



Operating manual  
of the  
electrocompressor with  
electronic card  
Airmaster S1

**RVK**

[ ]	RVK 25
[ ]	RVK 30
[ ]	RVK 40

**ROTAIR S.p.A.**

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*Stamp of the retailer of authorized service centre*

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-- 1) SUBJET INDEX --

1. Identification data
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**ATTENTION!**

***The failure to follow or apply the instructions or regulations indicated in the present manual with result in the annulment of any kind of guarantee rights on the compressor and will relieve the manufacturer from any kind of liability as the result of damage to either persons or things, as the result of the incorrect use of the machine or inadequate/non existent maintenance***

-- 1) IDENTIFICATION DATA --

Here follows details of the information printed on the machine identification plate situated at the front of the machine.

MODEL: **RVK**  
REGISTRATION NO.:  
MASS (Kg):  
AIR DELIVERY (litres per minute) \* :  
WORKING PRESSURE (bar):  
YEAR OF CONSTRUCTION:  
ACOUSTIC POWER dB(A) \*\* : < 100

(\*)Measured in accordance with ISO 1217 standards ( $\pm 5\%$ ).

(\*\*)Measured in accordance with directive CEE 84/533, technical adaptation 85/406/CEE.



**CAUTION:**

***The use of non-original ROTAIR S.P.A. spares will result in the immediate cancellation of the guarantee.***

*On requesting assistance or ordering of parts always cite the model number and registration number above.*

**-- 2) TECHNICAL DATA --**

Model	Motor rated power	Motor rated power	Air output ISO 1217	Air output ISO 1217	Frequency	Pressure	Pressure
	<b>kW</b>	<b>HP</b>	<b>lt/min.</b>	<b>cfm</b>		<b>bar</b>	<b>psi</b>
<b>RVK 25-8</b>	18,5	25	<b>3100</b>	<b>110</b>	50	8	114
<b>RVK 25-10</b>	18,5	25	<b>2700</b>	<b>96</b>	50	10	143
<b>RVK 25-12</b>	18,5	25	<b>2300</b>	<b>81</b>	50	12	175
<b>RVK 30-8</b>	22	30	<b>3700</b>	<b>131</b>	50	8	114
<b>RVK 30-10</b>	22	30	<b>3200</b>	<b>113</b>	50	10	143
<b>RVK 40-8</b>	30	40	<b>4900</b>	<b>173</b>	50	8	114
<b>RVK 40-10</b>	30	40	<b>4150</b>	<b>147</b>	50	10	143
<b>RVK 25-100</b>	18,5	25	<b>3692</b>	<b>130</b>	60	7	100
<b>RVK 25-125</b>	18,5	25	<b>3263</b>	<b>115</b>	60	8,75	125
<b>RVK 25-150</b>	18,5	25	<b>2967</b>	<b>105</b>	60	10,5	150
<b>RVK 30-100</b>	22	30	<b>4431</b>	<b>156</b>	60	7	100
<b>RVK 30-125</b>	22	30	<b>3916</b>	<b>138</b>	60	8,75	125
<b>RVK 30-150</b>	22	30	<b>3561</b>	<b>125</b>	60	10,5	150
<b>RVK 40-100</b>	30	40	<b>5744</b>	<b>203</b>	60	7	100
<b>RVK 40-125</b>	30	40	<b>5076</b>	<b>179</b>	60	8,75	125
<b>RVK 40-150</b>	30	40	<b>4616</b>	<b>163</b>	60	10,5	150

-- OIL SYSTEM CAPACITY:

5 litres

(\*) Q8 SCHUBERT 46 oil is recommended.

Similar types permitted:

DICREA 46	AGIP
COMPRESSOR OIL 46	API
ENERGOL RC-R 46	BP.
COMPRESSOR 46	ERG.
RARUS 425	MOBIL.
LR CCW 46	ROLOIL.
CORENA D 46	SHELL
DACNIS VS 46	TOTAL.

For all other information, regarding the motor, consult the use and maintenance booklet of the manufacturer itself, enclosed with this documentation.

**COMPLETE MACHINE:**

-- MAX. ENVIRONMENTAL TEMPERATURE:

40 °C



## COUNTER-INDICATIONS

The compressed air generated by this unit contains minute traces of oil and it is therefore not suited to use in those systems that require totally oil-free air (i.e. food industry, pharmaceutical industry, flour and powder transport, etc...).

## PRECAUTIONS

### GENERAL PRECAUTIONS

1. The machine owner is responsible for ensuring that the compressor is maintained in such conditions as to ensure totally safe operation. Any parts or accessories which fail to guarantee safe function are to be replaced.
2. Use only the oils and lubricants recommended or approved by *ROTAIR S.p.A.* and the engine manufacturer. Ensure that the selected lubricants comply with all current safety provisions, particularly as regards explosion or fire risks, and the hazard of the decomposition or production of harmful gases.
3. The supervisor or the responsible party must ensure that all the instructions concerning the function and maintenance of both machinery and equipment are always carefully followed, and that the machines and all the related accessories and safety instruments, comprising the entire compressed or vacuum air system together with all the related piping, valves, connectors and hoses as well as the expendable elements are in good conditions, that they are not excessively worn and that they are not mishandled.
4. All maintenance, overhauling and repair operations are to be undertaken exclusively by adequately trained staff, and supervised by a person qualified in these types of operations if necessary.
5. Maintenance operations must be undertaken only with the machine at a standstill and with the electrical power supply disconnected by means of the switch installed by the user.
6. In the event of suspected or evident overheating of an internal machine component it is necessary to stop the machine, but do not open any inspection hatch before the necessary cooling time has elapsed, to prevent the risk of the spontaneous combustion of oil vapours on contact with incoming air.
7. Before proceeding to disassemble any pressurized component, the compressor, or the machine needs to be suitably isolated from all pressure sources and should be totally exposed to the atmosphere. Each isolation valve must display a warning sign with the wording "work in progress: do not open".
8. Before proceeding with repair work it is necessary to take all the necessary precautions to prevent the risk of sudden starting up. All the starter instruments must also bear a sign with the following wording "work in progress. Do not start up".
9. Never allow the machine or appliance to operate at beyond the established limits (in terms of pressure, temperature, speed, etc..)
10. The machines and pneumatic appliances are to be kept clean, and free of oil, dust, or other accumulated dirt.
11. To avoid the risk of the building up of excessive working temperatures, the heat transfer surfaces must be regularly inspected and cleaned (including cooling fins, coolers and the water jackets, etc). A suitable programmed cleaning frequency should be established for each machine.
12. All the regulation and safety instruments must be maintained with the greatest care to ensure their correct function and they must not be placed out of use.
13. Beware of damaging the safety valves and other pressure discharging instruments, obstruction by means of varnish, oil residue or accumulated dirt is to be avoided as it may effect the working efficiency of the instrument.
14. The precision of the pressure and temperature indicators should be regularly checked in order to ensure rapid replacement should the tolerance values be irregular.
15. The parts should be replaced solely using original *ROTAIR S.p.A.* spares.
16. Never use any inflammable solvents or carbon tetrachloride to clean the parts. Take the necessary precautions to protect against toxic vapours when cleaning using specific chemical products.
17. Always pay the greatest care to cleanliness in all the maintenance and repair operations. Always protect against dirt by covering the parts and exposed openings with a clean cloth, paper or adhesive tape.





**-- 5) TECHNICAL DESCRIPTION --**

**-- 5.1) CHASSIS AND CANOPY --**

The chassis and the canopy are made of shaped and electro-welded sheet. Both parts are subject to two painting treatments to guarantee the corrosion and rust proofness. The canopy has been planned to meet all requirements of an ordinary and extraordinary maintenance : it is equipped with big doors on all sides to guarantee an easy accessibility to the main parts of the machine.

**-- 5.2) MOTOR --**

Three-phase, 2 poles, class F insulation, IP 55 protection degree. For further technical data and operating and maintenance instructions, please refer to the enclosed manual of the motor.

**-- 5.4) COMPRESSION UNIT AND OIL SEPARATOR TANK --**

It is completely manufactured in the ROTAIR S.P.A. factory and consists of a central body (cylinder) inside which are fitted two screw rotors with asymmetric section, a male one with 5 lobes and female one with 6 lobes.

The cylinder is closed at the ends by two head sections which contain the bearings which bear the radial and axial loads created by the air compression. A series of channels, inside the cylinder and heads, undertake to deliver the oil to the various components. The distribution of the lubricant , serves to lubricate the bearings and to maintain a coating of oil between the rotors and the bearings themselves as well as the internal cylinder walls, thereby promoting compression resistance. Another important function of the oil injected between the rotors is that of absorbing the heat generated by the air compression.

The compressed air supplied by this compressor is free of any pulsations and compression comes about axially.

The engine and the compression unit are linked by means of a belt transmission system (chap. 5.6)

The oil tank is integrated on the same compression unit, on the lower part, as is the oil separating filter, the minimum pressure valve, and safety valve located on the rear part of the compression unit.

A "regulator" unit is mounted on the compression unit, the purpose of which is to regulate the quantity of air taken in according to the amount of air consumed. A double-stage filter mounted on the top of this unit guarantees maximum purity of the suctioned air.

**-- 5.5) BELT TRANSMISSION --**

The motor is connected to the compressor by means of a belt transmission. The motor and compressor are installed on a slide support which guarantees the coaxiality of the same and the perfect alignment of the belts in relation to the pulleys. A simple pulling system ensures perfect belt tensioning.

**-- 5.6) FAN AND HEAT EXCHANGER --**

The required amount of electro-compressor cooling is guaranteed thanks to a fan located near the heat exchanger. The airflow generated, which passes through the combined air-air and air-oil radiator cools the air on exit from the compressor as well as the machine.

**-- 5.7) AIR TANK --**

On request the RVK compressor may be supplied with a horizontal air accumulation tank with a 270 litre capacity and tested to C.E 87/404 standards to a pressure of 11 bar.

The tank is fitted with a safety valve and a manual discharge cock.

**-- 5.8) DRYER --**

On request the RVK compressor is supplied with a refrigerating cycle dryer with the following features:

- maximum air entry temperature 45 ° C
- max. working pressure 15 bar
- pressurized dew point 3 ° C

For further information on the dryer, consult the relative user and maintenance manual enclosed.

-- 6. ELECTRONIC CARD DESCRIPTION --

**6.1 General Operation**

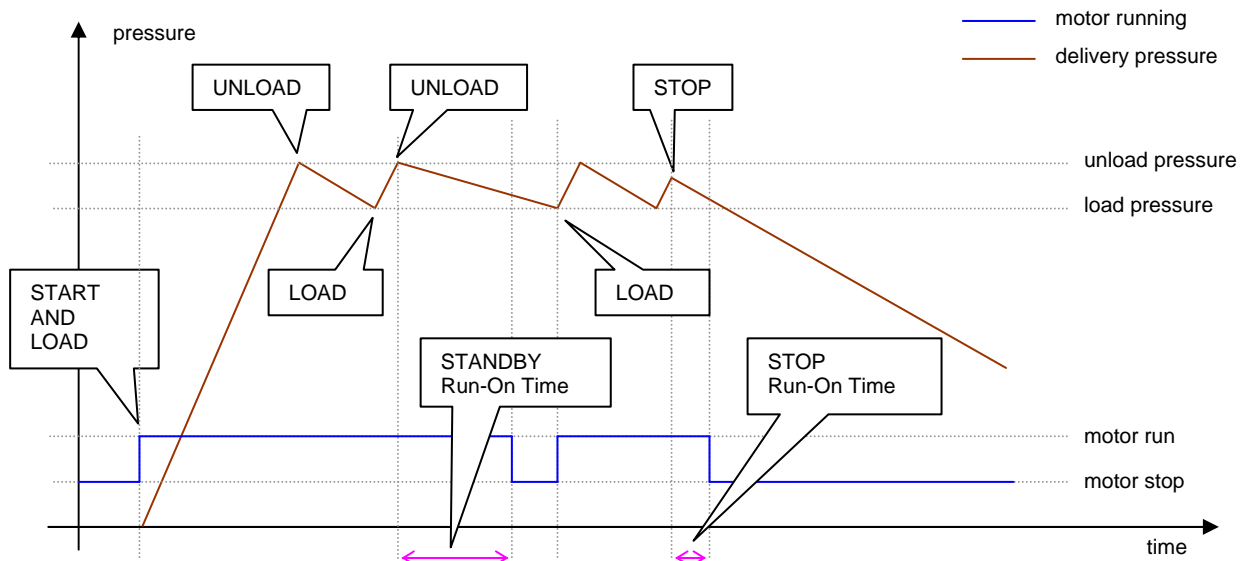
In normal operation, the detected delivery pressure controls regulation of the compressor once the compressor has been started by pushing the start button, or by a remote start command if enabled. The controller will perform safety checks and start the compressor if no inhibiting conditions are detected.

If a start inhibiting condition exists the compressor will not enter the started condition and a start inhibit message is displayed. If a run inhibiting condition exists the compressor will enter the started condition but a main motor start is inhibited; the compressor will remain in the standby condition and a run inhibit message is displayed. If a load request is present, in accordance with internal pressure settings or by remote command, the main motor is started in a star/delta sequence. When running in delta configuration, after the star/delta time (adjustable) has expired, the load delay time (adjustable) prevents loading for a period to allow motor speed to stabilise. The load delay time can be set to one second if required. When the load delay time has expired the load valve output is energised and the compressor will load. If the unload pressure setting is reached, or a remote unload command is received, the load valve output is de-energised and the compressor will run offload for the standby run on time (adjustable) before the main motor stops and the compressor enters Standby mode. The compressor will load again if pressure falls below the load setting before the standby run on time expires. If in Standby mode, a motor start sequence followed by the load delay time is executed before loading.

In the event of a motor stop, initiated by a stop command or when entering standby mode, a blow down timer (adjustable) is started. If a start request is made during the blow down time the compressor will enter standby mode until the blow down time expires. If already in standby mode, and a load request is present, the compressor will remain in standby mode until the blow down time has expired. For units with internal pressure detection enabled, a minimum internal re-start pressure can also be set to prevent a motor start sequence before internal pressure is vented. In the event internal pressure fails to fall below the set minimum re-start pressure within two minutes after the set blow down time has expired, a blow down fault is generated and the compressor will shutdown. After an unload event a re-load timer (adjustable) is initiated that will prevent re-loading, this time can be adjusted to a minimum of one second if required. Normal automated operation is ended by pushing the stop button, a remote stop command or in the event of a shutdown fault.

When stopped manually, or by a remote command, the load value is de-energised and the main motor allowed to run-on for the stop run on time (adjustable).

This time can be adjusted to a minimum of one second if required. Safety checks are made continuously, if there is a condition detected that presents a hazardous or damaging situation an immediate stop is performed and the reason displayed as a shutdown error message. If a warning condition is detected an Alarm message is displayed and normal operation continues.



## 6.2 Machine State Diagram

Controller operational logic is shown in the machine state diagram as state blocks with an associating status block number. The state block determines the functionality of the controller at any given time. The controller can only be in one state at any given time. The controller will move from state to state in accordance with the defined exit and entry conditions of each state block and the defined connections between state blocks.

### Definitions:

#### **Fault:**

A detected abnormal condition that must be indicated to operator personnel and that may require controller automated safety action, dependant on fault type and definition.

#### **Start Inhibit Fault (S):**

A start inhibit fault is a condition that may present a danger or cause damage to the compressor if started whilst the condition is present. Start inhibit faults are only triggered if a compressor start from the ready to start condition is attempted. Start inhibit faults are not triggered during an automated motor start sequence from the standby condition. Start inhibit faults are self-resetting. A start inhibit fault code is displayed when triggered but is not recorded in the fault log.

#### **Run Inhibit Fault (R):**

A run inhibit fault is a condition that may present a danger or cause damage to the compressor if the main motor is started whilst the condition is present. Run inhibit faults are only triggered if a motor start sequence is initiated. Run inhibit faults are self-resetting and do not prevent the compressor from entering a started condition. A Run inhibit will hold the compressor in a standby state and will allow a motor start sequence when the condition is no longer present. A Run inhibit fault code is displayed when triggered but is not recorded in the fault log.

#### **Alarm Fault (A):**

An alarm fault is a warning condition that does not present an immediate danger or potential damage to the compressor. An alarm state will not shutdown the compressor or affect normal operation. An alarm fault code is displayed that must be manually reset to clear once the condition has been resolved or no longer exists.

#### **Shutdown Fault (E):**

A shutdown fault is a condition that may present danger or potential damage to the compressor if the condition persists. A shutdown fault will cause the controller to stop the compressor. A shutdown fault code is displayed that must be manually reset to clear once the condition has been resolved or no longer exists. Two types of shutdown fault are definable a) non-emergency shutdown, an immediate controlled stop is executed, b) emergency shutdown, an instantaneous stop is executed.

#### **Unload Pressure:**

The unload pressure is the delivery pressure level (adjustable) at which the controller will de-energise the load solenoid output and the compressor will offload.

#### **Load Pressure:**

The load pressure is the delivery pressure level (adjustable) at which the compressor will energise the load solenoid output and the compressor will load. If in the standby state, an automated main motor start sequence is triggered prior to load.

#### **Main Motor Start Sequence:**

The controller will energise the Star contactor output followed by the Main contactor output 200ms later. After the Star/Delta timer (adjustable) expires the controller will execute an automated Star to Delta contactor output changeover with a 50ms star to delta transition time. If a Stop command is received during the start sequence the controller will continue to execute the start sequence before stopping. This action is intended to limit the break current of motor starter contactors.

**Load Delay Timer:**

The star to delta output transition is immediately followed by a load delay time (adjustable) that will inhibit the load solenoid output from energising until the load delay time expires. Intended to allow the main motor speed to stabilize and other pre-load functions to occur.

**Reload Delay Timer:**

The reload delay time (adjustable) is a period of time immediately following a load to unload event during which the load solenoid output is inhibited from energising.

**Blow Down Timer:**

The blow down time (adjustable) immediately follows a main motor stop event. During the blow down time a start request is recognised but is not initiated until the timer expires. If the optional internal pressure detection feature is enabled the restart inhibit is also dependant on internal pressure falling below the 'start inhibit pressure level' (adjustable). Failure of internal pressure to fall below the set pressure level for a period of two minutes after the set blow down timer expires will result in a blow down trip fault. The remaining time in seconds is show on the Information Item display.

**Standby Run-On-Time:**

When off load the standby run-on-timer will start. If the compressor remains in an off load condition and the timer expires the main motor will stop and the compressor will enter the Standby state. The compressor will automatically re-start and load as required. This function is intended to improve efficiency during low demand periods and to limit the number, and interval between, motor start events. The remaining time in seconds is show on the Information Item display.

**Stop Run-On-Time:**

When stopped (stop button, remote stop input or remote stop command) the compressor will unload and the main motor continue to run for the stop run-on-time before stopping. This function is intended to allow for internal pressure venting and to limit lubrication oil aeration prior to the main motor stopping. The remaining time in seconds is show on the Information Item display.

**Started State:**

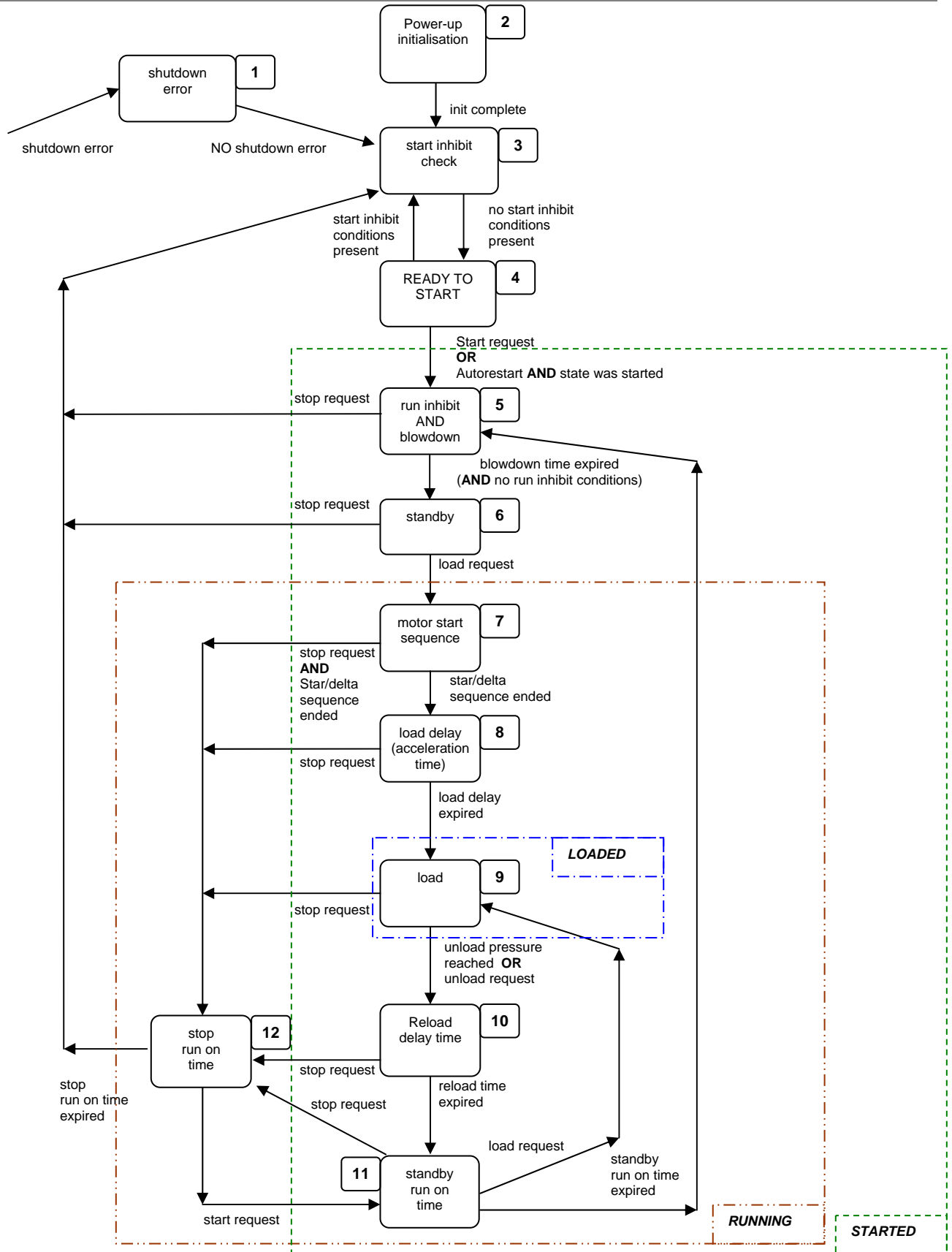
The unit has been started (start button, remote start input or remote start command) and is in an active condition ready to respond to changes in delivery pressure.

**Running State:**

The unit is in the Started state AND the main motor is running.

**Loaded State:**

The unit is in the Started state AND Running state AND the load solenoid output is energised.



## 7.0 User Interface



Display : Custom backlit LCD  
Indicators : 2 x LED  
Controls : 7 x Tactile push buttons

### 7.1 Keypad

START: Enter STARTED condition  
STOP: Exit STARTED condition  
RESET: Reset and clear fault conditions  
ENTER: Confirm selection or value adjustments  
MINUS/DOWN: Scroll down through menu, menu item options or decrement value  
PLUS/UP: Scroll up through menu, menu item options or increment value  
ESCAPE (C): Step back one menu navigation level

Start and Stop have one defined function and are not used for any other purpose.

Reset will initiate a display jump to the fault code item if a fault condition remains active or initiate a display jump to the information item if no active faults exist in normal display mode. If pressed and held for longer than two seconds in menu mode will exit menu mode to the normal operational display mode, page 00.

Enter will lock a selected value display preventing return, after a short delay, to the default Td value display. When locked the 'key' symbol will flash. To unlock press Escape.

Escape will initiate a display jump to the information item in normal display mode, page 00.



Plus, Minus, Enter and Escape are used to navigate menu mode and adjust menu parameters.

## 7.2 Led Indicators

STATUS: Green, adjacent to Start and Stop buttons  
 FAULT: Red, adjacent to Stop and Reset buttons

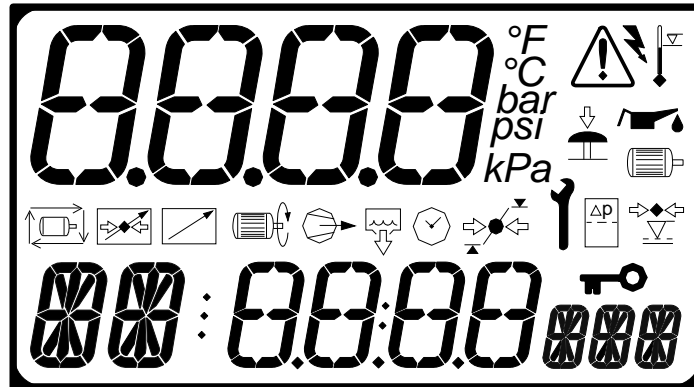
Indicator States:

ON: Illuminated continuously.  
 FF: Fast Flash: on/off four times per second.  
 SF: Slow Flash: on/off once per second.  
 IF: Intermittent Flash: on/off every four seconds.  
 OFF: Extinguished continuously.

Machine State Number	Machine State	Status 	Fault 
1	Shutdown Error	OFF	FF
2	Startup Init	OFF	OFF **
3	Start Inhibit Check	OFF	OFF **
	Start inhibit condition		SF
4	Ready to Start	OFF	OFF **
5	Blowdown	if (load_request) FF else IF	OFF **
6	Standby	IF	OFF **
7	Start Motor in Star/Delta	if (load_request) FF else IF	OFF **
8	Load Delay	if (load_request) FF else IF	OFF **
9	Load	ON	OFF **
10	Reload Delay	if (load_request) FF else IF	OFF **
11	Standby Run on Time	IF	OFF **
12	Stop Run on Time	SF	OFF **

 \*\* SF for Alarm condition

### 7.3 Display



The display is divided in to 4 areas.

Top, Left: Display Field:-

4 character numeric display, with unit symbols, used to continuously show delivery pressure in normal operating mode or menu page number in menu mode

Top, Right: Fault Symbol Field:-

Symbolic displays used to indicate common general fault conditions

Middle: Symbolic displays used to reinforce meaning of selected item, fault condition.

Symbolic status information in normal operational mode 'Information Screen' item

Bottom: Item and Value Field:-

Item identification: 2 character alphanumeric, 14 segment

Item Value: 4 character numeric, 7 segment











Item Unit: 3 character alphanumeric, 14 segment

#### Display Character Examples, Units:











<b>BAR</b>	bar	<b>KPA</b>	kPa	<b>CFM</b>	cfm	<b>CFM</b>	cfm
<b>PSI</b>	psi	<b>Hh</b>	hour	<b>M3m</b>	m <sup>3</sup> /min	<b>m3</b>	m <sup>3</sup> cubic metres
<b>KW</b>	kW KiloWatt	<b>Mm</b>	minute	<b>FT3</b>	ft <sup>3</sup> cubic feet	<b>h/m</b>	time hours/minutes
<b>KV</b>	kV KiloVolt	<b>S</b>	seconds	<b>SPM</b>	spm bearing monitoring	<b>dmY</b>	date day/month/year
<b>RPM</b>	rpm	<b>mA</b>	mA milliAmp	<b>dBm</b>	dBn spm unit	<b>( )</b>	greater than less than
<b>OC</b>	°C	<b>mV</b>	mV milliVolt	<b>+</b>	+ positive	<b>^ v</b>	up down
<b>0/0</b>	% percent	<b>OF</b>	°F	<b>--</b>	- negative	<b>^ / ^</b>	star delta



## Operational Display Symbols:

-  Motor Running
-  Loaded
-  Amount of time, timer
-  Filter, differential pressure
-  Pressure set point indication (upper and lower set point indicators displayed independently)
-  Condensate drain active (optional function)
-  Power failure autorestart enabled (optional function)
-  Remote load or remote pressure regulation active
-  Remote start/stop
-  Normal Operational: selected item locked as temporary default display  
Menu Mode: page item locked (adjustment inhibited)

## Fault Display Symbols:

- |   |                             |   |                                     |
|---|-----------------------------|---|-------------------------------------|
|  | General fault               |  | Lubrication, oil, oil level         |
|  | Emergency stop              |  | Dewpoint                            |
|  | Excess pressure             |  | Motor                               |
|  | Power failure               |  | Service due, maintenance            |
|  | Above set temperature limit |  | Filter differential, filter service |

## 7.4 Display Structure and Menu Navigation

### Display Item Structure:

All value, parameter or option selection displays are grouped into menu lists. Items are assigned to a list according to type and classification. Items that can be used to select options or modify functions are assigned to 'menu mode' lists. Items that an operator may require to view during routine operation, detected pressure or temperature values for example, are assigned to the normal operational mode list. Lists are identified by page number, the normal operational display list is page 0. All parameters and options are assigned to menu mode pages 1 or higher. All Page 0 items are view only and cannot be adjusted.

### Normal Operational Mode (Page 0):

At controller initialisation, all display elements and LED indicators are switched on for three seconds, the display will then show the software version code for a further 3 seconds before initialisation is complete and the normal operating display (Page 0) is shown. In page 0 'normal operational display mode' the Display Field will show the final delivery pressure continuously and the Item and Value Fields will initially show the Information Item display for 35 seconds before reverting to the default temperature display item. All available Item and Value field option displays (temperatures, pressures, hours counters) can be selected using the Up or Down buttons at any time. The Item display will revert to the default item after 35 seconds if no further selection is made. Pressing the Enter button will lock any selected Item display and inhibit return to the default display. When an Item display is locked the lock key symbol will slow flash. To unlock an Item display press Up or Down to view an alternative Item display or press Reset or Escape. In page 0 Escape will select the Status Information Item display and Reset will select any active fault code display or the Status Information Item display if no faults are active. Unless a selected Item display is locked, the display will automatically jump to the Status Information Item display at key status change events. The timeout period before returning to the default Item display is modified in some instances to enable the full range of a set countdown timer to be shown. No Item values, options or parameters can be adjusted in page 0. If a fault condition occurs the fault code becomes the first list item and the display will automatically jump to display the fault code. More than one active fault code item can exist at any one time.

### Access Code:

Access to page list displays higher than page 0 are restricted by access code. To access menu mode pages press UP and DOWN together, an access code entry display is shown and the first code character will flash. Use PLUS or MINUS to adjust the value of the first code character then press ENTER. The next code character will flash; use UP or DOWN to adjust then press ENTER. Repeat for all four code characters. If the code number is less than 1000 then the first code character will be 0(zero). To return to a previous code character press ESCAPE. When all four code characters have been set to an authorized code number press ENTER. Access to certain menu mode pages is dependent on authority level determined by the access code used. An invalid code will return the display to normal operational mode; page 0.



The following pages and access levels are used:

ACCESS LEVEL = USER (code = 9)	ACCESS LEVEL = SERVICE 1 (code = 100)
P00, P01, P02	P00, P01, P02, P08

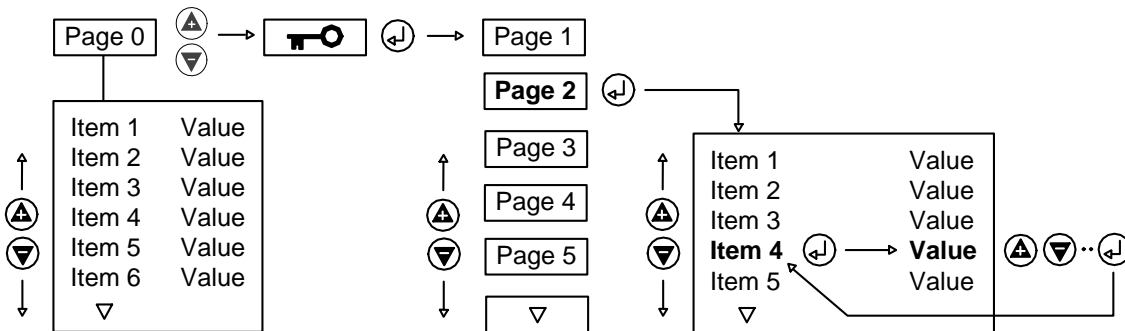
### Access Code Timeouts:

When in menu mode, if no key activity is detected for a period of time the display will automatically reset to the normal operational display; Page 0. The timeout period is dependant on the access code used:

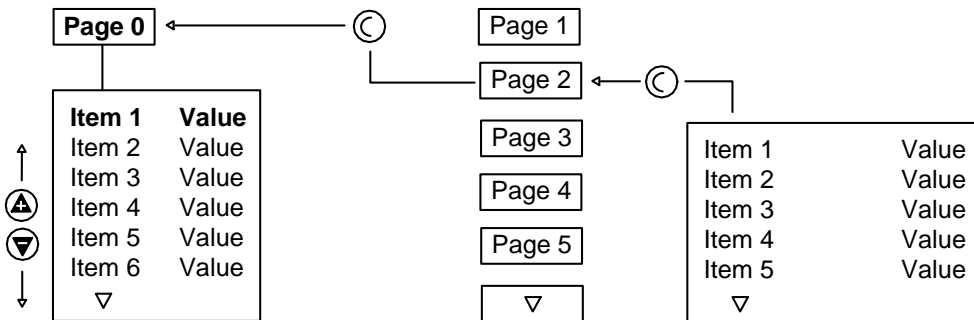
User: 1 minute

### Menu Mode Navigation:

In menu mode the Display Field will flash and show the Page number. To select a page press UP or DOWN. For each page the Item and Value field will display the first Item of the page list. To view a page list press ENTER, the Page number will stop flashing and the Item display will flash. Press UP or DOWN to view the selected page list items. To select an Item value for modification press ENTER, the Item display will stop flashing and the Value display will flash. The value or option can now be modified by pressing UP(Plus) or DOWN(Minus). To enter a modified value or option in memory press ENTER; alternatively the modification can be abandoned, and the original setting maintained, by pressing ESCAPE.



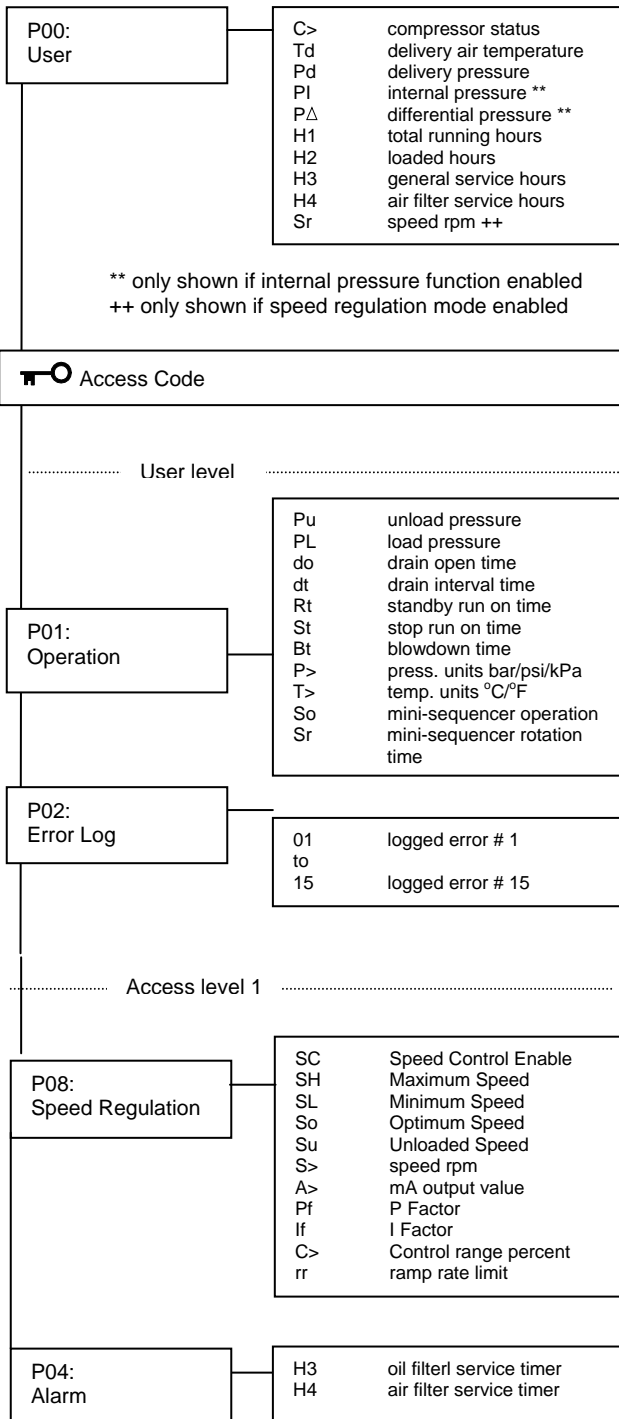
Press ESCAPE at any time in menu mode to step backwards one stage in the navigation process. Pressing ESCAPE when the page number is flashing will exit menu mode and return the display to normal operational mode; page 0.



Press and hold RESET for two seconds at any time to immediately exit menu mode and return to the normal operational mode display. Any value or option adjustment that has not been confirmed and entered into memory will be abandoned and the original setting maintained.

A flashing Key symbol displayed with any Item indicates the Item is locked and cannot be modified. This will occur if the Item is view only (non adjustable) or in instances where the item cannot be adjusted while the compressor is in the operational STARTED state.

### 7.4.1 Menu Structure



## 7.4.2 P00 User Menu

The User menu shows normal operational values and information displays. This is the default display menu; no access code is required.

item#	description	units	step	min	max	default	display
1	information screen	---	no_edit	---	---	---	<b>C&gt;</b>
2	delivery air temperature	°C/°F	no_edit	---	---	---	<b>Td</b>
3	delivery pressure	bar/psi	no_edit	---	---	---	<b>Pd</b>
6	running hours	h	no_edit	0	99999	---	<b>H1</b> 1430
7	loaded hours	h	no_edit	0	99999	---	<b>H2</b> 1275
8	general service hours	h	no_edit	-9999	9999	---	<b>H3</b> 0570
9	air filter service hours	h	no_edit	-9999	9999	---	<b>H4</b> 0080
10 ##	motor speed	rpm	no_edit	0	7200	---	<b>Sr</b> 3000 rpm
11 ##	percent speed	%	no_edit	0.0	100.0	---	<b>SP</b> 100.0 %

\*\* only shown if internal pressure sensor function activated

## only shown if variable speed regulation mode is activated (S1-20 only)

### Status Information Item:

The page 0 'Status Information Item' provides a basic overview of status using symbols:



Main motor running



Compressor on load



Delivery pressure relative to pressure set points, not displayed when remote pressure control active.



Pressure equal to, or below, load pressure set point



Pressure equal to, or above, unload pressure set point



Pressure between load and unload pressure set points



Condensate drain valve output is energised (if function enabled)



Countdown timer function is occurring (Run-On-Time, Stop Run-On-Time, Blowdown Time). During a countdown time function the remaining time in seconds is displayed.

### Hours Display Items:

Hours are displayed using the 'value and units' display fields together. This feature enables a maximum of 9999999 hours to be displayed.

**H2: 123456** (Loaded Hours 'H2' = 123456 h)

Note: hour values less than 1000 are shown with leading zeros (10 hours = 0010)

### 7.4.3 P01 Operation Menu

Contains general operation parameters that may be modified by the User from time to time.

item#	description	units	step	min	max	default	display
1	unload pressure	bar/psi	0.1	PL+0.2	14.0	7.0	<b>Pu</b> 7.0 bar
2	load pressure	bar/psi	0.1	5.0	Pu-0.2	6.5	<b>PL</b> 6.5 bar
3	drain open time	s	1	1	30	5	<b>do</b> 5 s
4	drain interval time	s	1	30	3600	60	<b>dt</b> 60 s
5	standby run on time	s	1	1	3600	300	<b>Rt</b> 300 s
6	stop run on time	s	1	1	60	30	<b>St</b> 30 s
7	blowdown time	s	1	1	600	10	<b>Bt</b> 10 s
8	pressure units	---	1	0	2	0	<b>P&gt;</b> 0 0=bar / 1=psi / 2=kPA
9	temperature units	---	1	0	1	0	<b>T&gt;</b> 0 0= <sup>0</sup> C 1= <sup>0</sup> F
10	mini-sequencer operation	---	1	0	1	0	<b>So</b> 0 0=off / 1=on
11	mini-sequencer rotation time	hours	1	1	168	24	<b>Sr</b> 24 hrs

### 7.4.4 P02 Error Log Menu

Contains the last 15 fault states in chronological order. The most recent fault (alarm, start inhibit or shutdown) is stored as item 1. Each item consists of two values: the fault code number and the running hours when the fault occurred. The display will automatically alternate between these two values. All items are view only.

Item#	description	units	step	min	max	default	display
1	logged error #1	---	no_edit	---	---	---	<b>01</b> ... Er: 0010 E <> 12345 *
2 to 15	logged error #2 to error #15	---	no_edit	---	---	---	<b>02 to 15</b>

\* example: last detected error = Emergency Stop shutdown (fault code 0010E) at 12345 running hours

### 7.4.6 P04 Alarm Menu

Settings that determine the level or condition at which an alarm fault is generated.

Item#	description	units	step	min	max	default	display
1	General Service Timer	hours	1	0	10000	2000	<b>H3</b> 2000
2	Air Filter Service Timer	hours	1	0	10000	500	<b>H4</b> 500

#### Service Countdown Timer:

The service countdown timer will count down from the set value in accordance with running hours. When the item is viewed the service hour's value will reflect the current hours remaining until a routine maintenance service is due (zero hours). When zero hours are reached a service due alarm will be displayed. The alarm can only be reset when the service hours is adjusted above zero. The service hours count will continue to count down in negative values until the timer is re-set. This function is intended to promote timely routine maintenance and indicate how many running hours have passed since a service due alarm was displayed. The value can be adjusted back to the required maintenance interval time each time a maintenance service is completed.

### 7.4.5 P08 Speed Regulation Menu

The speed regulation function provides P&I loop control of a variable speed drive (using 4-20mA output 1) in order to maintain a steady target pressure level (load pressure).

Speed regulation is used to maintain delivery pressure at the load pressure set point. If pressure rises to the unload pressure set point the load solenoid output is de-energised and the compressor unloaded. While in the offload state the controller will maintain speed at the set offload speed setting. If pressure remains above the load pressure set point for longer than the set run-on-time the main motor will stop and the controller will enter the standby state. When pressure falls below the load pressure set point the motor is re-started, if in standby state, and the load solenoid output is energised. Full range speed regulation is then applied.

If connected to a CMC sequence controller system, and the system consists of more than one VSR (variable speed regulated) compressor, any VSR compressor assigned as base load will be biased to operate at the set optimum speed setting. Any VSR compressor assigned as top-up will use full range speed regulation. In addition, the target pressure of each VSR compressor is automatically referenced to the sequencer to maintain exact pressure control regardless of pressure differentials between compressors. In this manner up to 12 VSR compressors can be controlled as a single coherent system with full efficiency capacity matched management, sequence rotation and single pressure set point control.

item#	description	units	step	min	max	default	display
1	Speed regulation control mode	---	1	0	2	0	<b>SC</b> 0=disabled 1=fixed speed regulation 2=variable speed regulation
2	maximum speed	rpm	100	100	10000	3000	<b>SH</b>
3	minimum speed	rpm	100	0	9900	1500	<b>SL</b>
4	optimum speed	rpm	100	100	10000	2700	<b>So</b>
5	unload speed	rpm	100	0	9900	1800	<b>Su</b>
6	rpm actual	rpm	---	---	---	---	<b>S&gt;</b> View only, for information
7	output actual	mA	---	---	---	---	<b>A&gt;</b> View only, for information
8	P factor	---	1	0	100	40	<b>Pf</b>
9	I factor	---	1	0	100	10	<b>If</b>
10	Control range percent	%	---	---	---	---	<b>C&gt;</b> View only, for information
11	Maximum ramp rate	%	1	5	100	10	<b>rr</b>

Speed regulation control mode:

To disable speed regulation control for a fixed speed motor, load/unload compressor; select mode '0'.

To operate at fixed speeds select mode '1'. The motor will operate at the set optimum speed while loaded, and at the set offload speed when unloaded. The transition in speed is determined by the max ramp rate.

To operate as a full range variable speed regulated compressor select mode '2'.

Maximum Speed	set for motor speed at 20mA output
Minimum Speed	set for motor speed at 4mA output
Optimum Speed	optimum efficiency speed while loaded
Offload Speed	motor speed when off load
P Factor	P&I loop proportional factor
I Factor	P&I loop integration factor
Max Ramp Rate	maximum allowed rate of change expressed as % of full speed range per second (example: max 3000rpm, min 1500rpm, ramp rate 10% = 150rpm/second maximum)

Control Range Percent: Shows the percentage of speed range where set minimum speed is represented as 0% and maximum speed is 100%. This value is different from the percent speed show in menu page 0.

## 7. Fault Messages

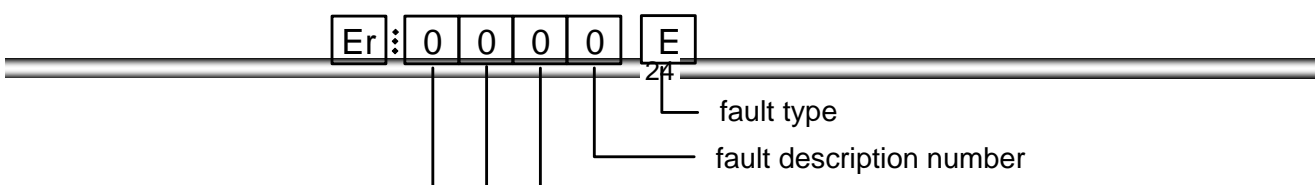
Faults are abnormal operating condition states. Alarms are fault states that indicate normal operating conditions have been exceeded but do not present an immediate hazard or potentially damaging condition. Alarms are intended as a warning only and will not stop the compressor or prevent the compressor from being started and run.

Start inhibits are fault states that prevent the compressor from initially being starting. Start inhibit faults are conditions that may present a hazard or damaging situation if the compressor was to be started. A start inhibit will self reset when the condition being monitored returns to normal operational levels. Start inhibit conditions are only checked during the initial start procedure and will not stop the compressor once started and in the 'started' state. Start inhibit conditions are not checked during an automated motor start from Standby.

Run inhibits are fault states that prevent the compressor from starting and running the main motor. Run inhibit faults are conditions that may present a hazard or damaging situation if the main motor is run. A run inhibit will self reset when the condition being monitored returns to normal operational levels and the compressor will then be allowed to exit the standby condition and run without further manual intervention. Run inhibit conditions are checked prior to a main motor start sequence and will not stop the compressor motor once started. Run inhibit conditions do not prevent the compressor from entering the 'started' state condition.

Shutdown trip errors are fault states that present a hazardous or damaging condition, the compressor is stopped immediately. The Shutdown trip error condition must be resolved, and the fault reset, before the compressor can be re-started.

The different fault state conditions are indicated on the screen with specific codes; the last character indicating the fault type: E = Shutdown Trip Error, A= Alarm, S = Start Inhibit, R = Run Inhibit. Shutdown trip errors are divided into two different categories: immediate shutdown errors and controlled stop errors. Immediate shutdown errors stop the compressor instantly (Emergency Stop button activated for example). Controlled stop errors stop the compressor in a controlled way using a normal Stop command; the motor will continue to run for the set stop run-on-time. Immediate shutdown errors have an error code where the first character is 0 (zero). Controlled stop faults have a "1" as the first character. Alarm faults are also divided into two different categories: alarms and service alarm messages. Alarms start with a "2", service alarm messages with a "4". Start Inhibit fault codes start with a "3".





fault description number	fault description
9	high level shutdown trip
8	high level alarm
7	high level start inhibit
6	special function
5	sensor error
4	timeout
3	low level start inhibit
2	low level alarm
1	low level shutdown trip
0	digital input

input number	input
#	Input number for controller input terminal/location

input location number	input location description
0	digital input
1	analogue input
2 to 7	<i>not used</i>
8	special functions
9	special functions slave unit

fault category number	fault category description
0	immediate shutdown trip error
1	controlled shutdown trip error
2	alarm
3	start or run inhibit
4	service

fault type	fault type description
E	shutdown trip error
A	alarm (or service message alarm)
S	start inhibit
R	run inhibit

**-- 11) MAINTENANCE PROGRAMME --**

This programme indicates all the necessary periodic operations to be undertaken in the machine and which are essential to ensure its efficient function and long life.

**ORDINARY MAINTENANCE**

Can be undertaken by the personnel who operate on the machine and includes all those periodic programmed maintenance operations such as checks on the oil level, air filters, refuelling, cleaning operations and checks to isolate any eventual leakage of lubricant or fuel inside the machine.

Here follows a list of all the operations relating to the compressor part, in order of frequency, while for those relating to the "motor" please refer to the USER AND MAINTENANCE MANUAL, supplied by the motor construction company with the machine.

**-- 11.1) DAILY CHECKS --**

**-- 11.1.1) DAILY AND BEFORE STARTING UP THE MACHINE --**

- Check on the compressor oil level (paragraph 12.1).
- Check for any lubricant leakage.

**-- 11.1.2) DAILY AND WITH MOTOR RUNNING --**

- Check on all the indicator lights positioned on the control panel
- Check on the maximum pressure level
- Check on the minimum pressure level

**-- 11.2) WEEKLY --**

- Check on air compressor filter (12.11).



**WARNING:** *Should the compressor operate in a very dusty environment the air filter must be checked, cleaned or replaced more often than indicated above.*

**-- 11.3) EVERY THREE MONTHS --**

- Safety valve efficiency check .
- Oil cooling radiator cleaning (12.6).
- Check on the oil recovery nozzle (12.8).

**-- 11.4) ANNUALLY OR ACCORDING TO THE PLANNED FREQUENCY ACCORDING TO HOURS OF OPERATION -**

As concerns the motor refer to the manufacturer's user and maintenance manual.

After the first **50 HOURS**:        Compressor oil filter replacement.  
    Compressor oil replacement.

Every **500 HOURS**:                Compressor air filter replacement (12.11).  
    Compressor oil filter replacement (12.3).



**WARNING:** *The replacement of the compressor air filter can also be undertaken more often, according to the amount of dust in the working environment.*

Every **2000 HOURS**:                Compressor oil replacement (12.2).

Every **2000 HOURS**:                Oil separator element replacement (12.4).

Every **2000 HOURS**:                Cloth replacement in oil separator tank (12.5).

Every **3000 HOURS**:                General check on the various components by the "Authorized Rotair" assistance service.



**WARNING:** *during the various maintenance operations it is necessary to carefully examine the rubber piping and should it be found to be excessively hardened and rigid, they must be replaced with materials having equivalent technical features.  
 The piping must be in accordance with SAE 100 R1 standards.*

\*\*\*\*\*

## -- 12.1) CHECKING COMPRESSOR OIL LEVEL --

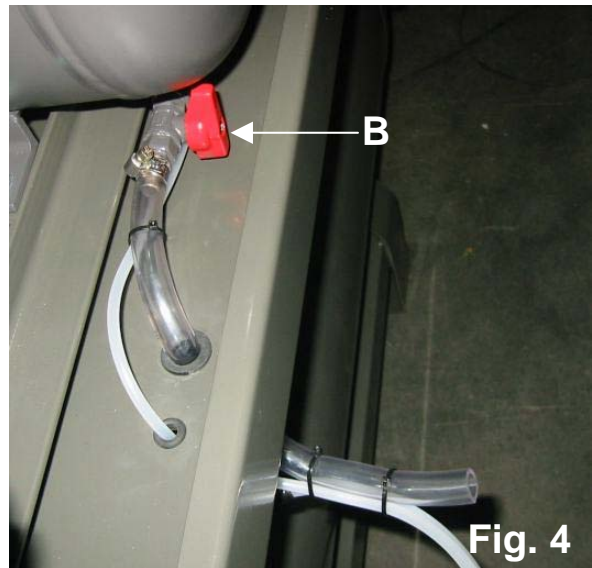
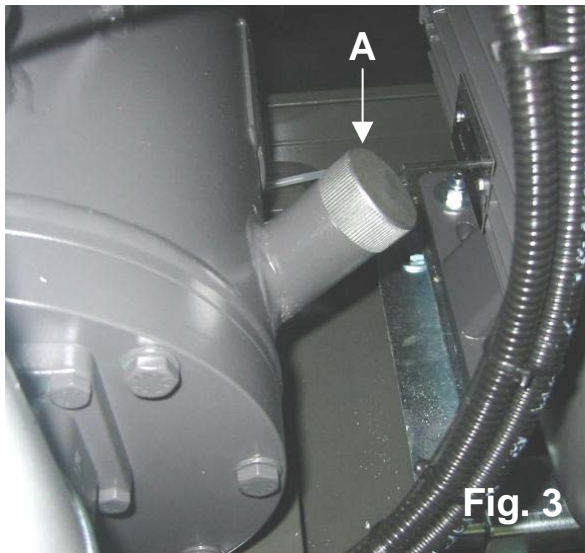
Every morning before starting the machine check the oil level in the compressor tank. The compressor oil level shall never fall below the minimum level notch and never exceed the maximum level either. It shall fall between the two notches of min. and max. level.

Oil level checks must be undertaken a few hours after having stopped the machine, in order to allow the oil to flow into the tank. In fact if the oil level is checked immediately after switching off the machine, a false reading is given which means that the user will top up with more oil than is necessary.

## -- 12.2) CHANGING COMPRESSOR OIL --

The oil in the compressor shall be changed every 2000 hours' operation or at least once a year. To change the oil proceed as follows:

1. Change the oil when the machine is hot
2. switch off the compressor and disconnect the main switch.
3. Unscrew the oil plug on the tank side (part. A fig.3) after checking that the inside of the tank has been fully depressurised
4. Open the drain valve on the tank bottom (part.B fig.4)
5. After draining the oil replace the oil filter cartridge by unscrewing and removing it from its seat. Replace with a new one (12.3)
6. Fill with oil through the filler.



**IMPORTANT:** Always use the same brand and type of oil as indicated in paragraph 2. In the event that it is necessary to change the oil type (which must however be of an equivalent type as indicated in paragraph 2) be sure to drain away all the lubricant from the entire circuit before adding a different type.  
**NEVER MIX DIFFERENT OIL TYPES.**

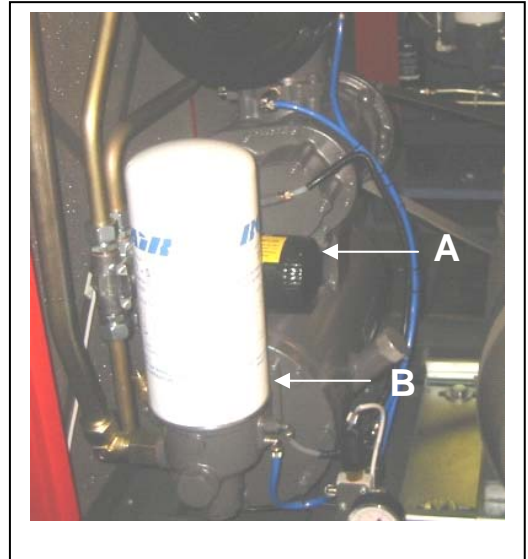
## -- 12.3) COMPRESSOR OIL FILTER REPLACEMENT (Fig. 5) --

- Use a chain pipe wrench to unscrew the filter to be replaced (part A).
- Oil the seal of the new filter which must be tightened and secured **by hand only**.
- Start up the machine and ensure that there is no leakage near the seal; if there is; switch off the machine and check the condition of the machine and that it is correctly positioned in its slot.

FIG. 5



**WARNING:** The old filter is impregnated with polluted and harmful mineral oil. It must therefore be sent to the special collection centres.



## -- 12.4) OIL SEPARATOR ELEMENT --

### -- 12.4.1) CHECKING OF OIL SEPARATOR ELEMENT --

The frequency is usually estimated as being of about every 2000 working hours, but it strictly depends on the observance of all the maintenance regulations indicated in this manual.

Insufficient oil in the tank, failure to comply with the lubricant replacement frequency indications or use of the machine with clogged cooling radiator, may all result in **serious damage** to the separator filter.

Therefore after having checked the condition of the recovery nozzle described in and having made sure of the correct oil level in tank, should there be any further traces of oil in the compressed air, it is necessary to replace the oil separator filter.

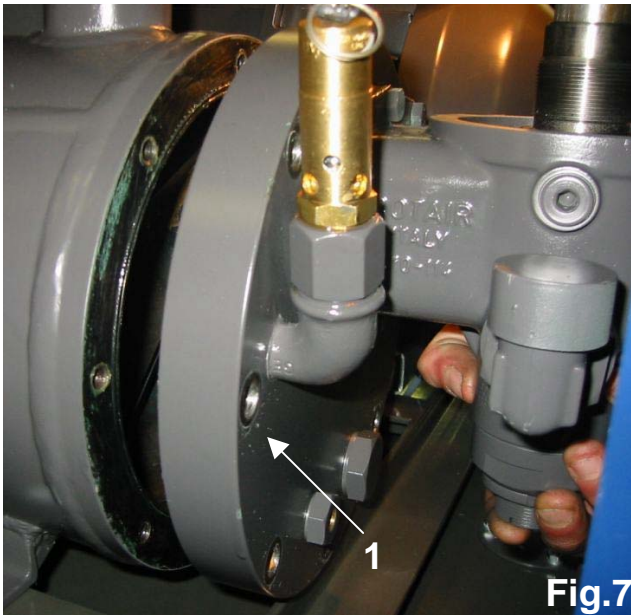
To find out the degree of blockage of the oil separator filter proceed as follows:

- Start up the machine
- Partially open the delivery piping until the control panel gauge indicates the working pressure.
- Read the pressure on the internal gauge and compare the two values: should a difference of over 1 bar be found, it is a clear indication that the filter is blocked and it must be neither cleaned or washed, but replaced.

### -- 12.4.2) INSTRUCTIONS FOR THE REPLACEMENT OF THE OIL SEPARATOR ELEMENT --

1. This operation must be undertaken with the machine at a standstill, and with no pressure inside the oil separator tank.
2. To prevent the risk of soiling the machine as the result of oil leakage which make occur on the replacement of the oil, we recommend that a few cloths be placed under the compression unit.
3. Unscrew the oil separator filter (part. B fig.5).
4. Re-assemble the filter making sure the lubricate the filter seal element. The filter must be secured by hand only.

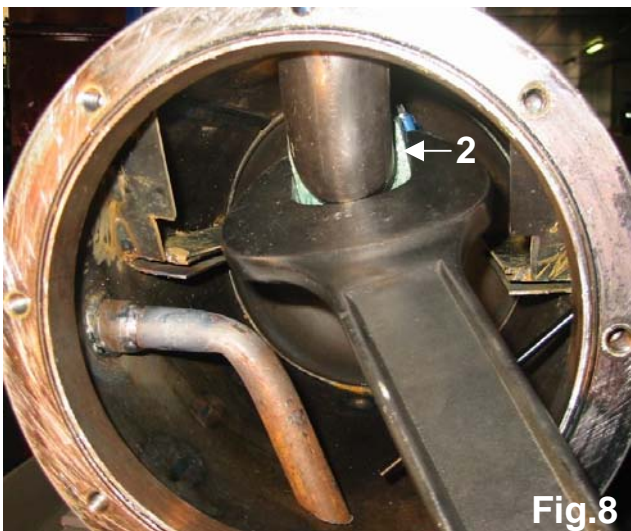
## -- 12.5) FILTERING CLOTH REPLACEMENT IN OIL SEPARATOR TANK --



**WARNING!** These operations must be undertaken only after having brought the machine to a standstill and disconnected the electricity supply!

After checking that the inside of the tank has been fully depressurised, empty out the oil contained inside using the special tap (see paragraph on compressor oil replacement).

Now, loosen the flange of the oil separator tank (part. 1 fig.7).



Unscrew the filter (part. 2 fig. 8) using a 62 mm spanner and extract it from the tank.

Now re-secure the filter reassembled in this way (fig. 8), close the flange again (fig. 7) and pour a sufficient quantity of oil into the tank (see paragraph entitled compressor oil replacement), checking to ensure there is no oil leakage from the flange.

## -- 12.6) COOLING RADIATOR CLEANING --

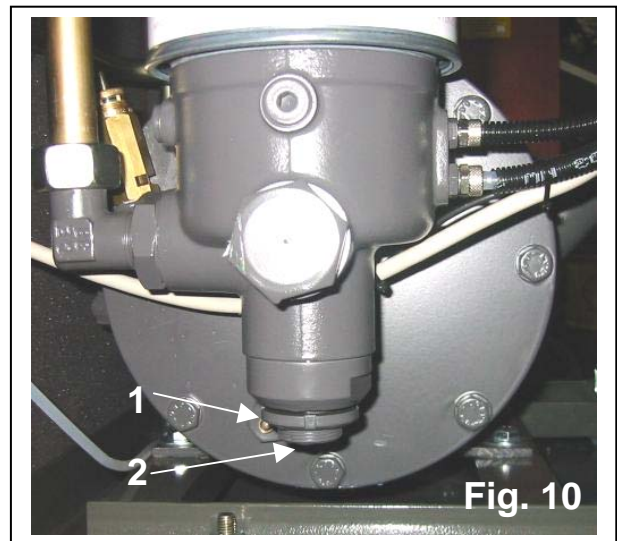
The cooling liquids of the compressor and motor are cooled by a radiator which must therefore be kept clean to ensure that the ventilation air can easily pass through its honeycomb flaps. Should the flaps become clogged with dust or other particles, there is a risk of harmful overheating of the mechanical parts of the screw compressor, seriously jeopardising its function and duration. It is therefore advisable to check it regularly and clean it using compressed air or wash it using a pressurized water jet.

## -- 12.7) MINIMUM PRESSURE CHECKING AND SETTING --

The purpose of this valve is to ensure that during operation the pressure in the oil separator tank does not drop under the minimum value, in order to ensure the necessary oil circulation.

### CHECKING AND SETTING:

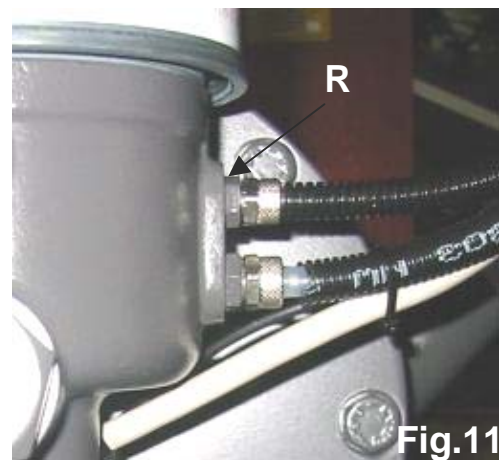
- 1) Start up the machine
- 2) With motor warm, at right temperature, gradually proceed to fully open the air cock the pressure of between 4.5 - 5 bar must appear on the gauge. Should a different pressure appear than that indicated above, proceed with setting as follows (fig. 10):
- 3) Release the lock-nut (1) .
- 4) Tighten the regulation screw (2) to increase the pressure to the desired value.
- 5) Loosen the regulation screw (2) to reduce the pressure to the desired value
- 6) Tighten the lock nut (1) and close the cocks.
- 7) Slowly re-open the air cock and then close it again repeating the operations several times in order to permit the valve to settle into place.



## -- 12.8) OIL RECOVERY NOZZLE CHECKING AND CLEANING --

This must be undertaken in the event of any leakage of nebulized oil mixed with compressed air, as follows (fig. 11):

- Unscrew the connection (R)
- Inside the connection (R) is a nozzle (U); ensure that its gauged hole is not clogged (blow with a jet of compressed air).
- Re-assemble.



**WARNING:** During the regular function of the compressor it is normal to note a certain amount of oil flow out of the transparent piping which starts from the connection (R), towards the compressor head.

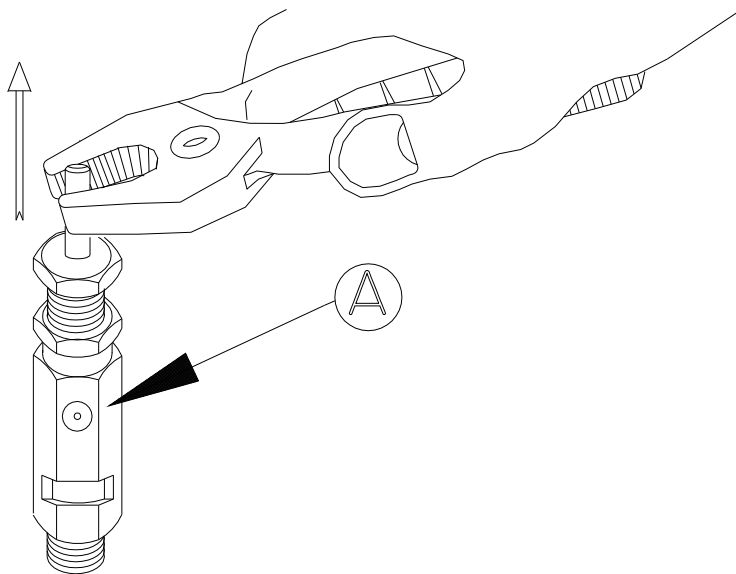
## -- 12.10) SAFETY VALVE CHECK --

This valve is positioned on the oil separator tank and operates to discharge any accidental overpressure.

This valve is calibrated and checked at the factory, and cannot therefore be altered or tampered with for any reason.

Its efficiency can be checked periodically as follows:

1. Start up the machine
2. With cocks closed, lift the pin upwards using pliers and release as soon as the valve can be seen to discharge air.



**WARNING:** The air which escapes from the valve during this checking operation is mixed with oil particles and therefore to avoid soiling the operator and the inside of the machine it is advisable to bind the valve with a cloth.

If the pin fail to rise after being guided with the pliers, thereby preventing valve breathing, it must be replaced at once. New replacement safety valves must be of the same type as the original and must be complete with conformity certificate issued by the manufacturer. As this valve plays a vital role in preventing any dangerous overpressure

which could cause the piping, or the oil separator tank to burst, it is important to request the original spare part from ROTAIR S.P.A. citing the machine serial number.

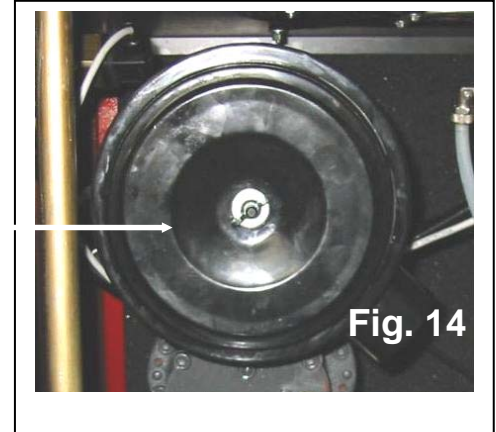
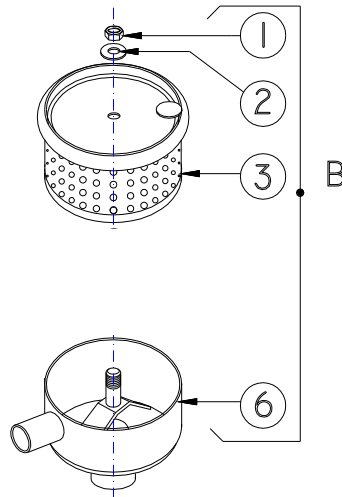
ROTAIR S.P.A. will not accept any responsibility in the event of the use of non-original and non-conforming valves.



**-- 12.11) AIR FILTER MAINTENANCE --**

The compressor life and efficiency greatly depend on an accurate maintenance of the air filter. A clogged filter reduces the efficiency and causes an early wear of the compressor.

In normal environmental conditions clean the air filters every 100 hours work and change the air filter after 500 hours work. In very dusty environmental conditions clean as often as required.



**FILTER DISASSEMBLY**

1. Unscrew nuts
2. Extract the closing flange
3. Extract the air filter

**FILTER CLEANING**

Accurately blow the air filter inside out. The above operations should be carried out in the reverse order to fit them back again.

**-- 12.12) SUCTION FILTER AND ITS MAINTENANCE --**

RVK compressors have been designed and made to operate in an environment at a max. temperature of 40°C;

should the machine be installed in a small ill-ventilated room because you have no other choice, it will be necessary to make a ventilation duct for air suction and a second duct for letting hot air out. Both ducts shall be connected with the outside and set in such a way as to prevent suction air from mixing with exhaust air. They shall have an adequate size with open-radius bends. An incorrect sizing would reduce ventilation and cause compressor overheating.

The room shall be well aired, clean and as close as possible to the distribution mains network. Should the compressor operate in a very dusty environment, clean air shall flow freely: this can be achieved by replacing the filter often enough (on the vent).

**A dirty clogged filter reduces and slows down the quantity of air being sucked in necessary for ventilation with a consequent harmful overheating of the unit.**

**WARNING:** type, density and thickness of the filter have been designed and selected not to brake the sucked in air too much. Therefore the spares shall always be original ROTAIR S.P.A. spares. Should other materials be used the guarantee on the machine will become null and void.

The machine shall be installed by leaving free space around it for ordinary and extraordinary maintenance operations.

**-- 12.13) TRANSMISSION BELT ---****-- 12.13.1) CHECK OF TRANSMISSION BELT TENSIONING ---**

For normal, efficient compressor functioning the transmission belts must always be perfectly tensioned..

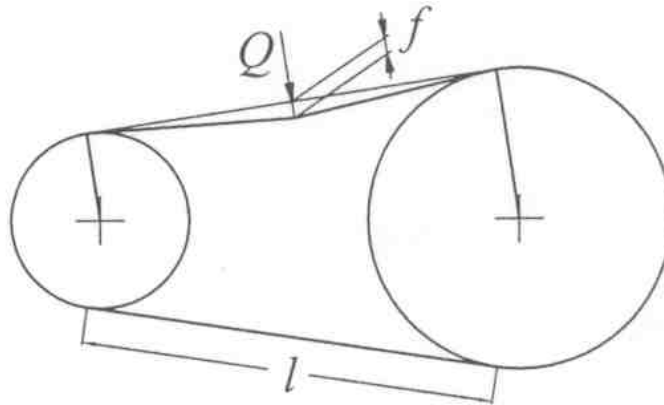
Tensions inferior or superior to those ones we recommend, could cause working anomalies like the sliding or the premature wear and tear of the belt. The mounting of the belt has to be made without using any instrument ( for instance levers ) that could incise the belt or the pulley.

These instructions (Fig. 15) must be followed to determine the exact tensioning of the transmission belts.

To determine the right tension, measure the arrow "f" caused by the application of a force "Q" in the middle of the free part of the belt. The force has to be perpendicular to the belt.

Arrow *f* must be 1,5% of the free section "*l*" applying a Q force equivalent to 40 ÷ 47 N for RVK 8-10-15 and of 50 ÷ 63 N for RVK 20.

If the arrow value "*f*" exceeds the indicated value it means that the belts are slack, while if the value is lower than this it means that the belts are too taut.

**Fig. 15****Warning:**

Belts that are too loose could slip and cause loss of compressor power.  
Belts that are too tight deteriorate and consequently break.

**Warning:****Check belt tension during the first 50 working hours**

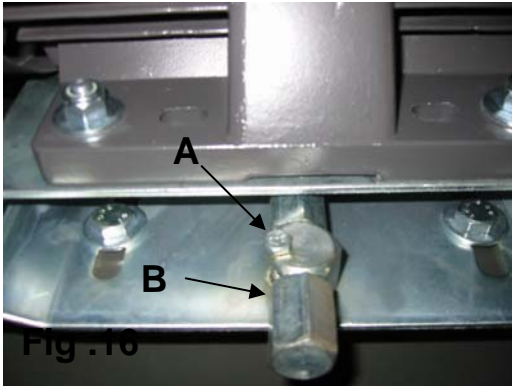
Please note that the belts, above all during the first 50 working hours, undergo a slight setting-in and consequently mild stretching.

In this situation the belts may be subject to slipping and, as a result, overheating which could cause breakages.

This is why we strongly recommend the user, after no more than 50 working hours, to check and re-tension the belts. Once this operation has been carried out the belt length is stabilised and subsequent checks must be done following the instructions in the "Maintenance Programme" chapter.

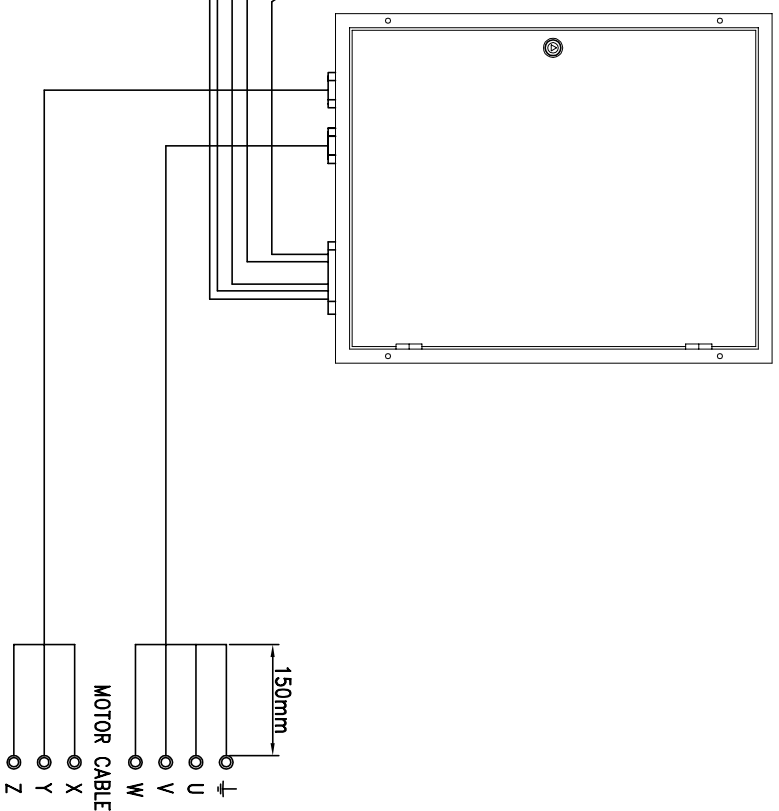
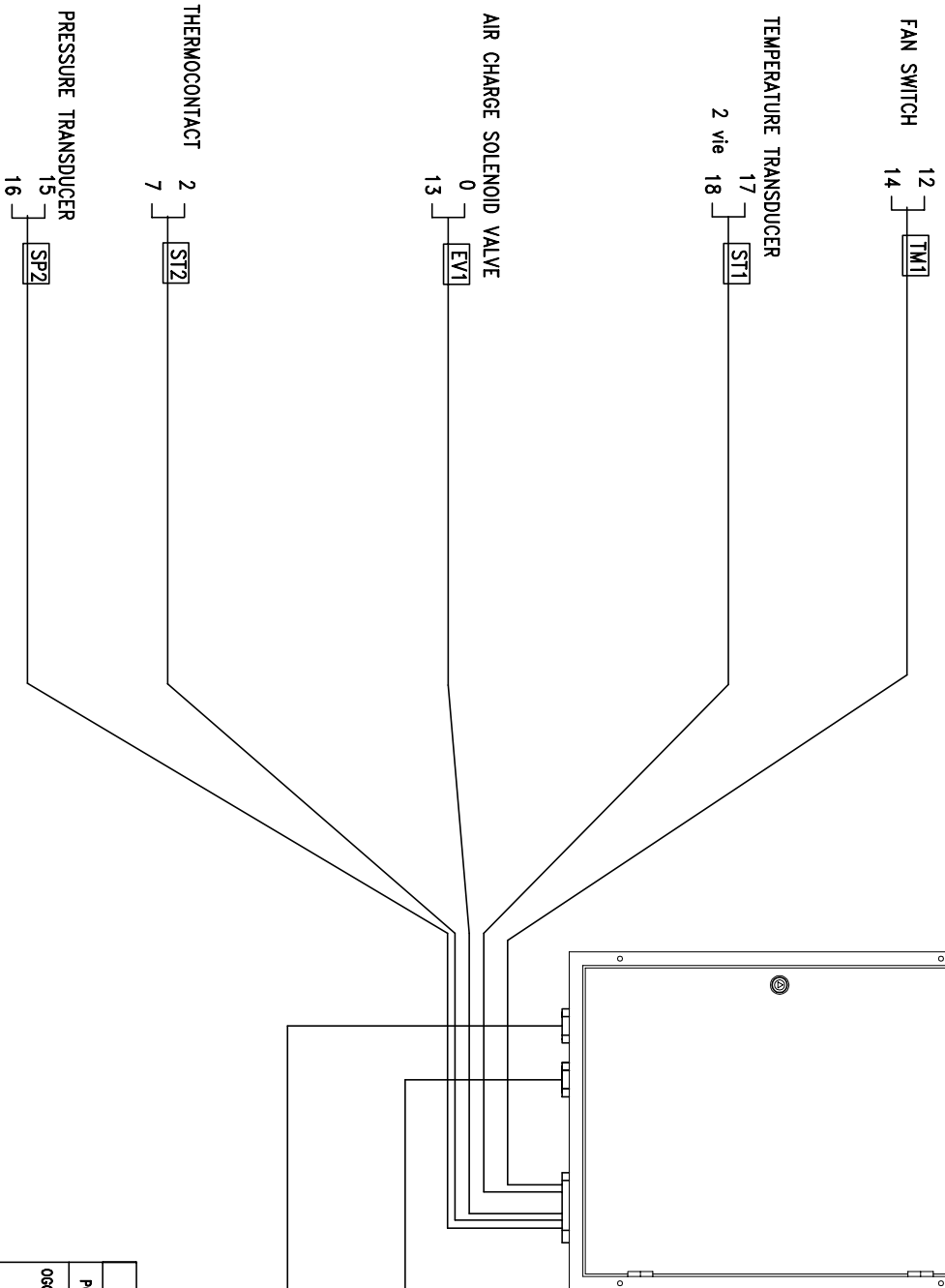
For belt tightening see the instructions in the chapter "Tensioning and Replacement of Transmission Belts"

## TENSIONING AND REPLACEMENT OF TRANSMISSION BELTS

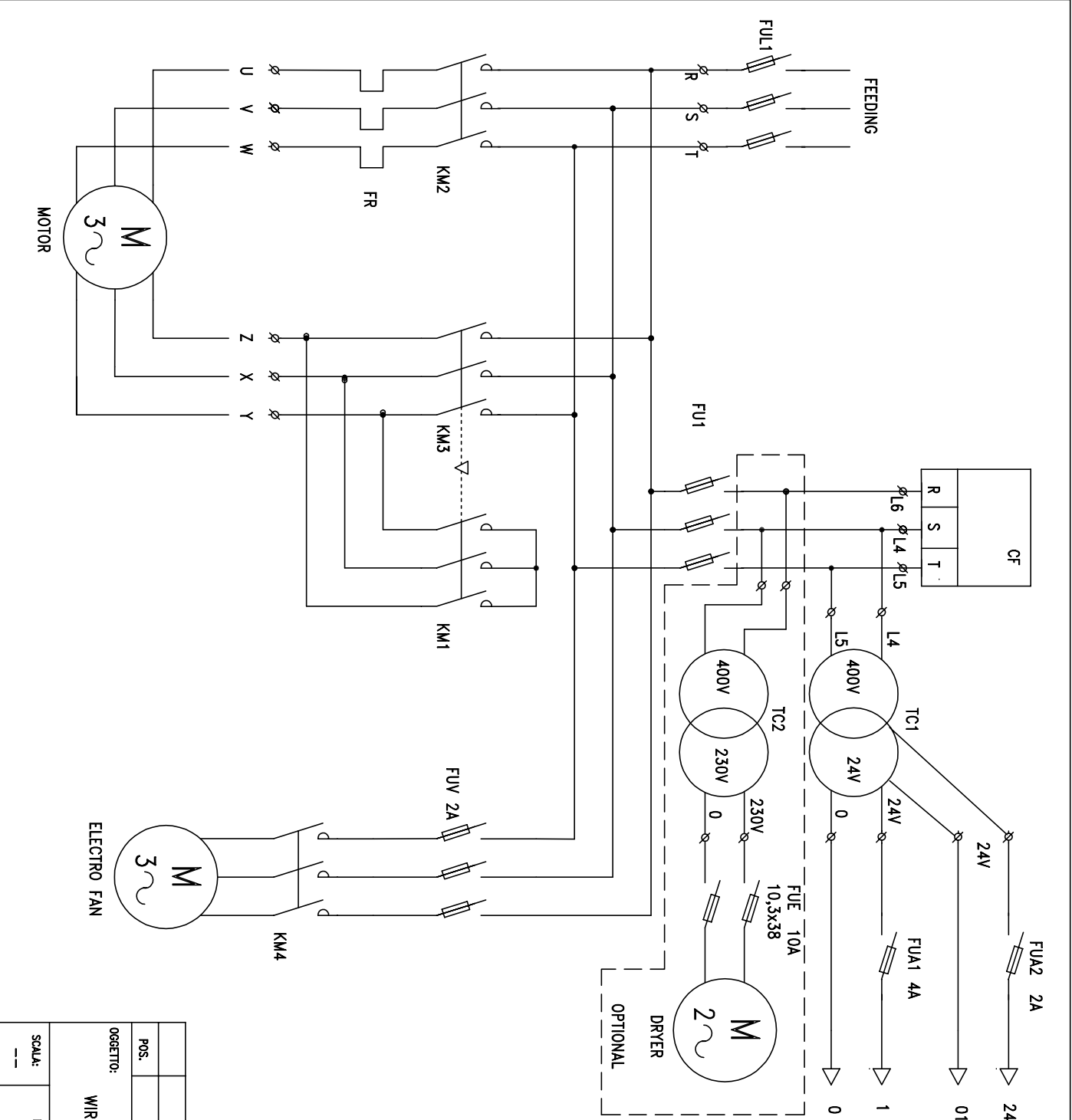


As regards the tension and the replacement of the transmission belts it is necessary to proceed as follows:

1. Loosen the screw (part. A fig 16).
2. Rotate the regulation screw (part. B fig.16) for tensioning.
3. If the belts have been replaced it is necessary to tension them to the correct value, proceeding as described at point 1 of this chapter and that described in the previous chapter under "Transmission belt tensioning check".
4. On adjusting the belts to the required tension, firmly secure screw A.



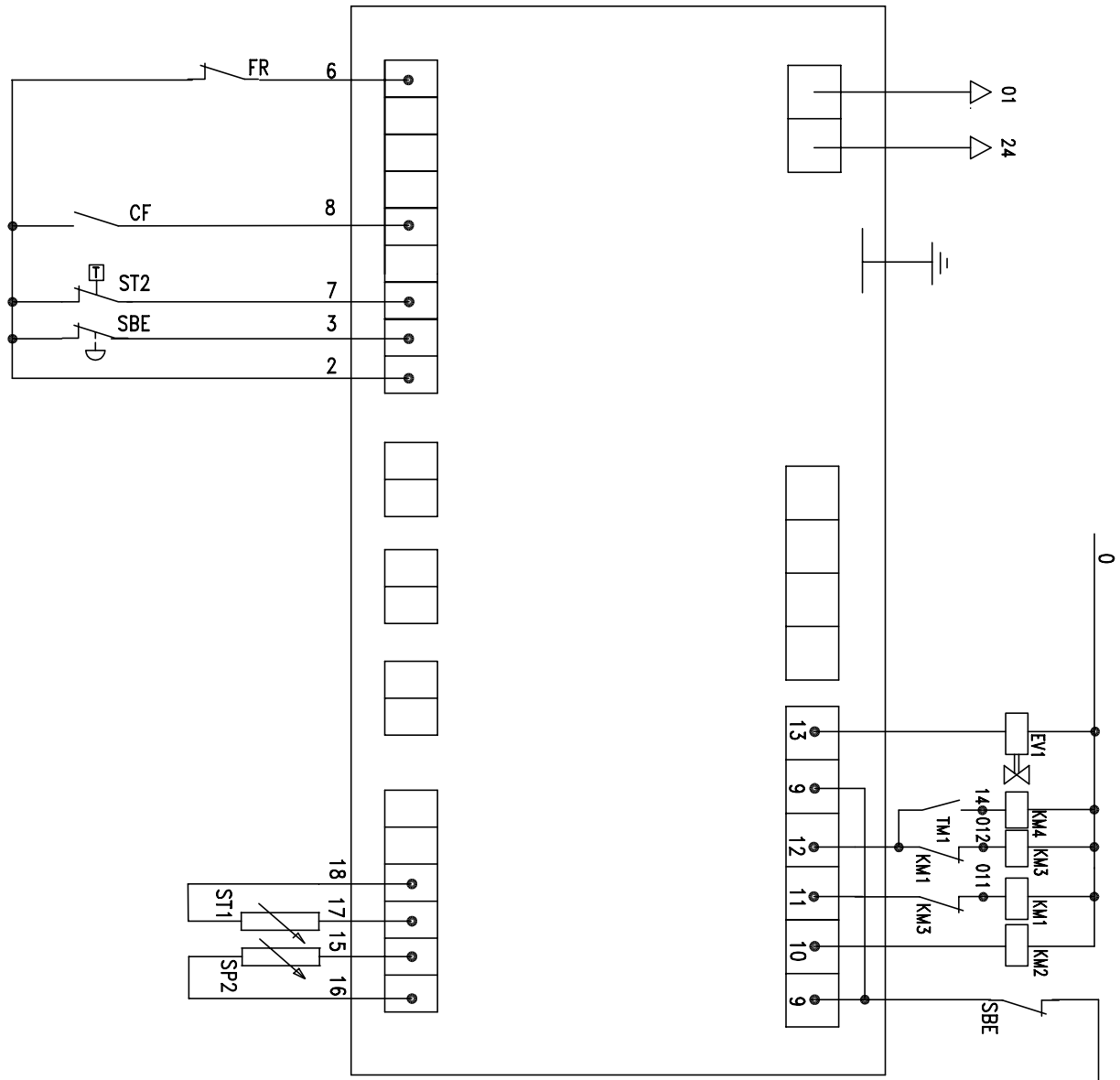
POS.	Descrizione modifica		Disegnatore	Data
OGGETTO:	WIRING DIAGRAM RVK S1		ROTAIR S.p.A.	
SCALA:	DISIGNATORE:	DATA:	FOGLIO:	File: quadro_cablog..
---	VERRA G.	25/02/08	1 / 3	Nr. Disegno: 269-3580.31-S



**LEGEND**

CF	PHASE CONTROL RELAY
FR	MOTOR THERMAL RELAY
FUL1	FUSE
KM1	STAR CONTACTOR
KM2	LINE CONTACTOR
KM3	TRIANGLE CONTACTOR
M	MOTOR
TC1	AUX. CIRCUIT TRANSFORMER
C1	CONNECTOR
C2	CONNECTOR
SBE	EMERGENCY BUTTON
SP1	AIR FILTER CLOGGING INDICATOR
SP3	MIN. PRESSURE SWITCH
ST1	TEMPERATURE TRANSDUCER
C3	CONNECTOR
EY1	AIR CHARGE SOLENOID VALVE
EY2	AIR DISCHARGE SOLENOID VALVE
C4	CONNECTOR
SP2	PRESSURE TRANSDUCER
ST2	THERMOCONTACT ON SCREW

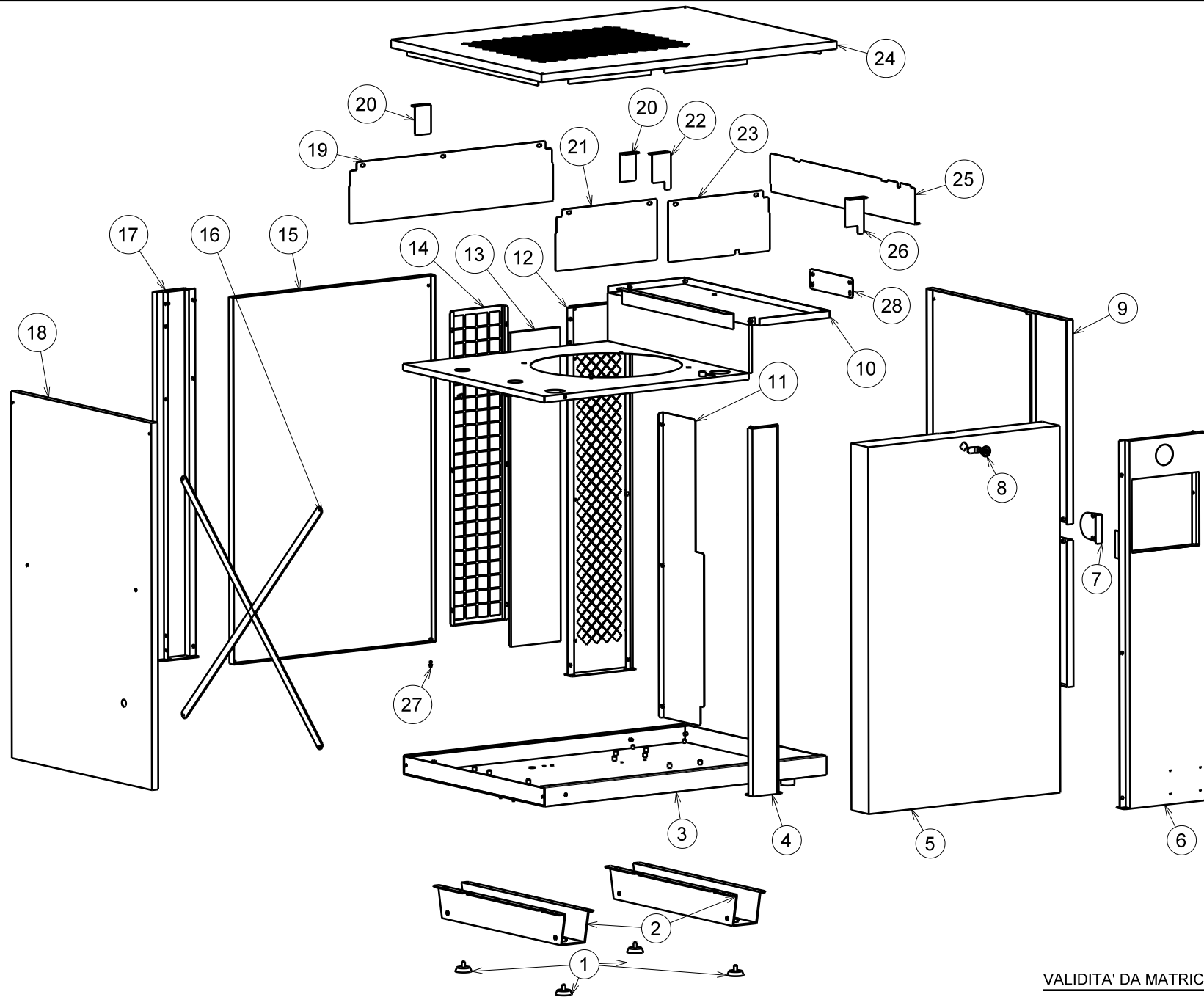
POS.	Descrizione modifica		Disegnatore	Data
OGGETTO:	WIRING DIAGRAM RVK SI			
SCALE:	DISEGNATORE:	DATA:	FOGLIO:	File: apparecchiaturaRVK
--	VERRA G.	25/02/08	2 / 3	Nr. Disegno: 269-3580.31-S



**LEGEND**

CF	PHASE CONTROL RELAY
FR	MOTOR THERMAL RELAY
FUL1	FUSE
KM1	STAR CONTACTOR
KM2	LINE CONTACTOR
KM3	TRANGLE CONTACTOR
M	MOTOR
TC1	AUX. CIRCUIT TRANSFORMER
C1	CONNECTOR
C2	CONNECTOR
SBE	EMERGENCY BUTTON
SP1	AIR FILTER CLOGGING INDICATOR
SP3	MIN. PRESSURE SWITCH
ST1	TEMPERATURE TRANSDUCER
C3	CONNECTOR
EV1	AIR CHARGE SOLENOID VALVE
EV2	AIR DISCHARGE SOLENOID VALVE
C4	CONNECTOR
SP2	PRESSURE TRANSDUCER
ST2	THERMOCONTACT ON SCREW

POS.		Descrizione modifica		Disegnatura		Data	
OGGETTO: WIRING DIAGRAM RYK S1							
SCALA: --				DISEGNATORE: VERRA G.		DATA: 25/02/08	
				FOGLIO: 3 / 3		N. Disegno: 269-3580.31-S	
ROTAIR S.p.A.						File: appparechhi/rvk	



**DETAILS LIST OF RVK 25-30-40 C.E.**

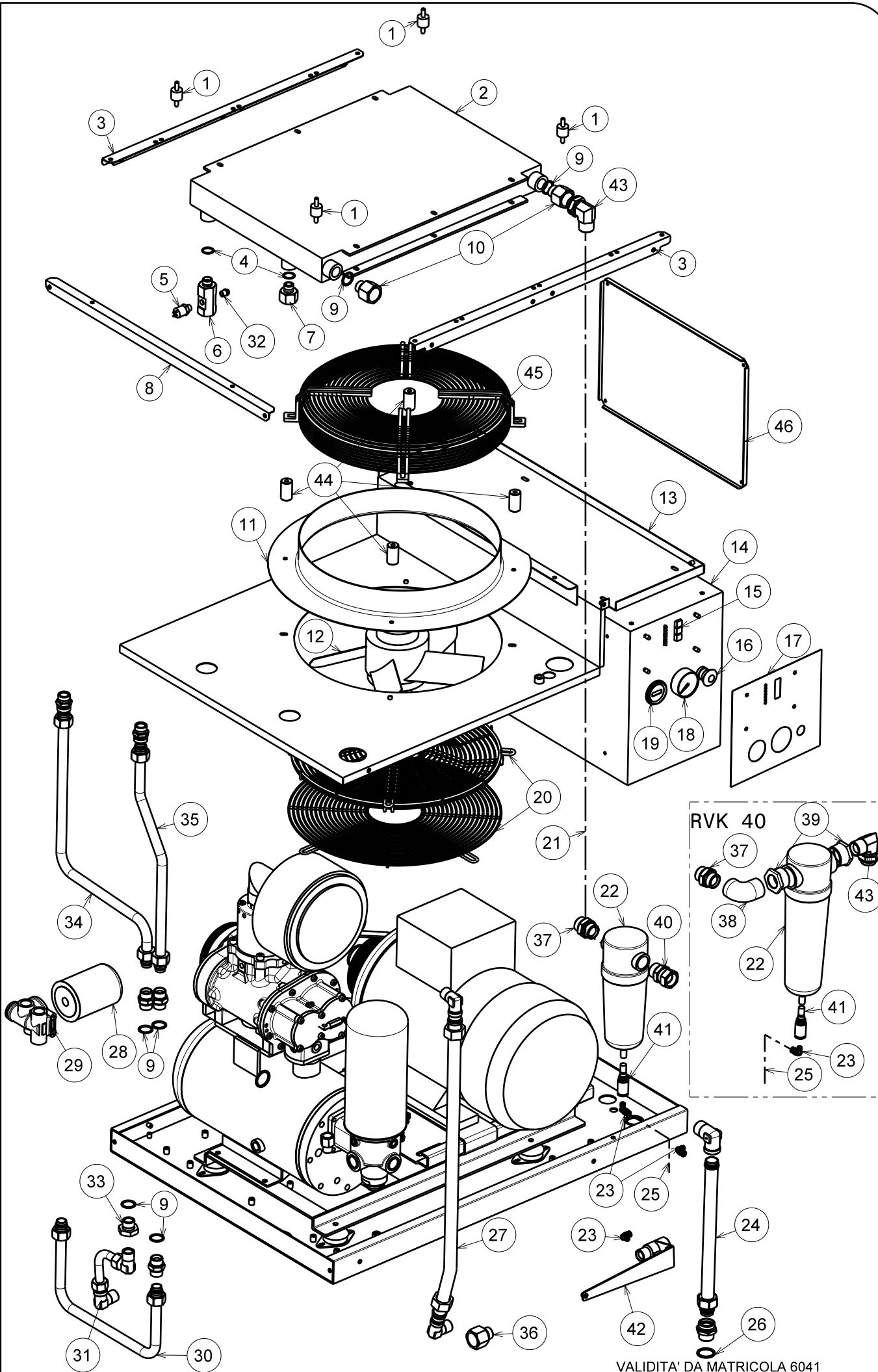
**TAB. 01**  
**REV.04 of the 09/08**

POSIZIONE	DESCRIZIONE	CODICE	QUANTITA'
1	FEET D.50	068-100-S	4
2	FOOT BEARING CHASSIS	068-1205-S	2
3	CHASSIS	038-282-S	1
4	FRONT LEFT UPRIGHT PANEL	124-2050-S	1
5	FRONT PANEL RVK 40	124-2074-S	1
6	FRONT RIGHT UPRIGHT PANEL (TELMAT)	124-2054-S	1
	FRONT RIGHT UPRIGHT PANEL	124-2055-S	
7	RIGHT SIDE PANEL CLOSURE FLAP	110-0313-S	1
	RIGHT SIDE PANEL CLOSURE FLAP PERFORED	110-0312-S	
8	ALLEN SCREW LOCK	128-007-S	1
9	RIGHT SIDE PANEL	124-2093-S	1
	RIGHT SIDE PANEL x RVK25-30+INVERTER	124-2094-S	
	RIGHT SIDE PANEL x RVK25-30-40+INVERTER	124-20942-S	
10	INNER PANEL SUPPORT ELECTRIC FAN.	124-2059-S	1
	INNER PANEL SUPP. ELECT. FAN. x RVK+INVERTER	124-2057-S	
11	SOUND-PROOFED INNER SECTION	118-1185-S	1
	SOUND-PROOFED INNER SECTION x RVK+INVERTER	118-11855-S	
12	REAR RIGHT UPRIGHT PANEL	124-2056-S	1
13	PRE-FILTER CLOTH	162-9881-S	1
14	SUPPORT PANEL PRE-FILTER	124-2070-S	1
15	REAR PANEL	124-2066-S	1
16	TIE ROD BODYWORK BLADE	120-1575-S	2
17	REAR LEFT UPRIGHT PANEL	124-2052-S	1
18	LEFT SIDE PANEL	124-2064-S	1
19	REAR CENTRAL SECTION ON RADIATOR	118-1170-S	1
20	FRONT-REAR SIDE SECTION ON RIGHT RAD. RVK 40	118-1178-S	1
	FRONT-REAR SIDE SECTION ON RIGHT RAD. RVK 25-30	118-1175-S	
21	FRONT CENTRAL SECTION ON LEFT RADIATOR	118-11712-S	1
22	REAR SIDE SECTION ON RIGHT RAD x RVK 25-30	118-1174-S	1
	REAR SIDE SECTION ON RIGHT RAD x RVK 40	118-1177-S	
	REAR SIDE SECT. ON RIGHT RAD x RVK 25-30+INVERTER	118-1160-S	
	REAR SIDE SECT. ON RIGHT RAD x RVK 40+INVERTER	118-11765-S	
23	FRONT CENTRAL SECTION ON RIGHT RADIATOR	118-1172-S	1
24	UPPER PANEL WITH GRATING RVK 25-30	124-2068-S	1
	UPPER PANEL WITH GRATING RVK 40	124-2076-S	
	UPPER PANEL WITH GRATING RVK 25-30+INVERTER	124-2048-S	
	UPPER PANEL WITH GRATING RVK 40+INVERTER	124-2047-S	
25	INT. PANEL FOR THERMAL INSULATION RVK 25-30	118-1173-S	1
	INT. PANEL FOR THERMAL INSULATION RVK 40	118-1176-S	
26	FRONT SIDE SECTION ON RIGHT RAD x RVK 25-30	118-1173-S	1
	FRONT SIDE SECTION ON RIGHT RAD x RVK 40	118-1176-S	

**\* MODIFIED ITEMS IN VERSION 04**  
**VALID FROM SERIAL NUMBER 6041**



26	FRONT SIDE SECT.ON RIGHT RAD x RVK 25-30+INVERTER	118-1160-S	
	FRONT SIDE SECT.ON RIGHT RAD x RVK 40+INVERTER	118-11765-S	1
27	ELECTRIC BOX SUPPORT BLADE	120-1565-S	1
28	M6 PIN FOR CENTERING	018-121-S	6



**DETAILS LIST OF RVK 25-30-40 C.E.**

**TAB. 02**  
**REV.04 of the 09/08**

POSIZIONE	DESCRIZIONE	CODICE	QUANTITA'
1	SILENT BLOCK RADIATOR 25x22 M8x20	061-026-S	4
2	OIL-AIR RADIATOR RVK 25-30	011-087-S	1
	OIL-AIR RADIATOR RVK 40	011-0871-S	
3	FIXTURE BLADE RADIATOR	120-1557-S	2
4	COPPER WASHER 1/2"	015-012-S	—
5	THERMO-FAN SWITCH	154-037-S	1
6	EXTENSION 1/2" M-3/4" F SUPP. THERMO-FAN.	189-111-S	1
7	EXTENSION 1/2" M-3/4" F L=42 total	189-056-S	1
8	BEARING RADIATOR BLADE	120-196-S	1
9	COPPER WASHER 3/4"	015-012-S	—
10	EXTENSION 1"F A 3/4"M L=50	189-336-S	2
11	CONVEYOR FOR ELECTRIC FAN	041-054-S	1
12	ELECTRIC FAN	083-7017-S	1
13	INNER PANEL SUPPORT ELECTRIC FAN	124-2059-S	1
	INNER PANEL SUPPORT ELECTRIC FAN x RVK+INVERTER	124-2057-S	
14	ELECTRIC BOX (TELMAT)	029-1955-S	1
	ELECTRIC BOX (AIRMMASTER S1)	029-19565-S	
	ELECTRIC BOX (AIRM.S1+INVERTER) x RVK 25-30	029-19567-S	
	ELECTRIC BOX (AIRM.S1+INVERTER) x RVK 25-30-40	029-195672-S	
15	ELECTRONIC CARD TELMAT	269-410-S	1
	ELECTRONIC CARD AIRMASTER S1	269-4005-S	
16	EMERGENCY SWITCH	154-066-S	1
17	CONTROL FOR PANEL STICKER TELMAT	238-2171-S	1
	CONTROL FOR PANEL STICKER AIRMASTER S1	238-2225-S	
18	CAPILLARY THERMOMETER (ONLY TELMAT)	167-030-S	
19	ELECTRIC COUNTER (ONLY TELMAT)	180-010-S	1
20	FAN PROTECTIVE PANEL WITH GRATING U.S.A.	124-2045-S	1
	FAN PROTECTIVE PANEL WITH GRATING C.E.E.	124-2077-S	
21	PIPE TROPIC NO. 1 STRAIGHT COUPL.+ 1 FITTING 90° L=640	065-2140-S	1
	PIPE EQUATOR 1" FD+FD L=810 x RVK40	065-215.10-S	
22	CONDENSATION SEPARATOR RVK 40	217-2012-S	1
	CONDENSATION SEPARATOR RVK 25-30	217-2011-S	
23	RACCORDO RAPIDO 90' 1/8 x TUBO d. 8	148-572-S	2
24	TUBO IN FERRO DA SEP,COND. A TELAIO	064-022-S	1
25	PIPE RILSAN D 8X6	089-0705-S	1
26	COPPER WASHER 1"	015-018-S	—
27	IRON PIPE FROM OIL SEPARATOR TO RADIATOR	^^	1
28	COMPRESSOR OIL FILTER	099-008-S	1
29	BY-PASS VALVE	053-044-S	1
30	IRON PIPE FROM BY-PASS TO SCREW INJECTION	^^	1
31	IRON PIPE FROM SCREW TANK TO BY-PASS	^^	1

**\* MODIFIED ITEMS IN VERSION 04**  
**VALID FROM SERIAL NUMBER 6041**

32	SQUARE HEAD CAP 1/4"	106-025-S	3
33	REDUCTION ELEMENT 3/4" M - 1/2"	190-041-S	1
34	IRON PIPE FROM BY-PASS TO RADIATOR	^^	1
35	IRON PIPE FROM RADIATOR TO BY-PASS	^^	1
36	EXTENSION 1"F A 1"M L=55	189-060-S	1
37	DOUBLE SCREW 1"	187-070-S	1
38	SHORT-RADIUS ELBOW M+F 1"	111-055-S	1
39	REDUCTION ELEMENT 1" 1/4 M + 1"F	190-070-S	2
40	ADAPTER FITTING AND STRAIGHT.M+F GIR.1"	148-006-S	1
41	AUTOMATIC CONDENSATION DISCHARGER	237-200-S	1
42	CONDENSATION SEP. SUPP. (ONLY COMPRESSOR)	010-1972-S	1
43	90° FITTING M+M G 1"	148-2987-S	2
44	SPACER FAN PROTECTIVE WITH GRATING	009-240-S	4
45	FAN PROTECT. PANEL WITH GRATING SUP.(ONLY U.S.A)	124-1775-S	1
46	ELECTRICAL APPLIANCES	**	1

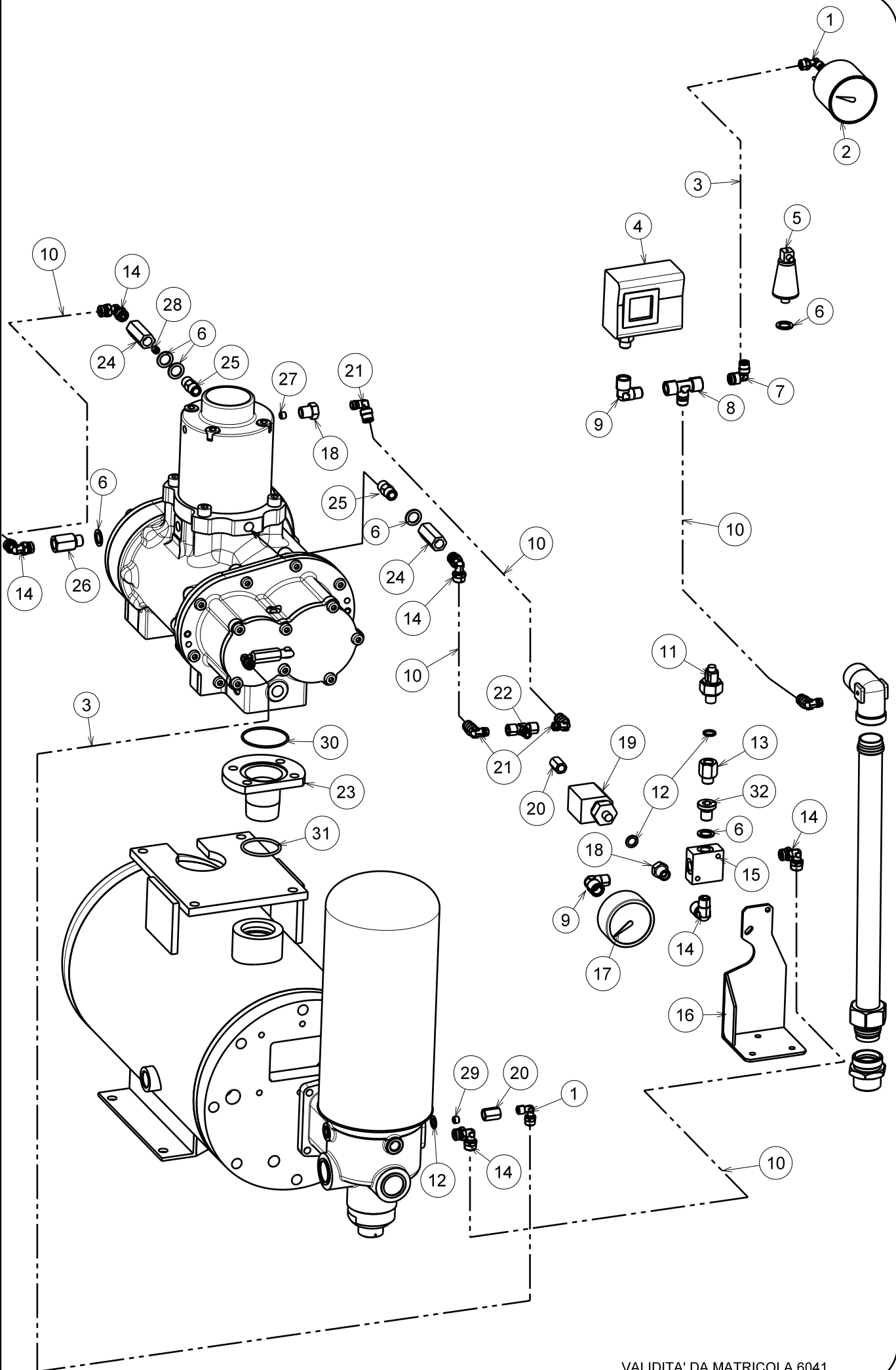
**\*\*INDICATE MACHINE POWER RATING, VOLTAGE AND MODEL ON THE ORDER  
^^CONSULTED ATTACHED TABLE**

Rev. 03\_09/08

Tav. 03

RVK 25-40

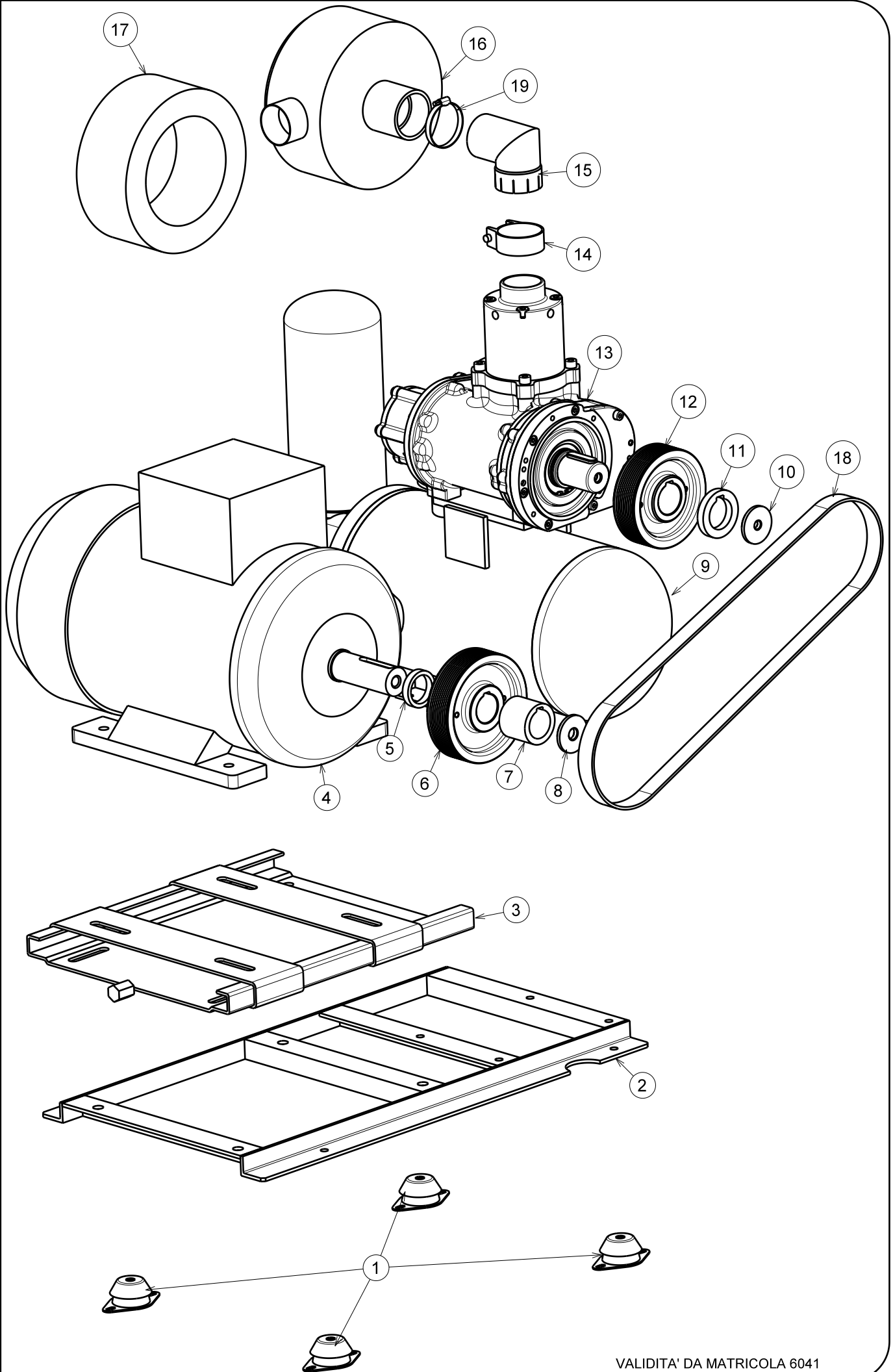
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**DETAILS LIST OF RVK 25-30-40 C.E.**

**TAB. 03**  
**REV.04 of the 09/08**

<b>POSIZIONE</b>	<b>DESCRIZIONE</b>	<b>CODICE</b>	<b>QUANTITA'</b>
1	90° FITTING 1/8 F FOR PIPE D 6x4	148-115-S	1
2	PRESSURE GAUGE 15 BAR (ONLY TELMAT)	206-020-S	1
3	PIPE RILSAN D 6x4	089-0605-S	2
4	PRESSURE SWITCH (ONLY TELMAT)	205-010-S	1
5	TEMPERATURE TRANSDUCER (ONLY AIRMASTER)	205-030-S	1
6	COPPER WASHER 1/4"	015-007-S	—
7	90° FITTING 1/4" M FOR PIPE D6	148-573-S	1
8	T-FITTING F+M+F 1/4"	148-194-S	1
9	90° FITTING M+F 1/4"	148-143-S	1
10	PIPE RILSAN D 8x6	089-0705-S	5
11	PRESSURE SWITCH (ONLY TELMAT)	154-035-S	1
12	COPPER WASHER D10,1x15x1,5	015-005-S	—
13	REDUCTION ELEMENT 1/4" M A 12x1,5 F	190-013-S	1
14	90° RAPID FITTING 1/4" FOR PIPE D8	148-573.5-S	4
15	4-WAY BLOCK UNIT 1/4"	053-295-S	1
16	BLOCK SUPPORT	010-1974-S	1
17	DRY GAUGE	206-0205-S	1
18	REDUCTION ELEMENT 1/4" M A 1/8" F	190-010-S	1
19	SOLENOID VALVE	160-070-S	1
20	HEXAGONAL SPACER 1/8" L=14	009-014-S	1
21	90° FITTING 1/8" FOR PIPE D8	148-572-S	3
22	T-FITTING F+M+F 1/8"	148-192-S	1
23	DELIVERY ATTACHMENT FLANGE	004-3345-S	1
24	NON-RETURN VALVE 1/4"	033-017-S	2
25	DOUBLE SCREW 1/4" CIL. + 1/4" CON.	187-006-S	2
26	EXTENSION 1/4"M A 1/4"F L=32	189-032-S	1
27	NOZZLE M8x8	218-150-S	1
28	NOZZLE M8x6	218-148-S	1
29	NOZZLE M6x5	218-139-S	1
30	OR DELIVERY FLANGE-SCREW GROUP	023-067-S	1
31	OR TANK-DELIVERY FLANGE	023-1282-S	1
32	EXAG. CAP.EMB.1/4"(ONLY VERS. AIRMASTER S1)	106-086-S	1

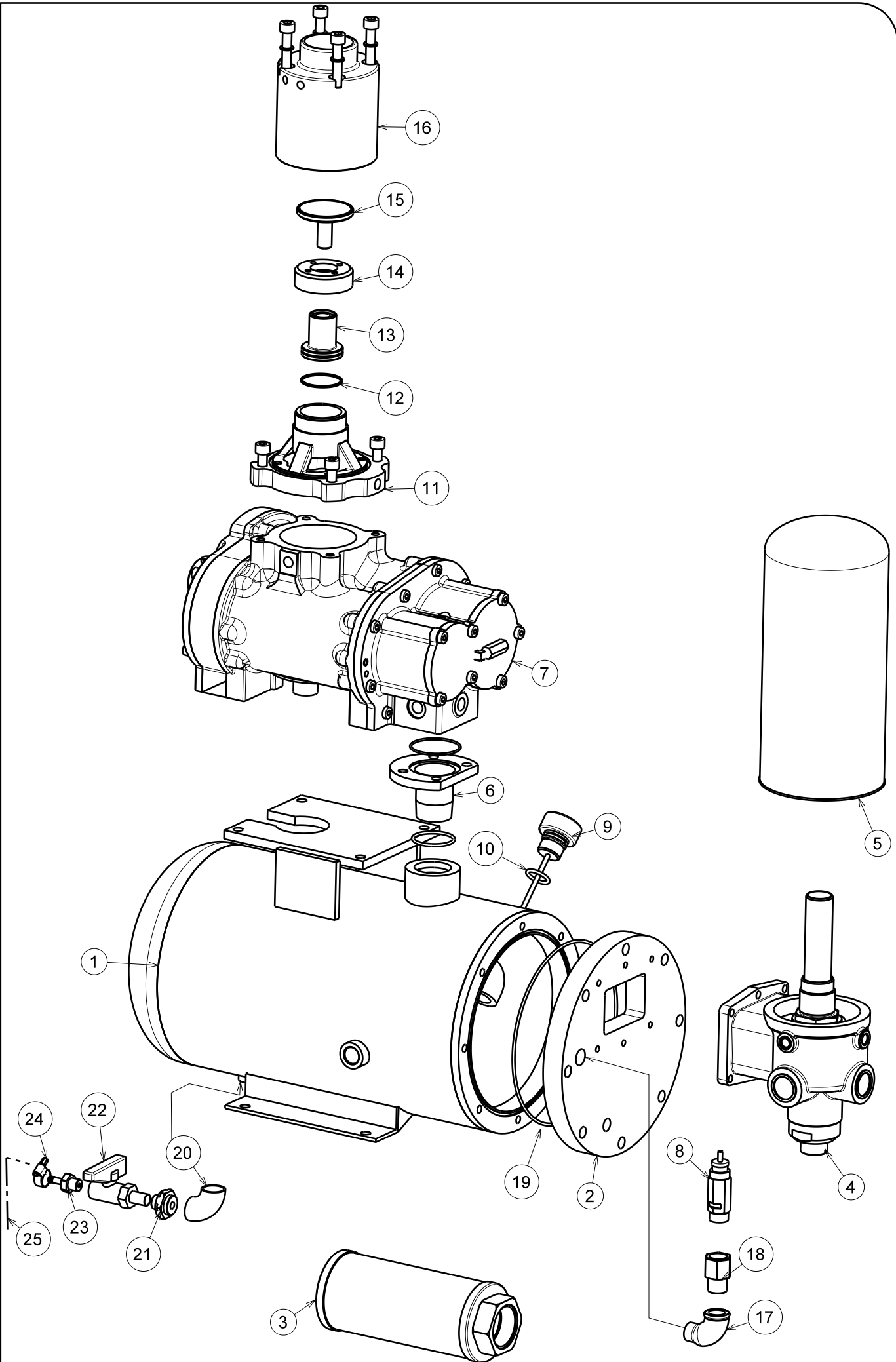


**DETAILS LIST OF RVK 25-30-40 C.E.**

**TAB. 04**  
**REV.04 of the 09/08**

POSIZIONE	DESCRIZIONE	CODICE	QUANTITA'
1	SILENT BLOCK	061-023-S	4
2	MOTOR-COMPRESSOR BASE	034-0525-S	1
3	MOTOR-SLIDE SUPPORT	039-0595-S	1
4	ELECTRIC MOTOR RVK 25	178-1135-S	1
	ELECTRIC MOTOR RVK 30	178-1322-S	
	ELECTRIC MOTOR RVK40	178-1482-S	
5	MOTOR PULLEY SPACER	009-141-S	1
6	RVK 25/8bar - 25/10bar MOTOR PULLEY	050-4202-S	1
	RVK 30/8bar - 30/10bar MOTOR PULLEY	050-423-S	
	RVK 40/8bar MOTOR PULLEY	050-434-S	
	RVK 40/10bar MOTOR PULLEY	050-433-S	
7	MOTOR PULLEY SPACER	009-2165-S	1
8	MOTOR PULLEY WASHER	015-061-S	1
9	HORIZONTAL TANK	037-081-S	1
10	COMPRESSOR PULLEY WASHER	015-068-S	1
11	COMPRESSOR PULLEY SPACER	009-142-S	1
12	RVK 25/8bar COMPRESSOR PULLEY	050-4201-S	1
	RVK 25/10bar COMPRESSOR PULLEY	050-4204-S	
	RVK 30/8bar COMPRESSOR PULLEY	050-4232-S	
	RVK 30/10bar-40/8-10bar COMPRESSOR PULLEY	050-4203-S	
13	SCREW GROUP ASSEMBLY	024-044-S	1
14	PIPE-TIGHTENING STRIP	149-314-S	1
15	AIR FILTER SUPPORT	111-0995-S	1
16	AIR FILTER CONTAINER	014-2895-S	1
17	AIR FILTER CARTRIDGE	162-574-S	1
18	BELTS POLY-V RVK 25/8bar	156-0024-S	1
	BELTS POLY-V RVK 25/10bar - 30/8bar	156-0028-S	
	BELTS POLY-V RVK 30/10bar	156-009-S	
	BELTS POLY-V RVK 40/8bar	156-0094-S	
	BELTS POLY-V RVK 40/10bar	156-0091-S	
19	PIPE-TIGHTENING STRIP	149-079-S	1

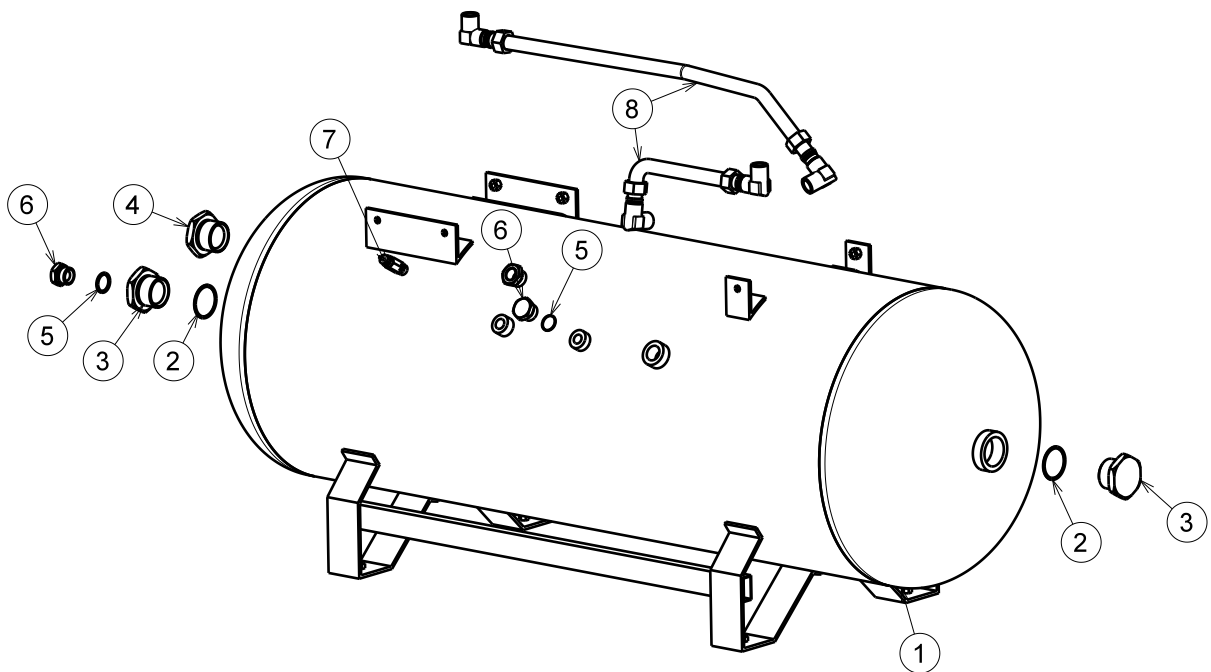
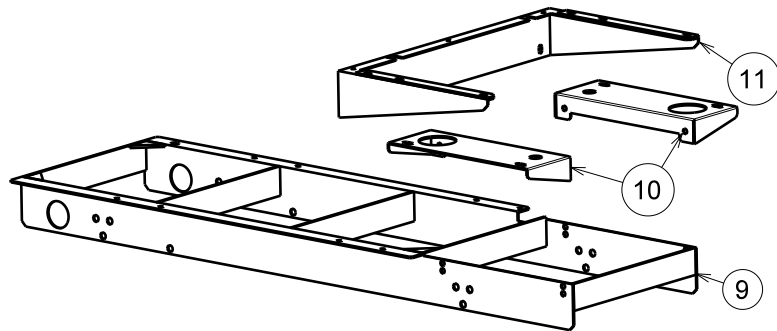
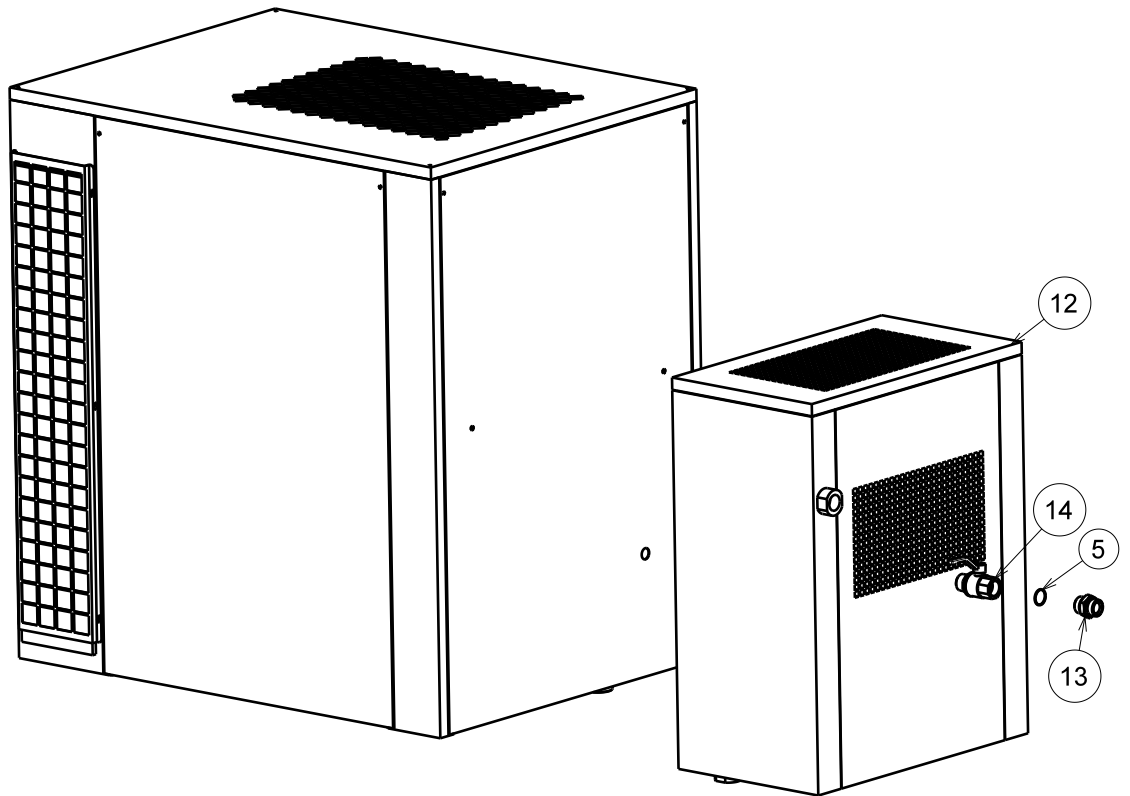




**DETAILS LIST OF RVK 25-30-40 C.E.**

**TAB. 05**  
**REV.04 of the 09/08**

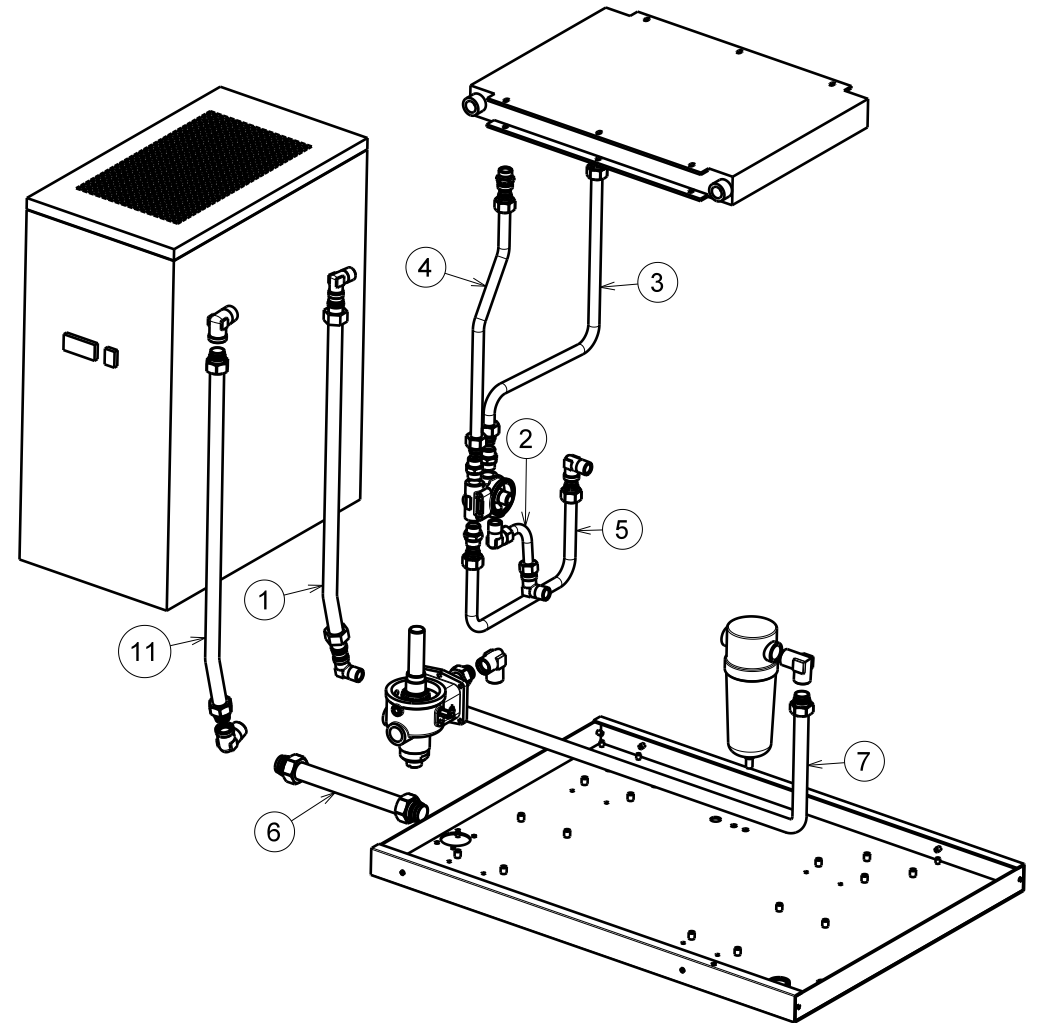
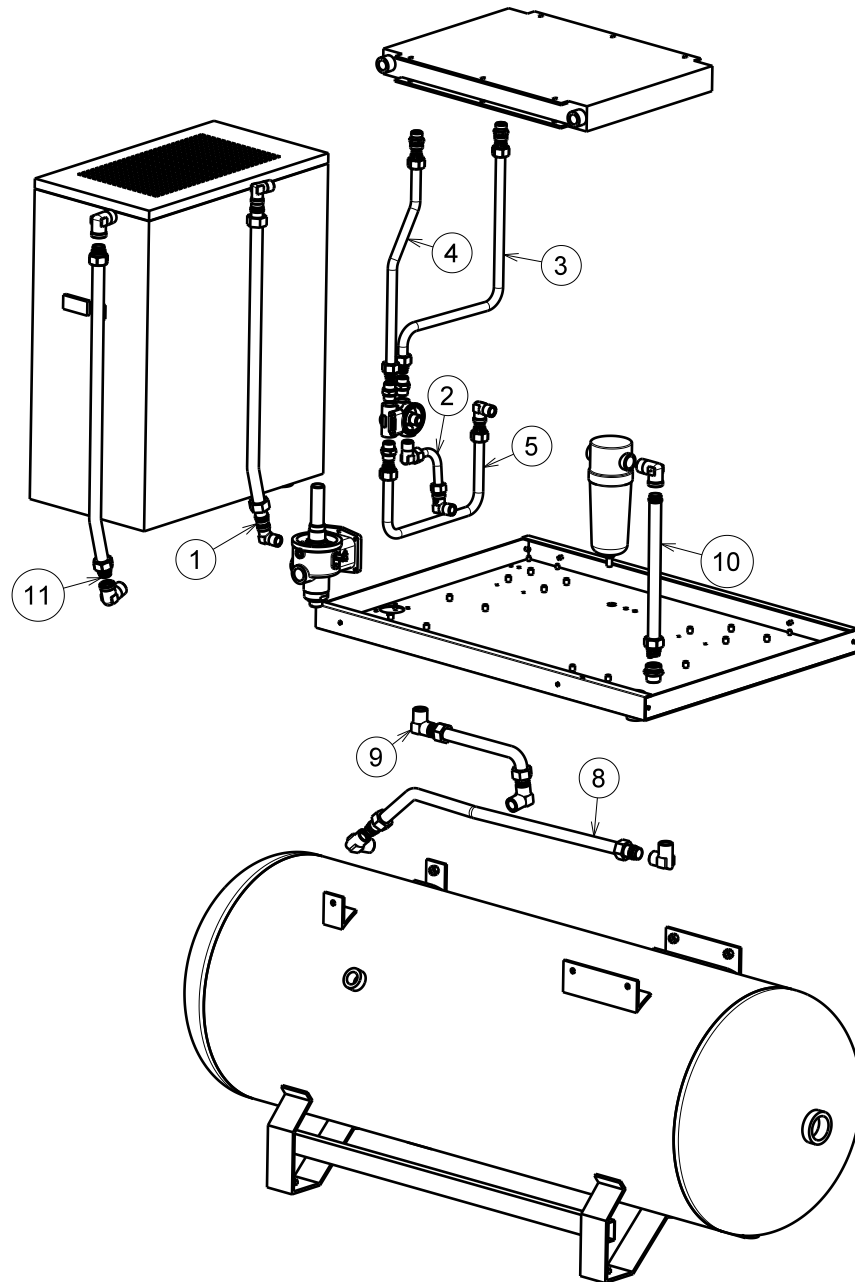
POSIZIONE	DESCRIZIONE	CODICE	QUANTITA'
1	HORIZONTAL TANK	037-081-S	1
2	HORIZONTAL CLOSURE FLANGE (CEE HOMOLOGATION)	004-333-S	1
3	OIL SEPARATOR FILTER FOR TANK 18 Lt*	157-175-S	1
4	MINIMUM PRESSURE VALVE ASSEMBLY	024-202-S	1
5	OIL SEPARATOR FILTER	157-171-S	1
6	DELIVERY ATTACHMENT FLANGE	004-3345-S	1
7	SCREW GROUP ASSEMBLY	024-044-S	1
8	SAFETY VALVE 1/2" 12 bar	033-051-S	1
	SAFETY VALVE 1/2" 14 bar	033-053-S	
	SAFETY VALVE 1/2" 17 bar	033-0575-S	
9	OIL LEVEL ROD CAP	106-0101-S	1
10	OR SEAL	023-026.5-S	1
11	REGULATOR BASE	034-001-S	1
12	SEGMENT	199-050-S	1
13	REGULATOR PISTON	048-026-S	1
14	ALUMINIUM RING	194-001-S	1
15	SUCTION VALVE	033-005-S	1
16	REGULATOR BODY	053-0767-S	1
17	SHORT-RADIUS ELBOW M+F 1/2"	111-030-S	1
18	-	-	-
19	OR TANK-DELIVERY ATTACHMENT FLANGE	023-0653-S	1
20	SHORT-RADIUS ELBOW 3/8" M+F	111-025-S	1
21	REDUCTION ELEMENT 3/8"M + 1/4"F	190-020-S	1
22	1/4" BALL COCK	152-015-S	1
23	FITTING 1/4" for PIPE RESCA D 12	148-198-S	1
24	PIPE-TIGHTENING STRIP	149-005-S	1
25	PIPE KRISTALL	089-100-S	1



**DETAILS LIST OF RVK 25-30-40 C.E.**

**TAB. 06**  
**REV.04 of the 09/08**

<b>POSIZIONE</b>	<b>DESCRIZIONE</b>	<b>CODICE</b>	<b>QUANTITA'</b>
1	TANK 500 L	037-109-S	1
2	COPPER WASHER 2"	015-019.2-S	2
3	HEXAGONAL HEAD IRON CAP 2"	106-136-S	2
4	REDUCTION ELEMENT 2"M+1"F(ONLY RVK25-40+TANK)	190-098-S	1
5	WASHER 1"	015-017-S	3
6	HEXAGONAL HEAD IRON CAP 1"	106-135-S	2
7	SAFETY VALVE 1/2" 12 bar	033-051-S	1
	SAFETY VALVE 1/2" 14 bar	033-053-S	
	SAFETY VALVE 1/2" 15 bar	033-0575-S	
8	CONSULT ATTACHED TABLE	-	-
9	TANK BASE - COMPRESSOR	034-0515-S	1
10	DRIER SUPPORT (ONLY RVK+DRIER+TANK)	010-336-S	2
11	DRIER SUPPORT (ONLY RVK+DRIER)	010-3362-S	1
12	DRIER RVK 25-40 50 Hz	253-101-S	1
13	DOUBLE SCREW 1"	187-070-S	1
14	BALL VALVE 1"	152-040-S	1



**TABLE LISTING ALL THE IRON PIPING FOR EACH MACHINE MODEL**  
**RVK 25-40**  
**REV.04 of the 09/08**

NO.	CODE	DESCRIPTION	ELECTRO-COMPRESSOR VERSION							
			RVK 25-30	RVK 40	RVK 25-30	RVK 40	RVK 25-30	RVK 40	RVK 25-30	RVK 40
			COMPRESSOR		COMPRESSOR+ DRIED		COMPRESSOR+ TANK		COMPRESSORE+DRIED+TANK	
1	064-023-S	FROM OIL SEPARATOR TO RADIATOR	X		X		X		X	
2	064-03200-S	FROM SCREW TANK TO BY-PASS	X	X	X	X	X	X	X	X
3	064-03210-S	FROM BY-PASS TO RADIATOR ENTR.	X	X	X	X	X	X	X	X
4	064-03220-S	FROM RADIATOR EXIT TO BY-PASS	X	X	X	X	X	X	X	X
5	064-03230-S	FROM BY-PASS TO SCREW INJECTION	X	X	X	X	X	X	X	X
6	064-01012-S	FROM PIPE UNION TO DRIER			X	X				
7	064-0222-S	FROM CHASSIS TO COND. SEPARATOR			X	X				
8	064-029-S	FROM FRAME TO LUNG					X	X	X	X
9	064-031-S	FROM LUNG TO DRIER							X	X
10	064-022-S	FROM COND. SEPARATOR TO CHASSIS					X	X	X	X

\* **MODIFIED ITEMS IN VERSION 04**  
**VALID FROM SERIAL NUMBER 6041**