AIR COMPRESSORS

BLADE series

ref. TI016G0011

INSTRUCTION, USE, AND MAINTENANCE MANUAL

INSTRUCTION USE AND MAINTENANCE MANUAL

TI016G0011

Versions

- BLADE 4 - 5 - 7 - 11
- BLADE-TM 4 - 5 - 7 - 11

Voltages/Frequencies

V 208, 230, 460, 575/60 Hz/3 Ph
V 230/60 Hz/1 Ph

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.

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.

Important Note
This manual should always be used together with the “MAESTRO XB User’s Manual”, code TEFA2G-014.

Printed : 10/2016

Attachments:

Form to request technical service
Form to request spare parts
Parts to be replaced during maintenance
"Technical data " sheets

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 informations 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 assembling 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 mechanical 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.

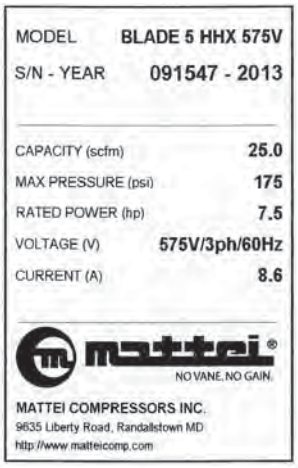
Electrical Service Engineer
A qualified engineer able to operate the machine under normal conditions and operate it with disconnected protections; he is in charge of all electrical adjustments, maintenance and repair.
He is able to operate inside cabins and shunt boxes with live voltage.

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
S/N and year
Capacity
Pressure
Power
Voltage
Amps

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 Mattei Compressors Inc 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 authorized staff.
During installation, handle the machine components as indicated in this manual; if lifting is necessary, insure that equipment used is properly rated for the load. Lift only at locations indicated as lift points.
The machine installation should be as free as possible from any material preventing or limiting its view.
Remove any brackets or braces used to protect the machine in transport.
Check that all the machine safety devices are correctly installed and there are no moving or loose parts.
Check for any visible damage.
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, insure the main power supply is disconnected and locked out. Verify that accident preventing guards are correctly installed and in perfect state.

+ The machine safety is not guaranteed in case of removal, by-pass or tampering of the safety devices on the machine.

Operating the machine
Only authorized and trained staff should operate the machine. The staff in charge of operating the system should be aware that the knowledge and application of safety regulations is an integral part of their job. Unskilled personnel should not access the operating area and the machine control panel when the system is ON.
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 authorized components and accessories for the protections and safety devices may lead to malfunctioning and dangerous situations for the operating staff.

Decommissioning and dismantling
Only authorized staff are allowed to decommission and remove the machine.
Before taking the machine out of operation it is necessary to disconnect and lock out the main power supply. Drain oils and fluids, remove all moving parts.
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, authorized 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 authorized 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 working on pipes, receivers, hoses and other components under pressure, confirm that all internal pressure has been relived from the system. 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. Mattei Compressors Inc 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 Mattei Compressors Inc.

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.
Always use genuine Mattei parts when performing maintenance or repairs.

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 Mattei Compressors Inc or to the closest distributor.

Kits with components for preliminary maintenance are available.
Please apply to Mattei Compressors Inc 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:

Technical and Spare Parts Service

Mattei Compressor, Inc.
9635 Liberty Road, Suite E
Randallstown, MD 21133
Tel: 410.521.7020
Fax: 410-521-7024
email: info@matteicomp.com

To operate the machine under any operating condition, including maintenance, it is not necessary that more than one person be present.

! The employer should instruct the staff on the risks of accidents, on safety devices and on the 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 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:

☐ EMERGENCY push-button to immediately stop the machine and STOP devices on the push-button panel of the control device.
☐ Fixed guards: These are mounted in areas for exclusive access for standard maintenance. They are fixed with systems that require specic tools to remove them or have been screwed in.
☐ Protection and segregation of the electrical/electronic equipment of the machine with a metallic container to avoid accidental contact with the equipment under voltage in the event that the metallic container is open; protection of the electrical cabin: IP 64; protection of inner equipment IP 20 against accidental contact.
☐ Adequate panels or protections to cover moving elements.
☐ Electrical devices to detect supply failures of the machine and the malfunction of electrical devices of motors.

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, the solutions necessary to remove the risks and limits the dangers to those exposed have been adopted.
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.
They 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 area that is well ventilated and far from sources of heat.
- ☐ Should any duct be installed for the suction and cooling of air, always use the data and recommendations given in Section 4 and preferably obtain expert advice during the design stage.
- ☐ In the event of outdoors installation (discouraged in very cold climates), the machine must be placed under a canopy or a cover to protect it from atmospheric elements.
- ☐ Be most careful to prevent any foreign material from clogging the radiator, thus provoking surges in the operating temperature.
- ☐ The intake air must be cleaned and free from flammable vapors that could cause fires or explosions.
- ☐ The control and safety devices should never be tampered with.
  If there are one or more compressors installed on one pneumatic line, it is absolutely necessary that each be supplied with an isolation valve.
- ☐ The electrical connections should comply with the regulations in force. The machines should be connected to the ground and protected by a magneto-thermal switch against possible short circuits.
- ☐ It is absolutely necessary that a power disconnect switch be installed near 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 internal pressure relieved. Also isolate the compressor from the pneumatic equipment.

Disconnect and lock out the main power supply.

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 questions about the compressor operation or of any of its components, it is recommended to contact the after sales service of Mattei Compressors Inc

The following should be also considered:

- ☐ The machine is equipped with an Automatic start system that can allow the machine to start without warning. It is necessary to disconnect and lock out the main power supply before performing any work on the machine.
- ☐ The key to open/close the cabin doors should be entrusted with the specialized staff.
- ☐ The maintenance operations should always be carried out when the compressor is off.
- ☐ Before carrying out any activity on the compressor group, read the gauge to ensure that no pressure is left inside.
- ☐ Use only tools suitable for the type of work.
- ☐ Never use solvents and flammable products to clean the machine or individual parts.
- ☐ Never carry out welding or other operation that might require considerable heat near the machine, specifically near the electrical equipment and the oil circuit.
- ☐ Never make modifications or carry our welding on containers under pressure.
- ☐ Never leave tools, cloths and other loose items on either the motor or the compressor.
- ☐ The lubricating oil, especially if old, can damage some people's skin. Protect your hands with gloves or with specific protective products for the skin.
- ☐ Never wear clothing contaminated with lubricating oil.
- ☐ Avoid contaminating the ground with lubricating oil.
- ☐ To prevent pollution, store the old lubricating oil in suitable containers and in a safe place. To discard, observe the recommendations set out by internal regulations and by current laws.
- ☐ In case of oil additions, use the same type as the one already contained in the machine.
  Mixing oils is harmful to the life span of both the oil and the compressor.
- ☐ After any maintenance, start the machine and check that all the devices for control, stop or alarm work correctly. Verify also that temperature and pressure values are those foreseen.
- ☐ Make the checks and the revisions as foreseen by this manual, using only original spare parts.
  Not making these checks or using non-original parts may cause problems that jeopardize the correct operation of the machine and cause the forfeiture of the manufacturer's warranty.

Responsibility

Ing. Enea MATTEI S.p.A. disclaims all responsibility for injuries to people, or damages to things and animals, if caused by:

- ☐ non-observance of the said precautions;
- ☐ improper use of the compressed air or the machine in general;
- ☐ non-observance of ordinary safety rules or domestic rules in the work place;
- ☐ non-observance of instructions during handling and transportation of the machine;
- ☐ incorrect installation of the machine;
- ☐ defects due to the power supply line;

- ☐ absence of regular maintenance;
- ☐ unauthorized changes or intervention;
- ☐ use of non-original spare parts or not explicitly for the model;
- ☐ non-observance, even if only partial, of the instructions;
- ☐ possible inefficiency caused by the non-use or the malfunction 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.

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

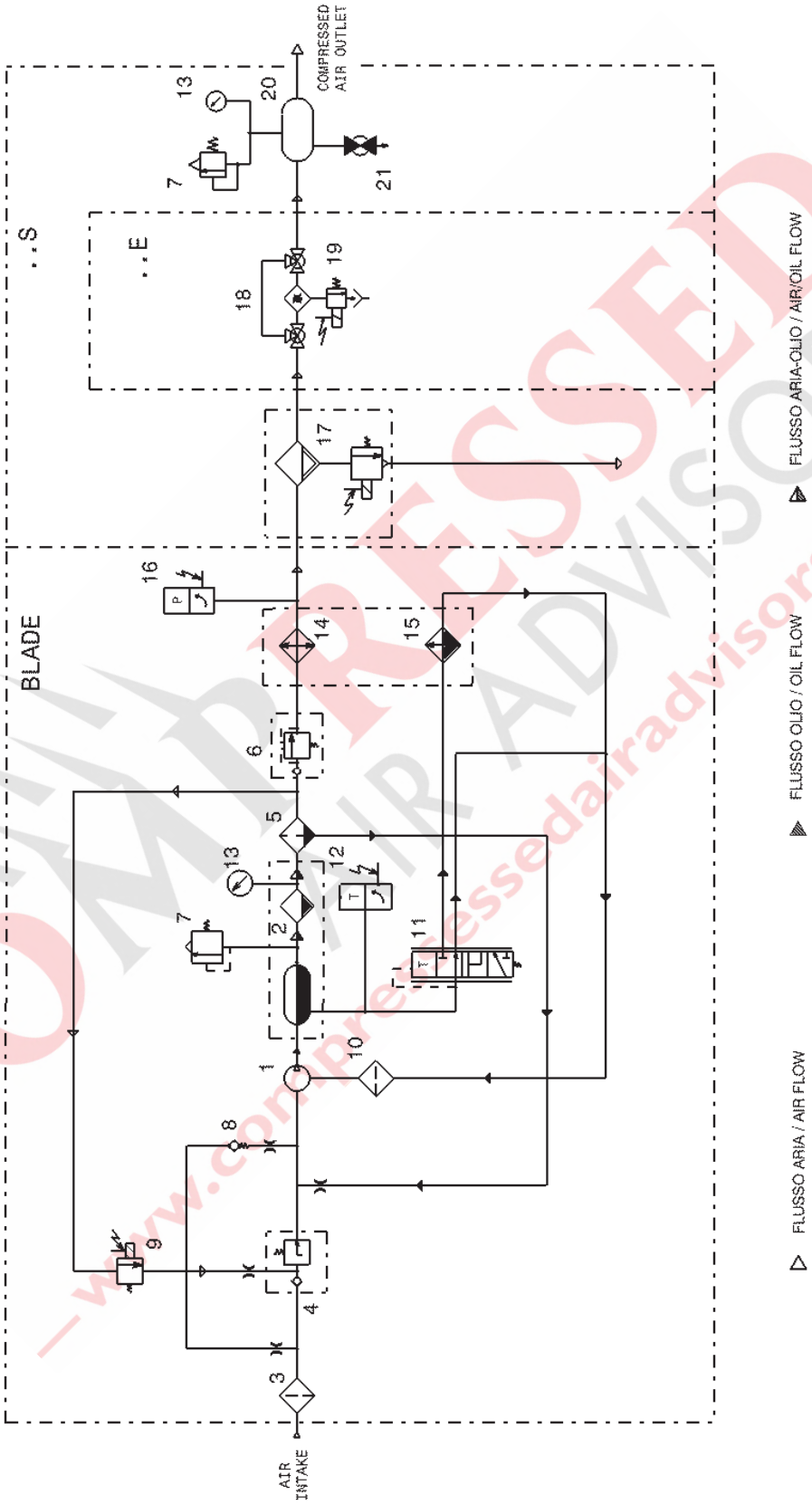
The above shown combination of pictograms means:
Warning! Please refer to the Instruction Manual before starting any activity.

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

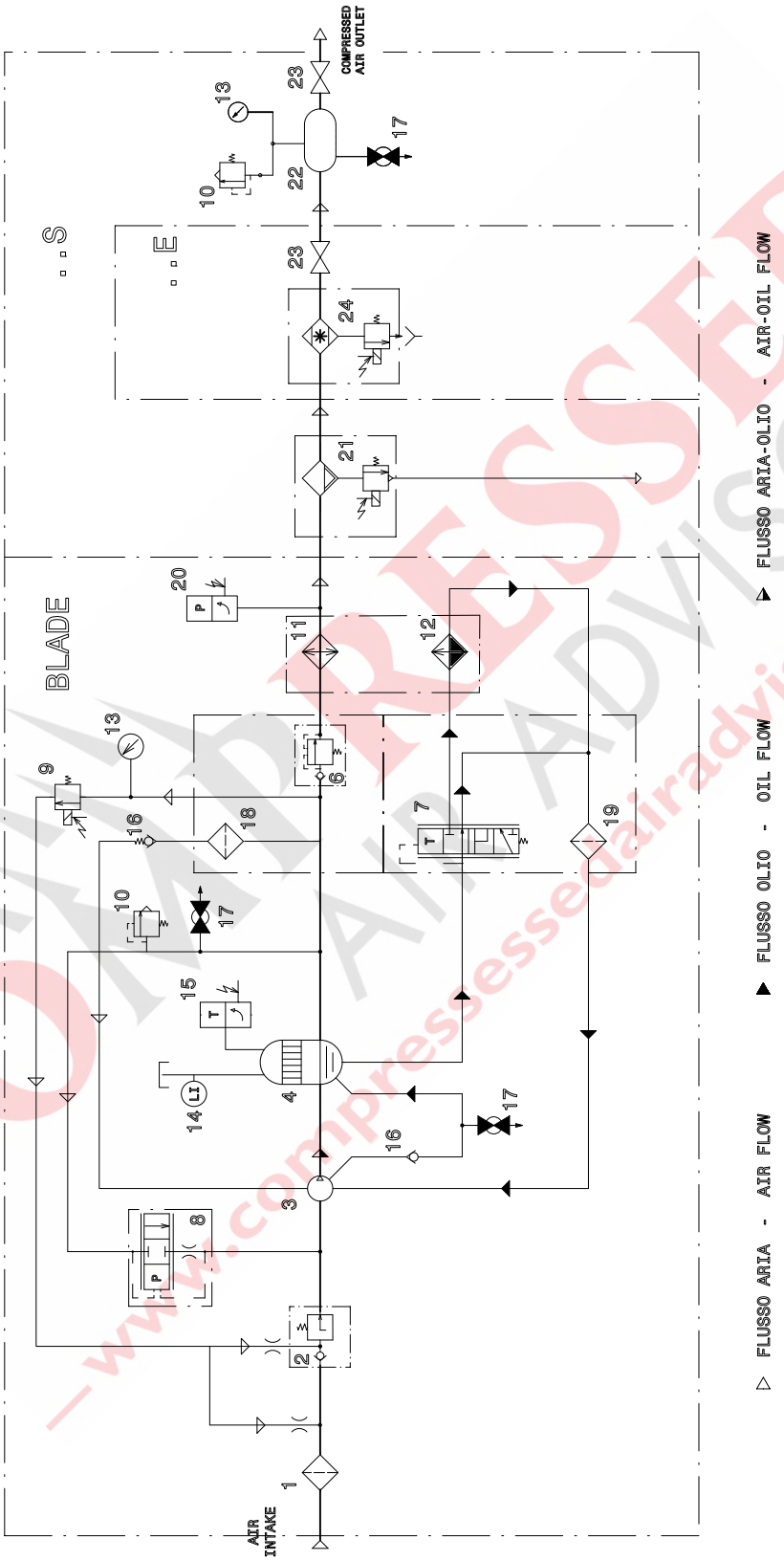
Mattei rotary compressors of the BLADE series are the result of years of investments in research and development, to improve performance continuously, and at the same be environment-friendly.
Designed for intermittent or continuous industrial service, they guarantee constant performance over time, low 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	2	OIL CHAMBER - PRIMARY SEPARATOR
3	FILTRO ASPIRAZIONE	3	INTAKE FILTER
4	VALVOLA ASPIRAZIONE	4	INTAKE VALVE
5	SEPARATORE ARIA - OLIO	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
8	VALVOLA DI NON RITORNO	8	NON RETURN VALVE
9	ELETTROVALVOLA CARICO-VUOTO	9	ON LOAD - OFF LOAD SOLENOID VALVE
10	FILTRO OLIO	10	OIL FILTER
11	VALVOLA TERMOSTATICA BY-PASS	11	BY-PASS THERMOSTATIC VALVE
12	SONDA DI TEMPERATURA	12	TEMPERATURE SENSOR
13	INDICATORE DI PRESSIONE	13	PRESSURE GAUGE
14	REFRIGERANTE ARIA	14	AIR COOLER
15	REFRIGERANTE OLIO	15	OIL COOLER
16	SONDA DI PRESSIONE	16	PRESSURE SENSOR
17	SEPARATORE + SCARICATORE CONDENSA	17	CONDENSATE SEPARATOR + DRAIN VALVE
18	ESSICCATORE	18	AIR DRYER
19	ELETTROVALVOLA DI SCARICO CONDENSA	19	CONDENSATE DRAIN SOLENOID VALVE
20	SERBATOIO ARIA	20	AIR RECEIVER
21	VALVOLA DI SCARICO	21	DRAIN VALVE



BLADE 11



1	FILTRO ASPIRAZIONE	1	INTAKE FILTER
2	VALVOLA ASPIRAZIONE	2	INTAKE VALVE
3	COMPRESSORE ROTATIVO A PALETTE	3	ROTARY VANE COMPRESSOR
4	SEPARATORE ARIA-OLIO	4	AIR-OIL SEPARATOR
5	DISOLEATORE	5	MIST SEPARATOR
6	VALVOLA DI MINIMA PRESSIONE E NON RITORNO	6	MINIMUM PRESSURE - NON RETURN VALVE
7	VALVOLA TERMOSTATICA BY-PASS	7	BY-PASS THERMOSTATIC VALVE
8	VALVOLA DI SOCCORSO A VUOTO	8	VACUUM RELIEF VALVE
9	ELETTROVALVOLA CARICO-VUOTO	9	ON LOAD - OFF LOAD SOLENOID VALVE
10	VALVOLA DI SFIATO	10	RELIEF VALVE
11	REFRIGERANTE ARIA	11	AIR COOLER
12	REFRIGERANTE OLIO	12	OIL COOLER
13	INDICATORE DI PRESSIONE	13	PRESSURE GAUGE
14	INDICATORE DI LIVELLO	14	LEVEL GAUGE
15	SONDA DI TEMPERATURA	15	TEMPERATURE SENSOR
16	VALVOLA DI NON RITORNO	16	NON RETURN VALVE
17	VALVOLA DI SCARICO	17	DRAIN VALVE
18	FILTRO DISOLEATORE	18	MIST SEPARATOR FILTER
19	FILTRO OLIO	19	OIL FILTER
20	SONDA DI PRESSIONE	20	PRESSURE SENSOR
21	SEPARATORE + SCARICATORE DI CONDENSA	21	CONDENSATE SEPARATOR + DRAIN VALVE
22	SERBATOIO ARIA	22	AIR RECEIVER
23	VALVOLA	23	VALVE
24	ESSICCATORE + SCARICATORE DI CONDENSA	24	AIR DRAYER + DRAIN VALVE

OPERATING PRINCIPLE

The design consists of a functional sound-proofing enclosure made of stainless steel and painted with epoxy powders.
The enclosure is complete with a pre-filter kit, preventing the access of coarse particles, which could clog the radiators and the air filter before their life-time.
Wide removable panels and hinged doors make all maintenance operations easily accessible.
The base is supplied with openings that allow for easy lifting and handling of the compressor (See Section 4).
Standard packaging includes: fixing on wooden pallets and a cardboard box.

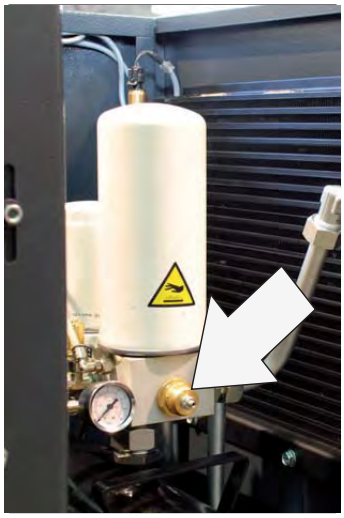
The Compressor

The vane compressor is a volumetric rotary compressor consisting of a cylinder, called stator, within which a rotor turns, which is mounted eccentrically and at a tangent, and by two covers. The rotor is provided with longitudinal grooves within which the vanes slide that are kept in contact with the stator by the centrifugal energy.
Sealing, cooling and lubrication of all moving parts are guaranteed by an efficient oil injection system that operates due to the pressure difference between the compression chamber and the oil tank. Hence, no pumps are required for lubricating oil circulation.
An oil film on the inner stator surface prevents direct contact with the moving parts preventing their wear.
In the vane compressor there are no axial forces that push the rotor against the covers; therefore it is not necessary to control their position with thrust bearings.
Depending on the model, the rotor is supported by either a white metal bearing and a rolling ball bearing (BLADE 4–5–7) or two white metal bearings (BLADE 11).Air is drawn into the compressor though the intake filter and intake valve into the compressor. The air is then compressed and discharged in a pulse free stream.

The suction valve

The intake valve is controlled by a specific solenoid valve through a hydraulic circuit, driven by compressed air. It can adjust the quantity of air taken into the compressor to supply the line demand.

Minimum pressure and non-return valves



The compressed air is discharged from the compressor through a valve that ensures a minimum pressure inside the oil chamber so to guarantee smooth performance when the compressor delivers air.
The valve also prevents the downstream compressed air from flowing back through the compressor.

Oil separation
Oil is separated from the air in several steps. This allows for exceptionally low oil consumption.
The mechanical separation – which is the greater – takes place in the oil chamber due too reduced velocity.
Final separation takes place via coalescence filters that remove almost all oil residuals from the air.
Thanks to this special separation system, oil consumption is extremely low.
The large size of filters combined with the quality of materials used guarantee their long life span.

Motor
The electric engine is coupled to the compressor
by:
- Pulleys and V-belts for the BLADE 4–5–7 versions
- Pulleys and elastic Poly-V belts for the BLADE 11 versions.

The motor is asynchronous, three-phase, 4 or 2 poles, with short-circuited winding.
- Class F Insulation
- IP 55 Protection Class
- Power supply according to IEC 38 standard
- Voltage/Frequency/Phase
208, 230, 460, 575/60 Hz/3 Ph
230/60 Hz/1 Ph

Cooling and Fan Systems
The compressor comes with two aluminum radiators suitable for cooling oil and compressed air, respectively. The cooling air is drawn in by the cooling fan and comes into contact with the radiators and removes the heat generated during compression. The temperature of the output compressed air is slightly higher that the environmental temperature.
See technical characteristics attached.

Electrical Cabin
The protection class is IP 64, and it includes:
- Full-voltage starter
- Main motor protection (by thermal relay)
- Fan motor protection (by fuses)
- 110 V transformer to supply auxiliary circuits
- 24 V transformer to supply the Maestro XB control device
- Protection fuses for auxiliary and primary circuits of transformer
- Terminal board for the remote restarting of start/stop controls and signals
- Emergency push-button
- Micro-door
- Safety block:

for high temperature in the compressor, motor overload, emergency stop, failure in the pressure sensors.
The electrical diagram can be found inside the electrical cabin.

Air Tank (unit in version BLADE - TM)

The tank comes with INSTRUCTIONS, USE, AND MAINTENANCE GUIDE that should be kept and referred to before any use of the tank. It is also comes with a CONFORMITY DECLARATION that clearly states the main technical data and the operating limits.
The tank contains compressed air; always consider the potential danger deriving from improper use.
The tank may contain condensation with oil residuals. Always consider the related ruling regulations for disposal.
The tank should be used as an air compressed accumulator only and it should be operated within the specified limits shown on the technical data plate.
No modifications should ever be made to either this tank or its installation when setting up the machine.
The maximum operating pressure and temperature of this tank are shown on the attached plate.
The setting of the safety valve guarantees the maximum tolerated operating pressure.
The tank has been designed and made so that to guarantee its use for a long period of time.
As it is shown in the guide supplied, extra thickness has been foreseen against any possible corrosion.
Inspections during its running might be required by the different national laws.
In the on-tank version, the machine comes complete with a condensate separator and a solenoid valve with timed and adjustable exhaust (see condensate exhaust section, tank version “BLADE-TM”)

CONTROL DEVICE - MANAGEMENT AND CONTROL OF A MICROPROCESSOR “MAESTRO XB”

MAESTRO XB is a programmable control unit which adapts compressor operation to the specific requirements of the air line it is connected to. It features various programming levels and performs operating and fault controls and analysis.
Advanced programming and analysis levels are protected by digital codes to prevent unintentional access.
MAESTRO XB also contains a memory which saves settings and operating data even if the compressor is disconnected from the power supply or switches off due to a power cut.

Hardware Characteristics

- Microprocessor-based technology
- Ergonomic control panel with rapid access keys to main menus
- access keys, start/stop and reset keys
- led backlit LCD display, 2 lines, 20 characters
- 24 Vac 50/60Hz Power Supply
- 24 Vdc Digital Inputs
- Digital output with clean contacts up to 230 Vac and until 24Vdc
- Pressure analog signals (4-20mA)
- Temperature analog signals (NPT)

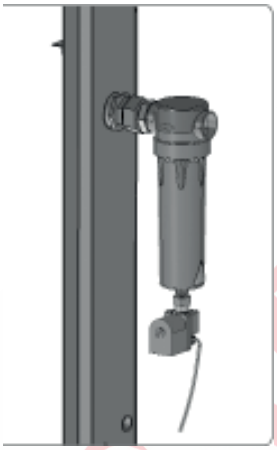
Interfaces:
☐ RS485 to comunicate with supervisor PC and network

The device allows for:
- Multilingual user Interface
- weekly and timed programming of start and stop functions via MAESTRO XB extention board (optional)
- immediate reading on display of data relevant to the compressor operation:
☐ Compressor hours of activation and line pressure of the equipment
☐ Oil temperature of the compressor
☐ Hours of running and hours of loading
- Programming of basic parameters for optimum operation of compressor accessible by user:
☐ Control modes of compressor (Local/ remote)
☐ Operation modes (Automatic, Continuous)
☐ The advanced programming of parameters, protected by “password” allows the qualified engineer to change those parameters to which the user cannot access directly
- Checking the input and output status to detect any failure in the compressor electric equipment
- Storage of up to 20 failure events
- The check of the integrated dryer (plus models)
- The remote control by clean contacts of the machine status below:
☐ Activated compressor (optional)
☐ Compressor blocked (standard)

Communication
MAESTRO XB ensures remote monitoring through MODBUS protocol.

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

OPTIONAL ACCESSORIES
The machine can also be customized according to meet different requirements by purchasing specific accessories such as:



Separator and Condensate Drain Kit (Photo 1)

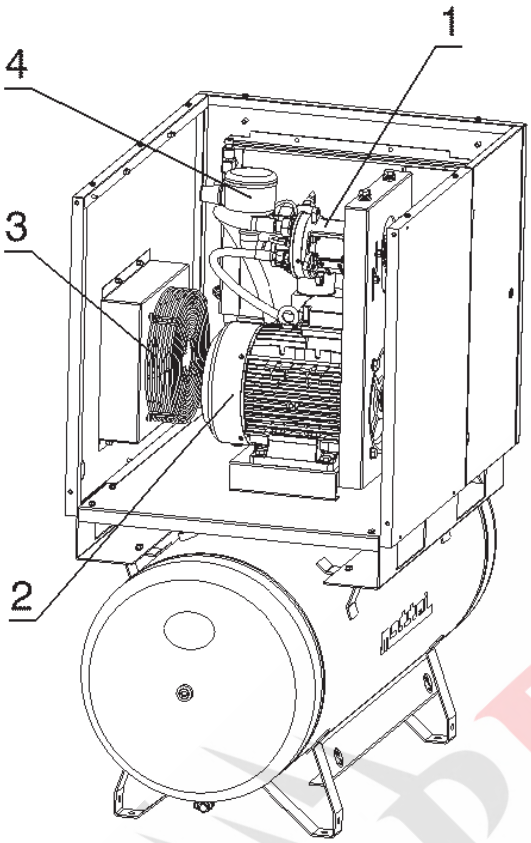
1

MAESTRO XB expansion module (Pict. 2)
To set weekly and timed programming.

2

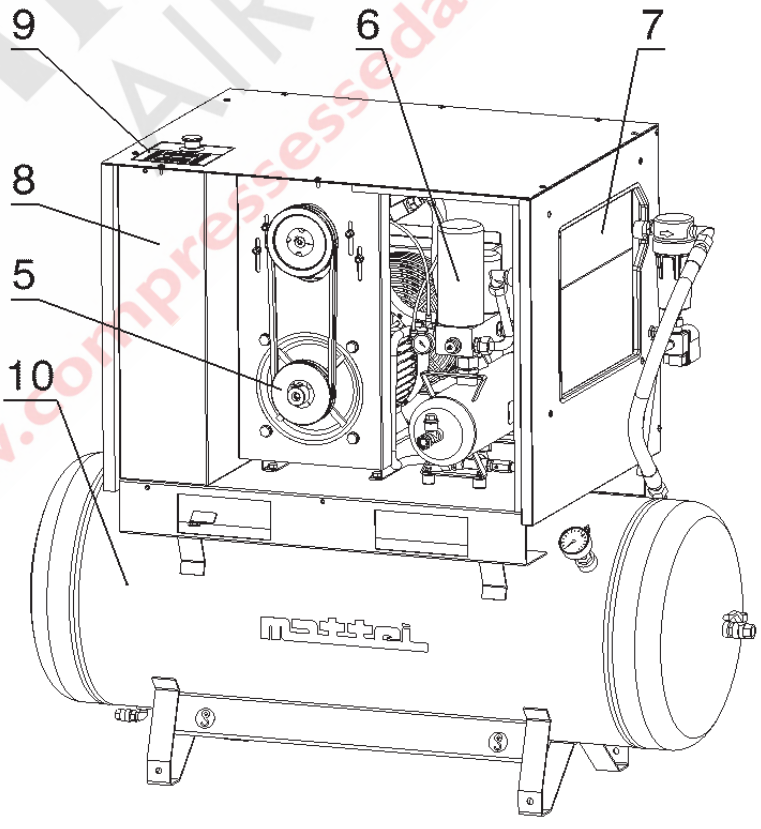
DOCUMENTATION
The machine comes complete with:
1 Use and Maintenance Manual complying with Machinery Directive 2006/42/EC
1 CE Declaration of conformity
1 Start Report
1 Maintenance Sheet
1 Electrical Diagram (inside the control board)
Documents for the optional accessories

CERTIFICATIONS
Ing. Enea Mattei SpA has its company quality system certified according to standard UNI EN ISO 9001 by DNV while the final inspection procedures comply with standard ISO 1217.

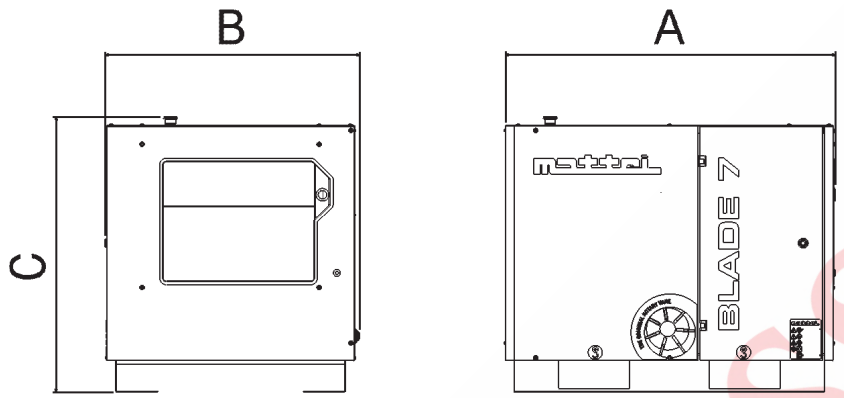


Location of main components

1 - Compressor
2 - Main motor
3 - Fan
4 - Suction filter
5 - Transmission
6 - Oil Separator
7 - Radiator
8 - Electrical cabin
9 - MAESTRTO XB controller
10 - Receiver
(model “BLADE-TM” only)

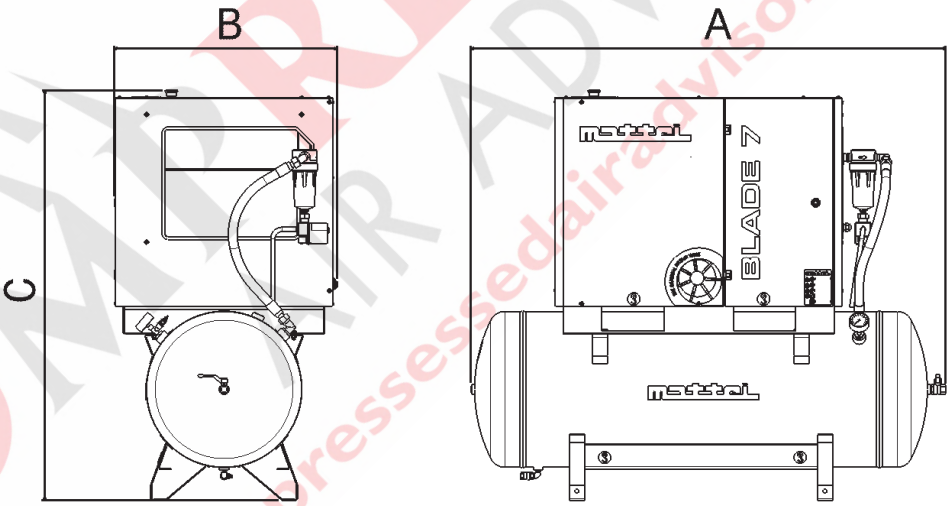


Technical data and overall dimensions



BLADE

BLADE-TM



Model	Air Receiver gallon	Air Outlet npt	LxWxH inches			lbs (net) 3 phase	lbs (net) 1 phase
BLADE 4	-	3/4"	37	28,4	31,1	451	454
BLADE 5	-	3/4"	37	28,4	31,1	462	493
BLADE 7	-	3/4"	37	28,4	31,1	473	-
BLADE 11	-	3/4"	37	28,4	31,1	600	-
BLADE 4-TM	90	1"	54	32,4	57,1	751	754
BLADE 5-TM	90	1"	54	32,4	57,1	762	793
BLADE 7-TM	90	1"	54	32,4	57,1	773	-
BLADE 11-TM	90	1"	54	32,4	57,1	900	-

The entire area used when handling the machine, including the area for parking the transport used and for installing the machine, must be identified and inspected in advance to identify any possible “DANGEROUS AREAS”.

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

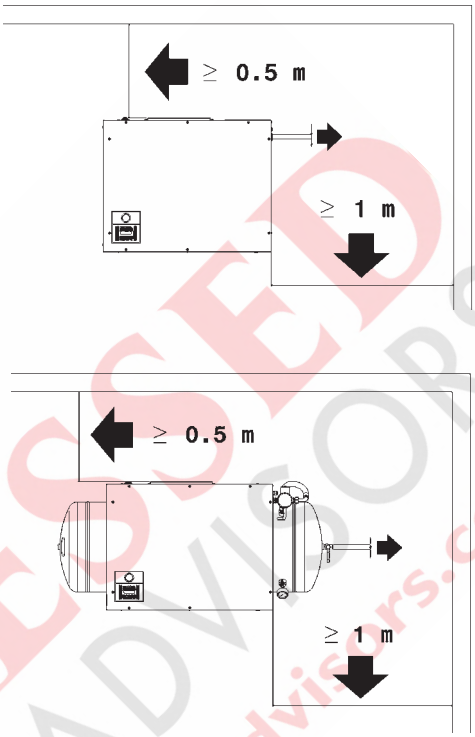
To that end:
☐ Verify first the total weight of the machine and use a forklift truck or an adequate lifting means. Specific pictograms indicate the points suitable for lifting.
☐ The center of gravity is close to the motor axis. Before lifting, verify (by slightly lifting the group from ground) that the lifting points are correct and that it is not about to overturn as this could be dangerous.
☐ When lifting, be careful not to damage the base of the machine and the soundproof case.

During transportation, fix the machine accurately to the means used, blocking it both longitudinally and on the side.

It is recommended to protect the machine with adequate packaging to protect it from environmental factors.

To unpack the machine, remove the guards and place it on the floor by means of a forklift truck to remove the pallet.

Position of compressor



Section “Technical Data” gives overall dimensions, total weight, and values on the cooling of the machine.
The machine should be installed in a covered environment, properly ventilated, away form heat sources and simply put on a solid and level floor. It does not require any type of special foundation.
Space and ventilation around the machine are essential.
An air-cooled compressor, controlled by an electrical motor, generates heat equal to about 85% of the absorbed power.
The BLADE Series machines, which have cooling air outlet opening on the side of the structure, shall be positioned at not less than 1 metre from the wall.
If such a clearance is not possible, a hot air vent duct must be installed (see further on the section on the size of the ducts and heat recovery).
Keep 0.5 metre distance – with no obstruction – also on the rear side, where suction takes place.
To make checks and maintenance operations

on the compressor easier, leave at least 1 m clearance from all other 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 disconnect switch and circuit breakerof suitable size as near as possible to the machine.

The characteristics of the electrical motor start should be taken into consideration when choosing the disconnect switch and circuit breaker.
The size of the power cables between line disconnect switch and the control board of the compressor should be made using the values given on the technical sheet of section “SECTION DATA “.

For further details, use the specific electrical diagram supplied with the machine or the general one attached to this Manual.

WARNING !!!

It is to be noted that the machine should ALWAYS be properly grounded.

Compressor Supply			
208 Vac	60 Hz	Three Phase	(3Ph + Ground)
230 Vac	60 Hz		
460 Vac	60 Hz		
575 Vac	60 Hz		
230 Vac	60 Hz	Single Phase	(1Ph + Ground)

Connection to the air distribution system

Compressed air distribution
Only qualified staff should carry out the connection to the air distribution network and in compliance with the regulations in force.
The distribution of air aims at bringing compressed air to utilities, with minimum pressure loss hence reducing any energy waste.
To avoid any kind of waste, check all the distribution equipment pipings and all accessories at regular intervals.
Filters, regulators, and other accessories must undergo suitable maintenance.
The section of piping connecting to the equipment must be flexible and with a diameter not less than the one leaving the machine.
An isolation valve is also required to remove the machine from the air network in case of maintenance.
It is recommended that a hose with an air nozzle be installed near the machine to allow for regular cleaning of the radiator,intake filter and other parts of the machine. The intake air contains a certain amount of water indicated as relative humidity.

After air has been compressed, it is cooled in the radiator, which all versions of the Mattei compressors are supplied with.
Cooling the air produces condensate based on the quantity of moisture in the intake air. The condensate produced is separated and drained with an automatic device (S and SE version).
It is to be noted that it should be collected and discarded in compliance with ruling laws.

Dimensions of compressed air distribution pipings

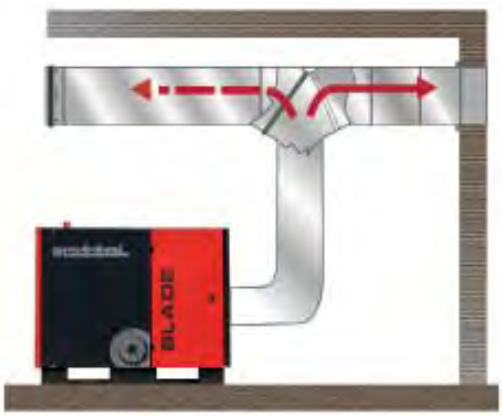
We mention that the main causes of energy losses are pipings with unsuitable diameter and losses due to an improper setting up of the equipment or deteriorated materials.
The pipe diameter must be duly selected so as to minimize the pressure drop between the compressor or the storage receiver and the 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

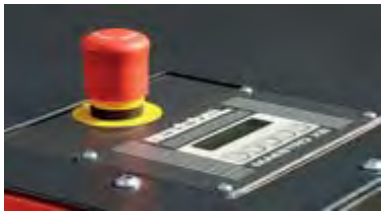
Pipe Diameter	Free air delivery [m³/min]	PRESSURE [bar]				
		6	7	8	9	10
1"	1	0,087	0,076	0,068	0,061	0,056
	2	0,315	0,275	0,245	0,220	0,200
	3	0,666	0,583	0,518	0,467	0,424
	4	1,134	0,993	0,883	0,795	0,722
2"	8	0,138	0,120	0,107	0,096	0,088
	16	0,496	0,434	0,386	0,347	0,316
	24	1,050	0,919	0,817	0,735	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

Heat Recovery

The air flow from the fan cools down oil and compressed air, that warms up when passing through the radiator.
The recoverable heat represents about 100% of the power installed in the BLADE series machines.
The heat produced can be conveniently recovered and used to heat rooms.
Any duct should be adequately sized and, if necessary, shaped in such a way to allow for a correct use during Winter and the output of hot air during Summer.
The duct to recover/output hot air should be designed by a competent engineer and should limit the load loss at approximately 20 Pa.
If the duct offers greater resistance, an auxiliary extractor should be used to prevent any overheating of the machine.
As an example, a duct with a higher or equal section to the coming out of the machine (the output grid on those versions equipped with a soundproof case), made up of some 10 m of straight duct and two 90° elbows properly connected, allows the maximum tolerated limits to be maintained.
However, it should be noted that 10 Pa increase corresponds to some 2 - 3 °C increase in operating temperatures.
As for the recoverable heat, it should be noted that 1 kW of installed power allows for the heating up a volume of about 30 cubic meters by 1 K (1 kW = 860 kcal/h).
In the Section on “TECHNICAL DATA” attached to this manual the values required to realize that which is mentioned above are indicated.



Emergency push-button



With this push-button the machine stops immediately, while skipping the regular stop sequence provided by the STOP button.

This button should be used **ONLY** in case of an emergency.
The regular and frequent stop of the compressor by this button can damage its operation.

WARNING !!!
Please refer to the Manual of the "MAESTRO XB" control attached to this manual for the detailed description of keys, programming, and all of its functions.

Safety Valve

A "SAFETY VALVE" protects the compressor in case of air overpressure inside the chamber, while limiting the value to its own setting limit.
The safety valve is set on 175 psi for all versions of compressors L and H and 218 psi is the setting for HH versions.

MAESTRO XB controller

MAESTRO XB is a programmable device to control the machine that can adapt its operation to the specific requirements of the network it is connected to.
It has several programming levels, with special possibilities of control/analysis of operation and of failures.
The advanced programming and analysis levels are protected by digital codes so as to prevent any unintentional tampering.
Maestro XB has a storage that saves the settings made over time as well as the data on operation even if the machine is not connected to the electrical line or if voltage drops occur.
It is possible to set an "OPTIONAL" weekly programming.

Keypad

The buttons are backlit for enhanced clarity and, in some cases, in order to complete the information provided by the device.

ON/OFF key. To switch on/off the compressor.

Arrow Up key. It has different functions:
- to scroll the menu items upwards
- In Modify mode, to increase the numerical value or to move the selection.

Arrow Down key. It has different functions:
• to scroll the menu items downwards.
• to decrease the numerical variable o in Modify mode, or to move the selection.

Enter key. It also has different functions:
• to open the memory before a modification and to close it after modification.
• to disable the single working days in Clock mode (optional)

.

Reset/Escape key. To jump to next level during menu navigation. It also has a Reset function in case of anomalies.

Foreword

The user is recommended to appoint a qualified person for the correct operation and maintenance of the machine.
The user should properly train all operators so that they are acquainted with all the steps aiming at preventing any accident or injury to people.
All start and stop procedures as well as the emergency ones should be known. They should also be reviewed at regular intervals with the operators.
The Use and Maintenance Manual should always be easily available.
If lost or damaged, further copies can be purchased from the Mattei Sales Organization.

Checks before Start

Before starting the machine, ensure that:

- ❑ the electrical system complies with both voltage and power of the machine and that cables are of the adequate section;
- ❑ the machine is connected to earth and protected from any short circuits;
- ❑ the line disconnect switch is installed near the machine;
- ❑ the machine oil level is correct. When the machine is still and without pressure in the chamber, oil should exceed the visual check pilot light. If the level is insufficient, fill it up with suitable oil and of the same type as the one used;
- ❑ the machine is connected to the compressed air system.

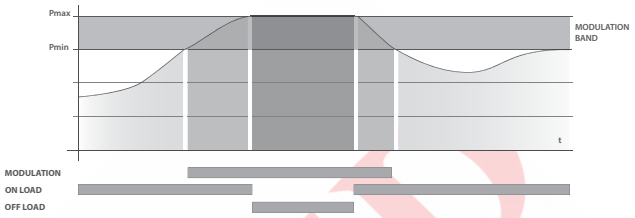
Operation Modes

Blade compressors are designed to operate according to continuous and automatic control logics.

The factory mode is AUTOMATIC. To modify the preset mode, see Page 16 of MAESTRO XB User Manual.

An overview of these two options is given below.

Continuous (Cont)

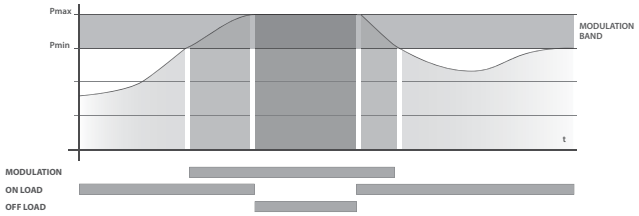


In this mode, the compressor delivers air within a clearly defined pressure range; maximum and minimum values are factory-set by Mattei though they can be customised using the programming functions in the [**User**] menu. When pressure reaches the maximum value (**Pmax**) the compressor is off-loaded (suction valve closed) and decompressed in order to reduce power consumption. As soon as a request for air from the network reduces pressure to the minimum value (**Pmin)** the compressor loads again and resumes air delivery. The compressor can be stopped at any time by pressing the stop button: the stopping procedure comprises a no-load run phase which lasts for a set time during which the compressor is decompressed.

Note

If the unit is enabled with a line pressure greater than the set minimum pressure, the compressor does not start but waits for the pressure to fall below the minimum value.

Automatic (Auto) (Preset Mode)



This mode adds another function to the previous one: the compressor can automatically stop at low or no air demand conditions. The cycle is the following. When line pressure reaches Pmax, the compressor is “off-loaded”; at this point, two things can happen:

1. if there is no demand for air it runs no-load for a certain period of time TMV (No-load Run Time) and stops when this period of time expires; it starts again as soon as line pressure falls below Pmin;
2. if line pressure falls to Pmin before TMV expires, the compressor is “recharged”.

MAESTRO XB controller

In order to communicate with the user, MAESTRO XB features various menus that allow the compressor to be monitored and programmed. These are divided by function and not all of them can be accessed by the final customer. Some of them are protected by one or more passwords.
The menus are divided according to the functions that they control.
The main menus used to manage the compressor are:

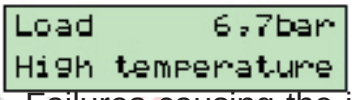
Menu	User access
Monitor Menu	Yes
User Menu	Yes
Advanced Menu	No
Clock Menu	Yes
Log Menu	Yes
Network Menu	Yes
Info Menu	Yes

The various menus also use texts informing the user of the meaning of the variables and the functions they perform.
For a more detailed description of individual menus, please refer to the MAESTRO XB manual (code TEFA2G-013) supplied with this manual.

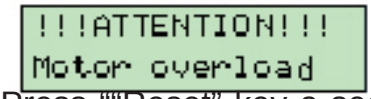
Operational Failures

Failures can be divided as follows:

- ❑ Failures with asignal (alarms)



- ❑ Failures causing the immediate stop of the compressor (blocks).
  The card signals a failure by lighting of the reset button, together with a visual signal through icons and a sliding description.

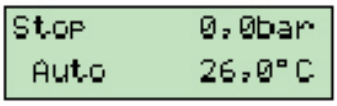


Press ““Reset” key a second time to reset the compressor operation.

WARNING !!!
If the failure cause cannot be solved, the compressor will not start as the failure appears to be still active and re-displays the intervention request.

WARNING !!!
The rotation in the wrong direction can seriously damage the compressor.

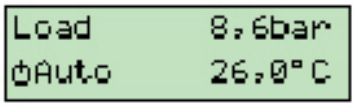
After completing all preliminary operations before start-up, described in the previous pages, this is the MAESTRO XB page displayed:



Starting
Press the key to switch the compressor “on”

The compressor is started. It starts off load (intake valve closed) and then goes on load after a pre-set time, subsequent to the star-delta switching delay The compressor, from this moment on, delivers compressed air according to the set operation mode.

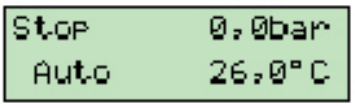
After start-up, the following page is displayed



Stop
To stop the compressor, press key

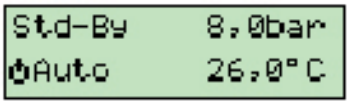
The compressor is unloaded (decompressed) for a preset time (basic programming). After the motor has stopped the residual pressure inside the compressor discharges completely in approximately one minute.

The following page shall be displayed



The machine can be started according to the previously described sequence, but it actually starts only provided that the line pressure is lower than the Pmin value set on the main unit.

In case the line pressure is higher than Pmin, the following page shall be displayed



NOTE
MAESTRO XB has a control logic that prevents an excessive number of consecutives starts.
This logic is cleared by the user ’s manual intervention, if he/she acts directly by turning off and on the machine manually.

WARNING
An excessive number of consecutive starts may damage the main motor.
Operate manually only in case of real need and wait for a reasonable amount of time before restarting the machine.
The number of starts depends now on many parameters,the rated power,the operation cycle,the working pressure,and the ambient temperature.
For any requirement,please contact MATTEI.

Tips on maintenance

Cleaning the machine

Cleaning of the equipment should be carried out at regular intervals, following the schedule listed in this manual.
To clean delicate parts of the machine, direct the compressed air jet so that neither processing residuals nor humidity can penetrate the mechanical groups under maintenance.
To clean any inner and/or moving parts (in touch with lube) only use lint-free cloths.
Always use perfectly dried air during cleaning and with such a pressure that the operator does not risk any injury.

Regular intervals in the maintenance operations

The time intervals quoted in the maintenance table are reference values concerning the machine operating time during running and the company situation.
The most important environmental factors affecting these intervals are: machine environment (temperature, humidity, and air pollution).

Machine Lubrication

Use only the amount of lubrication necessary to lubricate the concerned mechanism. Carefully dry any excess of lubrication or grease with a cloth.
Sometimes, either an excess or lack of lubrication can jeopardize the smooth operation of the machine.
To lubricate only recommended lubricants should be used or lubricants with equivalent characteristics, of a known and tested quality.
The replacement of used oils should be done when the machine is warm. The oil temperature should range between 25 and 30 °C. (See Section 8)
The draining and filling holes should not be left open beyond the time strictly necessary to replace the oil.

Operations to be performed during maintenance

During the carrying out of any maintenance operation, attention should be given to all indications that might precede a failure, and specifically:
• presence of corrosion,
• presence of wear,
• presence of loose joints or connections,
• presence of oxide contacts,
• exhaust the air from the pneumatic pipings, after each maintenance intervention.

Minimizing downtimes due to failures

It should be noted that correctly performed maintenance intervention, helps minimize downtimes due to failures.
A repair made at the right time prevents further deterioration.
Use only original spare parts and repair the failed component as carefully as possible at your factory or send it to for repair to the closest authorized service center.

Periodic maintenance table

CHECK	FREQUENCY - EVERY						
	The event that occurs first	OPERATING HOURS					
	EVERY	**50**	**200**	**500**	**1000**	**2500**	**5000**
Tighten nuts and screws fixing the cables in the command and control electrical board and in the terminal board of electrical motors	after the first **50 hours** and then every **6 months**				●		
Check the oil level	**week**	●					
Check and Clean the solenoid valve filter of condensate drain (if any)	**week**	●					
Clean the suction filter	**month**		●				
Clean the oil radiator and the final refrigerant of the compressed air	**month**		●				
Clean the intake pre-filter	**month**		●				
Check belt tensioning (BLADE 4-5-7)	after the first **500 hours** and then every **year**					●	
Clean or replace the condensate separator filter (if any)	**6 months**				●		
Replace maintenance kit A	**1 year**					●	
Replace maintenance kit B	**2 years**						●
Rotoroil F2 oil change (*)	**2 years**						●

(*) For other lubricant refer to Section 8

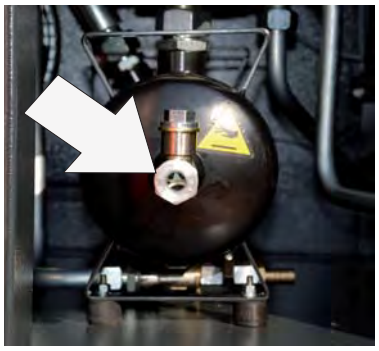
NOTES:
The kits A-B-C-D provided for the preventive maintenance contain all parts to be used to maintain the compressor in the best working condition. Fitting or replacement of items in the due times will meet the expected safety and correct operation requirements.
The extended warranty contracts impose use of the mentioned kits and ensure that any of the critical parts is replaced before it can deteriorate. In case of standard warranty, MATTEI recommend use of the same kits.
Alternatively, the maintenance technician avails of further assemblies or single components as spare parts but it is absolutely necessary that the following replacements are made not later than the scheduled times, otherwise there could be safety risks for the persons and the compressor itself.

Time inverval	**Job**
within 5000 hours and at every oil changere	place the oil filter (and all related gaskets)
within 5000 hours and at every oil change	replace the thermostatic bulb
within 10000 hours	replace the filtering element/s of the final separator
within 10000 hours	replace the coupling elastic element
within 10000 hours	replace the off-load solenoid valve and relative pipes

WARNING !!!
In dusty environments and/or at high temperatures, maintenance operations should be carried out more frequently.
The rubber flexible pipes must be replaced when they lose flexibility.

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.

Check of oil level (Pict. 1)



1

When the compressor is off and all internal pressure has been relieved the oil level completly fill the sight glass.

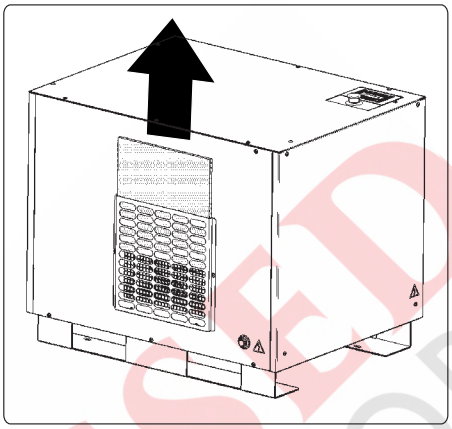
When the compressor is running and on load, the oil level should be about half of the sight glass.

Cleaning and/or replacing the air suction filter

Ensure that the machine is off. Access the machine by removing the upper panel.
Unscrew the filter body clamp. Take the filter out of the machine. Unscrew the filter cover; withdraw the filtering cartridge; clean the cartridge with compressed air, while directing the jet from inside the cartridge.
Carefully clean the filter housing and cover.
Assemble back in opposite order.

Cleaning of Air/Oil Radiator
The radiator is placed on the rear side of the machine structure.
The cooling flow passes through the radiator from the outside to the inside.
Blow a stream of compressed air into the radiator from the outside.
Then remove any possible dirt which may fall into the structure from the inspection panel.

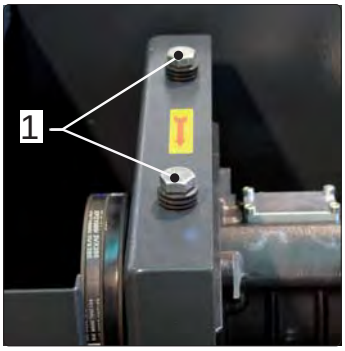
Cleaning of the Pre-filter (Pict. 2)



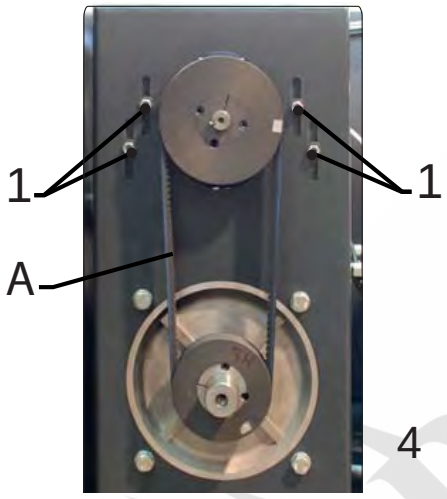
2

The pre-filter consists of a metal structure, including a filtering mesh.
It is used to filter the air to entering the cabinet, so as to prevent any foreign bodies from accessing the machine.
Important: the pre-filter has to be cleaned frequently. To do this, it is necessary to remove the pre-filter pulling it from the top, and then to blow over it with a stream of compressed air.
In case it's necessary, the filtering material can be washed.
Do not use any type of solvent when washing.

Belt Tensioning (BLADE 4-5-7)
It is important to check and adjust belt tensioning – if necessary - after the first 500 hours and then every year or 2500 hours. Be sure that the machine is switched off. Remove the upper and front panel to access the compressor. Use a dynamometer (Pict.5) to apply a perpendicular force ranging from 25N to 35N on point A (Pict. 4); each belt has to retract by 5 mm. In case it does not, unscrew the bolts (Pict.4-pos.1) and adjust the screws (Pict.3-pos.1) to tight the belt. After completing the operation, screw back the bolts (Pict.4-pos.1).



3



4

5

Belt Replacement

- **BLADE 4 - 5 - 7**

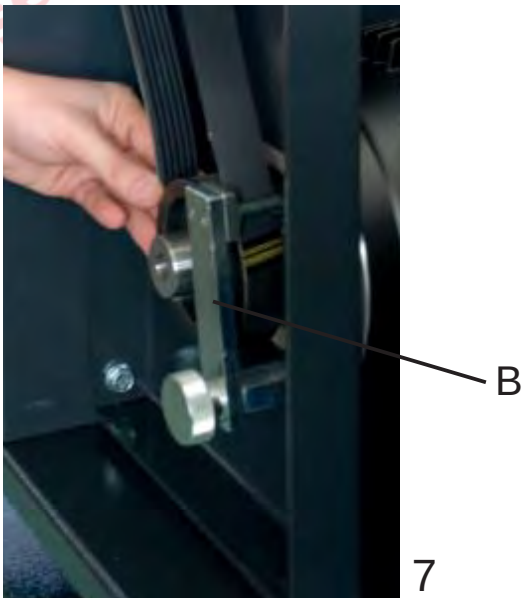
  Be sure that the machine is switched off. Remove the upper and frontal panel to access the compressor.
  Unscrew the bolts (Pict.4-pos.1) and adjust the screws (Pict.3-pos.1) to tight the belts. Remove the belts and replace them with new ones. Tighten the belts as described in the previous paragraph.

- **BLADE 11**

  Be sure that the machine is switched off. Remove the upper and frontal panel to access the compressor. Pull out the belt from the driving pulley, wrapping it in a sheath and exercising a combined rotation and traction movement manually (Pict. 6). Alternatively cut the belt.

6

Remove the compressor coupling by unscrewing the five fastening screws. Fix the instrument B on the motor special screw, taking care to insert the new belt in the seat provided (Pict. 7).



7

NOTE
Due to the fixed center distance of the drive gear, it is possible to use only Mattei elastic belt.

Put the proper protection C on the compressor hub and fix the lever D inserting the belt on one of the compressor coupling holes. The lever D must lock the rotor hub protection C (Fig. 8).

8

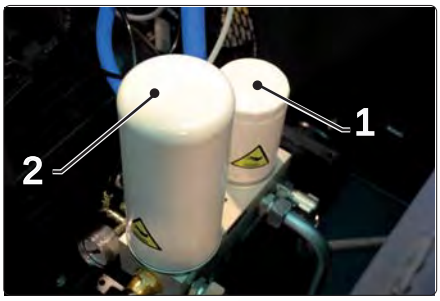
Wrap the new belt on the driving pulley, being careful to insert it properly in the grooves. Insert the belt on the left side of the driving pulley and lock it by pivoting with the lever D.

The lever pivot should fit into the drive gear so as to fasten the belt to the compressor pulley during the manual rotation, as shown in Fig. 9.


9

Be careful that the belt bypass the rotor hub protection and that during the pulley rotation for the belt insertion, the smooth, non-ribbed side of the belt looks at the operator. Once the belt has been inserted, remove the fitting tools from the drive gear and fit the compressor coupling again.

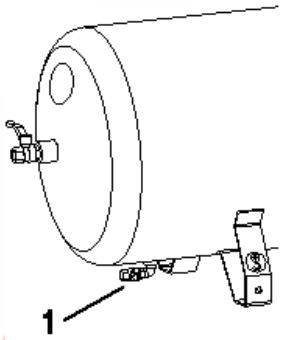
Replacement of Oil Filter Element
Replace the oil filter element each time the oil is changed.
Be sure that the machine is switched off.
Remove the upper panel of the machine. Dismantle the filter element (Pict.10-pos.1) by using chain tongs and replace it with a new unit. Before locking the filter element, lubricate the gasket. Screw the new filter element manually.



10

Replacement of the Air-Oil separator Filter Element
Be sure that the machine is switched off.
Open the inspection panel. Dismantle the filter element (Pict.10-pos.2) by using chain tongs and replace it with a new unit. Before locking the filter element, lubricate the gasket. Screw the new filter element manually.

Eliminating the receiver condensate
(Pict. 11)



11

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

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

available in available in 1, 5 and 55 gallon containers.
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 5 to 113 °F	5000
Mattei V-LIFE COLD	from -22 to 86 °F	6000
Mattei V-LIFE FOOD	from 23 to 104 °F	4000

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 is important that to prevent the risk of fires the best attention is given to the oil choice and to execution of all maintenance operations, and specifically:

- carry out regular and complete oil changes;
- ascertain that the coolling system is always efficient, with often checks to the oil temperature;
- verify that protecting 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
MAESTRO XB is working, it activates the start but the compressor does not start.	Line pressure is higher than Pmin / the pressure transducer reads an incorrect value.	Check the line pressure. Verify the correct operation of the pressure detection system: transducer, collector and switching solenoid valves. Contact the nearest authorized service center.
	The hour programming has been enabled.	
B. Pressure The network pressure does not reach the required value.	The minimum pressure valve does not operate properly.	Verify the operation. Contact the nearest authorized service center.
	The condensate drain solenoid valve is blocked in the open position (if present).	Clean the specific filter to remove the cause of the block and then check operation. Please refer to the “Installation, Use, and Maintenance Manual”, Section 12.
	The minimum pressure valve does not function correctly.	Verify the operation. Contact the nearest authorized service center.
	Clogged intake filter.	Replace the filter. Refer to section 7 to the “Operating and maintenance manual”.
	Request for air greater than the compressor maximum capacity.	Please refer to the Sales Organization of Mattei Compressors Inc to study equipment improvement.
The inside pressure exceeds the set value.	The setting of the maximum pressure value in the [USER MENU] menu is incorrect.	Verify the correct setting of operating parameters. Please refer to the “Installation, Use, and Maintenance Manual” Section 5 and 6.

PROBLEM	CAUSE	SOLUTION
C. Oil Excessive oil consumption; the level lowers too quickly; oil is detected within the network.	The air-oil separator filter is clogged.	Replace the filter. (See chapter 7)
D. Temperature The compressor stops due to its own over-heating.	The radiator or the filter of the cooling air is dirty; the environmental temperature is excessive for the compressor operation.	Verify the cause and remove the problem. (See chapter 7)
The compressor stops due to the over-heating of the motor.	Excessive working pressure.	Verify the setting and re-set to the design value for the machine. (See chapter 7)
	The main motor cooling is insufficient; the cooling air is either too hot or too little.	Verify the environmental conditions and the condition of the filtering panel. (See chapter 3 and 7)
E. NOISE LEVEL Belts are noisy.	Belts are not tightened enough.	Correcly tighten the belts. (see chapter 7).

General

The electric motor characteristics are given on the nameplate fixed to the motor itself, and specifically:

1. Model
2. Serial number
3. Protection degree
4. Insulation class
5. Maximum ambient temperature
6. Service
7. Service factor
8. Supply voltage [V]
9. Frequency [Hz]
10. Speed [rpm1]
11. Power [kW]
12. Power factor [cos φ]
13. Rated intensity [A]

Cooling

BLADE series electric motors are self-ventilated.
It is necessary to check that no dirt has accumulated on the rear cover of the motor. Dirt could restrict the cooling air flow.

Irregular Noises

Any abnormal vibrations or noises usually depend on worn bearings. In such an event, it is suggested to replace the bearings.

Electrical Checks

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

WARNING !!!
Before starting the machine, verify that the nuts blocking the power supply cable terminal boards are well tightened.

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

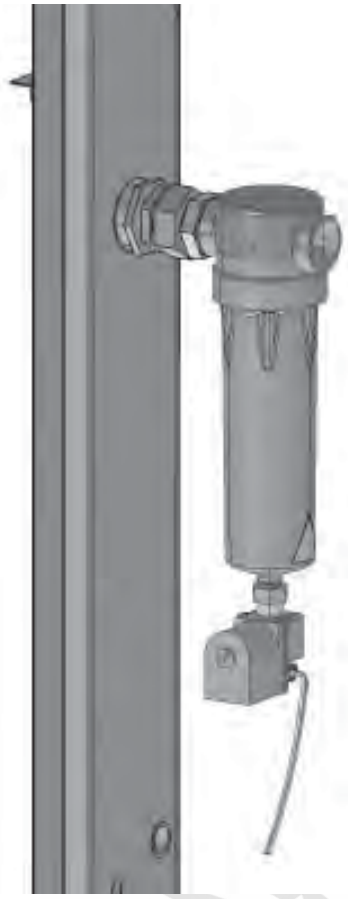
Ing. ENEA MATTEI S.p.A. will not take any responsibility for damages to people or objects that may derive from the recycling of individual components of the machine, for operation or assembling situations different than the original ones.
Ing. ENEA MATTEI S.p.A. refuses any implicit or explicit acknowledgement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

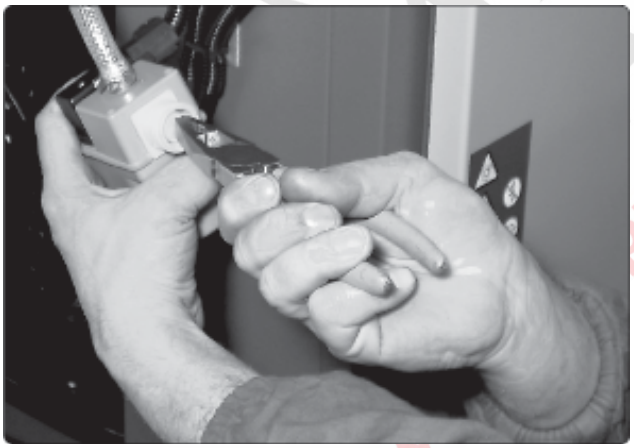
WARNING!!!
The deactivation and dismantling of the machine should be carried out only by duly trained and equipped staff.
Act as follows to deactivate the machine permanently:

- 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.





Cleaning the drain solenoid valve filter

Confirm all pressure has been removed from the condensate separator housing. Unscrew the connection and remove the drain solenoid valve.
Withdraw the solenoid valve filter using beak pliers, remove any dirt and wash with detergent.
Re-assemble in the reverse order while paying special attention to the position of the solenoid valve seal.

Form to request
Technical service

Mattei Compressor, Inc.
9635 Liberty Road, Suite E
Randallstown, MD 21133
Tel: 410.521.7020
Fax: 410-521-7024
email: info@matteicomp.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**

Electrical _____

_____

_____

_____

_____

Mechanical _____

_____

_____

_____

_____

Notes _____

_____

_____

Place _____ Date, _____

Stamp and Signature

Form to request spare parts

Mattei Compressor, Inc.
9635 Liberty Road, Suite E
Randallstown, MD 21133
Tel: 410.521.7020
Fax: 410-521-7024
email: info@matteicomp.com

Company _____

Address _____

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

Model _____ Serial number _____.

Reference	Description	Quantity

Notes _____

Place _____ Date, _____

Stamp and Signature

Parts to be replaced during maintenance

For overhauling and for preventive maintenance, a wide range of **Service Kits** is available. Each maintenance kit includes all the necessary components for the ordinary maintenance operations.

For codes and further information, please contact **Mattei Compressor Inc.**

			BLADE Series			
	Hours	**Quantity**	**4**	**5**	**7**	**11**
Maintenance Kit "A" + Prefilter	**2500 or once a year**	1	•	•	•	•
Maintenance Kit "B"	**5000 or once every 2 years**	1	•	•	•	•

Note: please contact Mattei Compressors Inc to obtain the codes of kits for preliminary maintenance.

Product Specifications		"LX version"		
		BLADE 4	BLADE 5	-
Tension - Frequency - Phases	V-Hz-ph	230-60-1		
Motor rated speed	rpm	1800		-
Nominal working pressure	psi	109		
Maximum working pressure	psi	115		
Nominal delivery	scfm	20,4	31,8	-
Terminals absorbed power	kW	4,76	7,06	-
Noise level (max)	dB(A)	61	62	-
Oil carry over	ppm w/w	1	2	-
Total heat recovery	%	95		
Oil circuit capacity	$inch^3$	275		
Minimum supply cables section (10 mt.)	AWG	10		
Storage AIR receiver volume (TM only)	gallon	90		
Nominal absorbed current	A	21,4	31,3	-

Product Specifications		"LX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	208-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	109			
Maximum working pressure	psi	115			
Nominal delivery	scfm	20,4	31,8	39	52,10
Terminals absorbed power	kW	4,61	6,67	9,00	13,98
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	10			8
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	16,1	23,5	26,7	42,1

PRODUCT SPECIFICATIONS

Product Specifications		"LX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	230-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	109			
Maximum working pressure	psi	115			
Nominal delivery	scfm	20,4	31,8	39	52,10
Terminals absorbed power	kW	4,61	6,67	9,00	13,98
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	10			8
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	14,5	21,2	24,3	38,1

Product Specifications		"LX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	460-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	109			
Maximum working pressure	psi	115			
Nominal delivery	scfm	20,4	31,8	39	52,10
Terminals absorbed power	kW	4,61	6,67	9,00	13,98
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	14			10
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	16,1	23,5	26,7	19,0

PRODUCT SPECIFICATIONS

Product Specifications		"LX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	575-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	109			
Maximum working pressure	psi	115			
Nominal delivery	scfm	20,4	31,8	39	52,10
Terminals absorbed power	kW	4,61	6,67	9,00	13,98
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	14			10
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	5,8	8,5	9,7	15,2

Product Specifications		"HX version"		
		BLADE 4	BLADE 5	-
Tension - Frequency - Phases	V-Hz-ph	230-60-1		
Motor rated speed	rpm	1800		-
Nominal working pressure	psi	143		
Maximum working pressure	psi	150		
Nominal delivery	scfm	17,52	29	-
Terminals absorbed power	kW	4,81	7,08	-
Noise level (max)	dB(A)	61	62	-
Oil carry over	ppm w/w	1	2	-
Total heat recovery	%	95		
Oil circuit capacity	$inch^3$	275		
Minimum supply cables section (10 mt.)	AWG	10		
Storage AIR receiver volume (TM only)	gallon	90		
Nominal absorbed current	A	21,6	31,4	-

Product Specifications		"HX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	208-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	143			
Maximum working pressure	psi	150			
Nominal delivery	scfm	17,52	29	36	47,00
Terminals absorbed power	kW	4,65	6,68	8,94	14,25
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	10			8
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	16,1	23,5	26,7	42,9

Product Specifications		"HX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	230-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	143			
Maximum working pressure	psi	150			
Nominal delivery	scfm	17,52	29	36	47,00
Terminals absorbed power	kW	4,65	6,68	8,94	14,25
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	10			8
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	16,1	23,5	26,7	42,9

Product Specifications		"HX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	460-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	143			
Maximum working pressure	psi	150			
Nominal delivery	scfm	17,5	29	36	47,00
Terminals absorbed power	kW	4,65	6,68	8,94	14,25
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	14			10
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	7,3	10,6	12,1	19,0

Product Specifications		"HX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	575-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	143			
Maximum working pressure	psi	150			
Nominal delivery	scfm	17,5	29	36	47,00
Terminals absorbed power	kW	4,65	6,68	8,94	14,25
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	14			10
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	5,8	8,5	9,7	15,5

Product Specifications		"HHX version"		
		BLADE 4	BLADE 5	-
Tension - Frequency - Phases	V-Hz-ph	230-60-1		
Motor rated speed	rpm	1800		-
Nominal working pressure	psi	168		
Maximum working pressure	psi	175		
Nominal delivery	scfm	14,8	25	-
Terminals absorbed power	kW	4,75	7,15	-
Noise level (max)	dB(A)	61	62	-
Oil carry over	ppm w/w	1	2	-
Total heat recovery	%	95		
Oil circuit capacity	$inch^3$	275		
Minimum supply cables section (10 mt.)	AWG	10		
Storage AIR receiver volume (TM only)	gallon	90		
Nominal absorbed current	A	21,3	31,7	-

Product Specifications		"HHX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	208-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	168			
Maximum working pressure	psi	175			
Nominal delivery	scfm	14,8	25	33	43,60
Terminals absorbed power	kW	4,60	6,75	8,78	13,85
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	10			8
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	16,1	23,5	26,7	41,7

Product Specifications		"HHX version"			
		BLADE 4	BLADE 5	BLADE 7	BLADE 11
Tension - Frequency - Phases	V-Hz-ph	230-60-3			
Motor rated speed	rpm	1800		3600	
Nominal working pressure	psi	168			
Maximum working pressure	psi	175			
Nominal delivery	scfm	14,8	25	33	43,60
Terminals absorbed power	kW	4,60	6,75	8,78	13,85
Noise level (max)	dB(A)	61	62	64	67
Oil carry over	ppm w/w	1	2	3	3
Total heat recovery	%	95			
Oil circuit capacity	$inch^3$	275			
Minimum supply cables section (10 mt.)	AWG	10			8
Storage AIR receiver volume (TM only)	gallon	90			
Nominal absorbed current	A	14,4	21,4	23,7	37,7