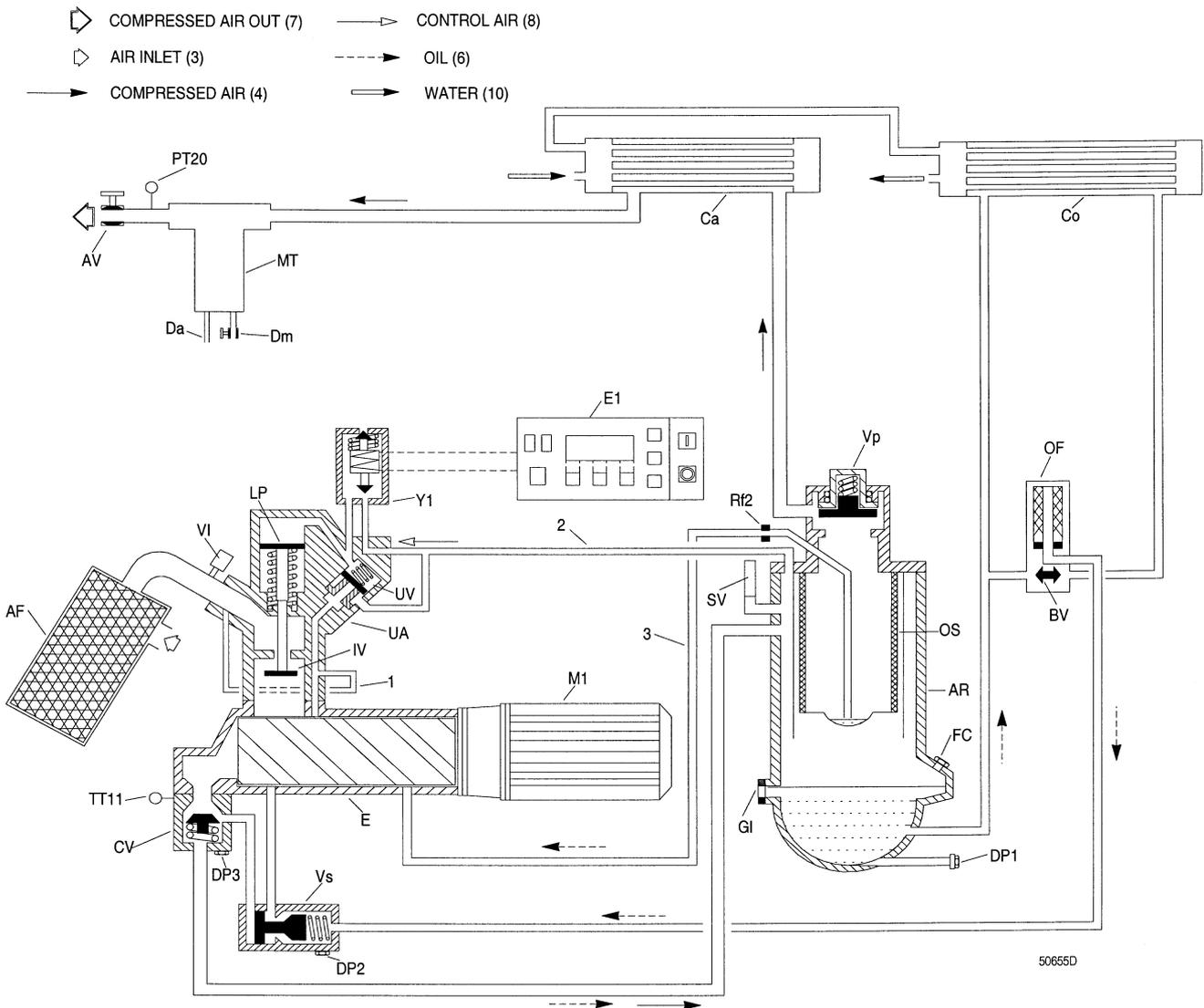


Fig. 1.6 GA W Pack during loading

AF	Air filter	MT	Air cooler moisture trap	On Full-feature also:	
AR	Air receiver/oil separator	M1	Drive motor	FN2	Fan, condenser
AV	Air outlet valve	M2	Motor, compressor fan	M1	Refrigerant compressor
BV	Oil cooler by-pass valve	OF	Oil filter	M2	Motor, condenser fan
Ca	Air cooler	OS	Oil separator element	TT90	Temperature sensor, dewpoint
Co	Oil cooler	PT20	Pressure sensor, air outlet	5	Air/air heat exchanger
CV	Check valve	Rf2	Restrictor	6	Air/refrigerant heat exchanger (evaporator)
Da	Automatic drain outlet, air cooler moisture trap	SV	Safety valve	7	Liquid separator
Dm	Manual drain valve, air cooler moisture trap	TT11	Temperature sensor, compressor element outlet	8	Hot gas by-pass valve
DP1	Oil drain plug, air receiver	UA	Unloader	9	Capillary tube
DP2	Oil drain plug, oil stop valve	UV	Unloading valve	10	Condenser
DP3	Oil drain plug, check valve	VI	Air filter service indicator	11	Filter
E	Compressor element	Vp	Minimum pressure valve	12	Condenser fan control switch
E1	Elektronikon regulator	Vs	Oil stop valve	13	High pressure shut-down switch
FC	Oil filler plug	Y1	Loading solenoid valve		
FN2	Fan, compressor coolers	1	Flexible, blow-off air or inlet air		
GI	Oil level gauge	2	Flexible, blow-off air or control air		
IV	Inlet valve	3	Flexible, oil scavenge		
LP	Loading plunger				

Figs. 1.5 and 1.6 Air-oil and unloading-loading systems

1.2 Unloading/loading system

1.2.1 Unloading (Fig. 1.5)

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 (Fig. 1.6)

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 for GA Pack / Full-feature

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

1.3.1 Regulator (E1-Fig. 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. 4) Take into account that a start command will be executed (if programmed and activated), even after manually stopping the compressor.

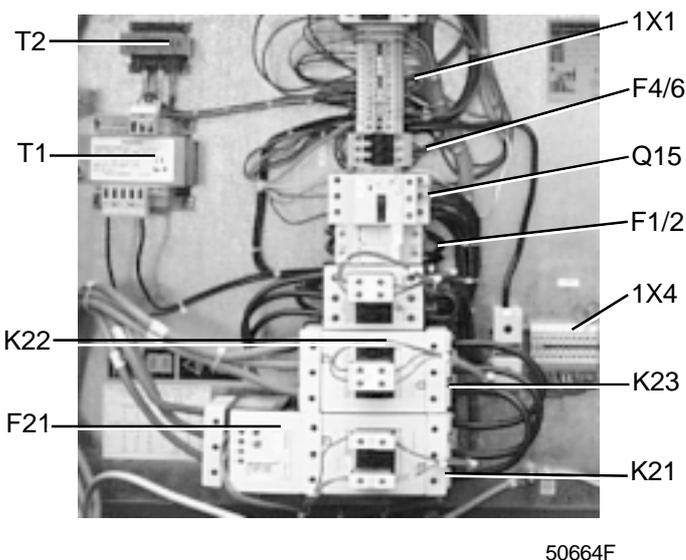
Protecting the compressor

Shut-down

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) or fan motor (M2). 5)

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.



See Fig. 1.8 for denomination of components

Fig. 1.7 Electric cabinet, GA Pack / Full-feature (typical example)

Monitoring components subject to service

The regulator continuously monitors the oil, oil filter, oil separator and air filter.

Service warning

Each input is compared to programmed limits. If these limits are exceeded, a message will appear on display (4-Fig. 1.9) to warn the operator to replace the indicated component.

SENSORS/SOLENOID VALVES/ ELECTRONIC DRAIN

B1	Electronically controlled condensate drain (type Bekomat 8)
PT20	Pressure sensor, air outlet
TT11	Temperature sensor, compressor element outlet
TT90	Temperature sensor, dewpoint 7)
Y1	Loading solenoid valve
Y2	Solenoid valve, modulating control 8)

MOTORS

M1	Drive motor
M2	Fan motor, compressor coolers 6)

ELECTRIC CABINET

F1/F10	Fuses
F21	Overload relay, drive motor
K11	Auxiliary contactor for dryer 7)
K21	Line contactor
K22	Star contactor
K23	Delta contactor
Q15	Circuit breaker, fan motor
T1/T2	Transformers
T3	Transformer
1X1/4	Terminal strips

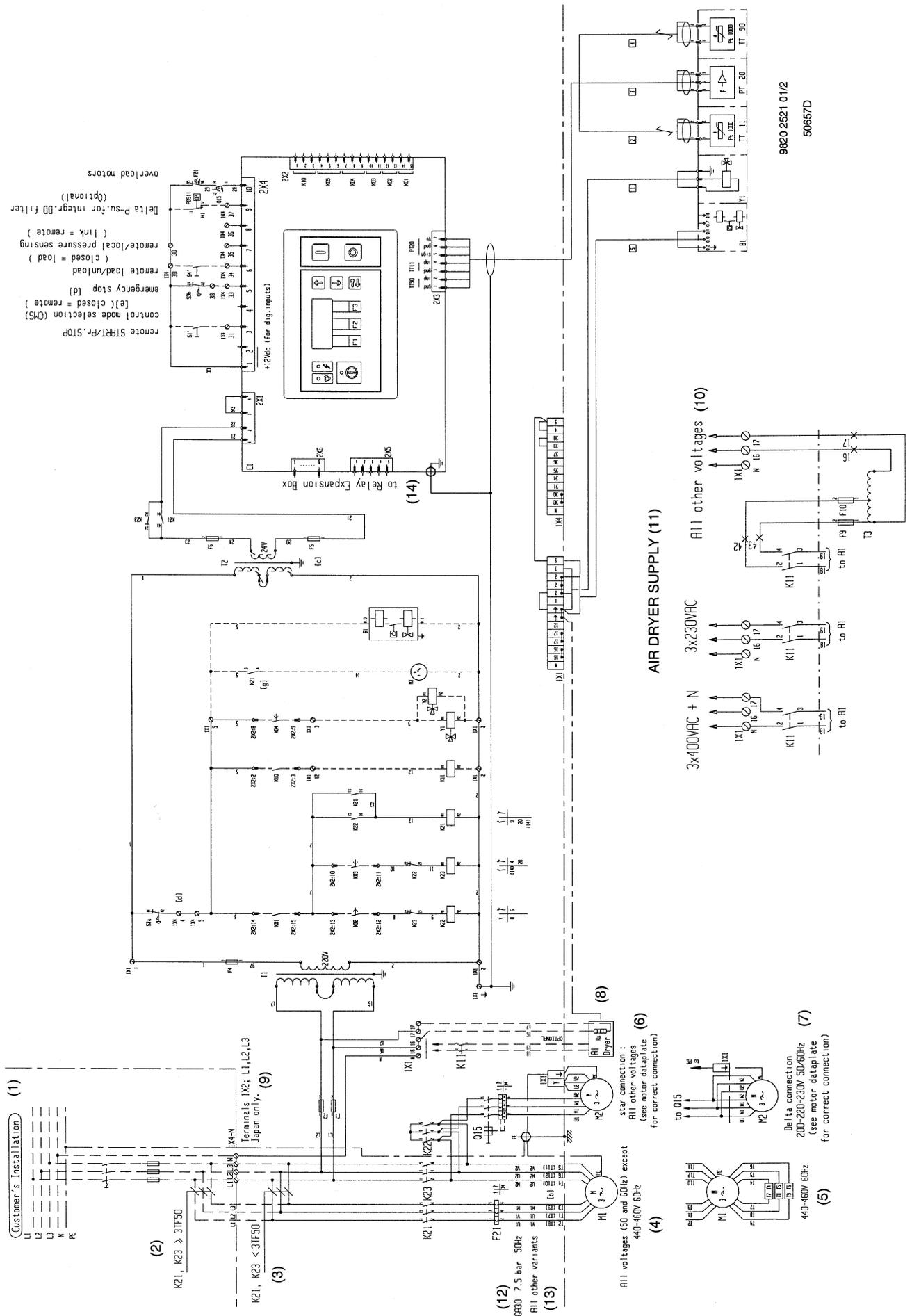
CONTROL MODULE (E1)

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 air pressure
K10	Auxiliary relay, dryer
O	Stop button
S3	Emergency stop button

DRYER ON FULL-FEATURE (A1)

Fig. 1.8 Electrical diagram, GA Pack / Full-feature 50 Hz with star-delta starter (typical example)



9820 2521 01/2
50657D

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.

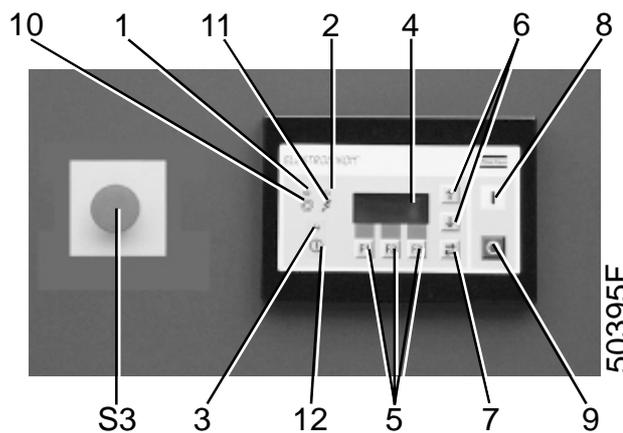


Fig. 1.9 Control panel, GA Pack / Full-feature

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 service warning or shut-down warning condition exists or if a sensor is out of order. Blinks if a shut-down condition exists, if a sensor 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 section 3.4 and the User manual for Elektronikon regulator, sections "Main display", "Main menu", "Status data submenu" and "Service submenu".
5	Function keys	Keys to control and program the compressor. See section 1.3.3.

Ref.	Designation	Function
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. See section 3.4.5.

Pictographs

- 10 Automatic operation
- 11 Voltage on
- 12 Alarm

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

1.3.3 Function keys (5-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)
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 the 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.

Program/Function	Description
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.

Compressor temperature shut-down switch (TSHH11)

The switch prevents damage resulting from too high a temperature at the outlet of the compressor element. See section 5.6.

Motor overload relay (F21)

The relay prevents damage resulting from too high a motor current.

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.

1.4 Regulator for GA Standard Pack

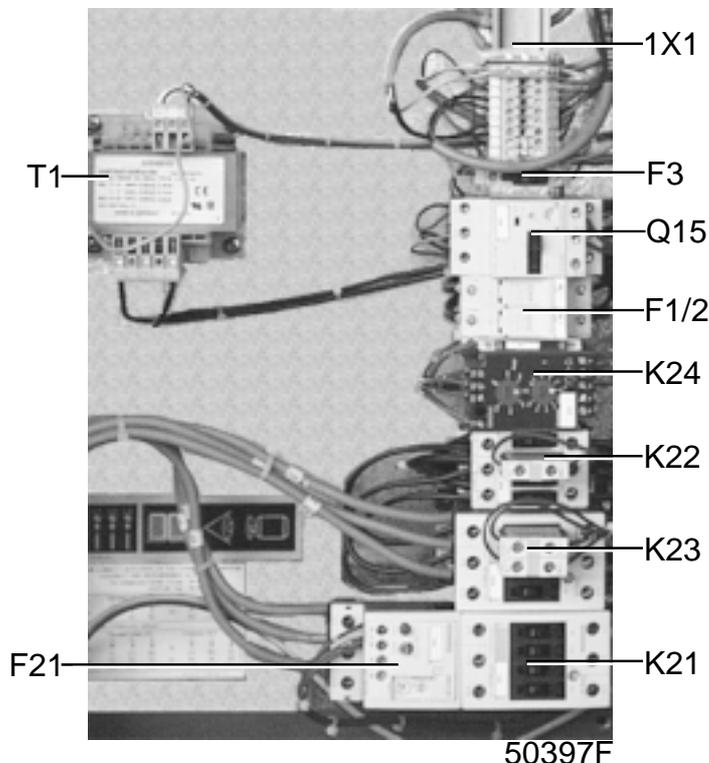
1.4.1 Regulator (Fig. 1.13)

The regulator loads, unloads, stops and restarts the compressor according to the air consumption, and protects the compressor and motor from overloads. The unloading and loading pressures are the opening and closing pressures respectively of switch (PSR19). See section 5.5.

Star/delta switch-over / Delayed motor stopping

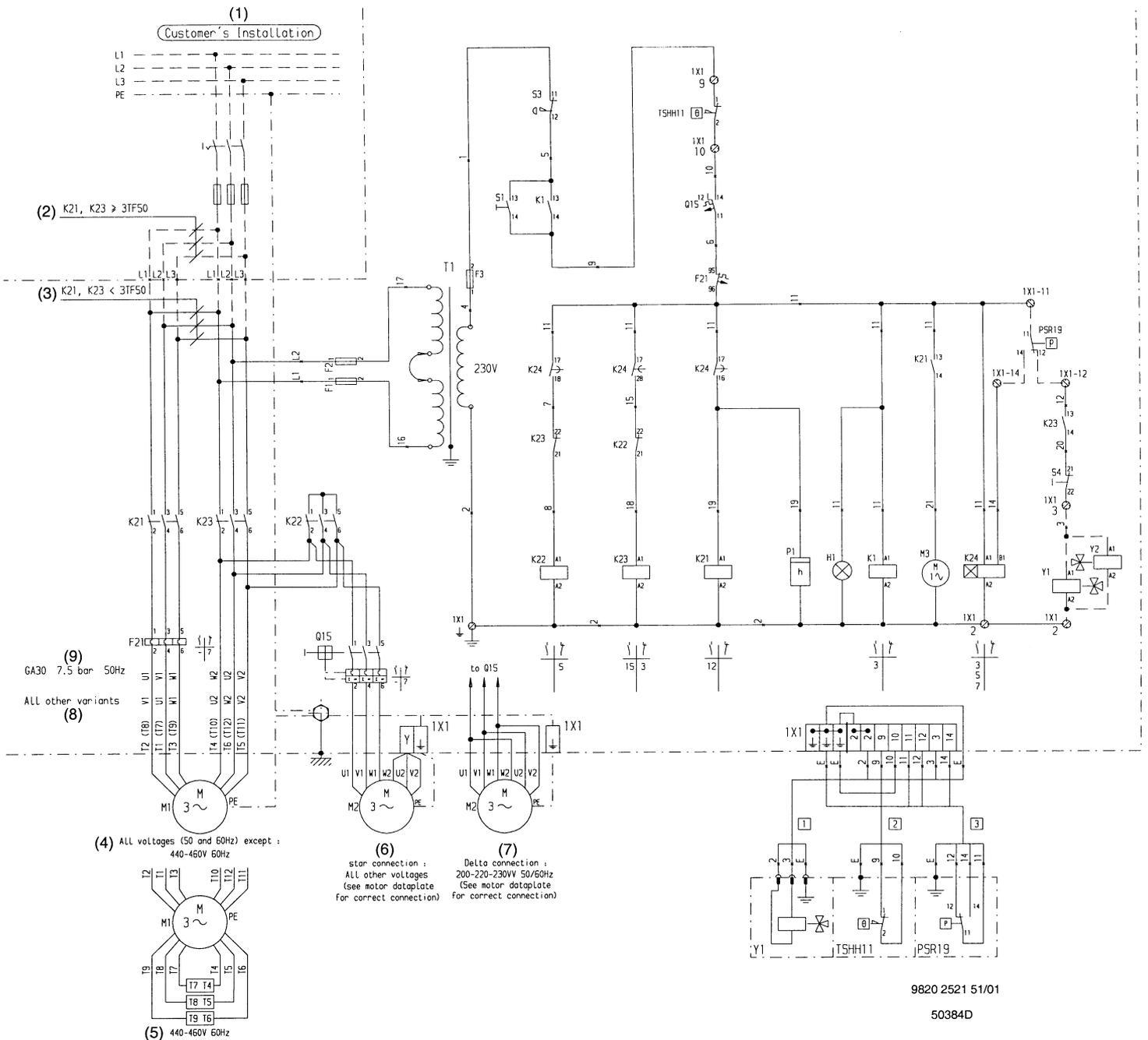
A time relay (K24) is provided:

- for delayed motor stopping: the frequency of automatic motor starts is limited by stopping the motor only after a set time of 5 minutes of uninterrupted unloaded operation; if the net pressure drops to the loading pressure within the set unloading time, the compressor will be loaded without stopping
- to switch over from star to delta connection 10 seconds after starting



See Fig. 1.13 for denomination of components

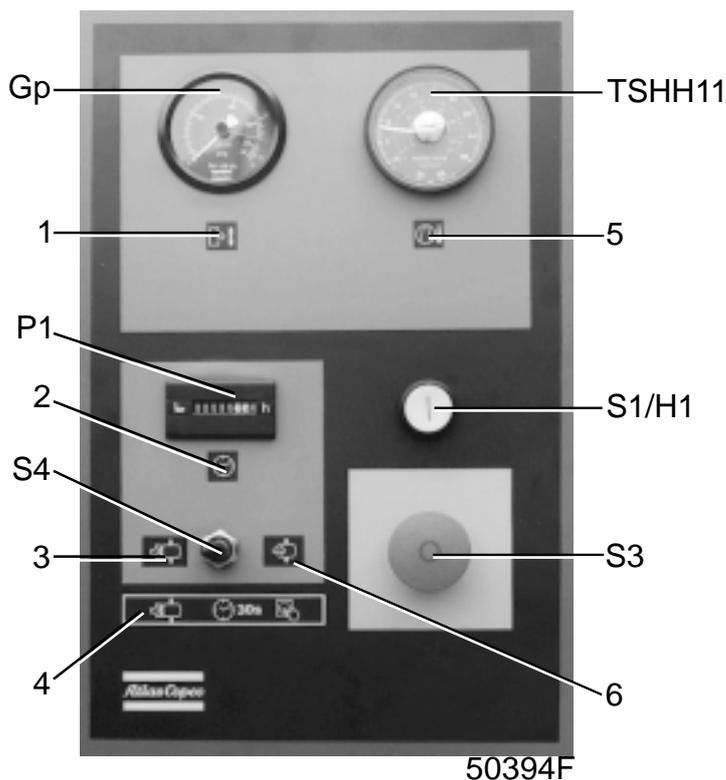
Fig. 1.12 Electric cabinet, GA Standard Pack (typical example)



F1/3	Fuses	M2	Fan motor, compressor coolers 5)	S4	Switch to load or unload compressor
F21	Overload relay, drive motor	PSR19	Load/unload pressure switch	TSHH11	Gauge, indicating temperature at outlet of compressor element combined with shut-down switch
H1	Automatic operation lamp	P1	Hourmeter indicating total motor running time	T1	Transformer
K1	Blocking relay	Q15	Circuit breaker, fan motor	Y1	Loading solenoid valve
K21	Line contactor	S1	Start button	Y2	Solenoid valve, modulating control 8)
K22	Star contactor	S3	Button to stop compressor after 30 seconds unloading or to stop it immediately (emergency)	1X1	Terminal strip
K23	Delta contactor				
K24	Time relay for star/delta switch-over (10 seconds) and for delayed motor stopping (5 min)				
M1	Drive motor				

Fig. 1.13 Electrical diagram, GA Standard Pack 50 Hz with star-delta starter (typical example)

1.4.2 Control panel (Fig. 1.14)



Gp	Gauge indicating the working pressure
H1	Lamp, automatic operation
P1	Hourmeter indicating the total motor running time
S1	Push button to start the compressor
S3	Push button:
	- to stop the compressor after a period of 30 seconds unloaded running
	- to stop the compressor immediately in case of emergency
S4	Toggle switch to unload or load the compressor
TSHH11	Gauge/switch, indicating the temperature at the outlet of the compressor element as well as the shut-down temperature; the regulator then stops the compressor

Pictographs

1	Working pressure
2	Running hours
3	Compressor unloaded
4	Unload compressor, wait 30 seconds, then press stop button
5	Outlet temperature of compressor element
6	Compressor loaded

Fig. 1.14 Control panel, GA Standard Pack

1.5 Air dryer on GA Full-feature (Fig. 1.5)

GA Full-feature are provided with a dryer which removes moisture from compressed air.

1.5.1 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 withdrawing 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 moisture trap (MT) which separates condensate from the air. The condensate is automatically drained through outlet (Da). The cold, dried air then flows through heat exchanger (5), where it is warmed up by the incoming air.

1.5.2 Refrigerant circuit

Compressor (M1) delivers high-pressure refrigerant gas which flows through condenser (10) where most of the refrigerant condenses. The liquid flows through filter (11) to capillary tube (9). The refrigerant leaves the capillary tube at evaporating pressure.

The refrigerant enters evaporator (6) where it withdraws heat from the compressed air by further evaporation. The heated refrigerant leaves the evaporator and is sucked in by compressor (M1).

Footnotes chapter 1

- 1) As an alternative, Atlas Copco offers compressors with variable speed drive (GA50 VSD and GA90 VSD) which have a high-efficient regulating system maintaining the pressure within a very small pressure band.
- 2) The valve starts opening at 65 degrees celsius and is fully open at 80 degrees celsius for 13 bar and 175 psi compressors. See also section 1.1.2.
- 3) Available as an option for GA Standard Pack.
- 4) See User manual for Elektronikon regulator, section "Timer submenu".
- 5) Air-cooled compressors only.
- 6) Only for air-cooled compressors.
- 7) Only for Full-feature compressors.
- 8) Available as an option.

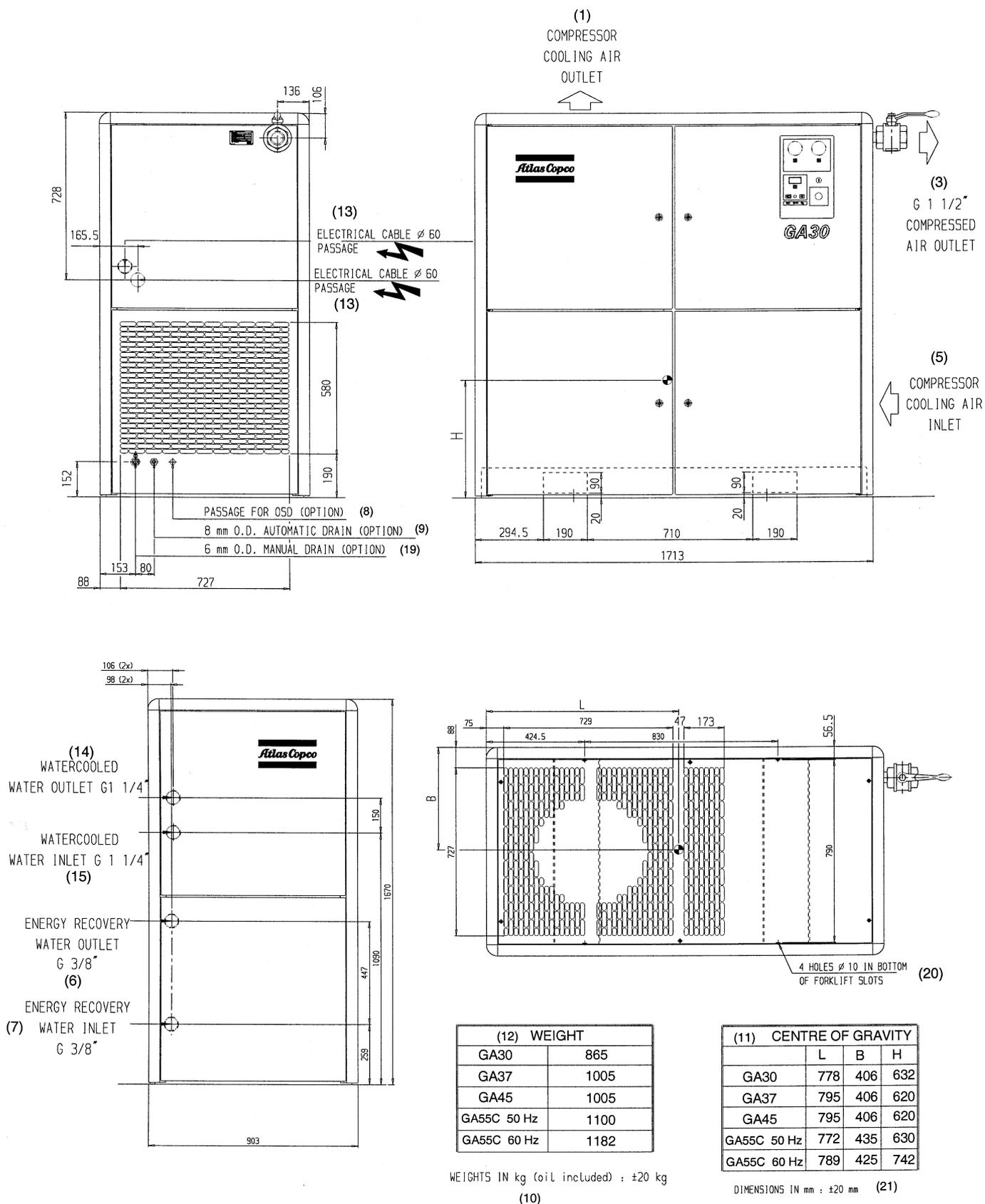
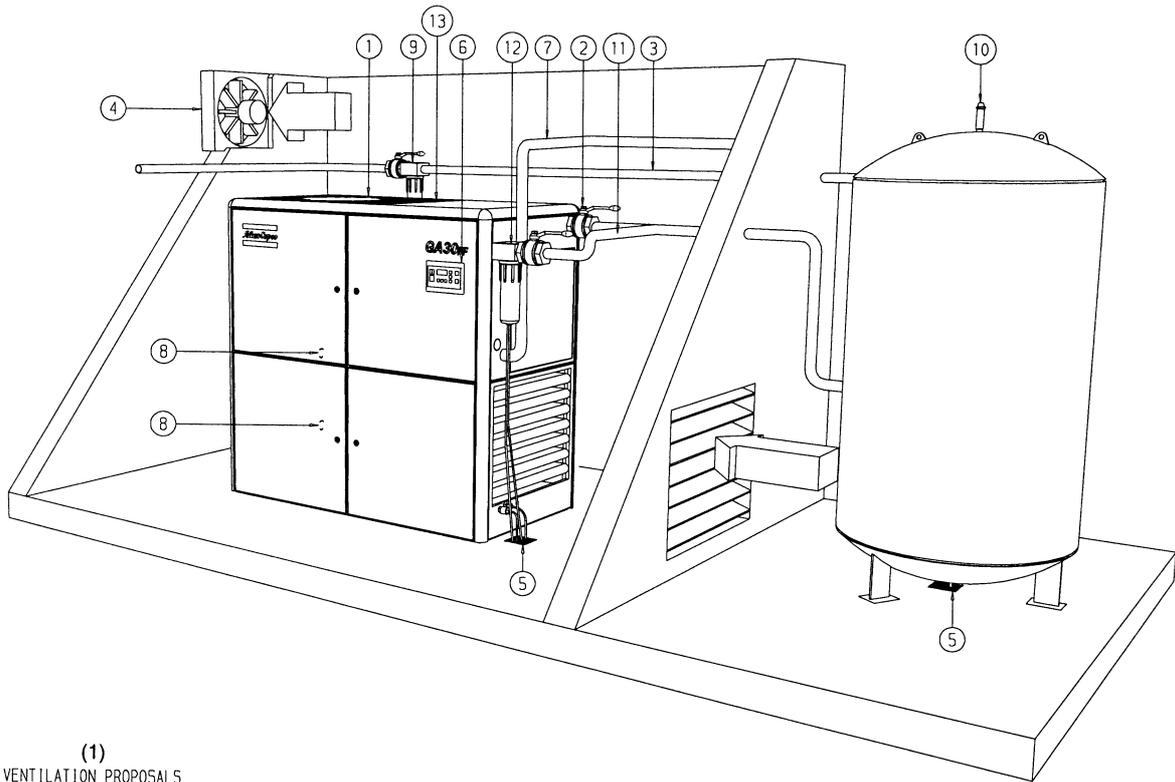


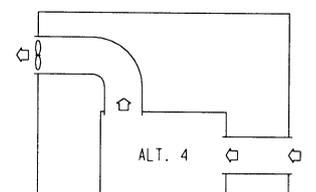
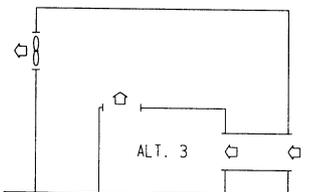
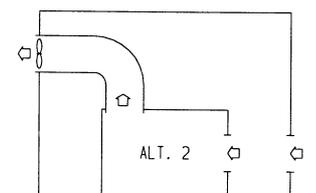
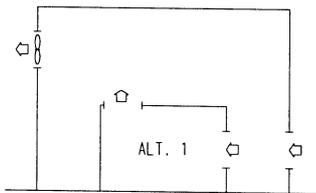
Fig. 2.2 Dimension drawing, GA Standard Pack

2.2 Installation proposals (Figs. 2.3 and 2.4)

Ref.	Description/recommendation	Ref.	Description/recommendation
1	Install the compressor on a solid, level floor suitable for taking the weight.	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 oil from condensate to ensure that the condensate meets the requirements of the environmental codes.
2	Position of the compressed air outlet valve.	6	Position of the control panel.
3	The pressure drop over the delivery pipe can be calculated as follows: $dp = (L \times 450 \times Qc^{1.85}) / (d^5 \times P)$ $dp = \text{pressure drop (recommended maximum = 0.1 bar)}$ $L = \text{length of delivery pipe in m}$ $d = \text{inner diameter of the delivery pipe in mm}$ $P = \text{absolute pressure at the compressor outlet in bar(a)}$ $Qc = \text{free air delivery of the compressor in l/s}$ <p>It is recommended that the connection of the compressor air delivery pipe is made on top of the main air net pipe to minimize carry-over of possible remainder of condensate.</p>	7	Position of the mains cable.
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 30 Pa. If exceeding this value, a fan is needed at the outlet of the ducts. Consult Atlas Copco. - For alternatives 1 and 3, the required ventilation capacity to limit the compressor room temperature can be calculated as follows: $Qv = 1.06 N / dT \text{ for GA Pack air-cooled}$ $Qv = (1.06 N + 4) / dT \text{ for GA Full-feature air-cooled}$ $Qv = 0.13 N / dT \text{ for GA Pack water-cooled}$ $Qv = (0.13 N + 4) / dT \text{ for GA Full-feature water-cooled}$ $Qv = \text{required ventilation capacity in m}^3/\text{s}$ $N = \text{nominal motor power of compressor in kW}$ $dT = \text{temperature increase in compressor room}$ <p>- 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.</p>	8	Provision for the inlet and outlet of the optional energy recovery system.
		9	Filter, type DD, for general purpose filtration (optional). The filter traps solid particles down to 1 micron with a 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 a 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. It is recommended to provide by-pass pipes and valves over the filters to isolate the filters during maintenance without disturbing the compressor.
		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: $V = (0.25 \times Qc \times P1 \times To) / (fmax \times dP \times T1)$ $V = \text{volume of air net in l}$ $Qc = \text{free air delivery of compressor in l/s}$ $P1 = \text{compressor air inlet pressure in bar absolute}$ $fmax = \text{cycle frequency} = 1 \text{ cycle}/30 \text{ s}$ $dP = \text{Punload} - \text{Pload in bar}$ $T1 = \text{compressor air inlet temperature in K}$ $To = \text{air receiver temperature in K}$
		By-pass system for compressors with dryer (optional)	
		11	Dryer by-pass pipe.
		12	Condensate trap.
		For water-cooled compressors (Fig. 2.4)	
		13	Position of cooling water pipes.



(1)
VENTILATION PROPOSALS



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50382D

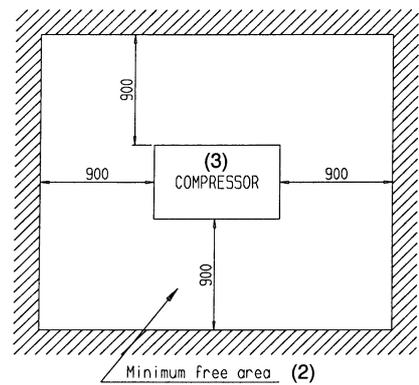


Fig. 2.3 Installation proposal, GA

2.3 Electric cable size

Attention

- Local regulations remain applicable if they are stricter than the values proposed below.

- The voltage drop must not exceed 5 % of the nominal voltage. It may be necessary to use cables with a larger section than those stated to comply with this requirement.
- The values below apply to Full-feature compressors.

Compressor type	Voltage (V)	Frequency (Hz)	Cable size (mm ²)	Cable size (mm ²)	Cable size (AWG)
GA30/W	230	50	70	2 x 35	-
GA30/W	400	50	35	-	-
GA30/W	500	50	25	-	-
GA37/W	230	50	70	2 x 50	-
GA37/W	400	50	50	-	-
GA37/W	500	50	35	-	-
GA45/W	230	50	95	2 x 50	-
GA45/W	400	50	50	-	-
GA45/W	500	50	50	-	-
GA55C	230	50	-	2 x 70	-
GA55C	400	50	70	-	-
GA55C	500	50	50	-	-
GA30/W	220-230	60	70	2 x 50	AWG00
GA30/W	380	60	50	-	-
GA30/W	440-460	60	35	-	AWG3
GA30/W	575	60	-	-	AWG4
GA37/W	220-230	60	95	2 x 50	2 x AWG2
GA37/W	380	60	50	-	-
GA37/W	440-460	60	50	-	AWG1
GA37/W	575	60	-	-	AWG3
GA45/W	220-230	60	2 x 50	-	2 X AWG0
GA45/W	380	60	50	-	-
GA45/W	440-460	60	50	-	AWG0
GA45/W	575	60	-	-	AWG1
GA55C	220/230	60	2 x 50	-	2 X AWG00
GA55C	440/460	60	50	-	AWG0
GA55C	575	60	-	-	AWG1

2.4 Electrical connections

General

- Provide an isolating switch.
- Check the fuses and the setting of the overload relay. See section 7.2.
- For motor contactors K21 and K23 lower than 3TF50, connect the power supply cables to terminals 1, 3 and 5 of contactor K21 (see Figs. 1.7, 1.8, 1.12 and 1.13).

- For motor contactors K21 and K23 higher than or equal to 3TF50, connect power supply cables to terminals 1, 3 and 5 of contactor K21 and to terminals 1, 3 and 5 of contactor K23 (see Figs. 1.7, 1.8, 1.12 and 1.13).
- Connect the earth conductor to earth bolt (PE) and the neutral conductor (if provided) to connector (N).

On GA Full-feature (Fig. 1.8):

The voltage supply to the dryer must be 230 V single-phase. The voltage to the dryer is supplied over the contacts of relay

(K11), which close when the compressor is started. For compressor supply voltages different from 3 x 400 V plus neutral or 3 x 230 V, the power to the dryer is supplied by a transformer.

2.5 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	Recirculating system	Pass-through system
Chloride (Cl ⁻)	lower than 600 mg/l	lower than 150 mg/l
Sulphate (SO ₄ ⁻)	lower than 400 mg/l	lower than 250 mg/l
Total solids	lower than 3000 mg/l	lower than 750 mg/l
Suspended solids (as SiO ₂)	lower than 10 mg/l	lower than 10 mg/l
Free chlorine (Cl ₂)	lower than 4 mg/l	lower than 2 mg/l
Ammonia (NH ₄ ⁺)	lower than 0.5 mg/l	lower than 0.5 mg/l
Copper	lower than 0.5 mg/l	lower than 0.5 mg/l
Iron	lower than 0.2 mg/l	lower than 0.2 mg/l
Manganese	lower than 0.1 mg/l	lower than 0.1 mg/l
Oxygen	lower than 3 mg/l	lower than 3 mg/l
Carbonate hardness (as CaCO ₃)	50-1000 mg/l	50-500 mg/l
Organics (KMnO ₄ Consumption)	lower than 25 mg/l	lower than 10 mg/l

No algae
No oil

Remark

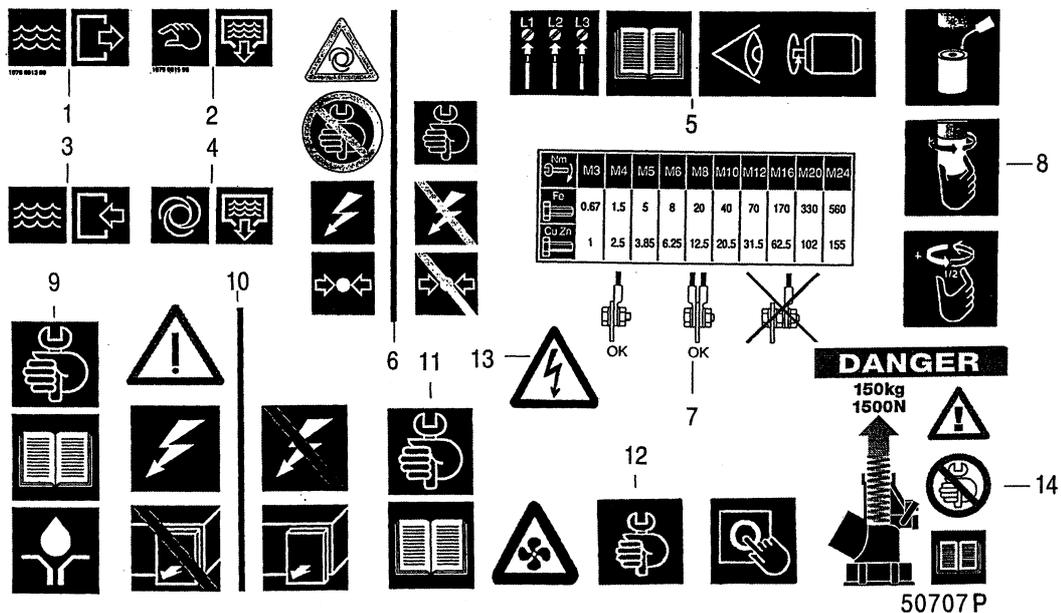
Chloride and sulphate are interactive. In pass-through systems the sum of the squares must not exceed 85,000. For recirculating systems with proper controls and treatment, the sum of the squares may be up to 520,000. Note that the sulphate value must include any sulphite present.

2.6 Pictographs (Fig. 2.5)

Read the warnings attentively and act accordingly.

- 1 Water outlet
- 2 Manual condensate drain
- 3 Water inlet
- 4 Automatic condensate drain
- 5 Warning: before connecting compressor electrically, consult Instruction book for motor rotation direction
- 6 Warning: 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 Warning: switch off voltage before removing protecting cover inside electric cubicle
- 11 Consult Instruction book before carrying out maintenance
- 12 Warning: stop compressor before repairing fans
- 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. 2.5 Pictographs (typical examples)



3 Operating instructions

3.1 Before 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 compressors" 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.

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 for GA Pack/Full-feature

A relay box for external compressor status indication is available as option. It can be connected to the electronic control module (see Fig. 1.8).

The following indications can be indicated by means of relays:

- Manual load/unload or automatic operation
- Warning condition
- Shut-down condition

Attention

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

3.1.6 Remote control for GA Pack / Full-feature

Attention

Stop the compressor and switch off the voltage before

connecting external equipment. Only voltage-free contacts are allowed. Have the modifications checked by Atlas Copco.

Remote control

For remote control of the compressor, bridge terminals 2 and 4 of connector (2X4) located at the back side of the electronic module (E1-Fig. 1.1).

Remote starting and stopping:

- connect a start/programmed stop button between terminals 30 and 31 of terminal strip (1X4-Fig. 1.7).
- bridge terminals 30 and 34 of strip (1X4): in this mode, the outlet pressure is still sensed by pressure transducer (PT20), 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).

Remote loading/unloading (via external pressure switch):

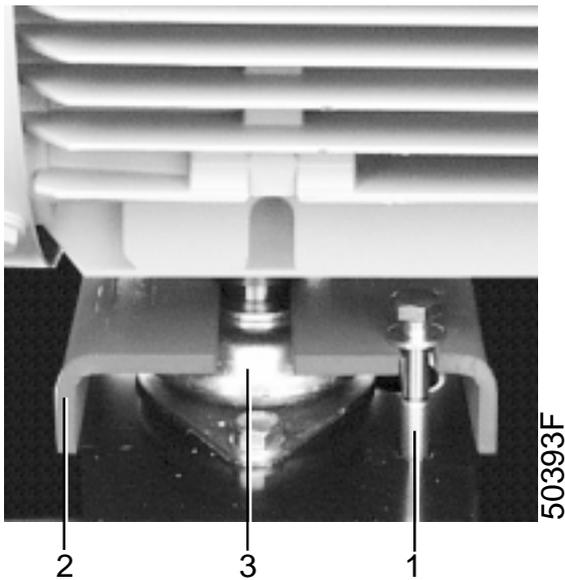
- bridge terminals 30 and 35 of strip (1X4-Fig. 1.7)
- connect a load/unload switch between terminals 30 and 34 of strip (1X4): this results in loading and unloading of the compressor at the closing and opening pressures of the external pressure switch respectively.

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.

3.2 Initial start-up

1. Following transport fixations, painted red, must be removed:
 - spacers (3-Fig. 3.2) from both gear casing supports
 - spacers (1-Fig. 3.2) from both air receiver supports
 - support (2-Fig. 3.1)
 - on Full-feature units, the spacers underneath transformer (T3-Fig. 1.8) (if provided)
2. Check that the electrical connections correspond to the local codes and that all wires are clamped tight to their terminals. The installation must be earthed and protected against short circuits by fuses of the inert type in all phases. An isolating switch must be installed near the compressor.
3. Check transformer (T1-Fig. 1.7) for correct connection, the settings of drive motor overload relay (F21) and fan motor circuit breaker (Q15) 1, and that overload relay (F21) is set for automatic resetting.
4. Fit air outlet valve (AV-Figs. 1.2 and 3.3). Close the valve. Connect the air net to the valve.
5. Connect the manual condensate drain valve (Dm-Fig. 1.4). Close the valve. Connect the valve to a drain collector. See Figs. 2.3, 2.4 and 3.4.



- 1 Transport bolt, to be removed
- 2 Transport support, to be removed
- 3 Vibration damper

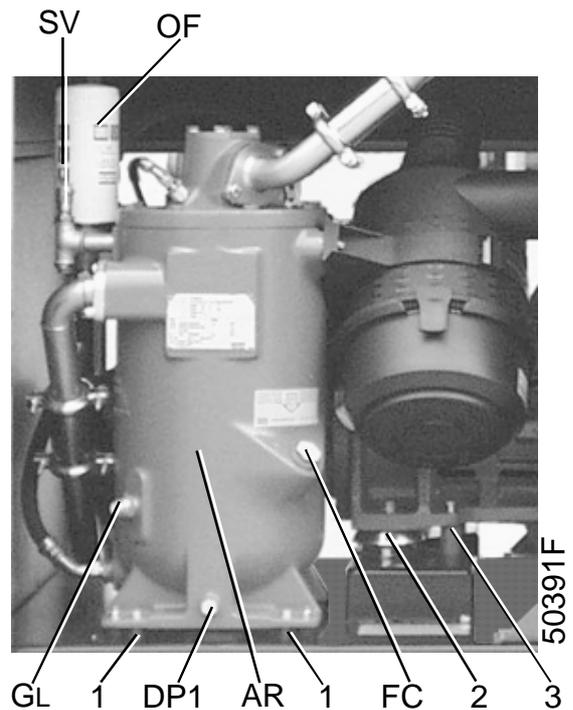
Fig. 3.1 Transport fixations, motor side

- 6. Connect the automatic drain outlet (Da-Fig. 1.4) to a drain collector. See Figs. 2.3, 2.4 and 3.4.
- 7. On water-cooled compressors, drain valves, shut-off valves and a regulating valve should be fitted by the customer in the cooling water piping.
- 8. Check the oil level. The pointer of level gauge (Gl-Fig. 3.2) should register in the green or orange range. Bottle (4-Fig. 3.4) with Atlas Copco Roto-injectfluid can be used for topping up. See also section 4.3.
- 9. A label dealing in short with the operating instructions and explaining the pictographs is delivered with the literature set. Affix it next to the control panel. Make yourself familiar with the instructions and pictographs explained, as well as with those mentioned in section 2.6.
- 10. Provide labels, warning the operator that:
 - the compressor automatically restarts after voltage failure (GA Pack/Full-feature, see section 1.3.1)
 - the compressor is automatically controlled and may be restarted (for GA Pack/Full-feature even after manually stopping, see section 1.3.1)

- 11. Switch on the voltage. Start the compressor and stop it immediately. Check the rotation direction of the drive motor (M1-Figs. 1.1 and 1.2) and fan motor (M2-Fig. 1.1) (on air-cooled compressors) while the motor is coasting to a stop.

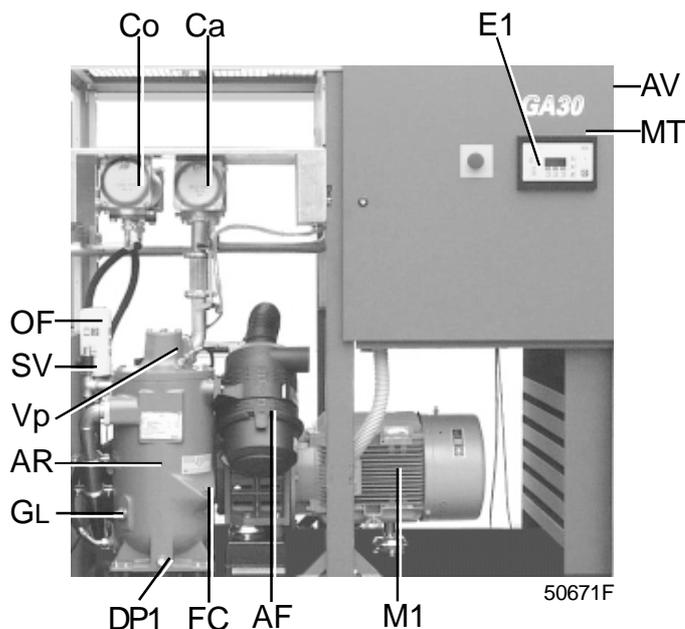
The correct rotation direction of the drive motor is indicated by an arrow provided on the gear casing. If the rotation direction is wrong, switch off the voltage and reverse two incoming electric lines.

Rotation arrows, visible through the grating in the roof, are provided on the plate below the fan to indicate the correct rotation direction of the fan motor. If necessary, switch off the voltage and reverse two incoming electric connections at the terminals of circuit breaker (Q15-Fig. 1.7).
- 12. Check the programmed settings. 2)
- 13. Start and run the compressor for a few minutes. Check that the compressor operates normally.



- AR Air receiver/oil separator
- DP1 Oil drain plug
- FC Oil filler plug
- Gl Oil level gauge
- OF Oil filter
- SV Safety valve
- 1 Transport spacer, to be removed
- 2 Vibration damper
- 3 Transport spacer, to be removed

Fig. 3.2 Oil system components and transport fixations



AF	Air filter	FC	Oil filler plug
AR	Air receiver/oil separator	GL	Oil level gauge
AV	Air outlet valve	MT	Air cooler moisture trap
Ca	Air cooler	M1	Drive motor
Co	Oil cooler	OF	Oil filter
DP1	Oil drain plug, oil separator	SV	Safety valve
E1	Elektronikon regulator	Vp	Minimum pressure valve

Fig. 3.3 GA30 W Pack

3. If the red part of service indicator (VI-Fig. 5.4) shows full out, replace air filter element (AF). Reset the service indicator by pushing the knob in the extremity of the body and reset the service warning 3).

On water-cooled compressors also:

4. Check that the cooling water drain valves in the inlet and outlet pipes are closed.
5. Open the cooling water inlet valve.
6. Open the water flow regulating valve. This step can be overlooked if, after previous operation, the setting of this valve has not been disturbed.

3.4 For GA Pack / Full-feature

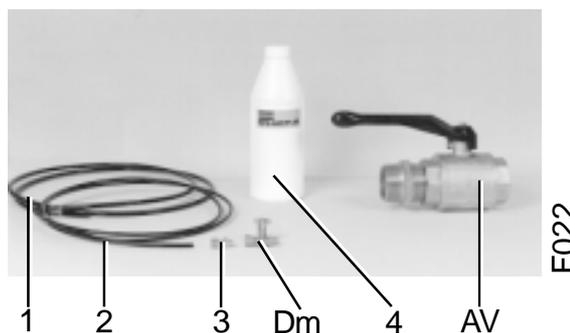
3.4.1 Starting (Fig. 1.9)

1. Switch on the voltage. Check that voltage on LED (2) lights up. The message <<Compressor off>> appears.
2. Open air outlet valve (AV-Figs. 1.2 and 3.3).
3. Close condensate drain valve (Dm-Fig. 1.4).
4. Press start button (8). The compressor starts running and automatic operation LED (1) lights up. Ten seconds **4**) after starting, the drive motor switches over from star to delta. At the same time **4**) the compressor starts running loaded. The message on display (4) changes from <<Auto unloaded>> to <<Auto loaded>>.

3.3 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: Remove bolts (2-Fig. 5.4), lift unloader (UA) and pour 3/4 l of oil into the compressor element. Reinstall the unloader. Make sure that all connections are tight.

1. Check the oil level (Gl-Fig. 3.2). The pointer should register in the upper field of the green range or in the orange range. If the pointer registers in the red range (low range), depressurize the oil system by unscrewing oil filler plug (FC) one turn. Remove the plug and add oil until the level reaches the filler opening. Fit and tighten the plug.
2. If necessary, empty the dust trap of air filter (AF-Figs. 1.1 and 3.3).



AV	Air outlet valve
Dm	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 (Dm)
4	Bottle containing Atlas Copco Roto-injectfluid

Fig. 3.4 Components delivered with the compressor (typical examples)

For 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. 3.5. For optimum operation, the cooling water outlet temperature must never exceed the value specified in section 7.5. Consult Atlas Copco if condensate should be formed during frequent unloading periods.

3.4.2 During operation

1. Check the oil level **during loaded operation**: the pointer of level gauge (Gl-Fig. 3.2) must register in the green range; if not, press stop button (9-Fig. 1.9), wait until the compressor has stopped, depressurize the oil system (by unscrewing oil filler plug FC-Fig. 3.2 one turn) and wait a few minutes. Remove the plug and add oil until the level reaches the filler opening. Fit and tighten the plug.
2. If the red part of service indicator (VI-Fig. 5.4) shows full out, stop the compressor and replace air filter element (AF). Reset the service indicator by pushing the knob in the extremity of the body and reset the service warning **3**.
3. When 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.

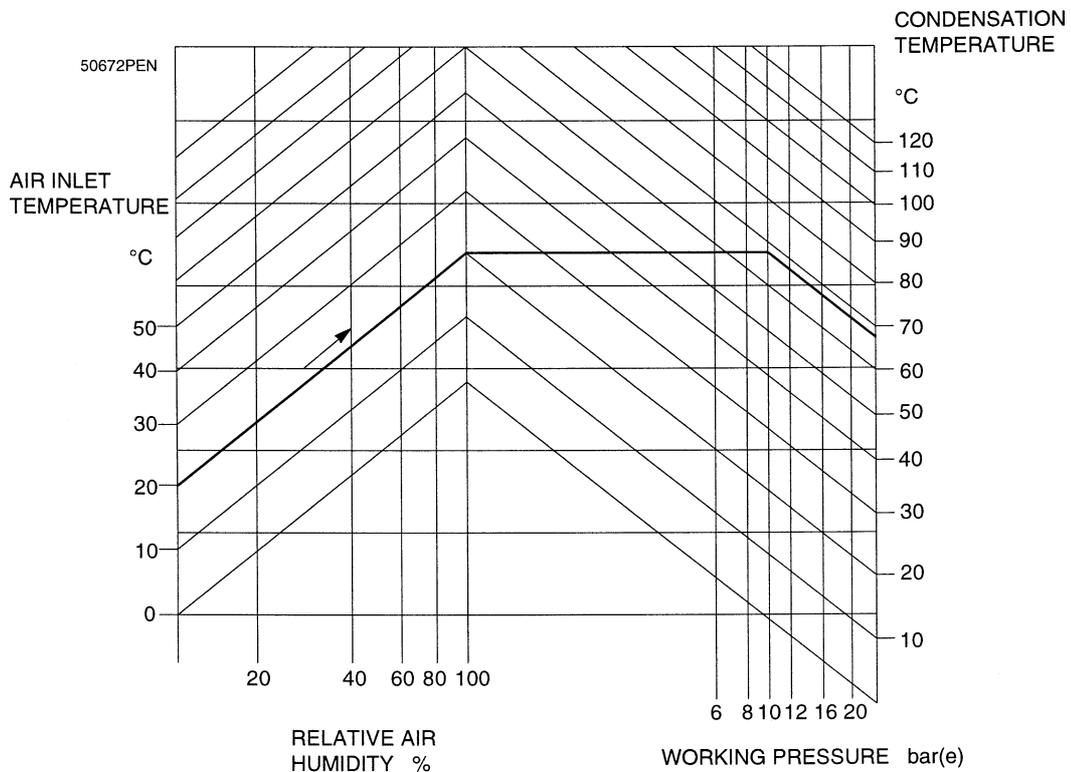
3.4.3 Checking the display

1. Regularly check 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 display (4-Fig. 1.9) and remedy the trouble if alarm LED (3) is alight or blinks. Consult section 1.3.2.
3. The display (4-Fig. 1.9) will show a service message if one of the monitored components is to be serviced; stop the compressor, replace the component and reset the relevant timer. **5**)

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 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.



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. 3.5 Minimum compressor element outlet temperature for water-cooled compressors

4. Regularly press key <<More>> (5-Fig. 1.9) **7**) 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) **6**)
 - the maximum allowable unloading pressure
 - the outlet pressure
 - the compressor element outlet temperature
 - the dewpoint temperature **8**)
 - the status of the overload protection of both the drive motor and fan motor **9**) (normal or not)
 - the total running and loading hours

3.4.4 Manual control (Fig. 1.9) **10**

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.

If required, the compressor can be unloaded manually. In this case, the compressor is switched out of automatic operation: 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: 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 5 minutes after the last stop.

3.4.5 Stopping (Fig. 1.9)

1. Press stop button (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). Alarm LED (3) blinks. After remedying the fault, unlock the button by pulling it out 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- Figs. 1.2 and 3.3) and switch off the voltage.
4. Open condensate drain valve (Dm-Fig. 1.4).

On water-cooled compressors only

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

3.5 For GA Standard Pack

3.5.1 Starting (Fig. 1.14)

1. Switch on the voltage.
2. Open the air outlet valve.
3. If installed, close the condensate drain valve. **11**)
4. Check that push button (S3) is unlocked (pulled out) and that toggle switch (S4) is moved to the left (unloaded) position.
5. Press start button (S1). The compressor starts running and lamp (H1) lights up.
6. Move switch (S4) to the right to load the compressor.

For water-cooled compressors also:

7. 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. 3.5. For optimum operation, the cooling water outlet temperature must never exceed the value specified in section 7.5. Consult Atlas Copco if condensate should be formed during frequent unloading periods.

3.5.2 During operation

1. Check the oil level **during loaded operation**: the pointer of level gauge (G1-Fig. 3.2) must register in the green range; if not, move switch (S4) to the left, wait 30 seconds and then press stop button (S3). Depressurize the oil system by unscrewing oil filler plug (FC-Fig. 3.2) one turn and wait a few minutes. Remove the plug and add oil until the level reaches the filler opening. Fit and tighten the plug. Pull out button (S3).
2. If the red part of service indicator (VI-Fig. 5.4) shows full out, replace air filter element (AF). Reset the service indicator by pushing the knob in the extremity of the body.
3. When automatic operation lamp (H1) is alight, the regulator is automatically controlling the compressor, i.e. loading, unloading, stopping of the motors and restarting.

3.5.3 Stopping

1. Move switch (S4) to the left to unload the compressor and wait 30 seconds.
2. Press stop button (S3). After stopping, unlock the button by pulling it out.
3. **To stop the compressor in case of emergency**, press button (S3). Before restarting, unlock the button by pulling it out.
4. Close the air outlet valve and switch off the voltage.
5. If installed, open the condensate drain valve. **11**)

On water-cooled compressors only

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

3.6 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 by opening plug (FC-Fig. 3.2) one turn and by opening valve (Dm-Fig. 1.4).
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. **12)**
6. Drain the oil, water **12)** and condensate circuits.
7. Disconnect the condensate piping from the condensate net.

Footnotes chapter 3

- 1) On water-cooled units, circuit breaker (Q15) is installed but not in operation. Check that the switch on the circuit breaker is in position "I".
- 2) Consult the User manual for the Elektronikon regulator.
- 3) For GA Pack/full-feature: Using key <<Rset>> in submenu "Service". See User manual for Elektronikon regulator, section "Service submenu".
- 4) Programmable.
- 5) Using key <<Rset>>: see User manual for Elektronikon regulator, section "Service submenu".
- 6) The compressor is automatically started and stopped if these start/stop commands are programmed and activated; consult section 1.3.1.
- 7) 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>>.
- 8) For Full-feature compressors.
- 9) For air-cooled compressors.
- 10) 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>>.
- 11) A condensate drain system is available as option.
- 12) For water-cooled compressors.

4 Maintenance

Attention

1. Apply all relevant safety precautions, including those mentioned in this book.
2. Read section 2.6 to familiarize yourself with all warning labels and pictographs.
3. Before carrying out any maintenance or repair on the compressor:
 - **For GA Pack/Full-feature**, 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.
 - **For GA Standard Pack**, move switch (S4-Fig. 1.14) to the left, wait 30 seconds, press stop button (S3) and switch off the voltage.
 - Close air outlet valve (AV-Figs. 1.2 and 3.3) and depressurize by opening plug (FC-Fig. 3.2) one turn and by opening valve (Dm-Fig. 1.4).
4. The air outlet valve (AV-Figs. 1.2 and 3.3) 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- Figs. 1.1 and 1.2)

Attention

Never mix greases of different brands or types.

The bearings must be regreased each 4000 operating hours. The lubrication points are marked.

For GA30-45 / GA W 30-45

Recommended grease: Atlas Copco Roto-Glide (ordering number 2908 8513 00 for a 400 g grease cartridge).

Quantity: 15 g (11 g for non-drive end side of GA30/GA W 30)

For GA55C with Siemens motor

Recommended grease: Atlas Copco Roto-Glide (ordering number 2908 8513 00 for a 400 g grease cartridge).

Quantity: 40 g

For GA55C with ABB motor

Recommended grease: Special high-quality ball bearing grease available from Atlas Copco (ordering number 2901 0338 01 for a 400 g grease cartridge).

Quantity: 16 g

4.2 Preventive maintenance schedule for the compressor 1)

Attention

For overhauling or carrying out preventive maintenance, service kits are available. See section 4.7. 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	--	3.3	--	Before starting Check oil level (G1)
"	--	3.4/3.5/7.1	--	During operation Check readings on display or gauges
"	--	--	--	Check that condensate is discharged during loading (Da)
"	--	3.4/3.5	--	Check oil level (G1)
"	--	3.4/3.5	--	Check air filter service indicator (VI)
"	--	3.4/3.5	--	Regulate cooling water flow (water-cooled compressors)
"	--	3.4/3.5	--	After stopping Drain condensate (Dm)
3-monthly	--	5.3	--	Operate safety valve (SV)
"	--	--	4	Carry out a LED/display test (Pack/Full-feature)
"	--	--	6	Check for possible leaks
"	500	5.2	1	Inspect coolers (Ca/Co); clean if necessary
"	500	--	1	Inspect condenser of dryer (Full-feature); clean if necessary
"	500	--	1/9	Remove air filter element (AF), clean by air jet and inspect
"	--	--	--	Remove, dismantle and clean float valve of moisture trap (MT)
Yearly	--	5.3	--	Have safety valve (SV) tested
"	--	--	--	Have operation of electrical interlockings, motor breakers, etc. tested
"	--	--	5	Test temperature shut-down protection
"	2000	--	--	Replace felt disc between air filter service indicator (VI) and its connection
"	2000	--	--	Inspect restrictor (Rf2) for cleanness
"	4000	4.7/5.1	--	Replace air filter element (AF)
"	4000	4.3/4.4/4.5/4.7	2/3/8	If Atlas Copco Roto-injectfluid is used, change oil and replace oil filter (OF)
"	500	4.3/4.4/4.5/4.7	2/8	For 13 bar and 175 psi: if oil as specified in section 4.3.2 is used, change oil and oil filter
"	1000	4.3/4.4/4.5/4.7	2/8	For 7.5-8-10 bar and 100-125-150 psi: if oil as specified in section 4.3.2 is used, change oil and oil filter
"	--	--	7	Have all flexibles inspected
"	--	--	--	Clean compressor
--	4000	4.1	--	Regrease drive motor bearings (M1)
2-Yearly	8000	4.7	--	Have oil separator (OS) replaced

Notes

1. More frequently when operating in a dusty atmosphere.
2. Use genuine Atlas Copco filters.
3. Recommended oil: Atlas Copco Roto-injectfluid. For the change interval in extreme conditions of temperature, humidity or cooling air, consult Atlas Copco.
4. Consult the User Manual for Elektronikon regulator, section "Test submenu".
5. For GA Pack/Full-feature:
Consult the User Manual for 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. Run the compressor: when reaching the setting, the unit must shut down. Attention: reset the shut-down level and warning level to their original values.
For GA Standard Pack: consult Atlas Copco.
6. Any leak should be attended to immediately.
7. Damaged flexibles must be replaced immediately.
8. Also inspect restrictor (Rf2) for cleanness.
9. Replace the air filter element if damaged or heavily contaminated.

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.

Roto-injectfluid can be ordered in following quantities:

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

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 filter 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:

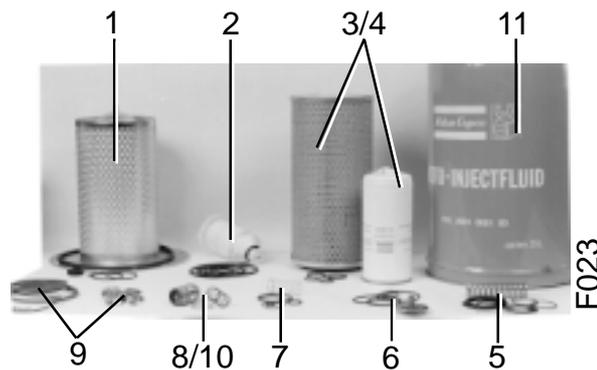
Ambient temperature	Viscosity grade	Viscosity index
Consistently above 25 degrees celsius	ISO VG 68	Minimum 95
Between 25 and 0 degrees celsius	ISO VG 46	Minimum 95

4.4 Oil change

1. Run the compressor until warm. Stop the compressor and depressurize by unscrewing filler plug (FC-Fig. 3.2) one turn to permit any pressure in the system to escape. Wait a few minutes and remove plug (FC) and vent plug (VP-Fig. 1.1).
2. Drain the oil by removing drain plugs (DP1, DP2 and DP3-Figs. 1.1 and 1.2). Fit and tighten all plugs (except for FC-Fig. 3.2) after draining. Deliver the oil to the local oil collection service.
3. Fill receiver (AR-Fig. 3.2) with oil until the level reaches the filler neck. Take care that no dirt drops into the system. Fit and tighten plug (FC-Fig. 3.2).
4. 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 receiver with oil until the level reaches the filler neck. Tighten plug (FC).
5. Reset the oil service warning. **3)**

4.5 Oil filter change

1. Run the compressor unloaded for 3 minutes.
2. Stop the compressor and depressurize by unscrewing filler plug (FC-Fig. 3.2) one turn to permit any pressure in the system to escape.
3. Remove vent plug (VP-Fig. 1.1), wait 5 minutes, remove drain plug (DP2-Fig. 1.2) and catch the oil in a receptacle.
4. Remove oil filter (OF-Fig. 3.2).
5. Clean the filter seat on the manifold. Oil the gasket of the new element. Screw the element into place and tighten firmly by hand.
6. Remove plug (FC-Fig. 3.2) and fill with oil until the level reaches the filler opening.
7. Tighten plugs (FC-Fig. 3.2), (VP-Fig. 1.1) and (DP2-Fig. 1.2).
8. Reset the oil filter service warning. 3)



- | | | | |
|---|----------------------------|----|--|
| 1 | Oil separator kit | 7 | Oil stop valve kit |
| 2 | Moisture trap kit | 8 | Thermostat kit |
| 3 | Filter kit | 9 | Unloader kit |
| 4 | Filter kit | 10 | Thermostat kit |
| 5 | Minimum pressure valve kit | 11 | Oil kit (Atlas Copco Roto-injectfluid) |
| 6 | Check valve kit | | |

4.6 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.

4.7 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.

See sections 4.1 and 4.3.1 for the ordering numbers for the motor grease and Roto-injectfluid respectively.

Service kit for oil filters and air filters	Ordering number
GA30 all versions,	2901 0325 00
GA37 10-13 bar, GA37 125-150-175 psi, GA45/GA55C 13 bar, GA45/GA55C 175 psi	
GA37 7.5-8 bar, GA37 100 psi,	2901 0326 00
GA45/GA55C 7.5-8-10 bar, GA45/GA55C 100-125-150 psi	

Service kit for the oil separator	Ordering number
GA30/45/55C	2901 0566 00

Fig. 4.1 Preventive maintenance kits (typical examples)

Footnotes chapter 4

- 1) Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.
- 2) Whichever interval comes first. The local Sales Company may overrule the maintenance schedule, especially the service intervals, depending on the environmental and working conditions of the compressor.
- 3) For GA Pack/Full-feature: Using key <<Rset>>: see User manual for Elektronikon regulator, section "Service submenu".

5 Adjustments and servicing procedures

5.1 Air filter (AF-Fig. 3.3)

1. Stop the compressor. Switch off the voltage. Release the snap clips of the filter and remove the dust trap and air filter element. Clean the trap. Discard the air filter element.
2. Fit the new element and the trap.
3. Reset service indicator (VI-Fig. 5.4) 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. 3.2)

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 set pressure stamped on the valve, consult Atlas Copco.

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

5.4 Safety devices of dryer on GA Full-feature

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

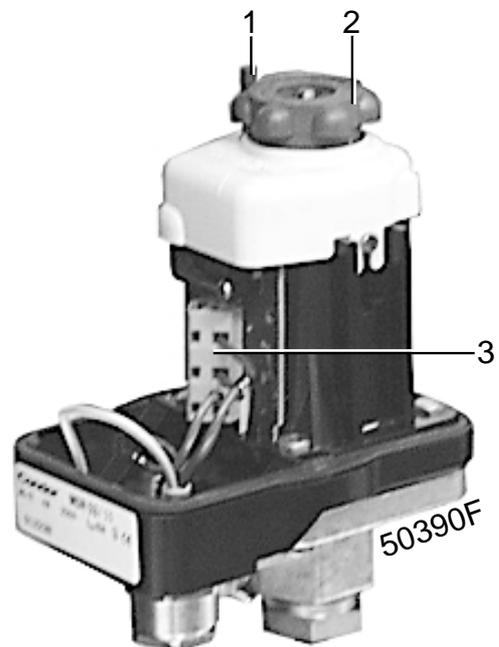
5.5 Load/unload pressure switch (PSR19-Fig. 5.1) on GA Standard Pack

The switch allows the operator to select the unloading pressure and the pressure difference between the unloading and loading pressures. The unloading and loading pressures are the opening and closing pressures of the air pressure switch.

Adjustment can only be carried out when the pressure switch is pressurized. Remove blocking device (1) before adjusting knob (2).

The unloading pressure is controlled by adjusting knob (2). Turn the knob clockwise to raise the unloading pressure, anti-clockwise to lower it.

The pressure difference between unloading and loading is adjusted by means of the same knob. The adjustment range is given in Figs. 5.2 and 5.3. Push down the knob and turn it clockwise to reduce the pressure difference, anti-clockwise to increase it.



- 1 Blocking device, to be removed before turning knob 2
- 2 Adjusting knob
- 3 Switch

Fig. 5.1 Load/unload pressure switch (Standard Pack)

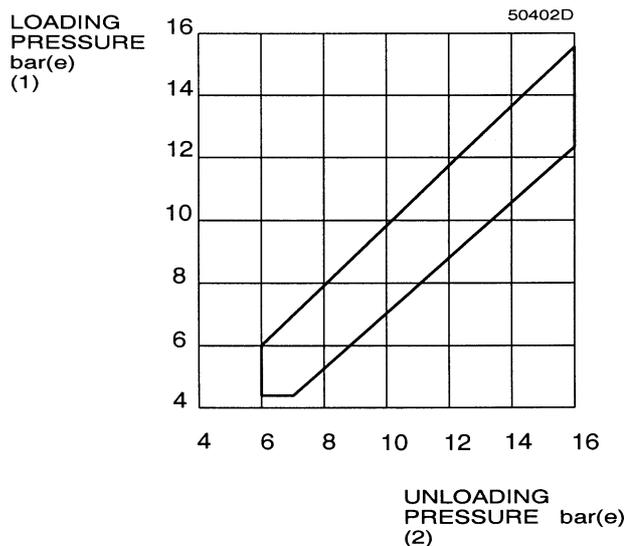


Fig. 5.2 Switch MDR 53/16

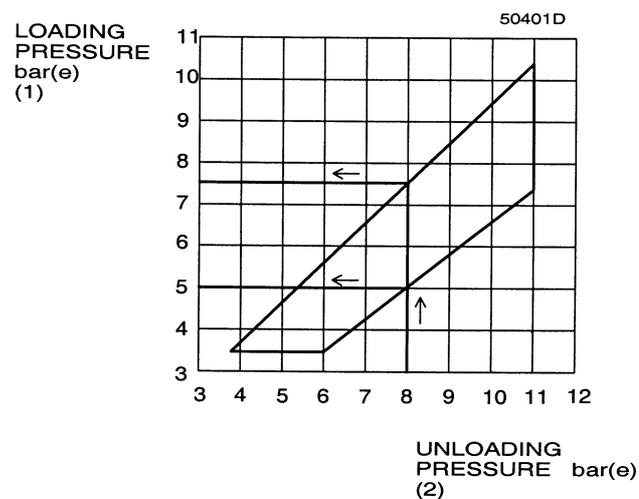


Fig. 5.3 Switch MDR 53/11

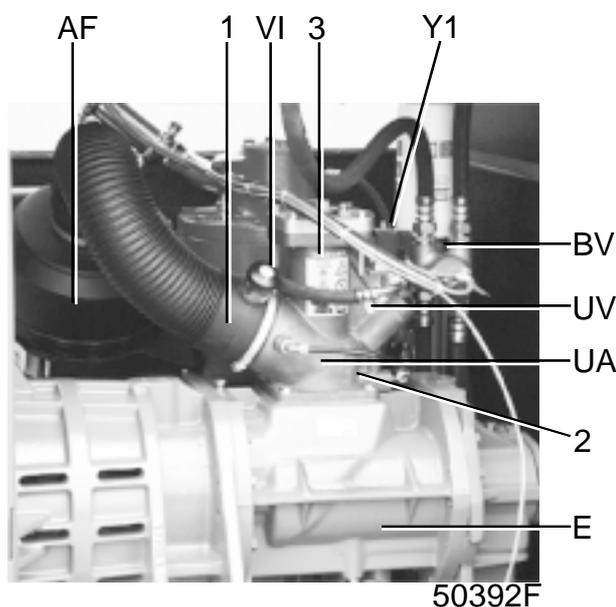
Example (Fig. 5.3): for 8 bar(e) unloading pressure, the loading pressure is adjustable between 5 and 7.6 bar(e)

Figs. 5.2 and 5.3 Adjustment ranges for load/unload pressure switch (Standard Pack)

5.6 Temperature shut-down switch on GA Standard Pack

Switch (TSHH11-Fig. 1.14) has an adjusting screw in the centre at the back of the housing of the switch.

The reset screw is located in the centre of the indicator scale and is protected by a cap. To reset the switch after tripping, unscrew the cap and turn the reset screw with a screwdriver anti-clockwise.



- AF Air filter
- BV Oil cooler by-pass valve
- E Compressor element
- UA Unloader
- UV Unloading valve
- VI Air filter service indicator
- Y1 Loading solenoid valve
- 1 Air inlet pipe
- 2 Bolt
- 3 Warning: potential risk of sudden releasing of spring underneath cover of unloader during disassembling, have possible repair carried out by Atlas Copco

Fig. 5.4 View of unloader and compressor element

Footnotes chapter 5

1) For GA Pack/Full-feature: Using key <<Rset>>: see User manual for Elektronikon regulator, section "Service submenu".

6 Problem solving

Attention

1. Apply all relevant safety precautions, including those mentioned in this book.
2. Read section 2.6 to familiarize yourself with all warning labels and pictographs.
3. Before carrying out any maintenance or repair on the compressor:
 - **For GA Pack/Full-feature**, 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.
 - **For GA Standard Pack**, move switch (S4-Fig. 1.14) to the left, wait 30 seconds, press stop button (S3) and switch off the voltage.
 - Close air outlet valve (AV-Figs. 1.2 and 3.3) and depressurize by opening plug (FC-Fig. 3.2) one turn and by opening valve (Dm-Fig. 1.4).
4. The air outlet valve (AV-Figs. 1.2 and 3.3) 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.
5. Consult the User manual for Elektronikon regulator (section "Status data submenu") if a service message or fault message appears on display (4-Fig. 1.9) or when alarm LED (3-Fig. 1.9) is alight or blinks.

Mechanical faults and suggested remedies (Figs. 1.5 and 1.6)

1 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 Replace valve
- 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 Replace defective parts 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 On GA Full-feature, 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) For GA Pack/Full-feature, a warning message will appear on display (4-Fig. 1.9).

7 Principal data

7.1 Readings on display (Fig. 1.9) or gauges (Fig. 1.14) 1)

Ref.: Air outlet pressure

Reading: Modulates between programmed unloading and loading pressures

Shown: On gauge Gp (Fig. 1.14) or main display (Fig. 1.10)

On Full-feature also:

Ref.: Dewpoint temperature

Reading: Approx. 4 degrees celsius

Shown: When using key <<More>> (5-Fig. 1.9)

Ref.: Compressor element outlet temperature

Reading: Approx. 60 degrees celsius above cooling air temperature or above cooling water inlet temperature

Shown: On gauge TSHH11 (Fig. 1.14) or when using key <<More>> (5-Fig. 1.9)

7.2 Settings of overload relay and fuses

Compressor type	Supply voltage (V)	Frequency (Hz)	Max. setting of relay F21 (A)	Fuses IEC (A)	Fuses CSA HRC (A)	Fuses UL K5 (A)
GA30/30W	230	50	67	160	-	-
GA30/30W	400	50	39	100	-	-
GA30/30W	500	50	31	80	-	-
GA37/37W	230	50	79	160	-	-
GA37/37W	400	50	46	100	-	-
GA37/37W	500	50	36	80	-	-
GA45/45W	230	50	97	2 x 100	-	-
GA45/45W	400	50	56	125	-	-
GA45/45W	500	50	45	100	-	-
GA55C	230	50	122	250	-	-
GA55C	400	50	70	160	-	-
GA55C	500	50	56	125	-	-
GA30/30W	220/230	60	68	160	150	150
GA30/30W	380	60	41	100	-	-
GA30/30W	440/460	60	34	80	80	80
GA30/30W	575	60	27	-	45	45
GA37/37W	220/230	60	82	200	175	175
GA37/37W	380	60	48	125	-	-
GA37/37W	440/460	60	41	100	90	90
GA37/37W	575	60	32	-	60	60
GA45/45W	220/230	60	100	200	200	200
GA45/45W	380	60	59	125	-	-
GA45/45W	440/460	60	50	125	110	110
GA45/45W	575	60	39	-	90	90
GA55C	220/230	60	113	250	250	250
GA55C	440/460	60	57	125	150	150
GA55C	575	60	45	-	100	100

7.3 Settings of fan motor circuit breaker (air-cooled compressors)

Compressor	Supply voltage (V)	Frequency (Hz)	Max. setting of breaker Q15 (A)
GA30/37/45	230	50	4.7
GA30/37/45	400	50	2.7
GA30/37/45	500	50	2.2
GA55C	230	50	8
GA55C	400	50	4.7
GA55C	500	50	3.8
GA30/37/45	220/230	60	4.2
GA30/37/45	380	60	2.4
GA30/37/45	440/460	60	2.4
GA30/37/45	575	60	1.9
GA55C	220/230	60	9.7
GA55C	440/460	60	5.6 (CSA UL)
GA55C	575	60	4.4 (CSA UL)

7.4 Settings of dryer switches (GA Full-feature)

Condenser fan control switch		
- Cut-out pressure	bar(e)	16.7
- Switch-on pressure	bar(e)	18
Shut-down switch	bar(e)	31

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 GA30 / GA30 W Standard Pack/Pack 2)

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	29	29	29	29	29	29	29	29
Drive motor, SIEMENS	1 LA 5 189-2							
Motor shaft speed r/min	2955	2955	2955	2955	3555	3555	3555	3555
Power input, GA kW	35.8	36.5	35.4	36.4	35.3	37.2	35	36
Power input, GA W kW	34.7	35.3	34.2	35.2	34	36	33.8	34.8
Oil capacity, GA l	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
Oil capacity, GA W l	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3). dB	65	65	65	64	65	65	65	64
Cooling water consumption, GA W 4) l/min	32	32	32	32	32	32	32	32
Cooling water consumption, GA W 5) l/min	48	48	48	48	48	48	48	48

7.5.4 GA30 / GA30 W Full-feature 2)

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, SIEMENS	1 LA 5 189-2							
Motor shaft speed r/min	2955	2955	2955	2955	3555	3555	3555	3555
Power input, GA kW	38	38.1	37.6	38.5	37.8	39.9	37.7	38.3
Power input, GA W kW	36.8	36.9	36.4	37.4	36.6	38.5	36.4	37.1
Oil capacity, GA l	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
Oil capacity, GA W l	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3). dB	65	65	65	64	65	65	65	64
Cooling water consumption, GA W 4) l/min	32	32	32	32	32	32	32	32
Cooling water consumption, GA W 5) l/min	48	48	48	48	48	48	48	48
Refrigerant type	R404a							
Refrigerant charge kg	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Pressure dewpoint, approx. 6) celsius	4	4	4	4	4	4	4	4

7.5.5 GA37 / GA37 W Standard Pack/Pack 2)

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	29	29	29	29	29	29	29	29
Drive motor, SIEMENS	1 LA 5 209-2							
Motor shaft speed r/min	2960	2960	2960	2960	3560	3560	3560	3560
Power input, GA kW	44.9	45.5	44	44.2	45.3	44.7	45	44.2
Power input, GA W kW	43.7	44.4	42.8	43.1	43.8	43.5	43.7	43
Oil capacity, GA l	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
Oil capacity, GA W l	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3). dB	66	66	66	65	66	66	66	65
Cooling water consumption, GA W 4) l/min	39	39	39	39	39	39	39	39
Cooling water consumption, GA W 5) l/min	59	59	59	59	59	59	59	59

7.5.6 GA37 / GA37 W Full-feature 2)

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, SIEMENS	1 LA 5 209-2							
Motor shaft speed r/min	2960	2960	2960	2960	3560	3560	3560	3560
Power input, GA kW	47.6	47.6	46.8	47	48.4	47.9	48	47.3
Power input, GA W kW	46.5	46.5	45.6	45.8	47	46.7	46.8	46.1
Oil capacity, GA l	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
Oil capacity, GA W l	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3). dB	66	66	66	65	66	66	66	65
Cooling water consumption, GA W 4) l/min	39	39	39	39	39	39	39	39
Cooling water consumption, GA W 5) l/min	59	59	59	59	59	59	59	59
Refrigerant type	R404a							
Refrigerant charge kg	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Pressure dewpoint, approx. 6) C	4	4	4	4	4	4	4	4

7.5.7 GA45 / GA45 W Standard Pack/Pack 2)

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	29	29	29	29	29	29	29	29
Drive motor, SIEMENS	1 LA 9 209-2							
Motor shaft speed r/min	2965	2965	2965	2965	3565	3565	3565	3565
Power input, GA kW	53.1	51.1	53.8	54.8	54.4	53.8	53.8	53.9
Power input, GA W kW	51.9	49.9	52.6	53.6	52.7	52.6	52.6	52.7
Oil capacity l	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3) . dB	67	67	67	66	67	67	67	66
Cooling water consumption, GA W 4) l/min	47	47	47	47	47	47	47	47
Cooling water consumption, GA W 5) l/min	70	70	70	70	70	70	70	70

7.5.8 GA45 / GA45 W Full-feature 2)

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, SIEMENS	1 LA 9 209-2							
Motor shaft speed r/min	2965	2965	2965	2965	3565	3565	3565	3565
Power input, GA kW	56.3	53.5	57	58.1	58.2	57.6	57.7	57.8
Power input, GA W kW	55.2	52.3	55.8	56.9	56.5	56.3	56.4	56.5
Oil capacity l	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3) . dB	67	67	67	66	67	67	67	66
Cooling water consumption, GA W 4) l/min	47	47	47	47	47	47	47	47
Cooling water consumption, GA W 5) l/min	70	70	70	70	70	70	70	70
Refrigerant type	R404a							
Refrigerant charge kg	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Pressure dewpoint, approx. 6) celsius	4	4	4	4	4	4	4	4

7.5.9 GA55C Standard Pack/Pack 2)

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-225	M2AA-225	M2AA-225	-	-	-	-
Drive motor, SIEMENS		-	-	-	1LA6 228-2	1LA6 228-2	1LA6 228-2	1LA6 228-2
Motor shaft speed	r/min	2975	2975	2975	3575	3575	3575	3575
Power input	kW	64.8	66.1	65.8	66.3	66	65.7	67.5
Oil capacity	l	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level, Pack/Standard Pack 3)	dB	73/74	73/74	73/74	75/76	75/76	75/76	75/76

7.5.10 GA55C Full-feature 2)

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-225	M2AA-225	M2AA-225	-	-	-	-
Drive motor, SIEMENS		-	-	-	1LA6 228-2	1LA6 228-2	1LA6 228-2	1LA6 228-2
Motor shaft speed	r/min	2975	2975	2975	3575	3575	3575	3575
Power input	kW	68.2	69.5	69.2	70.6	69.4	70	71.8
Oil capacity	l	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Mean sound pressure level 3)	dB	73	73	73	75	75	75	75
Refrigerant type		R404a	R404a	R404a	R404a	R404a	R404a	R404a
Refrigerant charge	kg	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Pressure dewpoint, approx. 6)	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 l = 0.220 Imp gal (UK)	1 mbar = 0.401 in water column
1 g = 0.035 oz	1 l = 0.035 cu.ft	1 N = 0.225 lbf
1 kW = 1.341 hp (UK and US)	1 l/s = 2.117 cfm	1 Nm = 0.738 lbf.ft
1 l = 0.264 US gal	1 mm = 0.039 in	x degrees celsius = (32 + 1.8 x) degrees fahrenheit 7)

Footnotes chapter 7

- 1) For GA Pack and Full-feature, see section 3.4 and the User manual for Elektronikon regulator, sections "Main display" and "More function".
- 2) At reference conditions. 8 bar/50 Hz versions are available as an option.
- 3) According to PNEUROP PN8NTC2.2.
- 4) At water inlet temperature below 25 degrees celsius and temperature rise of 15 degrees celsius.
- 5) At water inlet temperature between 25 and 40 degrees celsius and temperature rise of 10 degrees celsius.
- 6) At 20 degrees celsius / 100% relative humidity.
- 7) A temperature difference of 1 degree celsius = a temperature difference of 1.8 degrees fahrenheit.