INTRODUCTION

The purpose of this manual is to furnish the owner and operator with a set of practical and safe instructions on the use and maintenance of the VULCANIZERS. Follow all the instructions carefully, and the machine will assist you in your work and give lasting and efficient service in keeping with CORMACH traditions.

The definitions for identifying the different levels of danger are given below, together with the corresponding warning captions found in this manual:

DANGER – refers to immediate danger with the risk of serious injury or death.
WARNING – dangers or unsafe procedures that can cause serious injury or death.
ATTENTION – dangers or unsafe procedures that can cause minor injuries or damage to property.

Read these instructions carefully before powering up the machine. Keep this manual and all the illustrative material supplied with the machine in a folder near the vulcanizer, where it can be readily accessed for consultation by the operators.

The technical documentation supplied is considered an integral part of the machine; in the event of sale all relative documentation must remain with the equipment.

Adhere to the contents of this manual: any actions not explicitly described and authorised in this manual will be the sole responsibility of the operator.

NOTE: Some of the illustrations in this manual have been taken from photographs of prototypes: the standard production model may differ slightly in certain respects. These instructions are intended for persons with basic mechanical skills. We have therefore condensed the descriptions by omitting detailed instructions of simple operations such as loosening and tightening the fixing devices. Do not attempt to perform operations for which you are not qualified or with which you are unfamiliar. In case of need, please contact our nearest authorised Service Centre for assistance.
TRANSPORT–STORAGE–HANDLING

MACHINE TRANSPORT CONDITIONS
The machine must be transported in its original packaging, and kept in the position indicated on the packaging.

AMBIENT CONDITIONS FOR TRANSPORT AND STORAGE OF THE MACHINE
- TEMPERATURE: -25°C / +55°C.

ATTENTION
Keep the original packaging in case the machine has to be transported again in the future.

ATTENTION
After unpacking the machine, make sure it has not been damaged in transit. If in doubt do not use the machine, and call in a qualified technician.

TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>WEIGHT (KG)</th>
<th>MACHINE DIMENS. (CM)</th>
<th>PACKAGING DIMENS. (CM)</th>
<th>HEATING UNIT DIMENS. (MM)</th>
<th>VOLTS</th>
<th>WATTS</th>
<th>HERTZ</th>
<th>BAR</th>
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<tbody>
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<td>7.550</td>
<td>40x20x51</td>
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<td></td>
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<tr>
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<td>7.550</td>
<td>40x20x51</td>
<td>41x21x56</td>
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<td>600</td>
<td>50\60</td>
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<td>13.00</td>
<td>3420x83</td>
<td>36x23x85</td>
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<td>50\60</td>
<td>10</td>
</tr>
<tr>
<td>P20S</td>
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<td>50x23x102</td>
<td>190x100</td>
<td>230</td>
<td>600</td>
<td>50\60</td>
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<td>50\60</td>
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<tr>
<td>M50L</td>
<td>31.000</td>
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<td>64x30x100</td>
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<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

NOISE LEVEL IN OPERATING CONDITIONS <= 70 dB (A)
(Measurement criteria conforming to Italian decree law 277\91)
INSTALLATION CLEARANCES

WARNING
Choose the place of installation in strict observance of local regulations regarding safety in the workplace.

ATTENTION
In case of installation out of doors, the machine must be protected from the weather by means of a suitable permanent shelter.

WARNING
The vulcanizer must be anchored to a bench by means of the holes on the lower heating unit. If the vulcanizer is mounted on the support cabinet or column (optional accessories) it must be anchored to the floor.

WARNING
Do not install the machine in the vicinity of flammable materials, or in explosive environments.

AMBIENT CONDITIONS FOR OPERATION
- RELATIVE HUMIDITY: 30% / 95%
- TEMPERATURE: 0° C / 55° C

WARNING
Use of the machine in a potentially explosive atmosphere is not permitted.
ELECTRICAL AND PNEUMATIC HOOK-UP

WARNING

All the operations for connecting the machine to the electricity supply must be carried out exclusively by suitably qualified personnel.

- The sizing of the electrical connections must be performed on the basis of:
  - the power absorbed by the machine, specified on the machine data plate.
  - the distance between the machine and the point of connection to the electricity supply, so that the full-load voltage drop does not exceed 4% (10% during the startup phase) of the nominal rated voltage.

- The user must:
  - fit the electricity supply cable with a power plug conforming to local electrical safety regulations.
  - connect the machine to a dedicated electrical outlet equipped with an automatic circuit breaker (residual current set to 30 mA).
  - install power line fuses conforming to the specifications in the main wiring diagram contained in this manual.
  - install a suitable earthing system on the workshop mains line.

- To prevent unauthorised use of the machine, always disconnect the mains plug when the machine is not used (switched off) for extended periods of time.

- If the machine is connected directly to the power supply on the main electrical panel without the use of a plug, install a key-operated switch or other suitable lock-out device to restrict machine use exclusively to qualified personnel.

To ensure proper operation of the machine, it is essential to install an FRL unit upstream of the connection to the compressed air supply, which should have a pressure of min. 8 bar and max. 10 bar.

WARNING

To ensure correct and safe operation, the machine must be suitably earthed. NEVER connect the earth wire to a gas pipe, water pipe, telephone line or other makeshift system.
SAFETY REGULATIONS

WARNING

Failure to observe these instructions and hazard warnings can result in serious injury to the operator and others. Do not power up the machine before having read and understood all the danger/warning/attention notices in this manual. In order to correctly operate this machine, the operator must be qualified and authorised, able to understand the written instructions provided by the manufacturer and suitably trained and conversant with workplace safety regulations. Operators are expressly forbidden from using the machine under the influence of alcohol or drugs which may affect their physical or mental faculties.

The following conditions are essential:

_ You must be able to read and understand the contents of this manual
_ Make sure you are thoroughly familiar with the capabilities and characteristics of this machine
_ Keep unauthorised persons well clear of the area of operations
_ Make sure that the machine has been installed in compliance with all the relevant regulations and standards
_ Make sure that all machine operators are suitably trained, that they are capable of using the machine safely and correctly, and that they are adequately supervised during their work.
_ Do not leave any nuts, bolts, tools or other objects on the machine which may become caught up in its moving parts during its operation
_ Always make sure the electricity has been disconnected before touching electrical cables or the inside of electrical devices
_ Carefully read this manual and learn how to use the machine safely and correctly.
_ Always keep this manual in a place where it can be readily consulted when using the machine, and do not neglect to refer to it whenever necessary.

WARNING

Do not remove or deface the safety ATTENTION, WARNING, or INSTRUCTION decals. Replace any missing or illegible decals. Missing or damaged decals can be replaced at your nearest dealer. WHEN USING OR SERVICING THE MACHINE, OBSERVE THE UNIFIED INDUSTRIAL ACCIDENT PREVENTION REGULATIONS FOR LIVE EQUIPMENT. Any unauthorised alterations made to the machine automatically release the manufacturer from all liability in the case of damage or accidents attributable to such alterations. Specifically, tampering with or removing the machine's safety devices is a breach of the regulations for industrial accident prevention.
WARNING

When operating or servicing the machine, tie back long hair and do not wear loose-fitting clothes, ties, pendants, necklaces, rings, wristwatches or other articles that may become entrapped by moving parts.

DURING THE VULCANIZATION PERIOD, THE OPERATOR MUST ALWAYS BE PRESENT.

MAIN OPERATING PARTS OF THE MACHINE

Get to know your machine: being thoroughly familiar with its operation is the best guarantee of safety and performance. Learn the function and position of all its controls. Carefully check the correct operation of each machine control. To avoid accidents or injury, the machine must be properly installed, correctly operated and subjected to routine maintenance.

KEY TO HAZARD DECALS

DO NOT TOUCH during the preheating and vulcanization procedure: heat source which constitutes a burning hazard.

Always disconnect the electricity supply plug before attempting any operation inside the machine.
INTENDED CONDITIONS OF USE

**M5**

With the M5 manual vulcanizer it is possible to repair all types of inner tubes, canvas hoses and canvas/rubber strips.
The device for clamping the heating unit is quick and easy to use, and the mobile support plate makes it possible to maintain a constant pressure on the inner tube throughout the operation. It is important to thoroughly clean the part to be vulcanized. After having inserted the inner tube between the heating unit and the support plate, operate the manual clamp lever and turn on the luminous switch located on the upper part of the machine. The vulcanization time now begins. This should generally be calculated as 4 minutes for each millimetre of thickness (once the place is hot). After the time needed for vulcanization has elapsed, turn off using the switch. Allow the plate to cool down and release the tightening lever.

**M10**

With the M10 manual vulcanizer it is possible to repair all types of inner tubes, canvas hoses and canvas/rubber strips.
The device for clamping the heating unit is quick and easy to use, and the mobile support plate makes it possible to maintain a constant pressure on the inner tube throughout the operation. It is important to thoroughly clean the part to be vulcanized. After having inserted the inner tube between the heating unit and the support plate, operate the manual clamp lever. The vulcanization time can be adjusted from 1 to 60 minutes using a timer which automatically switches off the heating unit when the programmed time has elapsed. With the heating unit already hot, the vulcanization time is approximately 4 minutes per millimetre of thickness. After completing the operation, allow the heating unit to cool before releasing it.

**P10**

The P10 pneumatic vulcanizer is capable of repairing any kind of inner tube and any type of motor bike or scooter tyre. The plate is pneumatically clamped by means of a dual-action cylinder, which is in turn controlled by a manual valve. The working pressure is from 6 to 10 BAR. The vulcanization time can be regulated from 1 to 60 minutes, and once the plate is hot, vulcanization time is approximately 4 minutes per millimetre of thickness. It is important to scrape and clean the part of the tyre to be vulcanized. Cut out fine strips of Pará rubber and apply evenly, taking care to eliminate any trapped air, to cover the damaged part of the tyre, then protect the parts to be vulcanized both inside and out using heat-resistant backing paper. After placing the tyre between the plate and the support plate, using the manual control lower the former plate onto the part to be vulcanized, inserting the adjusting cushion if necessary, so that the pressure is evenly distributed over the surface. Set the timer for the necessary operation time. At the end of the operation it is advisable to allow the plate to cool before operating its manual upstroke control.
With the P20 pneumatic vulcanizer it is possible to repair all types of inner tubes and tyres belonging to any type of vehicle. The clamping of the heating unit is effected pneumatically by means of a double-acting cylinder actuated by a manual valve. The working pressure can vary from 6 to 10 BAR. The vulcanization time can be adjusted from 1 to 60 minutes and it is approximately 4 minutes per millimetre of thickness. It is important to thoroughly scrape and clean the part of the tyre to be vulcanized. Cut thin strips of para rubber and apply in a uniform manner, eliminating any air spaces, until the damaged part of the tyre has been filled. Then protect the part to be vulcanized both internally and externally with heatproof paper. After having inserted the tyre between the heating unit and the support plate, use the manual control to lower the heating unit onto the part to be vulcanized, inserting the pillow if necessary, so that there is uniform pressure over the entire surface to be vulcanized. Set the timer for the required operation time. After completing the operation, allow the heating unit to cool before raising it with the manual control.

With the P20S pneumatic vulcanizer it is possible to repair all types of inner tubes and tyres belonging to passenger vehicles of any type. Clamping of the heating unit takes place pneumatically by means of a double-acting cylinder actuated by a manual valve. The working pressure can vary from 6 to 10 BAR. The regulator permits adjustment of the pressure between the heating unit and support plates, making it possible to choose the most suitable pressure based on the hardness and thickness of the tyre or inner tube. The vulcanization time may be adjusted from 1 to 60 minutes, using a timer which automatically switches off the heating unit when the programmed time has elapsed. With the heating unit already hot, the vulcanization time is approximately 4 minutes per millimetre of thickness. It is important to thoroughly scrape and clean the part of the tyre to be vulcanized. Cut thin strips of para rubber and apply them uniformly, eliminating any air spaces, until the damaged part of the tyre has been filled. Then protect the part to be vulcanized both internally and externally with heatproof paper. After having inserted the tyre between the heating unit and the support plate, use the manual control to lower the heating unit (PRS1) onto the part to be vulcanized, inserting the pillow if necessary, so that there is uniform pressure over the entire surface to be vulcanized. Program the timer for the required operation time. After completing the operation, allow the heating unit to cool before raising it with the manual control.
With the P40 pneumatic vulcanizer it is possible to repair all types of inner tubes and tyres belonging to passenger vehicles of any type and light transport. Clamping of the heating units takes place pneumatically by means of a double-acting cylinder actuated by a manual valve. The working pressure can vary from 6 to 10 BAR. The regulator permits adjustment of the pressure between the two heating units, making it possible to choose the most suitable pressure based on the hardness and thickness of the air tube or tyre. The vulcanization time may be adjusted from 1 to 60 minutes, using a timer which automatically switches off the heating units when the programmed time has elapsed. With the heating units already hot, the vulcanization time is approximately 4 minutes per millimetre of thickness. It is important to thoroughly scrape and clean the part of the tyre to be vulcanized. Cut thin strips of para rubber and apply them uniformly, eliminating any air spaces, until the damaged part of the tyre has been filled. Then protect the part to be vulcanized both internally and externally with heatproof paper. After having inserted the tyre between the heating units, use the manual control to lower the upper heating unit onto the part to be vulcanized, inserting the pillow if necessary, so that there is uniform pressure over the entire surface to be vulcanized.

Program the timer for the required operation time. After completing the operation, allow the heating units to cool before raising the upper heating unit with the manual control).

**M50, M50L**

With the manual M50/M50L vulcanizer it is possible to repair all types of tyres for lorries, tractors and several types for earthmovers. The device for clamping the heating units is quick and easy to use. Also, the attachment of the upper heating unit is equipped with a mechanism which maintains a constant pressure on the tyre for the entire operation time. The vulcanization time can be adjusted from 1 to 120 minutes using a timer which automatically switches off the heating units when the programmed time has elapsed. With the heating units already hot, the vulcanization time is approximately 4 minutes per millimetre of thickness. It is important to thoroughly scrape and clean the part of the tyre to be vulcanized. Cut narrow strips of para rubber and apply uniformly, eliminating any air spaces, until the damaged part of the tyre has been filled. Next, protect the part to be vulcanized both internally and externally with heatproof paper. Release the upper heating unit of the machine using the special lever. Use the locking pin to clamp the long or short lower rod at the desired height, and assemble the lower heating unit on the rod. After having placed the tyre between the two heating units, lower the upper heating unit onto the part to be vulcanized, inserting the pillow if necessary, so that there is uniform pressure on the entire surface to be vulcanized. Next, use the lever to clamp the heating units (see FIG1). Program the timer for the required operation time. After completing the vulcanization, allow the heating units cool before releasing them. Use the lever to release the automatic clamping (see FIG.2), return the lower rod to its lowermost position and then remove the tyre.
The heating unit(s) is/are equipped with a temperature limiter set for 200°, which intervenes in the event of a short circuit on the thermostat which regulates the heating unit temperature. This is done to prevent overheating of the unit. Therefore, to resume normal operation after the temperature limiter has been tripped, switch off the heating unit - by setting the timer for 0 minutes or by disconnecting the mains supply (in vulcanizers not equipped with timer) - for at least ten minutes, and then replace the faulty thermostat.

The vulcanizers have been designed exclusively for: vulcanizing tyres and inner tubes within the specified limits, using the equipment supplied with the machine, in accordance with the instructions in this manual.

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**WARNING**

Any use other than that described herein is considered improper and shall be construed as negligence.

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**WARNING**

To stop the machine in an emergency situation: disconnect the power supply plug.

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**WARNING**

The machine is equipped with a heating unit which is a source of heat during the heating and vulcanization phases; DO NOT TOUCH as there is a burning hazard. THE TEMPERATURE CAN REACH 135\160°. The temperature values given on the data plate are understood to have a tolerance of –5% \ +20%.
MAINTENANCE

WARNING
CORMACH SRL declines all liability for claims deriving from the use of non-original spares or accessories.

WARNING
It is expressly forbidden to attempt to alter the temperature setting or the speed of descent of the heating units through the adjustment of valve.
THE MANUFACTURER DECLINES ALL LIABILITY FOR DAMAGE RESULTING FROM TAMPERING.

WARNING
Do not remove or modify any part of this machine (except for maintenance)

WARNING
Keep the work area clean. Do not use compressed air, water jets or solvents to remove dirt or residue from the machine. When cleaning the area, avoid raising dust as much as possible.
ACCESSORIES

<table>
<thead>
<tr>
<th></th>
<th>M5</th>
<th>M10</th>
<th>P20</th>
<th>P20S</th>
<th>P40</th>
<th>M50</th>
<th>M50L</th>
<th>P10</th>
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<tbody>
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<td>✗</td>
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</tr>
</tbody>
</table>

- **Standard**
- **Optional accessories**

TROUBLESHOOTING

**M5, M10, M50, M50L**

The fuses blow when the timer is programmed:

POSSIBLE CAUSES: - line conductor shorted to ground
                   - heating element shorted to ground

ACTION:  
1) Check the wiring
2) Check the heating element of the unit

**P10, P20, P20S, P40**

The fuses blow when the timer is programmed:

POSSIBLE CAUSES: - line conductor shorted to ground
                   - heating element shorted to ground

ACTION:  
1) Check the wiring
2) Check the heating element of the units

Cylinder not working: failure of compressed-air supply

POSSIBLE CAUSES: - Control defective
                   - Discharge regulator obstructed

ACTION:  
1) Make sure there is compressed air
2) Replace control
3) Replace the discharge regulator
RECOMMENDED FIRE-EXTINGUISHING EQUIPMENT

Consult the following table to choose the most suitable fire extinguisher:

<table>
<thead>
<tr>
<th></th>
<th>DRY MATERIAL</th>
<th>FLAMMABLE LIQUID</th>
<th>ELECTRICAL FIRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>FOAM</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>POWDER</td>
<td>YES*</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>CO2</td>
<td>YES*</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

*Can be used in the absence of more appropriate methods, or to control small outbreaks of fire.

WARNING

The indications in this table are of a general nature. They are intended as a guideline for the user. The applications of each type of extinguisher can be fully illustrated by its manufacturer on request.

SCRAPPING

If the machine is to be scrapped, remove all electrical, electronic, plastic and metal parts and dispose of them separately in accordance with the local regulations.

FIGURE 1.  FIGURE 2. 
MAIN WIRING DIAGRAM

M50, M50L

M5

M10/P10
PNEUMATIC SYSTEM DIAGRAM

P20