

USE AND MAINTENANCE MANUAL

SILENT ELECTRIC ROTARY SCREW COMPRESSORS

25-50 Hp – 18-37 kW



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WARNING: Read this manual carefully and in full before using the compressor.

IMPORTANT INFORMATION

Read all the operational instructions, safety recommendations and all warnings provided in the instruction manual.

Most accidents encountered when using the compressor are merely due to the failed observance of basic safety standards.

Accidents are prevented by foreseeing potentially hazardous situations and observing the appropriate safety standards.

The fundamental safety standards are listed in the "SAFETY" section of this manual and also in the section involving the use and maintenance of the compressor.

Hazardous situations to be avoided in order to prevent serious personal injuries and machine damages are listed in the "WARNINGS" section of the instruction manual or are actually printed on the machine.

Never use the compressor improperly but only as recommended by the Manufacturer.

The Manufacturer reserves the right to up-date the technical information given in this manual without notice.

l Index

0

1

word	5
How to read and use the instruction manual	5
Importance of the manual	5
Conserving the manual	5
Consulting the manual	5
Symbols used	6
è	word How to read and use the instruction manual Importance of the manual Conserving the manual Symbols used

Gen	General information7							
1.1	Identification data of the manufacturer and the compressor							
1.2	Information on machine technical/maintenance service7							
1.3	General safety warnings7							

2	Pre	Preliminary machine information10						
	2.1	General description	10					
	2.2	Intended use	10					
	2.3	Technical data	11					

3	Trai	Transport, Handling, Storage					
	3.1	Transporting and handling the packed machine	12				
	3.2	Packing and unpacking	12				
	3.3	Storing the packed and unpacked compressor	13				

4	Insta	allation	14
	4.1	Admitted surrounding conditions	14
	4.1.1	Installing the compressor on the ground	14
	4.2	Space required for maintenance	14
	4.3	Positioning the compressor	15
	4.4	Connecting the compressor to the sources of energy and relative inspections	16
	4.4.1	Connecting the compressor to the electrical mains power supply	16
	4.4.2	Connecting to the pneumatic mains	18
	4.4.3	Connecting to the pneumatic mains (compressor a on the ground)	18

5	Usin	ng the compressor	19
	5.1	Preparing to use the compressor	19
	5.1.1	Operational principle	19
	5.2	Controls, indicators and safety devices of the compressor	20
	5.2.1	Control panel	20
	5.2.2	Auxiliary control devices	22
	5.3	Check the efficiency of the safety devices before starting	23
	5.4	Starting the compressor	23
	5.5	Stopping the compressor	24

6

Usin	g the dryer	25
6.1	Preparing to use the dryer	25
6.1.1	Functional description	25
6.1.2	Use of the machine in safe conditions	25
6.2	Functional diagram	26
6.3	Control panel	26
6.3.1	Display visualization	27
6.3.2	Segnalling leds	27
6.3.3	Key functions	27
6.3.4	Condensate discharge parameters programming	27
6.4	Anomaly warning	
6.4.1	Remote signalling alarm	29
6.5	Before start up	29
6.5.1	Start up	29
6.6	Maintenance, troubleshooting and dismantling	
6.6.1	Maintenance	
6.6.2	Troubleshooting	
6.6.3	Dismantling	

7	Com	npressor maintenance	33
	7.1	Instructions relative to inspections and maintenance jobs	
	7.1.1	Changing the oil	35
	7.1.2	Replacing the oil filter cartridge	36
	7.1.3	Replacing the filter cartridge oil separator	
	7.1.4	Replacing the air filter cartridge	
	7.1.5	Tightening the belt	
	7.1.6	Replacing the belt	
	7.1.7	Draining the condensate	
	7.1.8	Cleaning the air/oil radiator	
	7.1.9	Electric motor maintenance	
	7.2	Diagnosing the alarm status/inconveniences-faults	
8	Drav	wings and diagrams	40
	8.1	Wiring diagrams	40
	8.2	Pneumatic diagrams	47
	8.3	Maintenance shedule	

0 Foreword

0.1 How to read and use the instruction manual

0.1.a Importance of the manual

This **INSTRUCTION MANUAL** has been written to guide you through the **INSTALLATION**, **USE** and **MAINTENANCE** of the compressor purchased.

We recommend that you strictly observe all the indications given within as the ideal operational efficiency and lasting wear of the compressor depend on the correct use and methodical application of the maintenance instructions given hereafter.

Remember that when any doubts or inconveniences arise it is a good rule to always contact the **AUTHORISED SERVICE CENTRES**. They are at your complete disposal for any explanations or jobs required.

The **Manufacturer** therefore declines all liabilities regarding the incorrect use and poor maintenance of the compressor.

The **INSTRUCTION MANUAL** is integral part of the compressor.

Ensure that any up-dates forwarded by the Manufacturer are actually added to the manual.

If the compressor is sold on at a later date the manual must be given to the new owner.

0.1.b Conserving the manual

Use and read the manual with care being careful not to damage any part of it. Do not remove, tear or re-write any parts of the manual for any reason whatsoever. Keep the manual in a dry and sheltered place.

0.1.c Consulting the manual

This instruction manual is made up of the following:

- FRONT COVER WITH MACHINE IDENTIFICATION
- DETAILED INDEX
- INSTRUCTIONS AND/OR NOTES ON THE COMPRESSOR

The model and serial number of the compressor to which the manual refers and that you have purchased is found on the **FRONT COVER**.

The various **SECTIONS** in which all the notes relative to a certain subject are found in the **INDEX**. All the **INSTRUCTIONS AND/OR NOTES ON THE COMPRESSOR** aim at pointing out safety warnings and procedures required to use the compressor correctly.

0.1.d Symbols used

The **SYMBOLS** pointed out below are used throughout this manual and their purpose is that of drawing the operator's attention, informing the latter how to behave and how to proceed in each operational situation.



READ THE INSTRUCTION MANUAL

Read the use and maintenance manual carefully before installing and starting the compressor.



GENERAL HAZARDOUS SITUATION

An additional note will point out the type of hazard involved. Meaning of the indications:

Warning! This points out a potentially hazardous situation, which if ignored, could cause personal injury and machine damage.

Note!

This enhances crucial information.



RISK OF ELECTRIC SHOCK

Warning: the electrical power supply of the compressor must be disconnected before doing any jobs on the compressor.



RISK OF SCOLDING

Warning: be careful when touching the compressor as some parts of it could be very hot.

1 General information

1.1 Identification data of the manufacturer and the compressor

COMPRESSOR IDENTIFICATION NAMEPLATE (Example)



1.2 Information on machine technical/maintenance service

We remind you that our technical service department is at your complete disposal to help you resolve any problems that may possibly be encountered, or to provide you with any other information necessary.

In the case of need contact:

Our CUSTOMER TECHNICAL SERVICE department or your local dealer.

The constant and efficient performance of the compressor is ensured only if original spare parts are used.

We recommend therefore that you strictly observe the indications provided in the MAINTENANCE section and to use **<u>EXCLUSIVELY</u>** original spare parts.

The use of NON ORIGINAL spare parts automatically annuls the guarantee.

1.3 General safety warnings

Note!

The procedures provided in this manual have been written to assist the operator throughout the use and maintenance of the compressor.



IMPORTANT INSTRUCTIONS FOR THE SAFE USE OF THE COMPRESSOR

WARNING: THE INAPPROPRIATE USE AND POOR MAINTENANCE OF THIS COMPRESSOR MAY CAUSE PHYSICAL INJURY TO THE USER. YOU ARE RECOMMENDED TO CAREFULLY FOLLOW THE INSTRUCTIONS PROVIDED HEREAFTER TO AVOID SUCH RISKS.

1. DO NOT TOUCH MOVING PARTS

Never put your hands, fingers or other parts of the body near moving parts of the compressor.

2. NEVER USE THE COMPRESSOR WITHOUT THE SAFETY GUARDS FITTED

Never use the compressor without all the safety guards fitted perfectly in their correct place (i.e. panelling, belt guard, safety valve). If these parts are to be removed for maintenance or servicing purposes, ensure that they are put back in their original place perfectly before using the compressor again.

3. ALWAYS WEAR SAFETY GOGGLES

Always wear goggles or equivalent eye protection means. Never direct compressed air towards any part of your body or that of others.

4. PROTECT YOURSELF AGAINST ELECTRIC SHOCKS

Avoid accidentally touching the metal parts of the compressor with your body, such as pipes, the tank or metal parts connected to earth. Never use the compressor where there is water or in damp rooms.

5. DISCONNECT THE COMPRESSOR

Disconnect the compressor from the electric power supply and completely discharge the pressure from the tank before carrying out any service, inspection, maintenance, cleaning, replacing or inspection jobs of each part.

6. ACCIDENTAL START-UP

Never move the compressor while it is connected to the electrical power supply or when the tank is pressurised. Ensure that the main switch is turned OFF before connecting the compressor to the electrical power supply.

7. STORE THE COMPRESSOR APPROPRIATELY

When the compressor is not in use, it must be stored in a dry room away from atmospheric agents. Keep it out of children's reach.

8. OPERATIONAL AREA

Keep the work area clean and remove any tools that are not required. Keep the work area sufficiently ventilated. Never use the compressor in the presence of flammable liquids or gas. The compressor may produce sparks while running. Do not use the compressor where there may be paints, gasoline, chemical compounds, glues and any other flammable or explosive material.

9. KEEP THE COMPRESSOR OUT OF CHILDREN'S REACH

Prevent children or anyone else from touching the power supply cable of the compressor. All outsiders must be kept at a safe distance from the operational area.

10. WORK CLOTHES

Do not wear unsuitable clothing, ties or jewellery as these may get caught up in moving parts. Wear caps to cover your hair if necessary.

11. PRECAUTIONS FOR THE POWER SUPPLY CABLE

Do not disconnect the power supply plug by pulling on the cable. Keep the cable away from heat, oil and sharp edges. Do not stand on the electrical cable or squash it under heavy weights.

12. LOOK AFTER THE COMPRESSOR WITH CARE

Follow the maintenance instructions. Inspect the power supply cable on a periodic basis and if damaged it must be repaired or replaced by an authorised service centre. Visually check the outside appearance of the compressor, ensuring that there are no visual anomalies. Contact your nearest service centre if necessary.

13. ELECTRICAL EXTENSIONS FOR OUTDOOR USE

When the compressor is used outdoors, use only electrical extensions manufactured for outdoor use and marked as such.

14. WARNING

Pay attention to everything you do. Use your common sense.

Do not use the compressor if you are tired. The compressor must never be used if you are under the effect of alcohol, drugs or medicines, which could make you tired.

15. CHECK FAULTY PARTS OR AIR LEAKS

Before using the compressor again, if a safety guard or other parts are damaged, they must be checked carefully to evaluate whether they may operate as established in complete safety.

Check the alignment of moving parts, hoses, gauges, pressure reducers, pneumatic connections and every other part that may be crucial for the normal operational efficiency of the compressor. All damaged parts must be properly repaired or replaced by an authorised service centre or replaced following the instructions provided in instruction manual.

16. USE THE COMPRESSOR EXCLUSIVELY FOR THE APPLICATIONS SPECIFIED IN THIS INSTRUCTION MANUAL.

The compressor is a machine that produces compressed air.

Never use the compressor for purposes other than those specified in the instruction manual.

17. USE THE COMPRESSOR CORRECTLY

Operate the compressor in compliance with the instructions provided in this manual. Do not allow children to use the compressor or those who are not familiar with it.

18. ENSURE THAT EACH SCREW, BOLT AND GUARD IS FIRMLY SECURED IN PLACE.

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19. KEEP THE IN-TAKE GRIDS CLEAN

Keep the motor ventilation grids clean. Regularly clean these grids if the work area is particularly dirty. 20. OPERATE THE COMPRESSOR AT THE RATED VOLTAGE

Operate the compressor at the voltage specified on the electric data plate. You could damage or burnout the motor and other electric components if the compressor is operated at a higher or lower voltage than its rated voltage.

21. NEVER USE THE COMPRESSOR IF IT IS FAULTY

If the compressor is noisy or vibrates excessively when running or it seems to be faulty, stop it immediately and check its efficiency or contact your nearest authorised service centre.

22. DO NOT CLEAN PLASTIC PARTS USING SOLVENTS

Solvents such as gasoline, thinners, gas oil or other compounds that contain hydrocarbons may damage the plastic parts. Clean them with a soft cloth and soapy water or other suitable liquids.

23. USE ORGINAL SPARE PARTS ONLY

The use of non-original spare parts involves the annulment of the guarantee and the abnormal running conditions of the compressor. Original spare parts are available c/o the authorised dealers.

24. DO NOT MODIFY THE COMPRESSOR

Do not modify the compressor. Contact an authorised service centre for all repairs required. An unauthorised modification may impair the efficiency of the compressor and may also cause serious accidents for those who do not have the technical skill required to make such modifications.

25. TURN THE COMPRESSOR OFF WHEN IT IS NOT IN USE

When the compressor is not in use turn the main ON/OFF switch OFF (position "0").

26. DO NOT TOUCH HOT PARTS OF THE COMPRESSOR

To avoid scolding do not touch pipes, the motor or any other hot part.

27. DO NOT DIRECT THE JET OF AIR DIRECTLY TOWARDS THE BODY

To avoid all risks never direct the jet of air towards people or animals.

28. DO NOT STOP THE COMPRESSOR BY PULLING ON THE POWER SUPPLY CABLE

Use the "O/I" (ON/OFF) buttons of the control panel to stop the compressor.

29. PNEUMATIC CIRCUIT

Use recommended pneumatic hoses and tools that can withstand the same or a higher pressure than the maximum running pressure of the compressor.

30. SPARE PARTS

Use only original and identical spare parts to replace worn or damaged ones.

Repairs must be made exclusively by authorised service centres.

31. CORRECT USE OF THE COMPRESSOR

The operator must be perfectly familiar with all the controls and compressor characteristics before starting to work with the machine.

32. MAINTENANCE JOBS

The use and maintenance jobs of the commercial components fitted on the machine, but not indicated in this manual, are indicated in the enclosed documents.

33. DO NOT UNSCREW THE CONNECTION WHEN THE TANK IS PRESSURISED

Do not unscrew the connection for any reason whatsoever with the tank pressurised without first checking if the tank is discharged.

34. DO NOT MODIFY THE TANK

It is prohibited to intentionally drill, weld or deform the compressed air tank.

- 35. IF THE COMPRESSOR IS USED FOR PAINTING JOBS
- a) Do not work in closed rooms or near free flames.
- b) Ensure that the room in which you are working is sufficiently ventilated.
- c) Wear face and nose mask.

36. DO NOT PUT OBJECTS OR PARTS OF THE BODY IN THE PROTECTION GRIDS

Do not put objects or parts of the body in the protection grids to prevent physical injuries and damage to the compressor.



KEEP THESE USE AND MAINTENANCE INSTRUCTIONS CAREFULLY AND GIVE THEM TO PERSONNEL WISHING TO USE THE COMPRESSOR!

WE RESERVE THE RIGHT TO MAKE MODIFICATIONS WHERE NECESSARY WITHOUT NOTICE

2 **Preliminary machine information**

2.1 General description

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The **rotary screw compressor** has been specifically designed aiming at minimising maintenance and labour costs.

The outside cabinet is completely covered in sound-proof and oil-proof panelling thus ensuring its extended and lasting wear.

The components have been arranged so that all vital parts can be easily reached for maintenance purposes simply by opening dedicated panels with quick-release locking devices.

The filters and adjustment and safety devices (oil filter, air filter, oil separator filter, regulator valve, minimum pressure valve, max. pressure safety valve, thermostat, belt tightener, screw compression unit, pressure switch and oil separator tank emptying and filling taps) are all fitted on the same side.

The dryer series has been devised with the intention of enclosing a complete compressed air system in one compact machine. It is indeed connected to a dryer that is capable of supplying dry air to ensure the perfect and lasting use of the tools.

Note! The tanks of the compressors have been manufactured in compliance with the EEC/2009/105 Directive for the European market. The compressors have been manufactured in compliance with the EC/2006/42 Directive for the European market.

Note! Check your model on the identification nameplate fitted on the compressor. It is also indicated in this manual.

ADVISED LUBRICANTS

Always use oil for turbines with approximately 46 cSt at 40 °C and a pour point of at least -8 +10 °C. The flash point must be greater than +200 °C.



NEVER MIX DIFFERENT OIL QUALITIES.

SCREW OIL

VG 46

Use oil with VG32 rating for cold climates and VG68 for tropical climates. It is advisable to use synthetic oils for very hot and humid climates.

2.2 Intended use

The silent rotary screw compressors have been designed and manufactured exclusively to produce compressed air.

EVERY OTHER USE, DIFFERENT AND NOT FORESEEN BY ALL INDICATED, RELIEVES THE MANUFACTURER OF POSSIBLE CONSEQUENT RISKS.

In any event the use of the compressor different to that agreed in the purchase order <u>RELIEVES</u> <u>THE MANUFACTURER FROM ALL LIABILITIES WITH REGARD TO POSSIBLE MATERIAL</u> DAMAGE AND PERSONAL INJURY.

The electrical system is not designed for the use in environments subject to explosion or for flammable products.



NEVER DIRECT THE JET OF AIR TOWARDS PEOPLE OR ANIMALS. NEVER USE THE COMPRESSED AIR PRODUCED BY LUBRICATED COMPRESSORS FOR RESPIRATORY PURPOSES OR IN PRODUCTION PROCESSES WHERE THE AIR IS IN DIRECT CONTACT WITH FOODSTUFFS UNLESS IT HAS BEEN FIRST FILTERED AND CONDITIONED FOR SUCH PURPOSE.

2.3 Technical data

MODEL		25 HP / 18 kW				30 HP / 22 kW		
Max pressure	bar/psi	8 - 116	10 - 145	13 – 188	8 - 116	10 - 145	13 – 188	
Free Air Delivery ISO 1217 MAX	m³/h	162	150	132	196,8	178,2	143,4	
	l/min	2700	2500	2200	3280	2970	2390	
	cfm	95.3	88.3	77.7	115.8	104.9	84.4	
Air outlet fitting	BSP	1"	1"	1"	1"	1"	1"	
Air outlet temperature	∆-T enviroment 20°C	10	10	10	13	13	13	
Lubrificant q.ty	L	9	9	9	9	9	9	
Oil residue in air	ppm	<3	<3	<3	<3	<3	<3	
Electric motor 2 pole	IEC	MEC 160	MEC 160	MEC 160	MEC 180	MEC 180	MEC 180	
Output power	HP/kW	25/18,5	25/18,5	25/18,5	30/22	30/22	30/22	
Protection rating	IP	55	55	55	55	55	55	
Service		S 1	S 1	S 1	S 1	S 1	S 1	
Max starts per hour	N°	10	10	10	10	10	10	
Ambient temperature range	°C (min/max)	5/45	5/45	5/45	5/45	5/45	5/45	
Noise level	dB (A)	73	73	73	74	74	74	

MODEL		40 HP / 30 kW				W	
Max pressure	bar/psi	8 - 116	10 - 145	13 – 188	8 - 116	10 - 145	13 – 188
Free Air Delivery ISO 1217 MAX	m³/h	270	234	210	321	300	252
	l/min	4500	3900	3500	5350	5000	4200
	cfm	158.9	137.7	123.6	188.9	176.6	148.3
Air otlet fitting	BSP	1"	1"	1"	1"	1"	1"
Air outlet temperature	∆-T enviroment 20°C	12	12	12	16	16	16
Lubrificant q.ty	I.	12	12	12	12	12	12
Oil residue in air	ppm	<3	<3	<3	<3	<3	<3
Electric motor 2 pole	IEC	MEC 200	MEC 200	MEC 200	MEC 200	MEC 200	MEC 200
Output power	HP/kW	40/30	40/30	40/30	50/37	50/37	50/37
Protection rating	IP	55	55	55	55	55	55
Service		S 1	S 1	S 1	S 1	S 1	S 1
Max starts per hour	N°	10	10	10	10	10	10
Ambient temperature range	°C (min/max)	5/45	5/45	5/45	5/45	5/45	5/45
Noise level	dB (A)	74	74	74	75	75	75

Sound level measured in a free range at a distance of 1 m: $\pm 3dB(A)$ at the maximum working pressure. The sound level may increase by 1 to 10 dB(A) depending on the room in which the compressor is installed.

DIMENSIONS & WEIGHT

Model (HP / kW)	Tank (Lt)	AxBxC (mm)	Kg	Model (HP / kW)	Tank (Lt)	AxBxC (mm)	Kg
25 / 18 30 / 22	1	950x850x1180	468 498	25 / 18		1170x850x1180	488 518
40 / 30 50 / 37	+	1200x890x1350	679 700	30 / 22		2040x850x1170	690 720
25 / 18 30 / 22	500	2040x850x1770	670 700	25 / 18 30 / 22		1170x850x1180	488 518

Note! The technical data and dimensions of the machine are subject to variations at any time without notice

3 Transport, Handling, Storage



In order to use the compressor in complete safety read the safety standards given in section 1.3. before reading this section.

3.1 Transporting and handling the packed machine



The packed compressor must be transported by qualified personnel using a forklift truck.

Before moving the machine ensure that the load-bearing capacity of the forklift truck is sufficient to take the weight to be lifted.

Position the forks exclusively as illustrated below. Once the forks have been positioned in the points indicated, lift slowly without jerking.





Never stand near the area where the compressor is being handled and never stand on the crate while it is being moved.

3.2 Packing and unpacking

To avoid damages and to protect the compressor during transport it is usually placed on a wooden pallet, to which it is secured by screws and covered with cardboard.

All the shipping and handling information and symbols are printed on the compressor packing. Upon consignment remove the top part of the packing and check if any damages have been encountered during transport. If any damages are found, caused during transport, immediately make a written claim, backed up with photos of the damaged parts if possible and forward everything to your insurance company, with copy to the **Manufacturer** and transporter.

Using a forklift truck take the compressor as near as possible to the place where it is to be installed then carefully remove the protective packing without damaging it, following the instructions below: • Remove the packing **1**, by sliding it away upwards.



• Unscrew screws 2 that block the feet that secure the compressor to the pallet.



Note! The compressor can be left on the packing pallet to make it easier to move.

Carefully ensure that the contents correspond with all written in the consignment documents. Dispose of the packing in compliance with current standards in force in the country of installation.

Note! The machine must be unpacked by qualified personnel using appropriate tools and equipment.

3.3 Storing the packed and unpacked compressor

For the whole time that the compressor is not used before unpacking it, store it in a dry place at a temperature between $+5^{\circ}$ C and $+45^{\circ}$ C and sheltered away from weather.

For the whole time that the compressor is not used after unpacking it, while waiting to start it up or due to production stoppages, place sheets over it to protect it from dust, which may settle on the components.

The oil is to be replaced and the operational efficiency of the compressor is to be checked if it is not used for long periods.

4 Installation

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In order to use the compressor in complete safety read the safety standards given in section 1.3. before reading this section.

4.1 Surrounding conditions admitted

Position the machine as established when the order was placed. Failing this the **Manufacturer** is not liable for any inconveniences that may possibly arise.

Unless pointed out otherwise when placing the order, the compressor must work regularly in the surrounding conditions indicated below:

ROOM TEMPERATURE

For a good work, the room temperature must not be lower than 5 ℃ or higher than 45 ℃.

If the compressor works at a room temperature lower than the minimum value, the condensate could be separated within the circuit and therefore the water would mix with the oil, thus deteriorating the quality of the latter, failing to guarantee the even formation of the lubricating film between the moving parts with the possibility of seizure.

If the compressor works at a room temperature higher than maximum value, the compressor would take in air that is too hot, which would prevent the heat exchanger from adequately cooling the oil in the circuit, raising the working temperature of the machine, thus causing the thermal safety device to trip, which stops the compressor due to an excessive temperature of the air/oil mixture at the screw outlet.

The maximum temperature of the room is to be measured while the compressor is running. **LIGHTING**

The compressor has been designed in compliance with legal prescriptions and in the attempt to minimise shadow zones to facilitate the operator's job.

The lighting system of the factory is to be considered as crucial for the operator's safety.

The room in which the compressor is installed must have no shadow zones, dazzling lights or stroboscopic effects due to the lighting.

ATMOSPHERE WITH RISK OF EXPLOSION AND/OR FIRE

The standard compressor is not pre-arranged or designed to work in rooms subject to the risk of explosion or fire. The performance of the compressor may decrease at the maximum permitted ambient temperature, with relative humidity higher than 80% and at an altitude of more than 1,000 mt.

4.1.1 Installing the compressor on the ground

Attention! Compressor versions installed on the ground must strictly be connected to a tank with a capacity of at least 200 litres. The manufacturer is not liable for any related malfunctions or problems if the compressor is connected to a smaller tank.

4.2 Space required for maintenance

The compressor must be installed in a large room that is well-aired, dust-free and sheltered away from rain and frost. The compressor takes in a large amount of air that is required to ventilate it internally. A dusty atmosphere would in time cause damages and inefficient performance.

Part of the dust once inside is taken in by the air filter causing it to clog rapidly and another part of dust will settle on the components and will be blown against the cooling radiator, consequently compromising the efficiency of the heat exchanger. It is therefore obvious that the cleanliness of the area in which the compressor is installed is crucial for the correct efficiency of the machine, avoiding excessive running and maintenance costs. To facilitate maintenance jobs and to create a favourable circulation of air, the compressor must have a sufficient free space all around it (see fig.).



The room must be provided with outlets that lead outdoors near the floor and ceiling that will allow the natural circulation of air.

If this is not possible, install some fans or extractors that guarantee a higher air flow rate than 50% that taken in by the compressor. Min. flow m³/h 2500.

Ducts for the inlet and outlet of the air can be used in unfavourable environments. These ducts must be the same size as the in-take and delivery grid. If these ducts are longer than 3 meters contact the **Authorised Service Centre**.

Note! A conveyance system can be fitted to recover the hot ventilation air delivered, which can be used to heat the room or for other purposes. It is crucial that the cross section of the system that recovers the hot air is greater than the total cross section of the grid slots plus the system must be equipped with a forced extraction system (extractor fan) to favour a constant downflow (min. sect. cm² 1200).

4.3 **Positioning the compressor**

Once the position in which the compressori s to be intalled has been identified censure that the compressor is set on a flat surface.

No special foundations or bases are required for the machine.

Lift the compressor using a forklift truck (forks at least 900 mm long) and fit the vibration-damping feet **1** and block with the nuts **2** under the four resting points where established.Anti-vibration feet are fitted on the floor-based version as standard; the models with tank are equipped with rubber feet without fitting.







Do not secure the compressor rigidly to the floor.

4.4 Connecting the compressor to the sources of energy and relative inspections.

4.4.1 Connecting the compressor to the electrical mains power supply



The compressor is to be connected to the electrical mains by the customer, to his exclusive liability, employing specialised personnel and in compliance with the Accident Prevention Norms EN 60204.

INSTRUCTIONS FOR CONNECTING TO EARTH

This compressor must be connected to earth while in use in order to safeguard the operator against electrical shocks. The electrical connection must be carried out by a skilled engineer. It is advisable never to dismantle the compressor or even to make any other connections. All repairs must be carried out exclusively by authorised service centres or other qualified centres. The earth wire of the power supply cable of the compressor must be connected only and exclusively to the **PE** pin of the terminal board of the actual compressor. Before replacing the plug of the power supply cable ensure that the earth wire is connected.

EXTENSION CABLE

Use only extension cables with plug and earth connection. Never use damaged or squashed extension cables. Ensure that the extension cable is in a good state of wear. When using an extension cable, ensure that the cross section of the cable is sufficient to convey the current absorbed by the product to be connected.

If the extension cable is too thin there could be drops in voltage and therefore loss in power and overheating of the equipment.

The extension cable of the three-phase compressors must have a cross section in proportion with its length: see table below:

HP	kW	220/240V 50/60 Hz 3 ph	380/415V 50/60 Hz 3 ph
25	18	35 mm²	16 mm²
30	22	50 mm²	25 mm²
40	30	70 mm²	25 mm²
50	37	95 mm²	35 mm²

CORRECT CROSS SECTION FOR THE MAXIMIM LENGTH OF 20M



Avoid all risks of electrical shocks. Never use the compressor with damaged electrical cables or extension cables. Regularly check the electrical cables. Never use the compressor in or near water or near a hazardous area where electrical shocks may be encountered

ELECTRICAL CONNECTION

An independent electrical isolator or disconnect should be installed adjacent to the compressor. Feeder cables/wires should be sized by the customer/electrical contractor to ensure that the circuit is balanced and not overloaded by other electrical equipment. The length of wiring from a suitable electrical feed point is critical as voltage drops may impair the performance of the compressor.



The **three-phase compressors** (L1+L2+L3+**PE**) must be installed by a qualified engineer.

The three-phase compressors are supplied without plug and cable.

The power supply cable must be fed into the electrical cabinet through the dedicated cable clamps (1) situated on the rear side of the cabinet of the compressor.

Ensure that the cable cannot accidentally come into contact with moving or hot components, possibly secure with clips.

The cross section of the wires of the power supply cable (for lengths of 4 m and ambient temperatures of $50 \,^{\circ}$ C at the most) must be as follows:



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HP	kW	220/240V 50/60 Hz 3 ph	380/415V 50/60 Hz 3 ph
25	18	25 mm²	10 mm²
30	22	35 mm²	16 mm²
40	30	50 mm²	25 mm²
50	37	70 mm²	25 mm²

It is required to install the connector, magneto thermal switch and fuses near the compressor (3 m away at the most). The magneto thermal switch and the fuses must have the characteristics indicated in the table below:

Power Hp/kW	Rated voltage 380/415V		Rated voltage 220/	240V
	Magneto thermal switch Fuse		Magneto thermal switch	Fuse
25/18	63 A	63 A	80 A	100 A
30/22	80 A	80 A	125 A	125 A
40/30	100 A	100 A	160 A	160 A
50/37	125 A	125 A	200 A	200 A

Note! The fuse parameters indicated in the table above refer to the **gl** type (**standard**). If cartridge fuses type **aM** are used (**delayed**) the parameters in the table are to be reduced by 20%. The parameters of the magneto thermal switches refer to switches type **K**.

Ensure that the installed power in kW is at least double the input of the electric motor. All **silent rotary screw compressors** avail of Star/Delta starting, which enables the motor to start with as little electrical energy consumption upon start-up as possible.

The mains voltage must correspond with that indicated on the electrical data nameplate of the machine; the admitted tolerance must remain within $\pm - 6\%$.

EXAMPLE:

Voltage, 400 Volt: minimum tolerance 376 Volt Voltage, 400 Volt: maximum tolerance 424 Volt

The plug of the power supply cable must never be used as a switch but must be plugged into a power socket that is controlled by an adequate differential switch (magneto thermal switch).



Never use the earth connection instead of the neutral. The earth connection must be achieved according to the EN 60204 industrial safety standards. Ensure that the mains voltage corresponds with that required for the correct operation of the compressor.

CHECK THE ROTATION DIRECTION

The 25-50 Hp compressors are equipped with an phases-sequency relay (KR) that, every start, check the rotation direction and, in case of wrong rotation direction, stops the compressor ("AL3" error message on the electrical board). Disconnect the compressors from the main power, reverse two phases of the power cable on the terminals for connection of the cable line and restart the compressor.



4.4.2 Connecting to the pneumatic mains



Always use pneumatic hoses for compressed air with the maximum pressure characteristics and cross section suitable for those of the compressor. Do not try to repair a faulty hose.

Connect the compressor to the pneumatic mains using the fitting 1. Use hosing with a greater or same diameter as the compressor outlet.



4.4.3 Connecting to the pneumatic mains (compressor a on the ground)



Always use pneumatic hoses for compressed air with the maximum pressure characteristics and cross section suitable for those of the compressor. Do not try to repair a faulty hose.

Connect the compressor to the pneumatic mains using the fitting 1. Use hosing with a greater or same diameter as the compressor outlet.



Install two ball taps with capacity suitable for the compressor between the compressor and tank and between the tank and line.

Do not install non-return valves between compressor and tank. The non-return valve is already installed inside the compressor.

5 Using the compressor



In order to use the compressor in complete safety read the safety standards given in section 1.3. before reading this section..

5.1 Preparing to use the compressor

5.1.1 Operational principle

The air taken-in by the filter passes through a valve that controls its flow rate to the screw where, mixing with the oil, it is compressed.

The air/oil mix produced by compression reaches a tank where the initial separation by gravity is achieved; as the oil is heavier, it settles on the bottom, it is then cooled and sent through a heat exchanger, filtered and injected into the screw again.

(The temperature is kept under control by an electric fan that is directly controlled by a thermostat fitted on the heat exchanger and based on the indication of the same). The oil is required to reduce the heat produced by compression, to lubricate the bearings and to maintain the coupling of the screw lobes. The air is sent through an oil separator filter to be additionally purified from residue oil particles. It is cooled by means of another heat exchanger and is finally outlet to be used at low temperature and with acceptable oil residues (<3p.p.m.). A safety system controls the crucial points of the machine and points out any abnormal conditions. The temperature of the air/oil mix at the screw outlet is controlled by a thermostatic probe, which stops the compressor if the temperature is too high

	IT	GB	DE		
1	Filtro olio	Oil filter	Oelfilter	Filtro aceite	
2	Valvola pressione	Minimum pressure valve	Mindestdruckventil	Valvola presion minima	
3	Gruppo vite	Air end	Schraubengruppe	Grupo tornillo	
4	Motore elettrico	Electric motor	Elektromotor	Motor electrico	
5	Cinghia trasmissione	Transmission belt	Antriebsriemen	Correa de trasmission	
6	Filtro aria	Air filter	Luftfilter	Filtro aire	
7	Radiatore olio	Oil radiator	Oelradiator	Radiator aceite	
8	Filtro separatore	Oil separator	Oelabscheider	Filtro separador	

5.2 Controls, indicators and safety devices of the compressor

5.2.1 EASY AIR control panel

The control panel is made up of a set of buttons required for the main operational and control functions of the compressor.

1 START

This button is used to turn the compressor on.

2 STOP

This button is used to turn the compressor off.

3 YELLOW LED

This point show the solenoid valve function

4 DISPLAY

The various functions are displayed: alarms and the delivery screw unit temperature.

5 GREEN LED (2)

Show the temperature unit (°F/°C)

6 h/RESET

This button is used to reset the compressor. If still pressed show the hours of duty.

7 EMERGENCY PUSH BUTTON (STOP)

This mechanically blocking push button is used to immediately stop the compressor in the case of emergency. With the push button blocked it is impossible to start the compressor (AL3 displayed on the screen).

To start the compressor again, turn the emergency button to release it, then press button h/RESET, than press the START button.



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Functions descriptions:

When the compressor is connected to power supply, display shows the text "OFF", the green led related to temperature unit of measurement is ON, the yellow led $|\mathcal{A}|$ about compressor status is off; in case of alarm the related alarm code is flashing on the display.

From "OFF" status the compressor can be switched on pushing the button , immediately the air-end temperature appears on display and the star – delta motor start up begins its procedure.

The yellow led 🔀 about compressor status starts to flash, the motor is running. The yellow led stops to flash when the compressor turns to load status.

When the maximum pressure is reached, set by the pressure switch, the compressor starts the idle running and the solenoid valve is unexcited.

When the idle running time finish (120 sec.) the motor turns off, the display continues to show the air-end temperature and the led 4 continues to flash but faster than before for all the "restart time", after this time (30 seconds) the led 4 slow down the flashing frequency and the compressor is ready to start again when the pressure in the system goes down below the minimum pressure set by the pressure switch.

If the button \bigcirc is pushed when the motor is running in delta mode, the compressor turns off after 30 seconds of idle running; during this time the display shows the air-end temperature and the led \bowtie is flashing slowly.

When the motor is off, the display shows the text "OFF" and the led $|\mathcal{L}|$ continues to flash but faster than before for all the "restart time", after this programmable time (30 seconds) it turns off.

In case the button is pushed during the "restart time", when this time ends the compressor will start again as described above.

If the button \bigcirc is pushed when the compressor is in stand-by status (the motor is off waiting for pressure switch signal), the display shows immediately the text "OFF" and the "restart time" starts with related fast flashing of the led $|\mathcal{A}|$; also in this case if the button \bigcirc is pushed the compressor will start again after the "restart time".

Note: in case the button \bigcirc is pushed after the \bigcirc button and when the motor is still in "star" connection, the motor stops immediately and the display shows the text "OFF", the led \checkmark turns off immediately (no "restart time" is case). Pushing the button \bigcirc (even after very short time) the motor starts immediately as described above.

Screw delivery temperature:

The display shows the compressor temperature in °C or °F, it depends on the setting (see setting chapter), the alarm high temperature is 105 °C (221 °F) and to reset the alarm the temperature has to be under 95 °C (203 °F). In case of high temperature alarm, the compressor stops (regardless its status) and is not possibile to start it again, the display shows alternately the air-end temperature and the alarm code "AL1", the yellow

led | is off. To reset the alarm and start the compressor again the user must push the button $\frac{1}{1600}$. If the air-end temperature is below $-5 \ \Columbca C (23 \ \Columbca F)$, the alarm code "AL2" appears alternately with the air-end temperature, the yellow led | is off and the green led related to the temperature unit is flashing.

The alarm can be reset pushing the button $\frac{\bigcirc}{k/R_{ESCT}}$ and is accepted only if the temperature is above -5 °C (23 °F).

If the air-end temperature drops below $-40 \,^{\circ}\text{C}$ (- 40 $^{\circ}\text{F}$) it means that the temperature sensor is short circuit; in this case the compressor stops immediately regardless of its status and it's not possible to start it again, the display shows alternately the air-end temperature and the alarm code "AL0", the led $|\mathcal{A}|$ is off.

The alarm can be reset by pushing the button $\bigcup_{k \in Rest}^{\bigcirc}$ and it's accepted only when the temperature rises above -5 °C (23 °F).

Alarms:

If the control panel has an internal malfunction, the display shows the alarm code "AL5", in this case the compressor stops immediately regardless of its status and it's not possible to start it again, the code alarm is flashing on the display, the led $|\mathcal{I}|$ and the temperature led are off.

The alarm can be reset by pushing the button $\frac{C}{k/R_{EST}}$ and it's accepted only when the problem is solved.

When the set maintenance hours are expired, the alarm code "AL6" appears on the display, this message DOESN'T modify the normal way of working of the compresor. The alarm code flashes alternately with the text that normally appears on the display case by case; the flashing appears when the compressor is "OFF" too.

The alarm can be reset by pushing the button when the problem is solved.

Check hours of duty:

During the normal working of the compressor, regardless with its status except under alarm condition, or when the diplay shows the text "OFF", the worked hours (loading hours + idle running hours) can be

displayed when the button *L/RESET* is pushed for 4 seconds.

The worked hours are divided in two displays: the first one shows the thousands of worked hours, the second one the worked hours up to 999 (example: worked hours 24563, first display is 024, second display

is 563); pushing the button $\frac{C}{k/R_{EET}}$ is possible to switch from first to second display.

If the button kreat is pushed after the second display of the worked hours, the time (in hours) to maintenance will appear (always displayed in 2 parts as explained above; example: hours to maintenance 1561, first display is 001, second display is 561)

From this condition, if the button is pushed again, the display shows the text "OFF" or the air-end temperature.

After 10 seconds without any commands the display turns back to the original message.

5.2.2 Auxiliary control devices

1 AIR CIRCUIT PRESSURE CONTROL GAUGE

Ver 25-50 Hp: Indicates the air pressure value after the non return valve or min pressure (line pressure or air system pressure).



5.3 Check the efficiency of the safety devices before starting

OIL LEVEL

Check the oil level as indicated in Section 6 "Compressor maintenance".



DO NOT START THE COMPRESSOR WITH THE GUARDS OPEN TO AVOID INJURY DUE TO MOVING COMPONENTS OR ELECTRICALLY POWERED EQUIPMENT.

5.4 Starting the compressor



Following an electrical shortage the compressor will start only if the START (I) button is pressed.

Ventilation must occur as illustrated below.

It is of crucial importance that the compressor works with all the panels firmly closed.

The failed observance of these and the following standards may lead to accidents that could cause personal injury and serious damages to the compressor or its equipment.



Before initially starting the compressor or following extended inoperative periods, start the machine intermittently by pressing the START(I)-STOP(O) buttons on and off for 3 or 4 seconds. After this it is advisable to run the compressor for a few minutes with the air outlet tap open.

Then gradually shut-off the air tap and load to maximum pressure, checking if the inputs on each phase of the power supply are within the limits and also if the pressure switch trips.

At this stage, when the max pressure value is arrived, the pressur switch start the idle running for 2 minutes; after this time, if there's not air consumption, the compressor stop in stand-by condition. Discharge the air from the tank until the starting pressure is reached (2 bar difference compared to maximum pressure). Shut-off the air outlet tap and wait for the pressure switch to trip, which will shut-on the in-take valve and close the internal discharge.

CALIBRATION AND SETTINGS MADE BY THE MANUFACTURER

The minimum setting pressure is:

Mod / bar	Set. pressure
8	6
10	8
13	11

Note! By disconnecting the power supply from the external switch the compressor is completely without power.

The thermal relay is set according to the table below.

Power HP/kW	Rated voltage 380/415V	Rated voltage 220/240V
25/18	21 A	36,3 A
30/22	24,8 A	42,9 A
40/30	33 A	57,1 A
50/37	40,5 A	70 A

HP 25-30 / kW 18,5-22

HP 40-50 / kW 30-40



Disconnect the electrical power supply form the compressor before opening the electrical cabinet.

The setting of trip switch (1) must not differ from the table given above; if the trip switch should trip, check the input of the motor of the compressor, the voltage on the line terminals L1+L2+L3 during operation and the power connections inside the electric control panel and of the terminal board of the motor and compressor.

USEFUL TIPS FOR CORRECT COMPRESSOR PERFORMANCE

For the correct operational performance of the machine under full continuous load at the maximum working pressure, ensure that the temperature of the work area in a closed room does not exceed $+45^{\circ}$ C. It is advisable to use the compressor with a maximum service of 80% in one hour under full load in order to ensure the correct efficiency of the product in time.

5.5 Stopping the compressor

Press the emergency stop button on control panel (see par. 5.2.1) the compressor fail immediately.

Note! By disconnecting the power supply from the external switch the compressor is completely without power.

6 Using the dryer



In order to use the compressor in complete safety read the safety standards given in section 1.3. before reading this section.

6.1 Preparing to use the dryer

6.1.1 Functional description

Drying systems with refrigeration cycle have been designed for a cost effective elimination, with minimal overall dimensions, of the condensate contained in compressed air by cooling it down to approximately $+ 3^{\circ}$ C.

The operation principle of the dryers described in this manual is shown in the air and refrigeration circuit diagrams (attachment A).

The air delivered to the services is virtually humidity free, and the condensate collected in the separator is discharged through appropriate draining devices. In order to limit the size of the machine and to avoid condensation on the external surface of the tubing, before exiting the dryer, treated air is counter current pre-heated by the air entering the system.



The dryer comes provided with all the control, safety and adjustment devices, therefore no auxiliary devices are needed.

A system overload not exceeding the maximum operative limits can worsen the operational performances of the dryer (high dew point), but it will not affect its safety.

The electric diagram (attachment B) shows the minimum protection degree IP 42. The user must provide the dryer with a line protection and a ground terminal.

6.1.2 Use of the machine in safe conditions

This system has been designed and manufactured in compliance with the European safety directive in force, therefore any installation, use and maintenance operations must be performed respecting the instructions contained in this manual.



Any installation, use and maintenance operation requiring to access the internal parts of the dryer must be performed by qualified personnel.



The manufacturer will not be liable in case of uses different or nor complying with those foreseen in this manual.

6.2 Fuctional diagram



6.3 Control panel

The machines belonging to this series are provided with an electronic system for parameters modification, so eventual reset operations can be performed by means of the digital panel located on the front of the dryer.

The control panel illustrated in PIC.1 is composed of 5 keys (ON/OFF, TEST, SET, DOWN e UP) and a 3 digit display, with three signalling LEDs indicated by icons.



6.3.1 Display visualization

On	Means the unit is ON with low load;
On	Means the unit is ON with normal load;
On 😑	Means the unit is ON with normal-high load;
On 📃	Means the unit is ON with high load;

6.3.2 Segnalling leds

LED	STATUS DESCRIPTION	
	ON	Compressor energized
	Blinking	Programming mode activated
X	ON	Condensate drain energized
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ON	Speed of the fan = 100%
ENS -	Blinking	Speed of the fan < 100%

### 6.3.3 Key functions



TEST: Pushed for 3 sec. during normal operation, it allows to activate a condensate drainage cycle.



SET: When pushed and released during normal operation, it displays the set-point value (decimal).

When pushed for 10 seconds, it allows to enter the C8 and C9 condensate drain parameters programming menu (see relevant table).

When pushed after having set new configuration values, it stores the applied modifications.



DOWN: When pushed while setting the set point or the configuration parameters, it decreases the displayed value of one unit per second, during the first 10 seconds, than of one unit every 0,1 sec.

When pushed for 10 seconds during normal operation, it starts an automatic test cycle of the controller.



UP: When pushed while setting the set point or the configuration parameters, it increases the displayed value of one unit per second, during the first 10 seconds, than of one unit every 0,1 sec.



ON / OFF: Pushed for 3 seconds, it activates or deactivates the process. When the process is deactivated, the display shows OFF.

NOTE: when the controller is in OFF position, some parts of the dryer are kept under tension therefore, for safety purposes, disconnect the electrical power before performing any operation on the machine.

#### 6.3.4 Condensate discharge parameters programming.

Push the SET key for 10 seconds to enter the parameters configuration menu: the display will show in sequence the set point value, the code of the first modifiable parameter (C8) and its value). Only if strictly necessary, use the UP and/or DOWN keys to change the displayed parameter value. Press the SET key to store the previously changed parameter value or to browse the parameters without changing them.

15 seconds after the last performed operation, the controller will return automatically to the normal operation mode.

PARAMETER	DESCRIPTION	RANGE	SET VALUE
C8	Delay between condensate discharges	1 ÷ 999 (min)	1
C9	Time required for condensate discharge	1 ÷ 999 (sec)	1

NOTE: Changes entered for timing values will be effective only after exiting the programming, while changes to other variables will be immediately effective.

Please remember that eventual changes to the configuration parameters of the machine could negatively affect its efficiency. Thus, changes have to be arranged in collaboration with the manufacturer.

### WARNING FOR USER: IT'S FORBIDDEN TO MODIFY THE OTHER CONFIGURATION PARAMETERS OF THE ELECTRONIC CONTROLLER WITHOUT THE SERVICE CENTER'S AUTHORIZATION AND COLLABORATION.

## 6.4 Anomaly Warning

The controller is capable to recognize certain types of anomalies to the drying circuit. In such cases, an alarm message will blink on the display, alternated to the current dew – point value.

MESSAGE (BLINKING)	CAUSE	OUTPUTS	ACTIONS
HtA	High Dew – point value (delayed alarm)	Alarm output ON Refrig. Compressor	Resettable by switching off the control board
Ht2	Very high Dew – point value (immediate alarm)	output OFF Fan output ON Discharge cycle standard	to preset range. If it persists call our Service Centre.
LtA	Low Dew – point value	Alarm output ON Refrig. Compressor output OFF Fan output OFF Discharge cycle standard	Automatic reset when dew-point returns to preset range. If it persists call our Service Centre.
PF1	Interruption or short circuit on the PTC probe input line	Alarm output ON Refrig. Compressor output OFF Fan output OFF Discharge cycle standard	Resettable by switching off the control board and replacing the faulty probe. Call our Service Centre.
ESA	Energy saving mode	Alarm output OFF Refrig. Compressor	No action necessary.
ES2 activated		Fan output OFF Discharge cycle standard	Automatic Reset
ASt	Series of alarms very close to each other	Alarm output ON Refrig. Compressor output OFF Fan output ON Discharge cycle standard	Call our Service Centre.

Note: PF1 has priority on all other alarm messages.

### 6.4.1 Remote signalling alarm

The dryer control board is equipped with a digital output for the remote signalling alarm. This digital output is controlled by a relays configured as normally open: when an alarm is detected, this relays closes a circuit.

Proceed as follows to activate a remote alarm output:

- 1. The User must provide a signaller in compliance with output relays electrical features (solenoid coil, light bulb, acoustic signaller, ...).
- 2. Disconnect the dryer from electrical power supply, remove cover and left side panel.
- 3. Connect the signaller to the terminal blocks (See PIC.2).

#### Alarm Output relays electric features:

250VAC / 3A – AC 15 (Amp. Inductive)



PIC.2

The activation of the above function is on User's discretion. The User will purchase all necessary installation material by himself. Any operation which needs access to the dryer must be carried out by qualified personnel.

#### 6.5 Before start up



Before starting the machine, make sure that all operating parameters correspond to the nominal data.

The dryer is supplied already tested and preset for normal operation, and it doesn't require any calibration. Nevertheless, it's necessary to check the operating performances during the first working hours.

### 6.5.1 Start up

The operations specified below must be performed after the first start up and at each start up after a prolonged inactive period of time due to maintenance operations, or any other reason.

- 1. Make sure that all instructions contained in chapters INSTALLATION SITE and INSTALLATION have been respected.
- 2. Check if by-pass is locked properly (if existent).
- 3. Activate current supply and press the ON/OFF switch on the control panel for at least 1 second.
- 4. Wait 5 to 10 minutes until machine has achieved its standard operating parameters.
- 5. Slowly open the air outlet valve and successively open the air inlet valve.
- 6. If existent, close the by-pass.
- 7. Check if the condensate drainer is working properly. Check if all connecting pipes are properly tightened and fixed.

Before disconnecting the dryer from electrical power supply, use ON/OFF key to stop the dryer. Otherwise wait 10 minutes before switching the dryer on again, in order to allow freon pression re-balance.

# 6.6 Maintenance, troubleshooting and dismantling.

#### 6.6.1 Maintenance

Before attempting any maintenance operation, make sure that:

1. No parts of the system is under pressure.

2. No parts of the system is electrically powered.

WEEKLY OR EVERY 40 HOURS OF OPERATION

Verify the temperature on the control panel display.

visually check if the condensate is drained regularly.

MONTHLY OR EVERY 200 HOURS OF OPERATION

Clean the condenser with a compressed air jet, taking care not to damage the cooling battery aluminium wings.

#### At the end of the above mentioned operations, check if the dryer is working properly. YEARLY OR EVERY 2000 HOURS OF OPERATION

Check if the flexible tube used for condensate drainage is damaged and replace it if necessary.

Check if all connecting pipes are properly tightened and fixed.

At the end of the above mentioned operations, check if the dryer is working properly.

### 6.6.2 Troubleshooting

# NOTE: FOLLOWING BEHAVIORS ARE NORMAL CHARACTERISTIC OF OPERATION AND NOT TROUBLES:

- Variable speed of the fan.
- Visualization of message ESA in case of operation without load.
- Visualization of negatives values in case of operation without load.

	Troubleshooting and eventual control and/or maintenance operations must be performed by qualified personnel. For maintaining the refrigerating circuit of the machine, contact a refrigeration engineer.
TROUBLE	POSSIBLE CAUSE AND REMEDY
<ul> <li>Luminous switch / Display of the control panel OFF.</li> </ul>	<ol> <li>Check if the line is electrically powered.</li> <li>Check cabling.</li> <li>Check the electronic control board; if the trouble persists, replace it.</li> </ol>
The compressor doesn't start.	<ol> <li>Check cabling and control.</li> <li>Activation of compressor's internal thermal protection; wait one hour and check again. If the fault persists: stop dryer and call a refrigeration engineer.</li> <li>Check the compressor's electrical components.</li> <li>Short circuit in the compressor. Replace it.</li> </ol>
□ The fan doesn't work.	<ol> <li>Check the protection fuse (if present), and in case replace it.</li> <li>Check cabling.</li> <li>Check the electronic control board; if the trouble persists, replace it.</li> <li>Short circuit in the fan. Replace it.</li> </ol>
<ul> <li>Condensate drain absent (no water nor air).</li> </ul>	<ol> <li>Check cabling.</li> <li>Pre-filter of the drainage system dirty, clean it.</li> <li>The coil of the drainage solenoid vale is burned out, replace it.</li> <li>Drainage solenoid valve clogged/jammed, clean or replace it. (fig.2)</li> <li>Check the electronic card, if the trouble persists, replace it.</li> <li>The temperature on the display of the control panel is lower then the nominal value, call a refrigeration engineer.</li> </ol>

30

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□ Air flo	ws continuously	1.	Drainage solenoid valve jammed, clean or replace it.
through the	2.	Verify the condensate drainage times.	
condensate drainage.		3.	Check the control. If the trouble persists, replace it.
Water	in the pipes	1.	The dryer is off; turn it on.
downs	stream the dryer.	2.	Close by-pass (if present).
		3.	Condensate drainage absent; see specific section.
		4.	The temperature on the control panel display is higher than the nominal value; see specific section.
□ The te	emperature on	1.	Check if the compressed air inlet/outlet is connected properly.
the co	ntrol panel	2.	The compressor doesn't start; see specific section.
dispia	y is nigner than	3.	The fan doesn't turn; see specific section.
		4.	The flow rate and/or temperature of the air entering the dryer are higher than the nominal values; restore the nominal conditions.
		5.	The ambient temperature is higher than the nominal values; restore the nominal conditions.
		6.	The condenser is dirty; clean it.
		7.	Condensate drain absent (no water nor air); see specific section.
		8.	Check if the temperature control probe in the evaporator is positioned improperly or faulty.
		9.	Gas leakage in the refrigerating circuit: stop dryer and call a refrigeration engineer.
		10.	Check cabling.
🗆 The d	ryer does not let	1.	Check if the compressed air inlet/outlet is connected properly.
compressed air flow through.	ressed air flow Jh.	2.	The temperature on the control panel display is lower than the nominal value; call a refrigeration engineer.
		3.	Check if the temperature control probe in the evaporator is positioned improperly or faulty.
		4.	Check if the connecting tubing are clogged; eventually proceed accordingly.
		5.	Check if by-pass (if present) is installed properly.
		6.	Check electronic control board. If the trouble persists, replace it.

### **IMPORTANT:**

The temperature control probe is extremely delicate. Do not remove the probe from its position. In case of any kind of problem, please contact your "Service Centre"

31

Fig.2



Cleaning of the drain solenoid valve

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#### 6.6.3 Dismantling

In case of necessity, dismantle the machine and the relevant packaging in compliance with the rules locally in force.

Pay particular attention to the refrigerant, as it contains part of the refrigerating compressor lubricating oil.

Always contact a waste disposal and recycling facility.

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# 7 Compressor maintenance



In order to use the compressor in complete safety read the safety standards given in section 1.3. before reading this section.

### 7.1 Instructions relative to inspections and maintenance jobs.

**The table that follows** summarises the periodic and preventative maintenance jobs required to keep the compressor in an efficient operational state in time. A brief description of the running hours after which the type of maintenance job is required.



#### Before performing any jobs within the sound-proof cabinet, ensure that: The main line switch is turned off (position "0")

The compressor is disconnected from the compressed air system

All the pressure has been released from the compressor and internal pneumatic circuit.

The compressor has been especially designed to facilitate maintenance jobs by simply opening the side panel with quick-release locks.

Weekly: it is advisable to inspect the compressor, paying special attention to oil leaks and scale due to settled dust and oil.

Note! If the compressor is used for more than 3000 hours/year the jobs indicated herewith are to be performed more often.

Jobs to be performed	See section
Check if the filters of the electric cabinet are clogged Check if the anti-dust pre-filter is clogged	
Change oil Check the electrical connections and tighten if necessary	7.1.1
Replace the oil filter cartridge Replace the filter cartridge of the oil separator Replace the air filter cartridge Check the transmission Clean the air/oil radiator Check filters in electrical cabinet and replace if necessary	7.1.2 7.1.3 7.1.4 7.1.5 7.1.8
Clean inverter dissipator (if equipped) Check the safety valve Check the electrical connections and tighten if necessary Drain condensate Change oil	7.1.7 7.1.1
Check the hydraulic seals Overhaul the suction valve	
Check the hoses and replace if necessary Overhaul oil separator flange Grease the minimum pressure valve Replace Fluorflon pipes 6x4 and 10x10 Replace the screw oil seal Replace the bearings of the radiator fan motor (to be done by Technical Service centre) Replace the delivery OR flange Clean the compressor	7.1.9
Replace inverter fan (if equipped) Replace the bearings of the screw (to be done by Technical Service centre)	
	Jobs           Check if the filters of the electric cabinet are clogged           Check if the anti-dust pre-filter is clogged           Change oil           Check the electrical connections and tighten if necessary           Replace the oil filter cartridge           Replace the air filter cartridge           Check the transmission           Clean the air/oil radiator           Check the transmission of the quipped)           Check the safety valve           Check the safety valve           Check the safety valve           Check the electrical connections and tighten if necessary           Drain condensate           Check the hydraulic seals           Overhaul the suction valve           Check the hydraulic seals           Overhaul oil separator flange           Grease the minimum pressure valve           Replace the screw oil seal           Replace the bearings of the radiator fan motor (to be done by           Technical Service centre)           Replace the bearings of the screw (to be done by Technical           Service centre)

The above described maintenance schedule has been planned bearing in mind all the installation parameters and recommended use of the Manufacturer.

The Manufacturer advises the customer to keep a record of all maintenance jobs performed on the compressor, see Section 7 – Drawings and diagrams.

#### 7.1.1 Changing the oil

Read all the information provided in **Section 6.1** before proceeding with any maintenance jobs. Change the oil following the initial 500 hours of use and then every 2000 hours and in event once a year.

In case of not frequently use (few hours of duty per day) you should change the oil every 6 months.



When you open the knurled fitting 2, oil starts to drain from the screw unit, therefore you need to have a pipe and container ready to collect the oil

Unscrew the cap 1 situated at the base of the screw unit.

Screw an attachment with tail piece 2 (supplied together with the compressor). Open tap 3.

Once emptied, shut-off tap 3 and remove the attachment with tail piece.

Fill-up with oil to the half of the union 4, then screw cap 1 back in place and close-up the compressor

again.

Once the oil and oil filter have been changed leave the compressor to run for roughly 5 minutes then turn it off and check the oil level again. Add oil if necessary.

Check the oil level once a month.









Never mix different types of oil, therefore always ensure that the circuit is completely empty before filling-up with oil. Each time the oil is changed the filter is also to be replaced.

#### 7.1.2 Replacing the oil filter cartridge

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Read all indicated in Section 6.1 before starting any maintenance jobs.

Replace the oil filter cartridge after the first 500 hours of use then every 2000/3000 hours and in any event each time the oil is changed.

Open the rear panel.

Disassemble filter cartridge 1, using a chain spanner and replace with a new one. Lubricate the sealing gasket before screwing the filter cartridge tight.

Manually tighten the new filter cartridge.



#### 7.1.3 Replacing the filter cartridge of the oil separator

Read all indicated in Section 6.1 before starting any maintenance jobs. Open the side panel to gain access to inside the compressor. Disassemble filter cartridge 2, using a chain spanner and replace with a new one. Lubricate the sealing gasket before screwing the filter cartridge tight. Manually tighten the new filter cartridge.



#### 7.1.4 Replacing the air filter cartridge

Read all indicated in **Section 6.1** before starting any maintenance jobs. Open the side panel to gain access to inside the compressor. Remove the cover.

Replace the cartridge of the air filter and replace the cover.





### 7.1.5 Tightening the belt

Read all indicated in **Section 6.1** before starting any maintenance jobs.

Open the side 2 panel to gain access to inside the compressor.

Every **500 hours** of use it is advisable to check and maybe tighten the belt if necessary.

Using a dynamo meter apply a perpendicular force in point **A** of between 25N and 35N, the belt must give by roughly 5mm.

Turn the nut 1 to tighten the belt.



Apply max 40 N of force. An excessive force could be damage the paraoil and the screw unit!

#### 7.1.6 Replacing the belt

Read all indicated in **Section 6.1** before starting any maintenance jobs. Open the front 2 panel to gain access to inside the compressor. Turn the nut **1** to slacken the belt. Slide the belt out, replace it with a new one and tighten as described in the previous section.



#### 7.1.7 Draining the condensate

Read all indicated in **Section 6.1** before starting any maintenance jobs. Drain the condensate from the air tank at least once a month by opening tap 1 secured to the foot of the tank.





The condensate drained is considered as polluting mix that must not be thrown away outdoors. It is advisable to use special water/oil separators for its disposal.

#### 7.1.8 Cleaning the air/oil radiator

Read all indicated in Section 6.1 before starting any maintenance jobs.

It is advisable to clean the radiator **1** on a weekly basis to remove impurities, blowing it with an air gun from inside.

low compressed air through the radiator, from inside outwards, making sure that no dirt settles inside the compressor



#### 7.1.9 Electric motor maintenance

#### Grease the bearings of the motor

The motor bearings may be provided with grease and then without maintenance or, depending on the model mounted, provided with bearings with grease nipples.

In case of environmental conditions (room temperatur up to  $30 \,^{\circ}$ C) is it advisable replace the bearings every 12000 hours of duty. In case of difficult environmental conditions (temperature above  $30 \,^{\circ}$ C) replace the bearings every 8000 hours of duty.

Replace the bearings once at 4 year maximum.



# The bearings relacement must to be done by Tecnical Service according by maintenance program.

Put new lubrication grease in the motor bearings, using the special lubricator.

To lubricate (with roughly 20g of grease), take the tap off the grease discharge on the shield. Always clean the grease cap and turn the shaft so that the grease spreads right around the bearing. When the motor is running, right after the bearing has been lubricated, the temperature of the actual bearing will increase by 10°-15° just momentarily, to then settle back down at the normal temperature when the grease has spread evenly and any excess grease has been expelled from the bearing tracks. If bearings are lubricated excessively they would overheat. Once you have re-lubricated and after a few minutes of testing, put the caps back on the holes of the motor shields, which discharge any excess grease.

#### Clean the supports and renew the grease

Whatever the hours of operation, the grease is to be renewed after 1-2 years and also when generally overhauling the compressor. Once the motor has been dismantled, clean all parts of the bearing and the support to remove all the old grease, dry them, check the state of wear of the bearing and replace if necessary. Fill all the empty gaps inside the bearing with new grease. The gaps at the side of the support are not to be filled.





#### Types of recommended grease

To grease the bearings efficiently, use exclusively grease for high temperatures type **Esso Unirex** N3. The manufacturer declines all forms or liability with regard to damages to bearings caused by the use of alternative grease.

Do not mix different types of grease (oil pulp, base oil), which reduces the quality of the oil and is therefore to be avoided.

In case the bearings of the electric motor are already lubricated and are maintenance free. In normal surrounding conditions (ambient temperature up to  $30 \,^{\circ}$ C) replace the motor bearings every 12500 hours of use. In more severe surrounding conditions (ambient temperature up to  $40 \,^{\circ}$ C) replace the motor bearings every 8000 hours of use.

The bearings are to be replaced in any event every 4 years at the most.

# Attention! Before replacing the motor bearings, contact our customer service department, as established by the maintenance schedule.

# 7.2 Diagnosing the alarm status/inconveniences-faults



Before doing any job on the compressor ensure that:

- The main ON/OFF switch is turned Off (position "0")
- The button EMERGENCY/STOP is pressed in secury position
- The compressor is shut-off from the compressed air system
- The compressor and the internal pneumatic circuit are completely depressurised

If you are unable to rectify the anomaly encountered on your compressor contact your nearest authorised service centre.

Cod. Alarm	An	omalies	Ca	auses	Solutions		
AL3	25-50 Hp	Machine stopped: the compressor does not start	25-50 Нр	Emergency button pressed Wrong rotation direction	25-50 Hp	Clockwise to unlock the emergency button, press the reset button on the control panel. Switch off power to the compressor and reversing two phases of the power cable on the terminals for connection of the cable line.	
AL1	25-50 Нр	The machine stops, as the oil alarm has triggered.	25-50 Нр	Excessive temperature of air/ oil mix outlet from the screw $(105 \ C)$ .	25-50 Нр	Check the oil level. Check if the radiator is clean. To restart the compressor press the RESET key on the main board.	
AL4	25-50 Нр	Machine stopped- <b>compressor</b> motor thermal protection switch tripped.	25-50 Нр	The thermal protection switch of the <b>compressor</b> motor has tripped.	25-50 Нр	Check if the electrical powers supply is correct, check if the three power supply phases are more or less at the same value. Check if the cables are firmly fitted to the terminal board, check if the electrical cables have melted. Check if the fan in- take grid is clean or obstructed (paper, leaves, rags). To restart the compressor press the <b>RESET on the thermal relay (see chapter 5.4) and press</b> RESET key on the main board.	
	25-50 Нр	Machine stopped: temperature thermostat <b>fan motor</b> tripped.	25-50 Нр	The internal thermal protection switch of the fan motor has tripped.	25-50 Нр	Check if the electrical powers supply is correct, check if the three power supply phases are more or less at the same value. Check if the cables are firmly fitted to the terminal board, check if the electrical cables have melted. Check if the fan motor in-take grid is clean or obstructed (paper, leaves, rags). To restart the compressor press the RESET key on the main board.	
	25-50 Нр	The compressor is running but fails to load.	25-50 Нр	The suction valve fails to open	25-50 Нр	Check if the pressure probe is working correctly and also if the commanding solenoid valve (NC solenoid valve) is working regularly.	

Cod. Alarm	An	omalies	Ca	auses	Solutions		
AL2	25-50 Нр	Machine stopped: low temperature thermostat tripped	25-50 Нр	Ambient temperature below 0 ℃.	25-50 Нр	To start the machine again be sure the installation of compressor guarantee a minimum ambient temperature above - $5 ^{\circ}$ C, then to restart the compressor press the RESET nutton on the main board.	
AL0	25-50 Нр	Machine stopped – temperature probe anomalies	25-50 Нр	Damage of temperature probe or electric cable.	25-50 Нр	Disconnect from the main power, replace the temperature probe e check the cables.To restart the compressor press the RESET button on the main board.	
AL6	25-50 Нр	Display flashes text	25-50 Нр	Maintenance hours set expired	25-50 Нр	Perform maintenance (change oil and filters)	

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# 8 Drowings and diagrams

# 8.1 Wiring diagrams

Mod. 25-30 380-415V 50-60Hz



Mod 25 380-415V 50-60Hz



Mod. 30 380-415V 50-60Hz



Mod 40-50 380-415V 50-60Hz



Mod 40-50 380-415V 50-60Hz



KEY:

F2-F3	FUSES 5x20 1A (T)
F4	FUSE 5x20 1 <b>A</b> (F)
F5	FUSE 5x20 630Ma (T)
FV	FAN MOTOR FUSE
MC	COMPRESSOR MOTOR
MV	FAN MOTOR
Т	TRANSFORMER
K1	COMPRESSOR MOTOR CONTACTOR
K2	COMPRESSOR MOTOR DELTA CONTACTOR
K3	COMPRESSOR MOTOR STAR CONTACTOR
KV	FAN MOTOR CONTACTOR
KR	PHASE SEQUENCY RELAY
Υ	SOLENOID VALVE
D	ELECTRONIC CONTROLLER
BT	OIL TEMPERATURE SENSOR
SE	EMERGENCY BUTTON
F1+S1	COMPRESSOR THERMAL TRIP SWITCH + RESET
S	PRESSURE SWITCH
STMV	FAN MOTOR TEMPERATURE SENSOR



# 8.2 Pneumatic diagrams

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# MAINTENANCE SCHEDULE

# COMPRESSOR MODEL_____

# SERIAL NO _____

Date	Intervention description	Hours of duty	Operator signature

# MAINTENANCE SCHEDULE

# COMPRESSOR MODEL_____

# SERIAL NO _____

Date	Intervention description	Hours of duty	Operator signature

Rev. (06/2013) - Cod. .7348530130



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AIR COMPRESSORS	SINCE 1977

New Silver 25-30	8-bar	V400/50-60Hz
New Silver 25-30	10 bar	V400/50-60Hz
New Silver 25-30	13 bar	V400/50-60Hz

REF.	CODE	QT		DESCRIPTION
RIF.	CODICE			DESCRIZIONE
1	4070100000	1	Radiator kit	Kit Radiatore
1.1	7515740000	1	Radiator	Radiatore
1.2	5019020008	1	Conveyor	Convogliatore
1.3	х	10	Screw	Vite M8X20 UNI-5739
1.4	х	10	Washer	Rondella Ø8 UNI-6592
1.5	7200440000	1	Fan	Ventola di raff.
2	х	4	Screw	Vite M12X30 UNI-5739
3	х	4	Screw	Vite M12X35 UNI-5739
4	х	4	Screw	Vite M14X45 UNI-5739
5	х	4	Screw	Vite M12X15 UNI-5739
6	х	4	Nut	Dado M12 UNI-5588
7	х	4	Nut	Dado M14 UNI-5588
8	х	8	Washer	Rondella Ø12 UNI-6592
9	х	4	Washer	Rondella Ø 12X36X2,5 UNI-6593
10	х	8	Washer	Rondella Ø14,5X28X2,5 UNI-6592
11	х	4	Washer	Rondella Ø3/4"
12	х	2	Washer	Rondella Ø1"
13	х	1	Washer	Rondella Ø1"1/4"42X54X1,5
14	х	16	Washer	Rondella Ø12 UNI-6592
15	7043011500	1	Clamp	Fascetta
16	7081031150	1	Joint	Raccordo 1"X1" SVF
17	7081120000	4	Joint	Raccordo 3/4"X3/4" SVF
18	7081220000	2	Joint	Raccordo 1"X3/4"
19	7085630000	1	Joint	Raccordo 1"1/4X1" SVF
20	7087780000	1	Joint	Raccordo MF 1"G ZINC
21	7211141300	1	Oil filter	Filtro olio
22	7212301000	1	Oil separator filter	Filtro Disoleatore
23	7214620000	1	Air Filter	Filtro Aria
23.1	7211450010	1	Air filter cartridge	Cartuccia filtro aria
24	7239360000	1	Infeed hose	Tubo alimentazione
25	7239370000	1	Rubber hose	Tubo in gomma
26	7239530000	1	Rubber hose	Tubo in gomma
27	7239890000	1	Copper hose	Tubo in Rame
28	7364450000	4	Shock absorber	Antivibrante Ø75 H40 MF FIL M12 60SH
29	7370900000	3	Belt	Cinghia (NS 25 - 8 bar)
29.1	7370900000	3	Belt	Cinghia (NS 25 - 10 bar)
29.2	7370900000	3	Belt	Cinghia (NS 25 - 13 bar)
29.3	7371000000	3	Belt	Cinghia (NS 30 - 8 bar)
29.4	7371000000	3	Belt	Cinghia (NS 30 - 10 bar)
29.5	7370900000	3	Belt	Cinghia (NS 30 - 13 bar)
30	7386240000	1	Three phase Motor	Motore Trifase (NS 25 - 400V/50-60Hz)
30.1	7386250000	1	Three phase Motor	Motore Trifase (NS 30 - 400V/50-60Hz)
31	7406000000	1	Screw pulley	Puleggia vite 95-3SPA-F30+BUSSOLA
32	7405750000	1	Motor pulley	Puleggia motore (NS 25-8 bar)
32.1	7405690000	1	Motor pulley	Puleggia motore (NS 25-10 bar)
32.2	7405820000	1	Motor pullev	Puleggia motore (NS 25-13 bar)
32.3	7405790000	1	Motor pulley	Puleggia motore (NS 30-8 bar)
32.4	7405980000	1	Motor pulley	Puleggia motore (NS 30-10 bar)
32.5	7405800000	1	Motor pulley	Puleggia motore (NS 30-13 bar)
33	7423440000	1	Screw pump unit	Gruppo vite Pack Smart V90
34	7456440000	1	Belt tensioner	Tendicinghia
35	7120210000	1	Maintenance oil	Olio per manutenzione
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REF.	CODE	οт		DESCRIPTION
RIF.	CODICE	3		DESCRIZIONE
100	4091040000	1	Emergency push button kit	Kit pulsante emergenza
101	5164730008	1	Base	Base
102	5161050008	1	Base	Base
103	5161060028	1	Side Panel	Pannello laterale DX
104	5161070028	1	Upper Panel	Pannello superiore
105	5161230028	1	Front Column	Montante anteriore SX
106	5161090028	1	Rear Column	Montante Posteriore
107	5161100028	1	Support	Supporto
108	5161110028	1	Side Panel	Pannello laterale SX
109	5161120028	1	Motor panel	Pannello motore
110	5161190008	1	Angular	Angolare
111	5161200008	1	Angular	Angolare
112	5161720028	1	Electric box panel	Pannello cassetta elettrica
113	5161730028	1	Belt guard panel	Pannello paracinghia
114	5161740028	1	Front panel	Pannello frontale
115	6002500014	1	Joint	Raccordo FFFF 1/4"
116	Х	4	Screw	Vite M4X12 UNI-8112
117	Х	15	Screw	Vite M5X15 UNI-8112
118	Х	4	Screw	Vite M8X30 UNI-5732
119	Х	4	Screw	Vite M6X22 UNI-5933
120	Х	6	Screw	Vite M5X20 UNI-7380
121	Х	16	Screw	Vite M5X40 UNI-7380
122	Х	6	Screw	Vite M5X50 UNI-7380
123	Х	4	Nut	Dado M6 UNI-5587
124	Х	4	Nut	Dado M8 DIN-6923
125	7083290000	1	Joint	Raccordo "L" F1/8"-6 CALZAMENTO
126	7083310000	3	Joint	Raccordo "L" M1/4"-6 CALZAMENTO
127	7085230000	1	Joint	Raccordo 1/4"-1/4" MF
128	7110400000	1	Pressure gauge	Manometro
129	7130090000	1	Discharge tap	Rubinetto Spurgo M1/4"
130	7213890000	1	Prefilter	Prefiltro
131	7215320000	1	Soundprof Kit	Kit fonoassorbente
132	7230010000	2		
133	7250690000	1	Pressure SWITCN	Piedo in commo (170 605H
134	7360400000	4		Pappalla di somando
135	1433850000	1	Kov	
130	X	2	Koybolo	Linguella Serreture
137	X 7519220000	2	Flectric box	Ouadro elettrico di comando
130	7510030000		Electric board plate	Piastra quadro elettrico
139	1518820000	1		
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New Silver 25-30	8-bar	V400/50-60Hz
New Silver 25-30	10 bar	V400/50-60Hz
New Silver 25-30	13 bar	V400/50-60Hz

	RFF	CODE	<b>—</b>		DESCRIPTION
	RIF.	CODICE	QT		DESCRIZIONE
	200	7415720000	1	Flettric board	Impianto elettrico (NS25 - 400V/50-60Hz)
	201	7434160000	1	Contactor	Contattore ( K1)
	202	7434160000	1	Contactor	Contattore ( K2)
	203	7434170000	1	Contactor	Contattore (K3)
	204	7433250000	1	Contactor	Contattore (KV)
	205	7434070000	1	Relay	Relé sequenza fasi (KR)
	206	7434250000	1	Thermic	Termica (F1+S1)
	207	7434200000	1	Contact	Contatto ausiliario (for K1)
	208	7434210000	1	Contact	Contatto ausiliario (for K2-K3)
	209	7563180000	1	Transformer	Trasformatore
	200	7415730000	1	Elettric board	Impianto elettrico (NS30 - 400V/50-60 Hz)
	201	7434150000	1	Contactor	Contattore (K1)
	202	7434150000	1	Contactor	Contattore (K2)
	203	7434160000	1	Contactor	Contattore (K3)
	204	7433250000	1	Contactor	Contattore (KV)
	205	7434070000	1	Relay	Relé sequenza fasi (KR)
	206	7434240000	1	Thermic	Termica (F1+S1)
	207	7434200000	1	Contact	Contatto ausiliario (for K1)
	208	7434210000	1	Contact	Contatto ausiliario (for K2-K3)
	209	7563180000	1	Transformer	Trasformatore
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POS	CPN	Q.tà	DESCRIPTION	DESCRIZIONE
300	7196460000	1	Intake valve	Valvola di aspirazione RC50
301	7196460020	1	Maintenance valve kit	Kit manutenzione Valvola
302	7423450010	1	Guskets kit	Kit guarnizioni
303	7423440010	1	Oil seal kit	Kit paraolio
304	7423440020	1	Bearing Kit	Kit Cuscinetti
305	7423450040	1	Minimun valve kit	Kit valvola di minima
306	7423450050	1	Recovery oil hose kit	Kit tubo recupero olio
307	7196460010	1	Solenoid Valve	Elettrovalvola RC50
308	7423440100	1	Screw pump unit	Gruppo vite V90
309	7423440200	1	Oil-air separator tank	Serbatoio disoleatore
310	7423450300	1	Flange kit	Kit flangia







Pump Unit: Pack Smart V90

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