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**FLUID**  
Diesel Transfer Equipments



**FLW 60-230**

**FLT 60-230**



**USE AND MAINTENANCE MANUAL 533004 GB Rev.0**



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## SAFETY INFORMATION

The following safety alert symbols are used in this manual. Obey all safety messages that follow this symbol to avoid possible injury or death.



### DANGER!

indicates an imminently hazardous situation which will result in death or serious injury if not avoided.



### WARNING!

indicates a potentially hazardous situation which will result in death or serious injury if not avoided.

It is responsibility of the person that use the pump to:

- ) Know and follow applicable national and local safety rules pertaining to installing and operating electrical equipment for use with petroleum fluids.
- ) Know and follow adequate safety precautions when handling petroleum fluids.
- ) Insure that all operators -must be adults only, children cannot use the pump- have access to adequate instructions concerning safe operating and maintenance procedures.



### DANGER!

This pump is designed for automotive Diesel fuel only. The pump is not suitable for food substances transferring. The motor of the pump is not explosion proof, do NOT USE the pump in ambient with flammable vapours. Do NOT USE the pump with gasoline, petrol or other flammable liquids with flash points less than 55°C (131°F). DO NOT use this pump to transfer Diesel fuel when ambient temperature exceeds the Diesel flash point temperature 55°C (131°F). DO NOT operate the pump in the presence of any source of ignition including running or hot engines, lighted cigarettes or gas or electric heaters. For safe operations, the diesel fuel transfer system must be properly grounded, this means a continuous metal to metal contact between components, supply tanks, pump, hose, metal nozzle and receiving tank. Failure to follow the above mentioned instructions may result in death or serious injury from fire or explosion.



### WARNING!

This manual is integrating part of the pump. Before starting, in the way to get the best results and the maximum performance from the pump, please read carefully these operating instructions and store the manual in a safe place. Don't leave the running pump unwatched, when the pump is not in use, store it in a safe place out of reach of children. **Insulation Class I:** the unit may only be connected to properly earthed power source, into a socket which is protected by a circuit breaker, with respect of national and local safety rules. When the pump is not in use and before of any maintenance, installation or inspection, disconnect the pump from the power supply. To disconnect the plug do not pull the cable, but remove directly the plug; don't touch plug or switches with wet hands. It's forbidden modify any part of the pump. Prevent any injury observing the basic safety rules. Use the pump for Diesel transferring only: a misuse of the pump can results dangerous for people, wares and/or animals. During the transferring operation, pay attention to avoid any splash of Diesel; avoid prolonged contact with Diesel fuel. It's recommendet the use of

protective glasses, gloves and aprons in case of splashing or spilling.

Before of use, chek always that the pump is in order: if any problem is found don't use the pump and solve the problem and, if necessary, contact the service. Never point the Diesel jet at electrical equipment, cables, open flames, hot object, persons, animals, wares or other place different from the receiving tank.

## DECLARATION OF CONFORMITY

We:

**FLUID s.r.l.**  
**via G. Fucà, 119**  
**41100 Modena - ITALIA**

herewith declare that the construction of the pumps

**FLW 60-230 / FLT 60-230**

complies with the following relevant regulations:

**89/392 - 91/368 - 93/44 - 92/31 - 89/336C - 93/68 - 73/23**

complies with the following relevant standards:

**EN 292/1**

**EN 50081-1**

**EN 60335-1**

**EN 292/2**

**EN 50081-2**

**EN 294**

**EN 55014**

complies with the following national standards:

**DPR 547/55**

Modena, lì 15/09/2007

Legal Rappresentative

Giovanni Bedoni

## TECHNICAL SPECIFICATIONS

**FLW 60-230:** Diesel oil dispenser with self- priming rotary vane pump, equipped with by-pass valve and filter integrated on pump body, driven by asincronuos motor 230V-50Hz/ 220V-60Hz, in protection class IP 54, designed for the transfer of Diesel fuel. The motor is provided with an automatic thermal protection switch that switch off the pump in overload running conditions. The thermal protection switch on automatically after few minutes and, if the main switch of the pump is still turned ON, the motor will re-start spontaneously: for this reason it's recommended always switch off the pump after an unexpected stop of the motor and contact immediatly the service. The pump is designed for a continuous use S1.

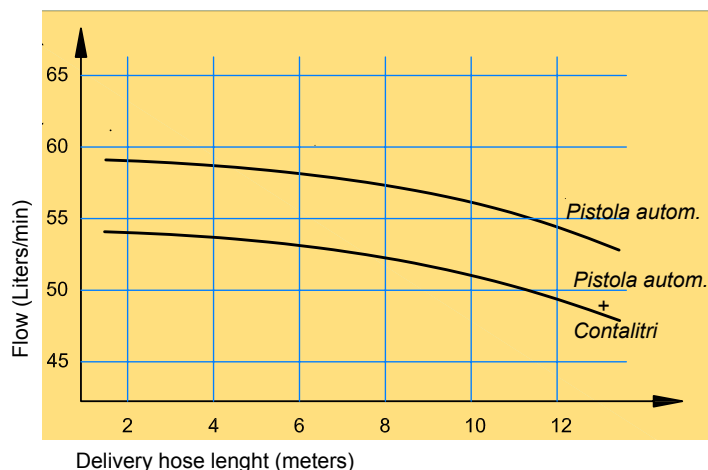
The diesel oil dispenser **FLW 60-230** has shell in painted steel and it is equipped with 4 digit flow meter, nozzle holder, ON/OFF switch, cable with plug, 3/4" delivery rubber hose 4 mt. long and nozzle with swivle connector.

Type	Tension V/Hz	Power max W	Courent nom./max A	Thermal protection	Flow rate Lt/min	Port	Weight Kg
FLW 60-230	230/50	500	1,7 / 2,1	Yes	54	1" BSP	15,2
FLT 60-230	230/50	500	1,7 / 2,1	Yes	54	1" BSP	28,5

### Noise level

Under normal working conditions, the noise emission pression do not exceed the value of 70 dB at the distance of 1 meter from pump.

### Diesel fuel flow rate



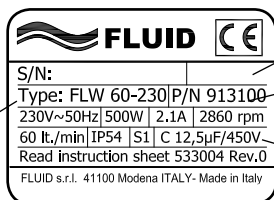
To get the maximum pump flow rate it's necessary:

- ) Minimize length of suction and discharge lines;
- ) Avoid, if possible, elbow and throttling along the line;
- ) Use tubing with diameter equal or greater than 3/4";
- ) Keep clean the strainer regularly;
- ) Use extension cable only if necessary (minimum sect. 3x2.5 mmq x 5mt length max.)

### Product identification

Serial Number

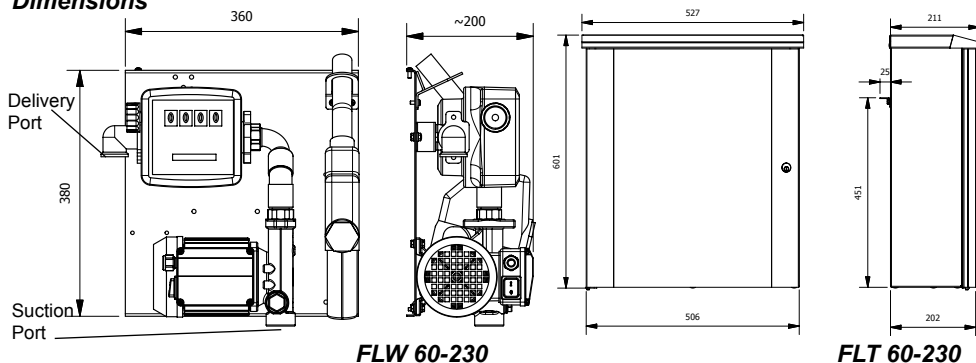
Product Description



Date of Production

Product Code

### Dimensions



FLW 60-230

FLT 60-230

### INSTALLATION



**DANGER!**

If the application is for gasoline, petrol or fluids that require an explosion-proof product, DO NOT INSTALL THIS ELECTRIC PUMP.


### **Preliminary operations:**


- ) Check that the product has not suffered any damage during transport or storage, in case of damages or missing parts, please contact immediately the dealer.
- ) Remove the protection plugs on inlet and outlet of the pump;
- ) Fix the pump on a firm, level and no slithery wall surface, by the holes provided on the FLW shell and through the holes on the rear FLT box rib.

### **Tubing connection**


Before connection make sure that the tubing, the inlet - outlet of the pump and the suction tank are not clogged and free of dirt, rust, etc. that could damage the pump and/or clog the retainer. The threaded connections must be 1" BSP type (do not use conical threaded joints that could damage the threaded pump bores), the pipes connections must be leakage-proof, to avoid air or fuel leakage and pump trouble.

When the hoses are not supplied, it is consiled minimize the lenght of both suction and discharge hoses, use hoses with adequate characteristics for diesel fuel, antistatic, with diameter equal or greater than 3/4" and working pressure equal or grater than 10 bar, in addition the suction hose shall be suitable for functioning under suction pressure. Connect the pump, observing the right fuel flow, like indicated by the arrows on the pump body.

 **WARNING!** The use of tubing unsuitable for use with Diesel fuel can damage the pump, injury persons and produce pollution, because of diesel fuel splashing/spilling.


 **WARNING!** The discharge hose and the accessories (nozzle, meter, etc.) must be grounded (to dissipate the electrostatic currents), alternatively the hoses must be of antistatic type (like the original one). It is installer responsibility to use tubing with adequate characteristics.

### **Electrical connections**


 **WARNING!** It's responsibility of the installer to perform the electrical connections with respect for the applicable local or national regulations.

Check that the suppling electrical specifications correspond to those shown on the plate.


Failure in the electrical specifications respect could damage the electrical pump.


 **WARNING!** Preserve the supply cable from oil, high temperatures and cutting edges. Inspect always the supply cable against damages: in case of damage replace immediately the supply cable with an original one. Avoid that cables, electrical receptacle, plugs and switches have contact with water or flammable fluids and avoid high moisture ambient for the pump. All metal parts must be always grounded. If necessary, use extension cable 5 meters lenght with section 3x2.5mmq minimum, unwinding completely the extension cable. Never any part with tension shall go in contact with water or inflammables fluids. Before of electrical connection of the pump, be sure that the main swicht on the pump is in OFF position.

## **USE**

 **DANGER!** To prevent injury, observe precautions against electrical shock, fire or explosion when dispensing fuel. Do not operate switch with wet hands Do not operate the pump in the presence of any source off ignition including running or hot engines, lighted cigarettes or gas or electric heater.


Start the diesel fuel dispensing turning ON the switch on the pump and opening the delivery valve (the lever of the nozzle) solidly grasping the end of the hose; **at the end of the diesel fuel dispensing turn OFF the switch on the pump and disconnect the main power supply.**

 **WARNING!** Operate the pump in ambient with temperature between -15°C and +40°C and moisture rate less than 90%. Serious or fatal shock can result from operating electrical equipment in damp or wet locations.

 **WARNING!** Avoid prolonged contact with petroleum fuels. Use protective goggles, gloves and aprons in case of splashing or spills. Change saturated clothing and wash skin promptly with soap and water.


This pump is designed for the transfer of diesel fuel with flash point at or above 55 °C (131°F). DO NOT USE this pump for other types of fluid. Use of this pump with other types of fluid may damage components and will void the warranty. The pump is not suitable with alimentary or food fluids.

#### **Operation without fluid**


 **WARNING!** DO NOT LEAVE the pump running without fuel. Dry running (even for few minutes only) can damage the pump.

#### **Operation in by-pass mode**

Pump is equipped with an automatic by-pass valve. Pump will go into by-pass mode when the discharge line is closed. To prolong the life of the pump, minimize time spent in by-pass.

 **DANGER!** Operation with the discharge line closed -by-pass mode- is allowed for maximum 3 minutes only. Longer pump running in by-pass mode produces abnormal diesel fuel temperature raising, with all the diesel fuel spilling, fire or explosion risks connected.

## **MAINTENANCE**

 **WARNING!** Observe precaution against electrical shock when servicing the pump! Always disconnect power before attempting any service. Never apply electrical power to the pump when any of the cover plates are removed. The mobile dispenser is designed for minimal maintenance, it is recommended observe the following indications:

#### **Daily:**

Keep pump and pipes clean to help identify leaks, check the connection/joints sealing and repair immediately any leakage, if necessary. Check the electrical cable conditions: if damages/cuts or other defects are recognized, it is necessary replace the cable with an original one, this operation must be performed by an expert technician, accordingly with local regulations.

Check the conditions of suction and discharge hoses: if fissures, cuts, bulges or other damages are recognized, it is necessary replace the hose with an original one.

#### **Weekly or every 5 hours of work:**

Inspect and/or clean the strainer integrated in the body pump: a clogged retainer reduces the fuel flow delivery and the pump lifetime; to disassemble the retainer unscrew the plug (2, pag. 7) and remove the strainer from its seat, clean by air-blast spray, then reassemble the strainer and the plug and check about leakage.

**Every 2 years it's recommended replace the discharge rubber hoses.**

#### **Transport**

Switch off the pump, disconnect the electrical wiring, disconnect the lines and flush the pump. Package properly the dispenser unit and be careful to avoid shocks during the transportation.

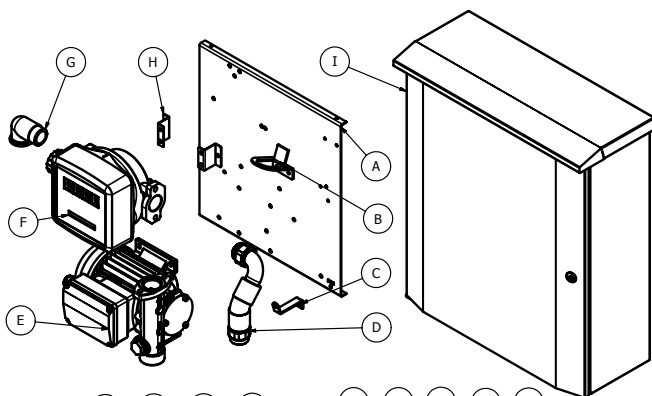
#### **Disposing of contaminated materials**

Don't disperse contaminated parts into the environment. Refer to local regulations for proper disposal of the product.

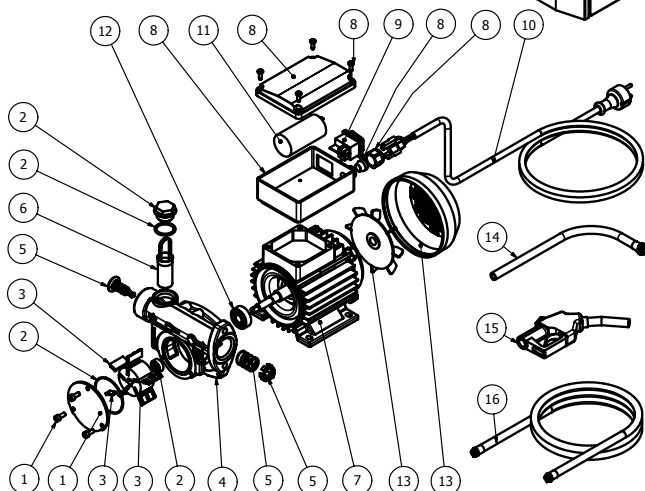
## TROUBLESHOOTING

Troubles	Possible Cause	Corrective Action
Motor does not run	No electrical power to pump	Check electrical connections, extension cable and fuse. Chek for possible locking of rotating shaft
Motor runs slowly and low fuel flow	Low voltage in the electric line	Bring the voltage in the corrctrs limits !Using extension cable, cble sections shall be 2x4 mmq minimum.
Motor runs, but no fuel delivery	Tank level low Clogged suction line Air leak in system	Add fuel to tank Clean suction line Check all joints

## PARTS - ACCESSORIES



FLW 60-230 - FLT 60-230			
Pos.	Q.ty	Description	P/N
A	1	FLW steel shell	200014
B	1	Nozzle seat	200011
C	1	Nozzle holder	200012
D	1	FLW hose + connectors	-----
E	2	FLC 60-230 AC pump	-----
F	1	Flow meter	320701
G	1	Elbow 90° 1"	-----
H	1	S shape holder	200023
I	1	FLT painted steel box	-----



FLC 60-230 AC PARTS			
Pos.	Q.ty	Description	P/N
1	1	Bracket + screws kit	695005
2	1	gaskets kit	695001
3	1	Rotor + vanes kit	695002
4	1	Pump body 60 lt.	210002
5	1	60 lt. by-pass valve kit	695016
6	1	Strainer	217001
7	1	230V/50Hz motor	610201
8	1	Electrical box kit	695006
9	1	ON/OFF switch	425001
10	1	Cord 3x0,75 + Schuko	410001
11	1	Capacitor 12,5 mF	440001
12	2	Bearing 6201-12x32x10	310201
13	1	Fan + fan cover kit	695007
14	1	Suction hose	990201
15	1	Autom. nozzle 60 lt/min	320601
15	1	Man. nozzle 80 lt/min	321601
16	1	Delivery hose 1"-4 mt.	990104

## METER - FM4

ATTENTION! To ensure a proper and safe use of the meter it's necessary to read and follow the instructions and warnings contained in this manual. An improper installation or use of the meter may cause damage to object or people. This meter has been designed for diesel only use: don't use it for other chemical or inflammable substance or food. Be aware that this device is not suitable to measure product for resale.

## GENERAL INFORMATION

FM4 is mechanical flow meter with nutating disk, designed to allow a precise measurement of Diesel oil. The nutating disk of the metering chamber, which is set in motion by the fluid itself, drives the gear train located in the cover of the meter body, which transfer the motion to the 4 digits meter. The meter is equipped with a no-resettable litre totaliser and a batch register which can be reset by means of a knob, whose unit digit is provided with marks of the readout of the tenths of a litre.

### Technical Data

<i>Flow rate (range)</i>	<i>20 - 120 l/min.</i>
<i>Meter mechanism</i>	<i>Nutating disk</i>
<i>Read out system: subtotal / total</i>	<i>4 digits (9999) / 8 digits (99999999)</i>
<i>Operating pressure</i>	<i>max. 3.5 bar</i>
<i>Accuracy after calibration / Repeatability</i>	<i>+/- 1% / +/- 0.2%</i>
<i>Treathed connectors</i>	<i>1" BSP/NPT</i>
<i>Body material</i>	<i>Aluminium</i>
<i>Dimensions (bxhxp) / Weight</i>	<i>240x165x170 mm / 1.8 Kg</i>

## CALIBRATION

FM 4 is pre-calibrated in factory to be used with Diesel oil. As specific operating conditions may affect the meter accuracy, a recalibration should be carried out after the installation has been completed. A new calibration is necessary each time the meter is disassembled for maintenance operations.

### Meter Calibration Procedure (see picture 1, page 9)

- 1) Unscrew the plug (P) and purge the system from air, shutting off the nozzle and let the pump running;
- 2) Reset the batch register by means of the knob;
- 3) Dispense at the flow rate which the best accuracy is required at, by using a calibration container having a capacity not lower than 20 litres.
- 4) Compare the indication of the calibration container (real value) with the one of the meter (indicated value):
  - a) if the indicated value is higher than the real value, turn counterclockwise the screw (H), using a screwdriver (S);
  - b) if the indicated value is lower than the real value, turn clockwise the screw (H), using a screwdriver (S);
- 5) Repeat the operation 3 and 4 until accuracy is satisfactory.
- 6) At the end of the procedures, screw the plug (P).



## USE

Turn the reset knob clockwise until the batch register is completely reset (0000). The totaliser cannot be reset in any way. Make sure that during the use the pressure and flow rate do not exceed the values indicated in "Technical Data" section.

## MAINTENANCE - SPARE PARTS

No ordinary maintenance is required when the FM4 meter is properly installed and used. Anyway, an incorrect filtering on the meter inlet may block or wear out the measuring chamber, thus affecting the meter accuracy. Should this problem occur, disassemble the measuring chamber as indicated below.

**WARNING! Before disassembling the meter always make sure that all fluid is drained from the meter and pipes connections.**

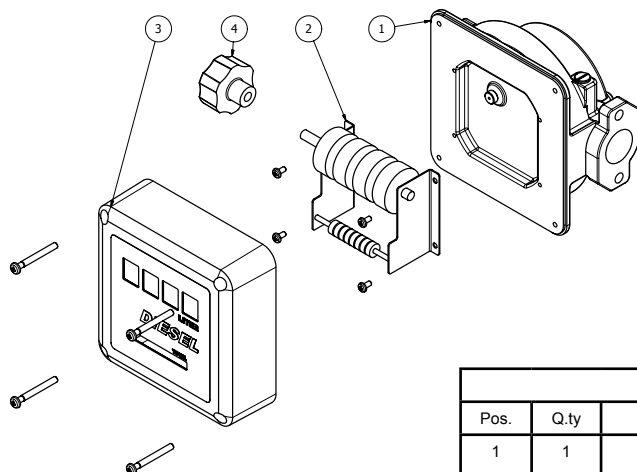
The FM4 meter can be disassembled without remove the main body from the pipes.

To disassemble the meter unit, follow this steps:

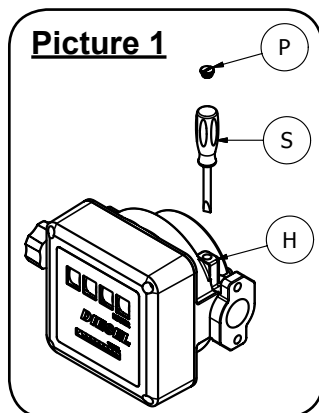
- 1) Remove the reset knob by firmly pulling it axially (see pos. 4, page 4);
- 2) Loosen the 4 retaining screws and remove the plastic cover (see pos. 3, page 4);
- 3) Loosen the 4 retaining screws and remove the counter (see pos. 2, page 4)
- 4) If is necessary replace the measuring chamber and /or the gear box, disconnect the pipes line and remove the complete hydraulics group (see pos. 1, page 4).

To reassemble the unit, reverse the above described procedure.

### Exploded view



### Picture 1



FM4 Spare parts			
Pos.	Q.ty	Description	P/N
1	1	FM4 Hydraulic group	695008
2	1	FM4 Counter group	695009
3	1	FM4 Cover (black)	695010
4	1	FM4 Knob (black)	695011

## WARRANTY

The product is guaranteed in accordance with statutory/country-specific regulations, only when it is used for the designed purpose. The warranty period shall begin on the date of purchase with an original sales receipt. The warranty is limited to demonstrable defects that can be attributed to workmanship and/or material; the buyer will pay for any transport costs and will bear any transporting risks responsibility. Failure/defects resulting from normal wear, incorrect and/or improper use, erroneous connections of the device, manomissions or modifications (without our written authorization) are not covered by the warranty. The manufacturer exclude any additional liability, in particular for subsequent ware or persons damages arising from the use of the product.

*Timbro Rivenditore - Dealer's stamp*



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**Fuel Transfer Equipments**

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