Atlas Copco Stationary Air Compressors

GA90/315 (W) – GR110/200 (W) – ZA3/6 – ZE3/4 – ZT/ZR 15/90 – ZT110/275 – ZR110/750

User manual for Elektronikon® regulator

This manual must be used together with the relevant instruction books of the compressors.

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

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APC ZR300-750 / 38 / 987

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1 General description

In general, the regulator has following functions:
- controlling the compressor
- protecting the compressor
- monitoring components subject to service
- automatic restart after voltage failure (made inactive)
- permissive start

1.1 Controlling the compressor

The regulator maintains the net pressure between programmable limits by automatically loading and unloading the compressor depending on the air consumption. **1)**

The regulator takes into account a number of programmable settings, such as:
- the unloading pressure
- the loading pressure
- the minimum stop time
- the maximum number of motor starts

The regulator stops the compressor whenever possible (when the expected unloading period exceeds a programmed value) to reduce the power consumption and restarts it automatically when the net pressure decreases. In case the expected unloading period is below a programmed value, the regulator keeps the compressor running to prevent too short standstill periods.

When the compressor has stopped automatically and the net pressure decreases, the regulator will start the compressor before the net pressure has dropped to the loading pressure to prevent the net pressure from falling under the programmed minimum level.

When stopping the compressor manually, the regulator will unload the compressor for a programmed time and then stop the compressor. **2)**

1.2 Protecting the compressor

1.2.1 Shut-down and fan motor overload

Several temperature and pressure sensors are provided on the compressor. If one of these measurements exceeds the programmed shut-down level, the compressor will be stopped. This will be indicated on the control display.
Depending on the compressor type, the compressor will also be shut down by the regulator in case of overload of the dryer motor or fan motors.

1.2.2 Shut-down warning

If the regulator detects a temperature or pressure just below the programmed shut-down level, this will be indicated on the control panel to warn the operator before the shut-down level is reached.

The message disappears as soon as the warning condition disappears.

1.2.3 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.

1.3 Service warning

A number of service operations are grouped in plans (called Service plans A, B, C…). Each Service plan has a programmed time interval. If a time interval is exceeded, a message will appear on display (3-Fig. 2.1) to warn the operator to carry out the service actions belonging to that plan.

1.4 Automatic restart after voltage failure

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

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

The power recovery time (the period within which the voltage must be restored to have an automatic restart) can be set between 1 and 255 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.

1.5 Permissive start

After a start command (either automatic start by the Elektronikon regulator or manual start), the start conditions are checked; if the programmed start conditions are not fulfilled within a programmed time interval, the compressor will not start (indicated as Start failure).

1.6 Start commands during programmed stop time and minimum stop time

The control module also includes following functions:

- **Programmed stop time**
  After pressing stop button (1-Fig. 2.1), the compressor will run unloaded for a programmed time period. The compressor then stops. A start command during this period is ignored.

- **Minimum stop time**
  After stopping, the module prevents the motor from restarting within a programmed time period. A start command during this time will be memorized and executed after running out of this period.

Footnotes chapter 1

1) For ZE and ZA without full-load/no-load regulator, the settings for unloading and loading the compressor are not programmable; consequently, these parameters are not taken into account.
2) GA90/315 and GR110/200 have an unloading time of 30 seconds, for Z compressors this period is 3 seconds.
If a compressor with 30 seconds unloading time was running at the moment of manually stopping in automatic unloading condition for 10 seconds, it will remain running unloaded for 30 - 10 = 20 seconds before stopping.

2 Control panel (Fig. 2.1)

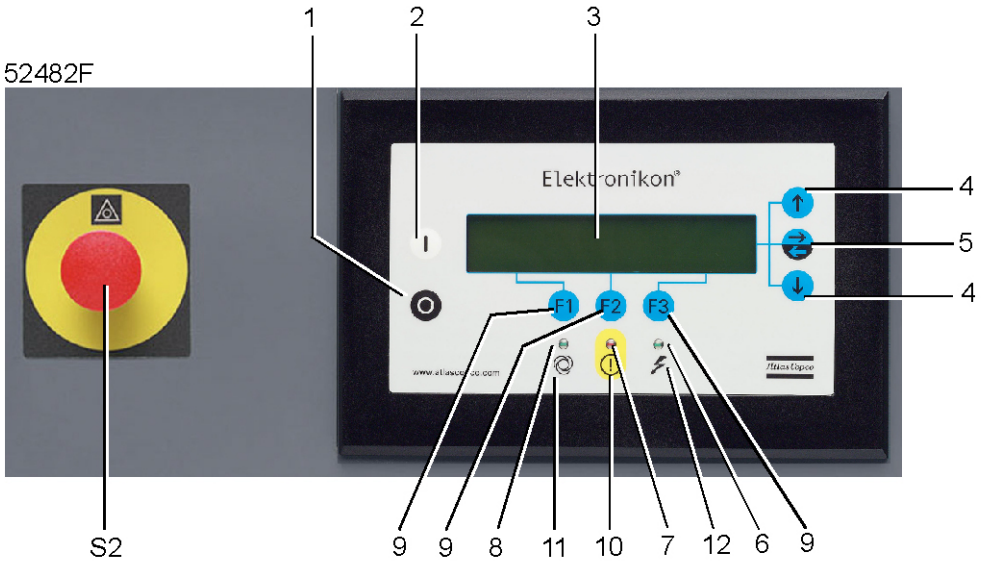

Fig. 2.1 Control panel, typical example

LEDs/buttons/keys

Ref.	Designation	Function
1	Stop button	Push button to stop the compressor. LED (8) goes out.
2	Start button	Push button to start the compressor. LED (8) lights up indicating that the regulator is operative (in automatic operation).
3	Display	Indicates messages concerning the compressor operating condition, a service need or a fault.
4	Scroll keys	Keys to scroll through the display.
5	Tabulator key	Key to select the parameter indicated by a horizontal arrow.
6	Voltage on LED	Indicates that the voltage is switched on.
7	General alarm LED	Is normally out. Is alight or blinks in case of an abnormal condition. See below.
8	Automatic operation LED	Indicates that the regulator is automatically controlling the compressor.
9	Function keys	Keys to control and program the compressor. See below.
10	Pictograph	Alarm.
11	Pictograph	Automatic operation.
12	Pictograph	Voltage on.
S2	Emergency stop button	Push button to stop the compressor immediately in case of emergency. After remedying the trouble, unlock the button by pulling it out and press reset key 9.

3 Display - keys

3.1 Display (3-Fig. 2.1)

The display has four lines of 40 characters. A typical display is shown in Fig. 4.5. It indicates:

1. On the first three lines:
   - the name of the sensor of which the actual reading is displayed
   - the unit of measurement and actual reading of the sensor
   - messages regarding the compressor operating condition (compressor off, etc.), a service need (e.g. for the oil filter and air filter) or a fault (e.g. shut-down)
2. On the fourth line, just above the three function keys (F1/F2/F3), the actual functions of these keys.

3.2 Scroll keys (4-Fig. 2.1)

These keys, labelled with vertical arrows, allow scrolling through the display.

As long as a downward pointing arrow is shown at the utmost right position of the display, the key (4) with the same symbol can be used to see the next item.

As long as an upward pointing arrow is shown at the utmost right position of the display, the key (4) with the same symbol can be used to see the previous item.

3.3 Tabulator key (5-Fig. 2.1)

This key, labelled with two horizontal arrows, allows the operator to select the parameter indicated by a horizontal arrow. Only the parameters followed by an arrow pointing to the right are accessible for modifying.

3.4 Function keys (9-Fig. 2.1)

The keys are used:
- 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 indicated on the bottom line of the display just above the relevant key. The most common functions are listed below.

Designation	Function
Add	To add compressor start/stop commands (day/hour)
Back	To return to a previously shown option or menu
Cancel	To cancel a programmed setting when programming parameters
Delete	To delete compressor start/stop commands
Extra	To find information regarding the installed modules
Help	To find the Atlas Copco internet address
Limits	To show limits for a programmable setting
Load	To load the compressor manually
Mainscreen	To return from a menu to the main screen (Fig. 4.5)
Menu	Starting from the main screen (Fig. 4.5): to have access to submenus
Menu	Starting from a submenu, to return to the previous menu
Modify	To modify programmable settings
Program	To program modified settings
Reset	To reset a timer or message
Return	To return to a previously shown menu
Unload	To unload the compressor manually

4 Menu-driven control programs

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

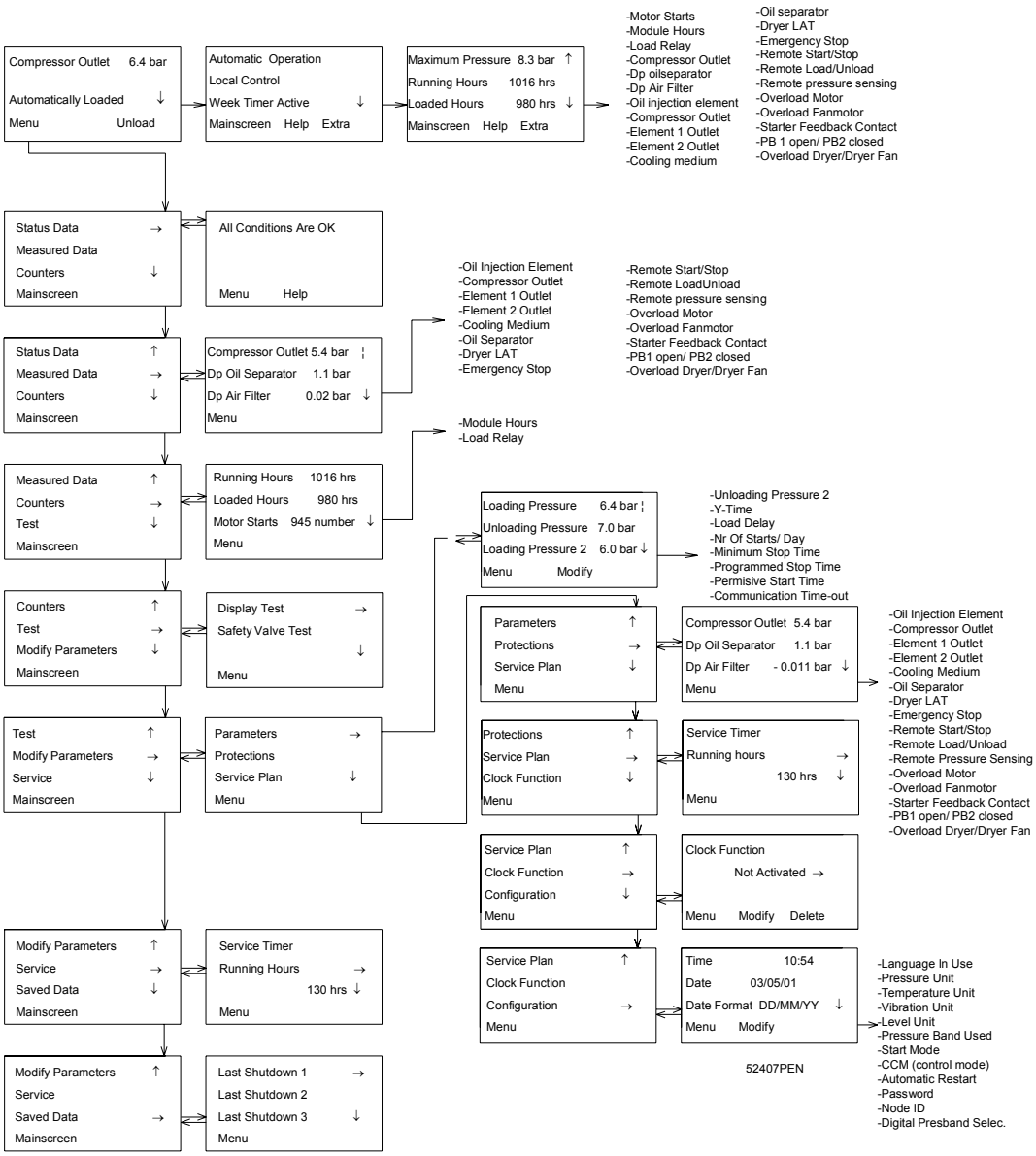

Fig. 4.1 Menu flow, GA90/315 aircooled

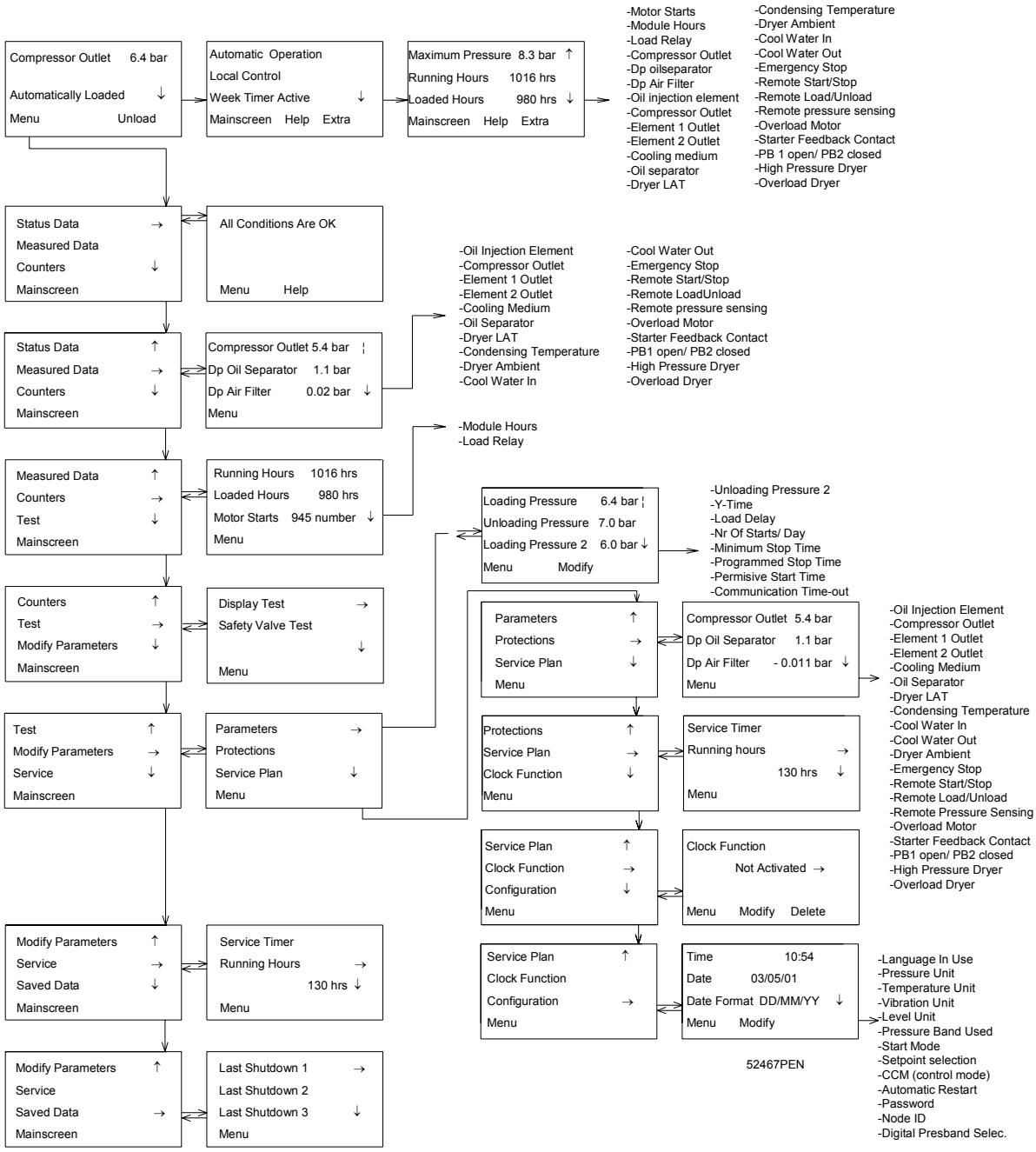

Fig. 4.2 Menu flow, GA90/315 watercooled

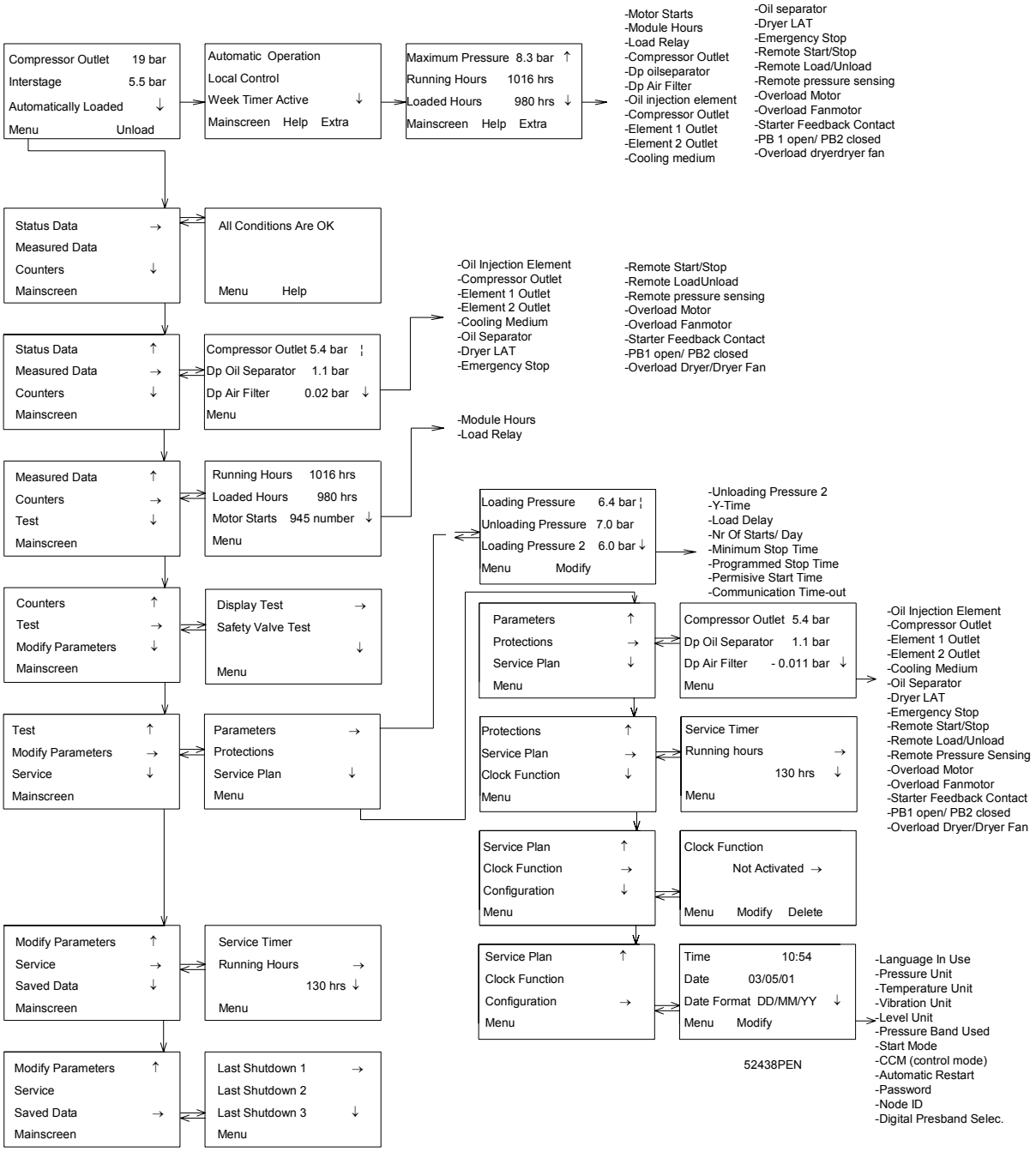

Fig. 4.3 Menu flow, GR110/200

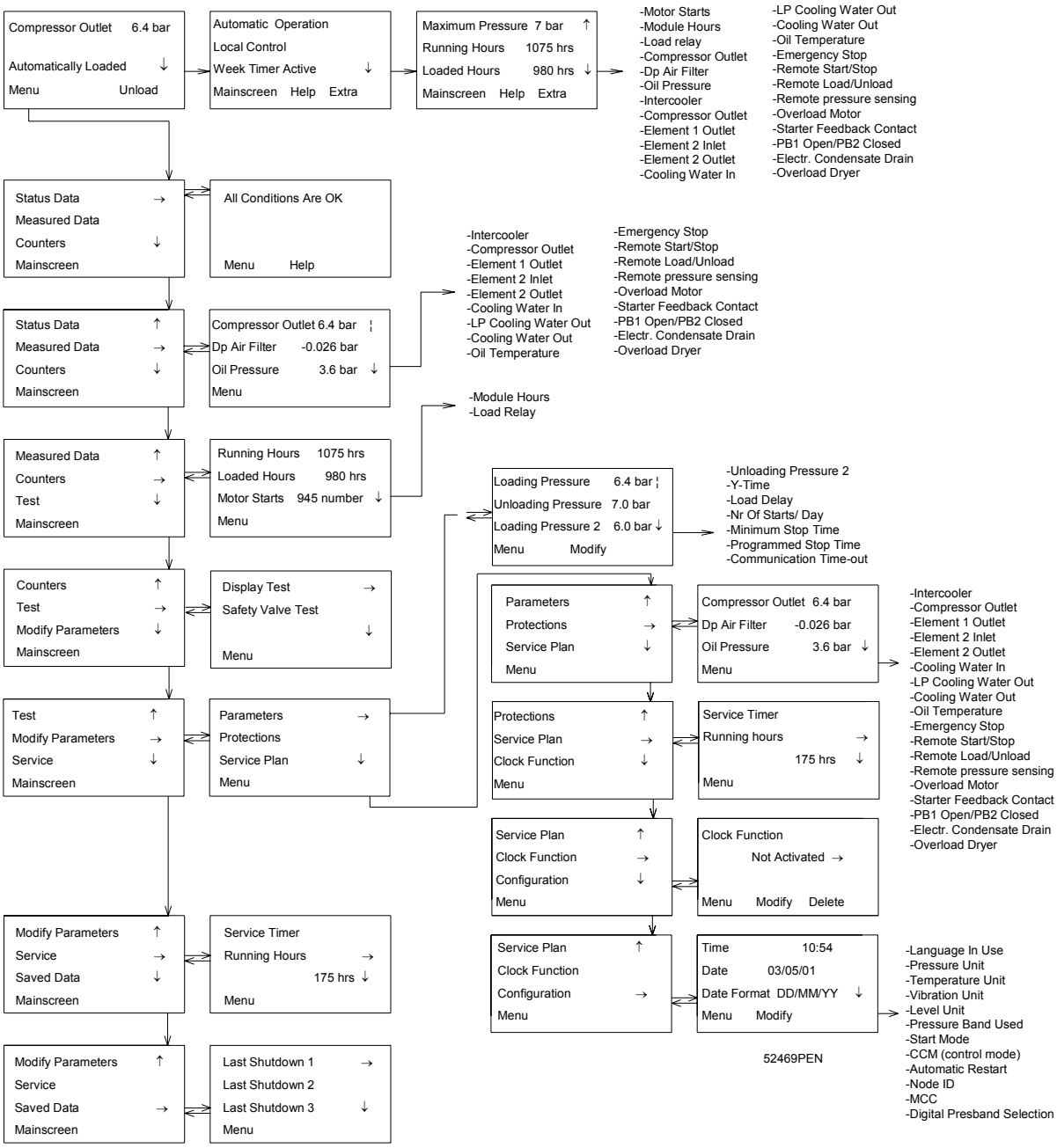

Fig. 4.4 Menu flow ZR110/750

4.1 Function of control programs

Program/Function	Description
Main screen	Shows in short the operation status of the compressor. It is the gateway to all functions.
Status data	Calling up the status of the compressor protection functions: - shut-down - shut-down warning - service warning - warning Resetting of a shut-down, motor overload and service condition.
Measured data	Calling up: - actually measured data - the status of a number of inputs, such as the fan motor overload protection
Counters	Calling up the: - loaded hours - number of motor starts - regulator (module) hours - accumulated volume
Test	Allows a display test.
Modify parameters	Modifying the parameters for: - parameters (e.g. minimum stop time) - protections (e.g. air temperature shut-down level) - service plans - clock functions (automatic compressor start/stop/pressure band commands) - configuration (time, date, display language, …)
Service	Calling up service plans and resetting the timers.
Saved data	Calling up the saved data: last shut-down, last emergency stop data

4.2 Main screen

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

Compressor Outlet		7.0 bar	
Automatically Loaded			↓
Menu		Unload	
F1	F2	F3	

Fig. 4.5 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 Mainscreen to return to the Main screen.

4.3 Calling up other menus

Starting from the Main screen:

- Use the ↓ key (Fig. 2.1) for a quick look at the actual compressor status (see section 5).
- Press the key Menu (F1); the option Status data will be followed by a horizontal arrow:
  - either press the tabulator key (5-Fig. 2.1) to select this menu
  - or use the ↓ key (Fig. 2.1) to scroll until the desired submenu is followed by a horizontal arrow and then press tabulator key (5-Fig. 2.1) to select this menu.

5 Quick look at actual compressor status

Procedure

1. Starting from the Main screen (see section 4.2), press the ↓ key: A screen similar to the one below appears:

Automatic Operation			
Local Control			
Week Timer Active			↓
Mainscreen	Help	Extra	
F1	F2	F3	

Fig. 5.1 Example of an actual compressor status display

Line 1 indicates the automatic or manual operation status of the regulator:

<<Automatic operation>> means that the regulator automatically adapts the operation of the compressor, i.e. matching the compressor output to the air consumption.

Line 2 indicates whether the regulator operates in local control or remote control mode:

<<Local control>> means that the start/stop buttons on the keyboard are activated.
<<Remote control>> means that these functions are controlled remotely. Consult Atlas Copco.

Line 3 indicates whether the timer, which generates time-based start and stop commands, is activated or not. See section 13.

See section 3.4 for the functions of keys Mainscreen, Help and Extra.

2. Press the ↓ key to get other data (actual compressor conditions of the compressor) as shown in Figs. 4.1 up to 4.4

6 Status data menu

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

Procedure

Starting from the Main screen (see section 4.2):
- Press the key Menu (F1): the option Status data will be followed by a horizontal arrow.
- Press the tabulator key (5).

6.1 No message exists

In this case, LED (7) is out and the message on the display indicates that all conditions are normal (Fig. 6.1):

All conditions Are OK			
Menu	Help		
F1	F2	F3	

Fig. 6.1 Example of a status data screen

6.2 A shut-down message exists

In case the compressor is shut down, LED (7) will blink.

In case of a shut-down due to too high a temperature at the compressor element outlet, a screen similar to the one below will appear:

Element Outlet		123 °C	
Shutdown	Maximum	110 °C	
Menu ***	Help	*** Reset	
F1	F2	F3	

Fig. 6.2 Example of a status data screen

1. The indicators (***) are blinking. The screen shows the sensor (element outlet), the actual reading (123 °C), that the compressor is shut down (Shutdown), and the shutdown setting (110 ° C).
2. It remains possible to scroll through other menus, e.g. to check the values of other parameters.

When returning to the Status data menu, the option Shutdowns will blink. This option can be selected by pressing the tabulator key (5) to return to the shutdown screen (Fig. 6.2).

Shut-down reset

1. Switch off the voltage and remedy the trouble. After remedying and when the shut-down condition has disappeared, switch on the voltage and press the key Reset.
2. Press the keys Menu and Mainscreen to return to the Main screen and restart the compressor by means of button **I**.

Reset of fan motor overload

1. Switch off the voltage and remedy the trouble. Reset the overload relay after cooling off. When the shut-down condition has disappeared, switch on the voltage and press the key Reset.
2. Press the keys Menu and Mainscreen to return to the Main screen and restart the compressor by means of button **I**.

6.3 A shut-down warning message exists

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

1. If a shut-down warning exists, LED (7) is alight. The Main screen will change into a screen similar to the one below:

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

Fig. 6.3 Example of a shut-down warning screen

2. The message *Shutdown Warning* appears.
3. Press the key Menu (F1) and the tabulator key (5) to select the Status data menu, the option Protection is blinking.
4. Scroll to this option and select it by pressing the tabulator key (5): option Warnings blinks, scroll to this option and select it by pressing the tabulator key. A screen similar to the one in Fig. 6.4 appears:

Element 2 Inlet		67 °C	
Shutd. Warn. Maximum		65 °C	↓
Menu	***	***	
F1	F2	F3	

Fig. 6.4 Example of a shut-down warning screen

The screen shows that the temperature at the inlet of the HP compressor element (67 °C) is too high.
5. If necessary, stop the compressor by means of button **O** and wait until the compressor has stopped.
6. Switch off the voltage, inspect the compressor and remedy.
7. The warning message will disappear automatically as soon as the warning condition disappears.

6.4 A service warning message exists

1. LED (7) is alight and the main screen will change into a screen similar to that shown in Fig. 6.5.

Compressor Outlet		7.0 bar	
*Service Required *			
Menu	***	***	
F1	F2	F3	

Fig. 6.5 Example of a warning screen

2. The indicators (***) are blinking and the service warning message appears.
3. Press the key Menu (F1) and the tabulator key (5) to select the Status data menu: the option Service is blinking.
4. Scroll to this option and select it by pressing the tabulator key (5), two options may blink:
   <<Inputs>>: if the programmed service level of a component is exceeded (e.g. the maximum pressure drop of the air filter).
   <<Plans>>: if a service plan interval is exceeded.
5. Stop the compressor and switch off the voltage.
6. In case the service message was referring to <<Inputs>> (air filter): replace the filter, switch on the voltage, scroll in the Status data menu to <<Inputs>> and press the Reset key to reset the service message.
7. In case the service message was referring to <<Plans>>: carry out the service actions related to the indicated plans. Reset the timers of the related plans as described in section 15.

6.5 A warning message exists

1. LED (7) is alight and a warning message will appear on the screen.
2. The indicators (***) are blinking and the warning message appears. This warning indicates that:
   - **On water-cooled compressors**, the cooling water outlet temperature exceeds the programmed warning level.
   - **On Full-feature compressors** (compressors with integrated air dryer), the dewpoint temperature exceeds the warning level.
3. Stop the compressor and wait until the compressor has stopped.
4. Switch off the voltage, inspect the compressor and remedy.

7 Measured data menu

Function
To call up information regarding the actually measured data and the status of a number of inputs, such as the motor overload protection.

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Measured data is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. By pressing the ↓ key, a number of actually measured data can be found (see Figs. 4.1 up to 4.4).
3. If one of the sensors is linked to a shut-down, service or warning function, both the actually measured value as well as the corresponding shut-down, warning or service level can be called up by pressing the tabulator key (5).

8 Counters menu

Function
To allow the operator to call up the:
- running hours
- loaded hours
- number of motor starts
- regulator (module) hours (the hours the module has been under tension)
- load relay

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Counters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. By pressing the ↓ key, the above-mentioned items can be found (see also Figs. 4.1 up to 4.4).

Loaded Hours		98	hours	↑
Motor Starts		57	number	
Module hours		123	hours	↓
Menu				
F1	F2	F3		

Fig. 8.1 Example of a counter screen

The display indicates that:
- the compressor has been in loaded condition for 98 hours
- there have been 57 motor starts
- the Elektronikon module has been under tension for 123 hours

9 Test menu

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

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Test is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. The option Display test will be followed by a horizontal arrow.
3. After pressing the tabulator key (5), the regulator will generate a series of patterns on the display, which enable the operator to check, that each pixel still functions normally; at the same time the LEDs are lit.

10 Modify parameters

Function
The menu allows the operator to program:
- Parameters
- Protections
- Service Plan
- Clock Function
- Configuration

Modifying parameters

Function
To modify a number of settings as mentioned in Figs. 4.1 up to 4.4.

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by an horizontal arrow
   - press the tabulator key (5) to activate the menu
2. The first option (Parameters) will be followed by a horizontal arrow.
3. Press the tabulator key (5): the first item (Loading pressure) and its setting will appear.
4. Use the ↓ key to scroll until the parameter to be modified is followed by a horizontal arrow.

Modifying the loading pressure setpoint

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

1. Consult the steps above to select Loading pressure.
2. The screen shows that the current setting is 6.4 bar(e). To modify this setting, press the key Modify (F2); the setting will blink.
3. The key Limits (F2) can be used to find out the limitations for the parameter. Use the ↓ or ↑ arrow key to change the value.
4. Press the key Program (F1) to program the new setting or the key Cancel (F3) to cancel the modification operation.
5. If required, the procedure to modify Unloading pressure is similar to the description above.

Loading Pressure		6.4 bar	
Unloading Pressure		7.0 bar	
Loading Pressure 2		6.0 bar	↓
Menu	Modify		
F1	F2	F3	

Fig. 10.1 Modify parameters screen, typical example

11 Modifying protection settings

Function

1. To modify protection settings:
   - shut-down (<<Shutdown>>), e.g. for element outlet temperature
   - shut-down warning (<<Shutdown warning>>), e.g. for element outlet temperature
   - warning (<<Warning>>), e.g. for cooling water outlet or dewpoint
   - service warning (<<Service>>), e.g. DP oil separator (max. pressure drop)

2. To check some compressor conditions, e.g. the status of the emergency stop button. The list of parameters is shown in Figs. 4.1 up to 4.4.

Note

Some parameters are not modifiable.

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Protections is followed by a horizontal arrow.
3. Press the tabulator key (5): the first item (e.g. Compressor outlet) and its value will appear.
4. Use the ↓ key to scroll until the parameter to be modified is followed by a horizontal arrow and press tabulator key (5).

Modifying settings for compressor element temperature

1. Consult the section above to select the parameter Element 1 outlet:

Element 1 Outlet		94 °C	
			→
Shutdown	Maximum	110 °C	
Menu	Modify		
F1	F2	F3	

Fig. 11.1 Modify parameters menu

2. The screen shows that the current temperature is 94 °C and that the shut-down setting is 110 °C. To modify this setting, press the key Modify (F2):

Element 1 Outlet		94 °C	
Shutdown	Maximum	110°C (blinks)	↓
Program	Limits	Cancel	
F1	F2	F3	

Fig. 11.2 Modify parameters menu

3. The key Limits (F2) can be used to find out the limitations for the parameter. Use the ↓ or ↑ arrow key to change the value.
4. Press the key Program (F1) to program the new setting or the key Cancel (F3) to cancel the modification operation.
5. The screen shown in Fig. 11.1 shows an arrow pointing to the right to call up the screen to modify the shut-down warning value:

Element 1 Outlet		94 °C	
Shutd. Warn. Maximum		100 °C	
Back	Modify		
F1	F2	F3	

Fig. 11.3 Modify parameters menu

6. The screen shows that the current temperature is 94 °C and that the shut-down warning setting is 100 °C. The modifying procedure is similar to the description above.

Note:
The modifying procedure for other settings is similar. For some settings, a delay can be programmed. See section 17.

12 Modifying service plans

Function
To modify the hour intervals for the Service levels.

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

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

13 Programming Clock function

To program:
- time-based start/stop commands for the compressor
- time-based change-over commands for the net pressure band (see also section 10)

13.1 Programming start/stop/pressure band commands

In this example, the compressor will be programmed as follows:
- On Monday at 06:15 starting in pressure band 1
- On Friday at 18:00 changing over to pressure band 2
- On Saturday at 18:00 stopping

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (5); following screen appears:

Clock Function			→
		Not activated	
Menu	Modify	Delete	
F1	F2	F3	

3. Press the tabulator key (5); following screen appears:

Monday			→
Tuesday			
Wednesday			↓
Menu		Delete	
F1	F2	F3	

4. Use the ↓ or ↑ keys until the day on which a command must be programmed is followed by a right pointing arrow. Press the tabulator key (5); following screen appears:

--:--	----------		-|
--:--	----------		
--:--	----------		↓
Menu	Modify	Delete	
F1	F2	F3	

5. Press the key Modify (F2). The first two dashes will flash. Use the ↑ or ↓ key to enter <<06>>. Press the tabulator key to jump to the following two dashes. Use the ↑ or ↓ key to enter <<15>>. Press the tabulator key to jump to the row of dashes. Use the ↑ or ↓ key to enter the command Start Compressor. Press the key Program to program the command: 06:15 Start Compressor.
6. Press the ↓ key: the symbol -| indicates that the second line is accessible. Press the key Modify and modify this line in a similar way to the following command line: 06:15 Pressure Band 1.
7. Press the key Menu (F1) and scroll to <<Friday>>:

Thursday			↑
Friday			→
Saturday			↓
Menu		Delete	
F1	F2	F3	

8. Programming the command to change over to Pressure Band 2 at 18 o'clock is carried out in a similar way as described above.
9. Press the key Menu (F1) and scroll to <<Saturday>>. Programming the command to Compressor Stop at 18 o'clock is carried out in a similar way as described above.

13.2 To activate/deactivate the timer

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (5); following screen appears:

Clock Function			
Not activated			→
Menu	Modify	Delete	
F1	F2	F3	

3. Press the key Modify, <<Not activated>> starts blinking.
4. Press the ↓ key, <<Not activated>> changes into <<Activated>>.
5. Press the key Program.

Important:
1. It is necessary to program the start/stop/pressure band commands in successive order time wise, e.g.:
07.30 start
07.30 band 1
08.30 band 2
17.00 stop
etc.

2. Make sure that the clock function is activated (indicated as <<Activated>>). If not, the programmed start/stop commands will not be executed.

13.3 To modify a command

Suppose the command to stop the compressor on Saturday 18:00 is to be modified: stopping at 17 o'clock instead of 18 o'clock:
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (5); following screen appears:

Clock Function			
Not activated			→
Menu	Modify	Delete	
F1	F2	F3	

3. Press the tabulator key (5); following screen appears:

Monday			→
Tuesday			
Wednesday			↓
Menu	Modify	Delete	
F1	F2	F3	

4. Scroll through the display until <<Saturday>> is followed by a horizontal arrow. Press the tabulator key (5). If necessary, scroll through the compressor start/stop/pressure band commands until the command to be modified is followed by the horizontal arrow on the screen. Press the key Modify, the first two digits of the command start blinking. Modify as required using the scroll keys, i.e. in the example above change <<18>> into <<17>> using the ↑ key.
5. If necessary, press the tabulator key (5) to go to the next field to be modified, the minutes indication and the start/stop/pressure band indication.
6. Press the key Program to program the new command or the key Cancel to quit without reprogramming.

13.4 To add a command

Adding a command at the end of an existing list
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu

2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (5); following screen appears:

Clock Function			
Not activated			→
Menu	Modify	Delete	
F1	F2	F3	

Suppose the command to stop the compressor at 18:00 must be added to the list of Monday:
- 06:15 start
- 06:15 band 1

3. Press the tabulator key (5); following screen appears:

Monday			→
Tuesday			
Wednesday			↓
Menu	Modify	Delete	
F1	F2	F3	

4. Scroll through the display until <<Monday>> is followed by a horizontal arrow. Press the tabulator key (5). Scroll through the compressor start/stop/pressure band commands until the first empty command line is indicated by the horizontal arrow on the screen.
5. Press the key Modify; the first two digits of the command start blinking. Enter <<18:00 stop>> using the scroll keys ↓ or ↑ to modify a field and the tabulator key (5) to jump from one field to another.
6. Press the key Program to program the new command or the key Cancel to quit without reprogramming.

Adding a command between two existing commands
1. Suppose the command 17:00 band 2 must be added to following list:
   - 06:00 start
   - 06:00 band 1
   - 18:00 stop
2. The regulator does not allow to enter a new command which is situated before the last command in the list time wise.
3. Scroll through the display until the command before which the new command must be entered is followed by the horizontal arrow (in the example above: 18:00 stop) and press the key Modify. Change this command to the new command (in the example above: 17:00 band 2) and press the key Program. Press the ↓ key, add the last command of the list (in the example above: 18:00 stop) and press the key Program.

13.5 To delete a command

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (5); following screen appears:

Clock Function			
Not activated			→
Menu	Modify	Delete	
F1	F2	F3	

Deleting all commands
Press the key Delete (F3) in the screen above. A question to confirm the deleting operation will appear.

Deleting all commands related to a specific day
Scroll through the display until the desired day is followed by a horizontal arrow. Press the key Delete (F3). A question to confirm the deleting operation will appear.

Deleting a specific start/stop/pressure band command
Scroll through the display until the command line to be deleted is followed by a horizontal arrow. Press the key Delete (F3). A question to confirm the deleting operation will appear.

14 Configuration menu

Function
To reprogram a number of parameters. See Figs. 4.1 up to 4.4.

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Configuration is followed by a horizontal arrow.
3. Press the tabulator key (5): The first option shown is <<Time>>. If another option is desired, scroll through the display (using ↓ or ↑ keys) and select it using the tabulator key (5).
4. In case of option <<Time>>, the second line on the screen indicates the actual setting, e.g. 14:30.
5. If it is desired to modify the time, press key <<Modify>>. If not, press key <<Menu>> to return to the submenu.
6. After pressing the key Modify, the first field (14) will blink. Modify the hours using the ↓ or ↑ keys. Then press the tabulator key (5) to go to the next field (i.e. 30). The setting of this field can now be modified with the ↓ or ↑ keys.
7. The bottom line of the display will show two options:
   - Program to program the new setting
   - Cancel to cancel the new setting
8. Proceed in a similar way for the other parameters to be modified.

Programming compressor control modes

Compressor control modes
The compressor can be controlled locally, remotely or via a local area network (LAN-consult Atlas Copco).

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify parameters is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. Use the ↓ key to scroll until the option Configuration is followed by a horizontal arrow.
3. Press the tabulator key (5): The first option shown is <<Time>>. Scroll through the display (using ↓ or ↑ keys) until the option CCM is followed by symbol -| and press the key Modify. Following screen is shown:

CCM		Local control
Program		Cancel
F1	F2	F3

Fig. 14.1 Compressor control mode menu

4. “Local control” is blinking, use the ↓ or ↑ keys to select the desired control mode. Press the Program key to program or the Cancel key to cancel the modification.

15 Service menu

Function
- To reset the service plans which are carried out.
- To check for the next service plans to be carried out.
- To find out which service plans were carried out previously.

Service plans
- Contact your Atlas Copco customer centre for the service actions related to these plans.
- Consult section 12 if any modification to the intervals should be required.

When the service plan interval is reached, a message will appear on the screen. See section 6.

Example
Programmed service plan intervals ex-factory

Service plans	**Intervals**
Service plan A	Every 4000 running hours
Service plan B	Every 8000 running hours
Service plan C	Every 16000 running hours
Service plan D	Every 40000 running hours

Resulting service actions to be carried out

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

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Service is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. A screen similar to the one below appears:

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

Fig. 15.1 Service menu

The screen shows that the total compressor running time is 7971 hrs.

3. Press the tabulator key (5):

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

Fig. 15.2 Service menu

The screen shows that the next service plans to be carried out are plans A and B and that these plans are to be carried out every 8000 running hours.

4. Press the ↓ key to find out which service plans were carried out previously:

Previous Timer			↑
Level		A	
		4008 hrs	
Back			
F1	F2	F3	

Fig. 15.3 Service menu

The screen shows that service plan A was carried out at 4008 running hours.

5. Stop the compressor, switch off the voltage and carry out the service operations related to plans A and B.
6. Switch on the voltage and scroll to the service screen shown in Fig. 15.2. Press the Reset button (F3) to reset the timer. Confirm the question for resetting.

Notes
- The Reset button only appears when the Next Timer level is almost reached before elapsing of the service plan interval.
- After pressing the ↓ key in Fig. 15.1, the Life time hours are shown (i.e. the number of hours elapsed since initial programming ex-factory). This counter is not taken into account.

16 Saved data menu

Function
To call up some compressor data saved by the regulator. These data are:
- Last shut-down data
- Last emergency stop data

Procedure
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Saved data is followed by a horizontal arrow
   - press the tabulator key (5) to activate the menu
2. The first option is shown (Last shutdown 1).
3. Press the tabulator key (5) to find out the date, time and other data reflecting the status of the compressor at the last shut-down.
4. If desired, scroll through the other items.

17 Programmable settings

17.1 GA90 (W) up to GA315 (W)

17.1.1 Parameters

		Minimum	Nominal	Maximum
Motor running time in star	sec	10	10	20
Load delay time (star-delta)	sec	0	0	20
Load delay time (no star-delta)	sec	10	10	20
Number of motor starts (star-delta)	starts/day	0	72	72
Number of motor starts (no star-delta)	starts/day	0	3	3
Minimum stop time	sec	20	20	99
Programmed stop time	sec	30	30	30
Permissive start time	sec	0	30	255
Power recovery time	sec	1	3	255 **1)**
Restart delay	sec	0	3	255
Communication time-out **2)**	sec	10	20	60
Unloading pressure				
- 7.5 bar Pack compressors	bar(e)	4.5	7.0	7.505
- 8.5 bar Pack compressors	bar(e)	4.5	8.0	8.505
- 10 bar Pack compressors	bar(e)	4.5	9.5	10.005
- 13 bar Pack compressors	bar(e)	4.5	12.5	13.005
- 100 psi Pack compressors	bar(e)	4.5	6.9	7.405
- 125 psi Pack compressors	bar(e)	4.5	8.6	9.105
- 150 psi Pack compressors	bar(e)	4.5	10.3	10.805
- 200 psi Pack compressors	bar(e)	4.5	13.3	13.805
- 7.5 bar Full-feature compressors	bar(e)	4.5	6.75	7.255
- 8.5 bar Full-feature compressors	bar(e)	4.5	7.75	8.255
- 10 bar Full-feature compressors	bar(e)	4.5	9.25	9.755
- 13 bar Full-feature compressors	bar(e)	4.5	12.25	12.755
- 100 psi Full-feature compressors	bar(e)	4.5	6.65	7.155
- 125 psi Full-feature compressors	bar(e)	4.5	8.35	8.855
- 150 psi Full-feature compressors	bar(e)	4.5	10.05	10.555
- 200 psi Full-feature compressors	bar(e)	4.5	13.05	13.650
- 7.5 bar Full-feature compressors with DD filter	bar(e)	4.5	6.4	6.905
- 8.5 bar Full-feature compressors with DD filter	bar(e)	4.5	7.4	7.905
- 10 bar Full-feature compressors with DD filter	bar(e)	4.5	8.9	9.405
- 13 bar Full-feature compressors with DD filter	bar(e)	4.5	11.9	12.405
- 100 psi Full-feature compressors with DD filter	bar(e)	4.5	6.3	6.805
- 125 psi Full-feature compressors with DD filter	bar(e)	4.5	8.0	8.505
- 150 psi Full-feature compressors with DD filter	bar(e)	4.5	9.7	10.205
- 200 psi Full-feature compressors with DD filter	bar(e)	4.5	12.7	13.305

		Minimum	Nominal	Maximum
Loading pressure				
- 7.5 bar Pack compressors	bar(e)	4.5	6.4	7.505
- 8.5 bar Pack compressors	bar(e)	4.5	7.4	8.505
- 10 bar Pack compressors	bar(e)	4.5	8.9	10.005
- 13 bar Pack compressors	bar(e)	4.5	11.9	13.005
- 100 psi Pack compressors	bar(e)	4.5	6.3	7.405
- 125 psi Pack compressors	bar(e)	4.5	8.0	9.105
- 150 psi Pack compressors	bar(e)	4.5	9.7	10.805
- 200 psi Pack compressors	bar(e)	4.5	12.7	13.805
- 7.5 bar Full-feature compressors	bar(e)	4.5	6.15	7.255
- 8.5 bar Full-feature compressors	bar(e)	4.5	7.15	8.255
- 10 bar Full-feature compressors	bar(e)	4.5	8.65	9.755
- 13 bar Full-feature compressors	bar(e)	4.5	11.65	12.755
- 100 psi Full-feature compressors	bar(e)	4.5	6.05	7.155
- 125 psi Full-feature compressors	bar(e)	4.5	7.75	8.855
- 150 psi Full-feature compressors	bar(e)	4.5	9.45	10.555
- 200 psi Full-feature compressors	bar(e)	4.5	12.45	13.650
- 7.5 bar Full-feature compressors with DD filter	bar(e)	4.5	5.8	6.905
- 8.5 bar Full-feature compressors with DD filter	bar(e)	4.5	6.8	7.905
- 10 bar Full-feature compressors with DD filter	bar(e)	4.5	8.3	9.405
- 13 bar Full-feature compressors with DD filter	bar(e)	4.5	11.3	12.405
- 100 psi Full-feature compressors with DD filter	bar(e)	4.5	5.7	6.805
- 125 psi Full-feature compressors with DD filter	bar(e)	4.5	7.4	8.505
- 150 psi Full-feature compressors with DD filter	bar(e)	4.5	9.1	10.205
- 200 psi Full-feature compressors with DD filter	bar(e)	4.5	12.1	13.305

17.1.2 Protections

		Minimum	Nominal	Maximum
Compressor outlet pressure	bar(e)	0	14.5	17.0
(shut-down warning level)				
Compressor outlet pressure	bar(e)	0	15.0	17.0
(shut-down level)				
Oil injection pressure, element (start protection)	bar(e)	2.0	2.5	13.2
Compressor outlet temperature (without DD filter) **8)**	°C	0	66	120
(shut-down warning level)				
Compressor outlet temperature (without DD filter) **8)**	°C	67	80	120
(shut-down level)				
Compressor outlet temperature (with DD filter) **8)**	°C	0	66	100
(shut-down warning level)				
Compressor outlet temperature (with DD filter) **8)**	°C	67	80	100
(shut-down level)				
Compressor outlet temperature (delay at signal)	sec	5	5	5
Compressor element outlet temperature (no energy recovery) **3)**	°C	80	100	110
(shut-down warning level)				
Compressor element outlet temperature (no energy recovery) **3)**	°C	101	110	110
(shut-down level)				
Compressor element outlet temperature (energy recovery) **3)**	°C	80	114	120
(shut-down warning level)				
Compressor element outlet temperature (energy recovery) **3)**	°C	115	120	120
(shut-down level)				
Compressor element outlet temperature (delay at signal)	sec	5	5	5
Oil separator temperature	°C	0	120	120
Delay at start, overload motor	sec	0	1	3
Delay at signal, overload motor	sec	0	1	3
Delay at start, overload fan motor	sec	0	1	3
Delay at signal, overload fan motor	sec	0	1	3
Delay at start, starter feedback contact = open	sec	0	13	60
Delay at signal, starter feedback contact = closed	sec	0	2	3
Delay at start, electric condensate drain	sec	0	15	60
Delay at signal, electric condensate drain	sec	5	5	5
Delay at signal, overload dryer/dryer fan	sec	0	1	3
For Full-feature also 5):				
Dryer LAT temperature (warning)	°C	0	15	50
Dryer LAT temperature (shut-down)	°C	0	16	50
Delay at signal **4)**	sec	0	3	10
Delay at starting **6)**	sec	0	255	255

17.1.3 Service settings

		Minimum	Nominal	Maximum
Service plans				
Service plan A (running hours)	hr	**7)**	4000	**7)**
Service plan B (running hours)	hr	**7)**	8000	**7)**
Service plan C (running hours)	hr	**7)**	16000	**7)**
Service plan D (running hours)	hr	**7)**	24000	**7)**
Service plan I (running hours)	hr	**7)**	2000	**7)**
Analog signals				
DP oil separator	mbar	0	800	800
Delay at signal, DP oil separator	sec	0	60	255
DP air filter	mbar	-100	-50	-50
Delay at signal, DP air filter	sec	0	60	255
DP DD filter	mbar	100	350	350
Delay at signal, DP DD filter	sec	0	60	255

17.2 GR110 (W) up to GR200 (W)

17.2.1 Parameters

		Minimum	Nominal	Maximum
Motor running time in star	sec	10	10	20
Load delay time (star-delta)	sec	0	0	20
Load delay time (no star-delta)	sec	10	10	20
Number of motor starts (star-delta)	starts/day	0	72	72
Number of motor starts (no star-delta)	starts/day	0	3	3
Minimum stop time	sec	20	20	99
Programmed stop time	sec	30	30	30
Permissive start time	sec	0	30	255
Power recovery time	sec	1	3	255 **1)**
Restart delay	sec	0	3	255
Communication time-out **2)**	sec	10	20	60
Unloading pressure				
- 13 bar Pack compressors	bar(e)	4.5	12.5	13.005
- 20 bar Pack compressors	bar(e)	9.5	19.0	20.005
- 200 psi Pack compressors	bar(e)	4.5	13.3	13.805
- 13 bar Full-feature compressors	bar(e)	4.5	12.25	12.755
- 20 bar Full-feature compressors	bar(e)	9.5	18.75	19.755
- 200 psi Full-feature compressors	bar(e)	4.5	13.05	13.650
- 13 bar Full-feature compressors with DD filter	bar(e)	4.5	11.9	12.405
- 200 psi Full-feature compressors with DD filter	bar(e)	4.5	12.7	13.305
Loading pressure				
- 13 bar Pack compressors	bar(e)	4.5	11.9	13.005
- 20 bar Pack compressors	bar(e)	9.5	18.0	20.005
- 200 psi Pack compressors	bar(e)	4.5	12.7	13.805
- 13 bar Full-feature compressors	bar(e)	4.5	11.65	12.755
- 20 bar Full-feature compressors	bar(e)	9.5	17.75	19.755
- 200 psi Full-feature compressors	bar(e)	4.5	12.45	13.650
- 13 bar Full-feature compressors with DD filter	bar(e)	4.5	11.3	12.405
- 200 psi Full-feature compressors with DD filter	bar(e)	4.5	12.1	13.305

17.2.2 Protections

		Minimum	Nominal	Maximum
Compressor outlet pressure 13 bar or 200 psi compressors	bar(e)	0	14.5	17.0
(shut-down warning level)				
Compressor outlet pressure 13 bar or 200 psi compressors	bar(e)	0	15.0	17.0
(shut-down level)				
Compressor outlet pressure 20 bar compressors	bar(e)	0	21.5	23.0
(shut-down warning level)				
Compressor outlet pressure 20 bar compressors	bar(e)	0	22.0	23.0
(shut-down level)				
Oil injection pressure, element (start protection)	bar(e)	2.0	2.5	13.2
Compressor outlet temperature (without DD filter) **8)**	°C	0	66	120
(shut-down warning level)				
Compressor outlet temperature (without DD filter) **8)**	°C	67	80	120
(shut-down level)				
Compressor outlet temperature (with DD filter) **8)**	°C	0	66	100
(shut-down warning level)				
Compressor outlet temperature (with DD filter) **8)**	°C	67	80	100
(shut-down level)				
Compressor outlet temperature (delay at signal)	sec	5	5	5
Compressor element 1 outlet temperature **3)**	°C	80	114	120
(shut-down warning level)				
Compressor element 1 outlet temperature **3)**	°C	115	120	120
(shut-down level)				
Compressor element 2 outlet temperature **3)**	°C	80	114	120
(shut-down warning level)				
Compressor element 2 outlet temperature **3)**	°C	115	120	120
(shut-down level)				
Compressor element outlet temperature (delay at signal)	sec	5	5	5
Oil separator temperature	°C	0	120	120
Delay at start, overload motor	sec	0	1	3
Delay at signal, overload motor	sec	0	1	3
Delay at start, overload fan motor	sec	0	1	3
Delay at signal, overload fan motor	sec	0	1	3
Delay at start, starter feedback contact = open	sec	0	13	60
Delay at signal, starter feedback contact = closed	sec	0	2	3
Delay at start, electric condensate drain	sec	0	15	60
Delay at signal, electric condensate drain	sec	5	5	5
Delay at signal, overload dryer/dryer fan	sec	0	1	3
For Full-feature also 5):				
Dryer LAT temperature (warning)	°C	0	15	50
Dryer LAT temperature (shut-down)	°C	0	16	50
Delay at signal **4)**	sec	0	3	10
Delay at starting **6)**	sec	0	255	255

17.2.3 Service settings

		Minimum	Nominal	Maximum
Service plans				
Service plan A (running hours)	hr	**7)**	4000	**7)**
Service plan B (running hours)	hr	**7)**	8000	**7)**
Service plan C (running hours)	hr	**7)**	16000	**7)**
Service plan D (running hours)	hr	**7)**	24000	**7)**
Service plan I (running hours)	hr	**7)**	2000	**7)**
Analog signals				
DP oil separator	mbar	0	800	800
Delay at signal, DP oil separator	sec	0	60	255
DP air filter	mbar	-100	-50	-50
Delay at signal, DP air filter	sec	0	60	255
DP DD filter	mbar	100	350	350
Delay at signal, DP DD filter	sec	0	60	255

17.3 ZT110 up to ZT275 and ZR110 up to ZR750

17.3.1 Parameters

		Minimum	Nominal	Maximum
Motor running time in star	sec	10	15	30
Load delay time (star-delta)	sec	10	10	30
Load delay time (no star-delta)	sec	20	20	30
Number of motor starts (star-delta)	starts/day	0	72	120
Number of motor starts (no star-delta)	starts/day	0	3	5
Minimum stop time	sec	20	20	99
Programmed stop time	sec	0	3	20
Power recovery time	sec	1	3	255 **1)**
Restart delay	sec	0	3	255
Communication time-out **2)**	sec	10	20	60
Unloading pressure				
- 7.5 bar compressors	bar(e)	4.0	7.0	7.505
- 8.6 bar compressors	bar(e)	4.0	7.0	8.605
- 10 bar compressors	bar(e)	4.0	9.0	10.005
- 10.4 bar compressors	bar(e)	4.0	9.0	10.405
Loading pressure				
- 7.5 bar compressors	bar(e)	4.0	6.0	7.505
- 8.6 bar compressors	bar(e)	4.0	6.0	8.605
- 10 bar compressors	bar(e)	4.0	8.0	10.005
- 10.4 bar compressors	bar(e)	4.0	8.0	10.405

17.3.2 Protections

		Minimum	Nominal	Maximum
Compressor outlet pressure	bar(e)	0	14.0	17.0
(shut-down warning level)				
Compressor outlet pressure	bar(e)	0	15.0	17.0
(shut-down level)				
Compressor outlet pressure (delay at start)	sec	0	1	3
Compressor outlet pressure (delay at signal)	sec	0	1	3
Oil pressure ZT/ZR110-275	bar(e)	1.0	1.3	2.0
(shut-down warning level)				
Oil pressure ZT/ZR110-275	bar(e)	1.0	1.2	2.0
(shut-down level)				
Oil pressure ZR300-750	bar(e)	1.0	1.3	1.9
(shut-down warning level)				
Oil pressure ZR300-750	bar(e)	1.0	1.2	1.9
(shut-down level)				
Delay at start, oil pressure	sec	15	15	20
Delay at signal, oil pressure	sec	0	1	3
Element 1 outlet temperature 7.5 and 8.6 bar **8)**	°C	100	210	220
(shut-down warning level)				
Element 1 outlet temperature 7.5 and 8.6 bar **8)**	°C	211	220	220
(shut-down level)				
Element 1 outlet temperature 10 and 10.4 bar **8)**	°C	100	225	235
(shut-down warning level)				
Element 1 outlet temperature 10 and 10.4 bar **8)**	°C	226	235	235
(shut-down level)				
Element 2 inlet temperature **8)**	°C	40	65	80
(shut-down warning level)				
Element 2 inlet temperature **8)**	°C	66	70	80
(shut-down level)				
Element 2 outlet temperature 7.5 and 8.6 bar **8)**	°C	100	210	220
(shut-down warning level)				
Element 2 outlet temperature 7.5 and 8.6 bar **8)**	°C	211	220	220
(shut-down level)				
Element 2 outlet temperature 10 and 10.4 bar **8)**	°C	100	225	235
(shut-down warning level)				
Element 2 outlet temperature 10 and 10.4 bar **8)**	°C	226	235	235
(shut-down level)				
Delay at signal of all element temperatures	sec	0	1	3
Oil temperature	°C	40	65	80
(shut-down warning level)				
Oil temperature	°C	40	70	80
(shut-down level)				
Delay at signal, oil temperature	sec	50	70	100
Delay at start, overload motor	sec	0	1	3
Delay at signal, overload motor	sec	0	1	3
Delay at start, overload fan motor	sec	0	1	3
Delay at signal, overload fan motor	sec	0	1	3
Delay at start, starter feedback contact = open	sec	0	18	33
Delay at signal, starter feedback contact = closed	sec	0	2	3
Delay at start, electric condensate drain	sec	0	15	60
Delay at signal, electric condensate drain	sec	5	5	5
Delay at signal, phase sequence	sec	0	1	2

17.3.3 Service settings

		Minimum	Nominal	Maximum
Service plans				
Service plan A (running hours)	hr	**7)**	4000	**7)**
Service plan B (running hours)	hr	**7)**	8000	**7)**
Service plan C (running hours)	hr	**7)**	16000	**7)**
Service plan D (running hours)	hr	**7)**	40000	**7)**
Service plan I (running hours)	hr	**7)**	2000	**7)**
Analog signals				
DP air filter ZT/ZR110-275	mbar	-55	-44	-44
DP air filter ZR300-750	mbar	-58	-52	-52
Delay at signal, DP air filter	sec	0	60	255

17.4 ZE/ZA 3 - 4

17.4.1 Parameters

		Minimum	Nominal	Maximum
Motor running time in star	sec	10	10	20
Load delay time (star-delta)	sec	5	5	30
Load delay time (no star-delta)	sec	20	20	30
Number of motor starts (star-delta)	starts/day	0	72	120
Number of motor starts (no star-delta)	starts/day	0	3	5
Minimum stop time	sec	20	20	99
Programmed stop time (without full-load/no-load valve)	sec	0	0	20
Programmed stop time (with full-load/no-load valve)	sec	0	3	20
Power recovery time	sec	1	3	255 **1)**
Restart delay	sec	0	3	255
Communication time-out **2)**	sec	10	20	60
Unloading pressure				
- ZE/ZA compressors without without full-load/no-load valve	bar(e)	0	4.5	4.5
- 1 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.0	1.25
- 1.25 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.25	1.5
- 1.5 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.5	1.75
- 1.75 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.75	2.0
- 2 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.0	2.25
- 2.25 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.25	2.5
- 2.5 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.5	2.75
- 2.75 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.75	3.0
- 3 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	3.0	3.25
- 3.25 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	3.25	3.5
- 3.5 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	3.5	3.6
- 1 bar ZE compressors with aftercooler	bar(e)	0.5	0.9	1.15
- 1.25 bar ZE compressors with aftercooler	bar(e)	0.5	1.15	1.4
- 1.5 bar ZE compressors with aftercooler	bar(e)	0.5	1.43	1.68
- 1.75 bar ZE compressors with aftercooler	bar(e)	0.5	1.68	1.93
- 2 bar ZE compressors with aftercooler	bar(e)	0.5	2.0	2.18
- 2.25 bar ZE compressors with aftercooler	bar(e)	0.5	2.2	2.45
- 2.5 bar ZE compressors with aftercooler	bar(e)	0.5	2.45	2.7
- 2.75 bar ZE compressors with aftercooler	bar(e)	0.5	2.7	2.95
- 3 bar ZE compressors with aftercooler	bar(e)	0.5	2.95	3.2
- 3.25 bar ZE compressors with aftercooler	bar(e)	0.5	3.2	3.45
- 3.5 bar ZE compressors with aftercooler	bar(e)	0.5	3.35	3.6
- 1 bar ZE high speed compressors with aftercooler	bar(e)	0.45	0.75	1.0
- 1.25 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.00	1.25
- 1.5 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.25	1.5
- 1.75 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.5	1.75
- 2 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.8	2.05
- 2.25 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.1	2.35
- 2.5 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.35	2.6
- 2.75 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.6	2.85
- 3 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.85	3.1
- 3.25 bar ZE high speed compressors with aftercooler	bar(e)	0.5	3.15	3.4
- 3.5 bar ZE high speed compressors with aftercooler	bar(e)	0.5	3.3	3.55

		Minimum	Nominal	Maximum
Loading pressure				
- 1 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	0.7	1.25
- 1.25 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	0.95	1.5
- 1.5 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.2	1.75
- 1.75 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.45	2.0
- 2 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.7	2.25
- 2.25 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	1.95	2.5
- 2.5 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.2	2.75
- 2.75 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.45	3.0
- 3 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.7	3.25
- 3.25 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	2.95	3.5
- 3.5 bar ZE/ZA compressors without aftercooler	bar(e)	0.5	3.2	3.6
- 1 bar ZE compressors with aftercooler	bar(e)	0.5	0.6	1.15
- 1.25 bar ZE compressors with aftercooler	bar(e)	0.5	0.85	1.4
- 1.5 bar ZE compressors with aftercooler	bar(e)	0.5	1.13	1.68
- 1.75 bar ZE compressors with aftercooler	bar(e)	0.5	1.38	1.93
- 2 bar ZE compressors with aftercooler	bar(e)	0.5	1.7	2.18
- 2.25 bar ZE compressors with aftercooler	bar(e)	0.5	1.9	2.45
- 2.5 bar ZE compressors with aftercooler	bar(e)	0.5	2.15	2.7
- 2.75 bar ZE compressors with aftercooler	bar(e)	0.5	2.4	2.95
- 3 bar ZE compressors with aftercooler	bar(e)	0.5	2.65	3.2
- 3.25 bar ZE compressors with aftercooler	bar(e)	0.5	2.9	3.45
- 3.5 bar ZE compressors with aftercooler	bar(e)	0.5	3.05	3.6
- 1 bar ZE high speed compressors with aftercooler	bar(e)	0.45	0.45	1.0
- 1.25 bar ZE high speed compressors with aftercooler	bar(e)	0.5	0.7	1.25
- 1.5 bar ZE high speed compressors with aftercooler	bar(e)	0.5	0.95	1.5
- 1.75 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.2	1.75
- 2 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.5	2.05
- 2.25 bar ZE high speed compressors with aftercooler	bar(e)	0.5	1.8	2.35
- 2.5 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.05	2.6
- 2.75 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.3	2.85
- 3 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.55	3.1
- 3.25 bar ZE high speed compressors with aftercooler	bar(e)	0.5	2.85	3.4
- 3.5 bar ZE high speed compressors with aftercooler	bar(e)	0.5	3.0	3.55

17.4.2 Protections

		Minimum	Nominal	Maximum
Compressor outlet pressure	bar(e)	0	**9)**	3.6
(shut-down warning level)				
Compressor outlet pressure	bar(e)	0	**10)**	3.6
(shut-down level)				
Oil pressure	bar(e)	1.0	1.5	2.0
(shut-down warning level)				
Oil pressure	bar(e)	1.0	1.4	2.0
(shut-down level)				
Delay at start, oil pressure	sec	15	20	30
Delay at signal, oil pressure	sec	0	1	3
Element 1 outlet temperature 1 up to 2.75 bar **8)**	°C	100	230	240
(shut-down warning level)				
Element 1 outlet temperature 1 up to 2.75 bar **8)**	°C	231	240	240
(shut-down level)				
Element 1 outlet temperature 3 up to 3.5 bar **8)**	°C	100	255	265
(shut-down warning level)				
Element 1 outlet temperature 3 up to 3.5 bar **8)**	°C	256	265	265
(shut-down level)				
Delay at signal, element 1 outlet temperature	sec	0	1	3
Oil temperature	°C	40	66	80
(shut-down warning level)				
Oil temperature	°C	67	70	80
(shut-down level)				
Delay at start, oil temperature	sec	50	70	100
Delay at signal, oil temperature	sec	0	1	3
Delay at start, overload motor	sec	0	1	3
Delay at signal, overload motor	sec	0	1	3
Delay at start, overload fan motor	sec	0	1	3
Delay at signal, overload fan motor	sec	0	1	3
Delay at start, starter feedback contact = open	sec	0	23	40
Delay at signal, starter feedback contact = closed	sec	0	2	3
Delay at start, electric condensate drain	sec	0	15	60
Delay at signal, electric condensate drain	sec	5	5	5
Delay at signal, phase sequence	sec	0	1	2

17.4.3 Service settings

		Minimum	Nominal	Maximum
Service plans				
Service plan A (running hours)	hr	**7)**	4000	**7)**
Service plan B (running hours)	hr	**7)**	8000	**7)**
Service plan C (running hours)	hr	**7)**	16000	**7)**
Service plan D (running hours)	hr	**7)**	40000	**7)**
Service plan I (running hours)	hr	**7)**	2000	**7)**
Analog signals				
DP air filter	mbar	-55	-44	-44
Delay at signal, DP air filter	sec	0	60	255

Footnotes chapter 17

1) See section 1.4.
2) In case of LAN control. See section 14. Consult Atlas Copco.
3) The regulator does not accept illogical settings, e.g. if the warning level is programmed at 114 °C, the minimum limit for the shut-down level changes into 115 °C.
4) Is the time period during which the warning signal must exist before the warning message appears.
5) Full-feature version is the Pack version with integrated air dryer.
6) Is the time period during which the warning signal is ignored after starting to allow the dryer to reach the dewpoint temperature.
7) Always consult Atlas Copco in case any timer setting should be changed. The intervals must not exceed the nominal intervals and must coincide logically. See section 12.
8) The regulator does not accept illogical settings, e.g. if the warning level is programmed at 66 °C, the minimum limit for the shut-down level changes into 67 °C. The recommended difference between the warning level and shut-down level is 10 °C.
9) The shut-down warning setting for Compressor outlet pressure is the maximum unloading pressure minus 0.05 bar (see section 17.4.1)
10) The shut-down setting for Compressor outlet pressure is equal to the maximum unloading pressure (see section 17.4.1)

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