OPERATING MAINTENANCE PARTS MANUAL

MOTORIZED COMPRESSOR

VRK

REFRIGERATED

MAN VRK IBIX ING 10-07-08 –rev 03

Authorized Distributor for ROTAIR:

IBIX North America Surface Technologies, LLC
2075 Lake Avenue SE – Largo, FL 33771 – USA
sales@ibixusa.com – www.IBIXUSA.com

ROTAIR

IBIX® NORTH AMERICA

Surface Technologies

Stamp of the retailer of authorized service centre

SUBJECT INDEX

-- 1) IDENTIFICATION DATA --

Here follows the complete list of the data printed on the identification plate applied to the front of the machine.

MODEL:

SERIAL No.

WEIGHT (Kg):

AIR YIELD (litres per minute) * :

WORKING PRESSURE (bar):

YEAR OF CONSTRUCTION:

ACOUSTIC POWER dB(A) ** :

(*)Measured according to ISO 1217 standards (±5%).

(**)Measured according to EEC 84/533 directive, technical amendment 85/406/EEC.

WARNING:

The use of non original *ROTAIR S.P.A.* spares will immediately render the guarantee void.
Always quote the model and serial number indicated above when requesting assistance or ordering spares.

-- 2) TECHNICAL DATA --

MODELS	MOTOR	MAX. ROTATION SPEED	WORKING PRESSURE	AIR YIELD
VRK 160 6 bar	HONDA GX620 - 20HP	2900 rpm	6 bar	1600 lt/min
VRK 160 11 bar	HONDA GX620 - 20HP	2900 rpm	11 bar	1050 lt/min
VRK 160 13 bar	HONDA GX620 - 20HP	2900 rpm	13 bar	950 lt/min
VRK 160 15 bar	HONDA GX620 - 20HP	2900 rpm	15 bar	780 lt/min
VRK 200 6 bar	HONDA GX670 - 24HP	2800 rpm	6 bar	1900 lt/min
VRK 200 7 bar	HONDA GX670 - 24HP	2800 rpm	7 bar	1650 lt/min
VRK 200 8 bar	HONDA GX670 - 24HP	2800 rpm	8 bar	1600 lt/min
VRK 200 11 bar	HONDA GX670 - 24HP	2800 rpm	11 bar	1300 lt/min
VRK 200 13 bar	HONDA GX670 - 24HP	2800 rpm	13 bar	950 lt/min
VRK 200 15 bar	HONDA GX670 - 24HP	2800 rpm	15 bar	910 lt/min

- MINIMUM WORKING PRESSURE 5 bar
- COMPRESSOR COOLING Hydraulic oil (*)
- MOTOR COOLING air
- TYPE OF FUEL: petrol
- OIL SYSTEM CAPACITY : 4 litres
- ELECTRICAL SYSTEM VOLTAGE: 12 Volt
- BATTERY: 12 Volt - 30 Ah - 300 A

(*)Q8 SHUBERT 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.
	SCARLATTI 46	Q8
	LR CCW 46	ROLOIL.
	CORENA D 46	SHELL
	DACNIS VS 46	TOTAL.

Motor oil: Q8 T750 SAE 15 W40

COMPLETE MACHINE:

-- MAX ENVIRONMENTAL TEMPERATURE: 40 °C
-- LENGTH (excluding drawbar): 1050 mm
-- WIDTH: 780 mm
-- HEIGHT: 950 mm
-- WEIGHT IN OPERATIONAL CONDITIONS (approximative): 220 Kg

ROTAIR®

MODELS	ENGINE	MAX. ROTATION SPEED	WORKING PRESSURE	AIR YIELD
VRK 160 6 bar	HONDA GX630 - 20HP	2900 rpm	6 bar	1600 lt/min
VRK 160 11 bar	HONDA GX630 - 20HP	2900 rpm	11 bar	1050 lt/min
VRK 160 13 bar	HONDA GX630 - 20HP	2900 rpm	13 bar	950 lt/min
VRK 160 15 bar	HONDA GX630 - 20HP	2900 rpm	15 bar	780 lt/min
VRK 200 6 bar	HONDA GX690 – 22HP	2800 rpm	6 bar	1900 lt/min
VRK 200 7 bar	HONDA GX690 – 22HP	2800 rpm	7 bar	1650 lt/min
VRK 200 8 bar	HONDA GX690 – 22HP	2800 rpm	8 bar	1600 lt/min
VRK 208G 8 bar	HONDA GX690 – 22HP	2800 rpm	8 bar	1600 lt/min
VRK 200 11 bar	HONDA GX690 – 22HP	2800 rpm	11 bar	1300 lt/min
VRK 200 13 bar	HONDA GX690 – 22HP	2800 rpm	13 bar	950 lt/min
VRK 200 15 bar	HONDA GX690 - 22HP	2800 rpm	15 bar	910 lt/min
VRK 220 6 bar	HONDA GX690 - 24HP	3400 rpm	6 bar	2150 lt/min
VRK 220 7 bar	HONDA GX690 - 24HP	3400 rpm	7 bar	2000 lt/min
VRK 220 8 bar	HONDA GX690 - 24HP	3400 rpm	8 bar	1950 lt/min
VRK 220 11 bar	HONDA GX690 - 24HP	3400 rpm	11 bar	1500 lt/min

Length (excluding drawbar)	42”
Width:	31”
Height:	37”

Technical Characteristics of the Engine:

Engine brand	HONDA	HONDA
Type	GX 630	GX690
Number of Cylinders	2	2
Fuel	Petrol/Gas	Petrol/Gas
Cooling	Air	Air
Power potential	20 HP	22 HP
Max. rotation speed	2900 rpm	2800 rpm
Emissions	EURO 2	EURO 2
Engine Oil Tank capacity	1.7 liters	1.7 liters

-- 3) PURPOSE AND SCOPE OF THE PRESENT USER AND MAINTENANCE MANUAL.

The owner, user and maintenance technician must carefully read the user manual to ensure its use according to the purposes and criteria for which it has been designed and constructed.
The owner and his employees are obliged to respect and apply all the information contained in this manual, to ensure optimum and correct machine use in compliance with the regulations and safety norms described.
The following detailed information is provided:

- machine lifting information;
- general norms and useful advice for ordinary and special maintenance operations;
- means of identifying and ordering spares.

N.B. The instructions for the correct use of the engine are to be found in the engine manual compiled by the actual engine constructor.

The correct and methodical use of the machine according to the instructions provided in the present manual will ensure a long lasting use and duration of the machine, and will also help the personnel entrusted with its operation from avoiding the risk of any work accident or injury.
This manual must be carefully conserved in its special holder, away from all hear and humidity sources and direct sunlight, so that it can be consulted at any time by the personnel responsible for the use of the machine and the technicians responsible for ordinary and special maintenance operations.
It is also important to ensure that any repairs or special maintenance operations are undertaken by specialized personnel.
In the event of loss or damage to the present manual, a copy can be requested from ROTAIR S.P.A. citing the machine identification data indicated on the plate affixed to the machine.
Should the plate be illegible for any reason, the details indicated in the sales invoice are to be cited on requesting a new manual.
Further information or advice on the use of the machine or as concerns any operations which may need to be undertaken on the machine can be requested direct from ROTAIR S.P.A.. always citing the serial number as well as the machine identification data.
This machine has been specifically designed and constructed **for supplying compressed air**, according to the conditions envisaged by the manufacturer. Any other use apart from the same will be considered as being "*non complying*" and will exonerate the constructor of any liability, which will become the direct responsibility of the user itself.

"Conforming use" presumes the observance of the instructions provided in the present relative to the use, maintenance and transportation of the machine.
It is also necessary to comply with all the accident prevention norms described and recommended, as well as to comply with the general health and safety regulations as enforced by current regulations.
The constructor declines all responsibility in the event of modifications made to the machine without its authorization.
The machine is supplied complete with the following documents:
1) - General use and maintenance booklet;
2) - Engine use and maintenance booklet;
3) - Oil separator tank safety valve conformity certificate;
4) - Engine warranty certificate;
5) - Compressor guarantee certificate.

-

-- 4) INTENDED MACHINE USE --

The **VRK** type compressor is a machine which generates a specific amount of compressed air measured in litres per minute.
The fields of use are varied and comprise the use of all tools, accessories and devices which operate "***pneumatically***" such as demolisher hammers, drilling hammers, vibrators, drills, pneumatic screwdrivers, compactors, plaster sprayers etc.
Each of these tool-accessories has its own compressed air consumption rate, also measured in litres per minute.

Optimum compressor-utensil combination is achieved when the compressed air supply of the tool does not exceed 85% of the air generated by the compressor (it is also necessary to bear in mind that the quantity of compressed air required by the tool will increase through time, in proportion to the wear of the tool itself).
A correct combination ratio between the compressor and tool will ensure operation in optimum conditions, ensuring a long life and maximum performance of the same.
A tool of excessive size, will jeopardize the effective function of the machine which will be unable to work to its full performance levels, having an insufficient supply of compressed air available.
This machine has been designed to work at an environmental temperature of between **-10** and **+40°C**.

ADVERSE EFFECTS

The compressed air generated by this unit contains minute traces of oil, and is therefore not suited to those systems that need to be totally oil-free (ie. The food, pharmaceutical, powder, flour and cement transportation fields 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 which do not form part of the standard maintenance program, can only be undertaken with the machine at a complete standstill.
6. 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".
7. 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". The battery should be detached and removed or the terminals should be covered with insulating caps.
8. Never allow the machine or appliance to operate at beyond the established limits (in terms of pressure, temperature, speed, etc..)
9. The machines and pneumatic appliances are to be kept clean , and free of oil, dust, or other accumulated dirt.
10. 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.
11. 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.
12. 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.
13. The precision of the pressure and temperature indicators should be regularly checked in order to ensure rapid replacement should the tolerance values be irregular.
14. The parts should be replaced solely using original **ROTAIR S.P.A.** spares.

15. 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.
16. 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.
17. Protect the engine, alternator, air intake filter as wells the regulation and electrical components etc to prevent the risk of humidity seeping in, for example during steam cleaning operations.
18. During operations involving either heat, flames or sparks in a machine, the surrounding components must be protected with non-inflammable material.
19. Never use a live flame luminous source to inspect the inside of a machine, pressure container etc.
20. Before dismantling a compressor, engine or other machine or before beginning an overhaul operation ,avoid moving mobile parts weighting over 15 kg.
21. Once the repairs are complete ensure that no tools, cloths or components have been left inside or on top of the machine, engine or drive elements.

PRECAUTIONS DURING USE AND FUNCTION

1. The operator should avoid getting in the way of any released compressed air as the force of the air speed may cause injury to those directly in its path. Never direct the air jet directly onto your own body or anybody else. Never use compressed air to dry your garments.
2. Should it be used for cleaning equipment, proceed with extreme caution using protective goggles.
3. Should the machine need to operate in closed environments, it is necessary to convey the exhaust gas to the exterior using a special duct pipe (a stainless steel spiral pipe is recommended with a diameter of at least 60 mm, the length of which should be as short as possible. It is also necessary when working in closed environments to create a ventilation system that conveys the any dirty, hot or dust saturated air externally, to ensure that the machine can take in air that is fresh and clean.
4. However the operation of the machine in any closed environments with atmospheric conditions in which it is possible to find corrosive or explosive gas vapours or mixtures is **severely prohibited**.
5. When operating in open areas it is necessary to position the machine in such a way as to ensure that on exit of the discharge gas it occurs on the lee side and never in the direction of walls or other obstacles, which might oppose the exit and the dispersion of such exhaust gases.
6. When undertaking any demolition, drilling or sandblasting operations or any similar operations that tend to generate dust, the tool needs to be connected to the compressor used a flexible hose that is pressure resistant and of sufficient length to permit the machine to be distanced from the working area, thereby avoiding the risk of any clogging of either the suction filters on the unit or of the cooling radiator used to cool lubricant and coolant liquids. Once again the operator should ensure that the machine is positioned leeward in relation to the working area.
7. When selecting flexible hosing to connect the machine to the tool, it is important to ensure that they are of the correct dimensions, in terms of length, the air volume involved and the working pressure. In fact if the piping is too small in diameter or of excessive length, there is a risk of blocking the air flow, with a loss in charge and reduced tool performance. Never use worn, damaged or faulty hoses.
8. The hosing used to convey the compressed air from the machine to the tool, or to any other appliance that may be applied, must have a cock at one end of the hose connection, this cock should be kept closed when connecting the hosing to the tool and the machine in order to prevent the risk of accidental opening of the cock itself with the consequent risk of severe wobbling of the hosing itself, and even a risk of personal injury. Before disconnecting any piping, always make sure that there is no internal pressure.
9. Never fill up with fuel with compressor in action. Keep the fuel away from hot parts. Never smoke during fuel filling operations. Never spread or leave any oil, fuel, coolant liquids or detergent substances on the compressor or near it.
10. Never operate the compressor at speeds or pressure that is either above or below the specified limits as indicated in the paragraph entitled "technical data".
11. Protect the ears using suitable ear-muffs, when noise output exceeds 85 dB (A). Avoid exposure to these noise levels for extended periods of time.

SAFETY DURING MAINTENANCE AND REPAIR OPERATIONS

Maintenance and repair operations are to be undertaken solely by adequately trained staff, supervised by a specifically trained technician in the field if necessary.

1. Use only the tools specifically suited to maintenance and repair operations.

2. Use only original spares.
3. All the standard maintenance operations aside from those of normal surveillance, are to be undertaken only when the compressor it at a standstill. Concrete precautions should be taken to ensure that the unit cannot be started up accidentally.
4. Before dismantling any component under pressure, isolate the unit in an appropriate manner against all pressure sources and discharge the pressure from the entire system.
5. Never undertake any welding operations or other operations that generate heat near any oil or fuel systems. The fuel and oils tanks in particular must be totally clean before undertaking such operations, by steam cleaning them for example.
6. Always ensure that no parts, cloths or tools have been left inside or on top of the unit.

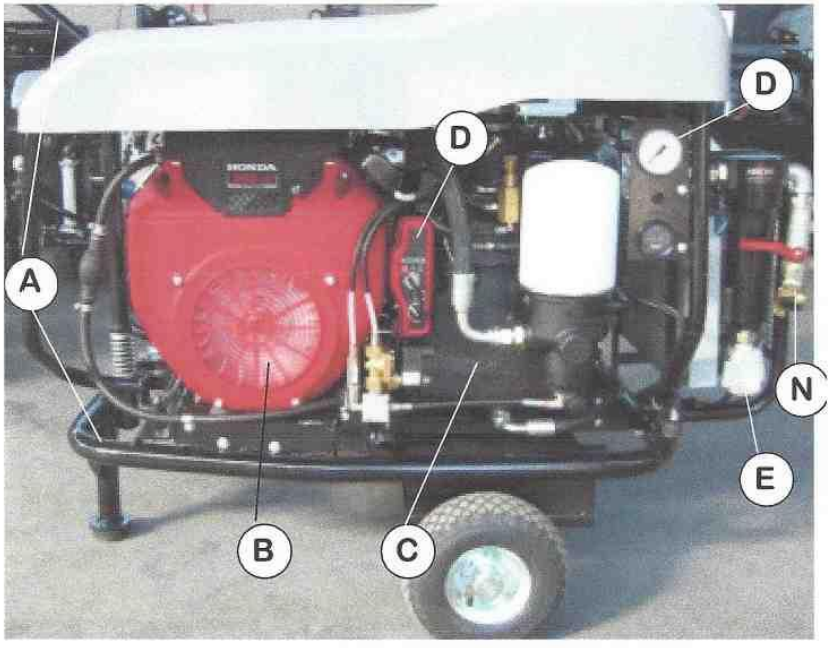
ACCIDENT PREVENTION

Fixed protections are present on all the parts that either rotate or alternate and which could be a potential personal hazard. The machine must not be operated once these protections have been removed or before they have been replaced.

-

-- 5) TECHNICAL DESCRIPTION --

This unit, like the entire VRK range consists in a single-stage, oil injection, mobile screw compressor.
The engine is of internal combustion type, which runs on petrol and is connected to the compressor by means of belt transmission.



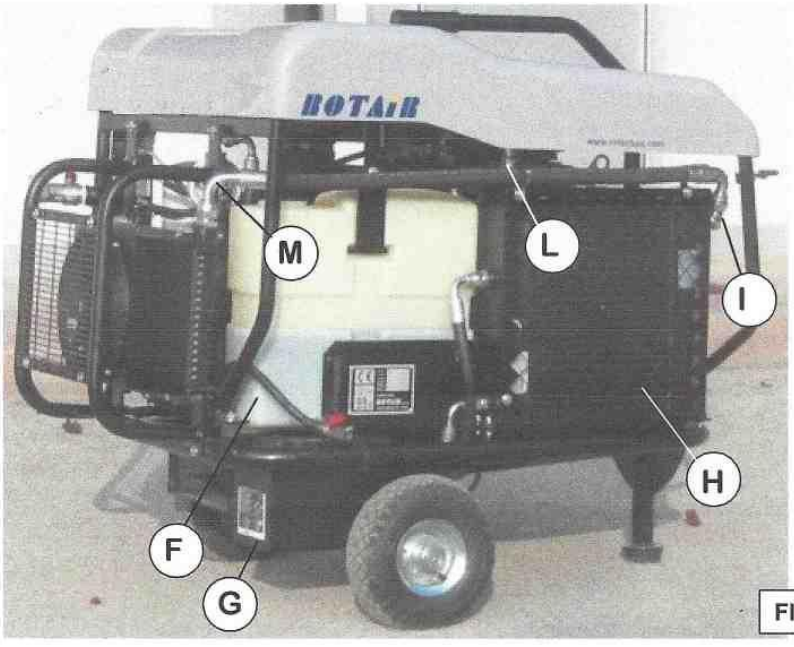


FIG. 2

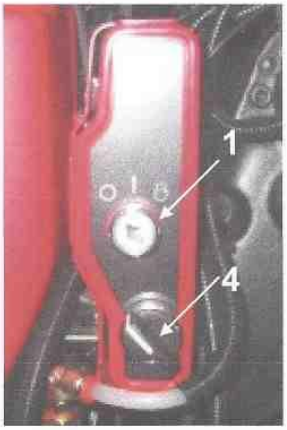
5.1 CHASSIS AND DRAWBAR (FIG. 1Part. A)

The chassis and the drawbar are made of pressed and electro-welded tubular material. The chassis is of self-supporting type as it supports all the machine components. Both the chassis and the drawbar undergo two painting treatments in order to guarantee their corrosion and rust resistance. The drawbar may be simply placed on top of the bonnet, thereby reducing the overall machine dimensions, by pushing down the drawbar so that it compresses the spring, turning the drawbar to the left at the same time.

5.2 ENGINE (FIG. 1 Part. B)

The unit is equipped with a petrol engine, the characteristics of which are described in paragraph 2.
Consult the manufacturer's user and maintenance manual enclosed with this machine, for the user and maintenance instructions.

5.3 CONTROL DEVICES AND INSTRUMENTS (FIG. 1 Part. D)



The control panel has all the necessary machine command and control instruments.
Figure 2 shows the various components of the control panel:

1. Starter block
2. hour meter
3. Pressure gauge
4. Electro-fan switch of the additional radiator

Refer to chapter 7 for details of the function of these devices

5.4 COMPRESSION UNIT AND OIL SEPARATOR TANK (FIG. 1 Part. C)

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
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 filter mounted on the top of this unit guarantees maximum purity of the suctioned air.

5.5 BATTERY (FIG. 2 Part. G) AND ELECTRIC SYSTEM

The machine's electric system is powered by a 12V battery providing continuous current in a special container fixed to the chassis.

5.6 FUEL TANK (FIG. 2 Part. F)

Of 15-litre capacity and made of transparent material for immediate fuel level checking. Complete with a bayonet joint on the delivery piping of the fuel to the engine for easy disconnection..

5.7 COOLING RADIATOR (FIG. 2 Part. H)

The cooling radiator (par. H) permits the cooling of the oil in the lower part and air cooling in the upper part (1st stage); an additional cooling radiator (part. E) (2^{nd} stage) complete with electro-fan permits improved air cooling, as it brings the temperature of the air on exit to the same temperature of that of the environment.

L= entry of air into the 1^{st} stage radiator of the compressor
I= exit of the air from the 1^{st} stage radiator of the compressor
M= air entry into the 2^{nd} stage radiator
N= exit of cooled air (FIG. 1)

5.8 BELTS AND PULLEYS

The engine is connected to the compressor by means of belt transmission. The engine and compressor are installed on a slide support to guarantee the coaxiality of the same, and therefore the perfect alignment of the belts with the pulleys. There is also a simple pulling system to ensure perfect belt tightness (see instructions in chapter 10.9).

5.9 CONDENSATION DISCHARGE (FIG. 1 Part. E)

Before the air exit there is a condensation separator fitted with an automatic discharge device; it is automatically engaged when the level of internal liquid exceeds a threshold level, thereby expelling the accumulated condensation

- 6) OLEOPNEUMATIC PLANT (Fig. 2) --

-- 6-9-1) COMPRESSOR LUBRICATION SYSTEM --

The system includes the oil separator tank (Z), the oil filter (V) and the oil cooling radiator (M)
As shown in fig. 2 the lower part of the oil separator tank (Z) acts as an oil tank, will the filtering part is situated at the top which separates the air from the oil.
On starting up the machine, the pressure generated by the compressor, makes the oil inside the tank flow through the conduit in the direction indicated by the arrow.

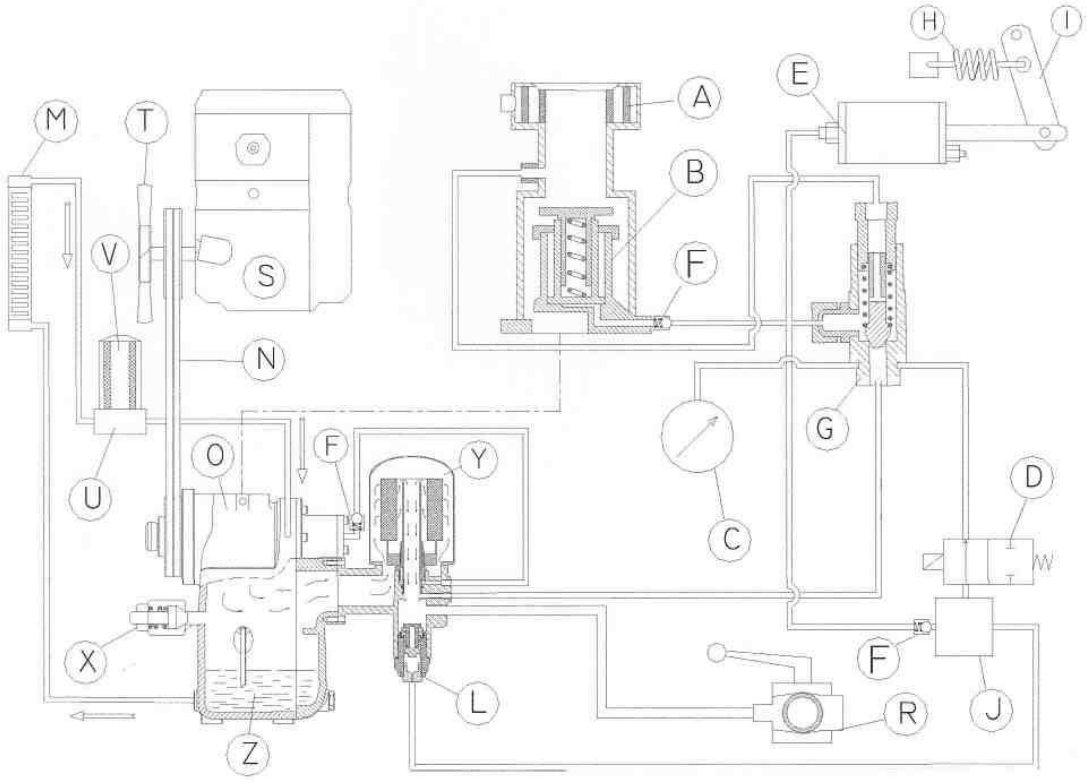


FIG. 2

From the radiator (M) the oil is injected into the compressor (O).
The cooled and filtered oil thereby reaches the compressor (O) and by means of the various internal channels it is distributed to the various parts (rotors, bearings etc) which are thereby cooled and lubricated.
From the compressor (O), the oil mixed with compressed air is sent to the tank (Z), inside which the separator (Y) undertakes to separate it from the air.
We have mentioned that the separator filter (Y) provides to separate the air from the oil; however a very small quantity is still able to penetrate the inside of the filter, and deposits itself on the low and concave part of the same. It is sucked through the piping on which the calibrated nozzle and the single-direction valve are positioned. The latter impedes the return of oil into the oil separator filter when the machine is stopped.

-- 6-9-2) PNEUMATIC SYSTEM (Fig. 3) --

The system includes: the suction filter (A), the suction regulator (B), compressor (o), tank (Z) and the oil separator element (Y), the minimum pressure and non-return valve (L), the cock (R) and the maximum pressure valve (G), and the start/work electrovalve (D).

On switching on, the electro-valve (D) is open so that the regulator remains closed and the motor runs at minimum speed; after 30 seconds the electro-valve is excited (and therefore closed) this means that the engine accelerates and the compressor reaches maximum pressure.
The suctioned air, after having passed through the filter (A) reaches the suction regulator, followed by the compressor which conveys it, together with the injected oil, into the oil separator tank. Where the air is separated from the oil. This separation process firstly comes about by means of centrifugal spinning and in the second stage with the use of the oil separator filter (Y).
The air which is cleansed of the oil, is conveyed by the minimum pressure valve (L), and only opens when the pressure in the tank reaches the pre-set value. This minimum pressure formed in the tank guarantees oil circulation even when the air discharge taps (R) are in fully open position.
It is however a good idea not to use tools and equipment, which excessively consume compressed air, and which may cause the tank pressure to fall to below 5-5.1 bar.
In fact prolonged working conditions at below 5 bar, may cause compressor overheating, due to insufficient lubrication, and inadequate air and oil separation, resulting in excessive lubricant consumption.
The minimum pressure valve (L) also acts as a single-direction valve, impeding return into the compressed air unit of air coming from channels or tools connected to the machine.

-- 6-9-3) AUTOMATIC MOTOR SPEED REGULATION (Fig. 2) --

The system controls the speed of the motor according to the compressed air taken in and consists of: maximum pressure valve (G), suction regulator (B), accelerator control piston (E), contrast spring (H).

- With motor on and the cock (R) fully open, the motor speed is at the maximum and the suction regulator is fully open.
- By slightly closing the cock (R) reduced air consumption is simulated with consequent increase in pressure in the tank (Z).
- On closing the cock (R), the pressure reaches the pre-set value and the maximum pressure valve (G) opens, allowing compressed air to flow out, which acts on the accelerator control piston (E) and beneath the suction regulator valve (B).
- Being stimulated by this pressure the piston (E) is able to exceed the contrast force of the spring (H), and by means of a lever system, the motor is proportionally decelerated.
- At the same time the suction regulation valve (B) also closed proportionally, thereby reducing the suction air passage. Therefore with cock (R) closed and with no air suction, the motor stabilizes at the minimum set speed while the suction valve (B) of the regulator reaches almost total closure position.
- In this stage of the cycle the suctioned air is minimal and it serves to compensate for any leakage within the circuit itself.
- At this stage the maximum final pressure will be indicated on the pressure gauge of the control panel.
- On resumption of air intake stage the maximum pressure valve (G) will start to close up and it will be totally closed when the pressure value falls to below approx. 1 bar in relation to the maximum final pressure value.
- During this stage the compressor delivers the maximum capacity to the working pressure as the spring (H), without the contrasting effect of the accelerator piston (E), accelerates the motor to maximum speed and the suction regulator valve reaches fully open position.
- In the event of use of tools with a consumption exceeding the nominal capacity of the compressor, a reduction in the pressure will be noted on the gauge, which must however never be less than 5 bar.
- Avoid any sudden opening of the cocks: they cause excessive stress on the oil separator filter and serious damage to the same.

-

-- 7) INSTRUCTIONS FOR MACHINE USE --

The use of the motorized compressor does not require the use of specialized personnel; it is however essential that the person who is responsible for machine operation has read the manual and he must also put into practice all the advice and instructions described below.
The use of specialized personnel will only be required for non-routine maintenance operations, who must have all the necessary technical know-how, according to the instructions provided by the "ROTAIR S.P.A. Assistance service".

7A) LIFTING INSTRUCTIONS --

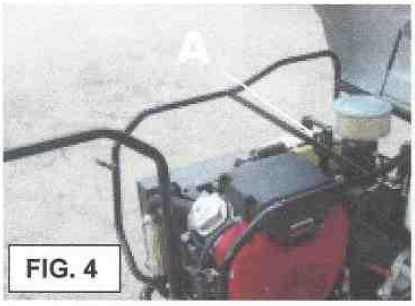


FIG. 4

On lifting the bonnet access if possible to the lifting hook (Fig. 4 part. A)

a) Check that the lifting element (crane, hoist etc) is suitable for the lifting of the weight of the unit (see par. 2)
b) Hitch the fastener and the cable to the lifting hook.
c) Lift the unit slowly and gradually.
Avoid the machine swaying during sideways movements.

The machine user must regularly check the efficiency of the lifting equipment described above, and should immediately undertake to replace any parts that are found to be no longer efficient or safe. No other lifting and hitching systems are permitted.

7.1 BEFORE STARTING UP THE MACHINE

Before starting up the machine carefully follow these procedures:

- Place the machine on a flat surface: an inclination of over 15° is not permitted.
- Check that the electric cables are connected to the battery terminals (if present); on making connection take the greatest care to ensure that the starter motor wire is connected to the (+) positive pole of the battery and that the earthing cable is connected to the negative (-) battery pole.
- Check the oil level in the tank: as concerns the various types and quantities of lubricant to be used, refer to the instructions contained in the manufacturer's user and maintenance manual enclosed with the machine documentation;
- Check the oil level in the compressor; it is necessary to wait for 5 minutes after the machine has stopped in order to allow the lubricant in circulation to completely flow out of the oil separator tank

It is essential to make sure that there is no pressure in the system before undertaking this operation (the gauge in FIG.2 part.3 must be at 0 bar)

- Unscrew the cap of the filler shown in figure 13, part B, at the side of the oil separator tank
- Check for the presence of oil which must be visible inside the filler
- Add the required amount of oil ,if necessary
- Use only the oil types indicated in chapter 2

- Fuel checking. Use fuels with similar characteristics as those indicated in the engine constructor's manual.
- Check that there are no traces of oil or fuel inside the machine as the result of oil or fuel filling.

7.2 MACHINE START UP

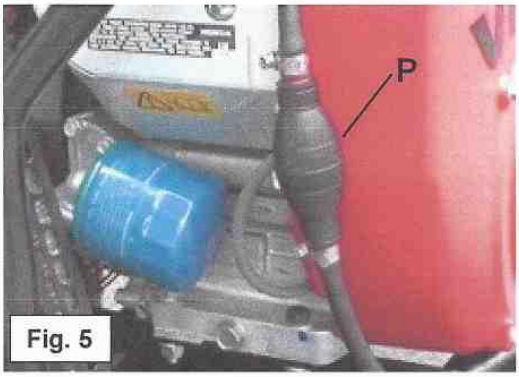


Fig. 5

Should the machine have remained at a standstill for a few days or on extracting the fuel tank it is necessary to press the bulb P shown in figure 5. This facilitates the flow of fuel to the engine pump.

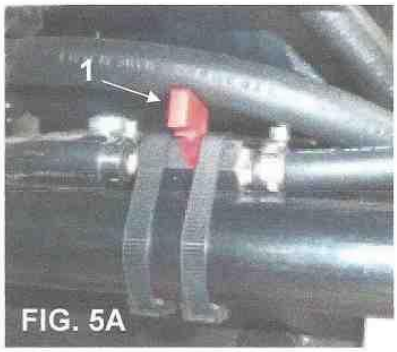


FIG. 5A

- Fully close the air delivery tap
- Open the fuel cock (part. 1 fig. 5A, in the photo is in closet position)
- Pull the air lever (see the enclosed motor booklet) (only if the motor is cold).
- Turn the starter key (fig2 part.1) to the second notch which starts the machine.

Release the key as soon as the engine begins to rev.

Avoid prolonged start ups of over 10 seconds
In the event of difficult start up conditions, repeat the operations at short intervals.

The engine runs at minimum speed and the gauge indicates a pressure of approx. 2-3 bar.

- After about 50 seconds the start/work electrovalve is enabled: the machine is then ready to provide air.
- Connect the compressed air delivery piping to the tool.
- Gradually open the air cock.

7.3 DURING THE WORKING STAGE

- The machine must always operate with bonnet lowered and closed.
- Check the fuel level.
- Constantly check that there are no foreign bodies around the machine which might accidentally get caught up in the cooling fan.

IMPORTANT:

Do not operate the machine with cock excessively open: working pressure must never fall to under 4,8 ÷ 5 bar

The machine is fitted with an additional radiator with cooling electro-fan: to enable the same turn the switch to position "1" (part. 4 fig. 3); to stop it return the switch to the initial position (position "0").
Enable the electro-fan only when maximum air cooling is required.

7.4 MACHINE STOPPING

IMPORTANT:

Never stop the engine when under load!

Before stopping the engine proceed as follows

- Slowly close the air delivery cock
- Turn the ignition key in an anti-clockwise direction to initial position.
- The engine will run at minimum speed for about 30 seconds, in order to depressurize the tank before automatically switching off.

7.5 AFTER MACHINE STOPPING

- Should the machine have been working in very dusty environments it is necessary to clean or replace the oil filter (chap.10.1), and also check the state of cleanliness of the cooling radiator, cleaning it by means of air jets if necessary.
- Also ensure that there has been no fuel or lubricant leakage during operations, if there has, find the cause.
- Store the machine in a covered area if possible

-- 8) MACHINE CALIBRATION AND TUNING --

-- 8.1) MAXIMUM ENGINE SPEED CHECK --

The maximum speed is calibrated, established and sealed by the manufacturer. It cannot therefore be modified for any reason.
Tampering with the seals in order to alter the maximum rotation revs will immediately render the guarantee void, both in relation to the engine and the compressor.

Any checks and calibration of the maximum and minimum running speeds are to be undertaken by specialized personnel, equipped with special speedometer with refracting measuring device complete with ear-protection muffs.

Proceed as follows:

1) Start the machine as described in paragraph 7.2 .
2) Keep the cocks closed and check that the pressure indicated on the gauge on the control panel complies with that established and indicated in paragraph 1.
Should the values fail to correspond it is necessary to regulate the pressure according to the instructions indicated in paragraph 8.2 .
3) Slowly open the cock until the working pressure value appears on the gauge. See paragraph 1.
4) Check that the engine is totally accelerated; to do this proceed as follows, referring to fig. 6:
5) Check that the rod has completely returned into the accelerator piston and that it is free to move. Should the number of revs differ to the value indicated in paragraph 2 (with a 3-4% variation) it is necessary to proceed as indicated below (fig.6):

- Loosen the fixture screw (F) from the sheathing (G)
- Slide sheath (G) to slide towards side A of the arrow in order to reduce the number of engine revs, and towards arrow "B" to increase the number of revs.

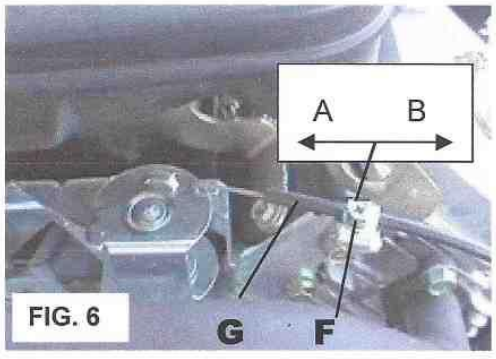


FIG. 6

6) In the event that with the acceleration rod at the end of stroke, and therefore will engine fully accelerated, a number of revs is noted that is much lower than that indicated on the plate (more than 150

revs less), the cause of the defect needs to be discovered, which denotes a lack of engine power, probably due to an inefficient injection feeder system (fuel filters, injectors, feeder pump, injection pumps etc.).

It is advisable that any work on the injection system (injectors, feeder pumps etc) be undertaken by the **"Assistance service"** authorized by the engine manufacturer, especially if still under guarantee.

-- 8.2) FINAL MAXIMUM PRESSURE CHECKING AND CALIBRATION (Fig. 7) --

The final maximum pressure is regulated during the machine testing stage. With engine running at minimum speed and with cocks closed, the pressure value indicated on the control panel gauge must correspond to that indicated in paragraph 2.
Should these values vary by over +/-5%, **regulate the maximum pressure valve** proceeding as follows:

1) Keep the machine running with cocks closed.
2) Loosen the counter-nut (2) fig.(7)
3) Tighten the regulation screw (1) to increase the pressure.
Loosen the regulation screw (1) to reduce the pressure.
4) Re-tighten the counter-nut (2).
5) Open the air delivery cock slightly for 3-4 seconds to accelerate the engine and then close again. Repeat the operation 2-3 times to allow the valve to settle.
6) Read the pressure value on the gauge and if necessary repeat calibration procedure as indicated at points 2-3-4, until a reading appears as indicated in paragraph 1.

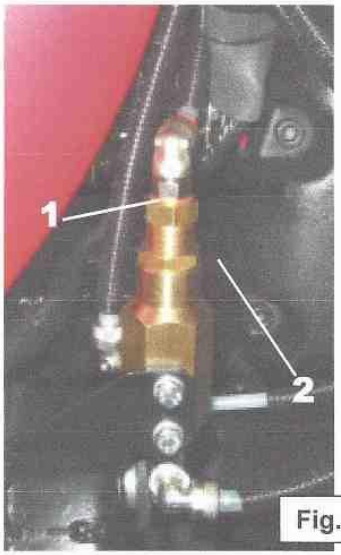


Fig. 7

***IMPORTANT**: In the event of irregular gauge function, it should be replaced. Therefore before undertaking any regulation of the maximum and minimum pressure values ensure that the gauge is both efficient and reliable.*

-- 8.3) MINIMUM PRESSURE CALIBRATION AND CHECKING (Fig. 8) --

The purpose of this valve is to ensure that the pressure in the oil separator tank does not fail to below the minimum level during its operation, in order to ensure the necessary oil circulation.

CHECKING AND CALIBRATION:

FIG. 8

1) Start up the machine as described in paragraph (7.2).
2) Once the engine is warm and at the right temperature, gradually fully open the air cock; the engine will reach maximum rev level and a pressure reading of between 4.5-5 bar must appear on the gauge on the control panel.

Should a value differing to the above be indicated , proceed with regulation as follows (fig. 8):
3 Release the counter-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 counter-nut (1) and close the cocks.
7 Slowly open the air cock again and then close, repeating this operation a few times to permit the settling of the valve

-- 8.4) SAFETY VALVE CHECK (Fig. 9) --

It is installed on the oil separator tank and operates to discharge any unwanted and accidental overpressure.

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

A routine efficiency check must be undertaken as follows:

1. Start up the machine as described in paragraph (7.2).
2. With cocks closed and engine running at minimum speed, lift up the pin using a pair of pliers as indicated in fig.9 and release as soon as the valve appears to discharge air.

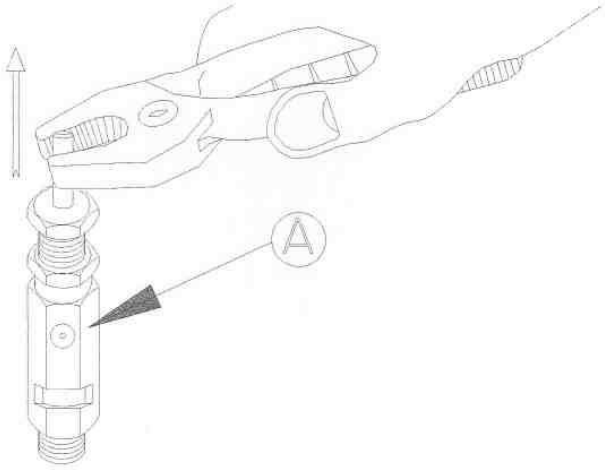


FIG. 9

IMPORTANT: *The air escaping from the valve during these checking operations is mixed with oil particles, and therefore it is advisable to cover the valve with a cloth to prevent the operator from getting dirty.*

Should it prove impossible to pull up the pin with the pliers, the valve will be prevented from breathing and must therefore be replaced immediately.

In the event of replacement the new safety valve must be of the same type as the original and be complete with conformity certificate issued by the manufacturer.

As it is a very important valve, which helps to protect the system from any damaging excessive pressure, which may also cause the piping or oil separator tank to explode, it is advisable to request an original spare from ROTAIR S.P.A. SPA, citing the relative machine serial number.

The use of non- original safety valves will exonerate ROTAIR S.P.A. from all liability

-- 9) MAINTENANCE PROGRAMME --

This programme provides a list of all the routine operations to be undertaken on the various machine components and which are essential to ensure efficient function and a long working life.

ORDINARY MAINTENANCE

It can be undertaken by the machine operators themselves, and includes all those periodic routine operations such as checking of the oil level, air filter, fuel top ups, and all cleaning and checking operations in order to trace any fuel or lubricant leakage inside the machine.

Here follows a list in order of frequency of all those operations relating to the compressor part, while those relating to the "engine" part it is necessary to refer to the USER AND MAINTENANCE MANUAL of the engine manufacturer itself, which is enclosed with the machine.

-- 9.1) DAILY CHECKS --

-- 9.1.1) DAILY BEFORE STARTING UP THE MACHINE --

- Compressor oil level check (paragraph 7.1).
- Engine oil level check (consult manufacturer's manual).
- Check for any fuel or lubricant leaks.
- Fuel fill up (paragraph 7.1).

-- 9.1.2) DAILY AND WITH MACHINE RUNNING --

- Check on maximum pressure value (8.2).
- Check on minimum pressure value (8.3).

-- 9.2) WEEKLY --

- Compressor air filter check (10.1).
- Engine air filter check (see constructor's manual).
- Check on battery electrolyte level (10.2).

***IMPORTANT**: Should the motorized compressor operate in very dusty environments, the air filter needs to be checked, cleaned or even replaced even more frequently than indicated above.*

-- 9.3) EVERY THREE MONTHS --

- Belt tension check (10.9)
- Check on engine maximum speed level (8.1).
- Safety valve efficiency check (8.4).
- Oil cooling radiator cleaning (10.3)
- Oil recovery nozzle check (10.4).
- Fuel tank drainage (10.5).

-- 9.4) ANNUALLY OR ACCORDING TO FREQUENCY PROGRAMME BASED ON NUMBER OF OPERATING HOURS

Refer to the manufacturer's use and maintenance manual as concerns the engine.

AFTER THE FIRST **50 HOURS:**	Compressor oil filter replacement.(10.6) Compressor oil replacement.(10.7) Transmission belt tension check (10.9)
EVERY **500 HOURS:**	Compressor air filter replacement (10.1). Compressor oil filter replacement (10.6).

***IMPORTANT**: Compressor air filter replacement should be undertaken even more frequently, according to the actual amount of dust existing in the working environment.*

EVERY **2000 HOURS:**	Compressor oil replacement (10.7).
EVERY **2000 HOURS:**	Replacement of the oil separator element (10.8.2). Replacement of the pre-filter in the integrated unit (10.10)
EVERY **3000 HOURS:**	General check on the various components by the authorized ROTAIR S.P.A. assistance service.

***IMPORTANT:** During the various maintenance operations it is important to take the greatest care in the examination of the flexible rubber piping and should it be found to be excessively hard or rigid it is necessary to replace it using materials of similar technical features.*
The piping must be to SAE 100 R1 standards.

-

-- 10) PERIODIC MAINTENANCE --

-- 10.1) AIR FILTER CHECK (Fig. 10) --

Fig. 10a

Fig. 10b

The duration and efficiency of the compressor greatly depends on effective maintenance of the air filter. Clogged filters will result in a loss in performance levels causing premature compressor wear.

This check is to be undertaken at regular intervals every 100 working hours; however in the event of very dusty conditions it may be necessary to undertake the check on a daily basis.

The filtering cartridge (fig 10b) can be cleaned using a series of air jets but it must never be washed.
They must however be replaced every 500 working hours.

To replace the air filter, take the cap (picture 10a) away by rotating it and then take the filter (picture 10b) away. Put the new filter and close the cap again.

-- 10.2) BATTERY CHECKS --

-Unscrew the caps on the elements and check the level of the electrolyte liquid. Top up with distilled water if necessary.

-- 10.3) COOLING RADIATOR CLEANING --

The compressor and engine cooling liquids are cooled through a radiator, which must therefore be kept clean to ensure that the ventilation air enters easily and freely through its honeycomb flaps.
In the event of the clogging of the flaps with dust or any other foreign particles, there is a risk of harmful and damaging overheating of the mechanical parts of the screw compressor, severely affecting its efficiency and working life. Regularly checking is therefore recommended and if necessary it should be cleaned using compressed air or washed using a pressurized water jet.

-- 10.4) OIL RECOVERY NOZZLE CHECKING AND CLEANING --

It must be undertaken every time that one notes the escape of nebulized oil mixed with the compressed air, proceeding as follows (fig. 11):

- Loosen the fitting (Z) situated at the middle of the tank.
- There is a nozzle (U) inside the fitting (z), check that its gauged slot is not blocked (by blowing in a jet of compressed air).
- Re-assemble.

IMPORTANT: *During the routine compressor function it will be possible to see a certain amount of oil flowing from the connection (z) towards the compressor head section, through the transparent piping which departs from connection.*

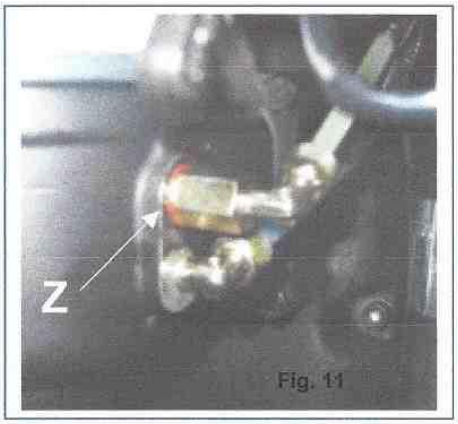


Fig. 11

- 10.5) FUEL TANK DRAINAGE --

The purpose of this operation is to eliminate any water which may have accumulated at the bottom of the tank, as the result of condensation or the entry of polluted fuel.
It is very important to undertake regular drainage, to prevent the risk of even the slightest amounts of water from being taken in and injected into the engine; which would be sure to cause the pump or the injection system to break down, as well wearing out the cylinders with consequential loss in engine power.
It is also advisable to refill with fuel at the end of each work shift to prevent any temperature variations on the tank walls causing any condensation to form inside the tank itself.
Whilst undertaking tank drainage it is also necessary to replace the fuel filter in order to eliminate all traces of water from the feeder system.
The tank must be drained at least 30 minutes after having switched off the machine, in order to provide enough time for the water to separate from the gas oil and deposit on the bottom of the tank.
To drain the fuel from the tank simply extract the tank, after disconnecting the piping by means of the bayonet joint, and pour into a special container. For best results it is advisable to keep the tank turned over for a few hours,
The polluted fuel escapes from the exhaust element and must be collected and sent to authorized and specialized pollutant refuse collection centres. It must not on any account be dispersed into the surroundings or waterways, neither must be conveyed through public sewerage systems.

-- 10.6) COMPRESSOR OIL FILTER REPLACEMENT (Fig. 12) --

- Use a chain pipe wrench in order to loosen the filter to be replaced (part. A).
- Lubricate the seal of the new filter which must be screwed and unscrewed **by hand only.**
- Start up the machine making sure that there is no sign of leakage around the seals; if there is; switch off the machine and check that the seal is in good condition and correctly positioned in its relative slot.

IMPORTANT*: The used filter is soaked with pollutant and harmful mineral oil. It must therefore be sent to the specialized collection centres.*

-- 10.7) COMPRESSOR OIL REPLACEMENT --

The compressor oil must be replaced taking the working conditions of the machine into account (dusty environments, very high temperatures etc), at in any event at intervals which must never exceed 2000 working hours, or at least once a year.

The relative filter must also be replaced at the same time as the oil change (paragraph 10.6).

Undertake this operation with the machine still warm, as follows: (fig. 13)

1) Ensure that the tank is free of pressure;
2) Loosen the filler cap of the tank itself (part. B);
3) Loosen the drainage tap (part.A) after placing a container of adequate size under it;
4) Loosen and replace the oil filter cartridge (paragraph 10.6);
5) Once all the oil has escaped, screw the cap back on, being sure to replace the copper seal. Pour the lubricant oil through the filler (part. B) to the correct level as indicated in paragraph 7.1.4 (the quantity and characteristics are indicated in paragraph 2)
6) Close the filler cap (part. B) and start up the machine again ensuring that there is no oil leakage, allow the machine to warm up and then stop it. Re-check the oil level after about 15 minutes and top up if necessary.

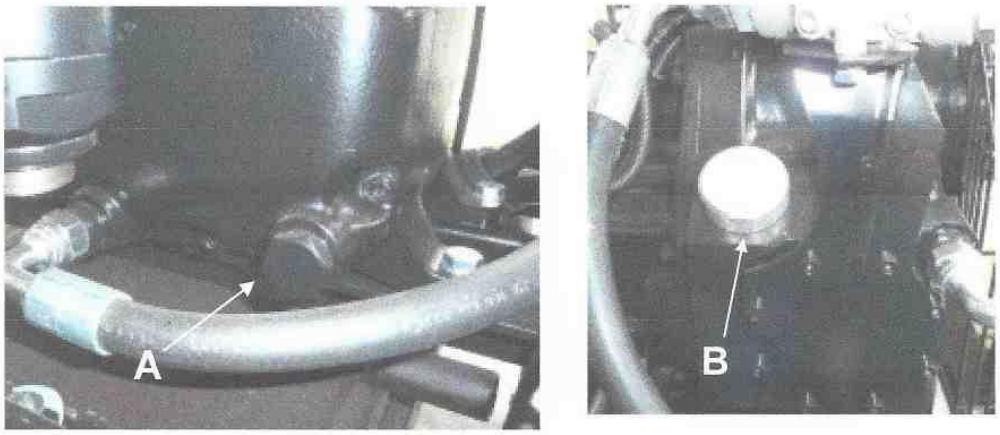


FIG. 13

IMPORTANT: *The used oil must be collected in a can and sent to a special authorized pollutant substance collection centre. It must never be disposed in the countryside or waterways.*

-- 10.8) OIL SEPARATOR ELEMENT (Fig. 14) --

-- 10.8.1) 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 (operation described in paragraph 10.5) and having made sure of the correct oil level in thank, should there be any further traces of oil in the compressed air, it is necessary to replace the oil separator filter (fig. 21).
To find out the degree of blockage of the oil separator filter proceed as follows:
- install a gauge at the top of the oil separator and check that the one on the machine is efficient.
- Start up the machine and position the switch to "WORK" (see paragraph 7.2)
- Partially open the delivery piping until the control panel gauge indicates the working pressure.
- Read the pressure on the gauge positioned at the top of the oil separator 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.

-- 10.8.2) 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. This filter is positioned on the rear part of the compression unit and is in the form of a cartridge.
4. Re-assemble the filter making sure the lubricate the filter seal element. The filter must be secured by hand only.

-- 10.9) TRANSMISSION BELTS

-- 10.9.1) TRANSMISSION BELT CHECK AND TIGHTENING --

The transmission belts must always be perfectly tightened in order to ensure the regular and efficient function of the motorized compressor.
In order to determine the precise tension of the transmission belts it is necessary to proceed as follows (Fig. 15)

Apply a force "F" of between 25 and 27N at the average point of the free "T" section of a belt, the "f" arrow must be of 5.9 mm. Should the value of the "f" arrow be above this value it means that the belts have become loose, while if the value is below this it means that they are too taut.
When checking the belts it is also advisable to check their conditions and replace immediately if necessary (paragraph 10.9.2)

Important:
If the belts are too loose they may slip and thereby cause a reduction in compressor power.
If the belts are too tight they may become damaged and break.

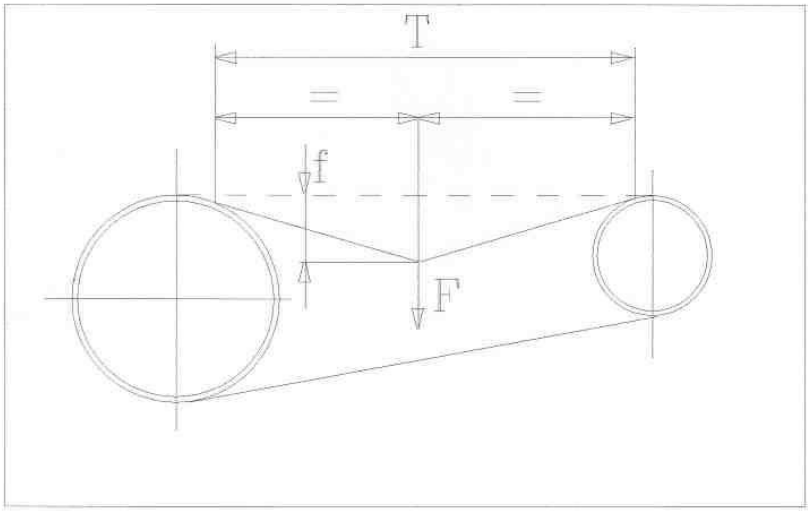


Fig. 15

To regulate the belt tension it is necessary to proceed as follows (fig.16 Motorized compressor seen from below)

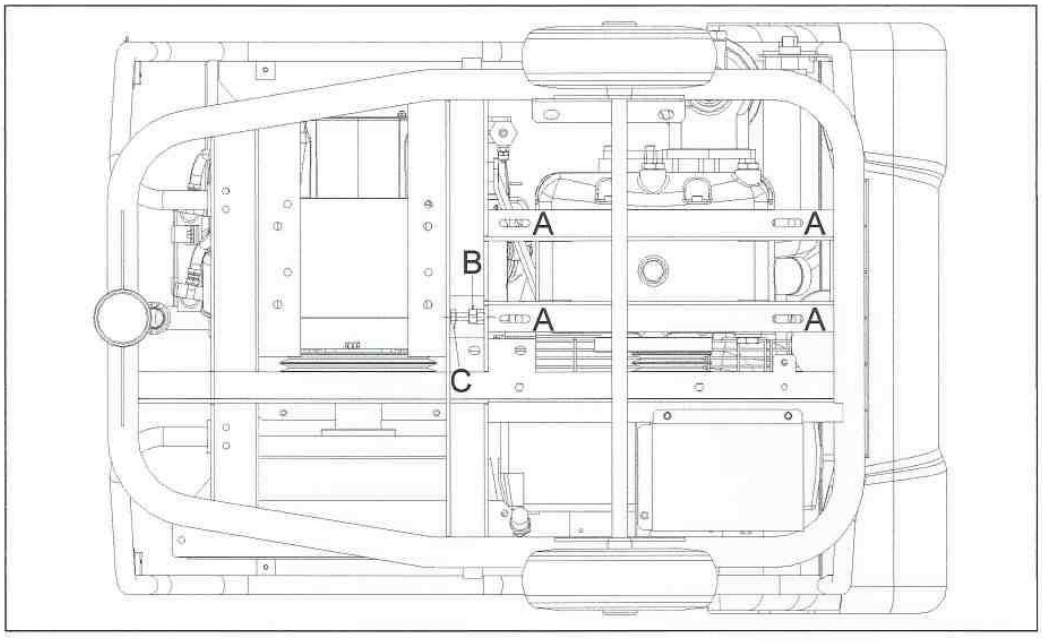


Fig. 15

- Loosen the 4 screws (part A)
- Loosen counter nut B
- Use bolt C for tightening. Tightening it, the belts will be tightened, loosening it will loosen them.
- When the right degree of tension has been obtained tighten counter nut B.
- Firmly tighten the four A screws

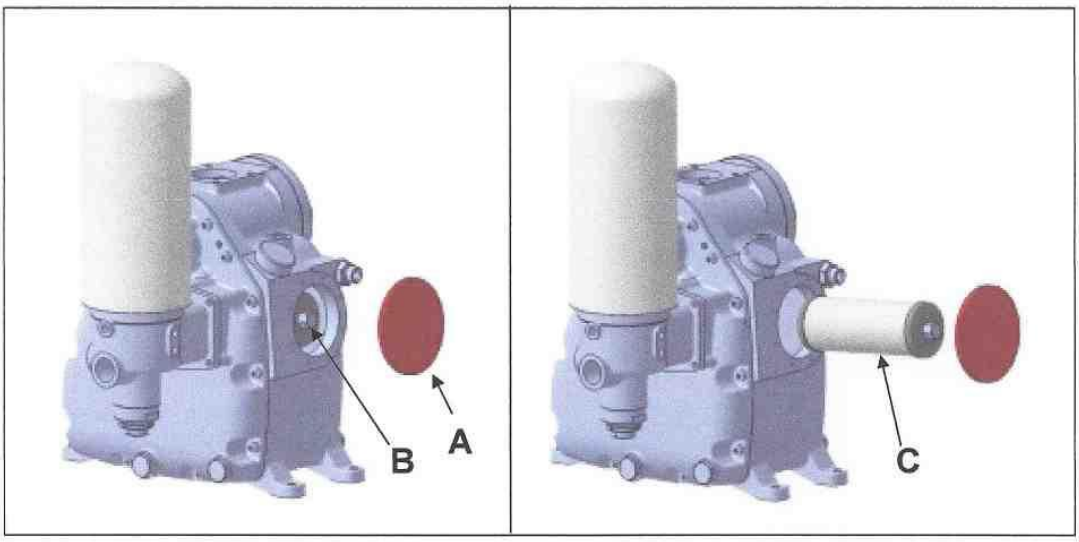
-- 10.9.2) TRANSMISSION BELT REPLACEMENT --

Before replacing the transmission belts it is necessary to ensure that the motorized compressor cannot be started up under any circumstances.
The operations to be undertaken are as follows:

1. Remove the protective casing of the belts
2. Loosen the screws (part.A fig.15)
3. Loosen the counter-nut (part. B fig.15)
4. Fully loosen the tensioning screw (C) using a lever to push the compressor unit towards the engine until the belts come out without any problem.
5. Replace the belts.
6. Tighten the regulation screws (C) to obtain the correct level of belt tightness
7. Firmly tighten the counter-nut (B)
8. Tighten the fixture screws (A)

-- 10.10) INSTRUCTIONS FOR THE REPLACEMENT OF THE PRE-FILTER IN THE INTEGRATED UNIT

The inside of the integrated compression unit contains a pre-filter which carries out the initial air-oil separation process, thereby reducing the workload on the oil separator filter or permitting improved air-oil separation.



To replace the pre-filter proceed as follows:

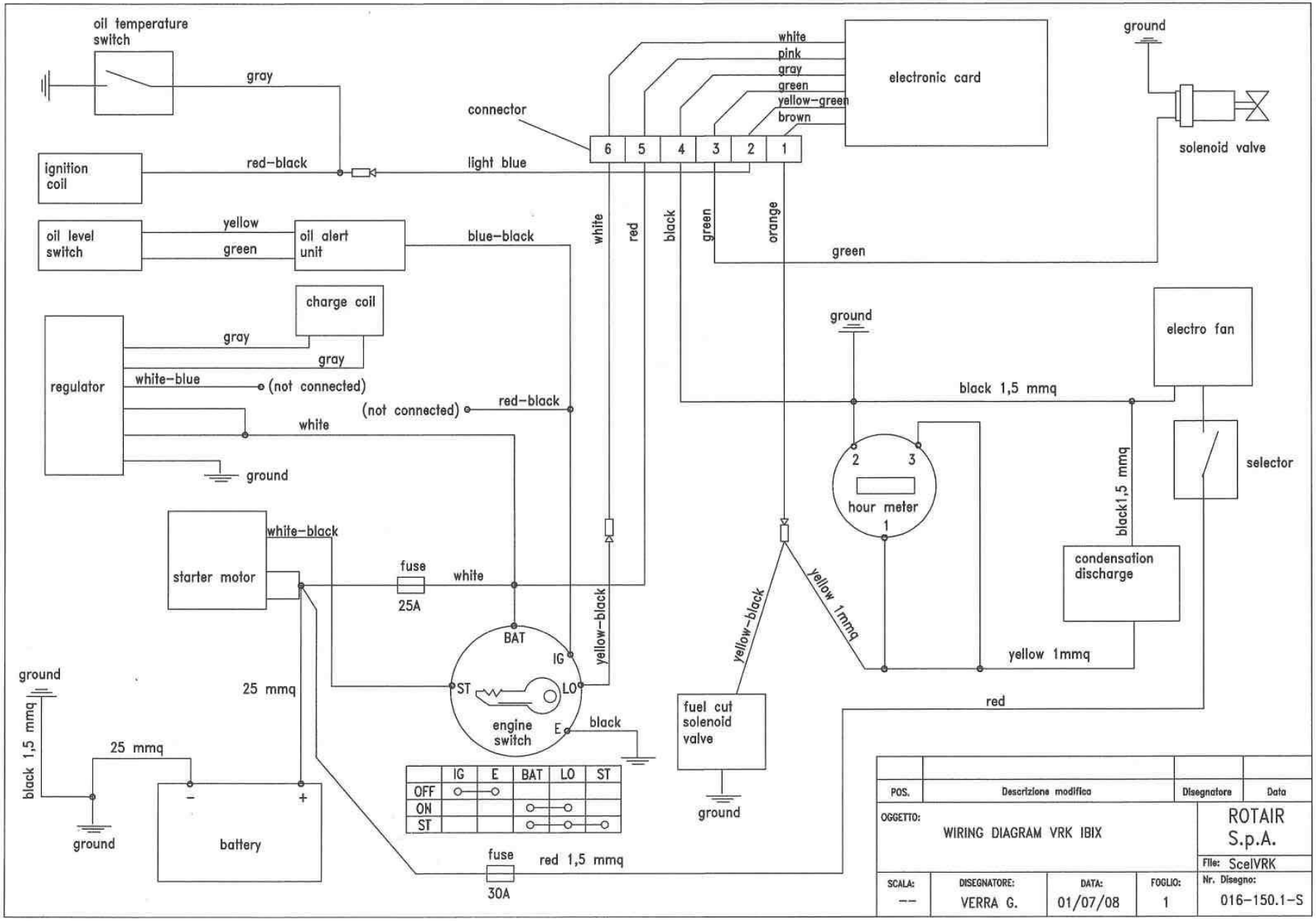
After checking that there is no pressure inside the tank, loosen flange A using a 6 mm Allen wrench.
Loosen filter C using the hexagon nut B using a 17 mm wrench and completely extract the same.
Insert the new filter and tighten it on its slot.
Re-tighten flange A.

-- 11) TROUBLE SHOOTING GUIDE –

PROBLEM	CAUSES	REMEDIES
The engine fails to start	Flat or defective battery	Recharge or replace if necessary.
	Oxidized or loose battery cable terminals	Clean and tighten them
	Lack of fuel	Fill the tank.
	Defective fuel solenoid valve	Request engine manufacturer customer assistance service intervention;
	Air inside the fuel piping.	Check to discover where the air enters by checking all the pipes.
	Defective injection pump	Request engine manufacturer customer assistance service intervention.
	Defective temperature probe.	Remove all the electrical wires from it one at a time, to find the defective one and then replace.
	Faulty starter motor.	Request engine manufacturer customer assistance service intervention.

PROBLEM	CAUSES	REMEDIES
On opening the cocks the engine fails to accelerate.	Defective maximum pressure regulation valve.	Dismantle and carefully check the spring and the conical slot. If it is defective and cannot be repaired the valve needs to be replaced. Replace and regulate the maximum pressure according to the instructions in paragraph 8.2.
Oil leakage from cocks.	Minimum working pressure too low.	Adjust according to the instructions in paragraph 8.3.
	Excessive oil in the tank.	Restore the correct level (parag.7.1).
	The machine operates in a non-horizontal position	Position the machine on a flat surface.
	Clogged oil recovery nozzle.	See par. 10.4
	Defective oil separator filter	See par. 10.8.
The engine fails to reach maximum rpml envisaged and the compressor performance is impaired.	The spring of the accelerator piston is broken or to be tightened.	Check the conditions of the accelerator piston and that its stroke is not impeded
	Engine revs below those envisaged.	Have the engine injection system checked by qualified personnel. Replace the fuel filter. Drain the fuel tank (10.5).

PROBLEM	CAUSES	REMEDIES
The engine accelerates but no air escapes from the cocks	Blocked minimum pressure regulation valve.	Dismantle the piston and check that it is free to move. Check the conditions of the spring. In the event of an irreparable defect the valve needs to be replaced. Re-assemble it and calibrate the minimum pressure level according to the instructions in paragraph 8.3.
Oil leakage from cocks.	Minimum work pressure too low. Excessive oil in the tank. The machine works in a non-horizontal position Blocked oil recovery nozzle. Defective oil separator filter	. Adjust according to the instructions of par. 8.3. Restore the correct level (parag.7.1.4). Position the machine on a flat surface. See par. 10.5. See par. 10.11.


oil temperature switch
gray
ignition coil
red-black
light blue
connector
6 5 4 3 2 1
white
pink
gray
green
yellow-green
brown
electronic card
ground
solenoid valve
oil level switch
yellow
green
oil alert unit
blue-black
white
red
black
green
orange
green
charge coil
gray
gray
regulator
white-blue
(not connected)
(not connected)
red-black
white
ground
ground
electro fan
black 1,5 mmq
2 3
hour meter
1
selector
black1,5 mmq
condensation discharge
starter motor
white-black
fuse
25A
white
BAT
IG
ST
LO
engine switch
E
yellow-black
yellow-black
yellow 1mmq
yellow 1mmq
red
fuel cut solenoid valve
ground
black
ground
25 mmq
black 1,5 mmq
25 mmq
ground
battery
- +
IG E BAT LO ST
OFF
ON
ST
fuse
30A
red 1,5 mmq
POS.
Descrizione modifica
Disegnatore
Data
OGGETTO:
WIRING DIAGRAM VRK IBIX
ROTAIR S.p.A.
File: ScelVRK
SCALA: --
DISEGNATORE: VERRA G.
DATA: 01/07/08
FOGLIO: 1
Nr. Disegno: 016-150.1-S

--- 12. KEYS AND SPARES TABLES ---

The following pages shows spare tables complete with exploded drawings and relative keys. Each exploded drawing reference corresponds to a key reference in order to facilitate any spare parts ordering. The key indicates the position of the part in the exploded drawing table, the name of the item, the ***ROTAIR S.P.A.*** code and the quantity present.

To order spares simply:

1. Check that the serial number shown in page 2 corresponds to the serial number printed on the CE identification plate (Fig.1 Part D) on board the machine
2. Consult the tables shown here in order to identify the parts required and relative positions
3. Identify the position of the part in the keys taking note of both name and code.
4. To ensure that the orders are fulfilled both promptly and efficiently, the following details must be provided; **model, serial number, position, table, description, code and quantity**

IMPORTANT !

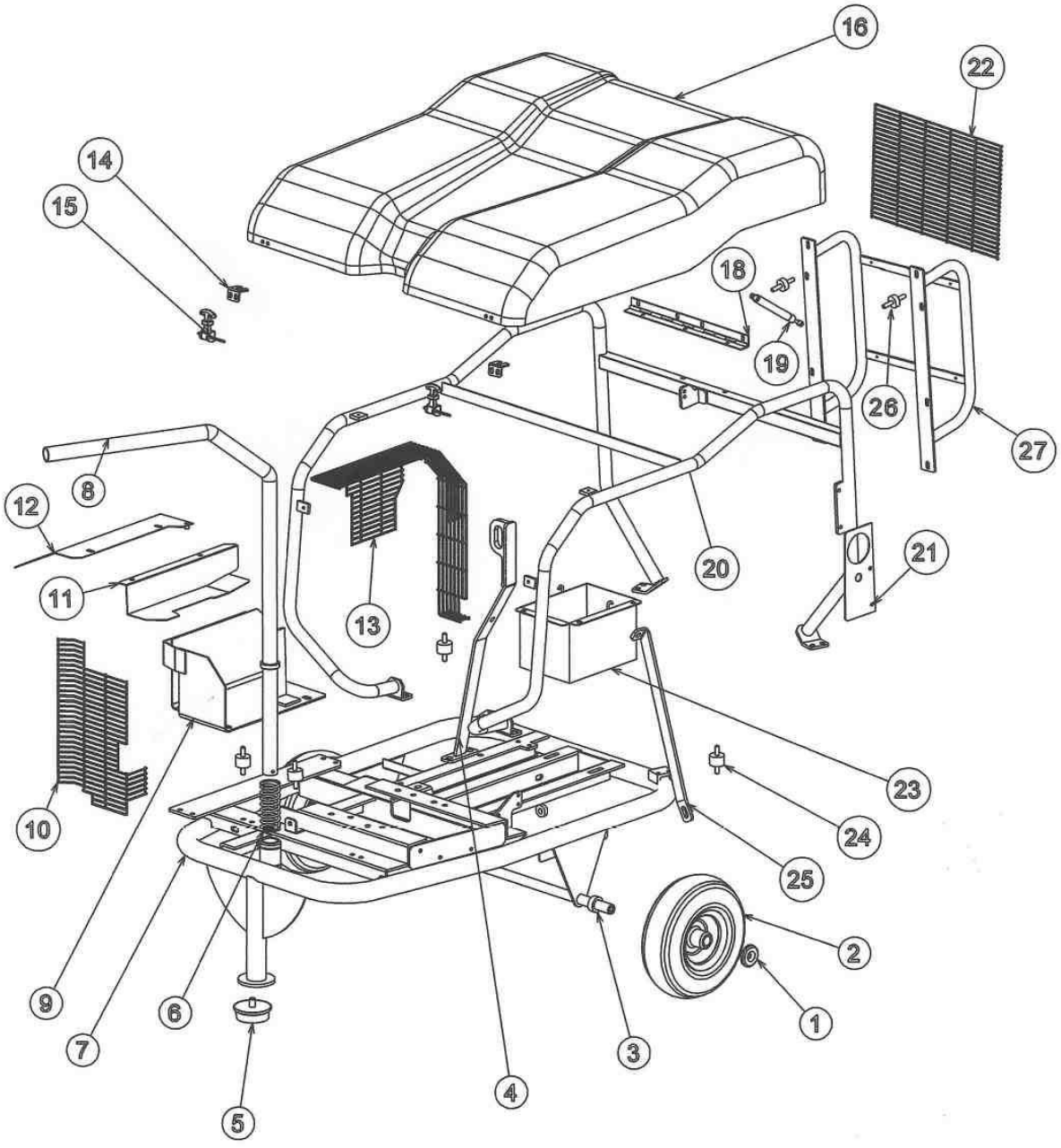
The processing of incorrect and incomplete orders will be considerably delayed!

ORDER EXAMPLE

To order part 3 in table A find the name and relative code in the key and complete the order form similar to that shown below:

Model	Serial no.	Pos.	Tab.	Description	Code	Quantity
VRK__	9999	3	A	Item description	123-902-S	2

ROTAIR S.p.A.	Serie: VRK refrigerato	TAV. 1	Rev. 03/15-07-08



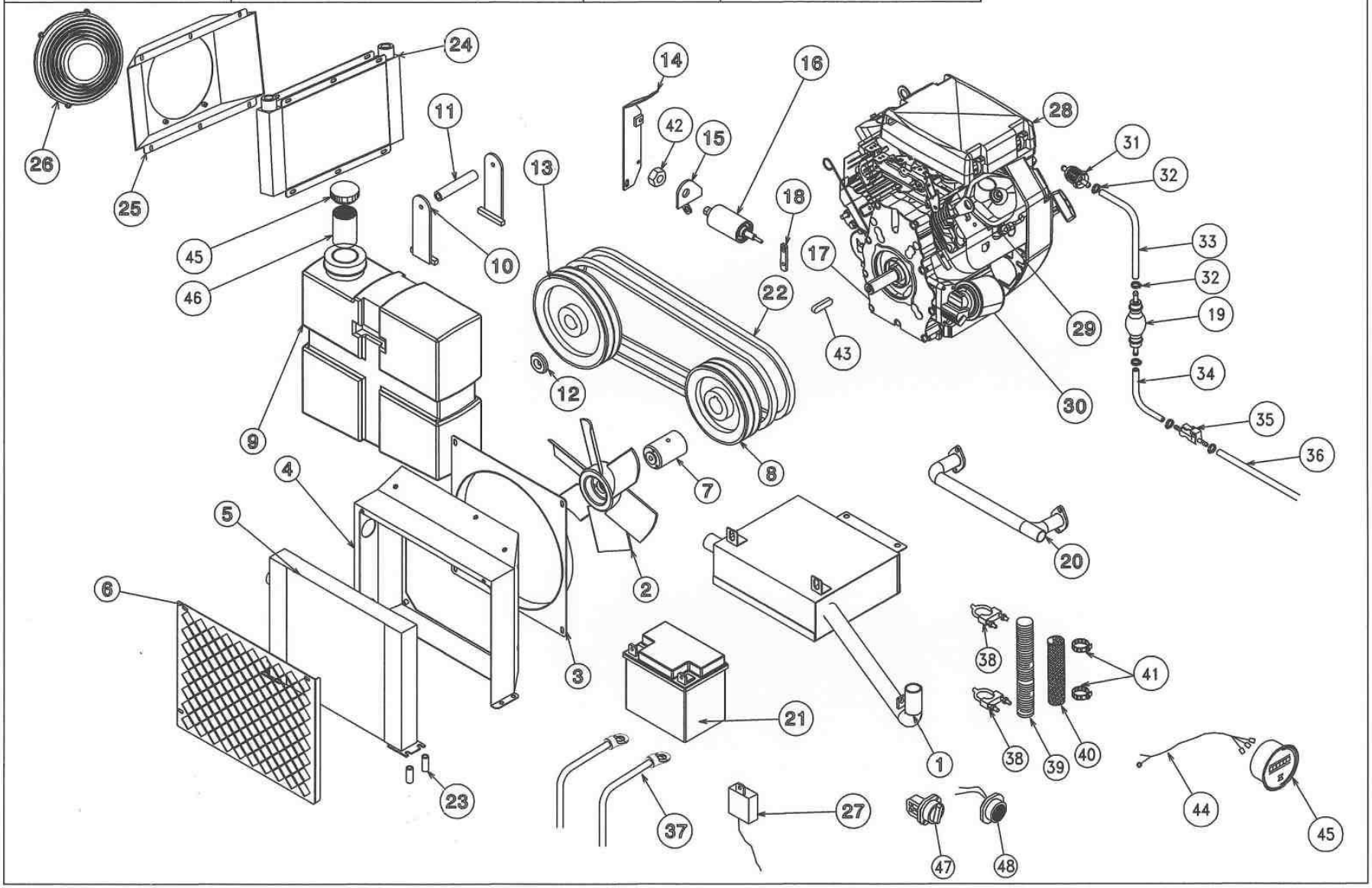
ROTAIR

DETAILS LIST OF VRK

TAB. 1

POSITION	DESCRIPTION	CODE	QUANTITY
1	Wheel stop washer	015-072-S	2
2	Tyre size: 3.00/4"	153-015-S	2
3	Wheel spacer	009-1091-S	2
4	Hoisting hook	017-0319-S	1
5	Rubber buffer support	197-003-S	1
6	Handle spring	043-044-S	1
7	Chassis assembly	038-420-S	1
8	Tow handle	209-0165-S	1
9	Gas-oil tank cabinet	029-056-S	1
10	Front pulley protection grating VRK160-200	124-0595-S	1
11	Silencer manifold baffle	118-126-S	1
12	Engine air conveyor	041-0338-S	1
13	Rear pulley protection grating	124-0592-S	1
14	Bodywork rubber tie-rod plate	208-2095-S	2
15	Rubber tie-rod for hoods	112-0065-S	2
16	Fiberglas bodywork assembly	036-15330-S	1
18	Bodywork hinge	007-011-S	1
19	Lift piston 150 N L=265 stroke 100	091-105-S	1
20	Roll-bar upper chassis assembly	038-421-S	1
21	Control panel with counter	040-0335-S	1
22	Electric fan protection grating	124-0268-S	1
23	Battery cabinet	029-0212-S	1
24	Silent block 3020VV20 W	061-013-S	2
25	Hoisting hook fixture insert	120-3087-S	1
26	Silent block M6x18	061-022-S	2
27	Roll-bar radiator support	049-103-S	1

ROTAIR S.p.A.	Serie: VRK refrigerato	TAV. 2	Rev. 03/15-07-08



ROTAIR

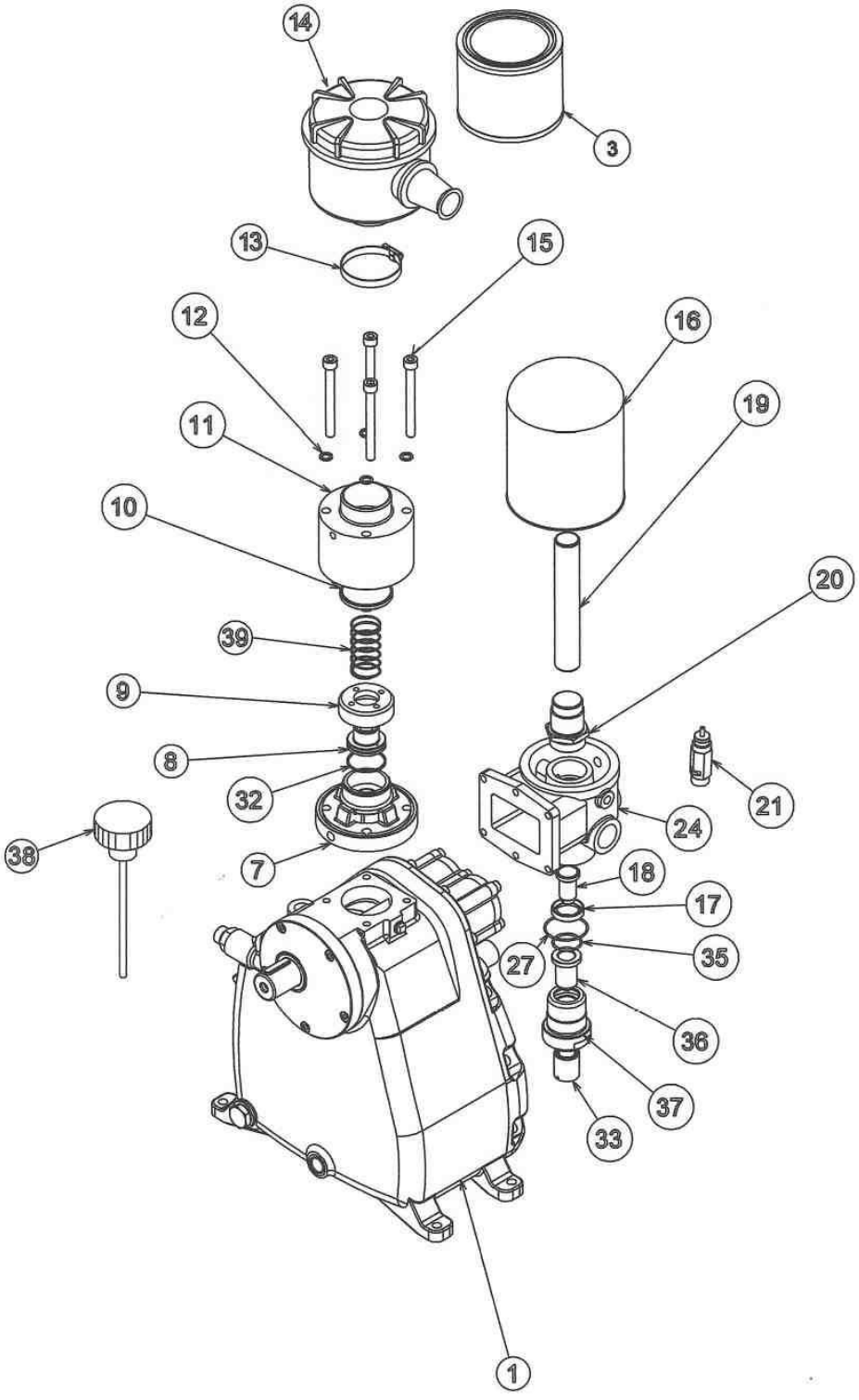
DETAILS LIST OF VRK

TAB. 2

POSITION	DESCRIPTION	CODE	QUANTITY
1	Silencer assembly	042-0631-S	1
2	Fandiam. 300 n° 6 blades 35° hub diam. 97	083-0972-S	1
3	Fan cover	001-145-S	1
4	Radiator cap	259-0163-S	1
5	Oil-Air radiator	011-0645-S	1
6	Radiator protective grating	124-02675-S	1
7	Fan support VRK 150-160	028-085-S	1
7	Fan support VRK 200	028-0845-S	1
8	Motor pulley VRK 160 8 bar	050-4925-S	1
8	Motor pulley VRK 200	050-4725-S	1
9	Petrol tank	201-014-S	1
10	Petrol tank lift blade	120-315-S	2
11	Petrol tank lift spacer	009-207-S	1
12	Compressor joint washer	015-067-S	1
13	Compressor pulley VRK 160 8 bar	050-525-S	1
13	Compressor pulley VRK 200 8 bar	050-491-S	1
14	Control panel support blade VRK 160-200	120-3555-S	1
15	Accelerator piston support VRK 160-200	010-1041-S	1
16	Accelerator piston assembly	024-1512-F	1
17	Motor Honda GX 620 QXF VRK 160-180	165-8025-S	1
17	Motor Honda GX 670U VRK 200	165-370-S	1
18	Accelerator piston lever VRK 160-200	094-0356-S	1
19	Petrol pump	021-030-S	1
20	Silencer manifold for Honda VRK 160-200 engine	119-03265-S	1
21	Battery	174-114-S	1
22	Belt SPZ VRK 160 8 bar	156-414-S	2
22	Belt SPZ VRK 200	156-422-S	3
23	Spacer	009-0995-S	4
24	Air radiator	011-065-S	1
25	Electric fan cover	001-1485-S	1
26	Electric fan	083-710-S	1
27	Electronic card	269-413-S	1
28	Motor air filter consisting of:		
	Motor pre-filter	162-017-S	1
	Motor air filter	162-016-S	1
29	Spark plug	286-001-S	2
30	Motor oil filter	099-030-S	1
31	Motor petrol filter	191-150-S	1
32	Strip	149-005-S	6
33	Pipe fuel	089-120-S	0,175mt
34	Pipe fuel	089-120-S	1,08mt
35	Ball micro-valve 1/4"	152-016-S	1
36	Pipe fuel	089-120-S	0,14mt
37	Battery cable kit	252-0052-S	1
38	U-bolt strip	149-051-S	2
39	Inox pipe VRK 160-180-200-220	090-00725-S	0,23mt
40	Fibre-glass covering for inox pipe	097-030-G	0,23mt

POSITION	DESCRIPTION	CODE	QUANTITY
41	Pipe-Tightening strip	149-022-S	2
42	Nut M18	135-096-S	1
43	Key VRK 120-130-150-190	171-127-S	1
43	Key VRK 160-180	171-126-S	1
43	Key VRK 200-220	171-128-S	1
43	Key VRK 200 Kohler USA	171-165-S	1
44	Electric wiring	224-4035-S	1
45	Counter	180-010-S	1
46	Fuel tank filter	191-100-S	1
47	Two-position switch	249-021-S	1
48	Red led indicator	186-045-S	1

ROTAIR S.p.A.	Serie: VRK refrigerato	TAV. 3	Rev. 03/15-07-08



ROTAIR

DETAILS LIST OF VRK

TAB. 3

POSITION	DESCRIPTION	CODE	QUANTITY
1	Integrated assembly	024-0867-F	1
14	Air filter container	014-4114-S	1
3	Compressor air filter	162-762-S	1
16	Oil separator filter DF 5006	157-170-S	1
21	Safety valve	033-051-S	1
38	Rod holder cap	106-1605-S	1

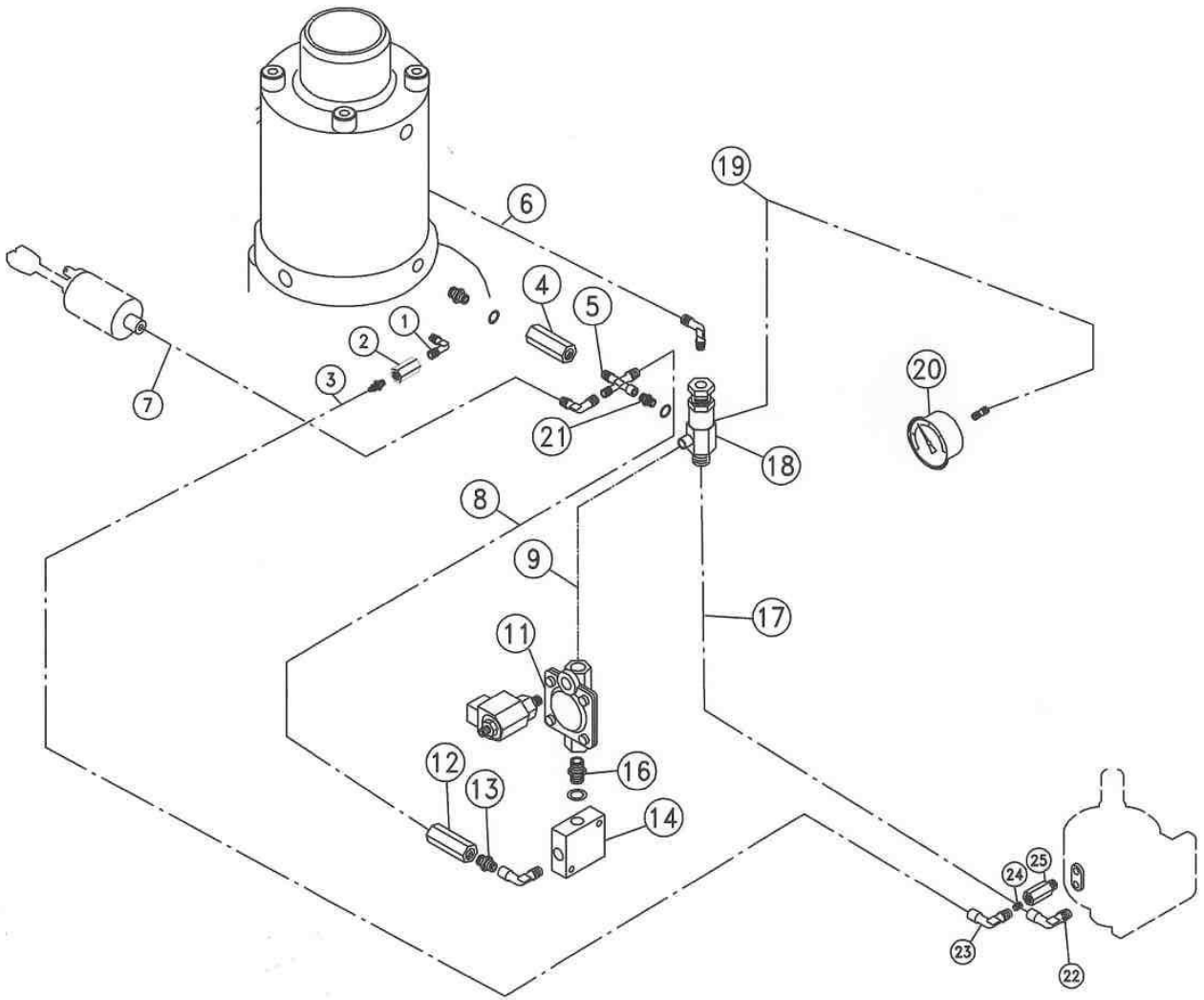
024-10455-F regulator assembly including:

POSITION	DESCRIPTION	CODE	QUANTITY
7	Regulator base	034-0075-S	1
8	Regulator piston	048-027-S	1
9	Regulator closure ring	194-001-S	1
10	Regulator valve	033-0055-S	1
11	Regulator body	053-0745-S	1
12	Flat washer	015-005-S	4
13	Strip	149-1619-S	1
15	TCEI screw M10x100	133-199-S	4
32	Elastic ring for regulator piston	199-050-S	1
39	Regulator spring for RVK 15-20	043-0115-S	1

024-2021-F minimum pressure valve assembly including:

POSITION	DESCRIPTION	CODE	QUANTITY
17	DI 100 Viton stem seal	023-329-S	1
18	Non-return valve and minimum pressure RVC - RVD - MDVN	033-003-S	1
19	R 133 Integrated oil recovery connection pipe	090-250-S	1
20	R 133 Integrated oil separator attachment fitting	148-8601-S	1
24	R 133 Integrated oil separator support	010-114-S	1
27	Seal Viton OR 3187	023-010-S	1
33	Minimum pressure valve regulation screw RVC-RVD-MDVN	092-0235-S	1
35	Seal Viton OR 4118	023-321-S	1
36	Check minimum pressure valve piston	048-001-S	1
37	Piston guide bushing for minimum valve RVC-RVD-MDVN 8	223-002-S	1

ROTAIR S.p.A.	Serie: VRK refrigerato	TAV. 4	Rev. 03/15-07-08



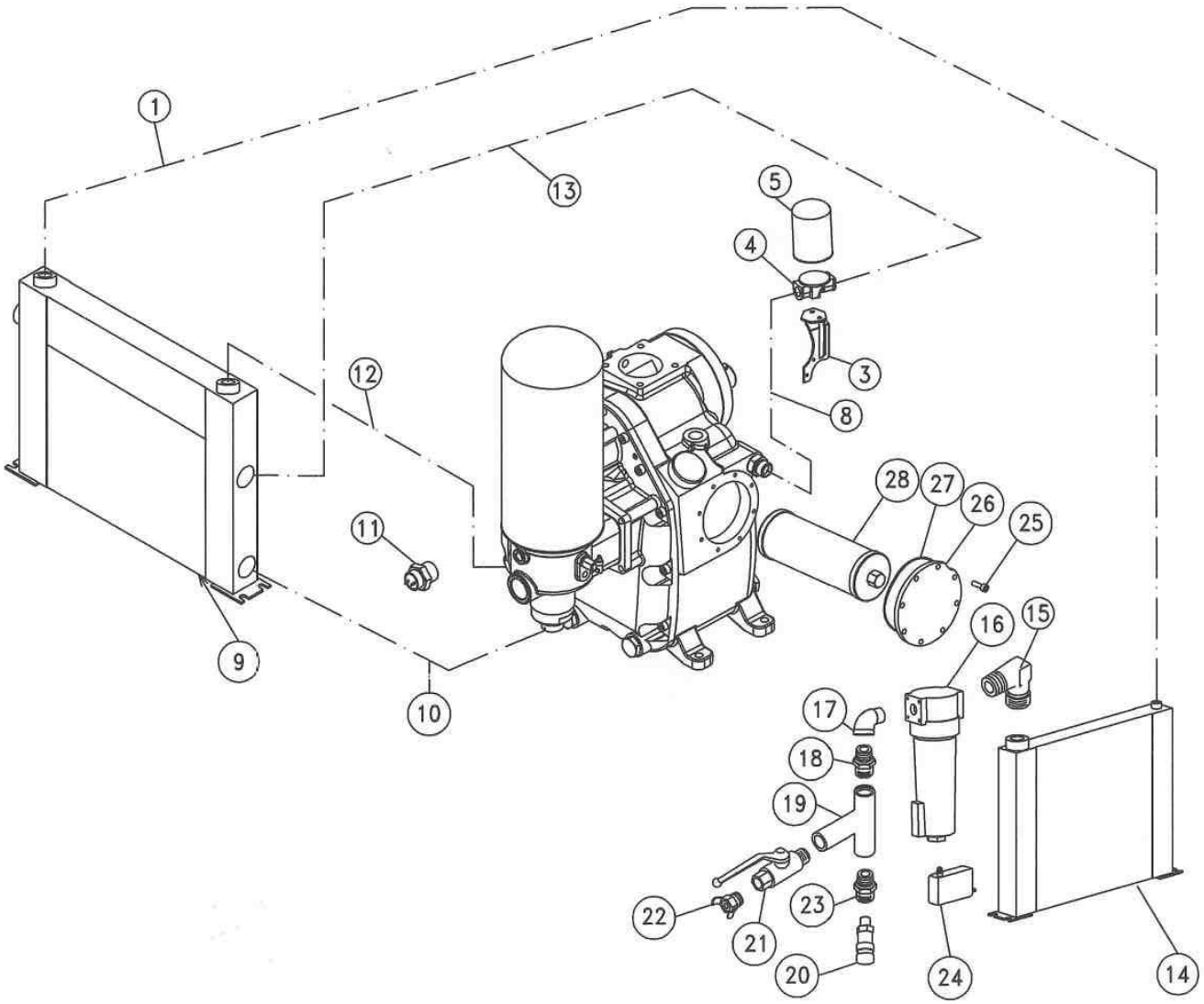
ROTAIR

DETAILS LIST OF VRK

TAB. 4

POSITION	DESCRIPTION	CODE	QUANTITY
1	Elbow fitting	148-080-S	1
2	Non-return valve 1/8"	033-001-S	1
3	Polyamide pipe 6x4	089-060-S	1
4	Non-return valve 1/4"	033-017-S	2
5	Cross fitting 1M 1/4 +3F 1/4	148-193-S	1
6	Polyamide pipe 8x6	089-070-S	1
7	Polyamide pipe 8x6	089-070-S	1
8	Polyamide pipe 8x6	089-070-S	1
9	Polyamide pipe 8x6	089-070-S	1
11	Servo-controlled electro-valve 1/4"	160-087-S	1
12	Non-return valve 1/4"	033-017-S	1
13	Double screw 1/4"	187-006-S	1
14	4-way block	053-2950-S	1
16	Double screw 1/4"	187-006-S	1
18	Maximum pressure regulation valve assembly	024-0325-F	1
19	Polyamide pipe 8x6	089-070-S	1
20	Gauge	206-020-S	1
21	Double screw 1/4"	187-006-S	4
22	90° Rapid fitting	148-572-S	2
23	Elbow fitting	148-080-S	1
24	Screw S.T. with embedded hexagon, hole 1mm	218-005-S	1
25	Extension 1/8F - 1/8M	189-030-S	1

ROTAIR S.p.A.	Serie: VRK refrigerato	TAV. 5	Rev. 03/15-07-08



ROTAIR

DETAILS LIST OF VRK

TAB. 5

POSITION	DESCRIPTION	CODE	QUANTITY
1	Oil pipe 3/4" F90+F90 L= 890	065-754.24-S	1
3	Oil removal head support	010-1642-S	1
4	Oil filter support	010-047-S	1
5	Compressor oil filter	099-007-S	1
8	Oil pipe 1/2" FD+F90 L= 310	065-559-S	1
9	Air-Oil radiator	011-0645-S	1
10	Oil pipe 1/2" F90+F90 L= 1050	065-686.056-S	1
11	Compressor thermo-contact	103-008-S	1
12	Oil pipe 3/4" FD+F90 L= 800	065-722-S	1
13	Oil pipe 1/2" F90+F90 L= 1320	065-687.402-S	1
14	Air radiator	011-065-S	1
15	90° Fitting	148-2985-S	1
16	Condensation separator	217-191-S	1
17	Elbow 3/4"	111-040-S	1
18	Double screw 3/4"	187-060-S	2
19	Y Fitting 3/4"	148-520-S	1
20	Snap coupling 1/4"	262-055-S	1
21	Ball valve 3/4"	152-030-S	1
22	Bayonet connection 3/4"	148-650-S	1
23	Reduction element 3/4"M - 1/4"F	190-012-S	1
24	Automatic condensation discharger	237-011-S	1
25	TCEI screw 6x20	133-092-S	8
26	Closure flange	004-3325-S	1
27	Seal OR 2375 viton	023-313-S	1
28	Pre-filter	157-172-S	1

IBIX Surface Technologies, LLC
2075 Lake Avenue SE
Largo, FL 3371
Phone: 727-322-4611 www.IBIXUSA.com

CONVENTIONAL WARRANTEE: TERM: 6 MONTHS

Conventional Warrantee automatically starts after the purchase/invoice date of the **IBIX VRK220 Compressor**.
Only valid for all IBIX Series manufactured after January 1, 2012 - The scope of the warranty is outlined below.

1. Object
IBIX SRL warrantees for flaws in the assembly or in components which can compromise the correct functioning of the machine in normal conditional use.

2. Timeline
IBIX SRL warrantees flaws which occur within the first ½ year of warrantee period (term) after the date of invoice.
The consumer shall lose the initial rights resulting from this warrantee when he/she does not report the fault within 2 weeks after delivery of the unit from the detection of the manufacturer's fault.

3. Exemption
This conventional warrantee is not valid for the following situations:
- Non-compliance of instructions and warnings posted in the manual concerning the use and maintenance supplied with the IBIX compressor when purchased (if you didn't receive a manual with your purchase please call us immediately);
- Incorrect use and handling of the machine;
- Negligent and careless use;
- Any repairs and or replacements of non-original parts or alterations performed by non-qualified (authorized) IBIX dealers (IBIX srl) or mechanic;
- Use of non-original IBIX manufactured spare parts;
- Careless handling (example: dropping, falling or bumping);
- Normal wear and tear of the IBIX consumable product parts such as rubber holder, filter for pressure regulator, pressure regulator, plastic cover and its base,
- Damage caused during transport (customer insurance required)
- Damage caused by acts of God, fire, accidents or any other cause not ascribable to assembly or components faults;
- If Compressor is not paid in full.

4. Limitation of Liability of the Producer
IBIX SRL / IBIX USA decline all responsibility for any damage to people, things or animals as a consequence of non-observance (compliance) of all instructions and cautions (warnings) listed in the Instruction and Maintenance Booklet (manual) of IBIX Compressors.

5. Commitment to the repair of a flaw
If a manufactured flaw (see point 1) is proven and acknowledged within the warrantee period of 1/2 year (6 months) of the time of purchase (invoice date), IBIX SRL warrants the product.
If technical service of the IBIX Compressor is required, any and all transport costs and labor charges are subject to the purchaser and not included in this warrantee (see point 2 and 3).
For any services rendered to the IBIX Unit at customer location or IBIX location the customer is required to carry any and all charges, which are not subject under this warranty (see point 2 and 3).
If technical servicing of the IBIX Unit is requested by the purchaser (at his location) the IBIX SRL / IBIX USA personnel (mechanic) travelling expenses, food and accommodation are subject to charges and equally not included under this warrantee.
All repairs or substitutions of IBIX components do not interrupt the lapse of this warrantee term, which will last until the end of the first year (see point 2).

6. Territory coverage
This conventional warrantee from the producer (IBIX SRL) is valid in all countries which are approved for direct sales of IBIX Systems. (IBIX North America only warrants products sold in the USA).

7. Date of Maturity (Term)
At the end of this 1/2 year conventional warrantee from the day of purchase, all repairs or replacement parts of IBIX Components will be at buyer's expense.

8. How to register for this IBIX Warrantee
Please fill in the coupon stub below, detach and send to your nearest distributor where the unit was purchased corresponding to the sales invoice.

IBIX WARRANTEE COUPON

MODEL: IBIX**VRK220**_____ Serial No.: _____

Date of Invoice _____ Number _____
Customer _____
Address _____
Address _____
Phone _____ Email _____

Signature _____ Date _____

SEND TO: Your Qualified Distributor