mattei®

AIR COMPRESSORS

UNICA Series

rif. TCD0120002 / TDA0120009

INSTRUCTION, USE, AND MAINTENANCE MANUAL

INSTRUCTION USE AND MAINTENANCE MANUAL

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Versions

- UNICA 1 / UNICA 1S
- UNICA 2 / UNICA 2S
- UNICA 3 / UNICA 3S

Voltages/Frequencies

V 230/50 Hz - UNICA 1 / UNICA 1S
- UNICA 2 / UNICA 2S

V 400/50Hz - UNICA 1 / UNICA 1S
- UNICA 2 / UNICA 2S
- UNICA 3 / UNICA 3S

The present manual, written in English, is the official translation of the manual in Italian, chosen as reference language by Ing. ENEA MATTEI SpA.
The paper copy will be available for over 10 years after end of production of the machine to which it refers.

The content of this document cannot be used, reproduced or disclosed to third parties without the explicit written consent of **Ing. ENEA MATTEI S.p.A.**

Ing. ENEA MATTEI S.p.A. reserves the right to modify the characteristics of the machine subject of this document without prior notice.

This instruction manual meets all requirements of the 2006/42/EC Directive.
It is to be considered valid for both machines, those with CE Marking and those without it.

Symbols in the manual

In this manual some symbols are used to attract the reader's attention and underline some particularly important aspects that are dealt with.
The table below gives the list and describes the meaning of the different symbols used.

SYMBOL	MEANING AND NOTES
	**Danger** It indicates a danger with a risk for accident, even fatal, for the user. Pay careful attention to text blocks with this symbol.
	Warning It warns against a possible deterioration of the machine or of the user's personal items.
	**Note** It shows a warning or note on the key fuctions or useful information.
	**Additional information** This symbol introduces text blocks containing further information. Such information are not directly related to the description of a function or to the development of a procedure. They may be cross-references to other documents or other sections of this manual.
	**Risk of damage** Indicating a high risk of damage for an item, such as using a wrong tool or assemblilng something in the wrong way.
	**Visual check** Suggesting the reader to carry out a visual check. This symbol can be also found in the instructions for use. The user must read a measuring, check a signal, etc.
	**Acoustic check** It recommends the reader to carry out an acoustic check. This symbol can be also found in the instructions for use. The user is required to listen to an operational noise.

Purpose of document

This manual includes technical characteristics, performance, transportation and installation rules, instructions for use, preventive and corrective maintenance operations of the machine manufactured by **Ing. ENEA MATTEI S.p.A.**

NOTE: This manual should be considered an integral part of the machine, and should stay with it during the whole life of the equipment.

Keep the manual and all attached documents in a place easily accessible to all staff in charge of the control or maintenance of the machine.

Ing. ENEA MATTEI S.p.A. reserves the right to subject the supply of further copies to the repayment of charges and to acceptance of special clauses related to the selfdefense of intellectual property, patent, and executive and functional identity of the product and/or parts of it.

It is understood that passing on all or part of this manual to third parties is not allowed without prior written consent of Ing. ENEA MATTEI S.p.A., either texts, or illustrations or diagrams.

Ing. ENEA MATTEI S.p.A. reserves the right to make changes without prior notice.

Any change, addition or elimination of machine elements, components, functions or cycles, not previously agreed upon with Ing. ENEA MATTEI S.p.A. releases the manufacturer from any responsibility whatsoever.

This manual is for the machine user and service engineer, and it aims at supplying them with typical system technical data, with a technical description of the various operating groups composing the same as well as the essential use procedures and information needed to perform preventive and corrective maintenance.

The manual is intended for staff with a sound knowledge of the machining processes, of mechanical and electrical diagrams, and involves both machine operators and technical service engineers.

This manual is an integral part of the machine and contains information that aims at granting all staff safe working conditions and ensuring perfect efficiency during the whole life of the machine.

For a correct use of the machine it is assumed that the working environment complies with current regulations concerning safety and health.

Applied directives and technical standards

The machine has been designed, manufactured and tested in compliance with the “safety and health essential requirements” stated in attachment 1 to the **European Directive 2006/42/EC.**

The list below gives the reference standards used by **Ing. ENEA MATTEI S.p.A.** for the design, manufacture and testing of the machine.

List of harmonized directives and technical standards

MACHINES DIRECTIVE 2006/42/EC
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004/108/EC
LOW VOLTAGE DIRECTIVE 2006/95/EC
EN 1012-1 Compressors and Vacuum Pumps – Safety Requirements - Compressors

Required qualifications for operators

The person in charge of the machine operation or maintenance should have all specific professional skills to do this.
The operator should be trained and aware of his responsibilities.
Below is the description of professional profiles for the machine operators.

Entry Level Machine Operator (Qualification 1)
Qualified staff able to carry out simple tasks, i.e. to operate the machine by using push buttons on the control panel and carry out typical simple settings, start-up and stopping.

Second Level Machine Operator (Qualification 2)
Qualified staff able to perform the tasks of Qualification 1 and also to operate the machine with disconnected protections to perform settings, start-up or stopping functions..

Important

This qualification includes responsibilities that normally are divided into two separate qualifications. For our machine operators a training course is foreseen, enabling them to perform all needed actions to operate the machine even with some of the protections disconnected. However, this involves a certain competence by the operator and extreme care by the factory manager, so that the said operator performs only allowed operations.

Mechanical Service Engineer
A qualified engineer able to operate the machine under normal conditions, to operate it with disconnected protections, to work on mechanical parts and make all needed settings, maintenance and repairs.
He is not allowed to work on electrical systems with live voltage.

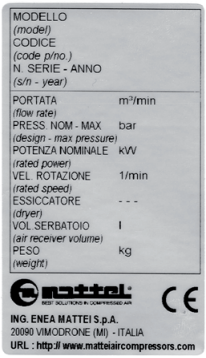
Electrical Service Engineer
A qualified engineer able to operate the machine under normal conditions and operate it with disconnected protections; he is in charge of all electrical adjustments, maintenance and repair.
He is able to operate inside cabins and shunt boxes with live voltage.

Manufacturer's Engineer
A qualified engineer from the manufacturer, to perform complex operations under special conditions or according to what is agreed with the final user.

Manufacturer's identification data - "CE MARKING"

Ing. ENEA MATTEI S.p.A. is identified as the machine's manufacturer, according to current laws in force, by following acts:
- Declaration of conformity - CE marking
- Instruction manual

A specific plate on the machine gives the following indelible information on the CE MARKING:



Model
Code
Serial number
Year of manufacture
Flow rate
Pressure
Power
Rated speed
Dryer
Receiver capacity
Weight
Manufacturer's name and address

The relevant "DECLARATION OF CONFORMITY" is enclosed.

It is forbidden to remove the "CE MARKING" plate and/or exchange it with other plates of machines of the same model in use by the customer or the operator.

Should the "CE MARKING" plate be accidentally damaged or removed from the machine, customer should inform the company.

General notes on delivery
Upon receipt of the machine please check that:
The supply complies with the order specification.
There are no damages due to transportation or other reasons.
(In the event of damage or missing parts, please inform immediately and in detail the forwarding agent or **Ing. ENEA MATTEI S.p.A.**)

ALWAYS STATE THE MACHINE SERIAL NUMBER AS WELL AS THE PRINT NUMBER OF THIS MANUAL WHEN MAKING ANY REQUEST TO Ing. ENEA MATTEI S.p.A. OR ONE OF THEIR SERVICE CENTRES.

Final inspection
The manufacturer carries out the final inspection of the machine directly, during the production phases, in compliance with the company quality system.
Ing. ENEA MATTEI S.p.A. is responsible for the machine under its original configuration.
Ing. ENEA MATTEI S.p.A. refuses any responsibility for improper use of the machine, for damages due to operations which are not described in this manual or unreasonable applications.

Safety precautions
The final user should comply with the instructions given by the supplier, concerning:
• safety devices already installed on the machine
• instructions for correct machine installation
• correct use and periodic maintenance of all the machine components, including safety devices
• regulations of current laws

The following safety precautions define both the behaviour and obligations to be observed when carrying out the activities listed in the manual, the instructions for the machine use and how to operate it under safe conditions, for the staff and the surrounding environment.

Machinery Directive
Machinery Directive means the 2006/42/

EC DIRECTIVE OF THE EUROPEAN PARLIAMENT AND COUNCIL dated 17 May 2006.

Machine
Machine means the functional assembly composed of: control unit, processing unit, working and resting equipment, systems (electrical, pneumatic, hydraulic, cooling, lubrication systems) and any group completing the system functionality.

Working area
Working area means the protected volume limited by guards to prevent injuries and aimed at operation during the machine processing.

Authorized staff
Authorized staff means personnel duly trained and appointed to perform the activities listed below and that make up the operating instructions for the machine.

Appointed staff
Appointed staff means the personnel who, although not participating materially in the work, supervise the work of others, for example the responsible engineer.

Transport
Transport means all those operations regarding the handling of the machinery or part of it.

Installation
Installation means the mechanical, electrical and fluid system integration of the machine into a production reality, in compliance with specified requirements.

Commissioning
Commissioning means the functional check of the machine installed.

Operation
Operation means the operating mode at which the machine produces compressed air according to all settings and controls inserted by the control device.

Decommissioning
Decommissioning means to disconnect mechanically and electrically the machine from a production line.

Dismantling
Dismantling means dismantling and eliminating the machine components.

Maintenance and repair
Maintenance and repair means the regular check and/or replacement of parts or components of the machine and any action to identify the cause of failure, ending with the machine resetting to the design operating conditions.

Improper use
Improper use means using the machine out of the limits specified in the technical documentation.

Applicability
The regulations should be applied when performing following activities:
- Transport, installation and setting up
- Manual operation
- Continuous operation
- Decommissioning and dismantling
- Maintenance and repair that compose the use procedures foreseen for the machine.

Installation and commissioning

The installation and commissioning are only permitted to authorised staff.

During installation, handle the machine components as indicated in this manual; if lifting is necessary, verify first the correct fixing of specific devices for lifting and use adequate slings and equipment.

The machine installation should be as free as possible from any material preventing or limiting its view.

If there are any, remove fixing brackets or eyebolt blocking devices, previously fitted to allow the transport.

Check that all the machine safety devices are correctly fixed and there are no moving or loose parts.

Also check soundness of the control unit components.

Connect the machine pneumatic system to the air distribution system and carefully check that pressure is set to the correct value.

Check consistency between the voltage set on power transformers and the voltage value of the electrical supply.

Before connecting the machine electrical system, check that the mains isolator is blocked in the off (open) position.

Verify that accident preventing guards are correctly installed and in perfect state.

The machine safety is not guaranteed in case of removal, bypass or tampering of the safety devices on the machine.

Operating the machine

Only authorised and duly trained staff or at least with a sufficient technical experience should operate the machine. The staff in charge of operating the system should be aware that the knowledge and application of safety regulations is in an integral part of their job.

Unskilled personnel should not access the operating area and the machine control panel when the system is live.

Before starting the machine, carry out following operations:

- Carefully read the technical documentation;
- Get information about the operation and position of emergency stop devices on the machine;
- Know which protections and safety devices are fitted on the machine, their position and operation.

It is forbidden to either disconnect or partially remove the protections and safety devices. The same applies for danger signals located in particular areas of the machine. It is strictly forbidden to access the working area and the control and power cabins during operation of the equipment (even partial) or immediately after it is switched off.

Protections and safety devices should be kept in perfect state so as to allow correct operation; in case of failure they should be repaired or replaced.

The use of not authorised components and accessories for the protections and safety devices may lead to malfunctioning and dangerous situations for the operating staff.

Decommissioning and dismantling

Only authorised staff are allowed to decommission and remove the machine.

Before taking the machine out of operation it is necessary to disconnect the mains isolator and block it in the off (open) position.

Discharge oils and fluids, remove all moving parts.

Disconnect the mains isolator cable, by cutting out the power wires and then the earth wire.

Disconnect the power supply cable from the machine main switch and remove it.

Disconnect the machine pneumatic equipment from the air distribution system.

Remove the machine from the working area following the instructions given in this manual. Before

lifting it, verify the correct use of lifting devices and use only suitable equipment**.**

Waste disposal should be performed in compliance with the laws in force in the country where the machine is installed.

☐ Installation, setting up and use of compressor should be carried out in compliance with the standards and the rules in force concerning safety at work.

☐ The owner of the machine is responsible for its good maintenance, an essential condition to ensure safe operation.

Those machine parts that due to improper use or wear do not ensure safe operation should be quickly replaced.

☐ Only trained, authorised and skilled staff should perform the installation, use, maintenance and repairs.

☐ In case of difference between the instructions given in this manual and those foreseen by current laws concerning safety, it is recommended to apply the more restrictive ones.

Maintenance and repair

Only authorised personnel should carry out maintenance, troubleshooting and repairs.

Any maintenance and repair in progress should be signalled by a specific sign, stating the maintenance condition and placed on the control panel until completion of the job, even if temporarily interrupted.

All operations for installation, maintenance or replacement of components on the machine or on the control unit should be performed with the system switched off.

Therefore, the main switch should be on OFF (OPEN) position and blocked with the safety lock to prevent any movement to the ON position.

Before acting, people in charge of maintenance should first check following conditions:

• that any receiver under pressure has been exhausted.

Before intervening on pneumatic or lubricating systems and specifically on pipes, receivers, hoses and other components under pressure, the staff in charge of maintenance should reduce the internal pressure of the plant down to the ambient pressure value.

Faulty components must be replaced with others having the same code.

If during troubleshooting it is necessary to carry out jobs with the control unit and the machine live, all precautions should be taken, as required by the safety standards to operate under dangerous voltages and with moving parts.

At the end of the maintenance and troubleshooting jobs, all disconnected safety devices should be reset.
Maintenance, repair and troubleshooting should be ended by the checking of the machine operation and of all its safety devices.

Settings to be made by customer
Unless different contractual agreements are taken, the following items are normally at customer's expense:

- ☐ room preparation (including building works, such as foundations or canali zations, etc, if required);
- ☐ anti-slip, levelled flooring;
- ☐ layout drawing when preparing the site and when installing the machine itself;
- ☐ preparation of auxiliary services, sui table for the system requirements (such as electricity supply, pneumatic system, etc);
- ☐ preparation of the electrical equipment conforming to 2006/95/EC Directive
- ☐ adequate lighting complying with EN 60204-1 Standard;
- ☐ any safety devices upstream and downstream of the electrical supply lines (like differential switches, earthing systems, safety valves, etc) foreseen by the current laws in the country of installation;
- ☐ earthing equipment complying with CEI 64-8 Standard;

General Instructions
For any kind of information on the use, maintenance, installation, etc. Ing. ENEA MATTEI S.p.A. is always available to meet the Purchaser's requests.
However, any enquiry should be made in clear terms, with references to this manual and always stating the data on the machine id plate.
For any communication with the service centre, always indicate the machine model, the serial number and year of manufacture, helping to identify every single machine and, when possible, specify the kind of problem or the defect found, for instance: electrical, mechanical fault or defects in the machining quality, and describe the same in the "**TECHNICAL SERVICE REQUEST FORM**" enclosed to this manual.
Please contact the nearest local service department, or refer to the headquarters in Italy.

Instructions on how to order spare parts
In the course of time a machine may need the replacement of those parts subject to wear.
The Purchaser may order the parts to be replaced.
It is compulsory to always buy original spare parts.

To order spare parts always indicate following data with the utmost accuracy:

1 Machine type and model
2 Serial number
3 Exact description of the item
4 Code and/or reference (if available)
5 Quantity

To simplify and speed up the delivery of spare parts, it is suggested to forward orders by compiling the "SPARE PARTS REQUEST FORM" enclosed with this

manual and send it to Ing. Enea MATTEI S.p.A.. or to the closest distributor.

Kits with components for preliminary maintenance are available.
Please apply to Ing. Enea MATTEI S.p.A. for further details.

The manufacturer's address Any request for intervention of the technical service by the customer or explanations on technical aspects of this document should be made to:

To operate the machine under any operating condition, including maintenance, it is not necessary that more than one person be present.
Using more than one person is superfluous and, in any case, not allowed for safety reasons.

The employer should instruct the staff on the risks of accidents, on safety devices and on he general rules concerning prevention and protection, as established by the European Community Directives and by the current legislation in the country where the machine is installed.

The operator should be aware of the location and operation of all controls and of all the machine features.
The operator should also have read the entire manual.

Only skilled engineers should carry out maintenance jobs, after having duly prepared the machine..

Any unauthorized tampering or replacement of one or more parts of the machine, or the adoption of accessories that modify the use of the machine and the use of different materials than those recommended in this manual, may be a potential risk of accidents.
It is strictly forbidden for the machine to be operated by two persons at the same time, one inside the guards and one on the control panel.

Dangers and residual risks
During the design phase all hazardous areas have been considered and, therefore, all necessary precautions have been taken to avoid risks to people and damage to the machine components.

To guarantee both health and safety of those exposed, the machine is equipped with appropriate safety devices:

- Fixed protections. located in areas with exclusive access for routine maintenance. They are fixed by devices that need special tools for their removal, or they are locked with screws.
- Protection and segregation of the electrical/electronic driving equipment of the machine by metallic box, to avoid accidental contacts with live equipment in case of accidental opening of the metallic box.
- Suitable protections to cover moving parts.

WARNING!!!
Our machine IS NOT SUITABLE for use in areas with potentially explosive atmosphere.

After having carefully considered all possible risks concerning the use and maintenance of the machine, all measures have been adopted to eliminate risks and limit dangers to exposed people.
Although the machine is equipped with safety devices, the following residual risks remain:
• Risk of bruises, tearing, cuts during the handling of tools and/or elements.
• Risk of bruises during machine intervention.
which can be eliminated or reduced by the relevant precaution.

Operation
☐ The operator should use the personal protection devices.
☐ Use the compressor only for the kind of application for which it is designed (air compression for industrial use).

- ☐ Before starting, ensure that compressor is filled with oil.
- ☐ Please refer to Section 8 of this manual for the oil type to be used.
- ☐ Never operate the compressor if there is a possibility of inhaling smoke or toxic or flammable vapours.
- ☐ Never operate the compressor at higher pressures than those indicated in the id plate.The air delivered by the compressor must not be used for breathing, unless it is filtered and purified from oil.
- ☐ If hoses are used to distribute the air, ensure they are properly sized and suitable for the operating pressure, and not damaged or worn. Please remember that rubber hoses should be replaced at regular intervals.
- ☐ Never remove the oil filler plug when the machine is running or there is still pressure inside the compressor: there would be hot oil leak.
- ☐ Although it has an acceptable sound pressure level, the machine can produce a much higher noise if the room is narrow and reverberating. Please note that the continuous presence of an operator is unnecessary. For safety against noise, in compliance with local laws in force, and if necessary, place specific warning signs near the machine and equip personnel with suitable protections

Installation

Besides fulfilment of rules and regulations issued by the authorities, it is recommended to consider the following:

- ☐ The compressor will perform most efficiently if installed in a suitable, well ventilated area and far from heat sources.
- ☐ In case of outdoor installation (not suggested for very cold climates) it is necessary to place the machine under a roof or covering, to protect it against weather.
- ☐ Be careful that no foreign materials clogg the radiator and cause rises of the operating temperature.
- ☐ The intake air must be clean and free from flammable vapours, which could cause fires or xplosions.
- ☐ As the machine is air-cooled, to avoid overheating a good ventilation is required to prevent the recycling of the hot air expelled.
- ☐ Control and safety devices should never be tampered with.
- ☐ If one or more compressors are installed on a single pneumatic line, it is essential that each unit is equipped with an isolating valve.
- ☐ Electrical connection should be conforming to current regulations. The machines should be earth connected and protected by a magneto-thermal switch against possible short circuits.
- ☐ It is essential to install a mains isolating switch upstream of the compressor.

Maintenance

The person responsible for operation of the compressor should check periodically that all instructions for operation and maintenance are followed by the operator.

WARNING!!!
Fill in the specific "Maintenance Sheet" supplied with the machine.

Only trained staff should carry out maintenance, with the compressor off and with no pressure inside the same. Also disconnect the compressor from the pneumatic equipment.
Turn off the electricity supply at the mains isolator located upstream of the compressor's electric board and indicate with a special sign that the machine MUST NOT BE RESTARTED.

WARNING!!!
An adequate cleaning of both the machine and the place where it is installed is highly recommended. For cleaning DO NOT USE flammable fluids or products not complying with current regulations.
In case of doubts about the compressor operation or of any of its components, it is recommended to contact the after sales service of Ing. Enea Mattei S.p.A.

The following should be also considered:

- ☐ Before intervening on the machine, disconnect the electrical supply by means of the mains isolator.
- ☐ The key for opening/closing the electric box doors should be given only to skilled personnel.
- ☐ Maintenance operations should be always carried out with the compressor not operating.
- ☐ efore carrying out any job on the compressor unit, ensure through the gauge that there is no pressure inside.
- ☐ Only use suitable tools for the kind of job.
- ☐ Never use solvents and flammable products to clean the machine or individual parts.
- ☐ Never carry out welding or other jobs requiring considerable heat near the machine, specifically near the electrical system and the oil circuit.
- ☐ Do not make modifications or weldings on vessels under pressure.
- ☐ Do not leave tools, rags or other loose items on the motor or on the compressor.
- ☐ The lubricating oil, especially if exhausted, may damage the skin: protect hands with gloves or specific protecting products for the skin.
- ☐ Do not wear clothes contaminated by lubricating oil
- ☐ Absolutely avoid contaminating the ground with lubricating oil.
- ☐ To prevent pollution, store the exhausted lubricant into suitable containers and in a safe place.
  For oil disposal follow what is required by internal rules and current regulations.
- ☐ In case of topping up, use the same oil as already contained in the machine. Mixtures are harmful for both the oil and the compressor life.
- ☐ After any maintenance, start the machine and check that all control, stop or alarm devices are working correctly; also verify that temperature and pressure values are the correct ones.
- ☐ Make checks and overhauls as foreseen in this Manual, and use only original spare parts. Failing to make checks or using non original spare parts may cause problems that jeopardize the machine operation and the manufacturer's warranty will be no longer valid.

Responsibilities
Ing. Enea MATTEI S.p.A. refuses any responsibility for injuries to people, animals or damages to objects, caused by:

- ☐ non-observance of the mentioned precautions;
- ☐ improper use of compressed air or of the machine in general;
- ☐ non-observance of normal safety regulations or domestic rules in the work field;
- ☐ non-observance of the instructions during handling and transport of the machine;
- ☐ wrong machine installation;
- ☐ defects due to the electric power distribution;
- ☐ lacks in periodic maintenance;
- ☐ unauthorised jobs or modifications;
- ☐ use of non original or unsuitable spare parts for the model involved;
- ☐ non-observance of the instructions, even if only partially;
- ☐ possible inefficiencies caused by malfunction or non-use of the compressor.

WARNING !!!
It is recommended to use the compressed air delivered directly by compressors only for manufacturing processes. For any other use, please ALWAYS CONTACT the distributor, the technical service or the manufacturer BEFOREHAND.

Description of pictograms
Pictograms have been applied on the machine to explain following situations:

Danger - Obligation - Prohibition

Special indications (example: direction of rotation of the fan, etc) Many accidents are often caused by the nonobservance of the simplest safety rules or poor knowledge of the instructions given by the manufacturer.

To avoid possible danger situations, some of them are highlighted through special signs represented by suitable standardized symbols (pictograms).

Below is the list of the most common symbols applied to our machines:

Danger pictograms
These triangular signs are framed in black with a yellow background and the symbol is black.

Warning!
The machine is fitted with remote control or with automatic system and may start without notice.

Warning!
Risk of high temperature surface (> 70 °C)

Warning !
Risk of electrical shock.

Warning !
Vessel under pressure

Warning!
Air delivery.

Prohibition pictograms
These circular signs are framed in red, with white background and the symbol is black.


No working on the machine.


No pressure in the receiver.


No voltage.

Obligation pictograms
These are circular signs on a blue background, and the symbol is white.


Read the instructions manual before carrying out any operation on the machine.


Use individual protective means against noise.

Indication pictograms
These signs may vary in shape and they give useful information.


Direction of rotation.


Lifting point.


Possibility to carry out jobs.

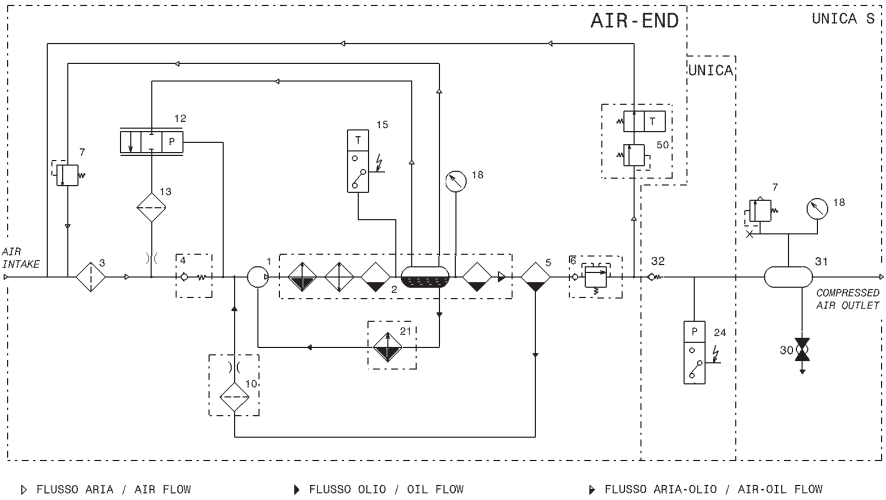
Combination of pictograms

The above shown combination of pictograms means:
Warning! Please refer to the Instruction Manual before starting any activity.

Warning !
Do not perform any maintenance operation on the compressor before having disconnected power supply and discharged all air pressure..

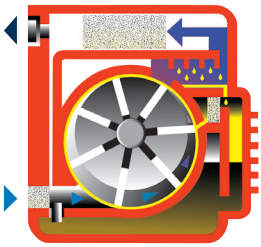
Mattei rotary compressors of the UNICA Series are the result of years of investments in research and development, to improve performance continuously, and at the same be environment-friendly.
Designed for intermittent or continuous industrial service, they guarantee constant performance over time, low energy consumptions, reliability, functionality and easy maintenance.

The compressor is supplied complete with all components described below and equipped with optional devices.
Unless differently required, the unit is filled with Mattei Rotoroil F2 synthetic lubricant.
For special requirements regarding lubricant, please refer to section 8 of this manual.



1	COMPRESSORE ROTATIVO A PALETTE	1	*ROTARY VANE COMPRESSOR*
2	CAMERA OLIO - SEPARATORE PRIMARIO - SCAMBIATORE ARIA - SCAMBIATORE OLIO	2	*OIL CHAMBER - PRIMARY SEPARATOR - AIR COOLER - OIL COOLER*
3	FILTRO ASPIRAZIONE	3	*INTAKE FILTER*
4	VALVOLA ASPIRAZIONE	4	*INTAKE VALVE*
5	CANDELA	5	*AIR - OIL SEPARATOR*
6	VALVOLA DI MINIMA PRESSIONE E NON RITORNO	6	*MINIMUM PRESSURE - NON RETURN VALVE*
7	VALVOLA DI SFIATO	7	*RELIEF VALVE*
10	VALVOLA DI RITORNO OLIO	10	*OIL RETURN VALVE*
12	VALVOLA DI SCARICO PRESSIONE	12	*PRESSURE EXAUST VALVE*
13	FILTRO	13	*FILTER*
15	TERMOSTATO	15	*THERMOSTAT*
18	INDICATORE DI PRESSIONE	18	*PRESSURE GAUGE*
21	SCAMBIATORE OLIO	21	*OIL COOLER*
24	PRESSOSTATO DI MIN-MAX	24	*MIN-MAX PRESSURE SWITCH*
30	VALVOLA DI SCARICO	30	*DRAIN VALVE*
31	SERBATOIO ARIA	31	*AIR RECEICER*
32	VALVOLA DI NON RITORNO	32	*NON RETURN VALVE*
50	VALVOLA ANTICONDENSA	50	*ANTI-CONDENSATE VALVE*

OPERATING PRINCIPLE



During the compression process, air is drawn through a filter into the “Rotor-Stator unit”.
Such “unit” consists of a cylinder (stator) in which a rotor mounted eccentrically and tangential with the stator rotates. The rotor has longitudinal slots in which vanes slide.
Vanes are pushed against the stator internal surface by centrifugal force, generated by rotation. Air is compressed through the contraction in volume of the chamber, consisting of the stator, vanes and rotor, during rotation.
Sealing between the moving parts, cooling and lubrication are ensured by oil injection.
At the exit from the rotorstator unit the air-oil mixture passes through a filtering element, separating oil from the air, this oil is then recovered and returns to the intake. The air-oil mixture leaving the compression unit passes through a special internal sleeve and touches the internal surface of the finned chamber. An air flow, produced by the axial fan, flows through the finned chamber and removes heat generated during the compression. Compressed air leaves the compressor through a valve, which has the function of keeping a minimum pressure inside the oil chamber, so as to ensure suitable operation when the compressor is delivering air.

DOCUMENTATION

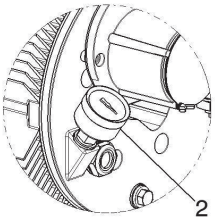
The machine is supplied complete with:
n.1 Use and maintenance manual complying with Machines Directive 2006/42/EC
n.1 CE declaration of conformity
n.1 Start report
n.1 Maintenance Booklet

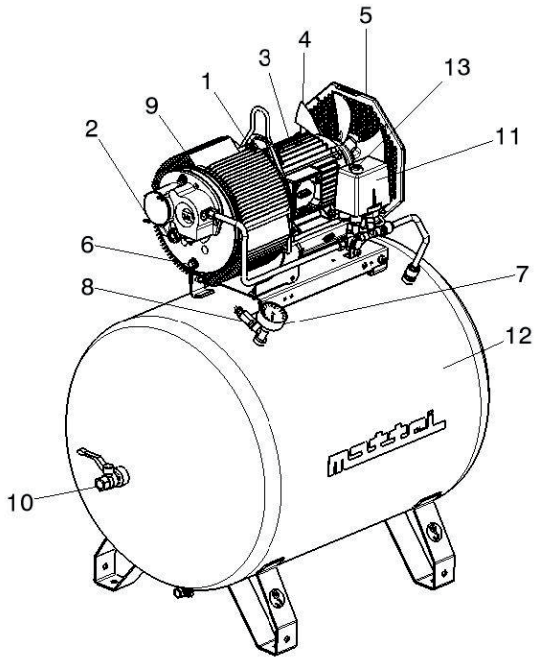
CERTIFICATIONS

Ing. Enea Mattei S.p.A. has been certified by DNV with the Quality System Certificate, conforming to UNI EN ISO 9001 standard.

Location of main components

1 Thermostat
2 Compressor pressure gauge
3 Electric motor
4 Fan
5 Fan guard panel
6 Fan guard panel
7 Receiver pressure gauge (UNICA S version)
8 Receiver safety valve (UNICA S version)
9 Oil chamber
10 Air delivery outlet connection
11 Pressure switch
12 Receiver
13 On/off switch





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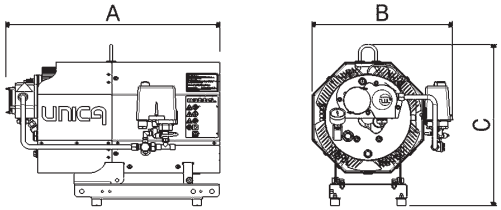
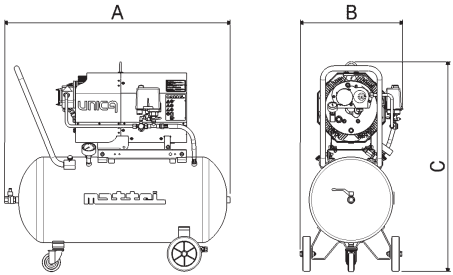
Technical data and overall dimensions

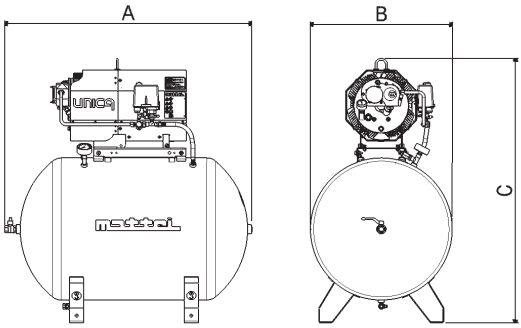
UNICA 1-2-3





UNICA S - 90 l

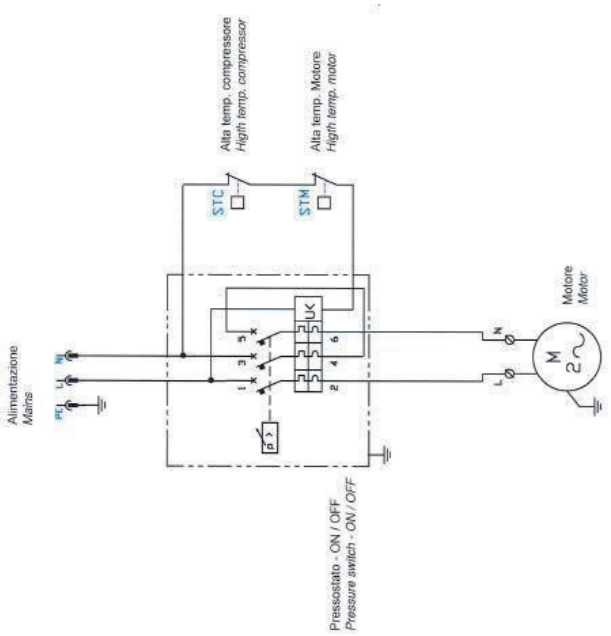
UNICA S - 200 l



MODEL	RECEIVER	A	B	C	AIR OUTLET	WEIGHT kg	
	litres	mm	mm	mm		230-1	400-3
UNICA 1		580	390	440	Rp 1/4”	41	40
UNICA 2		580	390	440	Rp 1/4”	43	42
UNICA 3		580	390	440	Rp 1/4”	43	
UNICA 1 S	90	1000	460	910	Rp 1/2”	74	73
UNICA 2 S	90	1000	460	910	Rp 1/2”	76	75
UNICA 1 S	200	1050	600	1120	Rp 1/2”	95	94
UNICA 2 S	200	1050	600	1120	Rp 1/2”	97	96
UNICA 3 S	200	1050	600	1120	Rp 1/2”	97	

Single-Phase Version

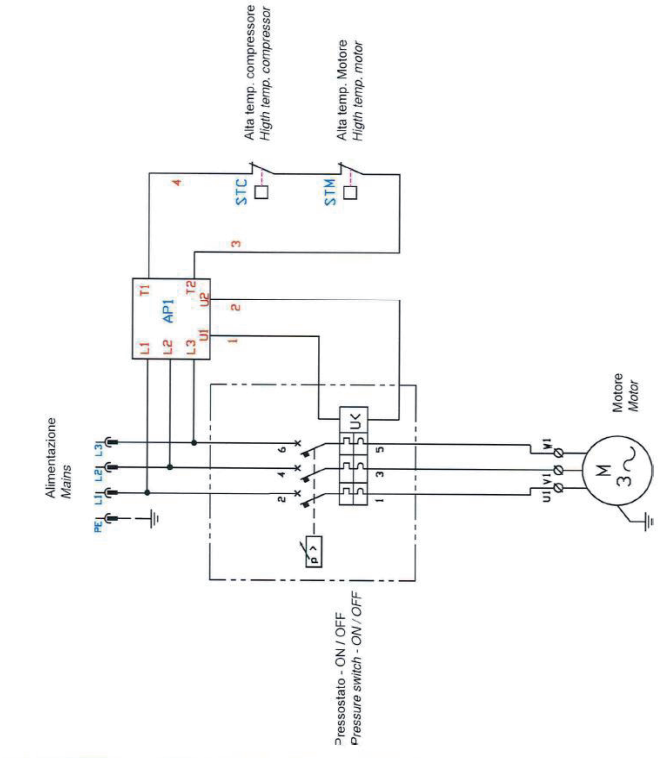
Electrical Wiring



Modello *Model*	Serie UNICA
Potenza *Power*	☐ 1,5 kW ☐ 2,2 kW ☐ _____
Tensione di rete *Main Voltage*	☐ 110 Vac ☐ 230 Vac ☐ 400 Vac ☐ _____
Tensione Ausiliari *Auxiliary Voltage*	☐ 110 Vac ☐ 230 Vac ☐ _____
Frequenza *Frequency*	☐ 50 Hz ☐ 60 Hz
Sistema *System*	Monofase (IEC 38) Single-phase

Three-Phase Version

Electrical Wiring



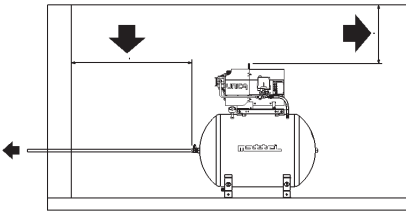
Modello *Model*	Serie UNICA
Potenza *Power*	☐ 1,5 kW ☐ 2,2 kW ☐ 3 kW ☐ ____
Tensione di rete *Main Voltage*	☐ 110 Vac ☐ 230 Vac ☐ 400 Vac ☐ ____
Tensione Ausiliari *Auxiliary Voltage*	☐ 110 Vac ☐ 230 Vac ☐ ____
Frequenza *Frequency*	☐ 50 Hz ☐ 60 Hz
Sistema *System*	Trifase *Three-phases* (IEC 38)

The whole area for the machine handling, including the space between the parking area for transport and the machine installation area should be identified and inspected beforehand, to find any possible "**DANGEROUS AREAS**".

Be careful when handling, lifting and transporting the machine, not to damage it and not to damage things or cause injuries to persons.

Verify the total mass of the machine and use a forlift truck or an adequate lifting means. Specific pictrograms indicate the lifting points.
During the transport, carefully fix the machine to the means used, by blocking it lengthways and sideways.
Unpack the machine by removing the guards and place it on the floor by means of a forklift truck to remove the pallet.

Position of compressor



In the section "Technical Data" you can find the overall dimensions, the weight and the cooling values of the machine.
The compressor must be installed in a well ventilated area protected with a roof or other suitable covering and away from any heat source. It can be simply placed on a solid and level floor. No special foundations are required.
Position of compressor During the transport, carefully fix the machine to the means used, by blocking it lengthways and sideways. The space and ventilation around the compressor are essential, the clearance from ceiling should not be any lower than 1,5 meters.
An air cooled compressor driven by electric motor, produces heat equal to about 85% the required power.
The 1,5 meter clearance, free from any obstructions, should also be kept on the side where the suction is.
For quick checking and maintenance and to ensure cooling, leave a distance of at least 1,5 metres on all sides.

Electrical connection
Only qualified personnel should make the electrical connections, in compliance with current regulations.

WARNING!!!
For safe maintenance of all compressor components, the customer should install a mains isolator and a magneto-thermal switch of suitable size as near as possible to the machine.

The mains isolator and magneto-thermal switch should be chosen by keeping into account the start features of the electric motor.
Adapting the size of wires between the mains isolator and the compressor starter should be made using the values given on the "TECHNICAL DATA" sheet.
For further details, use the specific electrical diagram supplied with this manual.

WARNING!!!
Please note that the machine hould be ALWAYS connected to the earth equipment.

Connection to the air distribution system

Compressed air distribution

Only qualified personnel should carry out the onnection to the air distribution system, in compliance with the regulations in force.

The aim of distributing air is to bring compressed air from the machine to the end users, with the lowest pressure drop and energy waste.

To avoid losses and wastes, regularly check all pipings of the distribution equipment and all accessories.

Filters, regulators and other accessories should undergo proper maintenance.

The connecting pipe to the system should be flexible and with a diameter not lower than the pipe leaving the machine.

An isolation valve is required to isolate the machine from the air distribution system in case of maintenance.

Dimensions of compressed air distribution pipings

We mention that the main causes for wastes are pipings with unsuitable diameter and losses due to an improper setting up of the equipment or deteriorated materials.

The pipe diameter must be duly selected so as to minimize the pressure drop between the compressor or the storage receiver and the point of use, based on the machine features, like air delivery and working pressure.

The pressure drop is proportional to the pipe length and most losses occur during the change of direction (curves, elbows) and in the valves.

With a pipe having the same diameter as the compressor outlet, the length should not exceed 50 m.

To make a check of one's own equipment, "Table 1" gives the load losses, over 100 metres straight piping, according to nominal diameters usually employed and at different air delivery and working pressure conditions.

A perfect air distribution system should limit the pressure drop from compressor to the point of use within few tenths of bar.

Table 1 – Load losses (bar) over 100 m straight piping

Pipe Diameter	Free air delivery [m³/min]	PRESSURE [bar]				
		6	7	8	9	10
1"	1	0,087	0,076	0,068	0,061	0,056
	2	0,315	0,275	0,245	0,220	0,200
	3	0,666	0,583	0,518	0,467	0,424
	4	1,134	0,993	0,883	0,795	0,722
2"	8	0,138	0,120	0,107	0,096	0,088
	16	0,496	0,434	0,386	0,347	0,316
	24	1,050	0,919	0,817	0,735	0,669
3"	8	0,019	0,017	0,015	0,013	0,011
	16	0,069	0,060	0,054	0,048	0,044
	32	0,248	0,217	0,193	0,174	0,158
	64	0,894	0,783	0,696	0,626	0,570
4"	16	0,018	0,015	0,014	0,012	0,011
	32	0,064	0,056	0,050	0,045	0,041
	64	0,230	0,201	0,179	0,161	0,146
	128	0,829	0,725	0,645	0,580	0,528

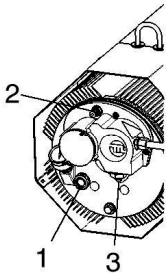


Fig. 1

Oil Level Display
The oil sightglass enables regular checks for correct oil level (Fig.1 - 1).

Exhaust Valve
The “exhaust valve” protects the compressor in case of air overpressure inside the chamber limiting its value to the preset value.

Anti-condensate valve
The anti-condensation valve extends the compressor operation by bringing the oil temperature up to the setting value of the thermostatic valve, to avoid moisture contained in the intake air condensing on the surfaces and accumulating inside the compressor. In this way all the intaken moisture remains under the gaseous state and is then expelled with the compressed air. The anticondensate system operates only when required. (fig. 1 – 3).

Pressure switch
All versions are equipped with a pressure switch. Its function is to keep the system pressure within a preset range (7,5 – 10 bar). When the pressure value decreases under the minimum setting value the compressor is set to operation.
When the pressure value increases over the maximum setting value the compressor is switched off.

WARNING!!!

For suitable operation of the anti-condensate valve, for no reason should the pressure switch setting fixed during the factory testing be modified.
For further information please contact Mattei’s nearest SERVICE CENTRE or distributor.

Safety Thermostatic Switch in Case of Compressor High Temperature
The compressor is equipped with a protection thermostat in case of high temperature of the air-oil mixture: this thermostat detects the temperature at the outlet of the rotor-stator assembly. This protection device stops the compressor as soon as the oil temperature reaches 110 °C. Before restarting the compressor, identify and resolve the cause of the over temperature.

WARNING!!!
For no reason should the electrical system to which the thermostat is connected be shortcircuited, so as to disconnect the thermal protection activation.

WARNING!!!
The compressor has been designed to compress **AIR ONLY**. The compression of other gases is **FORBIDDEN**.

Start/ Stop
All versions are equipped with a pressure switch. After the user has switched on the pressure switch, the compressor starts and its functioninig will be driven by the pressure switch itself, based on either the receiver or the line pressure. The pressure switch is set by the manufacturer during the testing phase, to stop the compressor when pressure reaches the Max value and restart the same when it goes down to Min. To avoid invalidating the warranty please contact the manufacturer before making any modification to the Max and Min pressure switch values.

WARNING!!!
Don’t start the compressor with pressure in the chamber.

Foreword

The user should appoint a qualified person for operation and maintenance of the machine.
He should properly train all operators, so that they are acquainted with all needed measures to prevent any accident or injury to people.
All start and stop procedures as well as emergency ones should be known; they should be also periodically checked with the operators.
The operating and maintenance manual should be always available; in case of loss or damage, further copies can be purchased from Mattei's sales organisation.

Checks before start
Before starting the machine, ensure that:

- ❑ with compressor not operating and without pressure inside the chamber the oil level should exceed the oil level indicator. When the compressor is running and on load, the oil level should reach half the level indicator. If necessary, top up with the same type of oil.

- ❑ the supply voltage matches with the motor voltage, frequency and current output, the electrical wires are properly dimensioned;

- ❑ the machine is earth connected and protected against possible short circuits;

- ❑ the mains circuit breaker is placed as near as possible to the compressor;

- ❑ that connection of the phases is correct. The compressor is equipped with a device that detects the correct sequence of the electrical supply phases.
  If mains is not connected as foreseen by the wiring diagram of the machine, the motor starting is prevented.
  Consequently, if the compressor does not start, it is necessary to disconnect the electricity supply and turn two phases by means of the suitable reverser included in the plug supplied with the machine.

WARNING!!!
Rotation in the wrong direction may cause serious damages to the compressor.

Periodic checks

WARNING!!!

Within the first 3 months of operation clean the oil return valve. In dusty environments and/or at high temperatures maintenance operations should be carried out more frequently

Weekly
- ❑ Check the oil level
- ❑ Version on receiver only: discharge condensate from the receiver.

Monthly
- ❑ Clean the intake filter.

Every six months
- ❑ Replace the intake filter
- ❑ Tighten nuts and screws fixing the electrical wires in the Electrical Control Panel and the motor terminal board.

Yearly
- ❑ Replace air-oil separator
- ❑ Replace oil (only use ROTOROIL F2).
- ❑ Replace the oil return valve.

Oil level check

With compressor not operating and without pressure inside the chamber the oil level should exceed the oil level indicator. When the compressor is running and on load, the oil level should reach half the level indicator.

WARNING!!!

The manufacturing date is quoted on rubber hoses.
Their operating life is 3 years, after which they should be replaced.

WARNING!!!

Scheduled maintenance agreements are available, to help the user keeping the machines at best operating and efficiency conditions.
Please apply to Ing. ENEA MATTEI S.p.A. for further details.

WARNING !!!

Kits with components for preliminary maintenance are available.
Please apply to Ing. Enea MATTEI S.p.A. for further details..

Machine cleaning

Suggestions on maintenance

Machine cleaning Cleaning of the equipment should be carried out at regular intervals, following the schedule in this manual.
To clean delicate parts of the machine direct the compressed air jet so that neither machining waste nor humidity can penetrate in the mechanic assemblies.
Only use lint-free cloths to clean internal and/or moving parts (in contact with lubricant).
Always use perfectlly dry air during the cleaning and at suitable pressure to avoid injuries to the operator.

Maintenance schedule

The time intervals in the maintenance tables are only reference values concerning the machine operation at the company's conditions.
Environment factors affecting these intervals are mainly: machine environment (temperature, humidity and air pollution).

Machine lubrication

Use only the lubricant quantity needed to lubricate the involved mechanism. Carefully dry the excess oil or grease with a cloth.
Sometimes an excess or a lack of lubricant may jeopardize the machine operation.
Only recommended lubricants or well known and tested equivalent lubricants should be used for lubrication.
Replacement of the exhausted oils should be made when the machine is warm. The oil temperature should range between 25 and 30 °C.
The draining and filling holes should not be left open for more than the time needed to replace the oil.

Jobs to be performed during maintenance

During maintenance operations pay attention to all signs that may precede a failure, and specifically:
- presence of corrosion,
- presence of wear,
- presence of loose unions or connections,
- presence of oxidized contacts,
- after each maintenance operation, exhaust the air from the pneumatic pipings.

Minimizing downtimes after a failure

It should be noted that correctly performed maintenance interventions may minimize downtimes after a failure.
A repair made in due time prevents further deterioration.
Only use original spare parts and repair the damaged component thoroughly, by your factory or send it to the nearest authorised service centre.

Cleaning and/or replacing the air intake filter (Fig. 2)

Unscrew the lock screws (1) and remove the cover (2); take out the filtering element (3); clean the element with a jet of compressed air, directed from the inside of the element. Thoroughly clean also the housing and the filter cover. Refit in reverse order as detailed for dismantling.

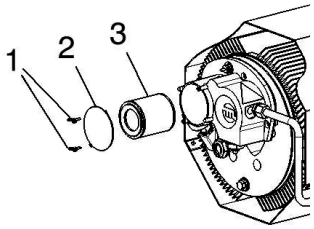


Fig. 2

Cleaning and/or replacing the oil return valve (Fig. 3)

Unscrew the screws (1) locking the intake cover to the oil chamber cover; unscrew the oil return valve (3) and take out the sintered filter (4); wash the valve with detergent and blow with compressed air; replace the sintered filter if it is very clogged. Always remember to replace the O rings (5) when reassembling the valve, which is done in the reverse order as for dismantling.

Replacing the air-oil separator element (Fig.3)

Unscrew the screws (1) locking the intake cover to the oil chamber cover. Take out and replace the element (6). Reassemble the various components, taking care that the O rings (5) are perfectly positioned in the relevant housings. To keep them positioned during the assembling it may be helpful to grease them.

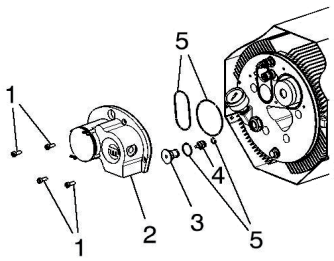


Fig. 3

Eliminating the receiver condensate (Fig.4)
On receiver version only. Unscrew the cap under the receiver on the compressor side (Fig. 4), collect the condensate inside the receiver in accordance with regulations in force.

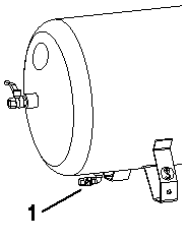


Fig. 4

First And Subsequent Oil Change
The UNICA Series compressors are supplied with Rotoroil 8000 F2 oil. We remind you that operation of the compressor with exhausted oil is dangerous.
For this reason it is necessary to change oil according to the oil change schedule. The oil change is performed with the compressor at a standstill and hot oil. Wait until the compressor has fully de-pressurised to drain the oil, and make sure that there is no more pressure inside by means of the pressure gauge located on the cover. Slowly unscrew the plug of the filling hole (Fig. 5 - 1). Open the plug (Fig. 5 - 2) and drain the oil into a suitable vessel. Replace the gasket and cap. Fill the oil chamber with new oil up to the rim of the filling hole. Tighten the plug. Start the compressor and operate it for a few minutes. Then stop it, check the oil by means of the indicator and top up if necessary (Fig.1-1).

Operation and setting of the anti condensation valve

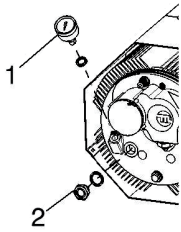


Fig. 5

If the compressor does not reach a preset temperature during operation, condensate may occur inside the compressor generating rust and causing mechanical failures.
For this reason, the UNICA series is provided with an innovative thermal regulation system.
The device includes two pneumatic valves and a thermostatic bulb and the complete system is called “anti condensation valve”.
If the compressor starts in a cold condition, the receiver or the line are likely to reach the maximum setting pressure of the pressure switch before reaching the minimum temperature required to avoid condensate formation. The thermostatic bulb, set at this temperature, enables compressed air to discharge into the environment, keeping the compressor on, until the ideal temperature is reached.
For correct system operation, the anti condensation valve must be set below the Pmax of the pressure switch.

Manufacturer settings are as follow:

Minimum pressure valve: 7 bar
Anti condensation valve: 8.5 bar
Pressure switch max. pressure: 10 bar

WARNING!!!
Change these settings only if absolutely necessary. The manufacturer is not liable for any damage caused to the compressor if these settings are changed by non authorized personnel. For changes, contact a Mattei authorized workshop.

Procedure to set the anti-condensation valve:

- ☐ The machine must be cold.
- ☐ Detach the delivery tube and insert a cock.
- ☐ Start the compressor and slowly close the delivery cock, until the air discharges into the environment (from the sintered filter located on the cover).
- ☐ Now the compressor has reached the current setting of the anti condensation valve.
- ☐ To change it, loosen the nut M8 (fig. 6-1) with a 13mm wrench.
- ☐ With a 4 mm socket head screw, screw the M8 dowel, inside the loosened nut, to the right to increase the pressure and to the left to decrease it.
- ☐ Perform this operation before the machine heats and the thermostatic valve activates.
- ☐ Once the required pressure is set, tighten again the nut M8.

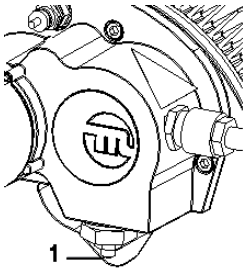


Fig. 6

WARNING

Observe the indications given on the containers !

During the disposal of exhausted lubricants it is necessary to comply with following environment protection rules:

- Lubricants may contaminate water and soil!
  Never pour lubricants on the ground, into water, or in the sewerage system. Any infringement of these rules can be legally prosecuted! When handling lubricants keep an oil agglomerative base near the working area.
- Recover the exhausted lubricants while separating the mineral based from synthetic lubricants. Upon disposal, please comply with current regulations concerning the disposal of exhausted oils.

Only the use of lubricants with suitable quality guarantees a safe operation of the machine.

It is forbidden to mix lubricants of a different quality, as their composition and additives are not the same.

This rule should be mainly applied to synthetic and mineral lubricant mixtures.

If other lubricants are to be used, it should be verified beforehand if the two products are compatible. In case of doubts, the lubricant used up to that moment should be completely eliminated, by means of a washing procedure of the fluid circuit.
To avoid any risk of contamination, the lubrication procedures should be carried out under “absolute cleanliness” conditions.
All manufacturers of lubricants mentioned in the table offer a technical information service that may answer all your questions on lubrication.

Lubricants are flammable products.

The correct use of suitable lubricants considerably helps to obtain the maximum performance and the elimination of failures.
During the handling of lubricants on equipments, it is essential to strictly comply with the following precautions, for sanitary protection:

- Avoid any prolonged, excessive or repeated contact of the skin with lubricating products as well as avoid inhalation of their vapours or fumes.
- Wear suitable clothing and protections to protect the skin (for instance overalls, eyeglasses or, as far as allowed by the safety rules, protection gloves) or apply a protective product.
- Clean dirty skin carefully by abundantly washing it with water and soap.
- Apply a skin cream after washing.
- Change clothes and shoes soaked with oil.
- Never put oil soaked cloths in one’s pockets.

General

Several oils are available on the market and research continuously improves their characteristics and it changes the names and specifications.
During the warranty period the use of Mattei Rotoroil lubricant is compulsory, thereafter however the user can decide to use the oil he believes most suitable or the available one, provided it is suitable for rotary vane compressors.
Only manufacturers of lubricants can recommend the most suitable oil for the kind of machine and for its specific application.
The user should then purchase the lubricant from an oil company or a distributor that guarantees its suitability for the speci-

fic use.
The cost of the best lubricant is a small percentage of the total running cost of the machine: it is suggested to purchase the best available on the market (see the section “MATTEI LUBRICANTS”).
Please consider that in lubricated and injection cooled compressors the oil performs the listed tasks and it is subject to continuous working cycles; therefore, it should be highly resistant to oxidation to ensure long life.
The oil should also provide a good demulsivity.
Anti-oxidizing additives should provide low volatile substances at the compressor operating temperatures, so as to ensure protection between one oil filling and the other.
The user must adopt the kind of oil grade recommended by Mattei.
Please refer to the specific table for the choice, according to the operating conditions.

Available oils on the market There are several kinds of oils on the market, including:

☐ mineral based industrial oils;
☐ synthetic oils.

Mineral based industrial oils
These oils have been designed for different applications and also for some types of compressors.
In this case, too, there are standards specifying their features; please refer to DIN 51506 which classifies the oils as VB-L, VC-L and VD-L, according to their possibility of working at different temperatures.
The latter is suitable for high temperatures and it is resistant to oxidation caused by the continuous mixing with the air.
ISO 6743-3 classifies oils based on the operating temperature and pressure and, according to this rule, for rotary vane compressors ISO-L-DAH or DAJ oils are recommended, which are for medium and heavy applications. The table indicates some typical values of the main characteristics.

Typical features of industrial oils for compressors	Measuring Unit	Ambient temperature 5 ÷ 40	Ambient temperature -5 ÷ 30
Viscosity ISO VG	---	150	100
Viscosity at 40°	cSt	135 ÷ 165	90 ÷ 105
Viscosity at 100°	cSt	14 ÷ 16	10 ÷ 12
Viscosity index		93 ÷ 100	100 ÷ 110
Pour point	°C	-10 ÷ -5	-15 ÷ -10
Flash point V.A.	°C	230 ÷ 265	250 ÷ 265
Volume mass	Kg/m^3	940 ÷ 960	940 ÷ 960

The values in the table are only an indication

Synthetic oils

Many synthetic oils with different bases are available on the market (esters, glycols, etc) that sometimes have proved to be suitable and provide a longer life than mineral oils.
Normally they reduce carbon deposits, provide a high self-ignition temperature and are remarkably resistant to oxidation.
As synthetic lubricants are good detergents, to change the kind of lubricant in a machine and pass from a conventional mineral based to a synthetic one, it is necessary to carry out a thorough washing, following the supplier's instructions, to avoid damages to the machine if dirt, residues and deposits circulate.
It is also necessary to pay attention to condensate, as usually synthetic lubricants are more sensitive to water washing and their thin film may not provide enough protection against rust.
This problem can be worsened if the compressor is not working continuously, but occasionally.
In this case, even though not suggesting its use, any responsibility for the choice is up to the user and to the lubricant supplier.

WARNING!!!
It is difficult to determine life of an oil, as there are different parameters effecting the same, among which the operating temperature and quality of the intake air are very important.
For this reason it is recommended to obtain precise guarantees from the supplier, validated by the analysis of samples taken from the machine, to determine the suitability of lubricant and its life.

MATTEI LUBRICANTS

Considering the important role of lubricant for operation of the compressor, Mattei offers special lubricants to the users and recommends their use.

These are:

- Mattei Rotoroil F2 (synthetic),
- Mattei Mattei V-LIFE COLD (synthetic),
- Mattei V-LIFE FOOD (synthetic, non toxic)

available in 2 - 5 and 20 litres cans.

Their life can reach the hours shown in the table, depending on the operating temperature and conditions of the intake air.

MATTEI LUBRICANTS

Name	Ambient temperature	Operating hours (max.)
Rotoroil F2	**from -15° to +45 °C**	**5000**
Mattei V-LIFE COLD	**from -30° to +30 °C**	**6000**
Mattei V-LIFE FOOD	**from -5° to +40 °C**	**2000**

Safety Precautions

There is a latent risk of fire in almost all compressed air systems and ISO 5388 Standard explains the reasons.
In fact, in compressed air systems both oxygen and oil are always present and are combustible.
Should for any reason oil vapours form, these could burn in presence of a flame; an ignition source may start a fire in case of use of excessive or unsuitable oil, or when neglecting maintenance.
Faulty maintenance has been mentioned, because a dirty radiator may cause a temperature
rise, often quickly, which leads to oil damage and to the creation of deposits.
Such processes are accelerated if unsuitable oil is used.
Based on experience, fires are almost never caused by the fact that the oil self-ignition temperature is reached (340-400 °C).
Usually the cause is that the oil, while decomposing,
creates carbon residues that when in contact with air and high temperature, continue to oxidize and, under special conditions, may ignite. So it is essential to use suitable lubricants and carry out correct maintenance.

WARNING!!!
It in order to prevent the risk of fires the best attention should be given to the oil choice and to execution of all maintenance operations, and specifically:
- carry out regular and complete oil changes;
- ascertain that the cooling system is always efficient, with regular checks on the oil temperature;
- verify that protection devices installed are always in perfect working order;
- keep the oil consumption under control;
- take care of the machine cleaning.

Storage and treatment of oils

Usually lubricant containers are built so as to prevent any contamination.
When the user receives the lubricant, it is under his responsibility to avoid damages or pollution to the same.
The lubricant may get damaged due to:
- dust and dirt;
- condensate, mainly due to absorbing humidity from the air;
- extreme temperatures;
- mixing with other oil types.

Please note that dirt in the oil reduces its efficiency and causes wear of those parts it comes into contact with, therefore there is the need to increase maintenance.
Instead, condensate cancels the effect of some additives, often present in very limited quantities.
Oil containers should be stored in protected rooms, avoiding exposure to extreme temperatures.

WARNING!!!
Absolutely avoid the mixing
of oils of a different grade and quality .
Although looking alike, they could not be compatible.
Also beware of oil leaks, not only being a waste, but also polluting, causing falls or injuries to people and also fires

General
The table below aims at helping the operator solve some difficulties that may arise, with indications of the possible causes.

Problem - Cause - Solution
Below is the indication of some faults, their causes and how to identify the solution.

PROBLEM	CAUSE	SOLUTION
A. Starting The compressor does not start.	The electrical supply is not sufficient and the excessive voltage drop during the starting causes release of the contactor.	Check correct sizing of the electrical supply.
	The line pressure is higher than Pmax.	Check the line pressure.
	The pressure switch reads a wrong value.	Check proper operation of the pressure switch. Contact the nearest authorised service centre.
B. Pressure The system pressure does not reach the required value.	The minimum pressure valve does not operate properly.	Verify the operation. Contact the nearest authorized service center.
	Clogged intake filter.	Replace the filter. Refer to section 7.02 of the “Operating and maintenance manual”.
	Higher air demand than compressor’s maximum capacity.	Please contact Ing. Enea Mattei SpA or a distributor to study an improvement of the plant.
C. Oil Excessive oil consumption; the level lowers too quickly; oil is detected inside the system.	The oil return valve is clogged.	Replace the valve and verify the causes of clogging. (See Section 7.03).
D. Temperature The compressor stops due to overheating.	The ambient temperature is too high for compressor operation.	Verify the cause and eliminate the problem.
The compressor stops due to motor overheating.	Excessive working pressure.	Check setting and bring it to the machine’s setting value.
	The motor cooling is not sufficient; there is not enough air or it is too hot.	Verify the ambient conditions.

General

The electric motor characteristics are given on the nameplate fixed to the motor itself.

Cooling

The main motor has a fan aiming at guaranteeing adequate cooling. The same fan guarantees also the cooling of the compressor.

Abnormal noises

Any vibration or abnormal noise is usually due to deterioration of the bearings. In this case it is recommended to replace the bearings rather than risking more serious problems to the motor or the machine.

Electrical checks

If the machine has been stored for a long period or in case of long stops in damp places, it is suggested to measure the winding insulation value by applying 500 V d.c. voltage for 60 seconds.
The insulation should be at least 10 MΩ (MegaOhms) in warm conditions or 100 MΩ in cold conditions.
Should these values not be detected and in case the motor has been exposed to damp, it is suggested to dry it for 24 hours in a furnace at 100-110 °C.
If no furnaces are available, please contact the manufacturer.

Storage
The compressor is protected against corrosion and deterioration for the shipment period and for a relatively short period of storage (3 months).
For longer periods please contact the manufacturer, considering it can be maximum 24 months.
In any case it is suitable to keep the machine in a dry place, protected against atmospheric agents.
In wet climates, to protect the electrical and mechanic components the machine should be kept in a heated room or closed in a barrier-bag with heaters or light bulbs.
Specifically for the motor, please refer to what mentioned about the winding insulation.

Decommissioning
Decommissioning the machine does not involve any special precautions, only collection of the oil contained in the machine and components of the lubrication system, like the oil filter and the oil-air separators.

WARNING!!!
Both these elements and the oil should be collected and disposed of according to current regulations on environment, to avoid any pollution and danger of fire.

Dismantling
When the machine has reached the end of its technical and operating life, it can be demolished, i.e.
decommissioned and put in such a condition so as not to be used any longer for the purposes it was designed and built, with the possible recycling of raw materials.

NOTE
Ing. ENEA MATTEI S.p.A. will not take any responsibility for damages to people or objects that may derive from the recycling of individual components of the machine, for operation or assembling situations different than the original ones.
Ing. ENEA MATTEI S.p.A. refuses any implicit or explicit acknowledgement of suitability to specific purposes of the machine components reused after the final dismantling in view of its demolition.

WARNING!!!
The deactivation and dismantling of the machine should be carried out only by duly trained and equipped staff.
Act as follows to deactivate the machine permanently:

- Drain the oil from the receiver.
- Disconnect the machine from the electrical and pneumatic supply systems.
- Lift the machine with suitable lifting means.
- Disassemble the machine main components.
- Block all the machine moving parts.
- Take all the machine components in supervised dumps.

Residual risks after deactivation
After deactivating the machine, there are no residual risks if all moving parts have been duly blocked.

From to requesst
Technical service

COMPRESSED AIR SINCE 1919

ING. ENEA MATTEI SpA
Strada Padana Superiore, 307 - 20090 Vimodrone (MI)
Tel + 39 02253051 - Fax +39 0225305243
E-mail: customer_support@mattei.it
www.matteigroup.com

Company _____

Address _____

Please note our request for intervention on our machine:

Model _____ Serial number _____

Intervention to be carried out by: :

Contact person _____

Telephone _____

Failure	**Description**
Eletrical	_____
	_____
	_____
	_____
	_____
Mechanical	_____
	_____
	_____
	_____
	_____

Notes _____

_____

_____

Place _____ Date _____

Stamp and Signature

COMPRESSED AIR SINCE 1919
ING. ENEA MATTEI SpA
Strada Padana Superiore, 307 - 20090 Vimodrone (MI)
Tel + 39 02253051 - Fax +39 0225305243
E-mail: spares@mattei.it
www.matteigroup.com

Company _____

Address _____

Please note our order no _____ dated _____ with required delivery on _____ for our machine :

Model _____ Serial number _____.

Reference	**Description**	**Quantity**

Notes _____

_____

_____

_____ li, _____

Stamp and Signature

Parts to be replaced during maintenance

DESCRIPTION	COMPONENTS	QUANTITY
Maintenance Kit	Intake filter	1
	Sintered filter	1
	O-ring	1
	O-ring	1
	Separator Element	1
	O-ring	1
	Washer	2
	O-ring	1

Note: please contact Ing. E. Mattei S.p.A. to obtain the codes of kits for preliminary maintenance.

		UNICA 1 UNICA 1 S	UNICA 2 UNICA 2 S
Tensione - Frequenza - Fasi Tension - Frequency - Phases	V-Hz-ph	230-50-1	
Velocità nomionale del motore Motor nominal speed	giri/min / rpm	1500	
Pressione nominale di esercizio Nominal working pressure	bar(g)	9,5	
Pressione massima di esercizio Maximum working pressure	bar(g)	10	
Portata nominale Nominal delivery	m3/min	0,16	0,24
Potenza assorbita in rete Terminals absorbed power	kW	2,14	3,03
Livello di pressione acustica (max) Noise level (max)	dBA	64	
Residuo di olio nell'aria compressa Oil carry over	mg/m3	3	
Calore totale recuperabile Total heat recovery	%	80	
Capacità circuito olio Oil circuit capacity	dm3	1,5	
Sezione minima cavi alimentazione (10 m) Minimum supply cables section (10 mt.)	mm2	2,5	
Volume serbatoio di accumulo ARIA Storage AIR receiver volume	dm3	90 - 200	
Corrente nominale assorbita Nominal absorbed current	A	9,7	14,2

		UNICA 1 UNICA 1 S	UNICA 2 UNICA 2 S	UNICA 3 UNICA 3 S
Tensione - Frequenza - Fasi Tension - Frequency - Phases	V-Hz-ph	400-50-3		
Velocità nomionale del motore Motor nominal speed	giri/min / rpm	1500		3000
Pressione nominale di esercizio Nominal working pressure	bar(g)	9,5		
Pressione massima di esercizio Maximum working pressure	bar(g)	10		
Portata nominale Nominal delivery	m3/min	0,16	0,24	0,32
Potenza assorbita in rete Terminals absorbed power	kW	2,07	3,25	3,94
Livello di pressione acustica (max) Noise level (max)	dBA	64		70
Residuo di olio nell'aria compressa Oil carry over	mg/m3	3		
Calore totale recuperabile Total heat recovery	%	80		
Capacità circuito olio Oil circuit capacity	dm3	1,5		
Sezione minima cavi alimentazione (10 m) Minimum supply cables section (10 mt.)	mm2	2,5		
Volume serbatoio di accumulo ARIA Storage AIR receiver volume	dm3	90 - 200		200
Corrente nominale assorbita Nominal absorbed current	A	4,0	6,4	7,9

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