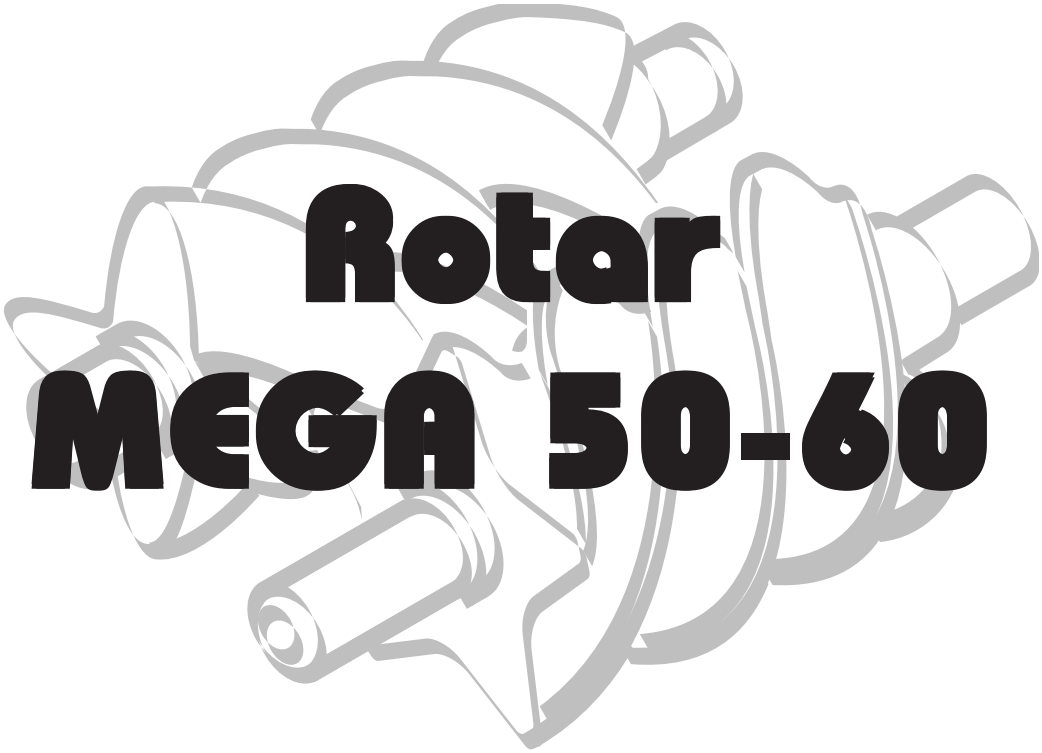
RotarScrew COMPRESSORS

GB

use&maintenance
MANUAL



Rotar MEGA 50-60

STANDARD EQUIPMENT

Your compressor is delivered with the following accessories:

- no. 1 user's guide
- line cock + connection hose and Teflon tape
- one wrench to open panels + one 5mm Allen wrench
- condensate / oil drainage tube

Check that standard equipment is supplied with the machine. No claims after delivery will be accepted.

CONDITION OF THE MACHINE WHEN SUPPLIED

Every compressor is shop tested and delivered ready to be installed and put into operation.
Used oil is: RotEnergy Plus

SAFETY INDICATIONS

GENERAL

- Rotary compressors are intended for heavy continuous industrial use. They are especially suitable for industrial applications requiring high air consumption for a long time.
- The compressor should be run and operated only in compliance with the indications given in this manual. Safely keep this manual in a known and easily reachable place for the whole working life of the compressor.
- A supervisor shall be appointed in the company, in which the compressor is installed. He/she shall be responsible for compressor inspections, adjustments and maintenance. Should a substitute be appointed for the supervisor, he/she shall carefully read the user's guide and all possible comment on service and maintenance carried out so far.

SYMBOLS USED IN THE MANUAL

Some symbols are used to highlight danger situations, give recommendations or information. These symbols are usually positioned next to the text, a figure or at the top of a page (in this case they refer to all subjects dealt with in that page).

Carefully read symbol meaning below.

CAUTION!
Important description on service, dangerous situation, safety, accident prevention recommendations and/or very important information.

POWER OFF!
All operations to be strictly carried out only after powering off the machine.

STOP MACHINE!
All operations to be strictly carried out only after stopping the machine.

SPECIALIZED PERSONNEL!
All operations to be strictly carried out only by specialized technician.

SYMBOLS USED ON THE COMPRESSOR

The compressor has several labels to highlight possible danger and give recommendations on what to do during machine operation or in special situations.

Please comply with these indications.

Danger! Hot!

Danger! Electric shock!

Danger! Hot gas or harmful gas within working area

Danger! Pressurized container

Danger! Mechanical moving parts

Caution! Maintenance works in progress

Prohibited! Do not open doors during compressor operation

Prohibited! Press emergency button for compressor immediate stop. Do not use line knife switch.

Prohibited! Do not use water on electric equipment to extinguish fire.

Compulsory! Read instructions for use carefully.

SAFETY INDICATIONS

WHAT TO DO:

Make sure that mains voltage corresponds to the voltage indicated on CE plate and that cable of suitable cross-section are used for electric connections.

Always check oil level before starting the compressor.

Be familiar with emergency stop control and all other controls.

Unplug the connector before any maintenance work, so to avoid accidental start.

Ensure that all parts have been correctly reassembled after any maintenance work.

Keep children and animals off the working area to avoid injuries caused by devices connected to the compressor.

Ensure that temperature of the working environment ranges between +5 and + 50 ºC.

The compressor should be installed and operated in a non-explosive environment.

Allow at least 80 cm between the compressor and the wall so to allow free air flow to the fan.

Press the emergency button on the control panel only in case of actual need so as to avoid possible damages to people or the very compressor.

When calling for technical assistance and/or advice, always mention model and serial number indicated on CE plate.

Always follow the maintenance schedule specified in the user's guide.

WHAT NOT TO DO:

Do not touch inner parts and pipes as they are very hot during compressor operation and stay hot for a certain time after compressor stop.

Do not position inflammable or nylon objects or cloths close to and onto the compressor.

Do not move the compressor when the tank is under pressure.

Do not operate the compressor if the power cable is damaged or defective or if connection is unstable.

Do not operate the compressor in wet or dusty environments.

Never aim the air jet at people or animals.

Do not allow unauthorized people to operate the compressor and give them all required instructions.

Do not hit fans with blunt objects as they might break during compressor operation.

Never operate the compressor without air filter.

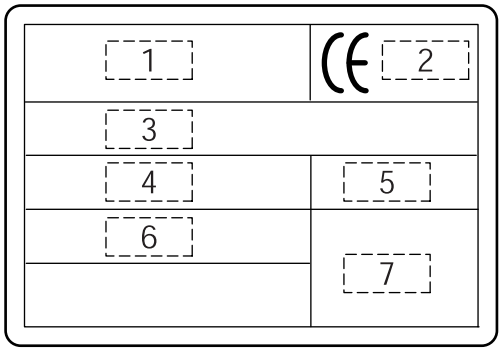
Do not tamper with safety and adjusting devices.

Never operate the compressor when doors/panels are open or removed.

PRODUCT IDENTIFICATION

The compressor Your have purchased has its own CE plate showing the following data:

1) Manufacturer's data
2) CE mark – year of manufacture
3) TYPE = name of the compressor
   CODE = compressor code
   SERIAL NO. = serial number of the compressor You have purchased (to be always mentioned when calling for technical assistance)
4) air delivered by the compressor expressed in (l/min) and (cfm)
5) max. operating pressure (bar and PSI) – compressor noise level in dB(A)
6) electric data: voltage (V/ph), frequency (Hz), absorption (A) - power (HP and kW), rotations per minute (Rpm).
7) other approvals

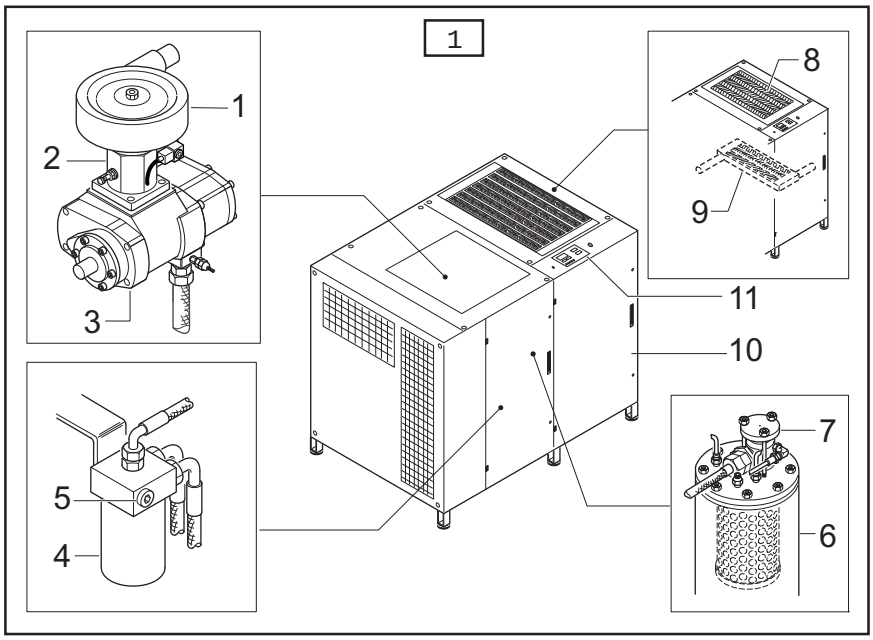


COMPRESSOR DESCRIPTION (fig. 1)

Compressors described in this manual are meant for industrial applications.

The compressor essentially consists of the following:

1. Air filter
2. Suction regulator
3. Screw compressor
4. Oil filter
5. Thermal expansion valve
6. Oil separator reservoir + filter
7. Minimum pressure valve
8. Oil-air radiator (50) – oil radiator (60)
9. Air radiator (only 60)
10. Electric panel
11. Control panel



UNPACKING AND HANDLING THE COMPRESSOR

The compressor is usually shipped to the customer with a carton cover. Wear protective gloves and cut outer straps. Then remove the carton cover from the top. Before removing the compressor, make sure it is intact (outside), open access doors and visually check components for damage. Check that all accessories are included.

Lift machine with a pallet truck or fork lift truck of suitable capacity (see technical table) and transport the machine with the utmost care to the place of installation.

Keep the packing material in case the compressor needs to be re-located. Keep the packing material at least for the whole warranty period, so that it can be used for safely deliver the compressor to the Service Center for repair works.

Dispose of the above mentioned materials by taking them to special disposal centres.

POSITIONING THE COMPRESSOR (fig. 2)

Upon installation, make sure that the chosen place is in compliance with all prevailing national safety standards and meets the following requirements:

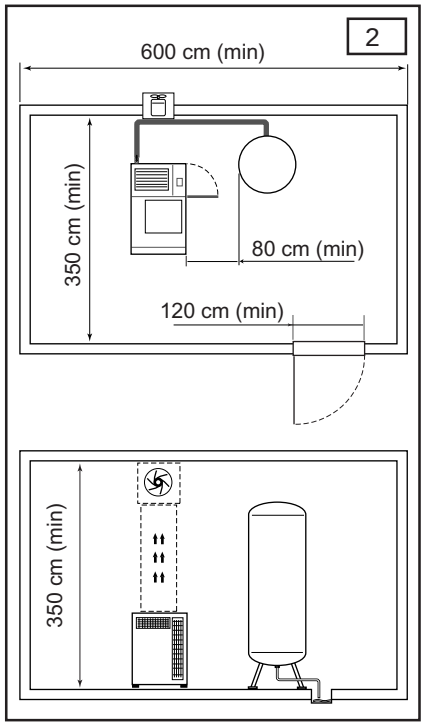
- **low percentage of dust** suspended in air,
- **shop must be suitably sized and well ventilated** so that room temperature never exceeds 40°C when the compressor is working. If this is not the case, install one or more exhaust fans to extract hot air. Ideally, the fans should be installed close to the ceiling.

Exhaust fan “2000 cu m /h” code 020041000 / Exhaust fan “4000 cu m /h” code 020042000

Dimensions are just approximate. Try nevertheless to respect them as much as possible.

A drainage pit or can shall be used to collect tank condensate.

Once machine is positioned and stable, fit supplied cock in its seat on radiator side; seal with Teflon tape. Connect compressor and air tank through the connection hose supplied with the machine (do not position check valves between tank and compressor).



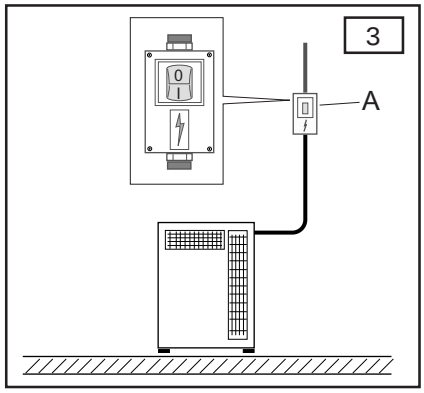
POWER CONNECTION (fig.3)

Only qualified electricians are authorized to connect the compressor.

- Proceed to power connection with cross-section cables suitable for machine power: 3 phase cables and 1 ground cable.
- Have a switch (A) provided with plug fuses installed between supply line and control panel, close to machine cable connections.
- Switch (A) should be installed within the operator’s reach.

The cables should be of the approved type and with a minimum protection degree: IP44.

NOTE: For cable cross-section selection, refer to technical data table.



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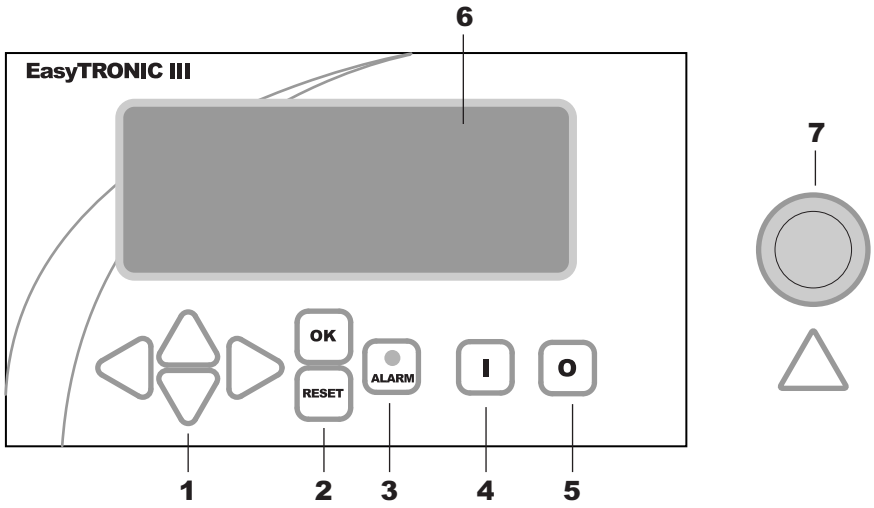


CONTROL PANEL

The main functions of the compressor are controlled by means of an electronic control unit installed in the control panel.

1. **Buttons for menu scrolling / modifying values**
2. **OK button –** for confirming settings
   Reset button – for silencing alarms
3. **Alarm LED**
4. **I/ON Button –** switch-on
5. **0/ OFF Button –** switch-off.
6. **Display**

To adjust the contrast, press ◁ ▷ together (with machine in OFF status).

The contrast can be adjusted from 1 (darker) to 20 (lighter). Press OK to save the value.

7. **Emergency button –** to be used for stopping the compressor immediately only in the event of a real emergency.

TYPE OF SERVICE

Automatic operation

• Compressor operation is regulated by the pressure transducer, which stops the machine when the maximum pressure is reached and restarts it when the pressure has returned to the minimum setting value.

The machine stop is delayed type; that is, it does not coincide precisely with the reaching of P max, but after a defined interval of time during which there is no air intake.

• The factory setting is 180 seconds, but we recommend checking that the number of starts per hour is NOT greater than the maximum recommended number of 12. If the number is greater, it is preferable to increase the idle running time (see the section “Modifiable parameters” point 7).

MODIFIABLE PARAMETERS

Pressing the OK button with the machine OFF takes you to the menu of operating parameters. In certain cases a password is required in order to access the modifications. Use the △▽ buttons to scroll the menu.

0) Control unit ID (service password): selects the identification number of the control unit; if several compressors are connected to the same RS485 line, multiple IDs can be selected.

1) Maintenance – Pre-alarm hours (service password) **:** each working hour of the machine is counted down automatically; when the counter reaches 0, the control unit trips a Maintenance Alarm.

Use the XX buttons to scroll the items of the menu:

1. General maintenance:	hours remaining
2. Air filter change:	hours remaining
3. Oil filter change:	hours remaining
4. Oil change:	hours remaining
5. Bearing lubrication:	hours remaining
6. Idle hours:	displays the hours of idle running
7. Total working hours:	displays the total working hours

The count preceded by the (-) sign indicates the number of hours that have elapsed since the last maintenance alarm.

The ◁ ▷ buttons can be used to set a new value (in this way overriding the previous alarm).

2) Alarm history (no password required): with this menu you can view the last 100 alarms.

3) Pre-alarm temperature (factory password): on this menu you can set the temperature differential (“delta”, expressed in °C) with respect to the maximum alarm temperature; the value can be set between 1 and 20.

Example: If the maximum temperature is 120°C and the differential value is 10°C, the maximum temperature pre-alarm is tripped at 110°C.

4) Maximum temperature (factory password): with this menu you can set the maximum temperature allowed; the setting range is from 0 to 150°C.

5) Minimum temperature (factory password): with this menu you can set the minimum temperature; the setting range is from 0 to -14°C.

6) Fan temperature (service password): with this menu you can adjust the temperature for activating the cooling fan; the setting range is from 0 to 150°C. At the preset temperature the fan starts; hysteresis is fixed at 10°C.

7) Duration of the idle running cycle (service password): with this menu you can change the duration of the machine idle cycle; the setting range is from 60 to 900 seconds.

8) Stop Empty Cycle (assistance password): using this menu you can change the duration of the empty operating cycle following the voluntary stopping of the compressor (OFF button), the range of regulation goes from 30 to 240 seconds.

9) Automatic start (service password): this parameter enables the automatic start; if it is activated, the compressor will restart automatically following an interruption of the electrical power supply.

10) Internal phase sequence (service password): this parameter enables the internal phase sequence control, or disenables the internal control by activating the input without phases on the terminal block.

11) Language (no password required): this parameter allows you to change the language in which messages are displayed.

12) RS485 enable (no password required): this parameter is used to enable data transmission via RS485 and automatically disenable transmission on RS232.

13) Set time and date (no password required): used for setting the current time and date.

14) PSI/BAR (no password required): for selecting the unit of measurement used to display the pressure.

15) Idle/Operating pressure set point (no password required): this parameter is used to set the pressure at which the compressor must shut down.

16) Load/Operating differential set point (no password required): indicates the pressure at which the control unit enables compressor restart.

17) Maximum pressure (service password): this parameter sets the maximum pressure value that can be reached, i.e. the maximum value set in point 14.

18) Maximum pressure alarm (factory password): this parameter sets the maximum pressure value at which the control unit trips an alarm and blocks compressor operation.

19) Remote Pressure (assistance password): enabling this parameter, the visualisation of the pressure and respective alarms is maintained, but the control of the start of the compressor takes place using an external pressure switch linked to a dedicated digital entry. In this event, it is necessary to pay attention that the setting of the external pressure switch falls within the values imposed in points 15 and 16. In case of an anomaly, an alarm message will appear.

20) Start programme (service password): this menu allows you to programme the starts and stops of the compressor. Use △▽ to select one of the five programmes available and press OK to enter the desired data (start time, stop time, and day of the week).

To disactivate the programming, go to the menu and enter the same time of start and stop.

21) X1 progr. NC-NO (service password): allows you to invert the logic of the inputs of terminal block X1.

22) X7 progr. NC-NO (service password): allows you to invert the logic of the inputs of terminal block X7.

23) Motor therm. separate (service password): with the parameter ON, the thermal relays of the compressor and fan motors are separated on two different inputs.

24) Temp. unit of measurement (no password required): for selecting the unit of measurement of the temperature (°C-°F).

25) Maximum starts per hour (service password): for selecting the maximum number of restarts per hour allowed. If this value is exceeded, a signal is given.

- The following menus are enabled only if an inverter is present:

26) Inverter
27) Minimum operation %
28) Load delay
29) Inverter integration
30) Inverter parameters

	Parameter		min.	max.	Def.		Parameter		min.	max.	Def.
0	ID		000	009	000	11	Language				ITA
1	General maintenance:	hours	0	50000	4000	12	RS485 enable				YES
	Air filter change:	hours	0	50000	2000	13	Time and date				
	Oil filter change:	hours	0	50000	4000	14	PSI/BAR	Bar			BAR
	Oil change:	hours	0	50000	8000	15	Idle	Bar	0	P.Max.	10
	Bearing lubrication:	hours	0	50000	4000	16	Load	Bar	0	2	0,5
	Idle hours:	hours	0	50000	0	17	Maximum pressure	Bar	0	P.all. - 0,5	11
	Total working hours:	hours	0	50000	0	18	Maximum pressure alarm	Bar	0	16	14
3	Pre-alarm temperature	°C	0	20	5	19	Remote pressure	Bar			NO
4	Maximum temperature	°C	0	110	110	20	Start programme				OFF
5	Minimum temperature	°C	-14	0	-7	21	X01 progr. NC-NO				01010110
6	Fan temperature	°C	0	150	65	22	X07 progr. NC-NO				111111
7	Idle running cycle	sec.	60	900	180	23	Motor therm. separate				NO
8	Stop Empty Cycle	sec.	30	240	35	24	Temp. unit				°C
9	Automatic start				NO	25	Max. starts per hour	n°	1	200	12
10	Internal phase sequence				NO						

ALARM MESSAGES

When a fault occurs or the safety limits set are exceeded, the red alarm light comes on and the alarm in progress is shown on the display.

In the case of multiple alarms, use △▽ to scroll through the items.

To silence an alarm, press the RESET button.

To delete all the non-active alarms, press RESET and hold it down for at least 2 seconds.

- **rot.dir.error**

Alarm tripped in the event of an incorrect phase sequence. The alarm blocks compressor operation; to restart operation, the correct phase sequence must be re-established.

N.B.: To completely reset the alarm you have to switch off the electrical power supply.

- **air.temp.sens. fault**

Alarm tripped in the event of a temperature sensor fault (sensor open or short circuit). The alarm blocks compressor operation; to restore operation, check the connection and/or replace the sensor, then press the RESET button XX.

- **screw.temp.sens. fault**

Alarm tripped in the event of a temperature sensor fault (sensor open or short circuit). The alarm blocks compressor operation; to restore operation, check the connection and/or replace the sensor, then press the RESET button XX.

- **max.oil.temp.**

Alarm tripped when the maximum oil temperature is reached. The alarm blocks compressor operation; to restore operation, wait for the temperature to fall below the programmed value, then press the RESET button XX.

- **min.oil.temp.**

Alarm tripped when the minimum oil temperature is reached. The alarm blocks compressor operation; to restore operation, wait for the temperature to rises above the programmed value, then press the RESET button XX.

- **oil.temp.pre-alarm**

Alarm tripped when the pre-alarm oil temperature is reached. The alarm does not block compressor operation. To silence the alarm, press the RESET button XX.

- **Motor thermal overload**

Alarm tripped when the motor PTC thermal relay + fan motor thermal relay is tripped. The alarm blocks compressor operation. To silence the alarm, first verify the cause and then press the RESET button XX.

- **Emergency button**

Alarm tripped when the emergency button is pressed, which blocks compressor operation. To silence the alarm, first reset the emergency button, then press the RESET button XX.

- **Maintenance**

This alarm signals the user that the machine is due for routine maintenance (oil change, filters, etc.).

The alarm must be silenced by the service technician who performs the maintenance, as described in the section “Modifiable Parameters”.

- **max.press.alarm**

Alarm tripped when the maximum pressure set is exceeded. The alarm blocks compressor operation.

To silence the alarm, first restore the correct pressure, then press the RESET button XX.

- **press.sens.fault**

Alarm tripped when the pressure sensor connected to the 4-20mA input is not working correctly. The alarm blocks compressor operation.

To silence the alarm, first restore the normal status of the pressure sensor, then press the RESET button XX.

- **comm.error**

Alarm tripped when communication between the control unit and the display is interrupted. The alarm blocks compressor operation.

Check the connections and press RESET XX.

- **screw.motor.therm.** (only if parameter 23 is activated)

Alarm tripped in the event that the screw motor thermal relay is tripped. The alarm blocks compressor operation.

To silence the alarm, first verify the cause, then press the RESET button XX.

- **fan.motor.therm.** (only if parameter 23 is activated)

Alarm tripped in the event that the fan motor thermal relay is tripped. The alarm blocks compressor operation.

To silence the alarm, first verify the cause, then press the RESET button XX.

- **Max starts/hour**

indicates the number of starts per hour is greater that that imposed. The alarm does not block the compressor, but persists for an hour, after which it resets itself automatically.

If this alarm activates itself frequently, check and if necessary increase the empty cycle time.

- **Err. remote pressure**

this activates itself in case of anomalies of the external pressure switch. The alarm does not block the compressor, but persists until the resetting of the correct control sequence.

- **Inverter error**

Alarm tripped only when the inverter is present.

START-UP PROCEDURE AND DISPLAY INFORMATION

FIRST START-UP

Before starting the machine for the first time, **make sure that**:

- the power supply voltage corresponds to the voltage indicated on the CE plate
- the electrical connections have been made using adequately sized cables
- the master switch (on the wall) has suitable fuses
- the oil level is higher than the minimum (where necessary, fill using oil of the same type)
- the air outlet cock is completely open.

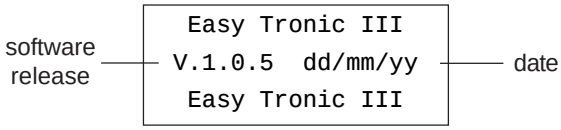
The first start-up of the compressor must only be carried out by a specialised technician.

Press the ⏽ button:

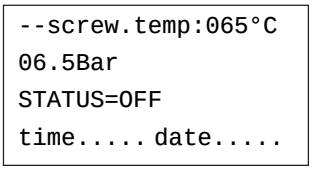
If the machine does not start and the message "rot.dir.error" appears on the display:
switch off the electrical power using the wall switch, open the electrical cabinet door and invert the position of two phases in the terminal block, close the door, restore voltage and restart the machine.

If the machine starts on the first try:

display status at start-up (remains for 5 seconds)



display status during normal operation



Line 1
Default display "——screw.temp." = temperature of the screw.
Using △▽ you can view the following information:

Inside temp.	indicates the temperature inside the electrical compartment
——air.temp.	indicates the temperature of the air at outlet
——total hours	indicates the total working hours
—load hours	indicates the working hours with load
—idle hours	indicates the idle running hours
maint.hours	indicates the hours remaining until maintenance is required
air filter h.	indicates the hours remaining until air filter replacement is required
bearing.lubric.	indicates the hours remaining until lubrication of the bearings is required
oil filter h.	indicates the hours remaining until oil filter replacement is required
starts/hour	indicates the number of starts recorded in the last hour

After 25 seconds without any buttons being pressed, the default display returns.
Line 2
Indicates the pressure inside the screw compressor.
Line 3
Compressor status:

IDLE	idle running
LOAD	the compressor is loading
STAND-BY	waiting for start command
REMOTE-OFF	waiting for remote start command
OFF	the compressor is powered but not operating

Line 4
DATE AND TIME if a start-up has been programmed, a blinking clock appears in the lower right-hand corner.

START/STOP CYCLE

- Pressing the ⏽ button

1. Stand-by for start-up: the message (STAND-BY) is displayed: if the compressor was switched off, there will be a pause of 15 seconds before the cycle starts; otherwise, the compressor remains in stand-by until the request for air comes from the pressure transducer.
2. Start: the compressor is started in "star" configuration and the message (IDLE) is displayed.
3. Run: after six seconds, the configuration changes from star to delta.

After a few seconds, if requested by the transducer, the load solenoid valve is energised and the message (LOAD) is displayed.

- Pressing the ⏾ button

the load solenoid valve enable is interrupted; the idle cycle starts and the message (IDLE) is displayed blinking. At the end of the idle cycle, the compressor switches off and the message "OFF" is displayed.

SAFETY DEVICES

1. Minimum pressure switch: indicates a pressure drop below the minimum inside the oil separator reservoir.

2. Pressure switch for oil separator filter clogging: indicates efficiency limit of oil separator filter.

3. Pressure transducer: reads pressure value

4. Pressure switch for air filter clogging: indicates air filter efficiency limit

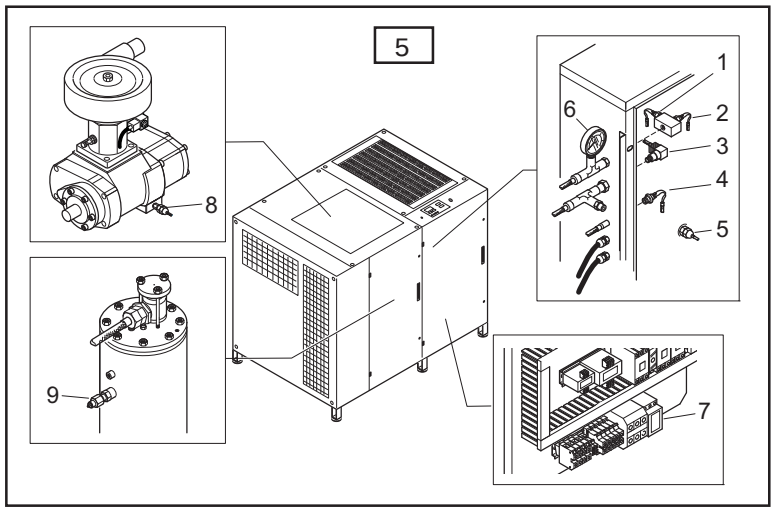
5. Delivered air temperature probe: displays temperature value of the air delivered from the radiator.

6. Pressure gauge for max. pressure check: indicates pressure value inside oil separator reservoir.

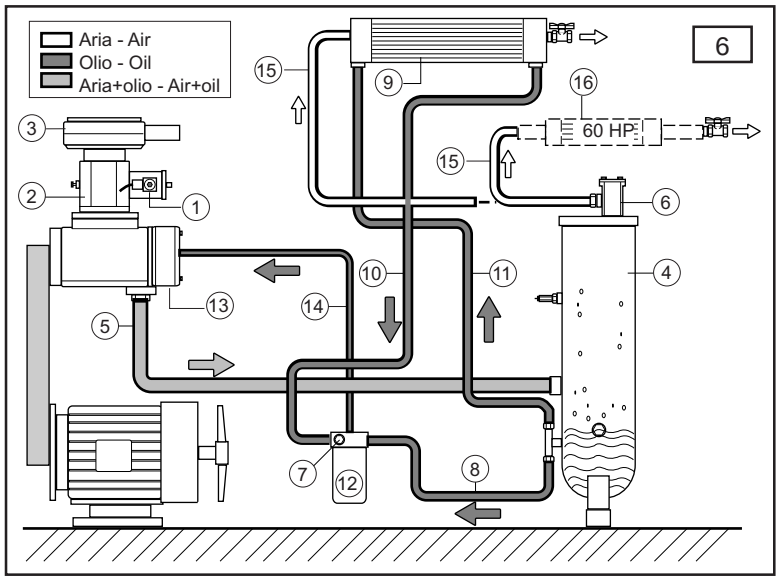
7. KR "phase-sequence relay": prevents compressor start in case of wrong direction of rotation due to the inversion of power contacts.

8. Screw compressor max. temperature probe: stops motor over +110°C.

9. Safety valve: It opens the air bleeding unit once the safety value has been reached.



WORKING CYCLE



- **At first start-up**, the motor starts in the "star" configuration. In this phase the compressor starts slowly, the solenoid valve **(1)** is open and the suction regulator **(2)** is closed.
- **The compressor** is kept under these conditions for about 4 seconds.
- **This time over**, motor is "delta" powered. The solenoid valve **(1)** is energized; it closes and enables suction regulator **(2)** opening, which sucks in air through filter **(3)**.
- During this stage, compressor is working at full speed and starts compressing air inside the oil separator reservoir **(4)** through tube **(5).**
- **Compressed air** cannot escape through the minimum pressure valve **(6)**, which is set at **3÷4 bar**.
- **Compressed air** compresses oil inside reservoir **(4)** and causes it to flow through tube **(8)** to the thermostat **(7)**. If oil temperature is below 50°C, oil is directly delivered to screw compressor through tube **(14)**.

If oil temperature is above 50°C, the thermostat closes the passage and oil is delivered to radiator **(9)** through tube **(11)**.

Cooled oil is returned to oil filter **(12)** through tube **(10)** and then to screw compressor through tube **(14)**.

- **From filter (12)**, oil reaches compressor **(13)** through tube **(14)**. Oil is mixed with sucked air to form an air/oil mixture that provides sealing and lubrication of compressor moving parts.
- **The air/oil mixture** flows back to reservoir **(4)** where air and oil are first separated by centrifugation and then by the oil separator filter.
- As a result, **reservoir (4)** will deliver air only to air radiator **(16)** (separate on Rotar 60) or **(9)** (oil-air radiator on Rotar 50) through tube **(15).** Air is then conveyed to mains through a cut-off cock.
- **Min. pressure valve (6)** serves also as a check valve.
- **Compressor** delivers compressed air to outer air tank.
- **Tank inner pressure** increases until reaching max. set value.
- **Once max. value is reached**, pressure gauge starts timer and powers off solenoid valve **(1)** of regulator **(2)**.
- **Regulator (2)** closes and compressor stops compressing and starts idling.
- **Timer** continues counting until reaching set value and, if pressure is unchanged, stops the electric motor. If pressure drops to minimum value set on controller, solenoid valve **(1)** is energized and closes before timer counting is over.
- **Regulator (2)** opens and compressor operates under normal load; timer is reset.
- **This cycle** is automatically repeated.

MAINTENANCE

Proper maintenance is fundamental to the efficiency of your compressor and for the prolongation of its operational lifespan.

- It is also important to respect the manufacturer's suggested maintenance schedule, keeping in mind that the compressor has been constructed for use in the best possible environmental conditions. (see the chapter on "Installation")
- The intervals between maintenance works might have to be reduced to counteract the effects of the environmental conditions in which the compressor is used.
- The oil used is RotEnergy Plus. Use of a different type of oil could compromise the efficiency of the compressor and frequency of maintenance work to be performed.
- The normal maintenance operations which can be performed by the person in charge of the compressor will be described in the following pages. Extraordinary maintenance work must be performed by an authorised customer technical assistance centre.

Type of maintenance	**Maintenance schedule**		
	Work hours	O	At least
ORDINARY MAINTENANCE			
Condensation release	-		Once per month
Oil level check and refill	500		
Clean the air filter	1000		
Check for clogging and clean the radiator	1000		
Check the transmission belt	2000		
Grease the electric motor pad	**2000**		
Air filter substitution	**2000**		**Once per year**
Oil filter substitution	**4000**		**Once per year**
Discharge oil filter substitution	**4000**		**Once per year**
Total oil change	**8000**		**Once per year**
EXTRAORDINARY MAINTENANCE			
One-way draining valve substitution	**4000**		**Once per year**
Suction valve overhaul	12000		-
Thermostatic valve overhaul	12000		-
Minimum pressure valve overhaul	12000		-
Solenoid-valve substitution	12000		-
Substitute the fexible tube	12000		-
Substitute the transmission belt	12000		-
Substitute the electric motor bearings	24000		-
Screw compressor overhaul	24000		-

- The maintenance operations indicated in **bold type** must be performed **at least once a year**, even if the machine has not been run for the amount of hours prescribed for such maintenance.

BEFORE SERVICING THE MACHINE, ALWAYS REMEMBER TO:

√ Stop motor by means of the control board switch (do not press the emergency button).

√ Turn off the outer wall-mounted switch.

√ Close line cock.

√ Make sure that no air is present inside the oil separator reservoir: turn cock anti-clockwise (A – fig.8).

√ **Before removing any protection,** make sure the wall-mounted switch is positioned to (0).

• In order to assure the correct functioning of the compressor, the following items must be checked **after the first one hundred hours of operation**:

Check **oil level** and top up with same oil, if needed.
Check for proper **screw tightening**: especially power electric connection screws.
Visually check that **all fittings seal properly.**
Check **drive belt tension** and tension up, if needed.
Check **operating hours** and **type of duty cycle** selected
Check **room temperature**.
Change **oil filte**

DRAIN CONDENSATE (SEE FIG. 8)

Once a month, drain condensate before starting the compressor: open cock (C) and close it as soon as oil starts coming out instead of water.

Check oil level and top up if necessary.

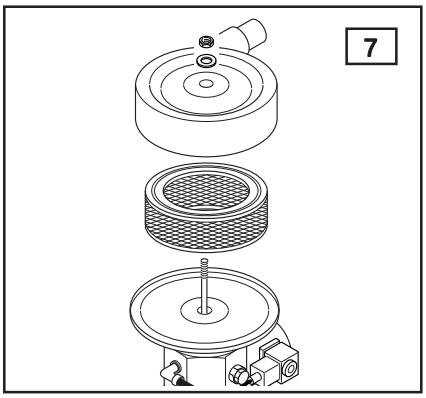
CONDENSATE IS A POLLUTANT! It cannot be drained into the sewerage system. Dispose of condensate in compliance with current laws on environmental protection.

CLEAN THE AIR FILTER (FIG. 7)

With compressed air, from the inside to the outside.

Look at filter against the light and check for tears. Always replace a torn filter.

Filter cartridge and cover should be carefully fitted or dust might enter the compression unit. REPLACE AIR FILTER AFTER THIRD CLEANING.



CLEAN RADIATORS

For cleaning, proceed as follows:

remove back and upper panel from compressor cabinet;

place a protective plastic sheet under radiator fins;

spray (spray gun + solvent) from the outside towards the inside;

check that air flows freely through radiator.

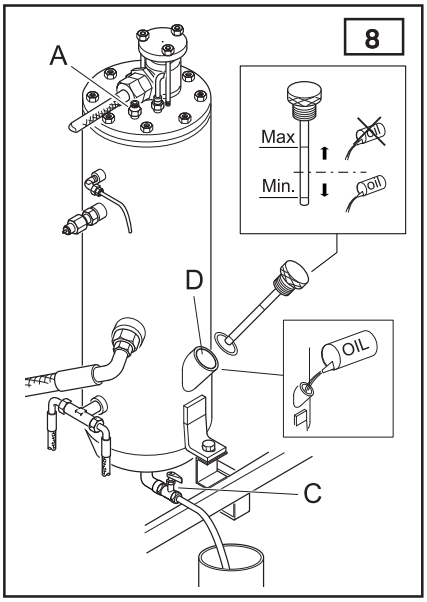
CHECK OIL LEVEL (FIG. 8)

To carry out this check, do NOT wait for the compressor to stop automatically. With the compressor on, press stop button (rif.12 - fig.4) to control manual stop and wait for approx 10 minutes. In this way you will be sure that oil has completely drained inside the oil separator tank.

Remember to bleed all air off oil separator reservoir before topping up: slowly loosen cock (A) to bleed all air, then tighten again.

Check oil level through the oil dipstick. Top up using the same oil, when level drops below the mid line (first equipment oil: RotEnergy Plus).

Oil amount necessary for topping up from min. to max. level is about 3 liter.

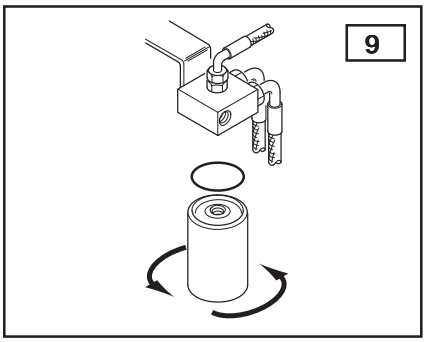


CHANGE OIL FILTER (FIG. 9)

Oil filter must be replaced at every 4000 operating hours.

Remember to depressurize the reservoir first:

Always apply a thin layer of oil on filter edge and its seal before fitting the filter.



CHANGE OIL SEPARATOR FILTER (FIG. 10)

Remove upper panel lifting it from the inside and removing it from the top.

Bleed all air through cock (A) (see fig. 11).

Loosen all hose connections positioned on oil separator upper flange.

Remove flange fastening bolts and lift the oil separator flange + filter unit using adequate lifting equipment.

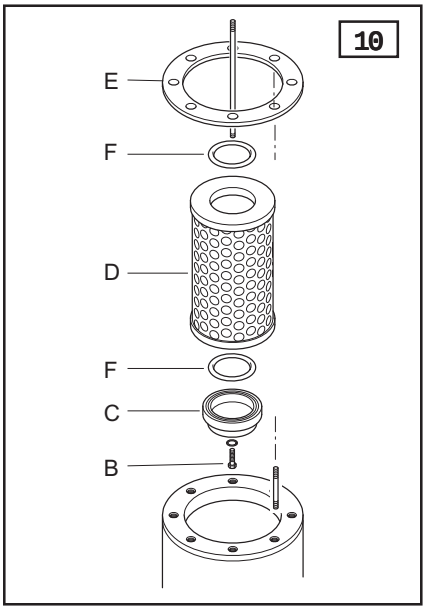
Unscrew nut (B) and remove bottom (C).

Replace oil separator filter (D) and gaskets (E) and (F).

Re-assemble oil separator flange + filter unit and fit it inside reservoir. Place gasket (E) inbetween.

Tighten bolts in a cross sequence. Be sure to tighten bolts evenly.

Re-connect all connections.



CHANGE OIL (FIG. 8)

Release pressure inside the oil separator reservoir through cock (A).

Connect the supplied hose to cock (C).

Unscrew the plug of filler (D) and open ball cock (C), then let all oil flow into a collection container.

Once this operation is over, close cock and remove hose. Then fill fresh oil through filler (D) (complete filling: 18 lt.).

Power the machine on.

Start the machine and let it run for 5 minutes, then stop and bleed all air.

Allow 3 minutes: check oil level and top up, if necessary.

Used oil is: RotEnergy Plus

EXHAUSTED OIL IS HIGHLY POLLUTANT! Dispose of exhausted oil in compliance with current laws on environmental protection.

CHECK DRIVE BELT TENSION (FIG.11)

Use a frequency tester to carry out this check.

Proceed as follows:

Remove left-side panel and inner L-shaped panel.

• Move tester microphone closer to the belt where “test” is marked (about at mid length) and hit the belt with a wrench.

• Read value on tester. Tension up or down if the value is different from values indicated in the table:

Higher value = tension down

Lower value = tension up

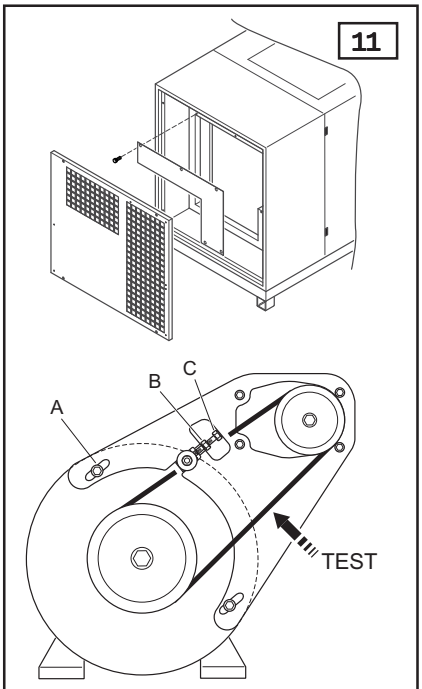
• Proceed as follows:

loosen screws (A);

turn tensioner (C) anti-clockwise to tension up and clockwise to tension down. Tighten the check nut (B) when finished;

tighten screws (A) and check frequency value once again. Repeat above procedure, if necessary, to reach optimal value.

Re-assemble cabinet parts before starting the compressor.



Correct belt tension values

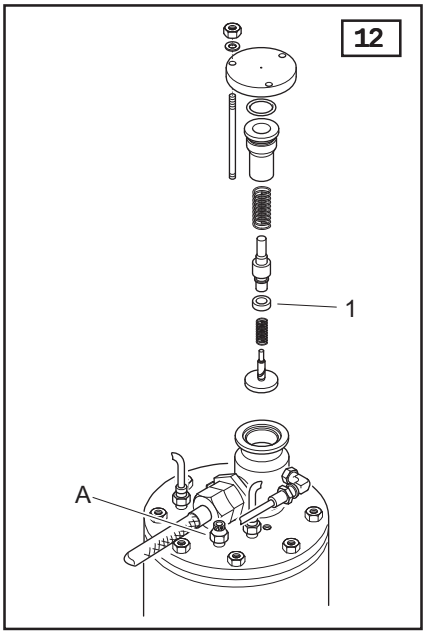
	50 Hp	60 Hp
Max.P 8 bar	70	76
Max.P 10 bar	71	75
Max.P 13 bar	69	76

REPLACE MIN. PRESSURE VALVE (FIG. 12)

Close line cock and bleed all air off oil separator reservoir through cock (A).

Remove fastening nuts from flange valve and lift valve.

Replace gasket (1) part no. 010083000.



REPLACE HOSES

Loosen hose connections, replace hoses and then tighten firmly hose connections.

REPLACE DRIVE BELT (FIG.11)

To replace drive belt, proceed as follows:

Remove left-side panel and inner L-shaped panel.

Loosen screws (A).

Completely loosen tensioner (C) by turning it clockwise.

Remove belt and replace it with a new one. Tension belt by turning tensioner (C) anti-clockwise and then secure it with the check nut (B).

Tension belt up as described above.

Tighten screws (A) and re-assemble cabinet parts.

Check belt tension after three operating hours and adjust again, if necessary.

Technical features							
Power	kW / Hp	37 / 50			45 / 60		
Pressure	bar	8	10	13	8	10	13
Compressor type		Enduro 12			Enduro 12		
Compressor rotation speed	RPM	4473	4010	3318	5332	5318	4244
Air volume supplied	l/min	5700	5000	3930	7150	6450	5030
Oil quantity	l	18			18		
Oil quantity for topping-up	l	3			3		
Max. final over temperature	°C	17	16,8	16	21	23,5	19
Removed heat	kJ / h	126.540			153.900		
Fan flow rate	m³ / h	5000			5200		
Oil residues in the air	mg / m³	4			4		
Electric motor (bipolar)	Type	1LG 200L IM B3B5			1LG 200L IM B3B5		
Max. power absorbed	kW	37			45		
Voltage	V/Hz	400 / 50			400 / 50		
Auxiliary voltage	V/Hz	230 / 50			230 / 50		
Electrical box protection class	IP	55			55		
Motor insulation class		F			F		
Full load current	A	65			77		
Starting load	A	138			168		
Max. Start-up per hour	n°	10			10		
Ambient limit temperature	°C	50			50		
Noise level at 1 m	dB (A)	70			74		
Protection devices							
Max compressor temperature	°C	110			110		
Safety valve setting	bar	15			15		
Oil separator filter pressure switch setting	bar	8,9	10,9	12,7	8,9	10,9	12,7
Start-up pressure switch setting	bar	1,5			1,5		
Air filter pressure switch setting	bar	-0,008			-0,008		
Dimensions and weight							
Dimensions	cm	180x94x137			180x94x137		
Weight	Kg	732			795		
Air outlet connection	Rp	1 - 1/4”			1 - 1/4”		

TROUBLESHOOTING

When a fault occurs or the safety limits set are exceeded, the red alarm light comes on and the alarm in progress is shown on the display.

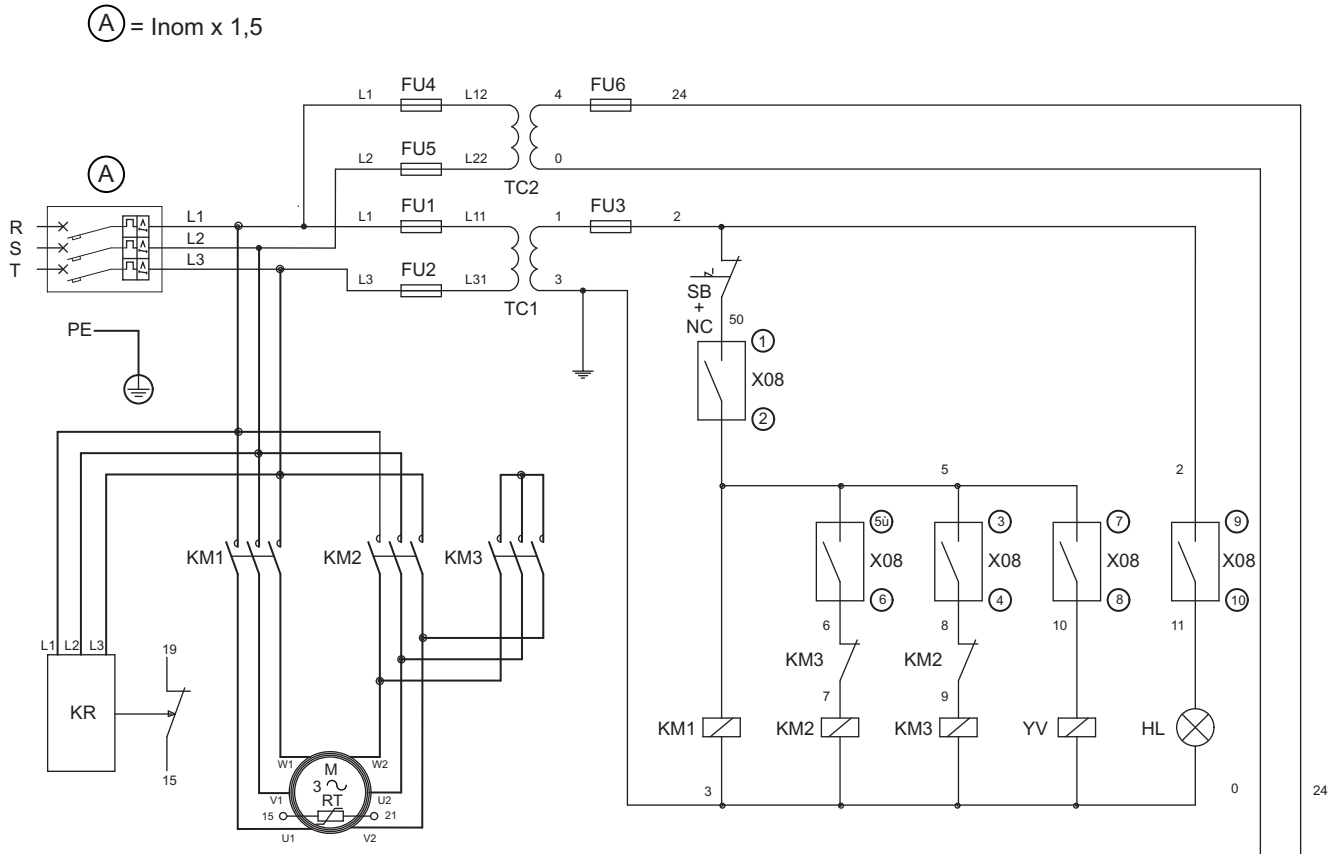
In the case of multiple alarms, use △▽ to scroll through the items.

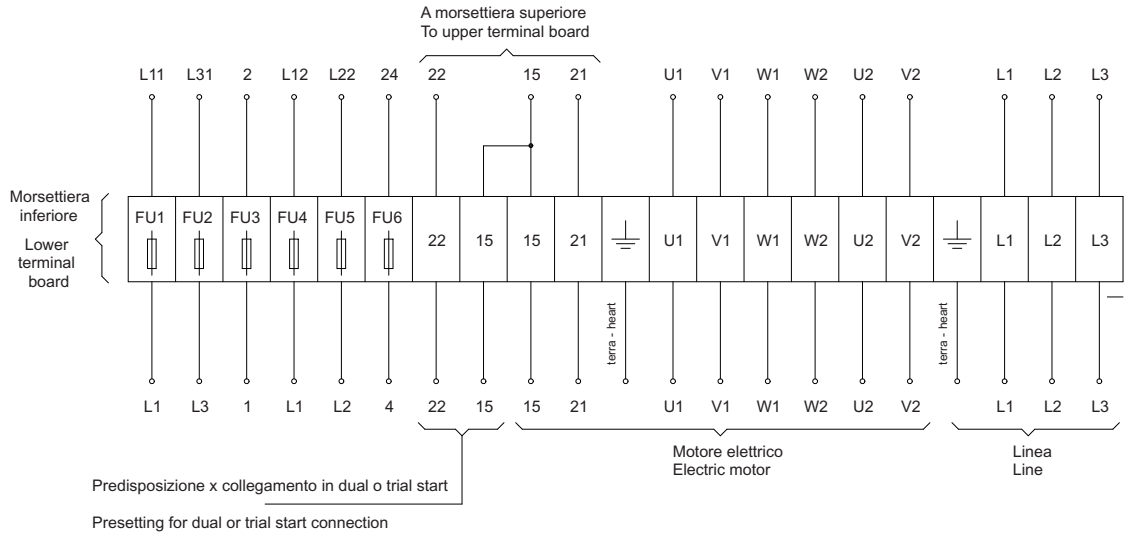
To silence an alarm, press the RESET button.

Fault/Alarm message	Cause	Solution
rot.dir.error	Power supply phases inverted	Open the electrical cabinet and invert the phases.
air.temp.sensor fault	Fault of the temperature sensor	Replace the air temperature sensor
screw.temp.sensor fault	Fault of the temperature sensor	Replace the screw temperature sensor
max.oil.temp.	Radiator clogged	Clean the radiator
	Low oil level	Fill the oil
	Oil mist separator filter clogged	Replace the filter
min.oil.temp.	Low room temperature	Heat the room. Wait
Motor thermal overload	Low line voltage	Check the voltage.
	Motor temperature overload	Check the operation of the cooling fan; if necessary activate it in “manual” or with the switch inside the electrical compartment.
	High room temperature	Increase the ventilation in the room. Wait
max.press.alarm	The intake regulator did not close at the end of the cycle.	Check that current to the solenoid valve is switched off and that the shutter opens normally. If necessary, remove and clean the intake regulator.
	Oil mist separator filter clogged.	Replace the oil mist separator filter.
	Line cock closed.	Open the cock.
	Minimum pressure valve blocked.	Check and clean the valve, if necessary replace the gaskets.
press.sensor fault	The pressure sensor is faulty.	Replace the pressure sensor.
High oil consumption	Defective draining	Check the drain hose.
	Oil level too high	Check the oil level and if necessary remove some.
	Oil mist separator filter faulty	Replace the oil mist separator filter.
	Poor seal of the oil mist separator filter gaskets	Replace the gaskets.
Oil leakage from the intake filter	The intake regulator does not close	Check the intake regulator and the solenoid valve.
The compressor performs poorly	Belt loose	Tighten the belt.
The compressor does not compress air	The intake regulator is closed and does not open because it is soiled.	Remove the filter and check the opening; if necessary disassemble and clean it.
	The intake regulator is closed and does not open due to lack of control.	Check the operation of the solenoid valve; replace if necessary.
The compressor does not restart	The minimum pressure valve does not close perfectly.	Disassemble the valve and clean it; if necessary replace the gaskets.
Difficult start-up	Low line voltage	Check the mains voltage.
	Cold room	Heat the room.
Oil in the cabin	Leakage from hoses	Tighten the unions.

NOTES

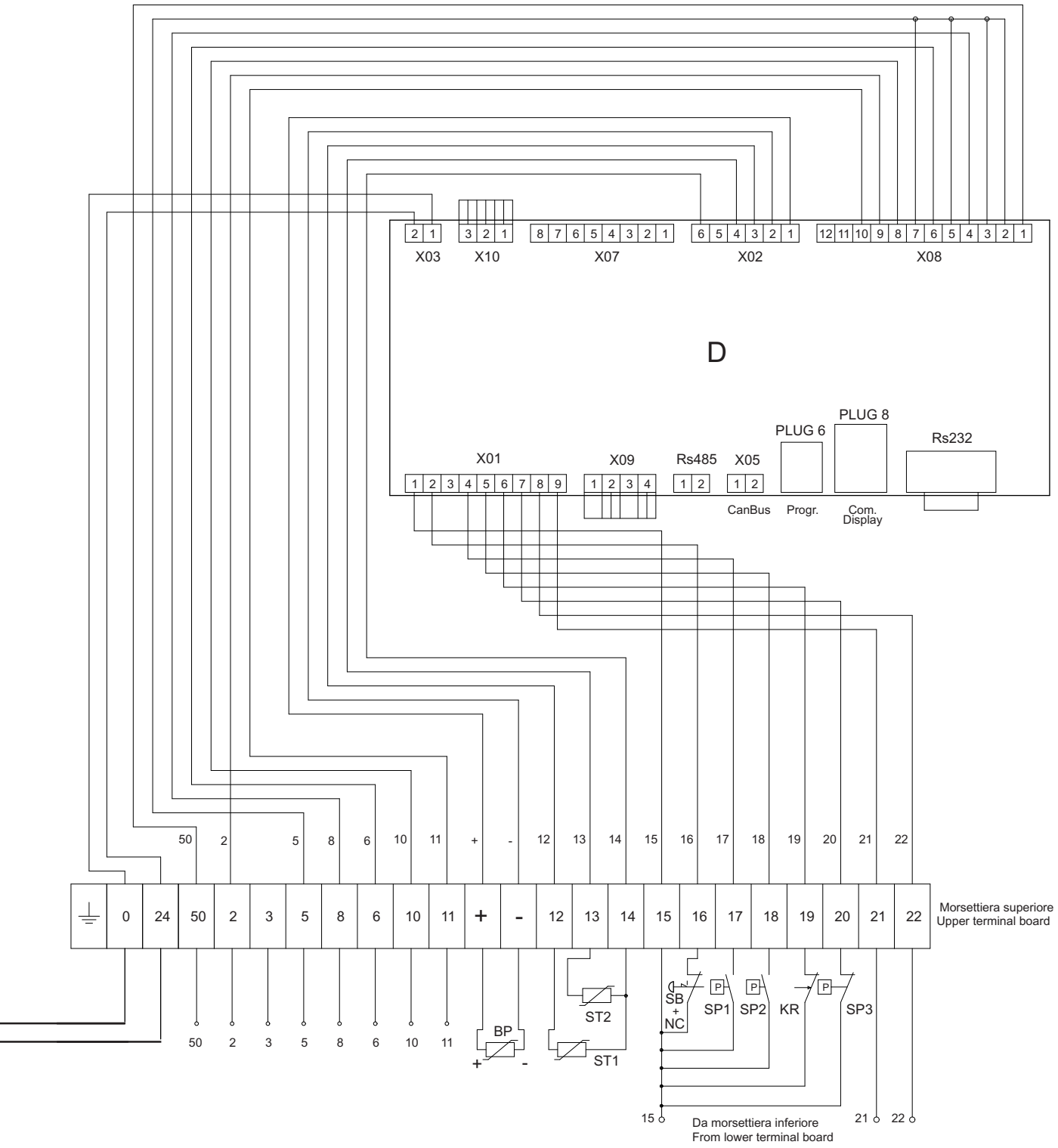
WIRING DIAGRAM





	Power (Hp)	50	50	60	60
	Tension (Volt)	**230**	**400**	**230**	**400**
FU1-FU2	Fuses 6.3x32 4A				
FU4-FU5	Fuses 6.3x32 1A				
FU3-FU6	Fuses 6.3x32 4A				
TC1	Transformer 160VA				
TC2	Transformer 63VA				
KM1	Liner contactor	37kW*	22kW*	45kW*	30kW*
KM2	Delta contactor	37kW*	22kW*	45kW*	30kW*
KM3	Star contactor	37kW*	22kW*	37kW*	22kW*
SB	Emergency button				
KR	Phase-sequence relay				
SP1	Air filter pressure switch				

WIRING DIAGRAM



	Power (Hp)	50	50	60	60
	Tension (Volt)	**230**	**400**	**230**	**400**
SP2	Oil separator filter pressure switch				
SP3	Min. pressure switch				
BP	Pressure transducer				
ST1	Screw delivery temp. probe				
ST2	Air delivery temperature probe				
D	Electronic controller				
YV	Solenoid valve				
HL	Red indicator light				
	Motor cable cross-section (mm²)	7x25	7x16	7x35	7x16
	Command contact cross-section (mm²)	1.5	1.5	1.5	1.5