VIP4Tools Coaxial

User and Maintenance Manual

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Manual drafted in compliance with
EC Directive 06/42

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1. INTRODUCTION

This *User and Maintenance Manual* refers to ***VIP4Tools Coaxial.***
You can find additional copies and newer revisions of this document from our website http://www.dropsa.com. Alternatively contact one of our Sales Offices.
This manual contains important information on health and safety issues for the personnel. It is recommended to attentively read this manual and carefully keep it in good condition so that it is always available to personnel requiring to consult it.

2. GENERAL DESCRIPTION

The coaxial piping lubrication system *Series 3135191÷198* has been designed to guarantee high performance at low price and is characterised by compactness. It has been conceived for use on:

- machine tools;
- chains.

The system is made of sub-base assembled to pneumatic-operated mini-pumps with manual regulation, which can satisfy any need: from 0 to 30mm³.
The technological innovation of the system consists in coaxiality: oil is injected through a capillary pipe (Ø3 mm – 0.11 in.) up to the air-oil lubrication nozzle, at the same time, the air flows to the same nozzle through another pipe (Ø6 mm – 0.23 in.), coaxial to the previous.
Modularity makes the system extremely versatile: you can use up to 8 mixture outlets.
The machine can be completed with the following accessories:

- A solenoid valve to stop air supply;
- A timer kit, to itme the system via pneumatic pulse generator.

The system can be also timed via the system PLC to which the panel is slaved.

3. PRODUCT-MACHINE IDENTIFICATION

Machine identification yellow label is located on the front side of the reservoir and contains product serial number and details of the operating parameters.

4. TECHNICAL SPECIFICATIONS

4.1 PANEL

Air supply pressure	5 ÷ 8 bar (73.5 ÷ 117.6 SUS)
Lubricant	Synthetic mineral oil
Viscosity (at working temperature)	32÷320 cSt (149.9÷1480 SUS)
Working temperature	-5 ÷ +55 °C (+23 ÷ +131 °F)
Working humidity	90% max
Storage temperature	-20 ÷ +65 °C (-4 ÷ +149 °F)

4.2 SAMBA LEVEL

Temperature	-10°÷ +80°C (+14 ÷ +176 °F)
MAX switching power	50W
MAX current	1 A
MAX power supply	220 VAC

4.3 AIR SPECIFICATIONS

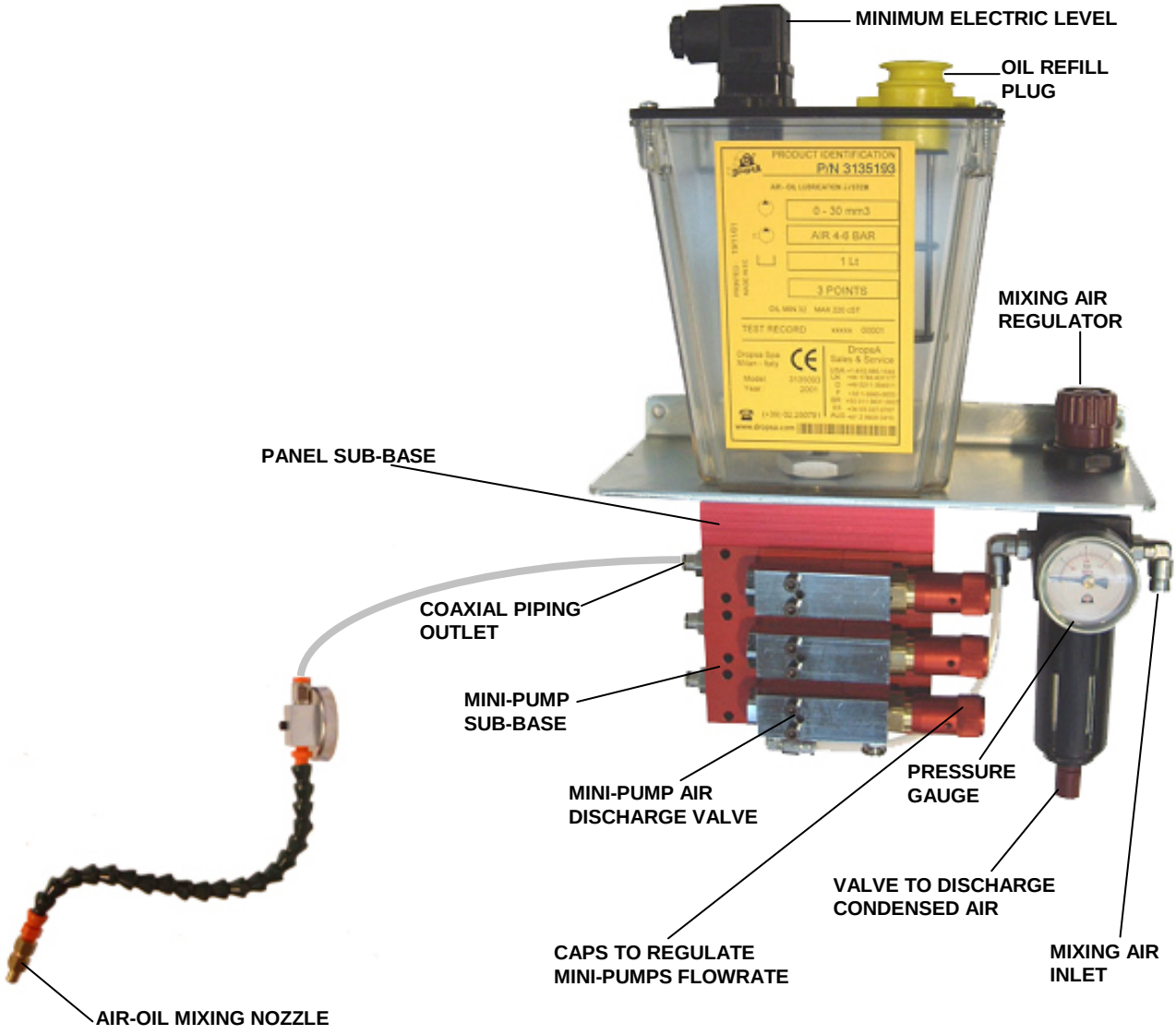
Pressure at the connection point	MINIMUM 6 bar (88.2 psi)
MAX amount of suspended particles	15 mg / Nmc
MAX diameter of the particles	0.05 mm (0.002 in.)
Dew-point	2° C (35.6 °F)
MAX amount of suspended oil	5 mg / Nmc

5. MACHINE COMPONENTS

5.1 CENTRAL UNIT

System central unit consists in the following components:

- A ***reservoir***, made of transparent plastic material;
- An **apparatus for the regulation of the admixture air**;
- A **panel sub-base**, one for all the version of the panel:
- **Air-oil modules *(from 1 to 8 outlets)***, consisting in **mini-pumps** with adjustable flowerate and assembled on **sub-bases**;
-
- ***SAMBA level sensor***, which indicates lubricant minimum level via a **N.O. *electric contact***. (**To reverse *N.O. to N.C., please contact Dropsa Eng. Dept.***);
- **Air-oil lubrication nozzle**.



6. UNPACKING AND INSTALLING THE PANEL

6.1 UNPACKING

Once a suitable location has been found to install the unit, remove the panel from package. Check the unit has not been damaged during transportation or storage. No particular disposal procedures are necessary as package materials are no dangerous for health or environment. However, package should be disposed of in accordance with regulations that may be in force in your area or state.

6.2 INSTALLING THE PANEL

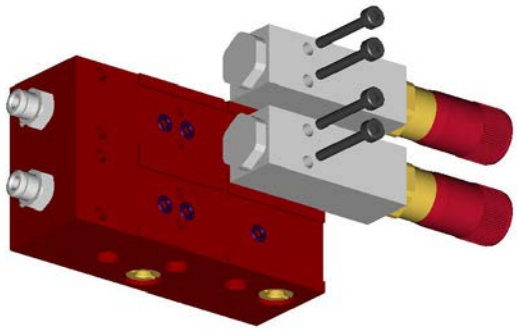
To install the panel, use only the supplied bracket provided with two holes for screws Ø6mm (Ø 0.23 in.), see *Dimensions ch.12*.

WARNING!

- In order to facilitate maintenance interventions, to avoid unnatural posture for personnel during machine operation or the possibility of sustaining impacts, install the machine in a comfortable and easy-to-reach location.
- Allow sufficient space for the installation, leaving minimum 100 mm (3.93 in.) around the unit.
- Do not install the unit in aggressive or explosive/inflammable environments or on vibrating surfaces.

6.3 INSTALLING MINI-PUMPS ON SUB-BASES

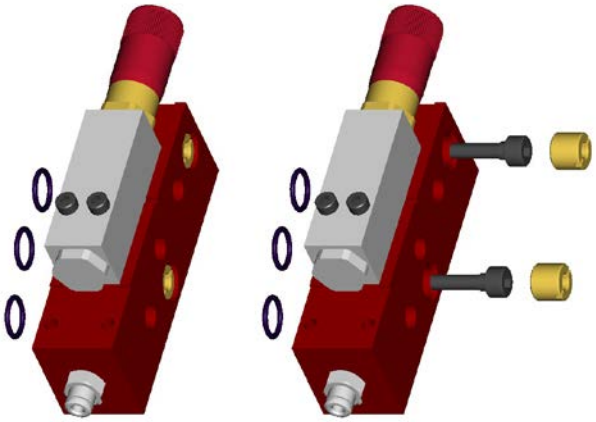
Mini-pumps are assembled to the sub-bases by means of two fixing screws. Be careful to correctly position o-rings between mini-pumps and mixing bases, as shown in the figure below:



6.4 ASSEMBLY OF THE AIR-OIL MODULES

To assembly a new mixing element, proceed as follows:

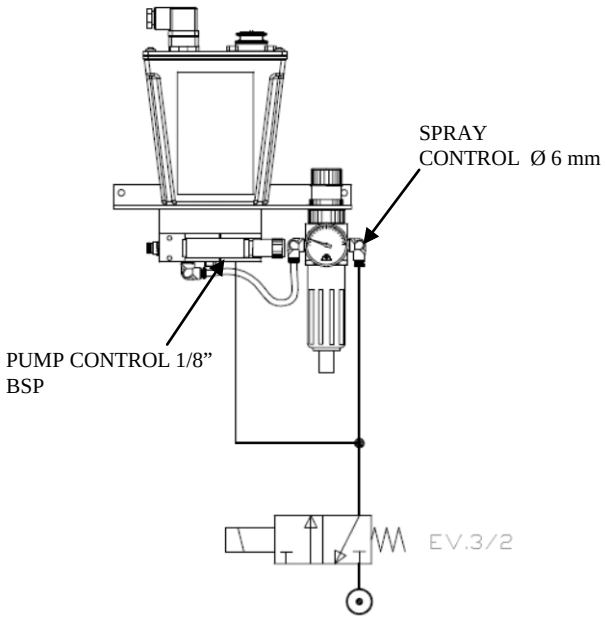
1. Empty the reservoir.
2. Disconnect the unit from the air supply source and unscrew the fittings on the base.
3. Connect a new base and tighten the new element using the provided screws, paying attention to the alignment and position of the o-rings.
4. Screw the fittings on the new base.



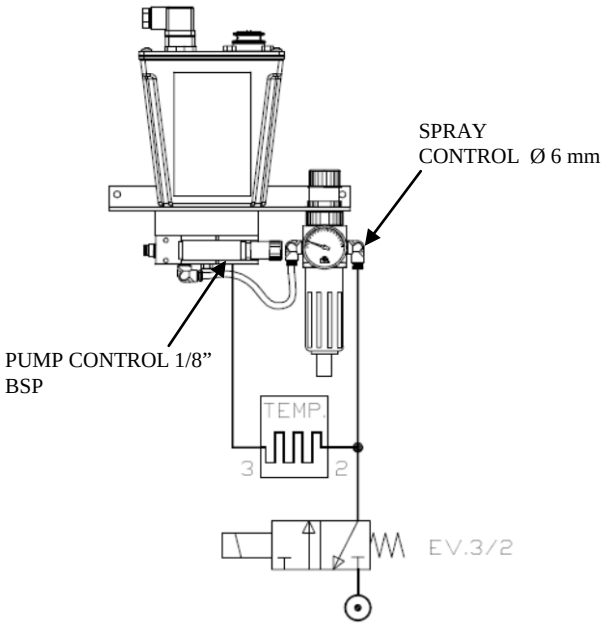
6.5 PNEUMATIC CONNECTIONS (see drawing on ch. 12. DIMENSIONS)
Connect the air supply to the inlet push-in by means of a Ø 6 mm (Ø 0.23 in.) nylon pipe.
In order to stop air supply a check valve must be arranged.

6.5.1 CONNECTION DIAGRAM

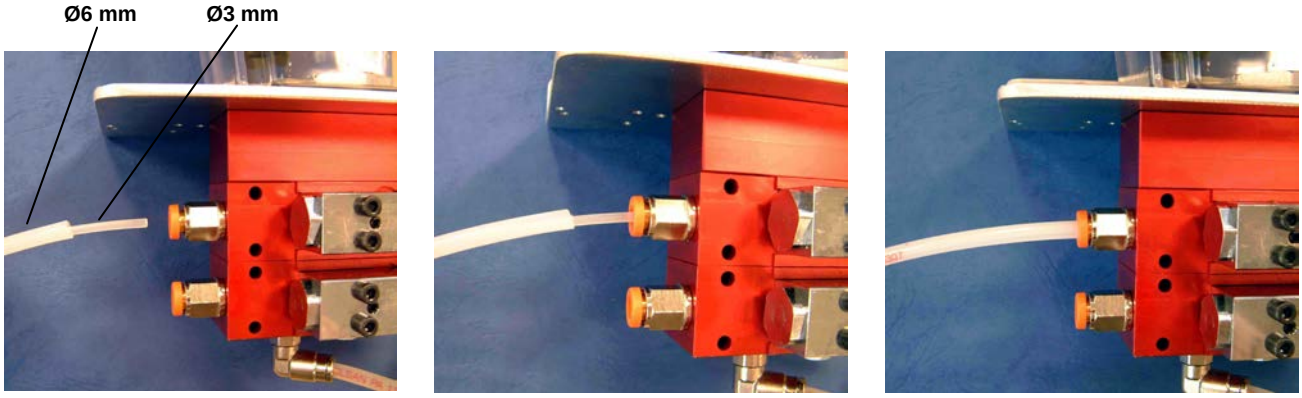
CONNECTION DIAGRAM PUMP WITH SOLENOID VALVE



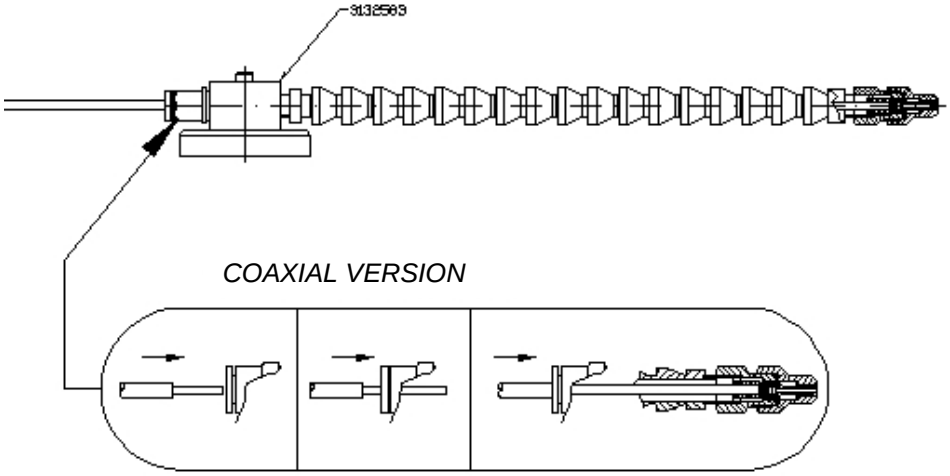
CONNECTION DIAGRAM PUMP WITH PNEUMATIC TIMER



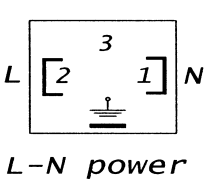
6.6 COAXIAL CONNECTION
Ø 6 mm (0.23 in.) pipe must be slid on the external of the Ø 3 mm (0.11 in.) up to the the air outlet push-in.

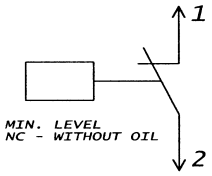


6.7 HYDRAILIC CONNECTION TO THE AIR-OIL MIXING LUBRICATION NOZZLE
When all the coaxial connections have been completed, connect the same coaxial piping the lubrication nozzle push-in.



6.8 ELECTRIC WIRING





WARNING: At the end of all connecting operations, make sure that pipes and wires are safe from impacts and carefully fixed.

7. INSTRUCTIONS FOR USE

7.1 PRIOR TO MACHINE START-UP

- ❑ Verify the unit is undamaged.
- ❑ Check that coaxial, pneumatic, hydraulic and electric connections have been carefully carried out.
- ❑ Refill the reservoir with compatible lubricant.
- ❑ Verify power supply: MAX 220VAC.

RESERVOIR REFILL

Use ONLY compatible lubricant and refill the reservoir by means of the oil refill plug provided with a filter. Do not pour lubricant directly into the reservoir without using this oil refilling plug.

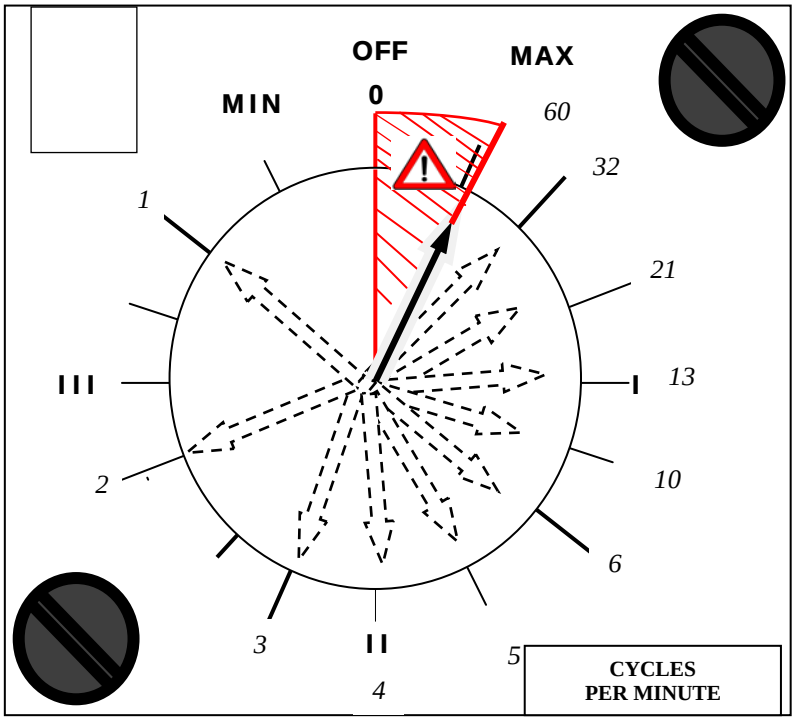
7.2 MACHINE START-UP

In order to avoid damage to the machine, the unit must be working when a minimum working temperature of +5°C (+41°F) is reached.

- ❑ Supply the pumps with a proper pneumatic source.
- ❑ Start a lubrication cycle.
- ❑ Verify panel operation.
- ❑ If the panel is provided with a timer kit (optional), set machine parameters.
- ❑ Discharge residual air from the pump, by means of the discharge valve located between the fixing screws, until lubricant comes out (do not over-tighten the discharge valve). To facilitate air discharge, adjust the pump at the maximum flowrate and carry out some lube cycles.
- ❑ Adjust nominal flowrate by turning pump caps (see table par. 7.4).
- ❑ Verify that lubrication is carried out correctly.

7.3 LUBRICANT FLOW CUT-OUT

To completely stop the lubricant flow of a mini-pump, unscrew anticlockwise the red cap (see fig. ch. 4) until no lubricant flows out.



7.4 FLOW REGULATION

1. Completely screw the red cap (flowrate = 0 mm³).
2. Screw 1½ turn (minimum flowrate 5 mm³), then each turn will correspond to a flowrate increase of 5 mm³ up to 30 mm³:

Flowrate mm³/stroke	Turns
30	6½
25	5½
20	4½
15	3½
10	2½
5	1½
0 (pump cut-out)	cap totally unscrewed

7.5 ADJUSTING THE PNEUMATIC TIMER (PN. 1524845)

The illustration below shows how to adjust the frequency of lubrication cycles when using models that contain the Pneumatic Timer.

Do not set a cycle frequency rate of less than a second.
MAX CYCLE RATE OF MICROPUMP = 1 second

Above Cycle frequency is based on 6 bar (90 PSI) inlet pressure.

- If inlet pressure is 8 BAR (120 PSI) reduce the values by 8%
- If inlet pressure is 7 BAR (105 PSI) reduce the values by 4%
- If inlet pressure is 5 BAR (75 PSI) increase the values by 7%

8. TROUBLESHOOTING

The following diagnostic table indicates the main anomalies which may be encountered, the probable causes and possible solutions. If you cannot solve the problem, do not attempt to disassemble parts of the machine but contact the **Engineering Department of DROPSA S.p.A.**

ANOMALY	POSSIBLE CAUSE	SOLUTION
Anomaly in dosing the air-oil mixture. **The air-oil mixture is not delivered**	• Lubricant below the minimum level	→ Refill the reservoir
	• Air in the system	→ Discharge air from the system by acting on mini-pumps discharge valves
	• Faulty mini-pump	→ Replace the mini-pump
	• Wrong mini-pump flowrate regulation	→ Regulate the flowrate acting on mini-pumps caps
	• Wrong regulation of the mixing air	→ Regulate air acting on the regulator
	• Lubrication nozzle obstructed	→ Wash and clean the nozzle

9. MAINTENANCE PROCEDURE

The machine does not require any special tool for check or maintenance tasks. However, it is recommended the use only of appropriate and in good conditions tooling, protective devices (gloves) and clothing (626/94 and DPR 547/55) to avoid injury to persons or damage to machine parts.

WARNING!
Prior to any maintenance, be sure that power, hydraulic and pneumatic supplies are off.

This unit has been designed and manufactured to require the minimum maintenance. Anyway, it is recommended :

- To keep the unit clean and periodically to check pipe joints to readily detect possible leaks.
- To replace refill filter when necessary.
- Periodically empty pressure regulator water trap by opening the red valve located in its base.

WARNING!
Be sure the reservoir is empty, before replacing mini-pumps.

10. DISPOSAL

During maintenance or disposal of the machine care should be taken to properly dispose of environmentally sensitive items. Refer to local regulations in force in your area.
When disposing of this unit, it is important to ensure that the identification label and all the other relative documents are also destroyed.

11. ORDERING INFORMATION

11.1 VIP4Tools Air-Oil/Coaxial

	Reservoir 1 Lt. (0.22 gals)	Reservoir 3 Lt. (0.66 gals)
Number of mini-pumps	**PART N°**	**PART N°**
1	3135191	3135241
2	3135192	3135242
3	3135193	3135243
4	3135194	3135244
5	3135195	3135245
6	3135196	3135246
7	3135197	3135247
8	3135198	3135248

11.2 SPARE PARTS

PART N°	DESCRIPTION
3132768	Air-oil lubrication nozzle
1524456	Panel sub-base
1524730	Mini-pump sub-base
3130139	Oil refill filter
3103116C	Adjustable pneumatic pump. with the pump must be ordered also the fixing screws. Part. num. 14067 - quantity 2
5717301	Flex pipe Ø 6 mm (0.23 in.)
5717232	Transparent coaxial nylon pipe PA6 3x1.5 mm (0.11x0.06 in.)
3044338	Reservoir 1 lt (0.22 gals)
20685	Reductive filter
1655583	Samba Level
20617	Pressure gauge 16 bar (235.2 psi) DN43 1/8 GAS
3133283	Kit for 3103115 – 3103116 mini-pumps

11.3 ACCESSORIES

PART N°	DESCRIPTION
3132572	Timer Kit 1s ÷ 1 min.
3132574	EV – 24 V DC: with the kit must be ordered also: part. num. 39979 – connector - quantity 1; part. num. 53923 – screw - quantity 3; part. num. 16077 – washer - quantity 3
3132575	EV – 110 V AC: with the kit must be ordered also: part. num. 39979 – connector - quantity 1; part. num. 53923 – screw - quantity 3; part. num. 16077 – washer - quantity 3

11.4 LRT 30 OIL FOR IRON AND ALUMINIUM

PART N°	DESCRIPTION
3226661	LRT 30 oil for steel –1lt (0.22 gals)

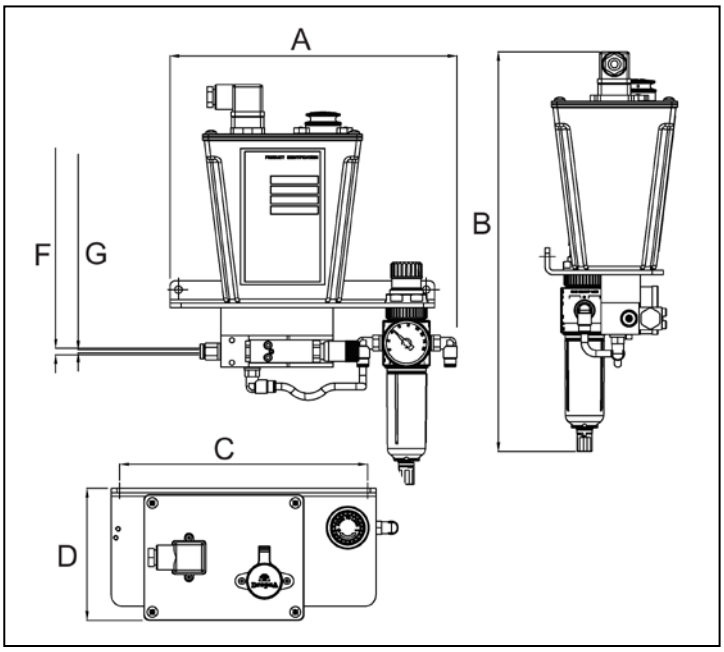
11.4.1 LRT TECHNICAL SPECIFICATIONS

	LRT 30
Application	Iron/Aluminium
Viscosity at 40°C (104°F)	24cSt (114.7 SUS)
Flammability point	>220°C (428°F)
Specific weight	at 15°C (59°F): 0.900 Kg/lt (2 lb)
Solubility	Not soluble in water
Solidification point	-

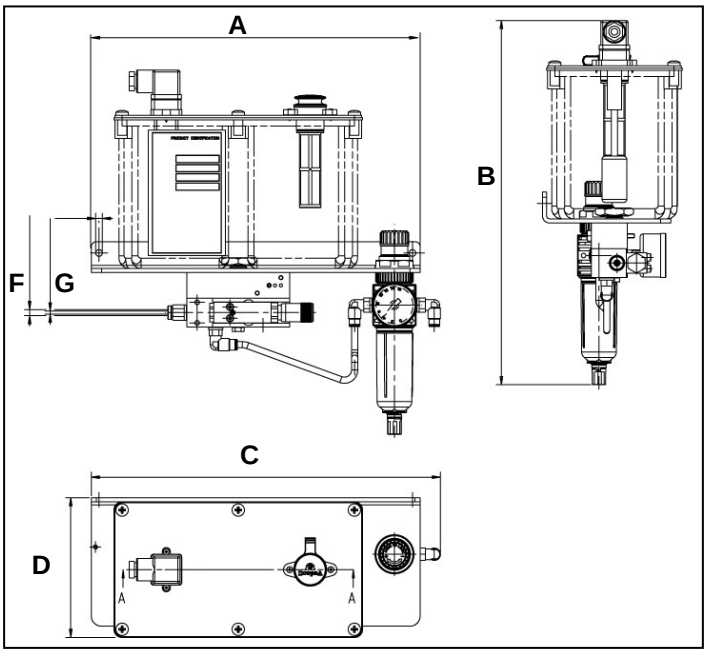
11.4.2 TABLE FOR THE USE OF LRT 30 FOR IRON AND FOR ALUMINIUM
(in grams for each delivery nozzle in 8 work hours)

	ALUMINIUM LEAD BRASS	LEAD STEEL MILD STEEL	ALLOY STEEL STAINLESS STEEL	REFRACTORY AND TITANIUM ALLOYS
Saw cut Turning Shearing Parting	35-40	30	30	30-60
Boring Drilling Milling Slotting	30-40	30	60	70
Threading Tapping Planing Shaving	60	70	80	90
Threading and blind tapping	60	70	80	90-100
Pressing and medium drawing	60	70	80-90	90-100
Broaching Toothing Bending	70	80	90	100/110

12. DIMENSIONS



1 Lt. (0.22 galloni)



3 Lt. (0.66 galloni)

		Number of elements							
	mm (in)	1	2	3	4	5	6	7	8
Reservoir 1 Lt. (0.22 gallon)	A	255 (10.04)							
	B	363 (14.3)	391 (15.4)	419 (16.5)	447 (17.6)	475 (18.7)	503 (19.8)	531 (20.9)	559 (22.0)
	C	220 (8.66)							
	D	117,5 (4.6)							
	F	Air outlet tube Ø 6							
	G	Air outlet tube Ø 3							
	Peso kg (lbs)	2,7 (5.9)	3,2 (7.0)	3,7 (8.1)	4,2 (9.2)	4,7 (10.3)	5,2 (11.4)	5,7 (12.5)	6,2 (13.6)
Reservoir 3 Lt. (0.66 gallon)	A	320 (12.59)							
	B	274 (10.78)	302 (11.88)	330 (12.99)	358 (14.09)	386 (15.19)	414 (16.30)	442 (17.40)	470 (18.50)
	C	340 (13.38)							
	D	136 (5.35)							
	F	Tubo uscita aria Ø 6							
	G	Tubo uscita olio Ø 3							
	Peso kg (lbs)	3,6 (7.9)	4,1 (9.03)	4,6 (10.14)	5,1 (11.24)	5,6 (12.34)	6,1 (13.44)	6,6 (14.55)	7,1 (15.65)

13. HANDLING AND TRANSPORTATION

Prior to shipping, the equipment is carefully packed in cardboard package. During transportation and storage, always maintain the pump the right way up as indicated on the box. On receipt check that package has not been damaged. Then, storage the machine in a dry location.

14. OPERATING HAZARDS

WARNING: ***It is necessary to carefully read about the instructions and the risks involved in the use of lubrication machines. The operator must know the machine functioning through the User and Maintenance Manual.***

Power supply
Any type of intervention must not be carried out before unplugging the machine from power supply. Make sure that no one can start it up again during the intervention. All the installed electric and electronic equipment, reservoirs and basic components must be grounded.

Flammability
The lubricant generally used in lubrication systems is not normally flammable. However, it is advised to avoid contact with extremely hot substances or naked flames.

Pressure
Prior to any intervention, check the absence of residual pressure in any branch of the lubricant circuit as it may cause oil sprays when disassembling components or fittings.

Noise
Pump does not produce excessive noise, less than 70 dB(A).

When using natural-based oils compatible with the health regulations in force, mixing pressure must be adjusted so as to avoid the formation and dispersion of oil mist in the environment. Mixing pressure should be between 1÷2.5 bar (14.7÷36.7 psi) approximately.

15. PRECAUTIONS

No particular operating hazards characterize the unit, except for the following precautions:

- **Operator's contact with lubricant** in case of piping breaking/opening or contact with the fluid during refill/maintenance. -> Protection against direct and indirect contact must be provided by the user: *the operator must be provided with suitable individual protective clothing and devices (tit VIII – 626).*
- **Unnatural posture –** See indications in par. 6.2
- **Use of incompatible lubricant**. Main unauthorized fluids:

⇓

Fluids	Dangers
Lubricants containing abrasive components	Premature wear of pump
Lubricants containing silicon	Pump failure
Petrol – solvents – inflammable liquids	Fire – explosion –seal damage
Corrosive products	Pump damage - danger to persons
Water	Pump oxidization
Food Products	Contamination of the product