CIAPONI
LUBRIFICAZIONE CENTRALIZZATA

CENTRALIZED LUBRICATION SYSTEM

# HYDRAULIC PUMP MODEL H


## OPERATION AND MAINTENANCE MANUAL

# INDEX

## *PART 1 – GENERAL CONSIDERATIONS*

### *COMPANY OVERVIEW*

**CIAPONI LUBRICATION CENTRALIZED s.r.l.** is a company specializing in the design, construction and installation of centralized lubrication systems. Initially dedicated only to the industrial vehicle sector, it has developed, thanks to the experience gained over time, a series of products that can also be used in the earthmoving and industrial machinery sectors.

Since 2001, it has had a quality control system complying with the requirements of UNI EN ISO 9001 and certified by Det Norske Veritas Italia s.r.l. (DNV).

Thus, the company's mission is to provide its customers with a comprehensive support service ranging from the supply and installation of reliable products to maintenance work directly at the user's premises.

**CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.**, a leading company in Italy with 55 years of experience, has gradually expanded its market beyond national borders, establishing itself worldwide.

### *MANUFACTURER'S DATA*

| | | |
|---|---|---|
| NAME | - | **CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** |
| ADDRESS | - | Via F. Guerrazzi, 113 – San Miniato Basso<br>56028 – Pisa<br>ITALIA |
| PRODUCTION FACILITY | - | Via F. Guerrazzi, 113 – San Miniato Basso<br>56028 – Pisa<br>ITALIA |
| TELEPHONE | - | +39 0571 42661 |
| FAX | - | +39 0571 42244 |
| WEB SITE | - | ***www.ciaponilube.com*** |
| E-mail address | - | ***export@ciaponilube.com*** |
| TAX-payer code / V.A.T. no. | - | IT01160480503 |

### *CUSTOMER SERVICE*

**CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** directly follows its customers with a dedicated after-sales service.
For further information or order spare parts, please contact the **Customer Service Department** at the above telephone and fax numbers.

## *GENERAL WARNINGS*



This Maintenance and Operation Manual has been prepared by **CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** and is supplied as is.

Therefore, it cannot be copied, reproduced, circulated or transcribed, in whole or in part, without the written authorization of **CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.**

The Manufacturer may change the content of this manual at any time, without warning, for technical or commercial reasons or to comply with new standards or laws.

## *KEY TO SYMBOLS*

**Key to symbols for the correct text interpretation**

The symbols listed will be reported to the left of the text or in the vicinity of contents to which the reader should pay attention.


Prohibition signal: it prohibits an action that could cause a hazard.


Prescription signal: it prescribes specific behavior.


Warning signal: it warns of a risk or generic danger.


Warning signal: it warns of a risk or generic danger.

## *SCOP OF THE MANUAL*

This manual supplies the user with all the information required to install, use, service and dismantle the system.

**CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** shall not be responsible for damages or faults caused by the failure to comply with the warnings and instructions provided below.

It is therefore advisable to:

- Carefully read all the parts of the Operation and Maintenance Manual.
- Keep a copy of the manual in a safe place and always make it available to all operators working with our products.

*MANUAL STRUCTURE*

The Complete Handbook is composed of the following parts.

**Part 1 – General considerations**

Consists of all the information of product presentation, describing the purpose and scope, the technical characteristics of the main components and the different versions, as well as the directions for the correct installation of centralized lubrication.

**Part 2 – Operating manual**

Consists of all the general information is the entire set of information necessary for the operation of the plant and for correct control and use of the same.

**Part 3 – Maintenance instructions**

Consists of all the information needed to adequately perform some simple maintenance. In this part there are also some very useful information in the event of a malfunction.

**Part 4 – Spare parts**

Consists of all the information necessary for the management of spare parts.

*SAFETY STANDARDS APPLIED*

Centralized lubrication systems are designed, manufactured and installed in compliance with the requirements imposed by Directive 2006/42/EC. Therefore, for the purpose of CE marking of the system, an adhesive metal plate, the fax-similar of which is shown in Figure 2, is affixed in the position shown in Figure 1, and contains the following information*:*

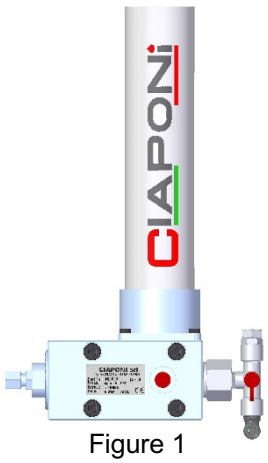



Figure 1

A. Manufacturer data
B. Model / Type
C. Maximum operating pressure
D. Serial number / Year of manufacture


Figure 2

Example nameplate for CE marking of a model H hydraulic pump, type 060000, maximum pressure 300 bar, serial number 010055 and production lot April 2024.

*DECLARATION OF CONFORMITY*

| | | |
|---|---|---|
| The manufacturer | - | **CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** |
| Address | - | Via Guerrazzi, 113<br>San Miniato Basso - 56028 PISA<br>ITALIA |
| Telephone | - | +39 0571 42661 |
| Fax | - | +39 0571 42244 |
| Website | - | ***www.ciaponilube.com*** |
| E-mail address | - | *export@ciaponilube.com* |
| Tax-payer code/VAT no. | - | IT01160480503 |

Declares that the machine:

Model - ***H***

Type - ***Hydraulic pump***

- complies with the requirements of Directive **2006/42/EC**, Annex **II**, section **B**, on the approximation of the laws of Member States relating to machinery;
- shall not be put into service until the final machine in which it is to be incorporated has been declared to comply, where applicable, with the provisions of the above Machinery Directive.

San Miniato Basso, July 2024

Il Legale Rappresentante

Ciaponi Lido

It is useful to remember that the Declaration of Conformity is valid only if:

- The indications, safety warnings and instructions given in the operation and maintenance manual are observed;
- The system is used in accordance with the instructions provided by the manufacturer;
- Adjustment operations are carried out by authorized, trained and qualified personnel;
- Maintenance operations are carried out by qualified and authorized technicians.

Failure to comply with the requirements listed in the Certificate of Conformity shall automatically invalidate the warranty.
Warranty conditions also lose their validity for:

- Damage occurring during additional transportation upon delivery of the system to the customer;
- Damage caused by washing the hydraulic pump with pressurized water;
- damage attributable to the use of greases other than those specified in this manual.

### *1.1.0) RECOMMENDED USE*

Centralized lubrication systems are designed to automatically lubricate points subject to wear, after their identification.
Therefore, they must be used only for the lubrication of the points to which they are connected.

- Uers are not allowed to apply unauthorized changes to an installed system. Modifications must be carried out or authorized by the manufacturer only.
- The system should always be used within the operating parameters specified in paragraph **1.4.0) TECHNICAL SPECIFICATIONS.**
- The system must be used only with the fluids listed in paragraph **1.4.0) TECHNICAL SPECIFICATIONS.**
- The Technical Department of **CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** can be contacted for further information or feasibility studies.

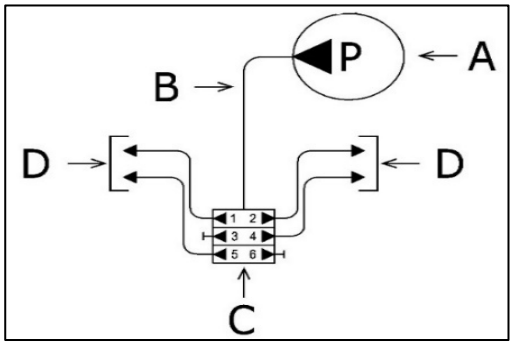
The manufacturer shall not be responsible for damages originating from an improper use or the unauthorized modification of the system or its components.
Furthermore, the manufacturer shall not be responsible for damages originating from the use of non original spare parts or parts not certified by the manufacturer, or for damages originating from the use of lubricants other than those listed.

### *1.2.0) SAFETY*

- An improper use of the centralized lubrication system may cause damage due an excessive or inadequate lubrication of the points to which it is connected.
- It is always necessary to comply with accident prevention and environmental regulations in force in the country where the centralized lubrication system is used.

### *1.3.0) DESCRIPTION OF THE SYSTEM*

The figure shows a schematic of the centralized lubrication system in its basic configuration.
The system comprises the following units:

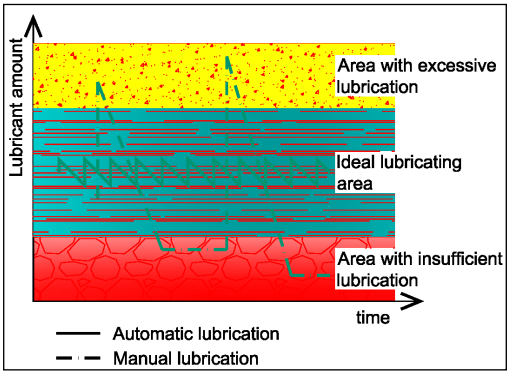



**A – Hydraulic pump with tank**
**B – Main pipe**
**C – Multiple way dispenser**
**D – Secondary pipe**

Centralized lubrication systems significantly reduce the maintenance costs of the equipment on which they are installed, lowering downtime for maintenance operations and increasing the life of lubricated components.

These systems also enable to reach all the points that require lubrication, including those that are not accessible to operators.

Once actuated by the hydraulic system of the machinery on which it is installed, the pump feeds, through the main piping derived from the pumping unit, a distributor which is entrusted with the task of distributing and metering the flow rate of lubricant dispensed among the various friction points. The lubricant, through the secondary piping, is distributed to the couplings that replace the grease nipples at the prepared friction points.




The diagram in Figure shows the operating cycle of a centralized lubrication system.

Each system is identified by a serial number that can be read on the nameplate under serial number.

- The serial number of the system must always be quoted when requesting technical information or ordering spare parts.

### *1.4.0) TECHNICAL SPECIFICATIONS*

The following sections describe the technical characteristics of the main components of the centralized lubrication system.

### *1.4.1) HYDRAULIC PUMP*

The Model H hydraulic pump is designed to be installed on earthmoving machines, commercial vehicles, mining equipment, machinery and industrial plants.
It is a piston pump driven by oil from the hydraulic system of the machinery on which it is installed. The return stroke of the piston is by a spring.
The pump has only one supply outlet from the centralized lubrication system and uses lubricating grease.
The flow rate is adjusted by changing the pumping element.
The pump is fed by a cartridge reservoir, with a capacity of 400 g, made of transparent polymer to facilitate lubricant level control. The reservoir is filled using the grease nipple located on the pump body.

The technical features of the model H pump are summarized below:

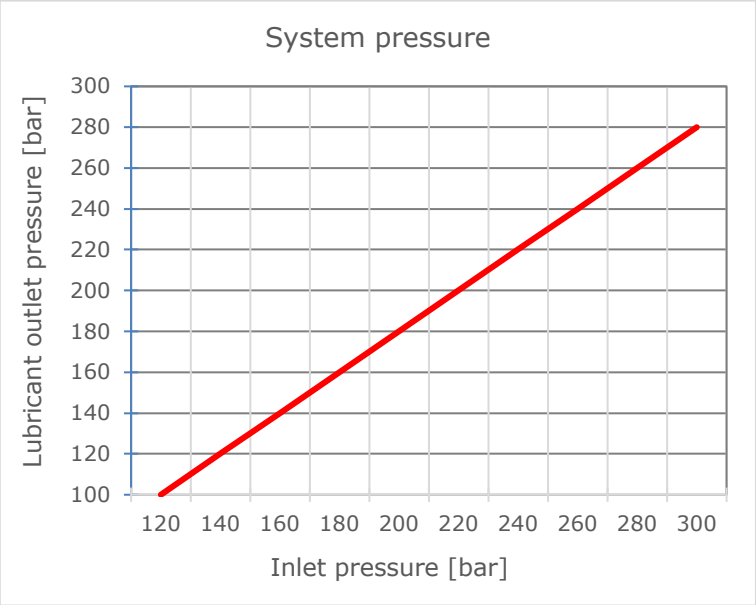
- Operating temperature _____ Da – 20°C a + 80°C
- Pumping system _____ Interchangeable piston Ø 5 - 6 – 8 -10 mm
- Number of outlets _____ 1
- Flow rate per single pumping [1] _____ 0,16 ÷ 0,63 $cm^3$/shot
- Operating pressure _____ See diagram below
- Drive _____ Hydraulic oil
- Hydraulic pressure _____ 100 ÷ 300 bar
- Hydraulic coupling _____ G1/4”
- System power output connection ___ G1/4”
- Cartridge capacity _____ 400 g with max - min level indicator
- Cartridge duration _____ from 600 to 2.500 shots
- Types of lubricants _____ Grease NLGI 000 ÷ 2

- Do not use grease other than those indicated.

[1] The indicated flow rate value refers to each drive (shot) of the hydraulic system of the machine on which the pump is installed under the following test conditions: grease with consistency class NLGI 2, standard environmental conditions (T = 20°C, p = 1 atm)

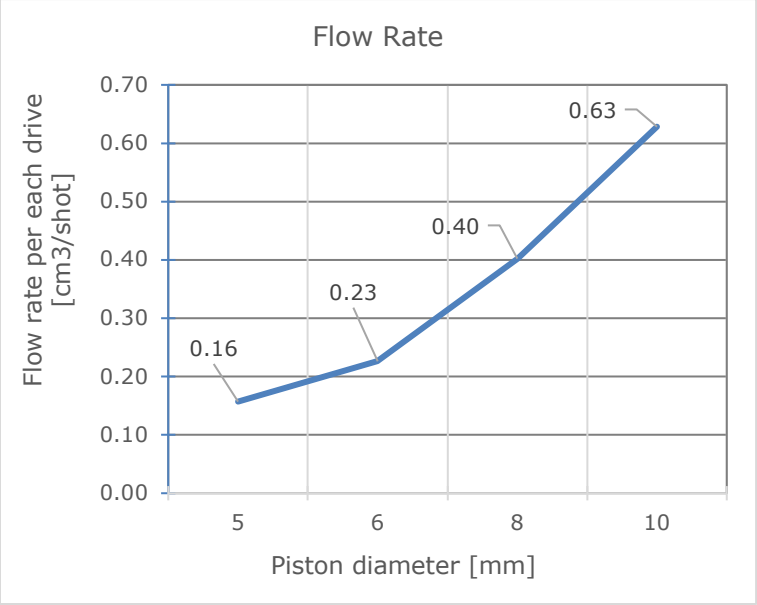
### *1.4.2) OPERATION PRESSURE DIAGRAM*

The following graph shows the operating pressure as a function of the pressure of the hydraulic system driving the pump.



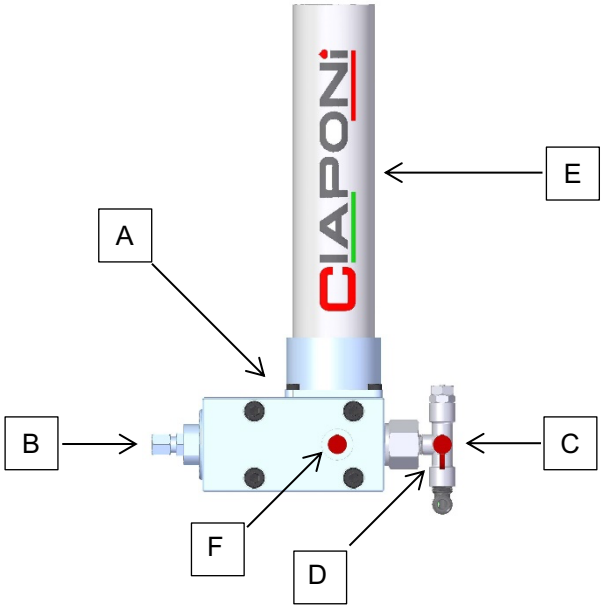

### *1.4.3) FLOW RATE DIAGRAM*

The following graph shows the operating flow rate as a function of the installed pumping. element diameter.



### *1.4.4) COMPONENTS*

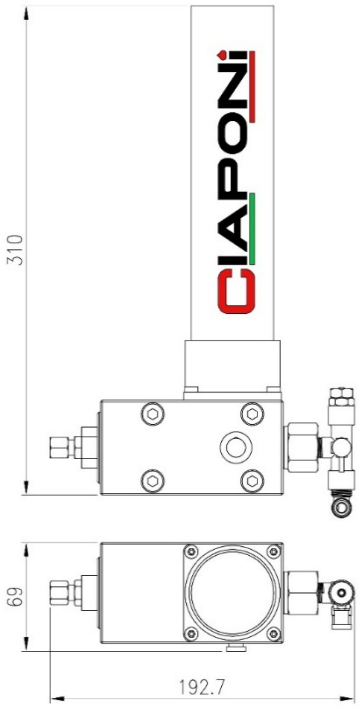
This section describes the main components of the hydraulic pump **MODEL H**.




A. Hydraulic pump model H;
B. hydraulic system drive inlet connection: must be connected to the hydraulic system of the machinery on which the pump is installed;
C. pumping element complete with pressure relief valve and primary piping connection lubrication system;
D. grease gun for charging the distribution system;
E. refillable and replaceable cartridge;
F. cartridge refill point.

### *1.4.5) DIMENSIONS*

The following are the maximum overall dimensions expressed in [mm] of the model H hydraulic pump:



*PART 2 – OPERATIVE MANUAL*

## *2.0.0) FUNCTION DESCRIPTION*

The Model H hydraulic pump is a positive displacement pump in which the pumping element is driven by a piston connected to the drive hydraulics of the machinery on which the pump is installed. With each actuation of the machinery's hydraulic system, a phase of pumping lubricating grease into the centralized lubrication system is performed. At the end of the actuation phase, a spring system returns the pumping unit to its rest position, also performing the lubricant suction phase from the cartridge tank. The flow rate of lubricant for each drive depends on the size of the installed pumping element.

The pressure with which the pumping element feeds the centralized lubrication system depends on the pressure of the drive hydraulic system.

The dispensed lubricant is conducted through a system of piping and progressive distributors to the bearing points to be lubricated. The progressive distributors both distribute and dose the lubricant to the various points to which they are connected.

## *2.1.0) INSTALLATION*

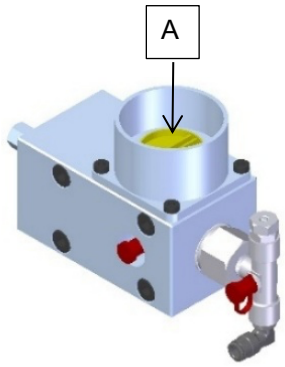
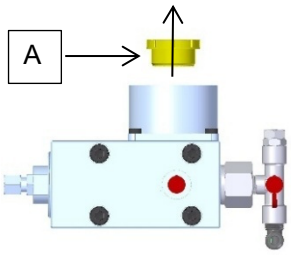
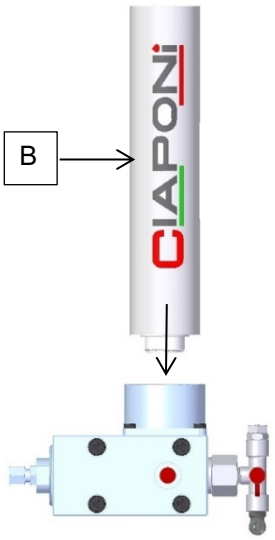
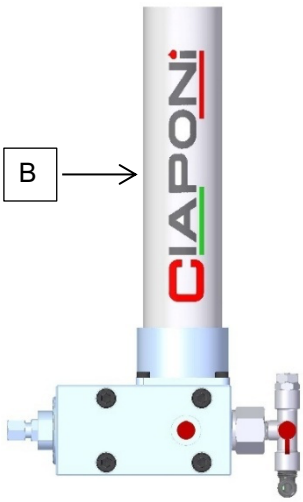
Open the packing and shipping box of the pump. Remove the pump from the packaging, checking that it has not been damaged during transport and/or storage. The packaging material does not require special disposal precautions, as it is not hazardous or polluting in any way. Follow local regulations for disposal of the material used for packaging.

- Position the pump and secure it to its bracket using number 4 screws M8.
- Mount the pump so that it is easily accessible for cartridge replacement and/or refilling operations.
- Leave a perimeter area of at least 100mm around the pump to allow access to the pump in case of maintenance.
- Do not install the pump submerged in particularly aggressive liquids and/or environment.
- Do not install the pump in environments where explosive or flammable mixtures are present.
- Do not install the pump near heat sources
- Verify that the lubricant used is suitable for the operating temperatures indicated in the section **1.4.0) TECHINCAL SPECIFICATIONS.**
- If there is any doubt about the installation of the pump, contact the technical department of **CIAPONI LUBRIFICAZIONE CENTRALIZZATA s.r.l.** for further information.

### *2.2.0) LUBRIANT CARTRIDGE ASSEMBLY*

Model H hydraulic pump is supplied without a feed cartridge.

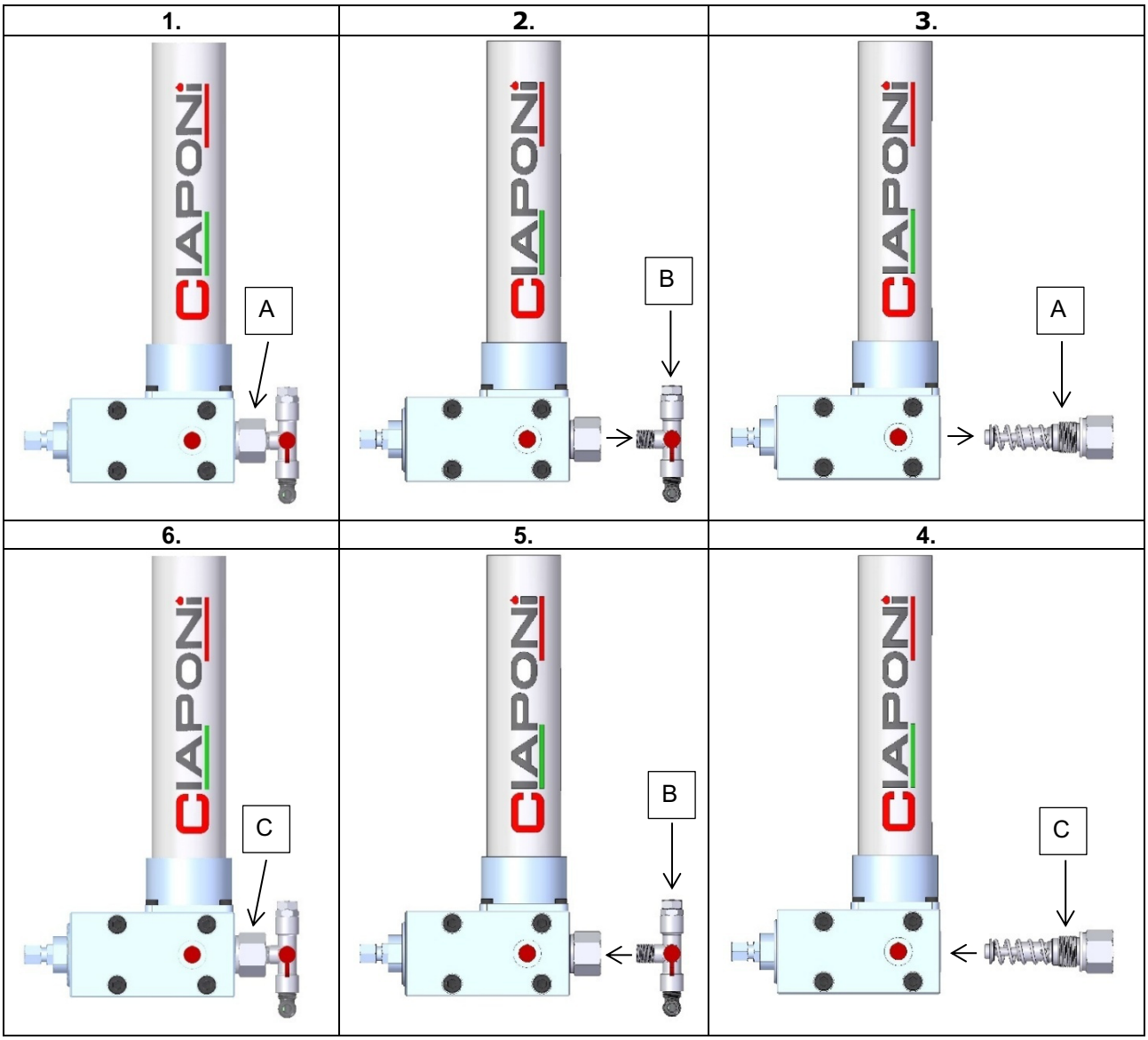
To install the cartridge, remove the screw cap A and screw the lubricant cartridge B in its place, according to the sequence **1 - 2 – 3** below.

| 0 | 1. | 2. | 3. |
|---|---|---|---|
|  |  |  |  |

- Do not use cartridges with lubricants other than those indicated in section **1.4.0) TECHNICAL CHARACTERISTICS.**

### *2.3.0) PUMPING ELEMENT REPLACEMENT*

To modify the flow rate of the model H pump, the pumping element A must be replaced. Unscrew and remove the pressure relief valve B, unscrew and remove the pumping element A, install the desired pumping element C, and then reinstall the pressure relief valve B, according to the sequence **1 – 2 – 3 – 4 – 5 – 6** below.



*PART 3 – MAINTENANCE INSTRUCTIONS*

### *3.0.0) ANOMALIES*

This chapter provides maintenance personnel with:

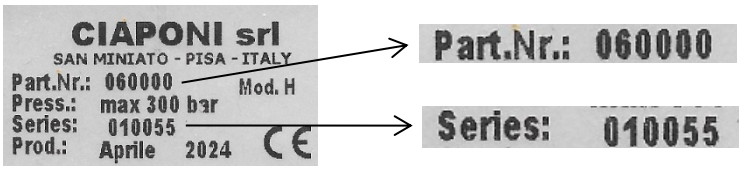
- **possible faults that may occur during operation of the system;**
- **the cause of the failure to start or stop the system;**
- **the remedy, if any, to be taken.**

| N | Problem | Cod | Cause | Corrective action |
|---|---|---|---|---|
| 01 | **The pump is operated but no lubricant escapes** | 01.01 | The lubricant in the reservoir is below the minimum level | Restore the correct level in the tank. |
| | | 01.02 | Presence of air inside the pumping element | Remove any air bubbles from the lubricant in the reservoir. |
| | | 01.03 | The lubricant within the pump system can be frozen according to environmental conditions. | The lubricant must be thawed. |
| | | 01.03 | Extraneous materials, dirt or small particles may enter while filling the pump. | Clean pump, piston and pump body with diesel-based liquid. |

## *PART 4 – SPARE PARTS*

The scheme below shows the key to ordering replacement parts.

- When ordering spare parts, it is necessary to specify not only the description of the part to be ordered but also the version code and serial number shown on the product identification plate as shown in the figure below.



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