

**MG-80**  
VOLUMETRIC MECHANICAL METER

CODE 32000

**MGI-80**  
VOLUMETRIC MECHANICAL METER WITH PULSER

CODE 32050

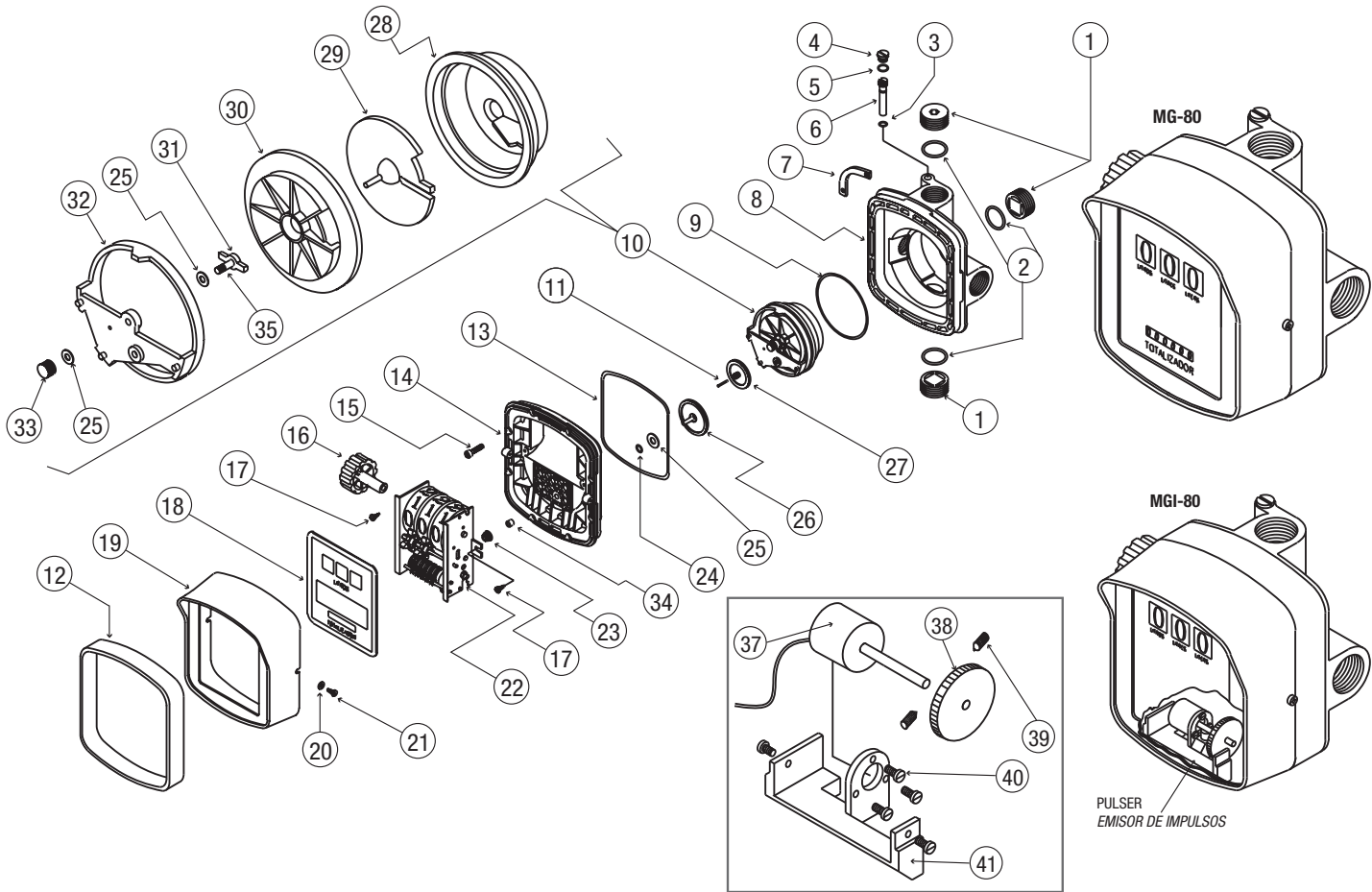
**MG-80V**  
VOLUMETRIC MECHANICAL METER with VITON JOINTS

CODE 32070

**MGI-80V**  
VOLUMETRIC MECHANICAL METER WITH PULSER and VITON JOINTS

CODE 32230

**INSTRUCTION MANUAL  
WARRANTY AND CONFORMITY DECLARATION** **CE**



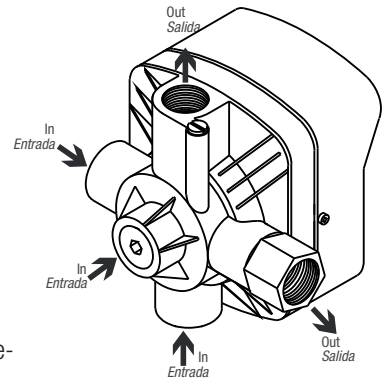
No.	DESCRIPTION	CODE
1	1" INLET/OUTLET PLUG	320004001
2	24x3.5 mm JOINT	803100022
2	D.24x3.5 mm VITON JOINT	803101022
3	5.28x1.78 mm CALIBRATION JOINT	803100024
3	D.5.28x1.78 mm VITON CALIBRATION JOINT	803101024
4	PLUG WITH PROTECTION REGULATION	320004004
5	D.9.5x1.5 mm JOINT	803100045
5	D.9.5x1.5 mm VITON JOINT	803101031
6	10x47 mm FLOW SCREW	320004006
7	HOUSING FIXATION SUPPORT	320004007
8	METER HOUSING	320004008
9	80x3 mm VITON JOINT	803101025
10	MEASURING CHAMBER	320002000
11	D.2x16 mm DIN.6325 PIN	804000001
12	BLACK RUBBER NUT CAP	320004010
13	SPECIAL SQUARE VITON JOINT	320704011
14	CENTRAL COVER	320004012
15	M-5x22 mm DIN.912 SCREW	805400008
16	RESET DRIVE	320005001
17	D.4.2x9.5 mm DIN.7981 ZINC-PLATED SCREW	805404003
18	3-DIGIT PLATE	320004113
19	NUMERATION SET COVER	320004014

No.	DESCRIPTION	CODE
20	M-4 WASHER	800300001
21	D.3.5x9.5 mm DIN.7981 ZINC-PLATED SCREW	805404002
22	NUMERATION	320005002
23	CONICAL GEAR	320001002
24	D.3.69x1.78 mm JOINT	803100023
24	D.3.69x1.78 mm VITON JOINT	803101023
25	GEAR WHEEL RING	320001005
26	GEAR WHEEL	320001003
27	DOUBLE PINION	320001004
28	MEASURING BOX	320002001
29	NUTATING DISC	320002002
30	TOP COVER	320002003
31	COVER LEVER	320002004
32	MEASURING BOX SUPPORT	320002006
33	CM GEAR MEASURING UNIT PINION	320002005
34	D.7 x D.4x6 mm SLEEVE	320004016
35	4x15 mm LEVER SHAFT	320002007
37	PULSER	805800002
38	TRANSMISSION GEAR	805890003
39	3x6 mm ALLEN STUD	805701001
40	M-3x5 mm DIN.7985 SCREW	805406003
41	3-DIGIT ENCODER SUPPORT	321105009

## 1. TECHNICAL FEATURES

### MG-80 · MGI-80 (MG-80V · MGI-80V)

Flow:	From 10 to 90 l/min
Accuracy:	±1 %
Connections:	Inlet 1" GAS (BSP), with three optional positions. Outlet 1" GAS (BSP), with two optional positions.
Counter:	Mechanical · 3 digits (999 litres) Partial Indicator · 6 digits (999,999 litres) Totalizer
Resistance Pressure:	13 bar
Test Pressure:	6 bar
Max. Operating Pressure:	3.5 bar
Measuring Chamber:	Disc Fireproof
Construction:	Made in non-toxic recyclable plastic with Viton-nitrilic joints and fire-proof chamber
Maximum Ambient Temperature:	60 °C
Additional Adaptors:	It can be supplied with special Male/Female Adaptors, in NPT, BSW, BSF, BRIGGS thread sizes.
Size:	150x150x170 mm
Total Weight:	1.6 kg



### MG-80 · MG-80V DESIGN FACTORS

The MG-80 meter is for private use.

The 1" GAS (BSP) Female Inlet and Outlet Threads take part of the housing. It has 3 inlets. They can be seen from the back: frontal, left lateral and bottom. It also has 2 outlets. They can be seen from the back: right side and top.

The meter is delivered with horizontal inlet and outlet. Nevertheless, the user can change their position in a short time; the plugs of the desired direction must be taken out and put them on the non-desired direction. The inner threads have joints which guarantee the sealing; you must only tighten until its locking, giving up pastes, liquids and sealing products.

The MG-80 volumetric mechanical meters have two numerations (registers):

- The partial with three big numbers where it is possible to read up to 999 litres. It can be reset through a lateral wheel after each supply.
- The 6-digit totalizer with capacity up to 999,999 litres; after that and with its operation, it is automatically reset, starting the cycle again.

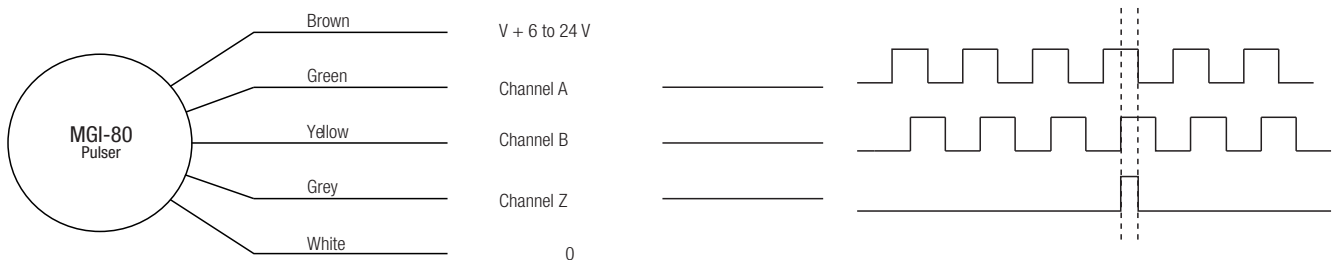
### MGI-80 · MGI-80V FEATURES

The MGI-80 · MGI-80V pulsers are different from the MG-80 meter. They have a pulser in its inner of 2 communication channels where the connection to a consumption controller is allowed. It also has a lateral packing gland and 90 cm of connection cable.

There is a cable of five little wires from the encoder:

Brown colour with 6-24 V feeding, white 0 V, A (or 1) green channel, B (or 2) yellow channel, and Z (or 3) grey channel.

The encoder generates 10 pulses per channel and supplied litre.



## 2. WARNINGS

Please read all the instructions carefully before using the product. The people who do not know the instructions must not use it.

This manual describes how to use the mechanical meter according to the project hypothesis, the technical features, the types of installation, the use, the maintenance and the training regarding to possible dangers.

The operation manual must be considered as a part of the mechanical meter and keep it for future inquiries during all its working life.

We suggest keeping it in a dry and protected place.

The manual reflects the technical situation in the meter sale and cannot be considered inadequate for the reason of being updated according to the new experiences. The manufacturer reserves the right to update the production and the manuals without being forced to update the production and previous manuals.

## 3. SECURITY INSTRUCTIONS

The meter security, regarding to the equipment quality and reliability, is determined by the EC Directive Regulations and endorsed by the quality controls of the enterprise leaders in the sector. It also guarantees the toxicity absence and the negative ecological effects. To avoid the possible accidents, it is advisable to read the following warnings and cautions carefully:

3.1. A wrong meter installation or use can cause serious effects, both physical and material.



3.2. Do not smoke when the flammable fluids, hydrocarbons, are transferred. A FIRE CAN BE CAUSED.



3.3. This meter has been designed for the hydrocarbon measurement, but with some restrictions regarding to its use with certain liquids.

The compatibility list is the following one:

- MG-80 is suitable for diesel.
- MG-80V is suitable for diesel, petrol and aviation fuels.
- MGI-80 and MGI-80V are suitable for diesel.

3.4. Make sure of the correct installation of the decanting circuit, checking the leak absence.

3.5. It is advisable the assembly of a check valve in the meter outlet. So, it is avoided some problems on the pumping and measuring equipment, for instance because of an accidental tread on the delivery hose.



### 3.6. IMPORTANT

The meter has a high accuracy because of the minimum tolerances there are in its measuring chamber. It is one of the most exact meters in the market.

IT IS OBLIGATORY TO INSTALL THE RED ADAPTER WITH FILTER of 350 µm (micron) or the PLASTIC FLANGE KIT WITH FILTER of 350 µm (micron) in the inlet used by the meter in order to avoid the measuring chamber is blocked because of the solid impurities. IT IS ALSO ADVISABLE to INSTALL the FG-100 MICROFILTER in the pump suction if you want to get a better microfiltration.

## 4. INSTALLATION

The meters are very easy to install. Then it is specified the appropriate process to make the installation more comfortable, using the six possible combinations to the pipe and hose assembly.

4.1. Check the most right fluid direction. It is not necessary to disassemble the meter to change the liquid direction.

4.2. Take out the chosen inlet and outlet hole plugs, as well as their joints.

4.3. Put these joints and plugs in the holes that are not going to be used. It is not necessary to put other joints in the threads. Everything is foreseen to get a total sealing. The thread end has a nitrilic joint (or Viton joint according to the model) which guarantees the total sealing with a minimum pressure.

4.4. It is necessary to use sealing components on the installation pipes and threads, which are resistant to the products to transfer.

## 5. DISASSEMBLE-ASSEMBLE

It is not advisable to disassemble the meter, but if you are going to do this, take into account the meter has a measuring chamber with liquid distributor holes, a partial and a total numeration register. Please see the explosion view section. The meter is divided into parts so that it is easier to identify each part. Please use the corresponding code number when asking for it, and take into account the meter can be taken into pieces without disassembling the pipes.

5.1. Take out the lateral reset drive (16).

5.2. Take out the rubber nut cap (12).

5.3. Slacken the two screws (21) and remove the unit numerator cover (19).

5.4. Unscrew the screws (17) that subject the numeration (22) and take it out carefully.

5.5. Unscrew the 8 screws (15) of the central cover (14) from the housing fixation supports (7). When the central meter cover (14) is opened, be careful because there are the measuring chamber mechanism gears in its inner.

5.6. For its assembly, follow the above described steps in the reverse order, taking into account the correct installation of the housing fixation supports (7), Viton joint (9) and the special square Viton joint (13).

## 6. CALIBRATION

The meters are precalibrated in the factory. IT IS ADVISABLE TO CALIBRATE THEM ONCE THEY HAVE BEEN INSTALLED.

Each liquid type has its own density and viscosity. In order to get a reliable measurement, it is advisable to make this calibration with an approved test tube or decalitre. It can be used a container, whose capacity you should know previously.

### Calibration procedure

6.1. For an exact calibration, the meter, the hose, the nozzle and the pump must be full of liquid, but free of air. This is achieved emptying from 10 to 20 litres of liquid and closing the nozzle, without stopping the pump until the operation is finished.

6.2. Fill the approved decalitre until the exact measurement (10 or 20 litres). The bigger the recipient is, the better accuracy you will have.

6.3. If the quantity does not correspond to the emptied liquid in the recipient, it needs to be calibrated.



The calibration process must be done with the nozzle totally open. Never calibrate it with the nozzle mid-opened.

6.4. First, take out the plug (4) and turn the screw (6) clockwise. Then, the flow percentage decreases. Turning it anticlockwise, it increases. A complete turn varies the measurement, more or less in 0.4 litres each 10 litres.

6.5. If you want to guarantee a correct calibration, you have to repeat the above step three or four times. If the result is correct, a good adjustment will be achieved, and the meter will be ready to be used. Do not exceed the pressure of 3.5 bar, and do not work less than 1 bar.

6.6. The MG-80 meter can work by gravity or with a pump. Remember the suitable minimum pressure is 1 bar with a minimum flow of 15 l/min, and an accuracy of  $\pm 1\%$ . If you use it by gravity, it is possible there is some mistake in the measurement due to the different liquid height that the tank may have. It is always advisable to install a pump.

## 7. MAINTENANCE

The MG-80 meters do not need maintenance. It is possible that some liquids are dried up on the measuring chamber inner, causing an obstruction. If this happens, they must be cleaned with a lot of care, and when they are going to be mounted, ensure it is correctly done.

If hydrocarbons are used, they can be cleaned with cleaning liquids or oil. Follow the instructions from section 5. Disassemble-Assemble. When the MG-80 meter is stored for a long time, clean it conscientiously. It will remain protected and ready for a new starting.

### WHEN USING THE METER FOR THE ADBLUE/DEF TRANSFER

Due to its chemical composition, the AdBlue/DEF is easily solidified making crystals when it is in touch with the air. These crystals may block the different mobile parts of the meter. To avoid this characteristic affects to the kit operation, please take into account the following:

If the meter is stopped some days without working, flow demineralized water (preferentially in hot) many times so that the AdBlue/DEF rests are eliminated and avoid these crystallize in its inner.

## 8. REPAIR

The authorized repair workshops are the only ones which can repair the motor in bad state. The meters must be cleaned and dried up before its delivery to be repaired.

When ordering spare parts, make sure it is given the correct code of the spare part, the manufacturing date and the pump serial number. This will guarantee the correct supply of the requested spare part.

## 9. PROBLEM GUIDE

BREAKDOWN	POSSIBLE CAUSE	SOLUTION
The litres are passing, but the numeration does not count.	- there are impurities on the measuring chamber.	- clean the measuring chamber (10). If it is used to transfer AdBlue/DEF, please clean with demineralized water (preferentially in hot).
Loss of liquid	- Allen screws loose - because of the overpressure the joint has been moved. - joint breaking	- tighten up the Allen screws (15). - replace the joint (9 or 13). - replace the joint (9 or 13).
The total or partial numeration does not point correctly.	- numeration breaking	- replace the numeration (22).
You read more or less litres than those supplied.	- calibration failure - the minimum flow is not respected.	- calibrate the meter according to the section 6. - the minimum supply flow must be 15 l/min to assure a trustworthy measurement.
Low flow rate	- impurities on the measuring chamber - dirtiness on the red adaptor	- clean the measuring chamber (10). - clean the inner sieve.
It counts too quick or too slow.	- bad calibration - air inlet - blocked gears - the minimum flow is not respected.	- calibrate the meter according to the section 6. - look for and repair the possible losses or air inlets on the system. - clean and replace the gears (23, 26, 27 or 33). - the minimum supply flow must be 15 l/min to assure a trustworthy measurement.

## 10. WARRANTY

- All the products manufactured by TOT COMERCIAL SA have a WARRANTY of 12 (twelve) months from their purchase, against any manufacturing defect.
- TOT COMERCIAL SA guarantees, in the warranty period, the change/the devolution of the defective part or product. This material must be sent with prepaid freight to our factory or any appointed technical service. After our technical inspection, it will be determined whether the responsibility is from the manufacturer, the user, the installer or the delivery transport.
- The warranty does not cover: the inadequate use, the negligence, the corrosion, the abuse, the manipulation or the wrong installation of the products, the use of non-original spare parts or not concerning to the specific model. All the manufactured and/or commercialized equipment must be installed according to the manufacturer's instructions.
- The accessories and the products not manufactured by TOT COMERCIAL SA are liable for their original manufacturer's warranty.
- Because of the constant innovations and development, TOT COMERCIAL SA reserves the right to modify the specifications of its products and publicity, without prior notification.

**TOT comercial, s.a.**

## 11. EU CONFORMITY DECLARATION

Manufacturer: TOT COMERCIAL SA - Partida Horta d'Amunt s/n - Apartado Correos nº 149 - 25600 BALAGUER (Lleida) SPAIN

STATES under its own responsibility the supplied product: **VOLUMETRIC MECHANICAL METER**. Make: **GESPASA**

Model: **MG-80 • MGI-80 • MG-80V • MGI-80V**

is in accordance with the following legislative and/or normative documents

DIRECTIVES	Nr. and issued rules date
2006/42/UE: Safety of machinery	EN-ISO 12100:2012

- This Declaration will lose its validity in case that any modification is made without the explicit manufacturer's consent.

Balaguer, November 2017

Andreu Pané

