

R.I.S.[®]
INTEGRATED SAFETY
DETECTOR

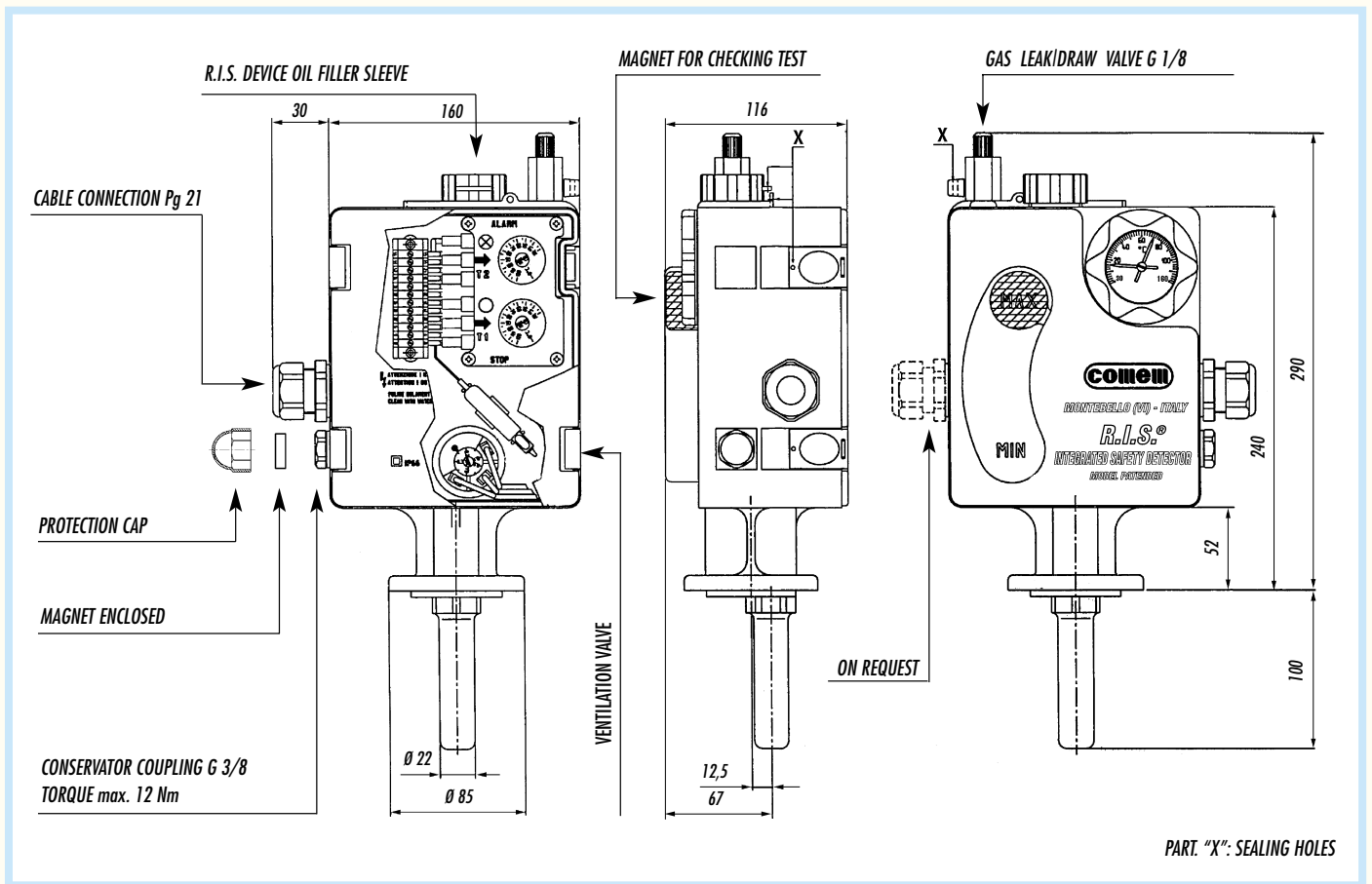
COMEM[®]

R.I.S.[®] INTEGRATED SAFETY DETECTOR



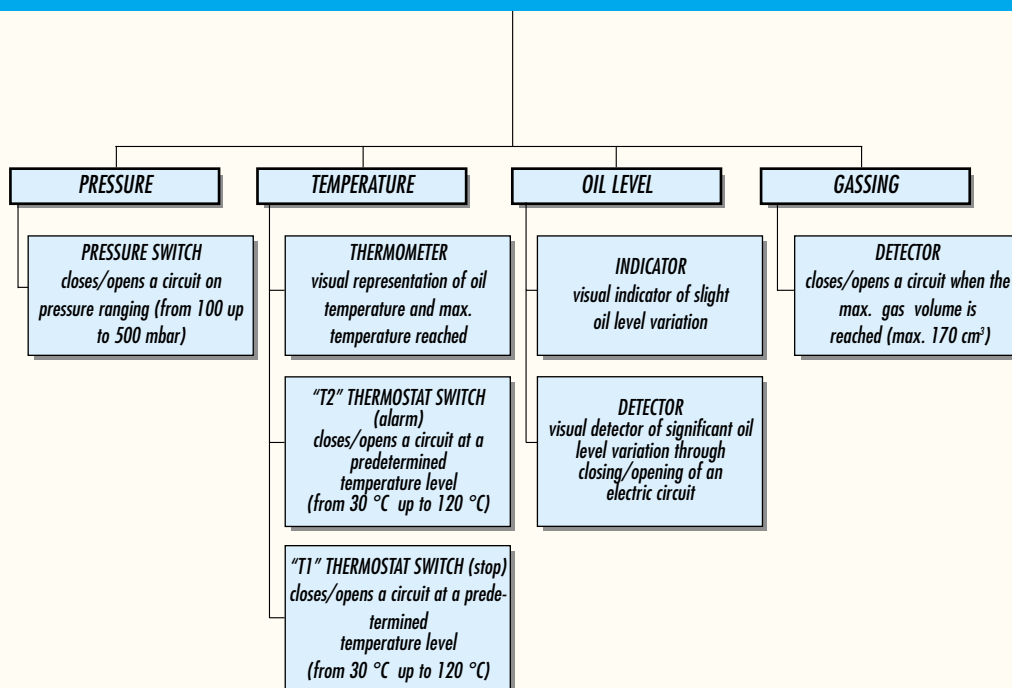
MODEL PATENTED

R.I.S.® (Integrated Safety Detector) was conceived from the need to integrate the functions performed by a number of transformer accessories in a single, compact and reliable instrument, which was capable of replacing their applications, as well as guaranteeing numerous advantages ranging from an economic to functional-aesthetic viewpoint.



It is composed of a robust plastic body, watertight and resistant to extreme climates, that houses a series of instruments and keeps under constant control the following operating conditions of the transformer:

R.I.S.® INTEGRATED SAFETY DETECTOR



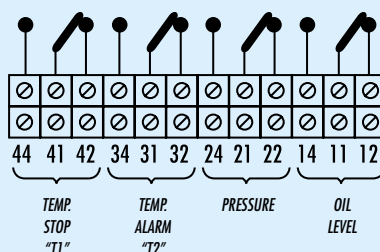
DESCRIPTION AND FUNCTIONS	MEASURE VALUE	CHECKING TEST
<p>OIL LEVEL (Float) The device indicates any gas evolution or oil level variation.</p> <p>-Slight oil level variation or any insignificant gas evolution is denoted by the float position between "MIN" & "MAX" on the display.</p> <p>-At major oil variation level or gas evolution the float stops at "MIN" and opens/closes the alarm circuit.</p> <p>-Any accumulated gas can be drawn off by the cock provided.</p>	max 170 cm ³	Locate the magnet close to the float (between MAX and MIN). Draw it downwards until it reaches "MIN". To reset the float to its correct position draw the magnet upwards and detach.
<p>PRESSURE (Pressure switch) This feature measures the internal pressure of transformer. The normal level is set according to the transformer manufacturer's instructions. When pressure exceeds a pre set level the alarm circuit is triggered via a N/O or N/C switch.</p>	100 ÷ 500 mbar	With the internal pressure at least 100 mbar set the adjusting knob of the pressure switch to minimum.
<p>TEMPERATURE:</p> <p>"T2" THERMOSTAT SWITCH (ALARM) The feature measures the internal oil temperature of the transformers. The normal operating value is set according to the transformer manufacturers instructions. At a pre set temperature on alarm circuit is triggered via a N/O or N/C switch (T2).</p> <p>"T1" THERMOSTAT SWITCH (STOP) The feature measures the internal oil temperature of the transformers. The normal operating value is set according to the transformer manufacturers instructions. At a pre set temperature on stop circuit is triggered via a N/O or N/C switch (T1).</p> <p>THERMOMETER The device measures the internal temperature of the transformer, which shall be visualized outside the device through the protection window. The thermometer is equipped with a zero re-setting pointer.</p>	<p>30 ÷ 120 °C</p> <p>30 ÷ 120 °C</p> <p>30 ÷ 160 °C</p>	<p>Open the rear cover using both hands, do not lever at one side only. The adjustment knob of the alarm switch "T2" should be set to zero.</p> <p>The adjustment knob of the stop switch "T1" should be set to zero.</p> <p>The protection window is to be unscrewed so that the pointer shall be set to zero.</p>

GENERAL FEATURES

DEGREE OF PROTECTION (EN 60529)	IP 66
DEGREE OF SHOCK TIGHTNESS (EN50102)	IK 07
SALT-FOGTIGHT	1000 h
UV-RAY RESISTANCE (UNI-ISO 4892 / UNI-ISO 4582)	500 h
TEMPERATURE RESISTANCE	-40 °C ÷ +120 °C
CABLE CONNECTION (WIRE Ø 13 mm UNTILL Ø 18 mm)	Pg 21
CABLE BOX (EN 50005 / EN 60947-7-1 / IEC 947-7-1)	ACCORDING TO STANDARD
WIRE SECTION TO BE USED ON CLAMP BOX	UNTILL 2,5 mm²
MAX. RATED PRESSURE	500 mbar
ELECTRICAL CHARACTERISTICS	INSULATED ENCLOSURE <input type="checkbox"/>

CURRENT Circuit type	A.C.						D.C.					
	OHMIC			INDUCTIVE (cos φ 0,5)			OHMICO			INDUCTIVE (L/R 40 ms)		
Voltage	220	127	24	220	127	24	127	48	24	127	48	24
Contacts interrupt power OIL LEVEL / GAS BLEED	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A
Contacts interruption power PRESSURE SWITCH	6A	6A	6A	1,5A	1,5A	1,5A	0,6A	0,6A	0,6A	0,6A	0,6A	0,6A
Contacts interruption power THERMOSTAT	16A	16A	16A	4A	4A	4A	0,6A	0,6A	0,6A	0,6A	0,6A	0,6A

WIRING DIAGRAM BY EN 50005 STANDARD



TESTS

R.I.S.® has amply passed the type tests prescribed by both European Standard Pr EN 50216-1 and 3 and by Comem internal technical standards, which can be listed as follows:

TYPE TESTS:

- Pressure overload: 2.5 bar - 2 minutes - with oil at 115 °C
- Operation at extreme temperatures: at -40 °C and 120 °C
- Classification of the IP 66 protection rating: EN 60529
- Classification of ambient conditions: 4K2, 4Z2, 4B1, 4C2, 4S3, according to EN 60721-3-4
- Mechanical vibrations 4M4 (shock 250 m/sec². Time spectrum "I" : 11 ms), according to EN 60721-3-4
- Classification of seismic conditions Level 2 class 0: according to EN 60068
- Inclined operation: 15°
- Gas or oil volume for contact switching at ambient temperature and at the average working temperature of the transformer: max. 170 cm³
- Contact response time: < 0.5 seconds
- Allowed max. magnetic field value: 25 mt (no intervention of R.S.I.®). According to Pr EN 50216-3.
- Mechanical shock protection IK 07: according to EN 50102
- Tightness test - 1000 hours in saline saturated atmosphere. UNI-ISO 9227-93 (NSS).
- Tightness test against UV ageing according to UNI ISO 4892.

ROUTINE TESTS:

Before shipment each piece is also subjected to the following routine tests:

- Tightness test: 30 minutes - 1 bar - with oil at 90 °C
- Operation of thermostats
- Pressure switch operation
- Oil level switch operation.

OPTIONS

- Pneumatic pump group / oil re-fill in altitude. Code: 5400806001.

SUPPLY CONDITIONS

R.I.S.® (product code 1SD4039000) is supplied in a single sturdy carton (dimensions: 400 x 200 x 160 mm, weight: 2.2 kg) and complete with the following accessories:

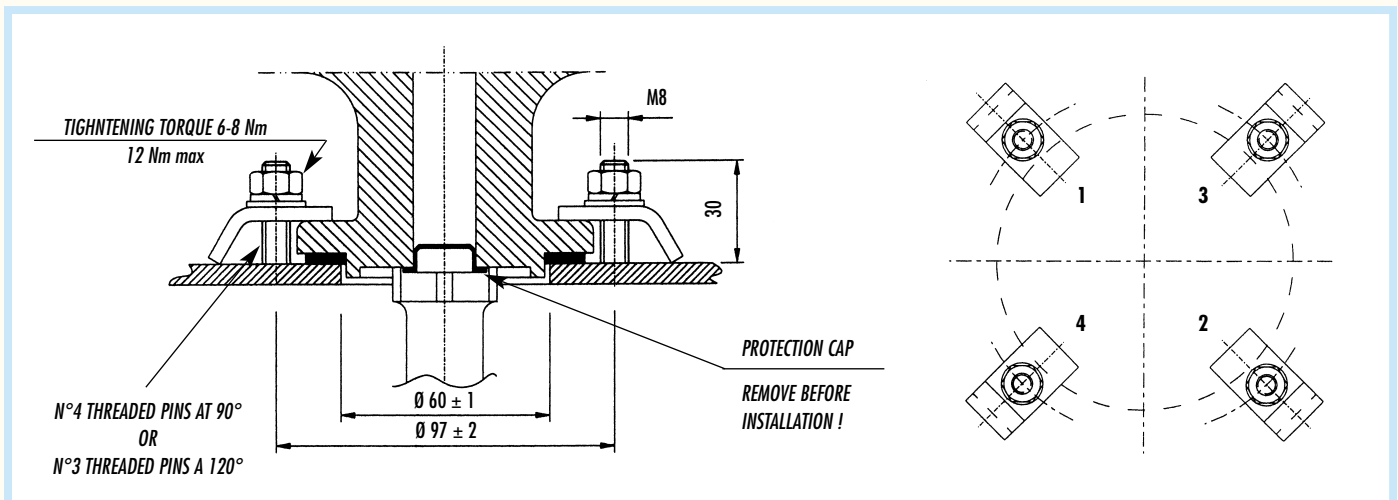
- Instruction booklet for installation and use.
- Fixing Kit.
- Test report.

R.I.S. MOUNTING INSTRUCTION APPLICATION TO A TRANSFORMER TANK

- Ø 60 ± 1 diam. hole on caisson
- Flat gasket (provided with the unit)
- stainless steel fixing brackets (4 pcs packed)
- stainless steel plane washers according to UNI 6592 Ø 8,4 (4 pcs packed)
- stainless steel spring washers according to UNI 1751 Ø 8,4 (4 pcs packed)
- stainless steel M8 nuts according to UNI 5588 (4 pcs packed).

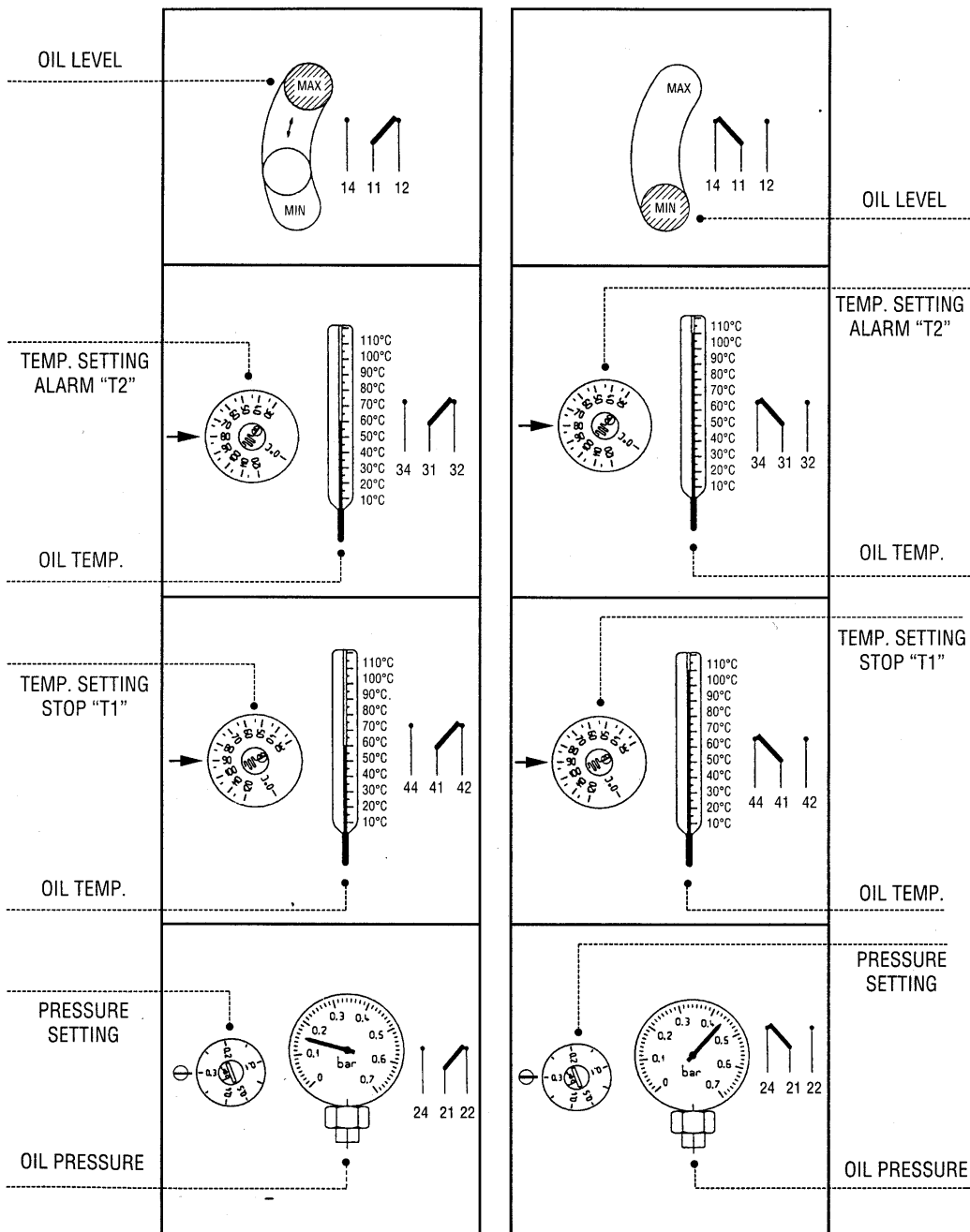
Tighten the nuts in position 1,2,3,4 with torque 3÷4 Nm crosswise; repeat the operation following the same sequence until the suggested value is reached.

Due to the deformation of the cover during lifting of the transformer, an oil leak could be possible. It is suggested to use covers of suitable thickness (min. 6-8 mm).



GB NORMAL WORKING CONDITIONS

ANOMALY CONDITIONS (R.I.S. INTERVENTION)



GB**R.I.S. INSTALLATIONS AND OPERATING INSTRUCTIONS**

- Before installing the device remove the protective cap from the oil down flow hole.
- Ensure the bearing surface is smooth and flat.
- A four stud fixing is recommended.
- Protect the R.I.S. device from any subsequent paint operation.
- Only install the R.I.S. after the transformer drying operation.
- Switch off the supply voltage prior to working on the R.I.S.
- Operation and maintenance of the R.I.S. should only be carried out by skilled personnel.
- COMEM SPA disclaim all responsibility for incorrect installation or improper use.
- On receipt of the goods please check the attached test certificate.
- The R.I.S. is guaranteed against defective parts for 12 months.
- Do not use powerful solvents or benzines for cleaning. A damp cloth should.

WARNING

- Do not use the oil filter on the R.I.S. for general filling of the transformer, only for topping up the R.I.S.
- When filling the R.I.S. with oil make sure the bleed cock is open and fill until float reaches the "MAX" position.
- After filling ensure the bleed cock and filler cap are fully closed. Hand tighten only, no tools required.
- After setting the thermometer pointer ensure the protective window is secured, hand tighten only.
- Check the cable gland is securely fitted.
- The eventual connection with the conservator coupling shall be made at room temperature ($\approx 23\text{ }^{\circ}\text{C}$) with a torque of max. 12 Nm as specified.
- When connecting to a conservator use LOCTITE 542 type sealing glue.
- The magnet necessary for float checking is housed in a 3/8" screw pocket of the conservator coupling as shown.
- The event of a major oil level variation or high gas evolution the float will reach "MIN" position, triggering the alarm switch, it will then be necessary to bleed off gas or add oil.

GB**INSTRUCTIONS FOR TOPPING UP THE LEVEL ON THE R.I.S. DEVICE****FOREWORD**

The device is filled with oil exclusively by the transformer manufacturer at environment temperature. At the time of putting into service, ensure what the R.I.S. device is completely filled with oil. For various reasons, the oil may be below the set level. If the transformer is warm, due to high environment temperature or to its own operation, the internal pressure may increase, causing a visible drop in the oil level in the chamber of the device.

- To solve this problem it is sufficient to remove the lead seal on the lever of the tap 1 (see diagram), partly unscrew cap 2, slightly turn the lever of tap 1, thus releasing pressure and causing the oil level to rise until the device is completely full. After operation, ensure that cap 2 is closed and clean off any oil that may have leaked out of the device.
- When the transformer is cold, due to a long period of inactivity, and/or an outdoor temperature below that of the environment, a vacuum may form inside the transformer, with consequent fall of the oil level visible on the external chamber of the device. This problem may be solved by removing the lead seal on the cap 2, unscrewing the cap and topping up the oil level slowly with the aid of a funnel until the device is completely full, taking care not to let it overflow. Close the device with the cap 6, without using tools or spanners. Once the oil level in the device has been topped up, the transformer may be started.

If there is no oil available for topping up, Comem supplies a set of accessories with the pump which can create a vacuum in the device, thus restoring the oil level.



INSTRUCTIONS FOR TOPPING UP THE LEVEL ON THE R.I.S. DEVICE

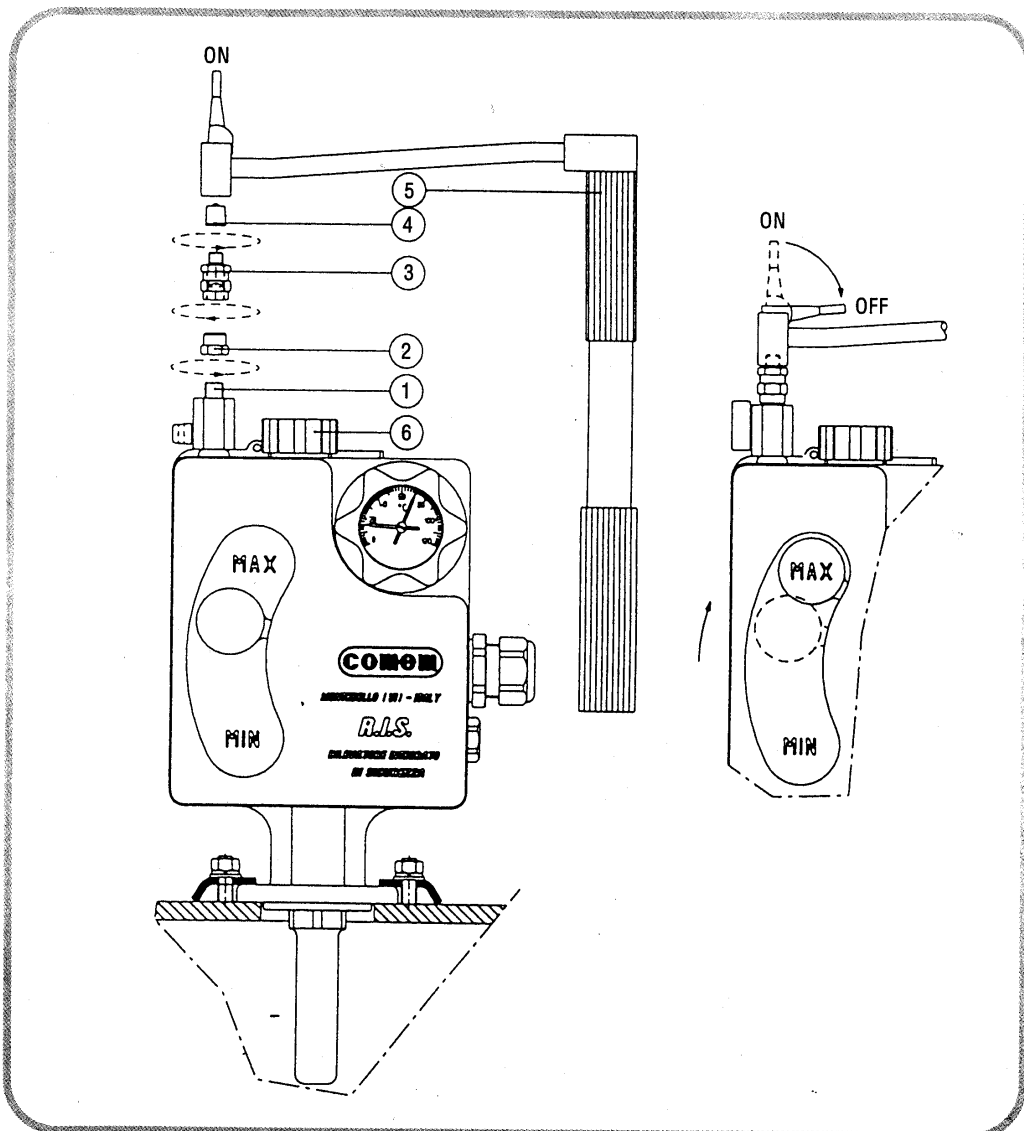
INSTRUCTIONS

The operations are performed as follows:

- A) Remove the cap "2", screw the valve "3" and its nipple onto the tap "1".
- B) Remove the cap "4", fit the pump "5" by means of the threaded coupling provided and turn the lever to OFF position.
- C) The pump is already set to create a vacuum.
- D) To restore the oil level inside the R.I.S. device, open the lever of the tap "1" and suck with the pump "5". After this operation, close the lever of the tap "1".
- E) Release air from the pump, turning the lever to ON position.

If the oil level reached is not sufficient, repeat operations "D" and "E".

Once the operations are complete, remove the components "5" and "3" and close the device with the cap "2".





comem® - S.p.A

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