Atlas Copco Stationary Air Compressors

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

With Elektronikon II Regulator

Instruction book

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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.

Important
This book applies exclusively to compressors from serial number AII-478 000 onwards. This book must be used together with the "User manual for Elektronikon I and II regulators", Printed Matter No. 2920 1461 0x.

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Registration code: APC G55-90C/2000 / 38 / 987

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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 Workplace
GA Workplace are enclosed in a sound-insulated bodywork. The compressors are controlled by the Atlas Copco Elektronikon® II 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 Workplace Full-Feature
GA Workplace Full-Feature are additionally provided with an **ICD** or **IFD** air dryer (1-Fig. 1.3 and 3-Fig. 1.4). The condensate is automatically drained. See section 1.6.

On **GA Workplace FF with IFD**, the dryer is integrated in the bodywork and removes condensate from the compressed air by cooling the air to near freezing point.

On **GA Workplace FF with ICD**, the dryer is integrated in the sound-insulated bodywork. However, the dryer and compressor module are shipped separately and must be installed at the site. Condensate from the compressed air is removed by the adsorption process of the ICD.

![Fig. 1.1 General view of GA75 Workplace Full-Feature with IFD](image)
1.1.1 Air flow (Figs. 1.6 and 1.7)

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 the outlet valve via minimum pressure valve (Vp), air cooler (Ca) and condensate trap (4).

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. The minimum pressure valve includes a check valve which prevents blow-back of compressed air from the air net.

1.1.2 Oil system (Figs. 1.6 and 1.7)

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.

Fig. 1.2 Front view of GA75 Workplace Full-Feature with IFD

- E1 Control module
- S3 Emergency stop button
- 1 Fan
- 2 Fan motor
- 3 Electric cabinet
- 4 Drive motor
- 5 Oil separator kit (OSD), optional
- 6 Air filter
- 7 Oil filler plug
- 8 Air receiver
- 9 Oil level gauge
- 10 Oil filters
- 11 Air cooler
**E1 Control module**
**S3 Emergency stop button**
1. ICD dryer
2. Dryer by-pass valve
3. Air outlet valve
4. Automatic condensate drain outlet
5. Manual condensate drain outlet
6. Oil separator kit (OSD), optional

---

**Fig. 1.3 Front view of GA75 Workplace Full-Feature with ICD**

---

1. Air outlet valve
2. DD or PD filter (optional)
3. IFD dryer
4. Fan motor
5. Fan
6. Oil cooler
7. Oil filters
8. Unloader
9. Compressor element
10. Check valve
11. Oil stop valve
12. Arrow, motor rotation direction (depends on compressor type)
13. Drive motor
14. Automatic condensate drain outlet of optional OSD
15. Manual condensate drain outlet
16. Condensate trap

---

**Fig. 1.4 Rear view of GA75 Workplace Full-Feature with IFD**
The oil system is provided with a by-pass valve (BV). When the oil temperature is below 40°C 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 40°C. At approx. 55°C 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.

1.1.3 Cooling and condensate drain systems (Figs. 1.6 and 1.7)

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. The water flows through the inlet pipe, the tubestacks of the air cooler and oil cooler, and the outlet pipe.

A condensate trap (4) is provided in the air outlet system. The trap is equipped with a valve for automatic condensate draining during operation (5) and a manually operated valve for draining after stopping the compressor (6).

![Condensate drains](image-url)
Fig. 1.6 Flow diagram (typical example of GA Workplace Full-Feature with IFD)
Fig. 1.7 Flow diagram (typical example of GA Workplace Full-Feature with ICD)
### AF Air filter  M1 Drive motor
### AO Air outlet  M2 Fan motor
### AR Air receiver/oil separator  OF Oil filters
### BV Oil cooler by-pass valve  OS Oil separator element
### Ca Air cooler  PDT1 Pressure sensor, oil separator pressure difference
### CM Control module  PT20 Pressure sensor, air outlet
### Co Oil cooler  SV Safety valve
### CV Check valve  TT11 Temperature sensor, compressor element outlet

#### DP1 Oil drain plug, air receiver  UA Unloader
#### DP2 Oil drain plug, oil stop valve  UV Unloading valve
#### DP3 Oil drain plug, check valve  VI Air filter service indicator
#### E Compressor element  Vp Minimum pressure valve
#### FC Oil filler plug  Vs Oil stop valve
#### FN Fan  Y1 Loading solenoid valve
#### GI Oil level gauge  1 Flexible, control or blow-off air
#### IV Inlet valve  2 Oil scavenging flexible
#### LP Loading plunger

**On GA Workplace FF with IFD also**
- **M3** Refrigerant compressor 8 Fan, condenser
- **M4** Motor, condenser fan 9 Insulating block
- **S2** Condenser fan control switch 10 Accumulator
- **S3** High-pressure shut-down switch 11 Hot-gas by-pass valve
- **3** Condensate separator 12 Filter
- **4** Condensate trap 13 Air/air heat exchanger
- **5** Automatic condensate drain outlet 14 Condenser
- **6** Manual condensate drain valve 15 Air/refrigerant heat exchanger (evaporator)
- **7** Capillary tube

**On GA Workplace FF with ICD also**
- **AV1** Air outlet valve, dryer by-passed  TT81 Temperature sensor, dryer inlet
- **CV1** Check valve  Y2 Solenoid valve
- **CV2** Check valve  Y3 Solenoid valve
- **DDp** DDp filter 16 Pneumatic actuator
- **IPD** Integrated pre-filter 17 Exhaust valve
- **PDP** Pressure dewpoint sensor 18 Silencer
- **PR** Pressure regulator 19 Exhaust valve
- **(only on 13 bar compressors) 20 Silencer
- **PT81** Pressure sensor, tower Ta 21 Air filter
- **PT82** Pressure sensor, tower Tb 22 Shut-off valve, control pressure
- **RF** Restrictor 23 Shut-off valve, PDP sensor
- **Ta** Tower A 24 Dryer inlet valve
- **Tb** Tower B 25 3-way valve

Figs. 1.6 and 1.7 Air-oil and unloading-loading systems
1.2 Unloading/loading system (Figs. 1.6 and 1.7)

1.2.1 Unloading (Fig. 1.6)

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. 1.7)

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

1.3.1 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 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.

For GA Workplace FF with ICD, the regulator also maintains the pressure dewpoint of the dryer between
programmable settings by defining the switching time. A number of programmable settings are taken into
account.

Warning
A number of time-based automatic start/stop commands may be programmed. Take into account that a
start command will be executed (if programmed and activated), even after manually stopping the
compressor.
1.3.2 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 (3-Fig. 1.8). The compressor will also be stopped in case of overload of drive motor (13-Fig. 1.4) or fan motor (4-Fig. 1.4). 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
A number of service operations are grouped in plans (called Service plans A, B, C and D). Each Service plan has a programmed time interval. If a time interval is exceeded, a message will appear on display (3-Fig. 1.8) to warn the operator to carry out the service actions belonging to that plan. See section 4.2.

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.
- On GA Workplace FF with ICD, the inlet temperature of the compressed air into the dryer exceeds the warning level.
- On GA Workplace FF with ICD, the pressure in the dryer vessels is lower than the minimum or higher than the maximum limit.

1.3.3 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 10 and 600 seconds or to Infinite. If the power recovery time is set to Infinite, the compressor will always restart after a voltage failure, no matter how long it takes to restore the voltage. A restart delay can also be programmed, allowing e.g. two compressors to be restarted one after the other.
1.3.4 Control panel (Fig. 1.8)

**Fig. 1.8 Control panel**

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stop button</td>
<td>Push button to stop the compressor. LED (8) goes out. The compressor will stop after running in unloaded condition for about 30 seconds.</td>
</tr>
<tr>
<td>2</td>
<td>Start button</td>
<td>Push button to start the compressor. LED (8) lights up indicating that the regulator is operative (in automatic operation). The LED goes out after unloading the compressor manually.</td>
</tr>
<tr>
<td>3</td>
<td>Display</td>
<td>Indicates messages concerning the compressor operating condition, a service need or a fault.</td>
</tr>
<tr>
<td>4</td>
<td>Scroll keys</td>
<td>Keys to scroll through the display.</td>
</tr>
<tr>
<td>5</td>
<td>Tabulator key</td>
<td>Key to select the parameter indicated by a horizontal arrow. Only the parameters followed by an arrow pointing to the right are accessible for modifying.</td>
</tr>
<tr>
<td>6</td>
<td>Voltage on LED</td>
<td>Indicates that the voltage is switched on.</td>
</tr>
<tr>
<td>7</td>
<td>General alarm LED</td>
<td>Is alight if a warning, service warning or shut-down warning condition exists or if a sensor is out of order.</td>
</tr>
<tr>
<td>7</td>
<td>General alarm LED</td>
<td>Blinks in case of shut-down, if a sensor with shut-down function is out of order or after an emergency stop.</td>
</tr>
<tr>
<td>8</td>
<td>Automatic operation LED</td>
<td>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.</td>
</tr>
<tr>
<td>9</td>
<td>Function keys</td>
<td>Keys to control and program the compressor. See below.</td>
</tr>
<tr>
<td>S3-Figs. 1.2 and 1.3</td>
<td>Emergency stop button</td>
<td>Push button to stop the compressor immediately in case of emergency. After remedying the trouble, unlock the button by pulling it out.</td>
</tr>
</tbody>
</table>
1.3.4.1 Function keys

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.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Add</td>
<td>To add compressor start/stop commands (day/hour)</td>
</tr>
<tr>
<td>Back</td>
<td>Back</td>
<td>To return to a previously shown option or menu</td>
</tr>
<tr>
<td>Canc</td>
<td>Cancel</td>
<td>To cancel a programmed setting when programming parameters</td>
</tr>
<tr>
<td>Del</td>
<td>Delete</td>
<td>To delete compressor start/stop commands</td>
</tr>
<tr>
<td>Help</td>
<td>Help</td>
<td>To find the Atlas Copco internet address</td>
</tr>
<tr>
<td>Lim</td>
<td>Limits</td>
<td>To show limits for a programmable setting</td>
</tr>
<tr>
<td>Load</td>
<td>Load</td>
<td>To load the compressor manually</td>
</tr>
<tr>
<td>Main</td>
<td>Main</td>
<td>To return from a menu to the main screen (Fig. 1.15)</td>
</tr>
<tr>
<td>Menu</td>
<td>Menu</td>
<td>Starting from the main screen (Fig. 1.15): to have access to submenus</td>
</tr>
<tr>
<td>Menu</td>
<td>Menu</td>
<td>Starting from a submenu, to return to the previous menu</td>
</tr>
<tr>
<td>Mod</td>
<td>Modify</td>
<td>To modify programmable settings</td>
</tr>
<tr>
<td>Prog</td>
<td>Program</td>
<td>To program modified settings</td>
</tr>
<tr>
<td>Rset</td>
<td>Reset</td>
<td>To reset a timer or message</td>
</tr>
<tr>
<td>Rtrn</td>
<td>Return</td>
<td>To return to a previously shown menu</td>
</tr>
<tr>
<td>Unld</td>
<td>Unload</td>
<td>To unload the compressor manually</td>
</tr>
<tr>
<td>Xtra</td>
<td>Exta</td>
<td>To find the module configuration of the regulator</td>
</tr>
</tbody>
</table>

1.4 Electric cabinet (Figs. 1.9 and 1.10)

The cabinet mainly comprises transformers, fuses, drive motor contactors and for air-cooled compressors the fan motor contactor.

The Elektronikon regulator and emergency stop button are fitted in the door of the cabinet.
F1/8 Fuses
F21 Overload relay, drive motor
K21 Line contactor
K22 Star contactor
K23 Delta contactor
PE Earth terminal
Q15 Circuit breaker, fan motor 3)
T1/T2 Transformers
1X1/4 Terminal strips
1X2 Terminal strip, mains connections
L1/L2/L3

On Full-Feature with IFD also:
K11 Contactor, refrigerant compressor
K12 Contactor, condenser fan

Fig. 1.9 Electric cubicle, GA Workplace FF with IFD (typical example)

F1/5 Fuses
F21 Overload relay, drive motor
K21 Line contactor
K22 Star contactor
K23 Delta contactor
PE Earth terminal
Q15 Circuit breaker, fan motor 3)
T1/T2 Transformers
1X1/4 Terminal strips

On Full-Feature with ICD also:
F90/91 Fuses

Fig. 1.10 Electric cubicle, GA Workplace FF with ICD (typical example)
Fig. 1.11 Electrical diagram (typical example)
Fig. 1.12 Electrical diagram of ICD dryer (typical example)

(1) Emergency stop
(2) Remote start/programmed stop
(3) Remote load/unload (closed=load)
(4) Remote pressure sensing (link=remote)
(5) Overload, drive motor
(6) Overload, fan motor
(7) Fault, EWD
(8) Dp, DD filter
(9) Dp, PD filter
(10) High/low air pressure (5-6 closed=high pressure)
(11) Manual load/unload
(12) Automatic operation
(13) General warning
(14) General shut-down
(15) Auxiliary contacts
(16) See motor data plate for correct connection
(17) Remote emergency stop
(18) Customer's installation
(19) Dryer
(20) Star connection: all other voltages
(21) Delta connection: 200-220-230 V 50/60 Hz
(22) CSA certified and UL listed industrial control panel as shown within dotted lines
(23) Phase sequence protection

SENSORS/LOADING SOLENOID VALVE

<table>
<thead>
<tr>
<th>Sensor Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDT1</td>
<td>Pressure sensor, pressure difference over oil separator</td>
</tr>
<tr>
<td>PT20</td>
<td>Pressure sensor, air outlet</td>
</tr>
<tr>
<td>TT11</td>
<td>Temperature sensor, compressor element outlet</td>
</tr>
<tr>
<td>TT51</td>
<td>Temperature sensor, cooling water inlet 4)</td>
</tr>
<tr>
<td>TT52</td>
<td>Temperature sensor, cooling water outlet 4)</td>
</tr>
<tr>
<td>TT53/54</td>
<td>Temperature sensors, energy recovery water inlet/outlet 2)</td>
</tr>
<tr>
<td>TT90</td>
<td>Temperature sensor, dewpoint (Full-Feature with IFD)</td>
</tr>
<tr>
<td>Y1</td>
<td>Loading solenoid valve</td>
</tr>
</tbody>
</table>
CUBICLE
E1 Electronic control module (B) K23 Delta contactor
F1/9 Fuses Q15 Circuit breaker, fan motor 3)
F21 Overload relay, drive motor T1/T2 Transformers
K21 Line contactor 1X1/4 Terminal strips
K22 Star contactor

CONTROL MODULE (E1)
I Start button K06 Auxiliary relay, dryer control
K01 Blocking relay K07 Auxiliary relay, manual/automatic operation
K02 Auxiliary relay, star contactor K08 Auxiliary relay, general warning
K03 Auxiliary relay, delta contactor K09 Auxiliary relay, general shut-down
K04 Auxiliary relay, loading-unloading 0 Programmed stop button
K05 Auxiliary relay, high/low pressure S3 Emergency stop button

MOTORS
M1 Drive motor M2 Fan motor 3)

OPTIONAL EQUIPMENT
AIE1 Expansion module, analog input R3/R4/R7 Heaters, freeze protection
A1 Dryer (Full-Feature with IFD) R96 Anti-condensation heater
B1 Electronic water drain (EWD) S10 Main power isolating switch
K04’ Auxiliary relay, Load/Unload for ES100 TSLL91 Thermostat, freeze protection
K25 Phase sequence protection Y2 Solenoid valve, modulating control
R1, K34 Drive motor thermistor protection, shut-down Y51 Water shut-off valve (water-cooled versions)
R2, K35 Drive motor thermistor protection, warning

ICD DRYER
E11 Emix module T1 Transformer
F90/F91 Fuses Y1 Solenoid valve 1
PDS81 Differential switch, DDp filter Y2 Solenoid valve 2
PT81 Pressure sensor, drying tower A 1 X 0 Terminal strip, power supply
PT82 Pressure sensor, drying tower B 1 X 2 Terminal strip, dryer
TT81 Temperature sensor, dryer inlet 1 X 3 Terminal strip, earth
TT82 Pressure dewpoint temperature sensor 1 X 5 Terminal strip, 24 V AC

Figs. 1.11 and 1.12 Electrical diagrams (typical examples)

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

A simplified menu flow is shown in Figs. 1.13 and 1.14.
Fig. 1.13 Menu flow of GA Workplace FF with IFD
Fig. 1.14 Menu flow of GA Workplace FF with ICD
1.5.1 Function of control programs

<table>
<thead>
<tr>
<th>Program/Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main screen</td>
<td>Shows in short the operation status of the compressor. It is the gateway to all functions. See Fig. 1.15.</td>
</tr>
<tr>
<td>Status data</td>
<td>Calling up the status of the compressor protection functions:</td>
</tr>
<tr>
<td></td>
<td>- shut-down</td>
</tr>
<tr>
<td></td>
<td>- shut-down warning</td>
</tr>
<tr>
<td></td>
<td>- service warning</td>
</tr>
<tr>
<td></td>
<td>- warning</td>
</tr>
<tr>
<td></td>
<td>Resetting of a shut-down, motor overload and service condition.</td>
</tr>
<tr>
<td>Measured data</td>
<td>Calling up:</td>
</tr>
<tr>
<td></td>
<td>- actually measured data</td>
</tr>
<tr>
<td></td>
<td>- status of some inputs such as the motor overload protection</td>
</tr>
<tr>
<td>Counters</td>
<td>Calling up the:</td>
</tr>
<tr>
<td></td>
<td>- running hours</td>
</tr>
<tr>
<td></td>
<td>- loaded hours</td>
</tr>
<tr>
<td></td>
<td>- number of motor starts</td>
</tr>
<tr>
<td></td>
<td>- regulator (module) hours</td>
</tr>
<tr>
<td></td>
<td>- number of load cycles</td>
</tr>
<tr>
<td>Test</td>
<td>Allows a display test</td>
</tr>
<tr>
<td>Modify settings</td>
<td>Modifying the settings for:</td>
</tr>
<tr>
<td></td>
<td>- parameters (e.g. loading and unloading pressures)</td>
</tr>
<tr>
<td></td>
<td>- protections (e.g. air temperature shut-down level)</td>
</tr>
<tr>
<td></td>
<td>- service plans (see section 4)</td>
</tr>
<tr>
<td></td>
<td>- clock functions (automatic compressor start/stop/pressure band commands)</td>
</tr>
<tr>
<td></td>
<td>- configuration (time, date, display language, …)</td>
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<tr>
<td>Service</td>
<td>Calling up service plans and resetting the timers. See section 4.</td>
</tr>
<tr>
<td>Saved data</td>
<td>Calling up the saved data: last shut-down, last emergency stop data</td>
</tr>
</tbody>
</table>

1.5.2 Main screen

When the voltage is switched on, the Main screen is shown automatically, showing in short the operation status of the compressor.

Compr. Outlet bar 7.0  ↓
Auto Loaded Unld
Menu
F1  F2  F3

Fig. 1.15 Main screen, typical example

If the function keys or arrow keys are not used for some minutes, the display will automatically return to the Main screen.

Whenever displayed on a submenu screen, press the key Main to return to the Main screen.

1.5.3 Calling up other menus

Starting from the Main screen:
- Use the ↓ key (Fig. 1.8) for a quick look at the actual compressor status
- Press the key Menu (F1); the option Status data will be followed by a horizontal arrow:
  - either press the tabulator key (5-Fig. 1.8) to select this menu
  - or use the ↓ key (Fig. 1.8) to scroll until the desired submenu is followed by a horizontal arrow and then press the tabulator key (5-Fig. 1.8) to select this menu

**User manual for Elektronikon I and II regulators**

For detailed instructions, consult the User manual for Elektronikon I and II regulators.

### 1.6 Air dryer

GA Workplace FF with IFD and GA Workplace FF with ICD are provided with a dryer which removes condensate from compressed air.

#### 1.6.1 GA Workplace FF with IFD (Fig. 1.6)

**Compressed air circuit**

Compressed air enters heat exchanger (13) and is cooled by the outgoing, dried air. Moisture in the incoming air starts to condense. The air then flows through heat exchanger (15) 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 condensate trap (3) which separates condensate from the air. The condensate is automatically drained through outlet (5). The cold, dried air then flows through heat exchanger (13), where it is warmed up by the incoming air.

**Refrigerant circuit**

Compressor (M3) delivers high-pressure refrigerant gas which flows through condenser (14), where most of the refrigerant condenses. The liquid flows through filter (12) to capillary tube (7). The refrigerant leaves the capillary tube at evaporating pressure.

The refrigerant enters evaporator (15) where it withdraws heat from the compressed air by further evaporation. The heated refrigerant leaves the evaporator and is sucked in by compressor (M3).

#### 1.6.2 GA Workplace FF with ICD (Fig. 1.7)

The dryer has two towers containing desiccant. This desiccant is a very porous grain material that can adsorb large amounts of water vapour. While the desiccant of one tower is drying the compressed air, the desiccant of the other tower is being regenerated and vice versa. Regeneration of the desiccant is achieved by means of purge air from the drying tower. The operation cycle of the dryer is repetitive and is controlled by the compressor regulator and PDP sensor.

**Compressed air circuit**

The compressed air entering the dryer is led to one of the towers by means of 3-way valve (25). This 3-way valve is controlled by pneumatic actuator (16). As the air flows upwards through the tower, the desiccant adsorbs the water vapours and the compressed air is dried. The dry compressed air leaves the dryer via the non-return valve (CV1 or CV2) on top of the drying tower.

**Regeneration circuit**

A small quantity of dried air is branched off from the dryer outlet and expanded to atmospheric pressure. This purge air flows downwards through the desiccant bed of the regenerating tower. As the vapour pressure of the purge air is much lower than that of the desiccant, the moisture is forced out of the desiccant. The wet purge air is discharged to atmosphere via exhaust valve (17 or 19) and silencer (18 or 20).
Control air circuit
A second small portion of dried air flows via control air valve (22), air filter (21) and on 13 bar units pressure regulator (PR) to solenoid valves (Y2 and Y3). When one of the solenoid valves is energized, the control air is fed to pneumatic actuator (16) and exhaust valve (17 or 19).

PDP sensor (PDP) measures the pressure dewpoint of the compressed air leaving the drying tower. As soon as the pressure dewpoint exceeds the setpoint, the Elektronikon regulator will shift towers, i.e. the regenerated tower starts drying the compressed air and the other tower will be regenerated.

Footnotes chapter 1

1) The valve starts opening at 60°C and is fully open at 75°C for 13 bar and 175 psi compressors.
2) For energy recovery systems only.
3) Air-cooled compressors only.
4) Water-cooled compressors only.
2 INSTALLATION

2.1 Dimension drawings (Figs. 2.1 and 2.2)

Fig. 2.1 Dimension drawing of GA Workplace (FF with IFD)
Important note:
Never lift compressor and ICD when mounted together.

Fig. 2.2 Dimension drawing of GA Workplace FF with ICD
(1) Centre of gravity
(2) Compressor cooling air outlet
(3) Dryer cooling air outlet
(4) Compressed air outlet
(5) Cooling air inlet
(6) Cooling water outlet
(7) Cooling water inlet
(8) Energy recovery water inlet, G 1 (GA55), G 1 1/2 (GA75)
(9) Electric cable passage, diameter 65
(10) Outlet for dryer by-pass
(11) Manual condensate drain
(12) Automatic condensate drain
(13) Automatic drain, type OSD (optional)
(14) With dryer
(15) Without dryer
(16) Energy recovery water outlet, G 1 (GA55), G 1 1/2 (GA75)
(18) For anchoring
(19) Weight
(20) Dryer unit
(21) Compressor unit
(22) Important remark: Never lift the compressor and ICD when mounted together
2.2 Installation proposals (Figs. 2.3 and 2.4)

(1) Minimum free area for compressor installation
(2) Cooling systems for water-cooled compressors
(3) Ventilation proposals for air-cooled compressors

Fig. 2.3 Installation proposal of GA Workplace (FF with IFD)
Ref. Description/recommendation

1. Install the compressor package 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:

\[ L = \frac{(dP \times d^5 \times P)}{(450 \times Qc^{1.85})} \]
L = pipe length in m

\( \text{dP} \) = maximum allowable pressure drop (recommended 0.1 bar)

\( d \) = inner diameter of pipe in mm

\( P \) = compressor outlet pressure in bar absolute

\( Q_c \) = 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:

\[
\begin{align*}
Q_v &= 1.06 \frac{N}{dT} \text{ for GA Workplace/Workplace Full-Feature with ICD air-cooled compressors} \\
Q_v &= \left(1.06 \frac{N}{dT} + 8\right) \text{ for GA Workplace Full-Feature with IFD air-cooled compressors} \\
Q_v &= 0.13 \frac{N}{dT} \text{ for GA Workplace water-cooled compressors} \\
Q_v &= \left(0.13 \frac{N}{dT} + 8\right) \text{ for GA Full-Feature with IFD water-cooled compressors}
\end{align*}
\]

\( Q_v \) = required ventilation capacity in m³/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.

6 Position of control panel.

7 Position of mains cables.

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

9 On GA Workplace FF with IFD
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/m³. 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/m³. If oil vapour and odours are undesirable, a filter of the QD type (optional) should be installed downstream of the PD filter.

On GA Workplace FF with ICD
Filters with regard to filtration of oil and particles are included in the package. If oil vapour and odours are undesirable, a filter of the QD type (optional) should be installed downstream of the dryer.

It is recommended to provide by-pass pipes and valves over the filter to isolate the filter 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:

\[
V = \frac{(0.25 \times Qc \times P1 \times To)}{f_{\text{max}} \times dP \times T1}
\]

- \( V \) = volume of air net in l
- \( Qc \) = free air delivery of compressor in l/s
- \( P1 \) = compressor air inlet pressure in bar absolute
- \( f_{\text{max}} \) = cycle frequency = 1 cycle/30 s
- \( dP \) = \( P_{\text{unload}} - P_{\text{load}} \) in bar
- \( T1 \) = compressor air inlet temperature in K
- \( To \) = air receiver temperature in K

11 **On GA Workplace FF with IFD**
Optional dryer by-pass pipe.

**On GA Workplace FF with ICD**
Dryer by-pass pipe.

12 Condensate trap.

**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)

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<tr>
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<th>Frequency Approval</th>
<th>MC cable 2) GA Workplace (mm²/AWG)</th>
<th>LC cable 2) GA Workplace (mm²/AWG)</th>
<th>MC cable 2) GA Full-Feature (mm²/AWG)</th>
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2.3.2 For GA75/GA75 W 2) 3)

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### 2.3.3 For GA90C/GA90C W 2) 3)

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<td>--</td>
<td>4x AWG 250</td>
<td>--</td>
</tr>
<tr>
<td>440-460</td>
<td>60 - IEC</td>
<td>3x95 + 95 or 2x (3x35) + 35</td>
<td>3x70 + 70</td>
<td>3x95 + 95 or 2x (3x35) + 35</td>
<td>3x70 + 70</td>
</tr>
<tr>
<td>440-460</td>
<td>60 - CSA/UL</td>
<td>4x AWG 4/0 or 2x (4x AWG 2)</td>
<td>4x AWG 250</td>
<td>3x95 + 95 or 2x (3x35) + 35</td>
<td>3x70 + 70</td>
</tr>
<tr>
<td>440-460</td>
<td>60 - CSA/UL</td>
<td>4x AWG 2/0 or 2x (4x AWG 3)</td>
<td>4x AWG 250</td>
<td>3x95 + 95 or 2x (3x35) + 35</td>
<td>3x70 + 70</td>
</tr>
<tr>
<td>575</td>
<td>60 - CSA/UL</td>
<td>4x AWG 3/0 or 2x (4x AWG 3)</td>
<td>4x AWG 250</td>
<td>3x95 + 95 or 2x (3x35) + 35</td>
<td>3x70 + 70</td>
</tr>
</tbody>
</table>

### 2.4 Electrical connections (Figs. 1.9 and 1.10)

- Provide an isolating switch.
- Check the fuses and the setting of the overload relay. See section 7.
- Connect the power supply to terminals L1/L2/L3.
- Connect the earth conductor to earth bolt (PE) and the neutral conductor (if provided) to connector (N).

**On GA Workplace FF with ICD (Figs. 1.11 and 1.12):**

The power supply of the dryer is derived from the main voltage supply of the compressor. A multi-voltage transformer is installed in the dryer cubicle. Check that the setting at the primary side of this transformer corresponds to the supply voltage of the compressor.
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. 2.5 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.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Recirculating system</th>
<th>Open system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride (Cl(^-))</td>
<td>&lt; 600</td>
<td>&lt; 150</td>
</tr>
<tr>
<td>Sulphate (SO(_4)(^{-2}))</td>
<td>&lt; 400</td>
<td>&lt; 250</td>
</tr>
<tr>
<td>Total solids</td>
<td>&lt; 3000</td>
<td>&lt; 750</td>
</tr>
<tr>
<td>Suspended solids (as SiO(_2))</td>
<td>&lt; 10</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Free chlorine (Cl(_2))</td>
<td>&lt; 4</td>
<td>&lt; 2</td>
</tr>
<tr>
<td>Ammonia (NH(_4)(^+))</td>
<td>&lt; 0.5</td>
<td>&lt; 0.5</td>
</tr>
<tr>
<td>Copper</td>
<td>&lt; 0.5</td>
<td>&lt; 0.5</td>
</tr>
<tr>
<td>Iron</td>
<td>&lt; 0.2</td>
<td>&lt; 0.2</td>
</tr>
<tr>
<td>Manganese</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Oxygen</td>
<td>&lt; 3</td>
<td>&lt; 3</td>
</tr>
<tr>
<td>Carbonate hardness (as CaCO(_3))</td>
<td>50-1000</td>
<td>50-500</td>
</tr>
<tr>
<td>Organics (KMnO(_4) Consumption)</td>
<td>&lt; 25</td>
<td>&lt; 10</td>
</tr>
</tbody>
</table>

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°C.
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 Outdoor/altitude operation

If the compressor is installed outdoors or if the air inlet temperature can be below 0°C, precautions must be taken. In this case, and also if operating above 1000 m, consult Atlas Copco.

3.1.3 Moving/lifting

Warning

Never lift a GA workplace FF with ICD package; compressor module and ICD module must be lifted separately.

The compressor can be moved by a lift truck using the slots in the frame. Take care not to damage the bodywork during lifting or transport. Make sure that the forks protrude from the other side of the frame. The compressor can also be lifted after inserting beams into 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.

3.1.4 External compressor status indication

The electronic regulator is provided with auxiliary contacts (K05, K07, K08 and K09-Fig. 1.11) at the back of electronic module (E1-Figs. 1.2 and 1.3) for external indication of:

- low or high air pressure (K05), 5-6 closed means high air pressure
- manual load/unload or automatic operation (K07)
- warning condition (K08)
- shut-down condition (K09)

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.

3.1.5 Compressor control modes

Consult the User manual, section “Configuration menu” if it is desired to switch to another control mode.

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.

Following control modes can be selected:

3.1.5.1 Local control

The compressor will react to commands entered by the buttons on the control panel. Compressor start/stop commands via function Clock function are active, if programmed.
3.1.5.2 Remote control

The compressor will react to commands from external switches. Emergency stop (S3-Figs. 1.2 and 1.3) remains active. Compressor start/stop commands via function Clock function are still possible.

For remote starting and stopping: Connect a start/programmed stop button between terminals 30 and 33 of terminal strip (1X1-Figs. 1.9 and 1.10).

Bridge terminals 30 and 34: 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.

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.

3.1.5.3 LAN control

The compressor is controlled via a local network. Consult Atlas Copco.

3.2 Start-up

![Diagram of components]

Fig. 3.1 Components delivered loose with compressor (typical examples)
1 DD or PD filter (optional)  
2 IFD dryer  
3 Fan motor  
4 Oil cooler  
5 Check valve  
6 Compressor element  
7 Bolt, bush and nut (to be removed)  
8 Bolt (to be removed)  
9 Support (to be removed)  
10 Drive motor

Fig. 3.2 View of compressor compartment
For GA Workplace FF with ICD, assemble the compressor and dryer as described in the assembly instruction 2920 1515 00.

2. The compressor element, air receiver and motor are secured to the frame, immobilizing the vibration dampers during transport. Remove bolts (8-Fig. 3.2) and support (9-Fig. 3.2). Remove the bolts, nuts and bushes (7-Fig. 3.2 and 4-Fig. 3.3) immobilizing the vibration dampers of the compressor element. Remove the four bolts and bushes (5-Fig. 3.3) immobilizing the vibration dampers of the air receiver.

3. 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.

4. Check transformer (T1-Figs. 1.9 and 1.10) for correct connection, the settings of drive motor overload relay (F21-Figs. 1.9 and 1.10) and fan motor circuit breaker (Q15-Figs. 1.9 and 1.10) 2), and that overload relay (F21-Figs. 1.9 and 1.10) is set for automatic resetting.

5. Fit the air outlet valve (1-Fig. 1.1). On compressors provided with a dryer by-pass valve, fit valve (2-Fig. 1.3). Close the valve(s). Connect the air net to the valve(s).

6. Connect the manual condensate drain valve (4-Fig. 1.5). Close the valve. Connect the valve to a drain collector. See also Figs. 2.3 and 2.4, reference 5.

7. Connect the automatic condensate drain outlet (3-Fig. 1.5) to the drain collector.

8. 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.

9. Check the oil level. The pointer of the level gauge (7-Fig. 3.3) 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 3.3 for lubrication of the compressor element.

10. Labels are delivered with the compressor, warning the operator that:
    - the compressor automatically restarts after voltage failure (see section 1.3.3)
- the compressor is automatically controlled and may be restarted, even after manually stopping (see section 1.3.3)

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.

11. Switch on the voltage. Start the compressor and stop it immediately. Check the rotation direction of the motors.

First check the drive motor (10-Fig. 3.2). The correct rotation direction is indicated by an arrow (8-Fig. 3.6) 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 (3-Fig. 3.2) 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-Figs. 1.9 and 1.10).

12. Check the programmed settings. Consult the User manual for Elektronikon I and II regulators.

13. **On GA Workplace FF with ICD:**
- Open the dryer by-pass valve (2-Fig. 1.3)
- Close the dryer inlet valve (1-Fig. 3.4)
- Close the dryer outlet valve (3-Fig. 1.3)
- Close the air supply valve towards the PDP sensor (23-Fig. 1.7)

14. Start and run the compressor for a few minutes. Check that the compressor operates normally.

15. **On GA Workplace FF with ICD:**
- Slowly open the dryer inlet valve (1-Fig. 3.4)
- Check the dryer connections for air leaks
- Let the dryer operate for several hours with the dryer outlet valve closed
- Gradually open the dryer outlet valve and close the by-pass valve.
- Open the air supply valve towards the PDP sensor

### 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: Disconnect air inlet hose (10-Fig. 3.6), remove unloader (9-Fig. 3.6) 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.

- For Workplace FF with IFD and Pack FF, switch on the voltage 4 hours before starting to energize the crankcase heater of the refrigerant compressor of the dryer.
- For Workplace FF with ICD, if the compressor has not been used for 3 months, refer to steps 13 up to 15 of chapter 3.2 (Start up).

1. Check the oil level (7-Fig. 3.3). The pointer should register in the green range or in the orange range.
2. If the coloured part of the air filter service indicator (11-Fig. 3.6) shows full out, replace the air filter element (2-Fig. 3.3). Reset the service indicator by pushing its knob.

**On water-cooled compressors also:**

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

**On GA Workplace FF with ICD also:**

6. Close the dryer inlet valve (1-Fig. 3.4).
7. Close the air supply valve towards the PDP sensor (23-Fig. 1.7).
8. Close the dryer outlet valve (3-Fig. 1.3).
3.4 Starting

Important
1. The regulator has a control function for correct motor rotation direction. The message <<Rota>> will appear on the display (3) if the rotation direction is wrong. In this case, switch off the voltage and reverse two incoming lines.
2. For GA Full-Feature with IFD, switch on the voltage 4 hours before starting to energize the crankcase heater of the refrigerant compressor.

Starting
1. Switch on the voltage. Check that voltage on LED (6) lights up.
2. On GA Workplace (FF with IFD), open the air outlet valve (1-Fig. 1.1).
3. Close the condensate drain valve (4-Fig. 1.5).
4. Press the start button I. The compressor starts running and the automatic operation LED (8) lights up. Ten seconds 1) after starting, the drive motor switches over from star to delta. At the same time 1) the compressor starts running loaded. The message on display (3) 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°C 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.

On GA Workplace FF with ICD also:
6. Slowly open the dryer inlet valve (1-Fig. 3.4).
7. Gradually open the dryer outlet valve (3-Fig. 1.3).
8. Close the by-pass valve (2-Fig. 1.3).
9. Open the shut-off valve towards the PDP sensor (23-Fig. 1.7).

**Note**
The dryer is sensitive to high air flow velocities because this can damage the desiccant. High-speed flow occurs when a compressor starts against an empty air net. Therefore, the air net must be filled by slowly opening the dryer outlet valve (3-Fig. 1.3).
Example:
If operating at a pressure of 10 bar(e) in an ambient temperature of 20°C and at a relative air humidity of 100 %, the minimum temperature to prevent condensate from forming is 68°C. Regulate the cooling water flow during loaded operation to obtain a temperature between 70 and approx. 75°C at the outlet of the compressor element.

Fig. 3.5 Minimum compressor element temperature for water-cooled units

3.5 During operation
1. Check the oil level during loaded operation: the pointer of the level gauge (7-Fig. 3.3) must register in the green range.
   If the level is in the LOW range, press the stop button O, wait until the compressor has stopped and switch off the voltage. Depressurize the oil system by unscrewing the oil filler plug (3-Fig. 3.3) one turn, wait a few minutes and add oil until the level reaches the filler plug. Tighten the plug.
2. If the coloured part of the air filter service indicator (11-Fig. 3.6) shows full out, stop the compressor, switch off the voltage and replace the air filter element (2-Fig. 3.3). Reset the indicator by pushing its knob.
3. If the automatic operation LED (8) is alight, the regulator is automatically controlling the compressor, i.e. loading, unloading, stopping of the motors and restarting.

3.5.1 Checking the display
1. Regularly check the display (3) for readings and messages. Normally, the main screen (Fig. 1.15) 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 (3) and remedy the trouble if alarm LED (7) is alight or blinks. Consult the User manual, section “Status data menu”.
3. The display (3) will show a service message if a service plan interval has been exceeded or if a service level for a monitored component has been exceeded. Carry out the service actions of the
indicated plans or replace the component and reset the relevant timer. Consult the User manual, section “Status data menu”.

4. For a quick look at the compressor status, consult section 1.5.3.

Warning
Before carrying out any maintenance, repair or adjustment, stop the compressor, press emergency stop button (S3-Figs. 1.2 and 1.3), 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 (F1-F2-F3) are filled with blinking indicators (**).
- When more than one message needs to be displayed, the messages will be displayed one after the other for 3 seconds.

3.6 Manual control

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

Manually unloading 3)
If required, the compressor can be unloaded manually:
Press the key Unld (F3). LED (8) goes out. The message <<Manual Unload>> appears on the display. The compressor remains running unloaded unless it is loaded again manually.

Manually loading 3)
Press the key Load (F3). LED (8) lights up. The command 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 6 minutes after the last stop.

3.7 Stopping

1. Press the stop button O. LED (8) goes out. The message <<Progr. stop>> appears. The compressor runs unloaded for approx. 30 seconds and then stops.
2. To stop the compressor in case of emergency, press button (S3-Figs. 1.2 and 1.3). Alarm LED (7) blinks. After remedying the fault, unlock the button by pulling it out and press the key Rset (9) before restarting. The message <<All conditions are OK>> appears. Press the keys Menu and Main.
3. Close the air outlet valve and switch off the voltage.
4. Open the condensate drain valve (4-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.
Fig. 3.6 View of compressor element

1. Oil cooler
2. Safety valve
3. Compressor element
4. Check valve
5. Oil drain plug, check valve
6. Oil stop valve
7. Oil drain plug, oil stop valve
8. Arrow, motor rotation direction (depends on compressor type)
9. Unloader
10. Air inlet hose
11. Service indicator, air filter
12. Loading solenoid valve
13. Oil filters
3.8 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) Programmable.
2) For air-cooled compressors.
3) If <<Load>> or <<Unld>> is not indicated on display (3), press the key Menu (9) until <<Main>> appears above key (F1), then press the key Main.
4 MAINTENANCE

Attention
Before carrying out any maintenance or repair on the compressor, press the stop button O, wait until the compressor has stopped (approx. 30 seconds), press emergency stop button (S3-Figs. 1.2 and 1.3) and switch off the voltage. Close the air outlet valve and open manual drain valve (4-Fig. 1.5). 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 (10-Fig. 3.2)
Also consult the manufacturer's instructions stuck on the drive motor.

The bearings must be re-greased every 4,000 operating hours with a high-temperature ball bearing grease ASONIC HQ 72-102. Quantity: 16 g per bearing. The lubrication points are marked. A cartridge with the correct type of grease can be ordered at Atlas Copco; see section 4.6.

4.2 Preventive maintenance schedule for the compressor 1)
Service plans
A number of service operations are grouped in plans, called Service plans A, B, C or D. Each plan has a programmed time interval at which all service actions belonging to that plan are to be carried out.

When reaching the interval, a message will appear on the screen indicating which Service plans are to be carried out. Consult the User manual, section “Status data menu”.

After servicing, the intervals are to be reset.

Important
Always consult Atlas Copco in case any timer setting should be changed.

Service kits
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.

General
The schedule comprises a summary of the maintenance instructions. Read the respective section before taking maintenance measures. When servicing, replace all disengaged packings, e.g. gaskets, O-rings, washers.
Preventive maintenance schedule

<table>
<thead>
<tr>
<th>Period</th>
<th>See section</th>
<th>See notes below table</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>3</td>
<td>-</td>
<td>Check oil level</td>
</tr>
<tr>
<td></td>
<td>3 and 7</td>
<td>-</td>
<td>Check readings on display</td>
</tr>
<tr>
<td>**</td>
<td>--</td>
<td>-</td>
<td>Check that condensate is discharged during loading</td>
</tr>
<tr>
<td>**</td>
<td>3</td>
<td>-</td>
<td>Check air filter service indicator</td>
</tr>
<tr>
<td>**</td>
<td>3</td>
<td>-</td>
<td>Check for cooling water flow (water-cooled compressors)</td>
</tr>
<tr>
<td>**</td>
<td>3</td>
<td>-</td>
<td>Drain condensate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>** On GA Workplace FF with ICD also</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Check the pressure dewpoint temperature</td>
</tr>
<tr>
<td>3-monthly</td>
<td>5</td>
<td>-</td>
<td>Check coolers and condenser of dryer; clean if necessary</td>
</tr>
<tr>
<td>**</td>
<td>5</td>
<td>1</td>
<td>Remove air filter element (AF). Clean by air jet and inspect</td>
</tr>
<tr>
<td>Yearly</td>
<td>-</td>
<td>-</td>
<td>Carry out service plans A and B</td>
</tr>
</tbody>
</table>

Service plans

<table>
<thead>
<tr>
<th>Running hours</th>
<th>See section</th>
<th>See notes below table</th>
<th>Service plan</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000</td>
<td>4</td>
<td>2/4</td>
<td>A</td>
<td>If Atlas Copco Roto-injectfluid is used, change oil and oil filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>** For GA 13 bar (175 psi) compressors:</td>
</tr>
<tr>
<td>500</td>
<td>4</td>
<td>2/3/4</td>
<td>A</td>
<td>If oil as specified in section 4.3.2 is used, change oil and oil filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>** For GA 7.5 - 10 bar (100 - 150 psi) compressors:</td>
</tr>
<tr>
<td>1000</td>
<td>4</td>
<td>2/3/4</td>
<td>A</td>
<td>If oil as specified in section 4.3.2 is used, change oil and oil filter</td>
</tr>
</tbody>
</table>
### Running hours

<table>
<thead>
<tr>
<th>Service plan</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Check pressure and temperature readings</td>
</tr>
<tr>
<td>B</td>
<td>Carry out a LED/display test</td>
</tr>
<tr>
<td>B</td>
<td>Check for possible air, oil or water leakage</td>
</tr>
<tr>
<td>B</td>
<td>Replace air filter element</td>
</tr>
<tr>
<td>B</td>
<td>Remove, dismantle and clean float valve of condensate trap</td>
</tr>
<tr>
<td>B</td>
<td>Test temperature shut-down function</td>
</tr>
<tr>
<td>B</td>
<td>Test safety valve</td>
</tr>
<tr>
<td>For GA Workplace FF with ICD:</td>
<td>Replace the silencers of the dryer</td>
</tr>
<tr>
<td>For GA Workplace FF with ICD:</td>
<td>Replace the elements of the IPD and DDp filters</td>
</tr>
<tr>
<td>C</td>
<td>Replace oil separator</td>
</tr>
<tr>
<td>For GA Workplace FF with ICD:</td>
<td>Exchange the dewpoint sensor</td>
</tr>
<tr>
<td>For GA Workplace FF with ICD:</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Have the desiccant of the ICD dryer replaced</td>
</tr>
</tbody>
</table>

### Notes

1. More frequently when operating in a dusty atmosphere. Replace damaged or heavily contaminated elements.
2. Use genuine Atlas Copco filters.
3. The interval for Service plan A is to be reduced to the mentioned interval in case mineral oil is used instead of Roto-injectfluid.
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. Check the pressure drop when the compressor is running loaded and preferably with a stable working pressure.
6. Any leakage should be attended to immediately. Damaged flexibles or flexible joints must be replaced.
7. See User manual, section “Test menu”.
8. See User manual, section “Modify protection settings”. 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. The certificate is only one year valid; for updating consult your Atlas Copco customer centre.
10. At normal working conditions, the lifetime of the desiccant is approximately 5 years.

### 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.

Atlas Copco Roto-injectfluid can be ordered in following quantities:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Ordering number</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-litre can</td>
<td>2901 0522 00</td>
</tr>
<tr>
<td>209-litre drum</td>
<td>2901 0045 01</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>Viscosity grade</th>
<th>Viscosity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistently above 25°C</td>
<td>ISO VG 68</td>
<td>Minimum 95</td>
</tr>
<tr>
<td>Between 25 and 0°C</td>
<td>ISO VG 46</td>
<td>Minimum 95</td>
</tr>
</tbody>
</table>

4.4 Oil and oil filter change

1. Run the compressor unloaded for 3 minutes.
2. Stop the compressor. Switch off the voltage. Un screw oil filler plug (3-Fig. 3.3) only one turn to permit any pressure in the system to escape.
3. Remove the vent plug of the oil cooler, wait 5 minutes, remove drain plug (7-Fig. 3.6) and catch the oil in a receptacle.
4. Remove the oil filters (13-Fig. 3.6).
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 (6-Fig. 3.3 and 5-Fig. 3.6). Collect the oil in a collector and deliver it to the local oil collection service.
7. Reinstall plugs (6-Fig. 3.3, 5-Fig. 3.6 and 7-Fig. 3.6) and fill the air receiver with oil until the level reaches the filler plug opening. Reinstall oil filler plug (3-Fig. 3.3) and the vent plug of the oil cooler.
8. Run the compressor for a few minutes loaded. 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 opening. Tighten filler plug (3-Fig. 3.3).
9. After carrying out the service actions of the related service plan, reset the timer. See User manual, section “Status data menu”.

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.

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

![Service kits diagram](image)

Fig. 4.1 Preventive maintenance kits (typical examples)

<table>
<thead>
<tr>
<th>Service kit for oil filters and air filter</th>
<th>Ordering number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For GA55-GA55 W</td>
<td>2901 0775 00</td>
</tr>
<tr>
<td>For GA75-GA75 W</td>
<td>2901 0776 00</td>
</tr>
<tr>
<td>For GA90C-GA90C W</td>
<td>2901 0776 00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service kit for oil separator</th>
<th>Ordering number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For all GA</td>
<td>2901 0774 00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service kit for ICD dryers</th>
<th>Ordering number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD170</td>
<td>2901 1004 00</td>
</tr>
<tr>
<td>ICD230</td>
<td>2901 0995 00</td>
</tr>
<tr>
<td>ICD280</td>
<td>2901 0995 00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service plan D</th>
<th>Ordering number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD170</td>
<td>2901 1005 00</td>
</tr>
<tr>
<td>ICD230</td>
<td>2901 0996 00</td>
</tr>
<tr>
<td>ICD280</td>
<td>2901 0996 00</td>
</tr>
</tbody>
</table>

**Motor grease**
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. The local Atlas Copco Sales Company may overrule this schedule depending on the working conditions of the compressor.
5 ADJUSTMENTS AND SERVICING PROCEDURES

5.1 Air filter (2-Fig. 3.3)
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 (11-Fig. 3.6) by pushing the knob in the extremity of the body.
4. After carrying out the service actions of the related service plan, reset the timer. See User manual, section “Status data menu”.

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 (2-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.
6 PROBLEM SOLVING

Consult the User manual, section “Status data menu” if a service message or fault message appears on the display (3) or when the alarm LED (7) is alight or blinks.

Before starting repairs:
Press the stop button O, wait until the compressor has stopped (approx. 30 seconds), press the emergency stop button (S3-Figs. 1.2 and 1.3) 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 (Figs. 1.6 and 1.7)

1. Start 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 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

On GA Workplace FF with ICD also:

8 Pressure dewpoint temperature to high
   a. The dryer is not yet regenerated
   a. Close the dryer outlet valve and have the desiccant regenerated
   b. Free water in compressed air inlet
   b. Check that condensate separators and drains upstream of the dryer are operative
c. Air flow through the dryer too high  
   c. Correct as necessary  
   d. Outlet pressure too low  
   d. Check whether the compressor provides enough air for the application  
   e. Compressed air temperature at dryer inlet too high  
   e. Check compressor aftercooler  

9 The dryer produces a lot of noise  
   a. Silencers defective or connected badly  
   a. Check the silencers and their fixations  

10 Insufficient air leaves the dryer  
   a. Too much purge air flow  
   a. Check the condition of solenoid valves, pneumatic valves and 3-way valve. Replace if defective.
7 PRINCIPAL DATA

7.1 Readings on display (3-Fig. 1.8) 1)

Ref. **Air outlet pressure**
Reading: Modulates between programmed unloading and loading pressures
Shown: On main screen (Fig. 1.15)

Ref. **Compressor element outlet temperature**
Reading: Approx. 60°C above ambient temperature
Shown: Use ↓ key on main screen (Fig. 1.15)

Ref. **Pressure difference over oil separator**
Reading: Below 1 bar
Shown: Use ↓ key on main screen (Fig. 1.15)

Ref. **Cooling water outlet temperature**
Reading: Below 50°C
Shown: Use ↓ key on main screen (Fig. 1.15)

On **GA Workplace FF with IFD**
Ref. **Pressure dewpoint temperature**
Reading: Approx. 4°C
Shown: Use ↓ key on main screen (Fig. 1.15)

On **GA Workplace FF with ICD (-40°C variant)**
Ref. **Pressure dewpoint temperature**
Reading: Approx. -40°C
Shown: Use ↓ key on main screen (Fig. 1.15)

On **GA Workplace FF with ICD (-70°C variant)**
Ref. **Pressure dewpoint temperature**
Reading: Approx. -70°C
Shown: Use ↓ key on main screen (Fig. 1.15)

7.2 Settings of safety valve

<table>
<thead>
<tr>
<th>Compressor type</th>
<th>Safety valve set pressure(e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA 7.5-8 bar</td>
<td>12 bar(e)</td>
</tr>
<tr>
<td>GA 10 bar</td>
<td>12 bar(e)</td>
</tr>
<tr>
<td>GA 13 bar</td>
<td>14.5 bar(e)</td>
</tr>
<tr>
<td>GA 100 psi</td>
<td>200 psig</td>
</tr>
<tr>
<td>GA 125 psi</td>
<td>200 psig</td>
</tr>
<tr>
<td>GA 150 psi</td>
<td>200 psig</td>
</tr>
<tr>
<td>GA 175 psi</td>
<td>215 psig</td>
</tr>
<tr>
<td>GA 7.5-8 bar/ISPESL approved</td>
<td>11 bar(e)</td>
</tr>
<tr>
<td>GA 10 bar/ISPESL approved</td>
<td>11 bar(e)</td>
</tr>
<tr>
<td>GA 13 bar/ISPESL approved</td>
<td>14 bar(e)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Overload relay F21</th>
<th>Circuit breaker Q15 3)</th>
<th>Fuses</th>
<th>Fuses CSA HRCII-C</th>
<th>Fuses UL Class K5</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 V 50 Hz - IEC</td>
<td>137 (A)</td>
<td>9.6 (A)</td>
<td>See (A)</td>
<td>(A)</td>
<td>- (A)</td>
<td>- (A)</td>
</tr>
<tr>
<td>230 V 50 Hz - IEC</td>
<td>119</td>
<td>9 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400 V 50 Hz - IEC</td>
<td>68</td>
<td>4.8 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>440 V 50 Hz - IEC</td>
<td>62</td>
<td>4.5 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500 V 50 Hz - IEC</td>
<td>57</td>
<td>3.8 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>550 V 50 Hz - IEC</td>
<td>50</td>
<td>3.5 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>690 V 50 Hz - IEC</td>
<td>40</td>
<td>2.8 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 V 60 Hz - IEC</td>
<td>137</td>
<td>10.5 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 V 60 Hz CSA/UL</td>
<td>137</td>
<td>10.5 - 250 250</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>220-230 V 60 Hz - IEC</td>
<td>125</td>
<td>9 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220-230 V 60 Hz CSA/UL</td>
<td>125</td>
<td>9 - 250 250</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>380 V 60 Hz - IEC</td>
<td>71</td>
<td>4.8 See</td>
<td>-</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>440-460 V 60 Hz - IEC</td>
<td>63</td>
<td>4.6 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>440-460 V 60 Hz CSA/UL</td>
<td>58</td>
<td>4.6 - 110 125</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>575 V 60 Hz CSA/UL</td>
<td>48</td>
<td>3.7 - 100 100</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 7.3.2 For GA75/GA75 W

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Overload relay F21</th>
<th>Circuit breaker Q15 3)</th>
<th>Fuses</th>
<th>Fuses CSA HRCII-C</th>
<th>Fuses UL Class K5</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 V 50 Hz - IEC</td>
<td>188 (A)</td>
<td>9.6 (A)</td>
<td>See (A)</td>
<td>(A)</td>
<td>- (A)</td>
<td>- (A)</td>
</tr>
<tr>
<td>230 V 50 Hz - IEC</td>
<td>164</td>
<td>9 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400 V 50 Hz - IEC</td>
<td>94</td>
<td>4.8 See</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Supply voltage

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Overload relay F21</th>
<th>Circuit breaker Q15 3)</th>
<th>Fuses</th>
<th>Fuses CSA HRCII-C</th>
<th>Fuses UL Class K5</th>
</tr>
</thead>
<tbody>
<tr>
<td>440</td>
<td>50 Hz - IEC</td>
<td>85</td>
<td>4.4</td>
<td>7.3.4</td>
<td>See</td>
<td>-</td>
</tr>
<tr>
<td>500</td>
<td>50 Hz - IEC</td>
<td>75</td>
<td>3.8</td>
<td>7.3.4</td>
<td>See</td>
<td>-</td>
</tr>
<tr>
<td>550</td>
<td>50 Hz - IEC</td>
<td>69</td>
<td>3.5</td>
<td>7.3.4</td>
<td>See</td>
<td>-</td>
</tr>
<tr>
<td>690</td>
<td>50 Hz - IEC</td>
<td>55</td>
<td>2.8</td>
<td>7.3.4</td>
<td>See</td>
<td>-</td>
</tr>
<tr>
<td>200</td>
<td>60 Hz - IEC</td>
<td>201</td>
<td>10.5</td>
<td>See</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>200</td>
<td>60 Hz - IEC</td>
<td>201</td>
<td>10.5</td>
<td>See</td>
<td>-</td>
<td>400 400</td>
</tr>
<tr>
<td>220-230</td>
<td>60 Hz - IEC</td>
<td>182</td>
<td>9</td>
<td>See</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>220-230</td>
<td>60 Hz - IEC</td>
<td>182</td>
<td>9</td>
<td>See</td>
<td>-</td>
<td>350 350</td>
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<tr>
<td>380</td>
<td>60 Hz - IEC</td>
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<td>440-460</td>
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<td>91</td>
<td>4.6</td>
<td>See</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>440-460</td>
<td>60 Hz - IEC</td>
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<td>See</td>
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<td>175 175</td>
</tr>
<tr>
<td>575</td>
<td>60 Hz - IEC</td>
<td>71</td>
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<td>-</td>
<td>150 150</td>
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</tr>
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</table>

### 7.3.3 For GA90C/GA90C W

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Overload relay F21</th>
<th>Circuit breaker Q15 3)</th>
<th>Fuses</th>
<th>Fuses CSA HRCII-C</th>
<th>Fuses UL Class K5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(V)</td>
<td>(A)</td>
<td>(A)</td>
<td>(A)</td>
<td>(A)</td>
<td>(A)</td>
<td>(A)</td>
</tr>
<tr>
<td>200</td>
<td>50 Hz - IEC</td>
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<td>14</td>
<td>See</td>
<td>-</td>
<td>-</td>
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<tr>
<td>230</td>
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<td>12</td>
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<td>-</td>
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<td>7</td>
<td>See</td>
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<td>-</td>
</tr>
<tr>
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<td>50 Hz - IEC</td>
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<td>6.3</td>
<td>See</td>
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<td>-</td>
</tr>
<tr>
<td>500</td>
<td>50 Hz - IEC</td>
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<td>5.6</td>
<td>See</td>
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<td>-</td>
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<td>50 Hz - IEC</td>
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<td>15</td>
<td>See</td>
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<tr>
<td></td>
<td>CSA/UL</td>
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<td></td>
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</table>
### 7.3.4 Maximum fuse setting

<table>
<thead>
<tr>
<th>Cable size (mm²)</th>
<th>Maximum fuse (A)</th>
</tr>
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<tbody>
<tr>
<td>16</td>
<td>63</td>
</tr>
<tr>
<td>25</td>
<td>80</td>
</tr>
<tr>
<td>35</td>
<td>100</td>
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<tr>
<td>50</td>
<td>125</td>
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<tr>
<td>70</td>
<td>160</td>
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<tr>
<td>95</td>
<td>200</td>
</tr>
<tr>
<td>120</td>
<td>250</td>
</tr>
<tr>
<td>150</td>
<td>250</td>
</tr>
</tbody>
</table>

### 7.4 Settings of dryer switches (on GA Workplace Full-Feature with IFD)

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.

### 7.5 Compressor specifications

#### 7.5.1 Reference conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air inlet pressure (absolute)</td>
<td>bar</td>
<td>1</td>
</tr>
<tr>
<td>Air inlet temperature</td>
<td>Celsius</td>
<td>20</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>%</td>
<td>0</td>
</tr>
<tr>
<td>Working pressure</td>
<td>bar(e)</td>
<td>See nominal values below</td>
</tr>
</tbody>
</table>

On water-cooled units also:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling water inlet temperature</td>
<td>Celsius</td>
<td>20</td>
</tr>
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</table>

#### 7.5.2 Limitations

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum working pressure</td>
<td>bar(e)</td>
<td>See maximum values below</td>
</tr>
<tr>
<td>Minimum working pressure</td>
<td>bar(e)</td>
<td>4</td>
</tr>
<tr>
<td>Maximum air inlet temperature</td>
<td>Celsius</td>
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</tr>
<tr>
<td>Minimum air inlet temperature</td>
<td>Celsius</td>
<td>0</td>
</tr>
</tbody>
</table>
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 Workplace 4)

<table>
<thead>
<tr>
<th>Compressor type</th>
<th>7.5 bar</th>
<th>8 bar</th>
<th>10 bar</th>
<th>100 psi</th>
<th>125 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Hz</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Maximum (unloading) pressure</td>
<td>bar(e)</td>
<td>7.5</td>
<td>8</td>
<td>10</td>
<td>7.4</td>
</tr>
<tr>
<td>Nominal working pressure</td>
<td>bar(e)</td>
<td>7</td>
<td>8</td>
<td>9.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Temperature of air leaving outlet valve, approx.</td>
<td>Celsius</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Motor shaft speed</td>
<td>r/min</td>
<td>2960</td>
<td>2960</td>
<td>2960</td>
<td>3565</td>
</tr>
<tr>
<td>Power input, GA</td>
<td>kW</td>
<td>65.9</td>
<td>67.2</td>
<td>64.7</td>
<td>65.7</td>
</tr>
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<td>Power input, GA W</td>
<td>kW</td>
<td>63.7</td>
<td>64.9</td>
<td>62.5</td>
<td>63.4</td>
</tr>
<tr>
<td>Oil capacity, GA</td>
<td>l</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
</tr>
<tr>
<td>Oil capacity, GA W</td>
<td>l</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
</tr>
<tr>
<td>Mean sound pressure level</td>
<td>dB</td>
<td>66</td>
<td>66</td>
<td>66</td>
<td>67</td>
</tr>
<tr>
<td>Cooling water consumption, GA W</td>
<td>l/min</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Cooling water consumption, GA W</td>
<td>l/min</td>
<td>84</td>
<td>84</td>
<td>84</td>
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### 7.5.4 GA55/GA55 W Workplace Full-Feature with IFD 4)

<table>
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<th>Compressor type</th>
<th>7.5 bar</th>
<th>8 bar</th>
<th>10 bar</th>
<th>100 psi</th>
<th>125 psi</th>
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<tr>
<td>Frequency</td>
<td>Hz</td>
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<td>50</td>
<td>50</td>
<td>60</td>
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<tr>
<td>Maximum (unloading) pressure</td>
<td>bar(e)</td>
<td>7.25</td>
<td>7.75</td>
<td>9.75</td>
<td>7.15</td>
</tr>
<tr>
<td>Nominal working pressure</td>
<td>bar(e)</td>
<td>7</td>
<td>7.75</td>
<td>9.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Temperature of air leaving outlet valve, approx.</td>
<td>Celsius</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Motor shaft speed</td>
<td>r/min</td>
<td>2960</td>
<td>2960</td>
<td>2960</td>
<td>3565</td>
</tr>
<tr>
<td>Power input, GA</td>
<td>kW</td>
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<td>kW</td>
<td>67.8</td>
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<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
</tr>
<tr>
<td>Oil capacity, GA W</td>
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<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
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<td>66</td>
<td>66</td>
<td>67</td>
</tr>
<tr>
<td>Cooling water consumption, GA W</td>
<td>l/min</td>
<td>56</td>
<td>56</td>
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<tr>
<td>Cooling water consumption, GA W</td>
<td>l/min</td>
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<td>84</td>
<td>84</td>
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<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
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<td>Refrigerant charge</td>
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<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
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### 7.5.5 GA75/GA75 W Workplace 4)

<table>
<thead>
<tr>
<th>Compressor type</th>
<th>7.5 bar</th>
<th>8 bar</th>
<th>10 bar</th>
<th>13 bar</th>
<th>100 psi</th>
<th>125 psi</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Hz</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Maximum (unloading) pressure</td>
<td>bar(e)</td>
<td>7.5</td>
<td>8</td>
<td>10</td>
<td>13</td>
<td>7.4</td>
</tr>
<tr>
<td>Nominal working pressure</td>
<td>bar(e)</td>
<td>7</td>
<td>8</td>
<td>9.5</td>
<td>12.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Temperature of air leaving outlet valve, approx.</td>
<td>Celsius</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Compressor type</td>
<td>7.5 bar</td>
<td>8 bar</td>
<td>10 bar</td>
<td>13 bar</td>
<td>100 psi</td>
<td>125 psi</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
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</tr>
<tr>
<td>Frequency</td>
<td>Hz</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Maximum (unloading)</td>
<td>bar(e)</td>
<td>7.25</td>
<td>7.75</td>
<td>9.75</td>
<td>12.75</td>
<td>7.15</td>
</tr>
<tr>
<td>Nominal working pressure</td>
<td>bar(e)</td>
<td>7</td>
<td>7.75</td>
<td>9.5</td>
<td>12.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Motor shaft speed</td>
<td>r/min</td>
<td>2965</td>
<td>2965</td>
<td>2965</td>
<td>2965</td>
<td>3570</td>
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<tr>
<td>Power input, GA</td>
<td>kW</td>
<td>93.3</td>
<td>94.7</td>
<td>92.8</td>
<td>92.8</td>
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<td>92.5</td>
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<td>90.6</td>
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<td>29.5</td>
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<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
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<td>68</td>
<td>68</td>
<td>68</td>
<td>69</td>
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<td>Cooling water consumption, GA W 6</td>
<td>l/min</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>76</td>
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<td>Cooling water consumption, GA W 7</td>
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<td>114</td>
<td>114</td>
<td>114</td>
<td>114</td>
<td>114</td>
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<td>Refrigerant type</td>
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<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
</tr>
<tr>
<td>Refrigerant charge</td>
<td>kg</td>
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<td>2.6</td>
<td>2.6</td>
<td>2.6</td>
<td>2.6</td>
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<tr>
<td>Pressure dewpoint, Full-Feature 8</td>
<td>Celsius</td>
<td>3</td>
<td>3</td>
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7.5.7 GA90C/GA90C W Workplace 4)

<table>
<thead>
<tr>
<th>Compressor type</th>
<th>7.5 bar</th>
<th>8 bar</th>
<th>10 bar</th>
<th>13 bar</th>
<th>100 psi</th>
<th>125 psi</th>
<th>150 psi</th>
<th>175 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Hz</td>
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<td>50</td>
<td>50</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Maximum (unloading)</td>
<td>bar(e)</td>
<td>7.5</td>
<td>8</td>
<td>10</td>
<td>13</td>
<td>7.4</td>
<td>9.1</td>
<td>10.8</td>
</tr>
<tr>
<td>Nominal working pressure</td>
<td>bar(e)</td>
<td>7</td>
<td>8</td>
<td>9.5</td>
<td>12.5</td>
<td>6.9</td>
<td>8.6</td>
<td>10.3</td>
</tr>
<tr>
<td>Temperature of air leaving outlet valve, approx.</td>
<td>Celsius</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Motor shaft speed</td>
<td>r/min</td>
<td>2970</td>
<td>2970</td>
<td>2970</td>
<td>2970</td>
<td>3575</td>
<td>3575</td>
<td>3575</td>
</tr>
<tr>
<td>Power input, GA</td>
<td>kW</td>
<td>99.1</td>
<td>105.5</td>
<td>99.6</td>
<td>99.9</td>
<td>100.4</td>
<td>101.2</td>
<td>101.9</td>
</tr>
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</table>
Power input, GA W kW 95.0 101.5 95.6 95.9 96.0 96.8 97.5 96.8
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 26.5 26.5 26.5 26.5 26.5 26.5 26.5 26.5
Mean sound pressure level dB 73 73 73 73 74 74 74 74
Cooling water consumption l/min 86 86 86 86 86 86 86 86
Cooling water consumption l/min 129 129 129 129 129 129 129 129

7.5.8 GA90C/GA90C W Workplace Full-Feature with IFD 4)

<table>
<thead>
<tr>
<th>Compressor type</th>
<th>7.5 bar</th>
<th>8 bar</th>
<th>10 bar</th>
<th>13 bar</th>
<th>100 psi</th>
<th>125 psi</th>
<th>150 psi</th>
<th>175 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Hz</td>
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<td>50</td>
<td>50</td>
<td>50</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Maximum (unloading) pressure bar(e)</td>
<td>7.25</td>
<td>7.75</td>
<td>9.75</td>
<td>12.75</td>
<td>7.15</td>
<td>8.85</td>
<td>10.55</td>
<td>12.25</td>
</tr>
<tr>
<td>Nominal working pressure bar(e)</td>
<td>7</td>
<td>7.75</td>
<td>9.5</td>
<td>12.5</td>
<td>6.9</td>
<td>8.6</td>
<td>10.3</td>
<td>12</td>
</tr>
<tr>
<td>Motor shaft speed r/min</td>
<td>2970</td>
<td>2970</td>
<td>2970</td>
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<td>3575</td>
<td>3575</td>
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<tr>
<td>Power input, GA kW</td>
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<td>104.7</td>
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<td>107.9</td>
<td>108.6</td>
<td>107.5</td>
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<tr>
<td>Power input, GA W kW</td>
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<td>106.9</td>
<td>100.7</td>
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<td>103.1</td>
<td>103.5</td>
<td>104.2</td>
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</tr>
<tr>
<td>Oil capacity, GA l</td>
<td>29.5</td>
<td>29.5</td>
<td>29.5</td>
<td>29.5</td>
<td>29.5</td>
<td>29.5</td>
<td>29.5</td>
<td>29.5</td>
</tr>
<tr>
<td>Mean sound pressure level dB</td>
<td>73</td>
<td>73</td>
<td>73</td>
<td>73</td>
<td>74</td>
<td>74</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>Cooling water consumption l/min</td>
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<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>Cooling water consumption l/min</td>
<td>129</td>
<td>129</td>
<td>129</td>
<td>129</td>
<td>129</td>
<td>129</td>
<td>129</td>
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<tr>
<td>Refrigerant type R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
<td>R404a</td>
</tr>
<tr>
<td>Refrigerant charge kg</td>
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<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Pressure dewpoint, approx. Celsius</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
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</table>

7.6 Specifications of ICD dryer 4)
7.6.1 Pressure dewpoint –40°C variant

7.6.1.1 For compressors with a working pressure up to 10 bar

<table>
<thead>
<tr>
<th>Dryer type</th>
<th>ICD170C</th>
<th>ICD230C</th>
<th>ICD280C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow at dryer inlet l/s</td>
<td>170</td>
<td>230</td>
<td>280</td>
</tr>
<tr>
<td>- 7 bar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 8 bar</td>
<td>187</td>
<td>253</td>
<td>308</td>
</tr>
<tr>
<td>- 9 bar</td>
<td>204</td>
<td>276</td>
<td>336</td>
</tr>
<tr>
<td>- 10 bar</td>
<td>221</td>
<td>299</td>
<td>364</td>
</tr>
<tr>
<td>Pressure drop over the dryer bar</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Regeneration air consumption %</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Amount of desiccant per vessel Kg</td>
<td>85</td>
<td>115</td>
<td>140</td>
</tr>
</tbody>
</table>
7.6.1.2 For compressors with a working pressure of 13 bar

<table>
<thead>
<tr>
<th>Dryer type</th>
<th>ICD170C</th>
<th>ICD230C</th>
<th>ICD280C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow at dryer inlet l/s</td>
<td>215</td>
<td>291</td>
<td>353</td>
</tr>
<tr>
<td>Pressure drop over the dryer bar</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Regeneration air consumption %</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Amount of desiccant per vessel Kg</td>
<td>85</td>
<td>115</td>
<td>140</td>
</tr>
</tbody>
</table>

7.6.2 Pressure dewpoint –70°C variant

7.6.2.1 For compressors with a working pressure up to 10 bar

<table>
<thead>
<tr>
<th>Dryer type</th>
<th>ICD170C</th>
<th>ICD230C</th>
<th>ICD280C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow at dryer inlet l/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 7 bar</td>
<td>136</td>
<td>184</td>
<td>224</td>
</tr>
<tr>
<td>- 8 bar</td>
<td>149</td>
<td>202</td>
<td>246</td>
</tr>
<tr>
<td>- 9 bar</td>
<td>163</td>
<td>220</td>
<td>268</td>
</tr>
<tr>
<td>- 10 bar</td>
<td>176</td>
<td>239</td>
<td>291</td>
</tr>
<tr>
<td>Pressure drop over the dryer bar</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Regeneration air consumption %</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Amount of desiccant per vessel Kg</td>
<td>85</td>
<td>115</td>
<td>140</td>
</tr>
</tbody>
</table>

7.6.2.2 For compressors with a working pressure of 13 bar

<table>
<thead>
<tr>
<th>Dryer type</th>
<th>ICD170C</th>
<th>ICD230C</th>
<th>ICD280C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow at dryer inlet l/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure drop over the dryer bar</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Regeneration air consumption %</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Amount of desiccant per vessel Kg</td>
<td>85</td>
<td>115</td>
<td>140</td>
</tr>
</tbody>
</table>

7.7 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°C = (32 + 1.8 x) degrees Fahrenheit

Footnotes chapter 7

1) See section 1.5.3.
2) A temperature difference of 1 degree Celsius = a temperature difference of 1.8 degrees Fahrenheit.
3) On air-cooled compressors only.
4) At reference conditions.
5) According to PNEUROP PN8NTC2.2. With a tolerance of 2 dB.
6) At water inlet temperature below 35°C and temperature rise=15°C.
7) At water inlet temperature between 35 and 40°C and temperature rise=10°C.
8) At 20°C / 100% relative humidity.
8 INSTRUCTIONS FOR USE OF AIR RECEIVER

1. This vessel can contain pressurized air; be aware of its potential danger in case of misuse.
2. This vessel shall only be used as compressed air/oil separator and be operated within the specified limits as mentioned on the data plate.
3. No alterations shall be made to this vessel by welding, drilling or other methods of mechanical work without written permission of the manufacturer.
4. Original bolts have to be used after opening for inspection. The maximum torque has to be taken into consideration: for M12 bolts 73 Nm (+/- 18), for M16 bolts 185 Nm (+/- 45).
5. Pressure and temperature of this vessel must be clearly indicated.
6. The safety valve must correspond with pressure surges of 1.1 times the maximum allowable operating pressure. It should guarantee that the pressure will not permanently exceed the maximum allowable operating pressure of the vessel.
7. Use only oil as specified by the manufacturer.
8. This vessel has been designed and built to guarantee an operational lifetime in excess of 20 years and an infinite number of pressure load cycles. Therefore, there is no intrinsic need for in service inspection of the vessel when used within the design limits and in its intended application. However, national legislation may require in service inspection.
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 or air dryer 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 or air dryer shall be lifted only with adequate equipment in conformity with local safety rules.

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.

4. If necessary, install a suction duct. Never obstruct the air inlet. Gas shall be taken to minimize the entry of moisture with the inlet air.

5. Air-cooled units shall be installed so that the piping is not close to flammable material.

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, air dryer 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.

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.
SAFETY PRECAUTIONS (continued)

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 units when there is a possibility of taking in flammable or toxic fumes.

4. Never operate the units at pressures below or in excess of their 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. Safety valves and other pressure-relief devices are not obstructed by dirt or paint
   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
   h. Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse
   i. 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-dampening 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.

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, fueling case, 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.