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LUBRICATION SYSTEMS



**MINI-MAX** SERIES PISTON ELECTRIC PUMP MANUAL

## USE AND MAINTENANCE MANUAL OF ORIGINAL INSTRUCTIONS



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**CE** INCLUDED  
**PRODUCT WARRANTY**  
**DECLARATION OF CONFORMITY**

## 1. INTRODUCTION

This use and maintenance manual refers to the **MINI-MAX** pump. Using this pump distributes grease in lubrication systems even for high pressures up to 200 bar (2,940 psi). You can get the latest version by requesting it from the Technical Sales Office or through our website <http://www.ilclube.com>

The pump that is the subject of this manual must be used by qualified personnel with basic hydraulic and electrical knowledge. This use and maintenance manual contains important information to protect the health and safety of personnel who intend to use this equipment. This manual must be read carefully and kept in good conditions so that it is always available to operators who intend to reference it.

## 2. GENERAL DESCRIPTION

The **MINI-MAX** electric pump series can be adapted to suit many requirements with no mechanical modifications and even after installation. In fact, you can choose from different components that are perfectly compatible with each other and can be easily installed in order to be able to vary the configuration and the type of distribution.

This construction technique is essentially based on the following components:

### Electric motor - Pump body with integrated reducer - Pumping elements - Tank - Timer

The bearing structure is identical in all the versions and always houses at most 2 pumping elements for progressive metering and 8 pumping elements for a single point. The pump body can house two different models of grease tanks

Version with spring - **presser disk** - spatulator and minimum electric level indicator

Version with only spatulator and scraper (does not include minimum electric level indicator)

The version with **presser disk** is suitable for use with particularly dense greases, low temperatures, final installation differing from the classic upright positioning or in the event the pump needs to be used on machines whose movement could cause the lubricant to move in the tank and subsequent priming issues.

The pump can be checked via the internal programming timer or the control panel of the machine on which it is housed

The **MINI-MAX** electric pump is completely protected from the external environment and can operate with no problem even in harsh environmental conditions.

**MINI-MAX** was designed to supply lubricant systems for use with grease. Using it for purposes other than for what it was intended is considered non-compliant with regulations.

### 2.1 TYPE OF LUBRICATION: WITH PROGRESSIVE METERING - DIRECT TO A POINT

**MINI-MAX** electric pumps can directly lubricate the end point with no need to insert other flow rate metering devices, using the specific pumping elements or via progressive metering to divide the flow rate to the various utilities. You can also pair both individually lubricated points and via progressive metering on the same pump, installing the two different types of pumping elements.

This gives you a cost-effective, versatile, easy-to-use product

### 2.2 FEATURES

**MINI-MAX** electric pumps are piston pumps activated by a cam and are able to work with a maximum of 10 pumping elements to supply several lines. If not otherwise specified when ordering, they are standard supplied with a single pumping element for progressive metering. Additional pumping elements must be ordered separately, choosing them based on the desired flow rate from the available models.

There are 2 standard versions: the L model has a 1 kg tank and is complete with sensor, presser disk with spring, spatulator and minimum level indicator. The other version differs in its lack of minimum level indicator and, subsequently, presser disk. In this case, in addition to the lower spatulator there is also a blade scraper. The moulded spatulator, located in the pump body at the base of the tank, facilitates lubricant intake and ensures proper operation even at low temperatures. The pump is activated by a 12 or 24 V DC powered gearmotor. An optional control electronic board allows you to set different types of lubrication and cycle, stand-by and check times.

### 2.3 TWO POSSIBLE CONTROL CONFIGURATIONS

The product is available in two versions:

#### • Control via integrated control circuit

#### • Control via machine main panel

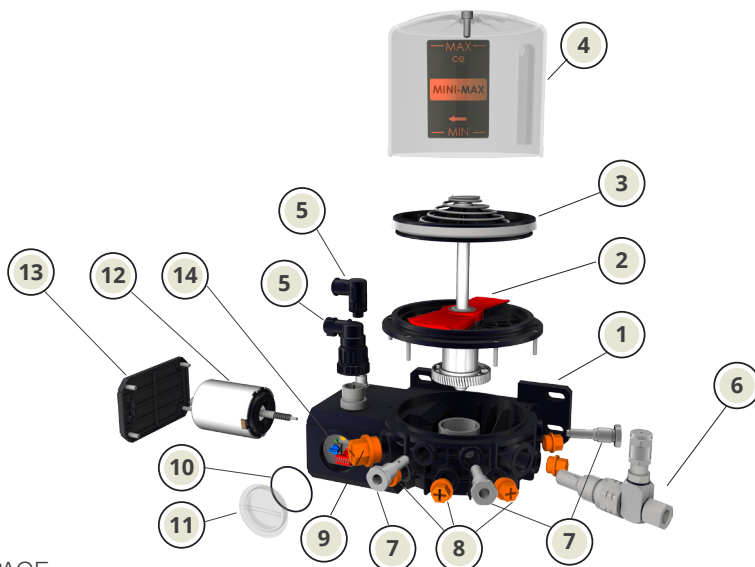
The model without timer only has an external connection for power and receiving the minimum level signal (if any). Control, stand-by and duration must be managed by the control panel of the machine on which it is applied.

The model with integrated timer makes the pump completely independent and you can set

#### **WORK TIMES, STAND-BY TIMES (BY TIME OR BY IMPULSES) AND FUNCTION CHECK**

You can save the stop point times so that when the cycle is restarted, it picks up from where it left off (stand-by or lubrication) and enable a cycle every time the machine is started up

## 3. MAIN COMPONENTS



1	PUMP BODY
2	SPATULATOR
3	PRESSER DISK
4	TANK
5	ELECTRIC CONNECTIONS
6	PUMPING ELEMENT FOR PROGRESSIVE METERING DEVICES
7	PUMPING ELEMENT FOR SINGLE POINT
8	SINGLE POINT PUMPING ELEMENT CAP
9	O-RING
10	TIMER ACCESS PORTHOLE
11	MOTOR
12	REAR COVER
13	TIMER
14	TIMER

## 4. IDENTIFICAZIONE DEL PRODOTTO



There is a plate on the back of the pump, which states the product code, the power supply voltage and the basic features.

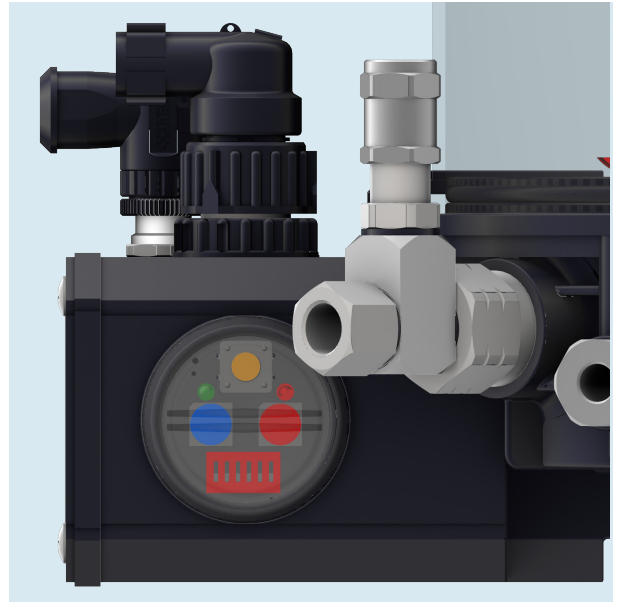
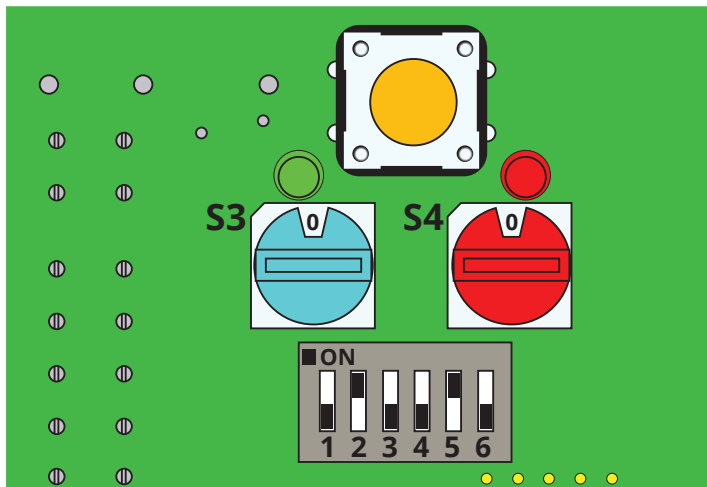
## 5. ELECTRIC PUMP TECHNICAL FEATURES

Motor	Power supply voltage 12 V – 24 V DC
RPM with 1 bar pressure NLGI-2 grease	20 rpm at 20° C
RPM with 200 bar pressure NLGI-2 grease	15 rpm at 20° C
Absorption with 200 bar pressure -25°C	max. 3.8 A at 24V DC max. 7.5A at 12 V DC
Initial absorption (30 ms)	~ 4.5 A 24 V DC ~8A 12 V DC
Degree of protection	IP 6K9K
Minimum level indication	Reed contact 1 A 140 V AC – 200 V DC 10 W NA
Pumping system	With cam drive and return spring
Max number of outlets/pumping elements	8 single utilities - 2 progressive metering device supply
Delivery connection (pumping outlet)	1/8" F single utility pumping elements 1/4" metering device pumping elements
Metering device pumping element nominal flow rate *	120 mm <sup>3</sup> /rev
Pumping element for single point nominal flow rate *	5 mm <sup>3</sup> /rev
	10 mm <sup>3</sup> /rev
	15 mm <sup>3</sup> /rev
	25 mm <sup>3</sup> /rev
	50 mm <sup>3</sup> /rev
Maximum reachable pressure	200 bar
Tank capacity	1 Kg
Grease consistency	Min. NLGI 0 Max. NLGI2 at real working temperature
Operating temperature	-40°C ÷ +70°C
Storage temperature	-10°C ÷ +60°C
Max. relative humidity w/o operating condensate	90%
Sound pressure level	< 70 db (A)
Work positioning	Indifferent
Power supply voltage	12 V DC - 24 V DC
Operating temperature	-40°C ÷ +70°C
Temperatura di stoccaggio	-20°C ÷ +80°C

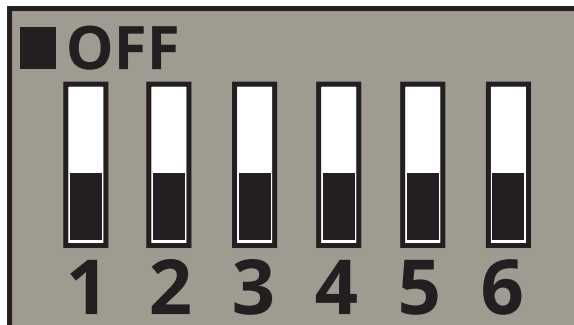
## 6. ELECTRONIC TIMER TECHNICAL

Selectable working modes	Hour-minute-impulse stand-by time - Second-minute work time
	Pre-lubrication
	Quick grease dispensing change +/- 30%
Accessories	Reset manual pushbutton
	Remote alarm warning
Controls	Minimum electric level management
	Progressive metering device cycle control

## 7. ELECTRONIC TIMER POSITION



## 8. SETTING THE FUNCTIONS IN THE DIP SWITCH



NUMBER	FUNCTION	STATUS/VALUE	
1	PRELUBE	NO	OFF
	PRELUBE	YES	ON
2	STAND-BY	MINUTES	OFF
	STAND-BY	HOURS	ON
3	WORK	SECONDS	OFF
	WORK	MINUTES	ON
4	CYCLE CONTROL	NO	OFF
	CYCLE CONTROL	YES	ON
5	STAND-BY	TIME	OFF
	STAND-BY	IMPULSES	ON
6	MIN. ELECTRIC LEVEL	NO	OFF
	MIN. ELECTRIC LEVEL	YES	ON

The electronic board is located in the pump body near the motor. For any setting operations, time variation or operations, there is no need to remove the closing wall and extract the board. You can access via the side porthole

## 9. ELECTRONIC TIMER FUNCTIONS

NUMBER	FUNCTION
PRELUBE ON YES	The PRELUBE ON condition identifies the function in which at every switch-off and/or power outage, the pump starts with a complete cycle identical to the one set in the selection values
PRELUBE OFF NO	The PRELUBE OFF condition identifies the saved work condition. In this case, at every switch-off and/or power outage, the pump picks up again from the stopping point (or stand-by)
STAND-BY MINUTES	Identifies the stand-by function with progression in minutes
STAND-BY HOURS	Identifies the stand-by function with progression in hours
WORK SECONDS	Identifies the work function with progression in seconds
WORK MINUTES	Identifies the work function with progression in minutes
CYCLE CONTROL OFF	the pump works only with stand-by - work time
CYCLE CONTROL ON	to verify proper lubrication cycle operation, check the inductive microswitch/sensor installed on a progressive divider. If the timer does not receive the signal from the inductive microswitch/sensor during the work cycle, the red LED lights up - the pumps goes into lock and sends a remote alarm signal
STAND-BY TIME	The stand-by time selects the waiting time between 2 cycles and can be set in 2 progressions (minutes - hours)
STAND-BY IMPULSES	The stand-by impulses select the function in which a signal sent from the machine is what determines pump cycle start.
ELECTRIC LEVEL INDICATOR ON	The minimum electric level check function is active
ELECTRIC LEVEL INDICATOR OFF	The minimum electric level check function is deactivated

## 10. COMPONENTS

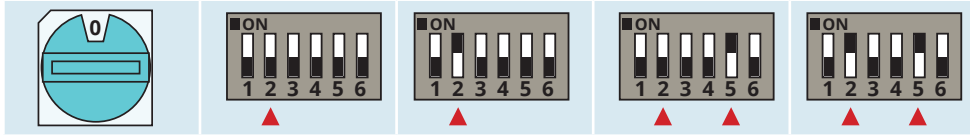
	<p><b>Manual pushbutton</b>          1. Once you have set the desired values, you must press the manual pushbutton for more than 5" in order to save these parameters to the board.          2. For the reset or extra-cycle function, press the button for 5 seconds.</p>		<p>Light blue S3 selector for 5"          Setting the stand-by times</p>
	<p><b>Flashing red LED - the pump does not go into lock</b>          Indicates the level pre-alarm, repeats 5 lubrication cycles and at the end, goes into lock  <b>Steady red LED - the pump goes into lock</b>          1. After the 5 cycles from the level pre-alarm          2. If it does not receive a signal from the microswitch or the inductive sensor installed on the progressive divider</p>		<p>Red S4 selector          Setting the work times</p>
	<p><b>Green LED steady on</b>          At start-up for 3" or with the pump in operation</p>		

## 11. SELECTING THE STAND-BY TIME

LIGHT BLUE S3 SELECTOR	STAND-BY VALUE IN MINUTES	STAND-BY VALUE IN HOURS	STAND-BY VALUE IN IMPULSES	STAND-BY VALUE IN IMPULSES
0	2	1	4	120
1	4	2	8	240
2	6	3	12	360
3	8	4	16	480
4	10	5	20	600
5	12	6	24	720
6	14	7	28	840
7	16	8	32	960
8	18	10	36	1200
9	20	12	40	1440
A	22	14	44	1680
B	24	16	48	1920
C	26	20	52	2400
D	28	24	56	2880
E	30	28	60	3360
F	32	32	64	3840

The light blue rotating selector (called S3) sets the stand-by time to use. As shown in the table, the selector must be paired with the choice of the progression (hours - minutes - impulses) and whether the stand-by values must be expressed in units of time and/or impulses. Make this selection using the DIP-SWITCH selector

THE FUNCTION SELECTIONS ARE SHOWN ON PAGE 5. IN THIS TABLE, THE DATA EXCLUSIVELY REGARD THE STAND-BY TIMES.

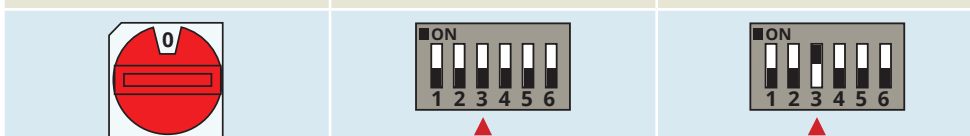


## 12. SELECTING THE WORK TIME

RED S4 SELECTOR	WORK VALUE IN SECONDS	WORK VALUE IN MINUTES
0	2	2
1	4	4
2	6	6
3	8	8
4	10	10
5	12	12
6	14	14
7	16	16
8	18	18
9	20	20
A	22	22
B	24	24
C	26	26
D	28	28
E	30	30
F	60	32

The red rotating selector (called S4) sets the work time to use. As shown in the table, the selector must be paired with the choice of the progression (seconds - minutes). Make this selection using the DIP-SWITCH selector

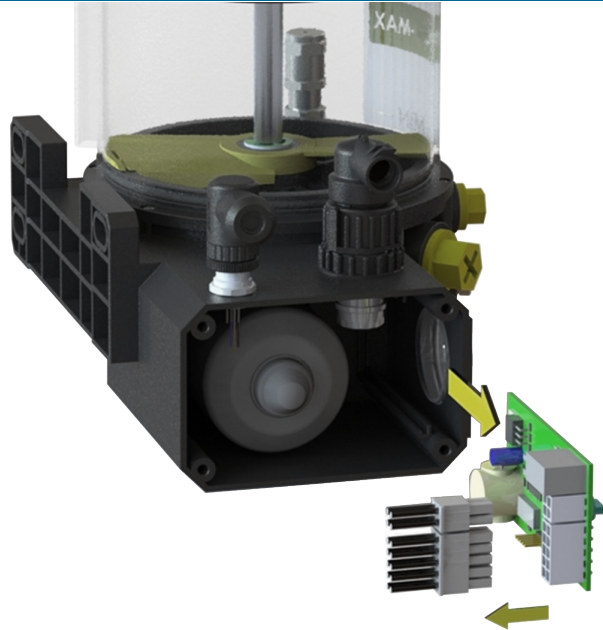
THE FUNCTION SELECTIONS ARE SHOWN ON PAGE 5. IN THIS TABLE, THE DATA EXCLUSIVELY REGARD THE WORK TIMES



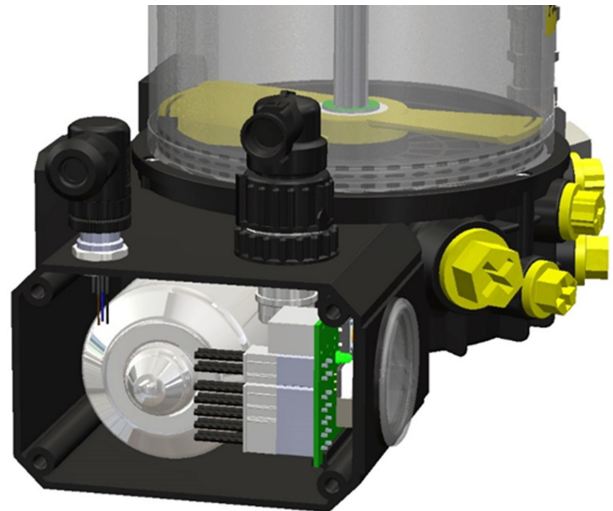
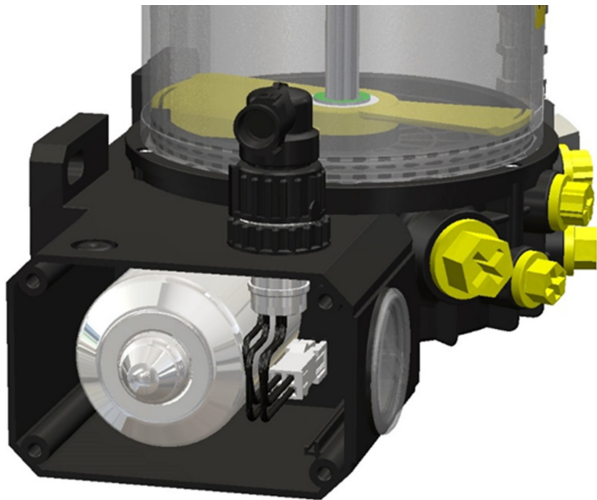
## 13. REPLACING THE ELECTRONIC TIMER

If the timer breaks, you can replace it extremely easily.

- REMOVE THE 4 SCREWS ON THE REAR CLOSING COVER
- EXTRACT THE ELECTRONIC TIMER
- UNHOOK THE EXTERNAL CONNECTOR CONNECTION CONNECTOR
- UNHOOK THE CONNECTION CONNECTOR FROM THE INTERNAL SOCKET
- MAKE THE SAME CONNECTIONS TO THE NEW TIMER
- PUT THE TIMER BACK IN, MAKING SURE IT IS INSERTED PROPERLY IN THE GUIDE RAIL
- POSITION THE CLOSING COVER AND SCREW THE Z 4 SCREWS BACK IN



## 14. MODIFYING THE PUMP FROM REMOTE CONTROL TO INTERNAL TIMER



You can modify MINI-MAX from remote control to internal timer control by ordering the kit (code 39.PWR.74) that includes the timer - 4-pin alarm connector - 7-pin power supply connector. To perform the operation:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• OPEN THE REAR COVER</li> <li>• UNHOOK THE 4-PIN SNAP CONNECTOR</li> <li>• PUT IN THE TIMER</li> <li>• REPLACE THE 4-PIN CONNECTOR WITH THE 7-PIN MODEL</li> </ul> | <ul style="list-style-type: none"> <li>• PUT IN THE M12 4-PIN CIRCULAR CONNECTOR</li> <li>• CONNECT THE INTERNAL TERMINAL BOARD AND THE 2 CONNECTORS TO THE BOARD</li> <li>• CLOSE THE COVER BACK UP</li> </ul> |
|--|---|

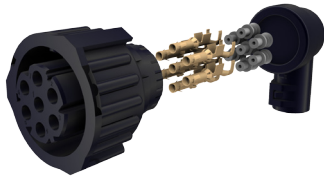
You can also do the operation in reverse order to switch a timer version to remote control. By ordering the kit (code 39.PWR.70) that includes the 4-pin power supply connector. To perform the operation

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• OPEN THE REAR COVER</li> <li>• UNHOOK THE 4-PIN SNAP CONNECTOR</li> <li>• REMOVE THE TIMER</li> <li>• REPLACE THE 7-PIN CONNECTOR WITH THE 4-PIN MODEL</li> </ul> | <ul style="list-style-type: none"> <li>• REMOVE THE M12 4-PIN CIRCULAR CONNECTOR</li> <li>• CONNECT THE TERMINAL BOARD TO THE 4-PIN CONNECTOR TERMINAL BOARD</li> <li>• CLOSE THE COVER BACK UP</li> </ul> |
|--|--|

## 15. ELECTRIC CONNECTIONS

### 15.1 CABLE ELECTRIC PUMP CONNECTION

Electric connection is the user's responsibility, who must identify the power supply, min. level alarm and/or cycle alarm connection. Connect the machine to the power line as shown on the pump near the connector. The power cable must have a cross-section that is appropriate for machine absorption and must conform to the provisions in force



The MINI-MAX pump is supplied complete with 7-pole electric connector A91.111327. The supply includes 3 types of rubbers for different diameters and for unused contacts:

- no. 7 part no. A91.111315 cables 1.2 ÷ 2.1 mm<sup>2</sup>
- no. 7 part no. A91.111314 cables 2.2 ÷ 3 mm<sup>2</sup>
- no. 7 part no. A91.111310 cap

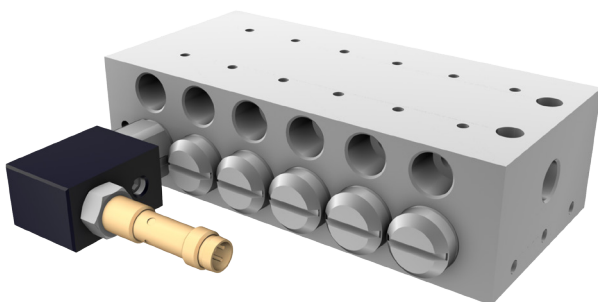
3-WIRE MODEL	CODE	7-WIRE MODEL	CODE
L. 5MT	40.CBL.3.05 5 M	L. 5MT	40.CBL.7.05 5 M
L. 10MT	40.CBL.3.10 10 M	L. 10MT	40.CBL.7.10 10 M
L. 15MT	40.CBL.3.15 15 M	L. 15MT	40.CBL.7.15 15 M



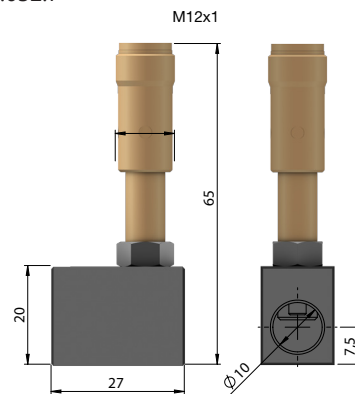
### 15.2 CONNECTING CONTROL ELEMENTS

In the version with internal timer, it is possible to manage a cycle control of the progressive metering device (if provided for in the system). In this configuration, a second connector is inserted, to which the cable coming from the 3-wire cycle control is directed. Connections complete with cables in the different sizes are also available for this configuration

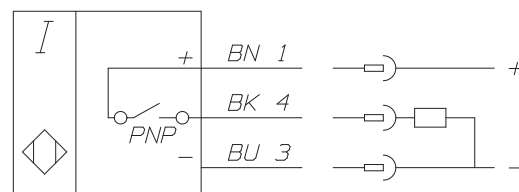
MODEL	CODE
L. 5MT	40.CDC.4.05
L. 10MT	40.CDC.4.10
L. 15MT	40.CDC.4.15



Inductive sensors for metering devices DPX M12x1 PNP-NO  
Code 49.052.7



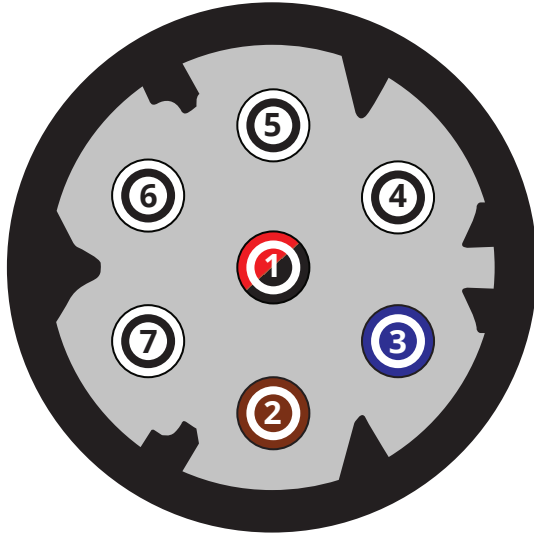
Electric scheme





## 16. PUMP ELECTRIC CONNECTION

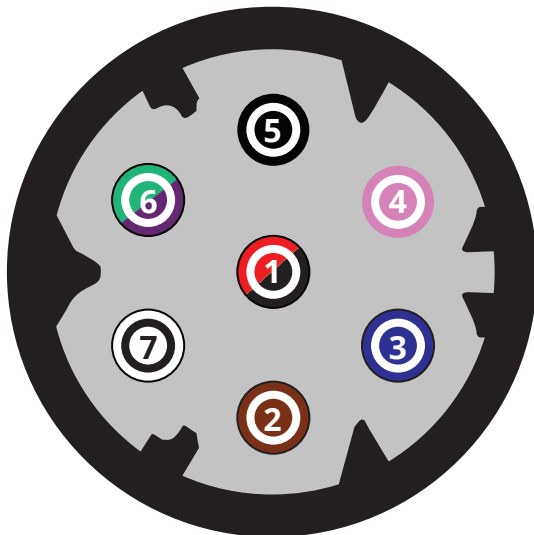
### 16.1 3-CABLE PUMP WITHOUT TIMER CONNECTION



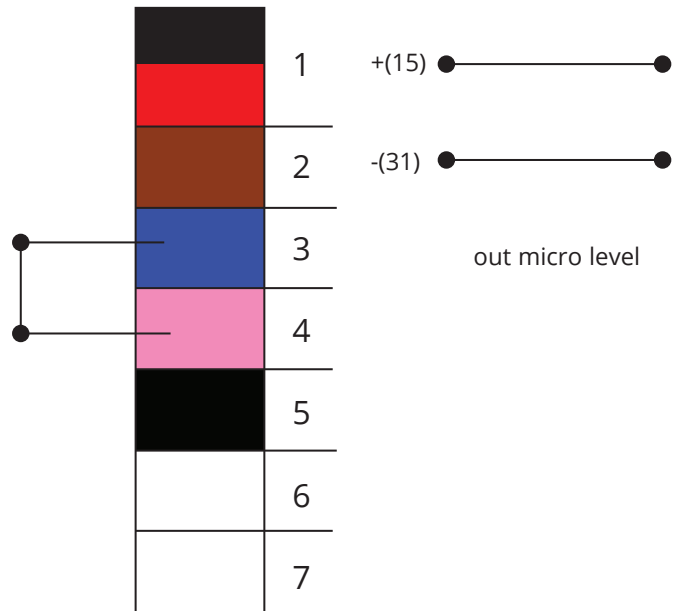
1= red/black  
2= brown



### 16.2 7-CABLE PUMP WITHOUT TIMER CONNECTION

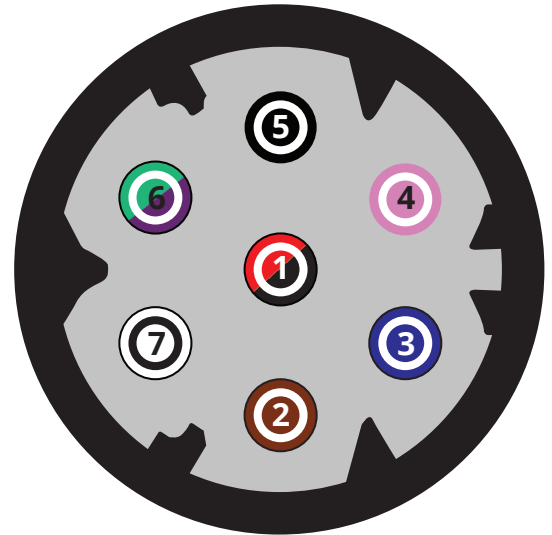
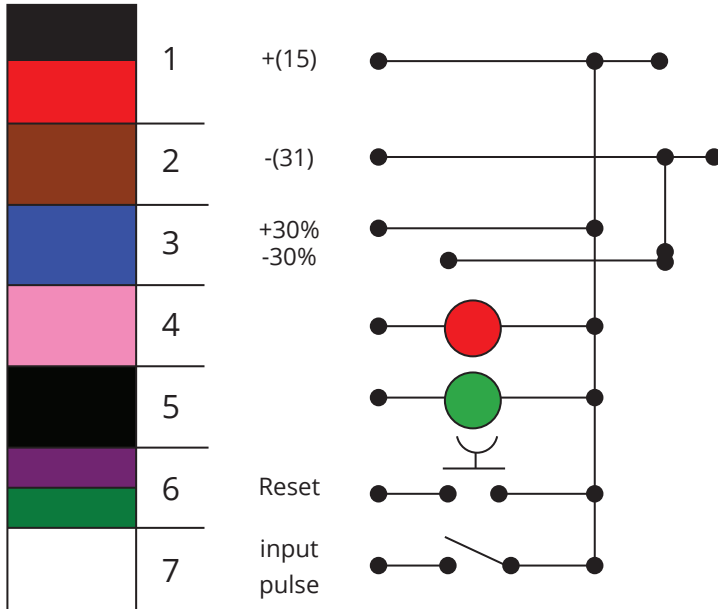


1= red/black  
2= brown  
3= blue  
4= pink



The contact between 3 and 4 is closed; when the tank empties, the contact opens.

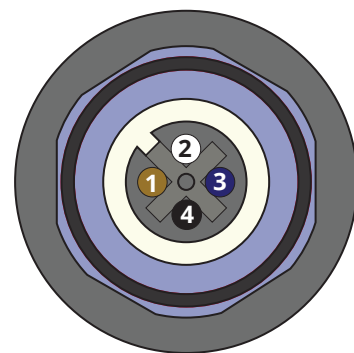
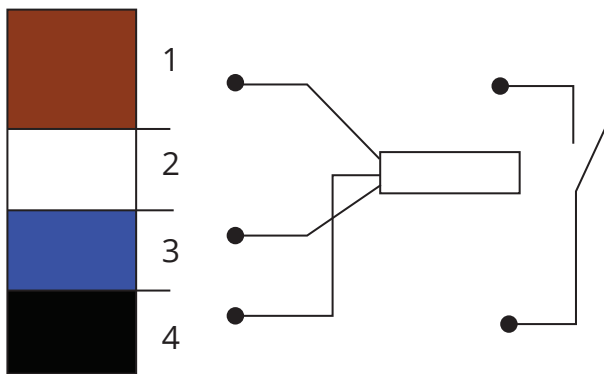
## 16.3 PUMP CONNECTION WITH TIMER 3 CABLES



- 1= red/black
- 2= brown
- 3= blue
- 4= pink
- 5= black
- 6= green/ purple
- 7= white

If we send a contact + 3 work time increases by 30%

If we send a - 3 to contact the working time decreases by 30%



- 1= brown
- 3= blue
- 4= black



Follow this diagram to connect a control placed on the progressive distributor or at the pump

## 17. UNPACKAGING AND INSTALLATION

### 17.1 UNPACKAGING

Once the installation location has been identified, open the packaging, extract the pump and make sure it was not damaged during transport and storage. The packaging material has no special disposal precautions as it is in no way dangerous or polluting. Refer to local regulations for disposal.

### 17.2 INSTALLATION

Position the electric pump and secure it to its support using the specific securing holes  
 Assemble the pump so that the grease nipple to fill the tank and the timer access porthole are easily accessible  
 Leave a perimeter of at least 100mm with respect to other equipment or obstacles that hinder access to the pump. In the event of filling with a cartridge pump, leave the necessary space  
 Assemble the pump at "eye level" so as to prevent possible impacts  
 Do not install the pump submerged in liquids and/or in particularly aggressive environments  
 Do not install the pump in environments where there are explosive or inflammable mixtures  
 Do not install the pump near sources of heat or near electrical equipment that may interfere with proper electronic operation  
 Make sure pipes and cables are appropriately secured and protected from impacts  
 Make sure that the lubricant used is suitable for the working temperature, particularly when working with temperatures below 0°C. In case of doubts, contact our Technical Sales Office to choose the right lubricant

### 17.3 HYDRAULIC LINE CONNECTION

The hydraulic connection between the pump and the system occurs at the pumping element delivery seat and must be done with piping and fittings that are suitable for operation with 200 bar pressure. Any unused pumping unit seats can be used as re-entry ports

## 18. INSTRUCTIONS FOR USE

### 18.1 WARNINGS

The unit can only be commissioned by specialised personnel  
 Using the pump submerged in liquids, in particularly aggressive or explosive/inflammable environments is prohibited unless previously prepared for such purpose by the supplier  
 Use gloves and safety glasses as required by the lubricant safety sheet  
 DO NOT use lubricants that are aggressive for NBR gaskets. In case of doubts, consult our technical office, which will provide information on the recommended lubricants  
 Do not ignore health risks and follow hygiene standards  
 Check the integrity of the pump

### 18.2 CHECKS TO PERFORM BEFORE STARTING UP

Check the lubricant level in the tank (min/max indication on the tank); in the event of low level, proceed as described in chap. 8 Filling the tank  
 Make sure the pump works at a suitable operating temperature and that there are no air bubbles in the piping  
 Make sure the electrical devices are connected properly  
 Before starting up, it is advisable to fill the piping with grease or use pre-filled piping (if compatible with the grease required for the pump) to simplify the next start-up phase. The lubrication lines must be connected to the pump so that no stress can be transferred to the pump itself (stress-free connection)  
 The fittings used to connect the lubrication lines and the piping itself must be designed for the maximum operating pressure of the system (200 bar)  
 Always use piping that is suitable for the operating pressures

## 19. FILLING THE TANK

MINI-MAX pumps can be filled with standard grease pumps via the specific grease nipple located in the lower part of the pump. It is very important for this operation to be done in a clean environment and for the lubricant going into the tank to have no impurities whatsoever.

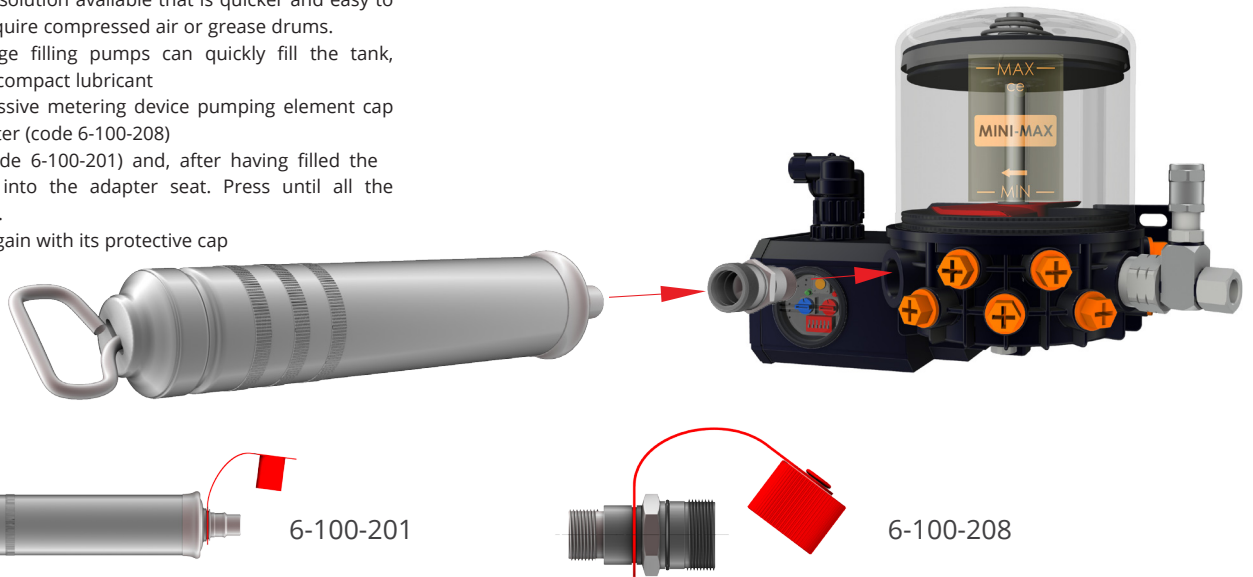
When filling, do not exceed the maximum lubricant level shown on the tank plate and corresponding to the too-full discharge hole located to the side.

The figure shows the standard filling method via a manual and/or pneumatic drum pump that is connected to the grease nipple



## 19.1 MANUAL FILLING KIT

There is a different solution available that is quicker and easy to do that does not require compressed air or grease drums. Commercial cartridge filling pumps can quickly fill the tank, ensuring clean and compact lubricant. Remove the progressive metering device pumping element cap and insert the adapter (code 6-100-208) and insert the pump (code 6-100-201) and, after having filled the cartridge, insert it into the adapter seat. Press until all the lubricant comes out. Close the adapter again with its protective cap



## 19.2 RESERVE - LOW GREASE

It is important never to completely empty the lubricant tank. This condition could damage the various parts that require lubrication. In the version equipped with an electric minimum level indicator, use a remote signal to show when the reserve has been reached. In the versions without an electric level, never go below the minimum indicator on the front plate.

Should the tank be emptied, after having filled the tank with grease, it is important to run some cycles with the delivery piping disconnected to eliminate the air produced by the pump having operated without grease. Reconnect the piping only after having seen grease with no air bubbles come out

## 20. TROUBLESHOOTING

Below is a diagnostic table containing the main anomalies, the probable causes and the possible solutions to activate immediately. For any doubts and/or irresolvable issues, do not continue troubleshooting by disassembling parts of the pump but rather, contact our technical office

### 20.1 ELECTRIC PUMP DIAGNOSTICS TABLE

ANOMALY	CAUSE	SOLUTION TO ADOPT
The pump motor does not work	No power	Check the power supply system
	The electronic board does not work	Replace the electronic board
	The motor does not work	Replace the motor
	Working temperatures too low for the type of grease used	Replace the lubricant with a suitable model that can be pumped at low temperatures
The pump works but lubricant does not reach the final points	Incorrect cycle time setting	Reprogram the cycle time
	Unsuitable lubricant used	Empty the tank and refill it with suitable lubricant
	Pumping element intake clogged	Disassemble the pumping element and clean the intake conduits
	The pumping element piston is worn	Replace the pumping element
	Pumping element delivery valve obstructed -dirty	Clean the delivery valve and, if necessary, replace it Replace the pumping element Replace worn piping
The pump does not dispense lubricant	Disconnected piping	Check the condition of the piping and the related connections to the fittings Replace worn piping
	Work temperatures too low for the type of grease used	Replace the lubricant with one that is suitable to be pumped at low temperatures
The pump starts the work phase but stops it immediately	Defective motor or elevated output absorption	Let it cool down for a few minutes and then try again. If the problem persists, replace the motor

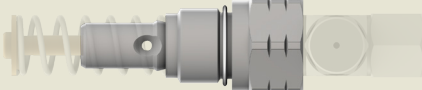
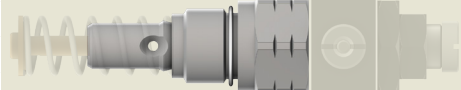
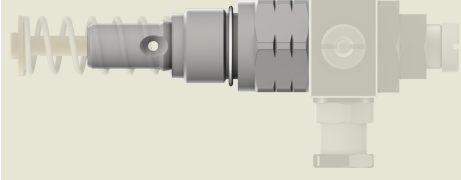
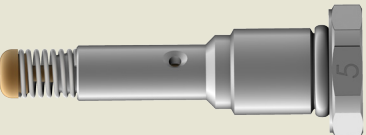
### 20.1 TIMER DIAGNOSTICS TABLE

ANOMALY	CAUSE	SOLUTION TO ADOPT
The timer does not work	No power	Check the power supply system
	Loose or incorrect connections	Check the power supply connection in the 7-pole external connector
	Defective timer	Check the connector timer internal connection Replace the timer

## 21. PUMPING ELEMENTS

### 21.1 ORDERING CODES

MINI-MAX pumping elements are divided into two categories: those used to lubricate single points, featuring very small flow rates and reduced dimensions, and those used to supply progressive metering devices that are, in turn, differentiated by fixed or adjustable flow rates. In addition to having a considerably superior flow rate, they are differentiated by the fact that they have a safety valve that automatically discharges excess pressure over 200 bar. Regardless of the model, the initial fittings must be ordered separately.

PUMPING ELEMENTS CODE SINGLE UTILITY	FLOW RATE mm <sup>3</sup> PER CYCLE	PUMPING ELEMENT CODE FIXED METERING DEVICE	FLOW RATE MM <sup>3</sup> PER CYCLE	PUMPING ELEMENT CODE ADJUSTABLE METERING DEVICE	FLOW RATE MM <sup>3</sup> PER CYCLE
90.940.0.05	5	00.900.0	120	00.900.3	0 - 120
90.940.0.10	10				
90.940.0.15	15				
90.940.0.25	25				
90.940.0.50	50				

### 21.2 INSTALLATION - PUMPING ELEMENT REMOVAL

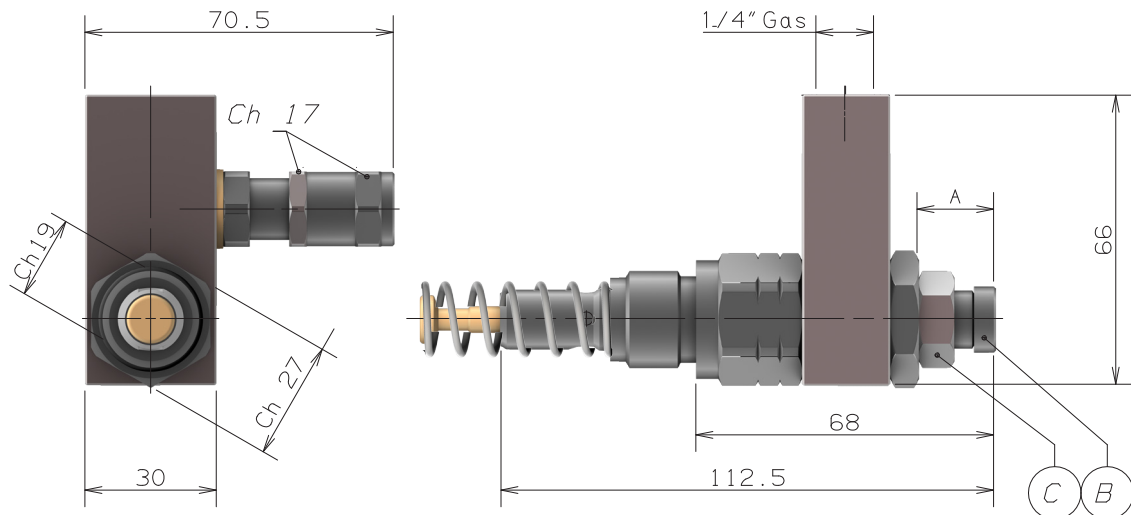
To install a pumping element that was not foreseen when ordering the pump, simply remove the yellow cap from the seat in the position in which you wish to insert the element and screw it all the way in. To ensure proper tightening and gasket seal, the closing force must be

**21 Nm** Progressive metering device pumping elements

**15 Nm** Single point pumping elements

### 21.3 ADJUSTABLE PUMPING ELEMENT

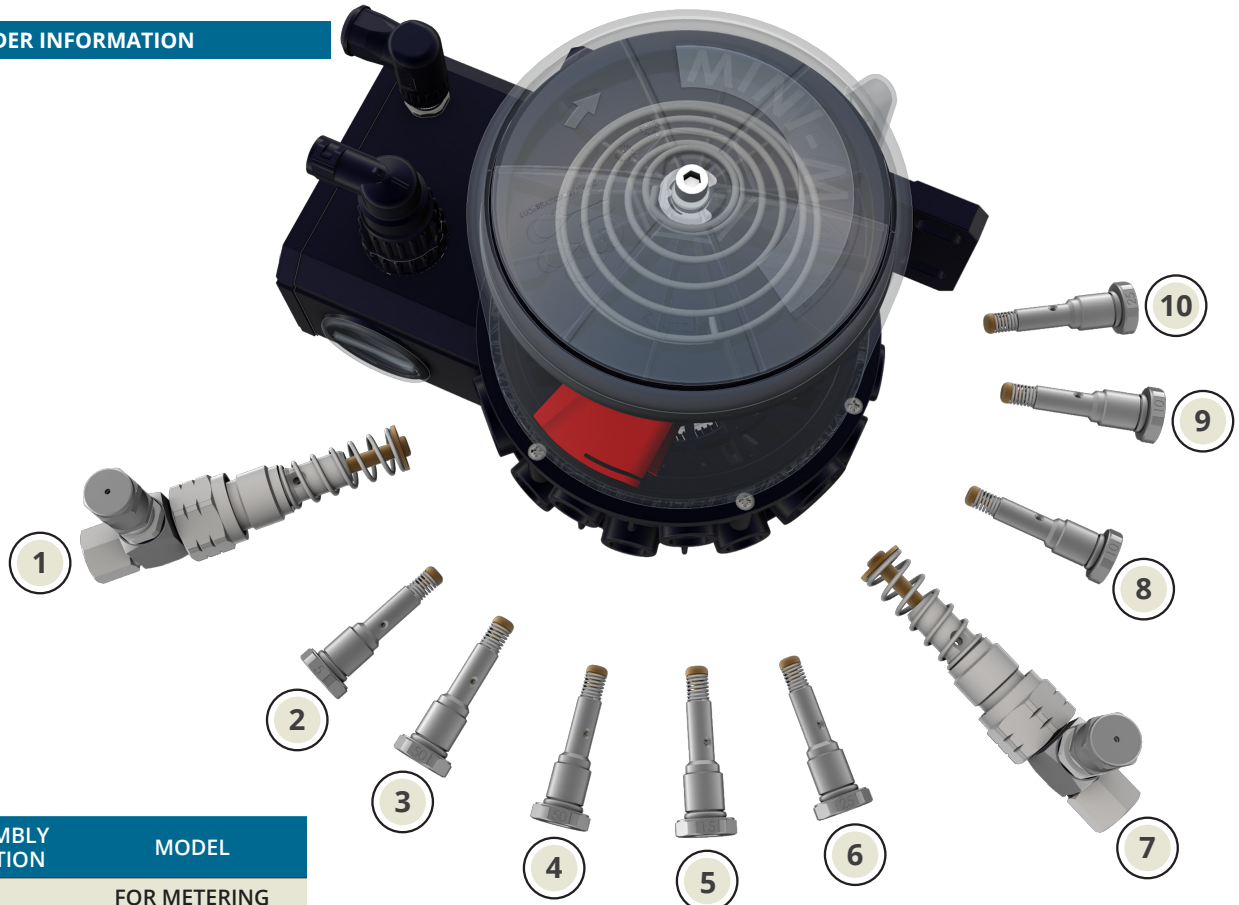
To vary the nominal pump flow rate, you must loosen the counter nut (Pos. C) and rotate the adjustment screw (Pos. B) clockwise to reduce, or anticlockwise to increase, the amount of lubricant. Once you have set the desired value, it is extremely important to tighten the counter nut again (Pos. C).



20.4 FLOW RATE ADJUSTMENT TABLE

A	FLOW RATE/CYCLE	PERCENTAGE
23.6	120 mm <sup>3</sup>	100 %
22.4	0.09 CC	75 %
21.2	0.06 CC	50 %
20.1	0.03 CC	25 %
19.4	0.03 CC	5 %
17.5	0.00 CC	0 %

## 22. ORDER INFORMATION



ASSEMBLY POSITION	MODEL
1	FOR METERING DEVICE
7	FOR METERING DEVICE
2	FOR POINT
3	FOR POINT
4	FOR POINT
5	FOR POINT
6	FOR POINT
8	FOR POINT
9	FOR POINT
10	FOR POINT

### IMPORTANT

If model, quantity and layout are not specified, MINI-MAX pump is delivered with a single pumping element for metering device installed in pos. No. 7. Additional pumping elements can be ordered separately using the codes shown on the specific table on page 12.

### MINI PUMPS ORDERING CODES

#### ASSEMBLY POSITION

1	7	2	3	4	5	6	8	9	10
F	R.	A	A	B	C	X	X	A	B

#### SINGLE PUMPING ELEMENTS

METERING 5 mm <sup>3</sup>	A
METERING 10 mm <sup>3</sup>	B
METERING 15 mm <sup>3</sup>	C
METERING 25 mm <sup>3</sup>	D
METERING 50 mm <sup>3</sup>	E

#### METERING DEVICE PUMPING ELEMENT

FIXED	F
ADJUSTABLE	R
NO	X

#### VOLTAGE

12 V DC	12
24 V DC	24

#### TIMER

WITH TIMER	T
WITHOUT TIMER	X

#### ELECTRIC LEVEL

WITH LEVEL	L
WITHOUT LEVEL	X



## 23. GENERAL SCHEDULED MAINTENANCE

### 23.1 MAINTENANCE

ATTENTION: Before any maintenance or cleaning operations, make sure the hydraulic and electric power supply are disconnected

The following tables list the periodic checks, the frequency and the operations that the maintenance technician will have to do to ensure system efficiency over time. The unit is designed and built so as to require minimal servicing. However, remember to

CHECK	FREQUENCY	OPERATION
Entire unit	500 hours (depending on the work environment)	Always keep the body and the entire structure clean
Distribution	1000 hours	Check piping - fittings and anchoring to the machine
Lubricant	Depending on system grease consumption	Check the level (for pumps without the electric indicator) and the condition of the grease in the tank, paying attention to any unusual decomposition or hardening that would compromise pump and progressive metering device operation
Inlet filter	Every filling	If there is one, check the condition of the internal filtering element

### 23.2 EQUIPMENT

The pump does not require any special equipment to check and/or service it. In any case, we recommend using suitable personal protective equipment (gloves, protective glasses, etc.) that is in good condition in accordance with the standards in force to prevent damage to persons or parts of the pump.

### 23.3 LUBRICANTS

NOTE: The pump is designed to work with NLGI-2 maximum grade lubricants at operating temperature. Use lubricants that are compatible with NBR gaskets. Below is a table comparing NLGI (National Lubricating Grease Institute) and ASTM (American Society for Testing and Materials) lubricant classifications, limited to the values concerning MINI-MAX pumps. For further information on the technical features and the safety measures to adopt, refer to the Product Safety Sheet (Directive 93/112/EEC) regarding the type of lubricant chosen and supplied by the manufacturer.

### 23.4 GREASES

NLGI	ASTM
00	400 - 430
0	355 - 385
1	310 - 340
2	265 - 295

### ATTENTION

Do not mix different types of grease. In many cases, this causes damage and requires additional thorough cleaning of all the pump contact parts and any metering devices. We suggest putting an identification plate on the pump that shows the type of lubricant to use to prevent these possible mixes from happening. MINI-MAX pumps are tested with oil and delivered without residues except for slight oiliness, precisely to prevent the above mentioned problems

## 24. DISPOSAL

When servicing or dismantling the pump, dispose of polluting elements properly, referring to local regulations. When dismantling the pump, the identification plate must be destroyed.

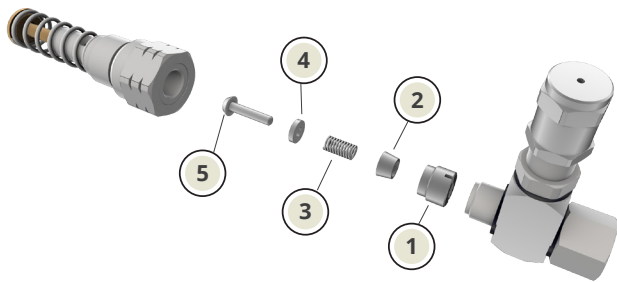
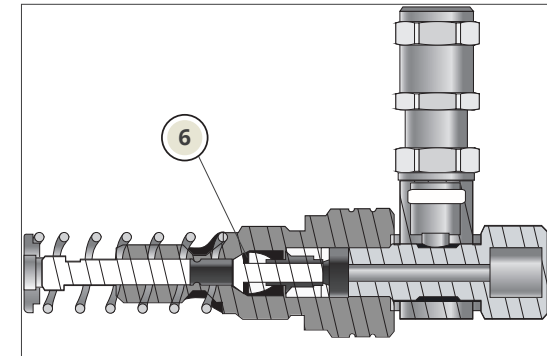
## 25. HANDLING AND TRANSPORT

Prima della spedizione le pompe sono accuratamente imballate all'interno di una scatola di cartone. Durante il trasporto e l'immagazzinamento dell'apparecchiatura, prestare attenzione al verso indicato sulla scatola. Al ricevimento, controllare che l'imballo non sia danneggiato e immagazzinare la pompa in un luogo asciutto.

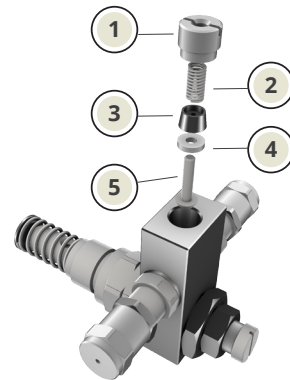
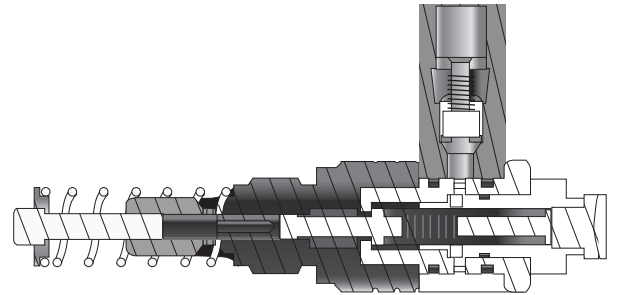
## 26. PUMPING ELEMENT MAINTENANCE

In the event of anomalies or every 1000 hours, it is a good idea to check the condition of the pumping elements, as they are the heart of the greasing system. Servicing usually involves delivery valve seal which, in the event of wear or impurities, does not work properly and prevents lubricant from being dispensed normally or completely. (see chap. troubleshooting) The operations below can be done without removing the pumping element from the pump body. It is very important for everything to be done in a clean environment by qualified personnel.

### 26.1 PUMPING ELEMENT FOR FIXED FLOW RATE METERING DEVICE



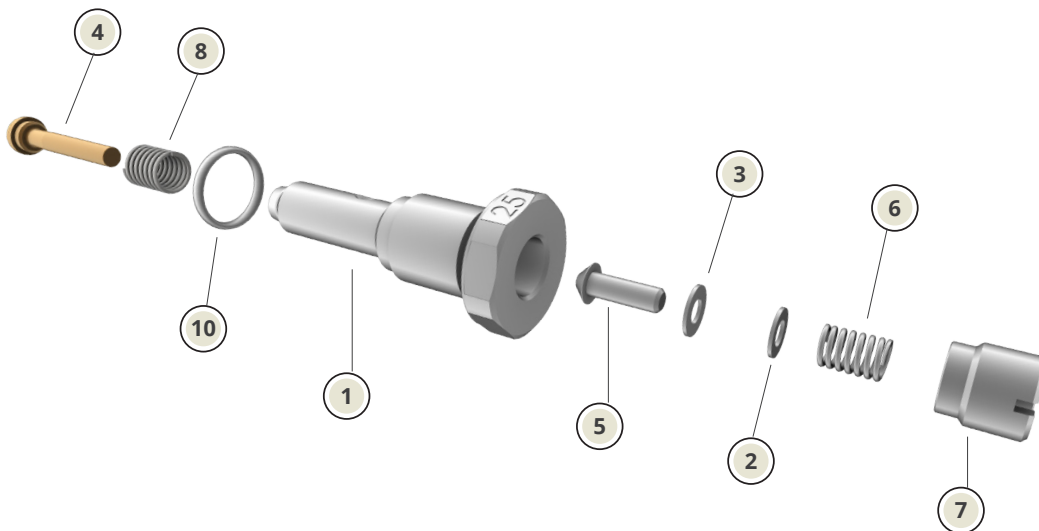
### 26.2 PUMPING ELEMENT FOR ADJUSTABLE FLOW RATE METERING DEVICE



Remove the locking screw pos.01 and remove the unit made up by spring (2), spring holder (3), gasket (4) and piston (5) Thoroughly clean all the parts and the delivery valve seat (6) Attention: if you do not have a spare gasket (4), you can rotate it 180° and reassemble it

### 26.3 PUMPING ELEMENT FOR SINGLE PUMP

Remove the safety ring pos. 09 and extract the unit made up by the spring pos.06 washer pos.02 gasket pos.03 and piston pos.05. Thoroughly clean the work housing, making sure there is no wear. Check the condition of the gasket pos.03 and replace it, if necessary. If you do not have a spare part, you can rotate it 180° and reassemble it.







## 27. PRECAUTIONS FOR USE

**ATTENTION:** You must carefully read the warnings about the risks that come with using a lubricant pump. The user must know how it operates via the Use and Maintenance Manual

### 27.1 ELECTRIC POWER SUPPLY

Do not perform any operations on the machine before having disconnected it from the electrical mains and making sure no one can reconnect it during the operation. All the installed equipment (electrical and electronic) must be earthed.

### 27.2 INFLAMMABILITY

The lubricant that is generally used in lubrication circuits is not an inflammable liquid. However, it is fundamental to adopt all the appropriate precautions to prevent it from coming into contact with very hot parts or open flames.

### 27.3 PRESSURE

Before every operation, make sure there is no residual pressure in any branch of the lubricant circuit, which could cause oil to spray when disassembling fittings or components.

### 27.4 NOISE

## 28. CONTRAINDICATIONS OF USE

Conformity to essential safety requirements and the provisions in the machinery directive was checked by filling out the prepared checklists contained in the technical file. Three types of lists were used:

- Risk assessment (appendix A of EN 1050).
- Conformity to essential safety requirements (Machinery Directive).
- Electrical safety provisions (EN 60204-1).

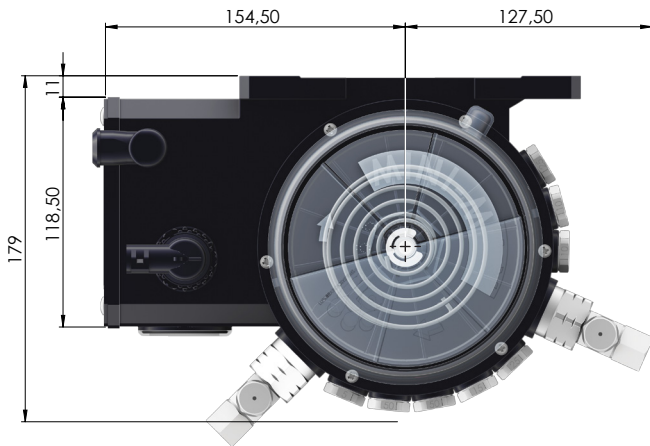
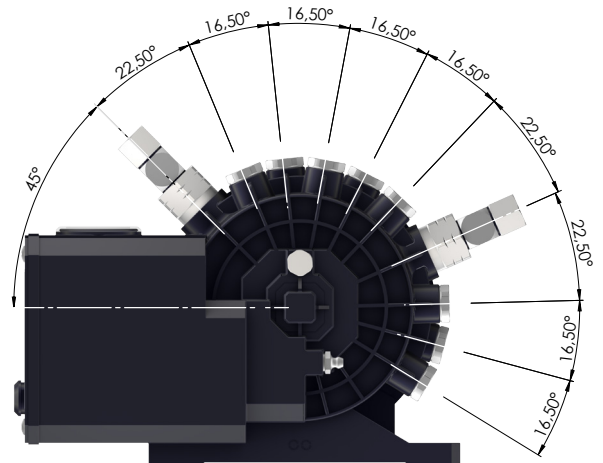
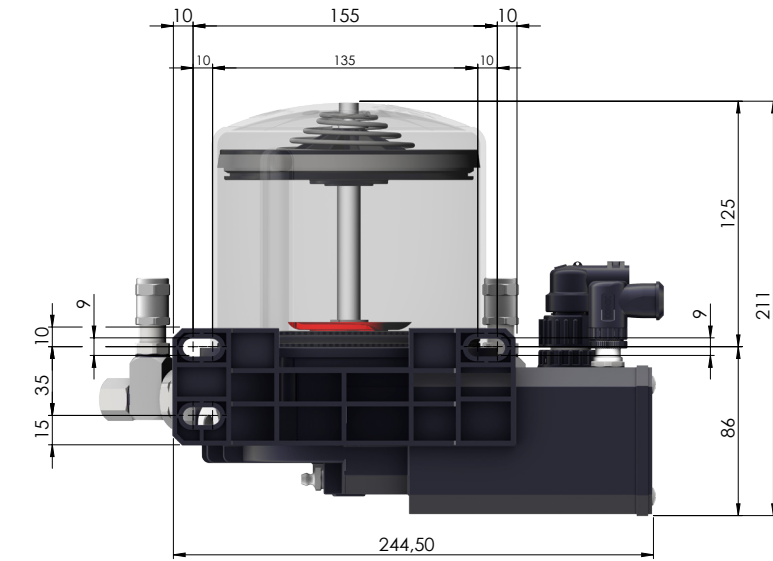
### 28.1 ACCEPTABLE RESIDUAL RISKS

- Low pressure lubricant may spray out during maintenance. (To this end, maintenance operations must be done using appropriate PPE).
  - Contact with lubricant during maintenance or when filling the tank. The machine user is responsible for providing protection from direct or indirect contact with lubricant. (See provision on the use of suitable means in accordance with the standards in force).
  - Impact and crushing. The moving parts are all contained and the access point has a warning about this hazard.
  - Electric shock. This can only occur in the event of serious incompetence of the user who, for that matter, is qualified.
  - Incongruous postures. The correct overall dimensions and installation methods are shown in this manual.
- Using unsuitable lubricant. The lubricant features are shown both on the pump and in this manual

### 28.2 LIQUIDS THAT ARE NOT ALLOWED

LIQUIDS	HAZARDS
Lubricants with abrasive additives	High wear of contaminated parts
Lubricants with silicone additives	Pump seize
Petrol - solvents - inflammable liquids	Fire - explosion - damaged gaskets
Corrosive products	Pump corrosion - injury to persons
Water	Pump oxidation
Food products	Contamination of said products

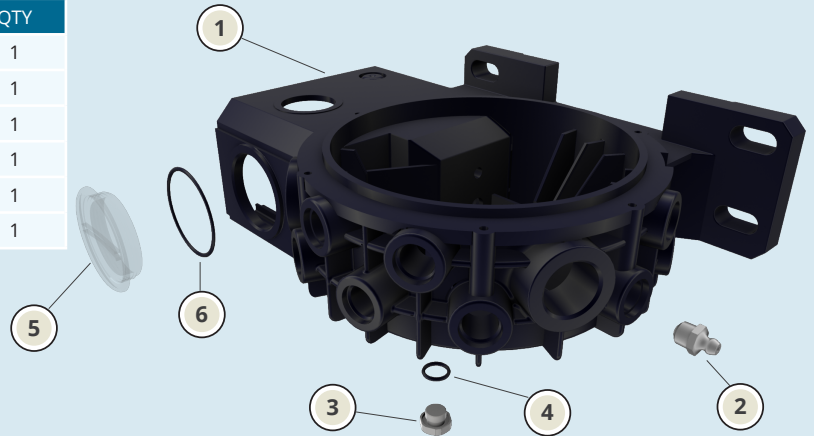
## 29. OVERALL DIMENSIONS



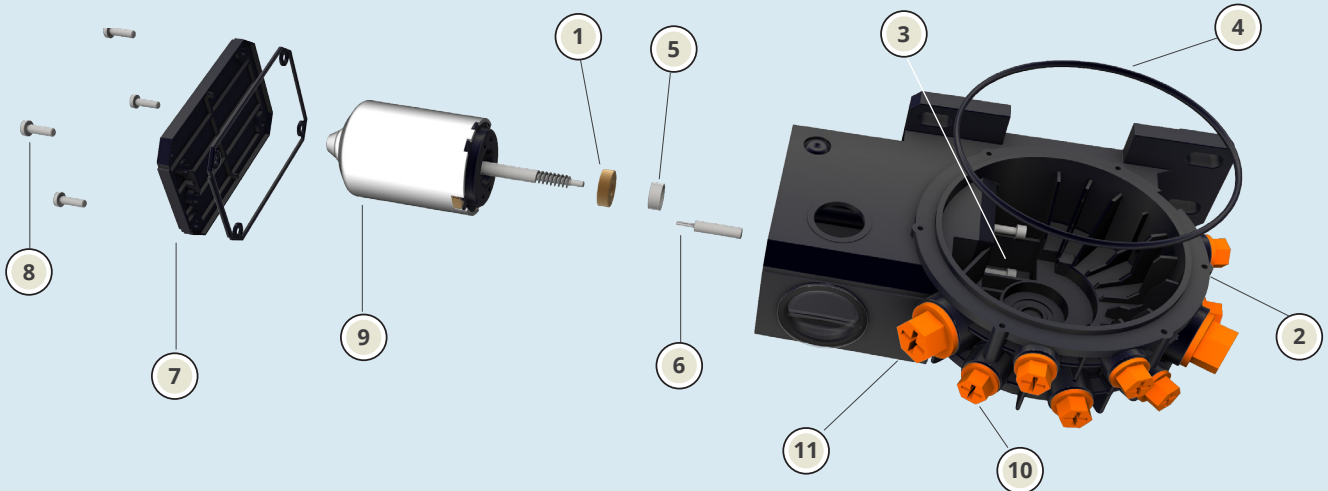
## 30. SPARE PARTS

### SPARE PARTS EXPLODED VIEW

POS.	ITEM	CODE	QTY
01	PUMP BODY	A83.125081	1
02	GREASE NIPPLE	A70.078422	1
03	1/8 CAP	A51.096055	1
04	O-RING-2037	A92.127109	1
05	TIMER HOLE CAP	A83.120851	1
06	40x2 O-RING	A92.127190	1



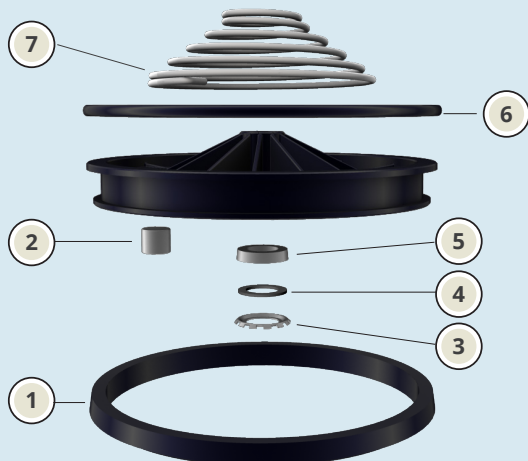
### SPARE PARTS EXPLODED VIEW



POS.	ITEM	CODE	QTY
01	8-16-7 MIM	A92.114019	1
02	PUMP BODY	A83.120581	1
03	M5x20 SCREW	UNI5931-M5x20	2
04	GASKET	A52.131035	2
05	COMPASS	A90.090095	1
06	REED CONTACT	A91.049096	1

POS.	ITEM	CODE	QTY
07	MOTOR BOX COVER	A83.120847	1
08	M5x16 SCREW	A93.083189	4
09	24 V DC MOTOR	A94.150404	1
	12 V DC MOTOR	A94.150403	1
10	SINGLE PUMPING ELEMENT SEAT CAP	A92.115062	8
11	PROG. METERING DEVICE PUMPING UNIT SEAT CAP	A92.115040	2

### SPARE PARTS EXPLODED VIEW NOT AVAILABLE IN THE VERSION WITHOUT ELECTRIC LEVEL INDICATOR

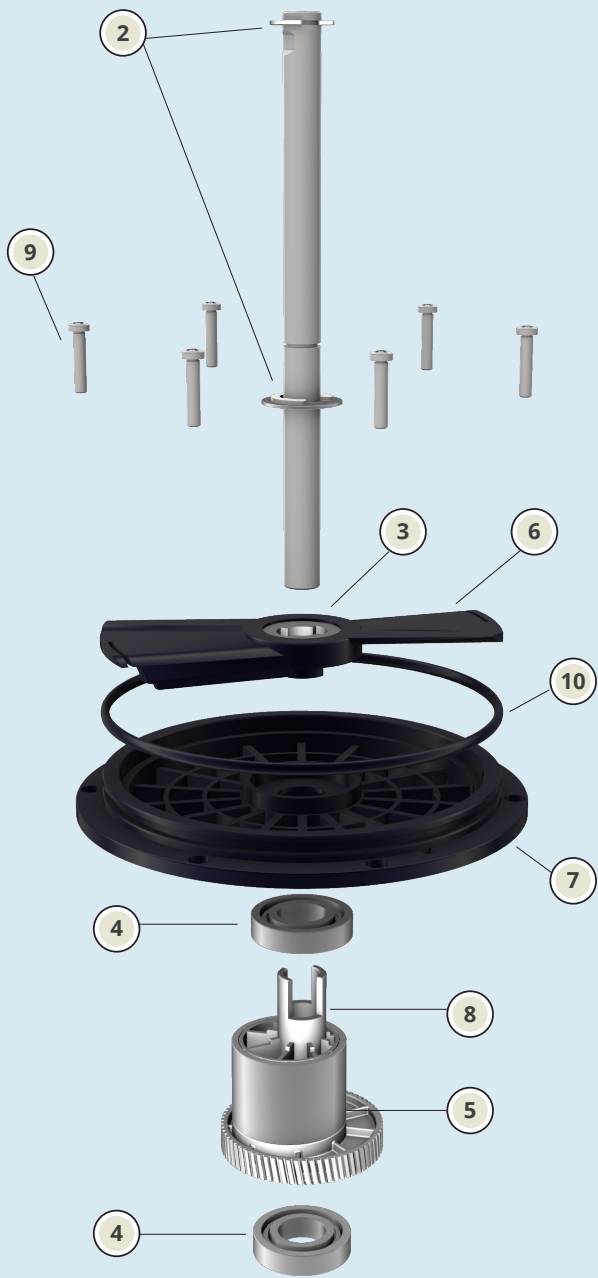


POS.	ITEM	CODE	QTY
01	GASKET	A89.128035	1
02	MAGNET	A91.049099	1
03	20-12-4 GASKET	A89.128006	1
04	21.8x13 WASHER	A51.114099	1
05	ZJ22 RING	A92.114098	1
06	FOLLOWER PLATE	A83.120850	1
07	CONICAL SPRING	A86.126158	1



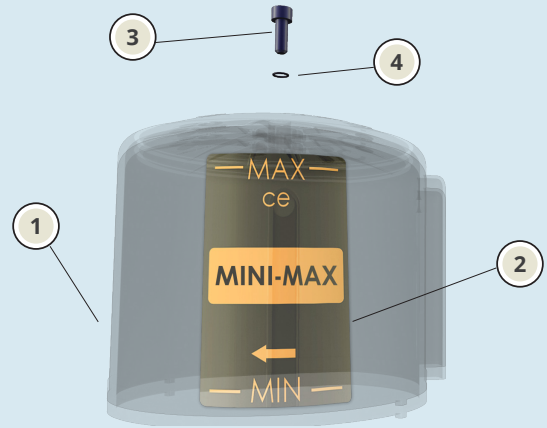
**NOT AVAILABLE IN THE VERSION WITHOUT ELECTRIC LEVEL INDICATOR**

## SPARE PARTS EXPLODED VIEW



POS.	ITEM	CODE	QTY
01	CENTRAL ROD	A53.080032	1
02	RS-10 SEEGER	UNI7434-10	2
03	26x12 WASHER	A51.131031	1
04	35x17x8 BEARING	A92.114096	2
05	35-40.30 RING	A92.114097	1
06	SPATULATOR FOR PUMP WITH ELECTRIC MIN. LEVEL INDICATOR	A83.120849	1
	SPATULATOR FOR PUMP WITHOUT ELECTRIC MIN. LEVEL INDICATOR		1
07	CENTRING GRID	A83.120848	1
08	GEAR	A83.120848	1
09	4x10 SCREWS	A92.083194	6
10	4500 O-RING	A92.127191	1

## SPARE PARTS EXPLODED VIEW



POS.	ITEM	CODE	QTY
01	TANK	A78.129130	1
02	PLATE	A88.112586	1
03	SCREW	UNI5931-M5x16	1
04	O-RING	A92.127069	1

## SPARE PARTS EXPLODED VIEW OF MODEL WITHOUT ELECTRIC LEVEL INDICATOR



POS.	ITEM	CODE	QTY
09	4x10 SCREWS	A92.083194	2
12	SCRAPER	A85.120897	1
13	SCRAPER GASKET	A87.104038-B	1



CENTRALISED  
LUBRICATION  
SYSTEMS

COPY OF THE ORIGINAL DOCUMENT

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## DICHIARAZIONE DI CONFORMITÀ - DECLARATION OF COMPLIANCE WITH STANDARDS DECLARATION DE CONFORMITE - KONFORMITÄTSERKLÄRUNG DES STANDARDS DECLARACIÓN DE CONFORMIDAD - DECLARAÇÃO DE CONFORMIDADE

La società ILC srl con sede legale in Gorla Minore, Via Garibaldi 149 - ILC srl registered office in Gorla Minore, Via Garibaldi 149 - ILC srl au Siège Social à Gorla Minore, Via Garibaldi 149 ILC srl Sitz in Gorla Minore, Via Garibaldi 149 - La sociedad ILC srl., con sede legal en Gorla Minore, Via Garibaldi 149 - A ILC srl, com sede em Gorla Minore, via Garibaldi 149

### DICHIARA /CERTIFIES / CERTIFIE/ ZERTIFIZIERT, DASS/ DECLARA/ CERTIFICA:

che la macchina denominata/that the machine named / que la machine dénommée/ Die Maschine mit der Bezeichnung/ que la máquina denominada/ que o equipamento denominado

Descrizione - Description - Description/ Beschreibung - Descripción - Descrição

Nome Commerciale - Product Name - Dénomination Handelsname

Denominación - Denominação:

Versioni - Versions - Versions- Versionen - Versiones - Versões:

Codici - Codes - Códigos

ELETTROPOMPA A PISTONI SERIE MINI-MAX  
MINI-MAX SERIES PISTON ELECTRIC PUMP

# MINI-MAX

TUTTE - ALL

39.000.----- 39.999.-----

è conforme alle condizioni previste dalle Direttive CEE /has been constructed in conformity with the Directives Of The Council Of The European Community on the standardization of the legislations of member states/ a été construite en conformité avec les Directives Du Conseil Des Communautés Europeennes/ Entsprechend den Richtlinien des Rates Der Europäischen Union, für die Standarisierung der Legislative der Mitgliederstaaten, konstruiert wurde/ cumple con las condiciones establecidas por las directivas comunitarias/ foi construído em conformidade com as diretivas do Conselho das Comunidades Europeias:

2006/42 Direttiva macchine /Machinery Directive / 2006/42 Directive machines / Maschinenrichtlinien/ Maquinaria 2006/42/CEE /Directiva 2006/42 Máquinas;

2006/95 CE Bassa tensione / Low Voltage Directive / Directive Basse Tension/ Niederspannungsrichtlinien/ Directiva de baja tensión/ Directiva de Baixa Tensão;

La persona autorizzata a costituire il Fascicolo Tecnico c/presso ILC srl  
The person authorized to compile the Technical File care of ILC srl  
Gorla Minore,10/12/2014:

Technical Director:

ing. Vittorio Baroni

Il Legale Rappresentante





## 31. WARRANTY

All ILC products come with a warranty of  
12 months from delivery date for construction and material defects.  
24-month extended warranty if the system was installed by ILC.  
12 months from the date the commercial components-electrical parts were installed.

[if the installation is done after 6 months from the delivery date, the warranty will cover a maximum of 18 months from the delivery date]

Should the equipment malfunction, you must notify us of the defect found, providing us the code, the serial number, the delivery and installation dates and the conditions in which the product in question is used.

Once we receive this information, at our sole discretion we will decide whether to

- provide technical assistance
- direct you to your nearest customer service centre
- give you a number authorising the return for repair

When we receive the equipment and based on accurate analyses, ILC reserves the right to choose whether to repair or replace the product. Should the warranty still be valid, we will see to repairing or replacing the product at our expense.

Should the product not be defective, ILC will decide at its discretion whether or not to charge for the sustained costs (logistics).

This warranty shall be considered void should the product show

- damage or cracks due to improper use
- negligence
- normal wear
- chemical corrosion
- signs of installation that is non-compliant with the explicitly stated instructions and use that is contrary to the manufacturer's recommendations.

Modifications, tampering with or alterations to the equipment or parts of it without authorisation from ILC relieve ILC from all liability and from warranty obligations.

Parts subject to normal wear and non-durable parts are not covered by the warranty.

Anything that is not expressly stated, as well as damage, injury or costs resulting from product defects are to be considered excluded from the warranty.

The warranty validity conditions are considered implicitly accepted at the time of purchase. Any varying modifications to this warranty shall only be considered valid upon written authorisation from ILC.

ILC declines all liability for damages to persons and things due to failure to observe the requirements in this manual.

Any modifications to parts making up the system or using the system or its parts for different purposes without written authorisation from ILC relieves ILC from all liability for damages to persons and/or things and from any warranty obligations.



LUBRICATION SYSTEMS



## **MINI-MAX** ELECTRIC PUMP FOR GREASE

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**SMEERTECHNIEK  
ROTTERDAM**

