ILC Srl

MINI-MAX

MINI-MAX Series electric piston pump for grease / oil
Use in centralized lubrication systems

Translation of original instructions

CE

All ILC products must only be used for their intended purposes, as specified in this brochure and in all instructions. If the product is supplied together with user instructions, the user is required to read them and comply with them. Not all lubricants are suitable for centralised lubrication systems. ILC lubrication systems or relative components cannot be used together with gas, liquid gas, pressurised gas in solution and liquids with vapour pressure exceeding normal atmospheric pressure (1013 bar) by more than 0.5 bar, maximum temperature permitted +60° C.
Any type of dangerous materials, namely those classified as such by European Community Directive (EC) 67/548/EEC, Article 2 (2), can only be used in ILC centralised lubrication systems or relative components upon consultation with ILC and after having received written approval from the company.

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1. Introduction

This use and maintenance manual refers to the **MINI-MAX**pump. Using this pump makes it possible to distribute grease in lubrication systems. The pump that this manual refers to 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 pump structure always houses at most 2 pumping elements for progressive distributors and 8 pumping elements for a single point. A 1 kg capacity tank is housed on the pump body.

The pump is configured in two versions: with spring, presser disc, spreader, minimum electric level or a version with only spatulator and scraper (that does not include minimum electric level indicator)

The pump can be checked via the internal programming timer or the control panel of the machine on which it is housed. It is fully protected from the outside environment and has no problems operating even in harsh environmental conditions. **MINI-MAX** is designed to supply lubrication systems for use with grease and oil. Using it for purposes other than for what it was intended is considered non-compliant with regulations.

2.1 Lubrication

The MINI-MAX electric pump can lubricate the end point directly, using either individual pumping elements or progressive distributors that 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 spring return eccentric unit 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.

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 cycle, stand-by and check times.

3. Applications

Movement Earth

Industry

Agriculture

Machinery Construction

Automotive

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4. Technical data

Speed	20 RPM (12 V DC), 24 RPM (24 V DC)
Pumping System	Cam actuation, spring return
Max number of outlets/pumping elements	8 single utilities – 2 progressive feeds
Delivery connection (pumping outlet)	Progressive power supply 1/4" GAS Single utilities 1/8" GAS
Pumping element for single utilities nominal flow rate	5 mm^3/rev 10 mm^3/rev 15 mm^3/rev 25 mm^3/rev 50 mm^3/rev
Fixed pumping element nominal flow rate	120 mm^3/rev
Adjustable pumping element nominal flow rate	0-120 mm^3/rev
Maximum reachable pressure	250 bar
Tank capacity	1 Kg
Max Grease Consistency	NLGI2 at actual working temperature
Operating temperature	-10°C to +60° C (with suitable grease down to -40° C)
Storage temperature	-20°C to +80° C
Max relative humidity without operating condensation	90%
Sound pressure level	< 70 db (A)
Minimum level indication	Reed contact triggered by presser disk 1.5 A - 250 V AC / 200 V DC - 5 W - NC or NO contact
Net weight	2.75 kg

4.1 Internal timer technical data

Supply voltage	12 V DC - 24 V DC
Selectable working modes	Pause time hours-minutes-pulses (external) / work time minutes-seconds
Controls	Pre-lubrication Minimum electric level management Remote manual pushbutton Remote alarm signal Progressive distributor cycle control

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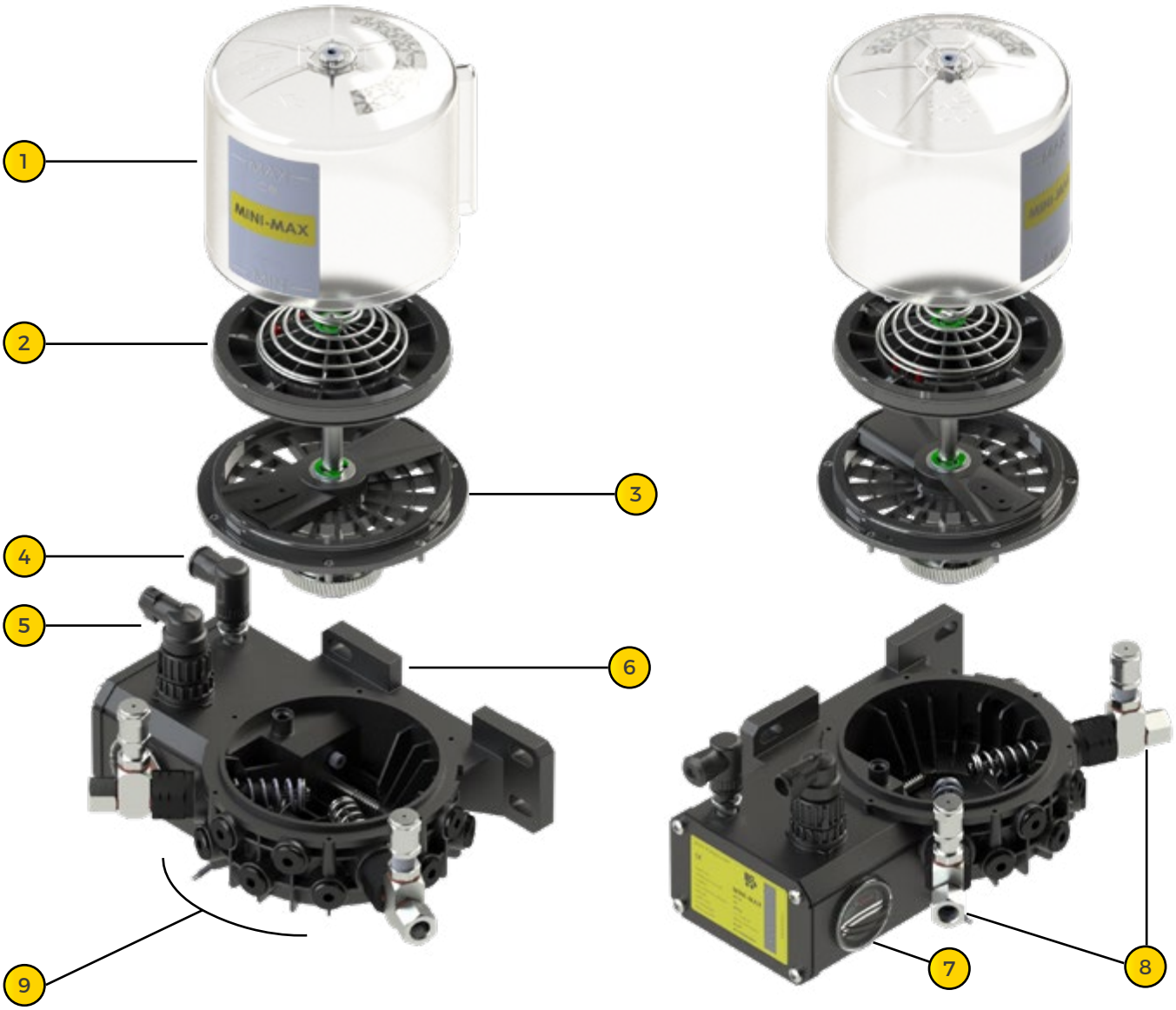
5. Main components



1. Tank
2. Presser disc
3. Spatulator
4. Connection to inductive control sensor
5. Power connection/cycle and minimum level alarm
6. Pump body
7. Programming timer
8. Pumping element for progressive systems
9. Pump housing caps for single utility

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6. Unpacking and Installation

6.1 Unpacking

Remove the pump and check that it has not been 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.

6.2 Installation

Install the pump in a horizontal position, fastening it to the wall or on a support by two M8 bolts. Assemble the pump so that the grease nipple to fill the tank and the side porthole are easily accessible. Provide space above the unit for any tank disassembly. Leave at least 100 mm of peripheral space in relation to other equipment or obstacles. In the case of filling with a cartridge pump, provide the necessary distances depending on the overall dimensions.

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. Install the pump away from heat sources that may disturb operation.

All rigid pipes, flexible hoses and fittings must be compatible with the lubricant, the operating pressure and the surrounding environment. Make sure pipes and cables are appropriately secured and protected from impacts.

Caution!
All electrical connections must be set up by qualified personnel and all requirements of local regulations must be followed. Refer to the electrical connection diagram for correct wiring.

Caution!
The unit must be protected by a thermal-magnetic switch with a trip threshold based on the absorptions documented on the data sheet or pump label.

7. Commissioning

MINI-MAX pumps can be filled with standard manual or pneumatic 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 overflow drain hole located to the side.

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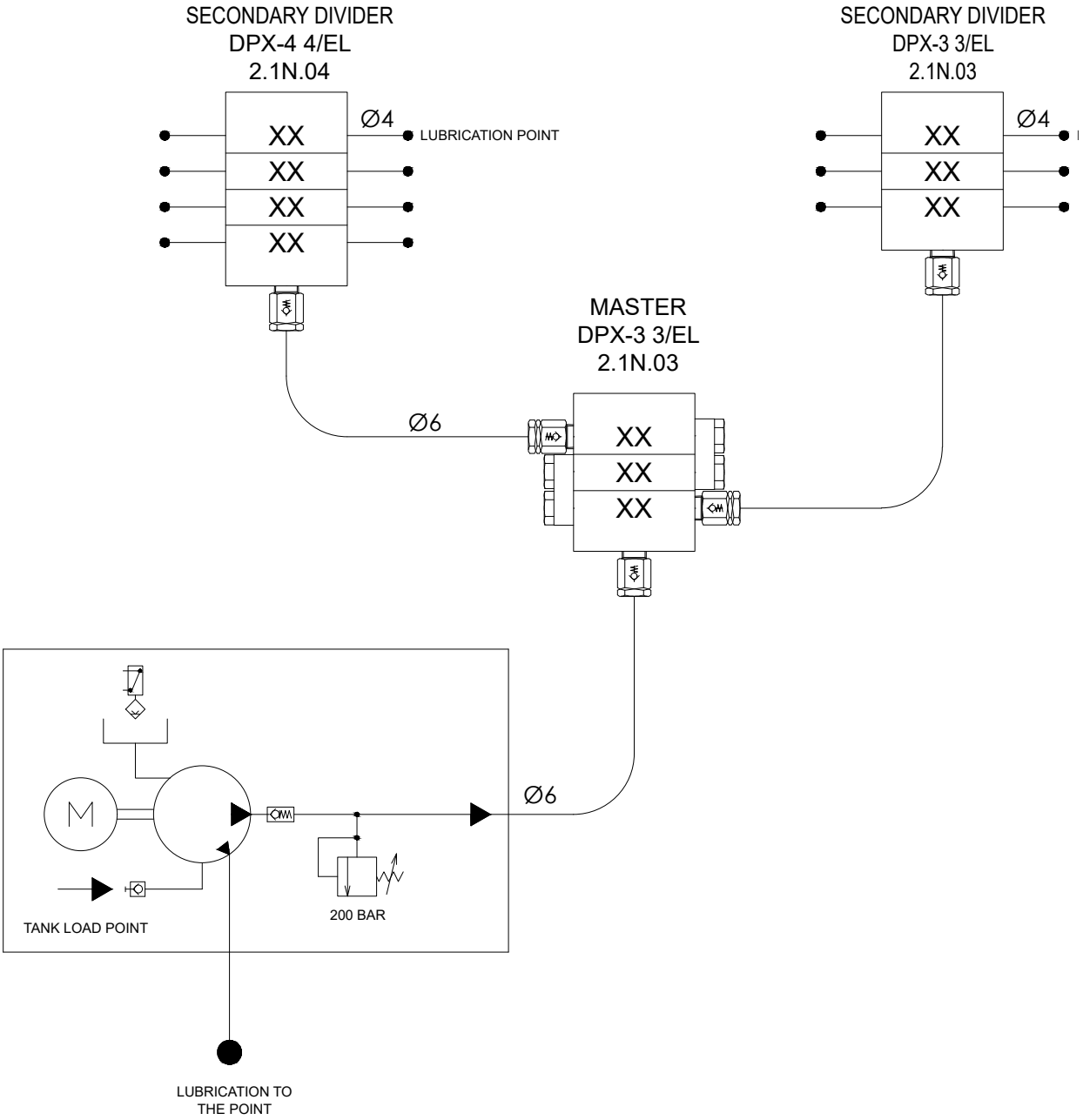
8. Hydraulic diagram



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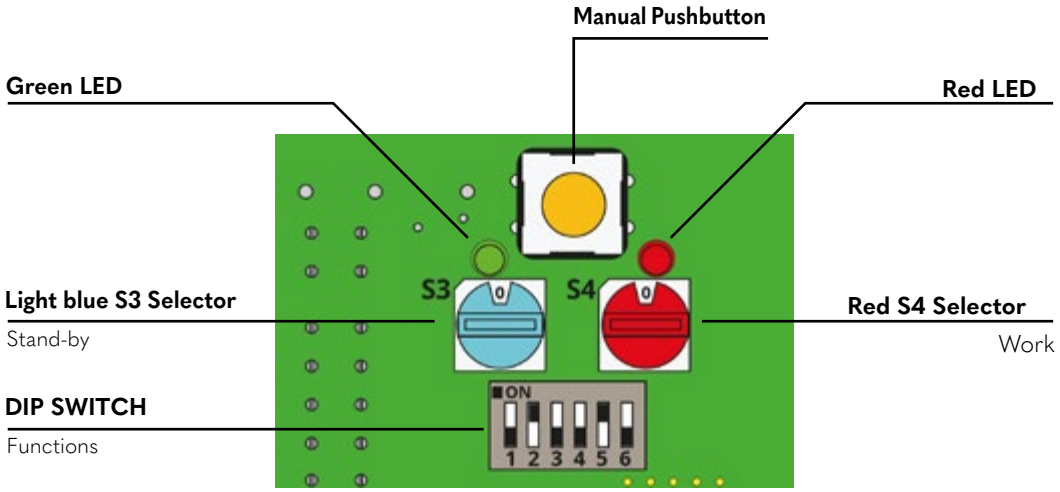
9. Electronic Timer Version

The model with integrated timer makes the pump totally autonomous: work times, pause times (timed or pulsed) and function control can be set. You can save the stop point so that when the cycle is restarted, it picks up from where it left off (stand-by or lubrication) or enable a cycle every time the machine is started up. The electronic timer settings are accessible through the front porthole.

9.1 Electronic Timer Components



9.2 Start

When switching on, wait 10" before performing any operation on the timer.

9.3 DIP SWITCH functions

No.	Function	Off	On
1	Prelube	No	Yes
2	Pause Time	Minutes	Hours
3	Work Time	Seconds	Minutes
4	Cycle control (from the proximity sensor of the progressive distributor)	No	Yes
5	Pause (in time or pulses)	Time	Pulses
6	Lubricant Level control	No	Yes

9.4 Saving programming

In order to memorise the programming of all entered changes, hold the Manual **Button** for at least **5 seconds** after the changes have been made.

Then, the pump will automatically start for one cycle.
To perform a reset or an extra cycle, press and hold the Manual Button for at least 5".

9.5 Indicator Lights (LED)

Red LED (flashing): indicates lack of lubricant in the tank. The lubrication cycles continue five times. To clear the alarm, fill the tank.

Red LED (stead): indicates that the timer is not receiving a signal from the proximity sensor. The pump stops at the end of the work cycle and does not start again.

Green LED (steady): when the pump is running.

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10. Electronic Timer Functions

10.1 Prelube (Dip-switch 1)

Off: the working condition with memory. In this case, at every switch-off and/or power outage, the pump picks up again from the stopping point (or stand-by).

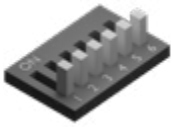
On: each time the power is switched off and/or interrupted, the pump starts with a complete cycle identical to the working time set in the parameters**.**

10.2 Pause (minutes/hours) (Dip-switch 2)

Off: sets **the pause time** function (the motor is not running) in **Minute** scale.

On: sets the pause time function (motor is not running) in Hours scale .

10.3 Work (Dip-switch 3)



Off: sets **the** working time function (motor is running) in Seconds **scale**.

On: sets **the** working time function (motor is running) in Minute **scale**.

10.4 Cycle control (Dip-switch 4)

Off: The pump works only with stand-by - work time.

On: For proper 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 and the pump locks

10.5 Pause type (pulses) (Dip-switch 5)

Off: the pause is not pulsed.

On(2 Off): Pause is pulsed (4-64)

On(2 On): Pause is pulsed (120-3840)

10.6 Electrical level (Dip-switch 6)

Off: The function of the lubricant level in the tank is deactivated.

On: The function of the lubricant level in the tank is activated.

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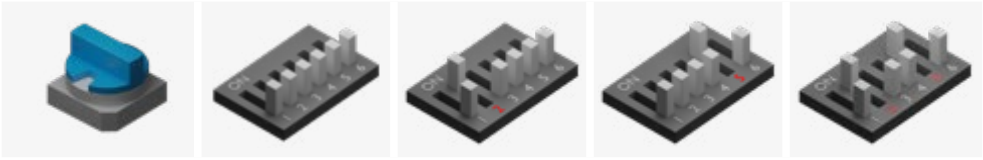
11. Setting Pause and Working Time

11.1 Pause adjustment in time or pulses

S3 Selector	Pause in Minutes	Pause in Hours	Pause in Pulses	Pause in Pulses
0	2	1	4	120
1	4	4	8	240
2	6	6	12	360
3	8	8	16	480
4	10	10	20	600
5	12	12	24	720
6	14	14	28	840
7	16	16	32	960
8	18	18	36	1200
9	20	20	40	1440
A	22	22	44	1680
B	24	24	48	1920
C	26	26	52	2400
D	28	28	56	2880
E	30	30	60	3360
F	32	32	64	3840



The light blue rotating selector (called S3) sets the pause or pulse time to be used.

As shown in the table, selector S3 is combined with the choice of pause values in units of time (minutes/ hours) or pulses.

The figure at the end of the table shows how to position the switches in the dip switch to obtain the desired settings.

11.2 Adjusting work in time

S4 Selector	Work in seconds	Work 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 be used.

As shown in the table, selector S4 is combined with the choice of working values in minutes or hours.

The figure at the end of the table shows how to position the switches in the dip switch to obtain the desired settings.

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12. Electrical Connections

Electric connection is the user's responsibility, who must identify the power supply, minimum 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. Both electrical connections are located on the left side of the pump.

12.1 Electrical connector Power supply

The MINI-MAX pump is supplied complete with a seven-pin electrical connector **A91.111327**, which powers the pump and manages any alarm and level signals. A total of twenty-one rubbers are included, seven per type, for different cable diameters and/or unused contacts.

On request, the connector can be ordered complete with a 3-wire or 7-wire cable (1 mm^2) in 3 different lengths (5, 10, 15 m).

3 wires	7 wires	Cable
40.CBL.3.05	40.CBL.7.05	5 m
40.CBL.3.10	40.CBL.7.10	10 m
40.CBL.3.15	40.CBL.7.15	15 m

Part No.	Rubbers
A91.111315	For 1.2 to 2.1 mm^2 cable
A91.111314	For 2.2 to 3 mm^2 cable
A91.111314	Closing cap

12.2 Connecting Control Elements

A second connector, for the management of a progressive feeder cycle control (if foreseen in the system), can be installed in versions equipped with an internal timer. Also for this connector, the connector complete with cable can be ordered on request.

Optional 90° Male Connector
A91.111352

Connector with cable	Cable
40.CDC.4.05	5 m
40.CDC.4.10	10 m
40.CDC.4.15	15 m

Proximity Sensor	Thread
40.052.7	M8x1
49.052.9	M12x1

only for version with internal timer.

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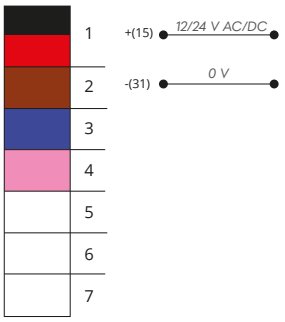
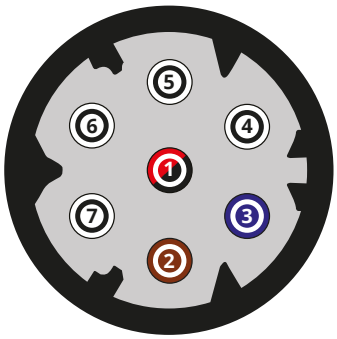
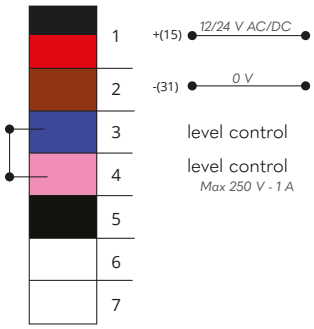
12.3 3-cable pump without timer connection

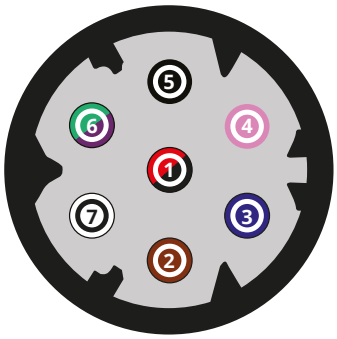




1 = red / black
2 = brown

12.4 7-cable pump without timer connection

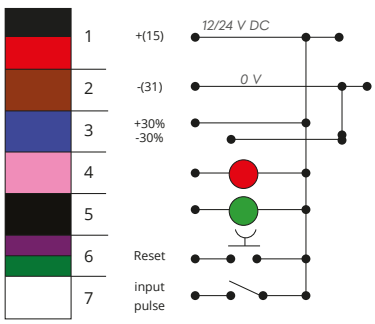


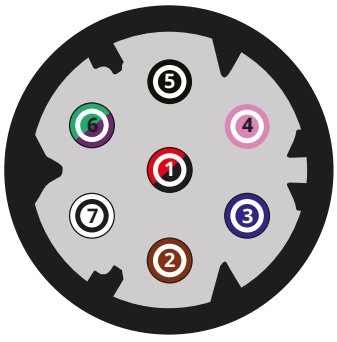


1 = red / black
2 = brown
3 = blue
4 = pink

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

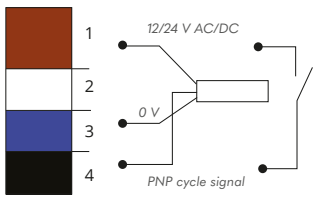
12.5 Pump connection with 3-wire timer

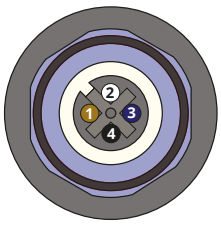




1 = red / black
2 = brown
3 = blue
4 = pink
5 = black
6 = green / purple
7 = white

If we send a (+) to contact 3, work time increases by 30%. If we send a (-) to contact 3, work time decreases by 30%.





1 = brown
2 = white
3 = blue
4 = black

Follow this diagram to connect a control positioned on the progressive distributor or at the pump outlet.

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13. Replacing the electronic timer

- Disconnect the power supply to the pump.
- Remove the 4 screws on the rear cover.
- Remove the rear cover and gasket.
- Uncouple the 4- and 10-pin snap connectors.
- Remove the faulty timer.
- Insert the new timer partially into the guide, taking care to orient the LEDs on the side of the transparent cap.
- Connect the 4- and 10-pin connectors to the board.
- Push the board to the end of the guide.
- Place gasket and closing cover in position.
- Tighten the 4 screws (1.2-1.3 Nm).

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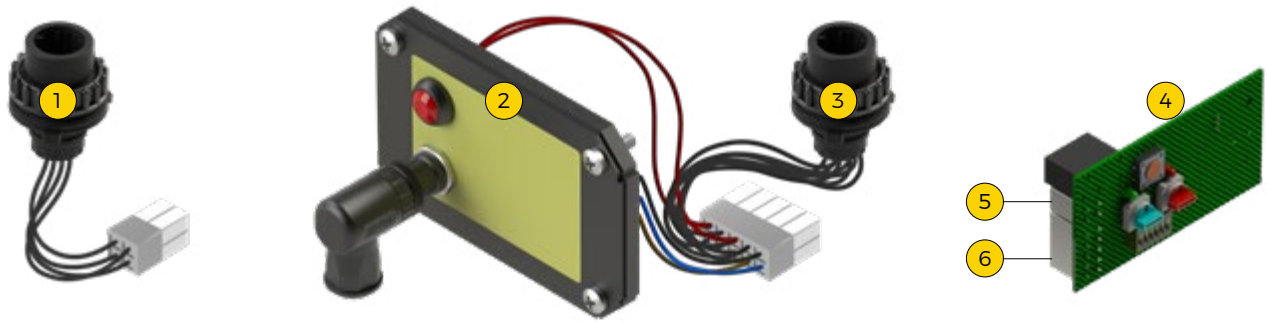
14. Pump conversion

The MINI-MAX without timer can be converted to a MINI-MAX with timer. Order and install kit code **A70.0931048** which includes Timer, 4-pin Alarm Connector and 10-pin Power Connector.

The MINI-MAX with timer can be converted to a MINI-MAX without timer. Order and install the kit **code A70.0931089** that includes the 4-pin power supply connector.

14.1 Conversion operations (from no timer to timer)

- Disconnect the power supply to the pump.
- Remove the 4 screws on the rear cover.
- Remove the rear cover and gasket.
- Uncouple the 4-pin snap connector (1).
- Unscrew the ring nut of the TYCO 4-pin power connector (1) and replace it with the 10-pin model (3) pre-connected to the cover (2). Refit the ring nut to tighten it.
- Insert the timer partially into the guide, taking care to orient the LEDs on the side of the transparent cap.
- Connect the 4-pin (5) and 10-pin (6) snap-in connectors to the board.
- Push the board (4) to the end of the guide.
- Place gasket and closing cover in position.
- Tighten the 4 screws (1.2-1.3 Nm).



14.2 Conversion operations (from timer to no timer)

- Disconnect the power supply to the pump.
- Remove the 4 screws on the rear cover.
- Remove the rear cover, taking care not to pull on it to avoid damaging the connected cables.
- Pull the board (1) out about halfway along its length.
- Disconnect connectors 4 (2) and 10 pin (3).
- Pull the board out completely (4).
- Unscrew the ring nut of the 10-pin TYCO power connector (3) and replace it with the 4-pin model (4). Refit the ring nut to tighten it.
- Place gasket and closing cover in position (5).
- Tighten the 4 screws (1.2-1.3 Nm).

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15. General scheduled maintenance

Premature wear of pumping elements and other moving parts is caused by contaminated and dirty lubricants.
Failure of the progressive distributors which, as a consequence, do not send lubricant to the points, is caused by the presence of air in the distribution network or by contaminated lubricant. The unit does not require special maintenance if you avoid using contaminated lubricant and injecting air into the circuit. Before performing any operation, make sure you have disconnected the power supply.

Table 15.1 lists 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.

Diagnostic tables 15.2 and 15.3 (page 16) highlight the main faults, their causes and solutions. If the problem cannot be solved after consulting it, contact the technical office at ILC.

15.1 Periodic checks

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

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15.2 Electric pump diagnostics table

Anomaly	Potential causes	Potential solutions
1. The pump motor does not work.	1.1 No voltage. 1.2 The electronic board does not work. 1.3 The motor does not work. 1.4 Working temperatures too low for the type of lubricant used.	1.1 Check the power supply system. 1.2 Replace the electronic board. 1.3 Replace the motor. 1.4 Replace the lubricant with a suitable model that can be pumped at low temperatures
2. The pump works but lubricant does not reach the final points.	2.1 Incorrect cycle time setting. 2.2 Unsuitable lubricant used 2.3 Pumping element intake clogged. 2.4 The pumping element piston is worn. 2.5 Pumping element delivery valve obstructed-dirty. 2.6 Disconnected piping. 2.7 Working temperatures too low for the type of grease used.	2.1 Reprogram the cycle time. 2.2 Empty the tank and refill it with suitable lubricant. 2.3 Disassemble the pumping element and clean the intake conduits. 2.4 Replace the pumping element. 2.5 Clean the delivery valve and, if necessary, replace it. Replace the pumping element. 2.6 Check the condition of the piping and the related connections to the fittings. Replace worn piping. 2.7 Replace the lubricant with one that is suitable to be pumped at low temperatures.
3. The pump starts the work phase but stops it immediately.	3.1 Defective motor or elevated output absorption.	3.1 Let it cool down for a few minutes and then try again. If the problem persists, replace the motor.

15.3 Timer diagnostics table

Anomaly	Potential causes	Potential solutions
1. The timer does not work	1.1 No voltage. 1.2 Loose or incorrect connections 1.3 Defective timer.	1.1 Check the power supply system. 1.2 Check the power supply connection in the 7-pole external connector. Check the connector timer internal connection. 1.3 Replace the timer.

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16. Transport

I.L.C. Srl products are packaged to market standard according to the regulations in force in the country of destination. Proceed with caution during transport. The product must be protected against impact. There are no restrictions for transportation by land, air or sea.

Caution!
Do not spill or throw away the product

16.1 Delivery

After receiving the shipment, it is necessary to check the integrity of the products based on the accompanying documents. Packaging materials must be kept until any discrepancies have been clarified.

16.2 Storage

For I.L.C. products. The following storage conditions apply:

Storage of lubrication units

- Environmental conditions: dry and dust-free environment, storage in a well-ventilated and dry location
- Storage period: max. 24 months
- Admissible air humidity: <65%
- Storage temperature: -20°C to +80° C°
- Light: avoid direct exposure to sunlight or UV rays, isolate heat sources located in the vicinity

Storage of electronic and electrical equipment

- Environmental conditions: dry and dust-free environment, storage in a well-ventilated and dry location
- Storage period: max. 24 months
- Admissible air humidity: <65%
- Storage temperature: -20° C to +80° C
- Light: avoid direct exposure to sunlight or UV rays, isolate heat sources located in the vicinity

General notes for storage

- Dust-protected storage by covering the devices with plastic film is recommended
- Protection against floor humidity by storing on shelves or on wooden structures
- Before storage, it is recommended to protect the polished metal surfaces, specifically the friction components and the assembly surfaces, by treating them with a long-term anticorrosion product
- Approx. every 6 months: check for corrosion. If signs of corrosion are visible, it is recommended to eliminate them immediately and treat again with the anticorrosive agent
- The drives must be protected against mechanical damage

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17. Operation

17.1 General information

The pump operates automatically. However, the flow of the lubricant inside the piping must be checked periodically. The filling level of lubricant in the reservoir, being installed, must be visually checked periodically. If an excessively low lubricant level is detected, it must be topped up to the maximum marking as described in the "Commissioning" chapter.

The information provided by the manufacturer of the machinery and of the lubricants must be strictly complied with.

Caution!
Only fill clean lubricant using a suitable device. The use of contaminated lubricants may cause very severe system malfunctions. The lubricant reservoir must be filled avoiding the formation of bubbles.

Caution!
Do not mix different types of lubricants, as damage may occur, resulting in expensive cleaning operations of the product/ central lubrication system. To avoid confusion, it is recommended to apply a note on the reservoir identifying what lubricant was used.

17.2 Commissioning

Before commissioning the product, it is recommended to check all electrical and hydraulic connections and, if applicable, the pneumatic connections.

The lubricant must be supplied without bubbles. For this purpose, fill the reservoir with clean lubricant. Then, run the pump until the lubricant comes out of all lubrication points without bubbles.

The purge cycle of the central lubrication system is carried out by opening the ends of the main pipe, so that lubricant comes out from this point without bubbles.

The inclusion of air in the lubricant greatly affects system operation, with potential damage due to the lack of lubrication of moving parts.

17.3 Lubricants

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.

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

For further information about the technical features and the necessary safety measures, refer to the Product Safety sheet (Directive 93/112/EEC) regarding the type of lubricant chosen and supplied by the manufacturer.

Caution!
Do not mix different types of grease. We suggest putting an identification plate on the pump that shows the type of lubricant to use.

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18. Decommissioning

18.1 Temporary decommissioning

Temporary decommissioning of the product described occurs by disconnecting the electrical, pneumatic and/or hydraulic power supply connections.

For extended product decommissioning, please refer to the information in the "Transport and storage" chapter in these assembly instructions.

For product recommissioning, please refer to the information in the "General information" and “Commissioning” chapter in these assembly instructions.

18.2 Definitive decommissioning

For definitive product decommissioning, the regional legal regulations and the laws on the disposal of contaminated operating equipment must be strictly complied with.

Caution!

Lubricants may pollute the soil and groundwater. Therefore, it is recommended to properly use and dispose of the lubricants. Regional regulations and laws regarding disposal of lubricants must be complied with.

18.3 Disposal

During maintenance or demolition of the machine, do not release polluting parts into the environment. Refer to local regulations for correct waste disposal. When dismantling the pump, the identification plate and every other document must be destroyed.

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19. Precautions for use

You must carefully read the warnings about the risks that come with using a lubricant pump. The operator must know how it functions and clearly understand the hazards of pumping pressurised lubricants.

19.1 It is recommended to

- Check the chemical compatibility of the materials that the pump is built with, with the fluid to be pumped. A wrong choice may cause, in addition to damage to the pumps and pipes, serious risks for people (leakage of irritating and harmful products to health) and for the environment.
- Never exceed the maximum operating pressure value allowed by the pump and by the components connected to it. In case of doubt, refer to the data on the machine plate.
- Only use original spare parts.
- Should it be necessary to replace components with others, make sure that they are suitable for operating at the maximum operating pressure of the pump.
- Never attempt to stop or divert any leaks with your hands or other parts of your body.
- Note: Personnel must use protective devices, clothing and tools that comply with the regulations in force in relation to the location and to the use of the pump both during operation and maintenance operations.

19.2 Flammability

The lubricant used in lubrication circuits is not a normally flammable liquid. However, it is crucial to adopt all precautions possible to prevent it from coming into contact with very hot parts or open flames.

19.3 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.

After long periods of inactivity, check the tightness of all the parts subject to pressure. Do not subject the fittings, pipes and pressurised parts to violent impact. Damaged flexible hoses or fittings are DANGEROUS, replace them. We recommend only using original spare parts.

19.4 Noise

Under normal operating conditions, the noise emission does not exceed a value of 70 dB "A" at a distance of 1 metre (39.3 inch) from the pump.

Use of the pump with NLGI00 consistency greases must be evaluated on a case by case basis, due to the extreme difference in the pour properties of the compound, depending both on the viscosity of the base oil but also on the soaps and additives used.

For further information about the technical features and the necessary safety measures, refer to the Product Safety sheet (Directive 93/112/EEC) regarding the type of lubricant chosen and supplied by the manufacturer.

19.5 Interventions

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 disconnected from the earth line.

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20. User instructions

Conformity to essential safety requirements and to the provisions in the machinery directive has been checked by filling out the prepared checklists contained in the technical file.

20.1 Lists used

- Risk assessment (UNI EN ISO 14121-1).
- Conformity to essential safety requirements (Machinery Directive –EC 06/42).

20.2 Risks not eliminated, but considered acceptable

- Electrocution: this can only occur in the event of serious user carelessness.
- Use of unsuitable lubricant: the types of fluids that are not compatible with correct pump operation are listed below.*
- Contact with harmful fluids.

20.3 Inadmissible fluids

Liquids	Hazards
1. Lubricants with abrasive additives	Wear of the internal pump components
2. Lubricants with silicone additives	Pump seizing
3. Petrol - solvents - inflammable liquids	Fire - explosion - damaged gaskets
4. Corrosive products	Pump corrosion - injury to persons
5. Water	Pump oxidation
6. Food products	Contamination of said products

* For more detailed information on product compatibility with particular fluids, contact the I.L.C. Technical Office.

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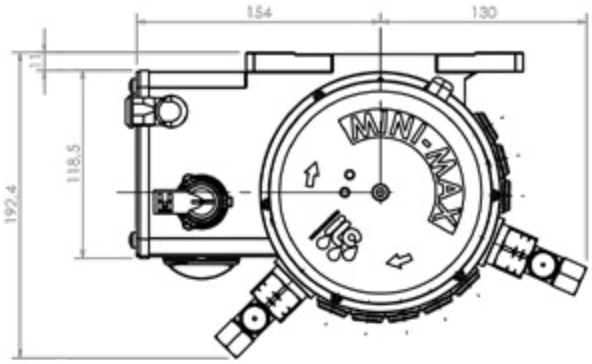
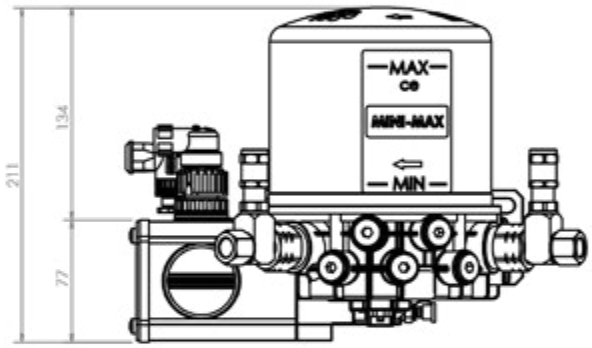
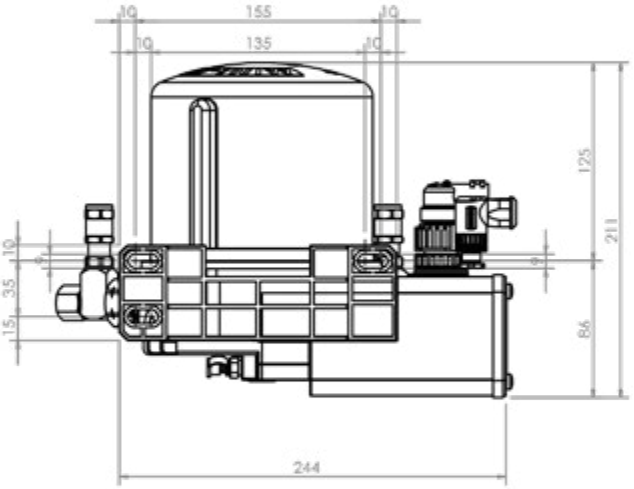
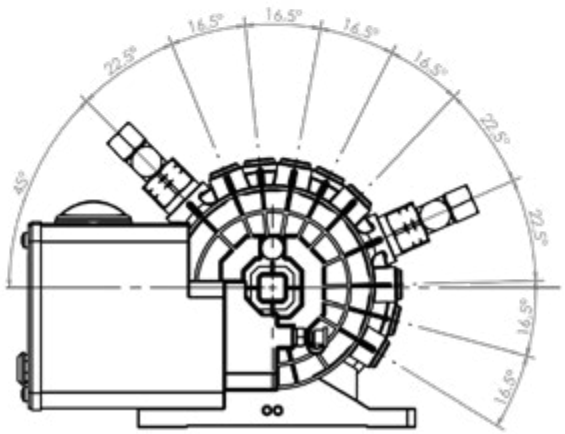
21. Dimensions MINI-MAX









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22. MINI-MAX order code configurator

ASSEMBLY POSITION

1	7	2	3	4	5	6	8	9	10
39	.	12	.	X	.	X	.	X	F	.	X	X	X	X	X	X	X	X
		A		B		C		D			E							

A (Voltage)		B (Timer)		C (Electric Level)	
12 V DC	12	With timer	T	With level	L
24 V DC	24	Without timer	X	Without level	X

D (Pumping element for progressive systems)		E (Pumping element for single pump)			
Fixed (0.12 CC /rev)	F	Metering 5 mm³	A	Metering 25 mm³	D
Adjustable (0.12 DC/rev)	R	Metering 10 mm³	B	Metering 50 mm³	E
No	X	Metering 15 mm³	C		

Pumping elements codes

For single point		For Progressive Metering Devices	
90.940.0.05	5 mm³ /rev	00.900.0	Fixed (120 mm³ /rev)
90.940.0.10	10 mm³ /rev	00.900.3	Adjustable (0 -120 mm³ /rev)
90.940.0.15	15 mm³ /rev		
90.940.0.25	25 mm³ /rev		
90.940.0.50	50 mm³ /rev		

Note: *No pressure relief valve is installed for the single utility. A pressure relief valve set at 200 bar is installed for progressive metering devices.*

IMPORTANT

If the model, quantity and position of the pumping elements are not specified, the pump is supplied with a single pumping element for progressive metering devices installed in position 7.
Additional pumping elements can be ordered separately using the codes provided in the tables below.

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23. Pumping elements

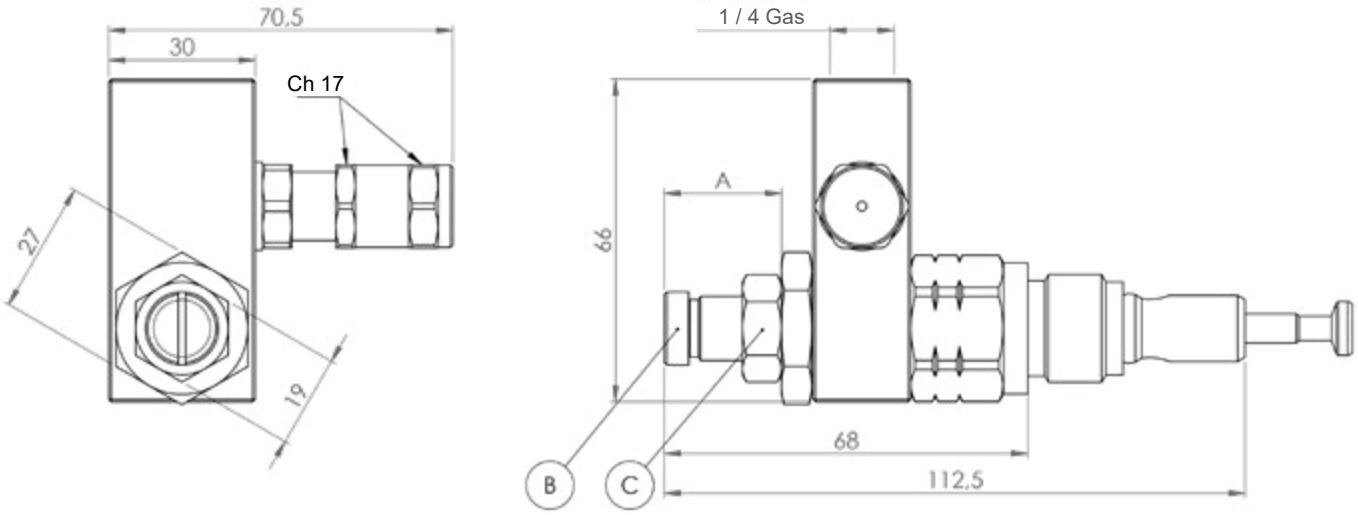
23.1 Installation and pumping element removal

To install a pumping element that was not foreseen when ordering the pump, simply remove the cap from the seat in the position in which you wish to insert the element and screw it all the way in. To ensure correct tightening and sealing of the seal, the closing force must be 21 Nm for pumping elements for progressive metering devices, 15 Nm for single point pumping element.

23.2 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).

A	Flow rate mm^3/Cycle	Percentage
23.6	120	100%
22.4	90	75%
21.2	60	50%
20.1	30	25%
19.4	10	5%
17.5	0	0%



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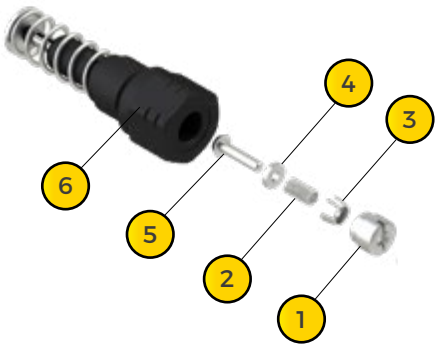
24. Pumping element maintenance

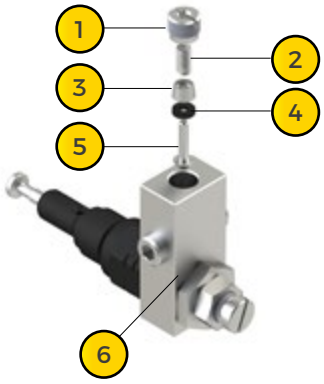
24.1 Fixed flow rate pumping element

Remove the locking screw (1) and take out the assembly consisting of spring (2), spring holder (3), seal (4) and piston (5). Thoroughly clean all parts and the discharge valve seat (6). Please note that if you do not have the replacement gasket (4), you can turn it by 180° and refit it.



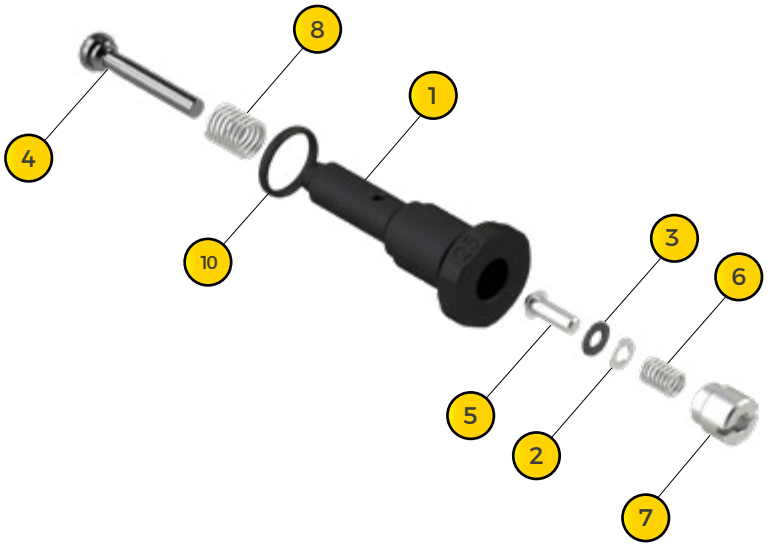
24.2 Adjustable flow rate pumping element

Remove the locking screw (1) and take out the assembly consisting of spring (2), spring holder (3), seal (4) and piston (5). Thoroughly clean all parts and the discharge valve seat (6). Please note that if you do not have the replacement gasket (4), you can turn it by 180° and refit it.



24.3 Single point fixed flow pumping element

Remove the locking screw (7) and take out the assembly consisting of the spring (6) washer (2) gasket (3) and piston (5). Thoroughly clean the working seat and check for wear. Check the condition of the gasket (3) and replace it, if necessary. If you do not have a spare part, you can rotate it 180° and reassemble it.



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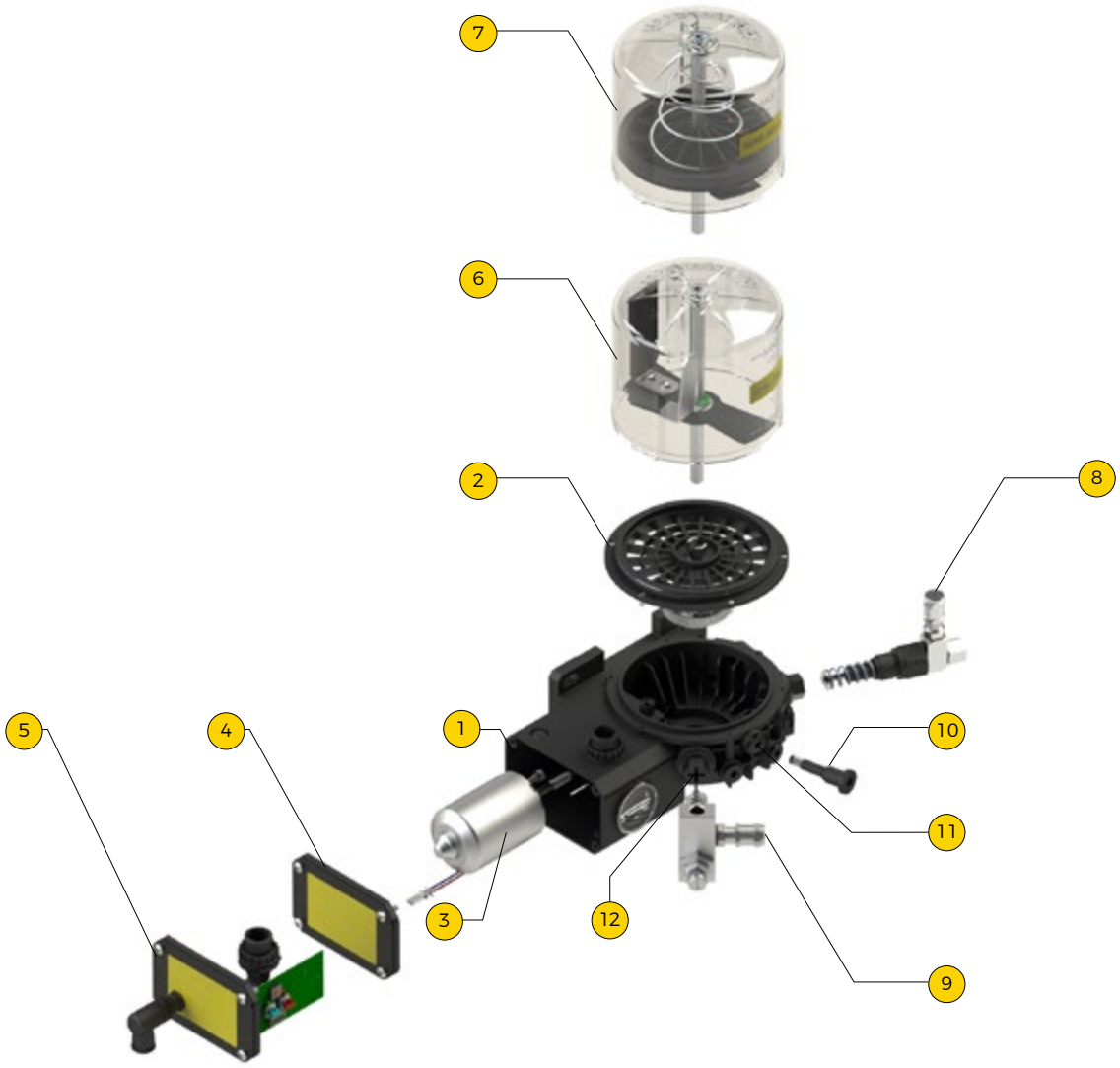
25. Spare parts

25.1 Grease pump spare parts



Pos	Part No.	Item
1	A70.0931042	Mini-Max Grease Pump Body Unit
2	A70.0931046	Flange unit
3	A70.0931043 (12 V DC) A70.0931044 (24 V DC)	Mini-Max Motor Unit
4	A70.0931047	Mini-Max Motor Cover Unit
5	A70.0931048	Trans. Unit Cover Timer + Mini-Max Pulses
6	A70.0931049	Tank Unit S/Level Mini-Max
7	A70.0931050	Tank Unit C/Level Mini-Max
8	00.900.0	Fixed pumping element with spring return D.6
9	00.900.3	Adjustable pumping element with spring return D.6
10	90.940.0.05	Fixed pumping element M14x1.5 5mm^3 D.3
11	05.057.0	Small cap for point pumping element
12	05.057.1	Large cap for pumping element to progressive distributors

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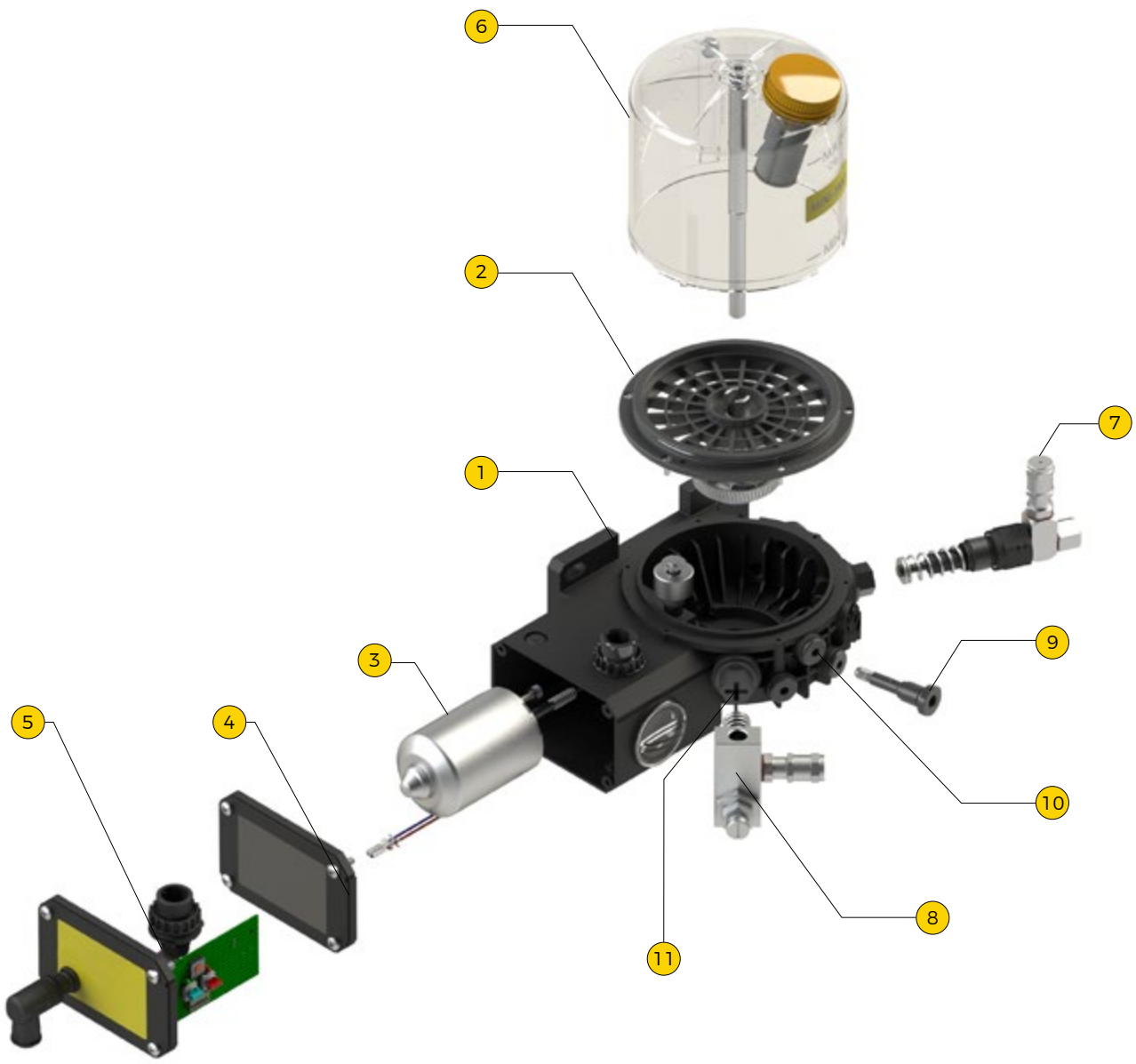
25.2 Oil pump spare parts



Pos	Part No.	Item
1	A70.0931045	Mini-Max Oil Pump Body Unit
2	A70.0931046	Flange + Cam Unit
3	A70.0931043 (12 V DC) A70.0931044 (24 V DC)	Mini-Max Motor Unit
4	A70.0931047	Mini-Max Motor Cover Unit
5	A70.0931048	Trans. Unit Cover Timer + Mini-Max Pulses
6	A70.0931051	Mini-Max Oil Tank Unit
7	00.900.0	Fixed pumping element with spring return D.6
8	00.900.3	Adjustable pumping element with spring return D.6
9	90.940.0.05	Fixed pumping element M14x1.5 5mm³ D.3
10	05.057.0	Small cap for point pumping element
11	05.057.1	Large cap for pumping element to progressive distributors

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26. Warranty

All ILC products come with a warranty of 12 months from the date of delivery for construction and material defects. 24-month extended warranty if the system was installed by ILC. 12 months from the date of installation of the commercial components-electrical parts. 24-month extended warranty if the system was installed by ILC. If installation is carried out 6 months after 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, providing us with the code, the serial number (expressed as in fig.1), 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 support; direct you to the nearest support 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.
If the product is not found to be defective, ILC will decide at its discretion whether or not to charge the expenses (logistics).

This warranty lapses if the product shows

- 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.
- tampering

Modifications, tampering with or alterations to the equipment or parts of it without authorisation by ILC S.r.l. 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 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 property due to the 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 property and from any warranty obligations.

27. Machine identification

On the front of the pump reservoir there is a yellow label (fig.1) which shows the product code and its basic characteristics.

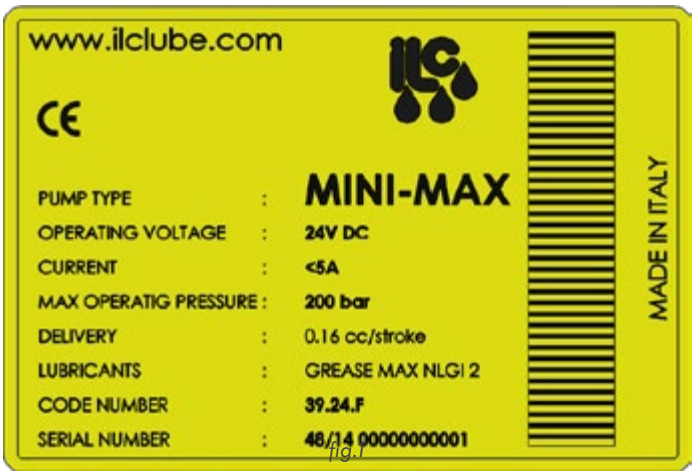

fig.1

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DICHIARAZIONE DI CONFORMITÁ / 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 (VA), Via Garibaldi 149 - ILC srl, registered office in Gorla Minore (VA), Via Garibaldi 149 - ILC srl. au Siège Social à Gorla Minore (VA), Via Garibaldi 149 / ILC srl Gorla Minore (VA), Sitz in Via Garibaldi 149 - La sociedad ILC srl., con sede legal en Gorla Minore (VA), Via Garibaldi 149 - A ILC srl, com sede em Gorla Minore (VA), Via Garibaldi 149

DICHIARA / CERTIFIES / CERTIFIE / ZERTIFIZIERT / DASS / DECLARA / CERTIFICA

che il prodotto denominato/that the product called/ le produit appelè/ das Produkt mit dem Namen/ el producto que se llama/ o produto chamado:

Descrizione/ Description/ Description Beschreibung/ Descripción/ Descrição	**PISTON ELECTRIC PUMP**
Nome Commerciale/ Product Name/ Dénomination Handelsname/ Denominación/ Denominação	**MINI-MAX ELECTRIC PUMP**
Versioni/ Versions/ Versions/ Versionen/ Versiones/ Versões	**ALL VERSION**
Codici/Part Number/Codes/Teile Nummer/Codigos/Codigos	**39.000.----- 39.999.-----**

IT	è conforme alle condizioni previste dalle Direttive CEE
EN	has been constructed in conformity with the Directives of the Council of the European Community on the standardization of the legislations of member states
FR	a été construit en conformìté des Directives du Conseil des Communautés Européennes
DE	Entsprechend den Richtlinien des Rates Der Europäischen Union, für die Standarisierung der Legislative der Mitglieder-staaten, konstruiert wurde
ES	cumple con las condiciones establecidas por las directivas comunitarias/ foi construído em conformidade com as diretivas do Conselho das Comunidades Europeias
PT	foi construido em conformidade com as diretivas do Conselho das Comunidades Europeias

- 2006/42/CE Direttiva macchine /Machinery Directive/ Directive machines/ Maschinenrichtlinien/Maquinaria / Directiva Máquinas;
- 2014/30/UE Compatibilità elettromagnetica/ Electromagnetic compatibility/ Compatibilité électromagnétique/ Elektromagnetlschevertr glichkeit/ Compatibilldad electromagnética/ Compatibilidad eletromagnética
- 2014/35/UE Bassa tensione / Low Voltage Directive / Directive Basse Tension/ Niedrigspannungsrichtlinien/ Directiva de baja tensión/ Directiva de Baixa Tensão;
- RoHS 2011 / 65 / EU.

La persona autorizzata a costituire il Fascicolo Tecnico presso ILC srl
The person authorized to compile the Technical File care ILC srl
La personne autorisée à constituer le dossier technique à CIT srl
Die Person, die berechtigt, die technischen Unterlagen bei ILC srl zu kompilieren
La persona autorizada para configurar el Archivo Técnico en ILC srl
A pessoa autorizada a configurar o Arquivo Técnico na ILC srl

CE

Gorla Minore 10/01/2022

Ing. Stefano Ghiringhelli

Firmatario autorizzato/Authorized signatory/
Signataire autorisé/Zeichnungsberechligter/
Slgnatario autorizado/ Slgnatàrio autorizado

Il Legale Rappresentante
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