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**B INTRODUCTION**

The K600 series represents a family of meters developed to satisfy a wide range of requirements for the control, measurement, dispensing and transfer of lubricating oils and fuels.

Its measurement principle is based on modular elliptical gears that provide high accuracy over a wide range of flow rates together with reduced loss of head.

The fluid passing through the instrument turns the gears whose rotation transfers constant "fluid units".

The exact measurement of the fluid dispensed is carried out by counting the rotations of the gears and, thus, the "fluid units" transferred.

The magnetic coupling, consisting of magnets installed in the gears and a magnetic switch located outside the measurement chamber, guarantees the seal of the measurement chamber and ensures

the transmission of the impulses generated by the rotation of the gears to the microprocessor.

The meter housing is manufactured of extruded aluminum and is furnished with external guides for a practical and simple installation. The various models are differentiated by the length of the housing, which is related to their ability to function at higher flow rates.

The meter is furnished with threaded and aligned input and output connections to allow easy installation on the tubing. The diameter and thread are a function of the model.

A net filter is installed in the opening of the input connector, accessible from the outside by means of a cover provided for the purpose, that protects the gears of the meter from any dirt present in the system.

**METER TYPE**

The METER version is equipped with an electronic circuit card that measures and displays the quantity dispensed.

The microprocessor, by means of an appropriate calibration factor, translates the impulses generated by the rotation of the gears into fluid volumes expressed in the preset measuring units, which are displayed as partial and total amounts on the liquid crystal display.

The measurement electronics and the LCD are installed in the upper part of the meter, isolated from the measurement chamber that is bathed by fluid and sealed from the outside by means of a cover equipped with two buttons:

- RESET** on the left-hand side
- CAL** on the right-hand side

**ATTENTION**

Calibration is a procedure that the operator will probably never perform since the factory calibration factor ensures a high level of accuracy in practically all conditions of use. Using the CAL button is never required in daily use and accidentally pushing the button has no effect.

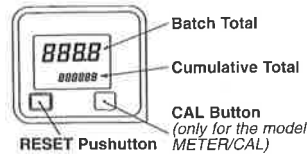
The calibration button, if used as described in the "Calibration Instructions," allows recalibrating the meter in those cases where operating conditions make it necessary.

**For daily use, it is not necessary to know the calibration procedure.**

The K600 METER is powered by standard batteries that are easily replaced. The LCD simultaneously displays:

- A resettable total (Batch) that shows the volume dispensed since the last time the RESET button was pressed.
- A cumulative total that shows the volume dispensed since the first time the electronic circuit card was powered up.

The K600 METER is equipped with



non-volatile memory that allows the maintenance of stored data, even in the case of the complete absence of power for long periods of time.

**PULSER TYPE**

The PULSER version is a pulse emitter (reed bulb) that translates variations in the magnetic field generated by the rotation of the gears into electrical impulses to be sent to an external

receiver that is connected as shown in the attached diagram. The pulser does not need its own electric power, in as much as it is powered directly by its connection with the receiver.

During or at the end of a dispensing operation, the Batch total indicates the quantity dispensed since the last time the RESET button was pressed.  
**Press the RESET button to reset the batch total.**

The Batch total is reset but the cumulative total does not change.

The K600 is ready for a new dispensing operation.

**ATTENTION**

The Batch total cannot be reset during dispensing. To reset it, it is necessary to stop dispensing and wait for several seconds.

**PULSER VERSION**

Once the pulser meter is correctly connected to the impulse receiver, it does not need to be turned on or off.

**F MAINTENANCE**

The model K600 is designed to require a minimum of maintenance. The only required maintenance is:

|                                  |                                    |   |
|----------------------------------|------------------------------------|---|
| Battery Replacement              | For the METER version only         | Required when they are discharged   |
| Cleaning the Measurement Chamber | For both METER and PULSER versions | If necessary because of the particular nature of the fluid being dispensed                        |
| Cleaning the Filter              | For both METER and PULSER versions | To be performed periodically, also as a function of the cleanliness of the fluids being dispensed |

**F1 REPLACING THE BATTERIES (Meter version only)**

The K600 is supplied with 2 alkaline batteries SIZE 1N, 1,5 Volt. The batteries must be replaced with the

numbers on the LCD display fade or completely disappear.

**ATTENTION**

Dispose of batteries properly. Refer to local regulations for their disposal.

To replace the batteries, with reference to the positions on the spare parts list, proceed as follows:

- Press the RESET button to update the Cumulative Total
- Unscrew the battery cover (pos. 18)
- Remove the discharged batteries

- Place the new batteries in the same position as the old ones, making sure that the positive terminals are positioned as shown on the label
- Screw down the battery cover, making sure that the gasket seal and conical spring are correctly positioned.

**ATTENTION**

The screen will remain off even after the replacement of the batteries. This is due to the fact that the K600 METER is equipped with a system that prevents incorrect powering of the device during battery replacement.

To make the K600 operational, press the RESET button.

The K600 will display the same cumulative total that it showed before the replacement of the batteries and the Batch total will display zero.

**F2 CLEANING THE MEASUREMENT CHAMBER**

Cleaning the measurement chamber can be performed without removing the device from

the line or the dispensing gun on which it is installed.

**ATTENTION**

Always make sure that the liquid has drained from the meter before cleaning.

To clean the chamber, proceed as follows (with reference to the positions on the spare parts list):

- Unscrew the 6 sealing screws on the upper cover (pos. 3).
- Remove the cover (pos. 4) and the gasket seal (pos. 5).
- Remove the elliptical gears (pos. 6).
- Clean where necessary. For this procedure

- use a brush and a pointed object, such as a small screwdriver. Be careful not to damage the housing or the gears.
- Carry out the reverse procedure to reassemble the device.

The type of pulse emitted is represented by a square wave generated by voltage variations, which can be diagrammed as follows:



Calibration of the instrument is performed by means of the external pulse receiver.

### C TECHNICAL SPECIFICATIONS

|  | K600/2 Meter     | K600/3 Meter                    | K600/4 Meter | K600/2 Pulsar | K600/3 Pulsar | K600/4 Pulsar |
|--|------------------|---------------------------------|--------------|---------------|---------------|---------------|
| Measurement System                                   | Elliptical Gears |                                 |              |               |               |               |
| Resolution   | L/pulse          | 0,019                           | 0,028        | 0,038         | 0,019         | 0,028         |
| Range of Flow Rates                                  | L/min            | 5 ÷ 50                          | 10 ÷ 100     | 15 ÷ 150      | 5 ÷ 50        | 10 ÷ 100      |
| Working Pressure                                     | bar              | 70                              | 30           | 20            | 70            | 30            |
| Bursting Pressure                                    | bar              | 140                             | 60           | 40            | 140           | 60            |
| Storage Temperature                                  | °C               | -20 ÷ +70                       |              |               |               |               |
| Storage Humidity                                     | R.H.             | 95%                             |              |               |               |               |
| Working Temperature                                  | °C               | -10 ÷ +60                       |              |               |               |               |
| Loss of Head (at maximum flow rate with diesel fuel) | bar              | 0,3                             |              |               |               |               |
| Compatible Fluids                                    |                  | Oil, Diesel Fuel, Gasoline      |              |               |               |               |
| Viscosity Range                                      | cSt              | 2 ÷ 2000                        |              |               |               |               |
| Accuracy (within capacity range)                     |                  | ± 0,5 %                         |              |               |               |               |
| Repeatability  |                  | 0,2 %                           |              |               |               |               |
| Weight   | Kg               | 0,5                             | 0,7          | 1             | 0,5           | 0,7           |
| Input and Output Connection Thread                   |                  | 3/4" Gas                        | 1" Gas       | 1 1/2" Gas    | 3/4" Gas      | 1" Gas        |
| Impulse Type   |                  | Open collector / Single Channel |              |               |               |               |
| Max. Current   | mA               | 100                             |              |               |               |               |
| Max. Voltage   | Volt             | 28 ac/dc                        |              |               |               |               |
| Impulses per liter (approx.)                         | n°               | 52                              | 35           | 26            |               |               |
| Batteries  |                  | 2 x 1,5 Volt                    |              |               |               |               |
| Battery Life (expected)                              | h                | 5.000 ÷ 10.000                  |              |               |               |               |

### D INSTALLATION

The model K600 is designed to be permanently installed on an oil or diesel fuel distribution line.

blocking the gears. Do not use conical connections that could damage the housing of the meter or the connection flange.

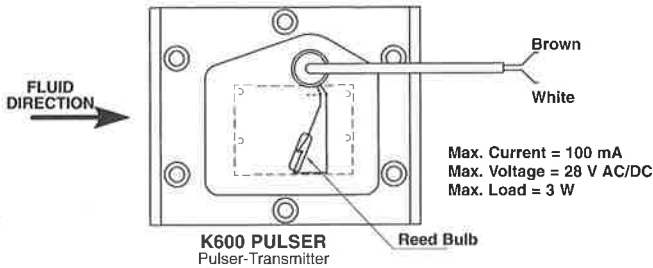
Make sure that the threaded connections do not protrude into the measurement chamber

The position of the filter determines the input direction of the flow.

#### PULSER VERSION

The pulser version must be connected by two wires observing the electrical specifications

shown in the diagram:



### E DAILY USE

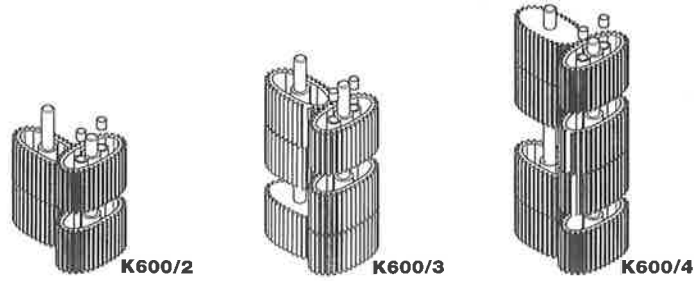
#### METER VERSION

The model K600 METER is supplied ready for use. Even after long periods in storage, there are

no special procedures required to place it in operation.

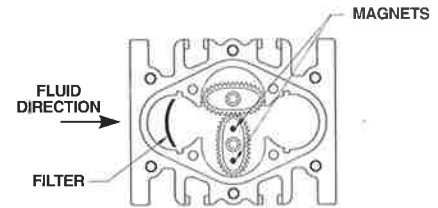
### ATTENTION

Reassemble the gears following the mounting diagram shown below.



### ATTENTION

Only one of the two modularly coupled gears described above is equipped with magnets. Observe the position of the gear with magnets as shown in the figure. Install the second gear (without magnets) with the major axis at 90° with respect to the first gear.



Check that the gears rotate freely before closing the cover.

### F3 CLEANING THE FILTER

Cleaning the K600 filter can be performed without removing the device from the line or the dispensing gun on which it is installed.

### ATTENTION

Always make sure that the liquid has drained from the meter before cleaning.

To clean the filter, proceed as follows (with reference to the positions on the spare parts list):

- Remove the cover (pos. 14) and the gasket seal (pos. 5).
- Slide out the filter (pos. 13).
- Clean the filter with compressed air.
- Carry out the reverse procedure to reassemble the filter.

### G TROUBLESHOOTING

| Problem           | Possible cause   | Solution  | Version          |
|-------------------|--|---|------------------|
| LCD faded         | Discharged battery   | Replace battery   | Meter            |
| LCD black         | Battery completely discharged                                    | Replace battery   | Meter            |
|                   | After the battery was replaced, the RESET button was not pressed | Press RESET   | Meter            |
| Inaccuracy        | Calibration not correct  | Perform calibration with the appropriate procedure                            | Meter            |
|                   | Calibrate the device with the impulse receiver.                  |   | Pulsar           |
| High loss of head | Working flow rate outside the capacity range                     | Reduce or increase the flow rate until it enters the indicated capacity range | Meter and Pulsar |
|                   | Dirty filter   | Clean the filter  | Meter and Pulsar |
| Not counting      | Gears obstructed   | Clean the measurement chamber   | Meter and Pulsar |
|                   | Gears mounted incorrectly  | Check the position of the gear with the magnets                               | Meter and Pulsar |
|                   | Failed circuit card  | Replace the card  | Meter            |
|                   | Failed reed bulb   | Replace the bulb  | Pulsar           |