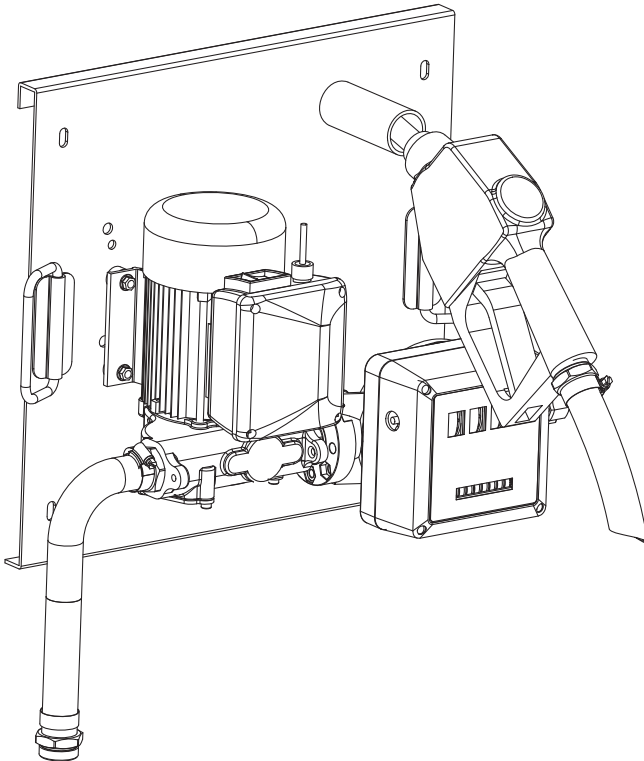




Wall Mounted Pump Kit Instruction Manual



WARNING:

Read carefully and understand all INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury. Save these instructions in a safe place and on hand so that they can be read when required. Keep these instructions to assist in future servicing.



GENERAL SAFETY REGULATIONS



WARNING: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur. It must be understood by the operator that common sense and caution are factors that cannot be built into this product, but must be supplied by the operator.

1. Keep the work area clean and dry. Damp or wet work areas can result in injury.
2. Keep children away from work area. Do not allow children to handle this product.
3. Use the right tool for the job. Do not attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this equipment was designed. It will do the job better and more safely at the capacity for which it was intended. Do not modify this equipment, and do not use this equipment for a purpose for which it was not intended.
4. Check for damaged parts. Before using this product, carefully check that it will operate properly and perform its intended function. Check for damaged parts and any other conditions that may affect the operation of this product. Replace damaged or worn parts immediately.
5. Do not overreach. Keep proper footing and balance at all times to prevent tripping, falling, back injury, etc.
6. DO NOT use the equipment when tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating this equipment may result in serious personal injury.

DECLARATION OF CONFORMITY

IN ACCORDANCE WITH THE DIRECTIVES

89/392/CEE - 91/368/CEE - 93/44/CEE – 89/336/CEE – 92/31/CEE

THE MANUFACTURER:

MACNAUGHT AMERICAS

(813) 628-5506 | INFO@MACNAUGHTUSA.COM

DECLARES THAT THE FOLLOWING PUMP MODELS:

FTWM120-001

To which this declaration refers, conform to the following applicable regulations:

EUROPEAN REGULATIONS:

EN292-1-92 – Safety of Machinery – General Concepts, basic principles for design – terminology, basic methodology

EN292-2-92 – Safety of Machinery – General Concepts, basic principles for design – specifications and technical principles

EN294-93 – Safety of Machinery – safe distances to prevent the operator's upper limbs from reaching dangerous areas

EN60034-1-2000 – Rotating electrical Machinery – nominal and functional specifications

EN60034-5-2001 – Classification of grades of protection for the housings of rotating electrical machinery

EN61000-6-3 – Electro – magnetic compatibility – generic emission standards

EN61000-6-1 – Electro – magnetic compatibility – generic immunity standards

EN55014-1-00(A1/99-A2/99) limits and methods for measuring radio disturbance characteristics

EN55014-2-97 – Electrical motor – operated and thermal appliances for household and similar purposes, electric tools and similar electrical apparatus

EN60204-1-98 – safety of machinery – electrical equipment of machines

INTRODUCTION

The diesel transfer pump kit has been designed for the delivery of fuel from an open surface tank. The pump mounted on a bracket for wall or tank mounting. This manual, apart from giving all necessary information on ordinary maintenance and supporting engineers in failure detection and repair, should also give all the information's needed to fully employ the capacity of the machine, as well as to the user's needs.

PRELIMINARY INSPECTIONS

Before the power connection is done, verify the conductors aren't live and general switches are off.

DISMANTLING AND DISPOSAL PROCEDURE

The metallic parts which the machine is mainly made of will be dismantled and sent to the steel mills. The fuels in the tanks of the installation will be collected and sent to an authorized disposer. All plastic and non-degradable material parts will be separately collected and sent to an authorized disposer or recycled.

SAFETY DEVICES

GENERAL SWITCH

It is placed on the motor body and allows the operator to set it on standby in a very short time. Once the machine is stopped, the whole starting procedure can be repeated.

HARMFUL FUNCTIONS

The noise from the machine is below 70 dB (A).

HARMFUL EMISSIONS

Steam emission is so reduced to result irrelevant.

FIRE PREVENTION

1. In case of fire never use water, but extinguishing powders charged with CO2 cat. A-B-C-D only, employing the extinguishers placed next to the machine. Combustion of paints and plastic parts may produce toxic emissions: use the normal precautions to be employed in case of fire (always refer to the security supervisor of the place of installation).
3. MAXIMUM BY-PASSING TIME: 3 MINUTES.
4. DO NOT RUN WITHOUT FLUID.

DUTY CYCLE FOR DC PUMPS



Extreme operating conditions with working cycles longer than 30 minutes can cause the motor temperature to rise, thus damaging the motor itself.

Each 30-minute working cycle should always be followed by a 30-minute power-off cooling phase.

NOTICE:

THE VISION IS BUILT PAYING MAXIMUM CARE TO USER'S AND MAINTENANCE ENGINEER'S SECURITY.

TECHNICAL DETAILS

Item No.	Model of Meter	Flow Rate	Electrical Power		
			Current	Voltage	Power
FTWM120-001A	FPM-MECH	32GPM	AC	120V	1100W

SAFETY PRECAUTIONS

1. During Diesel delivery always wear oil resistant and always wash hands with water and soap at the end. Always clean at once fuel stains to avoid slips and/or pollution.
2. Use particular care with the zones next to the controls.
3. When cleaning, and specially when removing dust or waste, always wear suitable clothes, if possible use aspirators only. Always use suitable clothes or protective devices. Never place hands or limbs under moving parts.

SYSTEM DESCRIPTION

Functional Description

The diesel transfer system are hydraulic machine tools which feed with a given capacity (volume) of fluid in the time unit, a collecting tank, sucking the liquid from an open surface feed tank; the allowed suction lift (geodetic suction lift H_{ga}) is also a specific characteristic of the pump. The system is composed by complementary equipment, operating as whole to give a complete service:

1. Diesel pump
2. Manual dispensing nozzle
3. 2M suction hose with filter
4. 4M delivery hose

MACHINE DESCRIPTION

The wall mounted pump kit has been designed and built according to the following standards:

1. Electric requirements: EN 60204-1 and EN 60529
2. Mechanical requirements: EN 292-1 and EN 292-2; EN 55081-2, EN 55011C/A
3. Other requirements 89/392 CEE

ALLOWED AND FORBIDDEN USE

1. Diesel transfer unit has been designed and built for DIESEL TRANSFER ONLY from reservoirs, tanks and drums.
2. It is strictly forbidden to employ it to transfer liquids of different kind as gasoline, explosives and corrosives (or flammable), alimentary liquids.
3. The machine isn't designed for employment in the explosive environment.
4. Operating the pump is forbidden to children and disabled person.
5. It is forbidden to employ the unit next to flammable liquids (gasoline, alcohol, etc.).
6. It is forbidden the employment in closed environments in presence of gasoline, LPG, methane fuelled vehicles.

TRANSPORT AND UNPACKING

Due to its weight and dimensions, the unit can easily be transported by hand. Control that the package is good conditions and verify that the unit isn't damaged. Each failure must be noticed in 10 days from receiving the machine.

For correct unpacking carefully follow these instructions:

1. Place the case on the ground following the indications on the package.
2. Carefully open the case, remove the machine and place it on the ground or on a steady surface.
3. Control that the machine and its accessories aren't damaged.

4. Check and tighten the screws which connect the pump and the board, pump and meter. For a better employment the unit should be placed as near as possible to level of liquid to be pumped. (Max. distance 2m).
5. Screw the delivery hose on the fitting of the flow meter and of the filling gun.
6. We suggest using a diesel resistant rubber or plastic suction hose; spiral shaped, with minimum as 25mm internal diameter, the same as the union. The hose must be sealed to avoid leakage. In case a 4 meters or longer hose is employed we suggest to use the foot valve with filter.

USE AND STARTING

STARTING

Once the hoses are sealed, the feeding cable is connected and the filling gun is in rest position, the machine can be started. After placing the hose into the tank and the gun into the filling hole, start the pump, gradually release the lever and start Diesel transfer. Once the filling is done release the control of the gun and switch the pump off. When the pump isn't in use disconnect it.

FLOW METER

1. The flow meter shows how many litres of liquid were pumped by the unit. Be aware that this device is not suitable to measure products for resale.
2. The mechanical flow meters indicate the partial (resettable) and total (no reset function) of the litres pumped. Each time the instrument must be reset, turn the knob on the left of the unit until all zeroes are displayed.

Calibration

The meter used in the pumping unit is calibrated at the factory. Calibration is recommended upon initial use, after disassembly or significant wear. Meter calibration can be easily changed with the procedure hereafter. The proving container should be at least 50 litres.

Procedure:

Fill container to a know volume

Turn the calibration screw

+Clockwise to increase the number of liters counted

-Counterclockwise to decrease the number of liters counted

WARNING

1. The gunlock has been provided to make filling easier. It is forbidden to leave the gun unattended to avoid overflow.
2. Don't operate the machine if there is no liquid inside. Don't start the pump before connecting suction and delivery hoses.
3. Once the gun is closed switch the motor pump off as soon as possible. **THE PUMP HAS TO WORK IN BY-PASS CONDITION FOR SHORT PERIOD: MAXIMUM 3 MINUTES.**
4. In case of current losses the pump should be switched off and the plug disconnected.
5. It is strictly forbidden to use the pump with wet hands, barefooted or dipped in water.
6. In case of blackout switch the pump off and disconnect the plug to avoid unexpected starts with liquid overflow.
7. When transferring from open-air tanks, we suggest to place the machine as far as possible to avoid sprays and sudden dips which may cause serious damage.

MAINTENANCE

Each kind of disassembly should always be carried out when the machine is stopped, the plug is disconnected and after emptying the pump and the flow meter. For a better operation control every three months that there isn't any kind of debris in the flow meter filter.

OPERATIONAL PROBLEMS

ACCIDENTS	CAUSES	REMEDIES
The pump doesn't work.	1. Jammed shaft. 2. No electric feeding.	1. Disconnected the plug; unscrew on the pump, remove the pump body and clean it inside. Control that the shaft is now working correctly. Reassemble the pump. 2. Control that the plug is correctly connected and that the socket is live.
The pump works doesn't deliver liquid.	1. The pump sucks air from the suction hose. 2. Air inside the pump.	1. Control the suction hose seal on the pump. Verify that the hose is completely immersed into the liquid and free from chokes. 2. Control that the filter is clean. Ensure the suction height less than 2M.

MECHANICAL RISKS

1. Mechanical parts subject to wear

- The blades
- The bearing
- The rotor

These parts should be replaced with original spare parts by qualified personal only or in authorized service centres.

2. Risks due to extreme temperatures

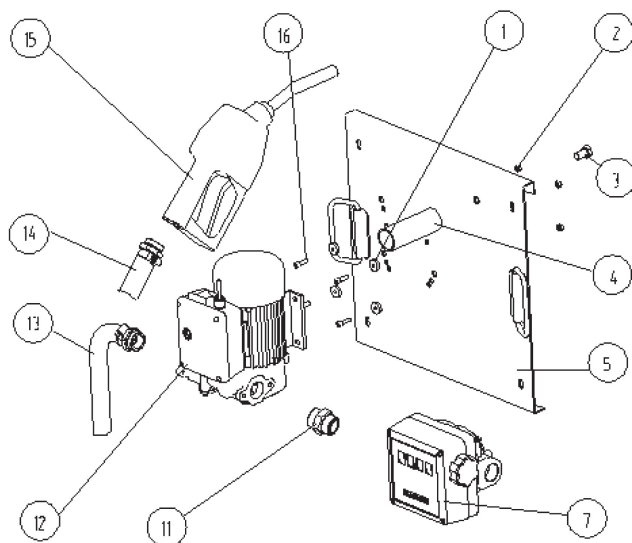
Remember that a very low temperature can freeze the Diesel inside the pump. This situation can cause serious damage to the motor pump unit.

3. A very high temperature (about 45°C) may cause the plastic parts in the unit to expand. The unit should thus be placed in a well-ventilated place and protected from the sun.

LIMITED WARRANTY

1. Macnaught warrants this product against defects in material and craftsmanship, for a period of two years from date of purchase, but not including wearing parts.
2. Macnaught's liability is limited to replacement or repair of defective material within the warranty period, when returned freight prepaid to the distributor or their designated service depot.
3. The warranty does not cover damage caused by accident, misuse or faulty installation.
4. The product must be installed and maintained in compliance with the instructions.

EXPLODED AND PARTS LIST



Part No.	Description	Q'ty	Part No.	Description	Q'ty
1	Latex Washer	4	11	Hose Connectors	1
2	Nut	4	12	Pump	1
3	Bolt M12	1	13*	Inlet	1
4	Gun base	1	14*	Outlet	1
5	Board	1	15	Nozzle	1
7	Meter	1	16	Bolt	4

* Wearing parts.

TECHNICAL DETAILS FOR PUMP

Item No.	ELECTRICAL POWER			Flow Rate	POWER	Connection
	Current	Voltage(V)	Frequency		Nominal (*)	Inlet/outlet
17331200	AC	120	60Hz	32GPM	1200W	1"

OPERATING CONDITIONS

ENVIRONMENTAL CONDITIONS

1. TEMPERATURE: min. -20°C / max. +60°C.
2. RELATIVE HUMIDITY: max. 90%.

ATTENTION

The temperature limits shown apply to the pump components and must be respected to avoid possible damage or malfunction.

ELECTRICAL POWER SUPPLY

1. Depending on the model, the pump must be supplied by a single-phase alternating current line whose nominal values are shown in the table in Paragraph C1 – ELECTRICAL SPECIFICATIONS.
2. The maximum acceptable variations from the electrical parameters are:
 - Voltage: +/-5% of the nominal value
 - Frequency: +/-2% of the nominal value

ATTENTION

Power from lines with values outside the indicated limits can damage the electrical components.

WORKING CYCLE

The pumps are designed for continuous use under maximum back pressure.

ATTENTION

Functioning under by-pass conditions is only allowed for brief periods of time (2-3minutes maximum).

FLUIDS PERMITTED / FLUIDS NOT PERMITTED

PERMITTED

1. DIESEL FUEL at a VISCOSITY from 2 to 5.35 cSt (at a temperature of 37.8°C) .
2. Minimum Flash point (PM): 55°C.

NOT PERMITTED

Description	Related Dangers
Gasoline	Fire – Explosion
Inflammable Liquids With Pm<55°C	Fire – Explosion
Liquids With Viscosity>20cst	Motor Overload
Water	Pump Oxidation
Food Liquids	Contamination Of The Same
Corrosive Chemical Products	Pump Corrosion, Injury To Persons
Solvents	Fire – Explosion, Damage To Gasket Seals

MOVING AND TRANSPORT

1. Given the limited weight and size of the pumps (see overall dimensions), moving the pumps does not require the use of lifting devices.
2. The pumps were carefully packed before shipment. Check the packing material on delivery and store in the dry place.

INSTALLATION

1. DISPOSING OF THE PACKING MATERIAL

The packing material does not require special precautions, not being in any way dangerous or polluting.

Refer to local regulations for its disposal.

2. PRELIMINARY INSPECTION

- Check that the machine has not suffered any damage during transport or storage.
- Clean the inlet and outlet openings, removing any dust or residual packing material.
- Make sure that the motor shaft turns freely.
- Check that the electrical specifications correspond to those shown on the identification plate.

3. POSITIONING THE PUMP

- The pump can be installed in any position (pump axis vertical or horizontal).
- Attach the pump using screws of adequate diameter for the attachment holes provided in the base of the pump (see the section "OVERALL DIMENSIONS" for their position and dimension).



THE MOTORS ARE NOT OF AN ANTI-EXPLOSIVE TYPE. Do not install them where inflammable vapours can be present.

4. CONNECTING THE TUBING

- Before connection, make sure that the tubing and the suction tank are free of dirt and thread residue that could damage the pump and its accessories.
- Before connecting the delivery tube, partially fill the pump body with diesel fuel to facilitate priming.
- Do not use conical threaded joints that could damage the threaded pump openings if excessively tightened.

SUCTION TUBING:

- Minimum recommended nominal diameter: 1"
- Nominal recommended pressure: 10bar / 145psi
- Use tubing suitable for functioning under suction pressure

DELIVERY TUBING:

- Minimum recommended nominal diameter: 1"
- Nominal recommended pressure: 10bar/145psi



It is the installer's responsibility to use tubing with adequate characteristics. The use of tubing unsuitable for use with diesel fuel can damage the pump, injure persons and cause pollution.

Loosening of the connections (threaded connections, flanging, gasket seals) can cause serious ecological and safety problem.

Check all the connections after the initial installation and on a daily basis after that. Tighten the connections, if necessary.

5. CONSIDERATIONS REGARDING DELIVERY AND SUCTION LINES DELIVERY

1. The choice of pump mode must be made keeping the characteristics of the system in mind.
2. The combination of the length of the tubing, the diameter of the tubing, the flow rate of the diesel fuel and the line accessories installed can create back pressure greater than the maximums anticipated such as to cause the (partial) opening of the pump by-pass with the consequent noticeable reduction of the flow rate supplied.
3. In such cases, to allow correct functioning of the pump, it is necessary to reduce system resistance, using shorter tubing and/or of wider diameter and line accessories with less resistance (e.g. an automatic dispensing nozzle for greater flow rates).

SUCTION

1. All pumps are self-priming pump and characterized by good suction capacity.
2. During the start-up phase, with an empty suction tube and the pump wetted with fluid, the electric pump unit is capable of suctioning the liquid with a maximum difference in height of 2 meters. It is important to point out that the priming time can be as long as one minute and the pressure of an automatic dispensing nozzle on the delivery line prevents the evacuation of air from the installation, and, therefore, prevents proper priming.
3. For this reason, it is always advisable to prime the pump without an automatic delivery nozzle, verifying the proper wetting of the pump. The installation of a foot valve is recommended to prevent the emptying of the suction tube and to keep the pump wet. In this way, the pump will subsequently always start up immediately.
4. When the system is functioning, the pump can work with pressure at the inlet as high as 0.5 bar, beyond which cavitation phenomena can begin, with a consequent loss of flow rate and increase of system noise.
5. As we have said up to this point, it is important to guarantee low suction pressure by using short tubing of a diameter equal to or larger than recommended, reducing curves to a minimum and using suction filter of wide cross-section and foot valves with the lowest possible resistance.
6. The difference in height between the pump and the fluid level must be kept as small as possible and, at any rate, within the 2 meters anticipated for the priming phase.
7. If this height is exceeded, it will always be necessary to install a foot valve to allow for the filling of the suction tube and provide tubing of wider diameter. It is recommended that the pump not be installed at a difference in height greater than 3 meters.

ATTENTION

In the case that the suction tank is higher than the pump, it is advisable to install an anti-siphon valve to prevent accidental diesel fuel leaks.

INITIAL START-UP

- Check that the quantity of diesel fuel in the suction tank is greater than the amount you wish to transfer.
- Make sure that the residual capacity of the delivery tank is greater than the quantity you wish to transfer.
- Do not run the pump dry. This can cause serious damage to its components.
- Make sure that the tubing and line accessories are in good condition. Diesel fuel leak can damage objects and injure person.
- Never start or stop the pump by inserting or removing any plugs.
- Do not operate switches with wet hands.
- Prolonged contact with diesel fuel can damage the skin. The use of glasses and gloves is recommended.

⚠ATTENTION

Extreme operating conditions can raise the motor temperature and, consequently, cause the thermal protection switch to stop it.

Turn off the pump and wait for it to cool before resuming use.

The thermal protection automatically turns off when the motor is sufficiently cool.

In the priming phase the pump must blow the air initially present in the entire installation out of the delivery line.

Therefore it is necessary to keep the outlet open to permit the evacuation of the air.

⚠ATTENTION

If an automatic type dispensing nozzle is installed at the end of the delivery line, the evacuation of the air will be difficult because of the automatic stopping device that keeps the valve closed when the line pressure is too low. It is recommended that the automatic dispensing nozzle be temporarily disconnected during the initial start-up phase.

The priming phase can last from several seconds to a few minutes, as a function of the characteristics of the system. If this phase is prolonged, stop the pump and verify:

- That the pump is not running completely dry;
- That the suction tubing is not allowing air to seep in;
- That the suction filter is not clogged;
- That the suction height does not exceed 2m. (if the height exceeds 2m, fill the suction hose with fluid);
- That the delivery tube is allowing the evacuation of the air.

When priming has occurred, verify that the pump is operating within the anticipated range, in particular:

- That under conditions of maximum back pressure, the power absorption of the motor stays within the values shown on the identification plate;
- That the suction pressure is not greater than 0.5 bar;
- That the back pressure in the delivery line is not greater than the maximum back pressure foreseen for the pump.

DAILY USE

1. If using flexible tubing, attach the ends of the tubing to the tanks. In the absence of an appropriate slot, solidly grasp the delivery tube before beginning dispensing.
2. Before starting the pump, make sure that the delivery valve is closed (dispensing nozzle or line valve).
3. Turn the ON/OFF switch to ON. The by-pass valve allows functioning with the delivery closed only for brief periods.
4. Open the delivery valve, solidly grasping the end of the tubing.
5. Close the delivery valve to stop dispensing.
6. When dispensing is finished, turn off the pump.

⚠ATTENTION

Function with the delivery closed is only allowed for brief periods (2-3 minutes maximum).

After use, make sure the pump is turned off.

PROBLEMS AND SOLUTIONS

ACCIDENTS	CAUSES	REMEDIES
The Motor is not turning.	Lack of electric power	Check the electrical connecting.
	Rotor Jammed	Check for possible damage or obstruction of the rotating components.
	Motor Problems	Contact the Service Department
The motor turns slowly when starting.	Low voltage in the electric power line	Bring the voltage back within the anticipated limits
Low or no flow rate	Low level in the suction tank	Refill the tank
	Foot valve blocked	Clean and/or replace the valve
	Filter clogged	Clean the filter
	Excessive suction pressure	Lower the pump with respect to the level of the tank or increase the cross-section of the tubing
	High loss of head in the delivery circuit (working with the by-pass open)	Use shorter tubing or of greater diameter
	By-pass valve blocked	Dismantle the valve, clean and/or replace it.
	Air entering the pump or the suction tubing	Check the seals of the Connections
	A narrowing in the suction tubing	Use tubing suitable for working under suction pressure
	Low rotation speed	Check the voltage at the pump. Adjust the voltage and/or use cables of greater cross-section
Increased pump noise	The suction tubing is resting on the bottom of the tank	Raise the tubing
	Cavitation occurring	Reduce suction pressure
	Irregular functioning of the by-pass	Dispense fuel until the air is purged from the by-pass system
Leakage from the pump body	Air present in the diesel fuel	Verify the suction connection
	Seal Damaged	Check and replace the seal

MAINTENANCE

All models are designed and constructed to require a minimum of maintenance.

In any case always bear in mind the following basic recommendations for a good functioning of the pump:

- On a weekly basis, check that the tubing joints have not loosened, to avoid any leakage.
- On a monthly basis, check the pump body and keep it clean of any impurities.
- On a weekly basis, check and keep clean the line suction filter.
- On a monthly basis, check that the electric power supply cables are in good condition.

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NOISE LEVEL

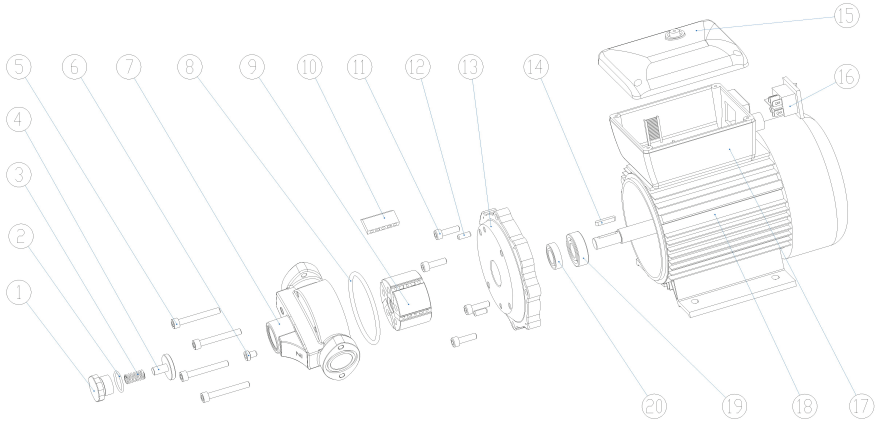
Under normal working conditions the noise emission from all models does not exceed the value of 70 db at a distance of 1 meter from the electric pump.

DISPOSING OF CONTAMINATED MATERIALS

In the event of maintenance or demolition of the machine, do not disperse contaminated parts into the environment.

Refer to local regulations for their proper disposal.

DIAGRAM AND PARTS LIST



Part No.	Description	Q'ty	Part No.	Description	Q'ty
1	BY PASS VALVE COVER	1	11	SCREW M5	4
2	O-RING	1	12	PIN 5	2
3	BY PASS SPRING	1	13	PUMP COVER	1
4	BY PASS VALVE	1	14	KEY	1
5	SCREW M6	4	15	TERMINAL BOARD	1
6	SCREW M6	1	16	DOUBLE-POLE SWITCH	1
7	PUMP BODY	1	17	TERMINAL BASE	1
8*	O-RING	1	18	MOTOR	1
9	ROTOR	1	19	BEARING	1
10*	BLADE	5	20	SEAL	1

* Wearing parts.

TECHNICAL DETAILS

Item No.	FPM-MECH
Meter Mechanism	Nutating disk
Flow Rate Range	5-32GPM
Operating Pressure	50PSI
Storage Humidity	Max. 95%
Working Temperature Range	-14 to 122°F
Accuracy	±1%
Inlet/outlet Connection	1"
Weight	4 LBS

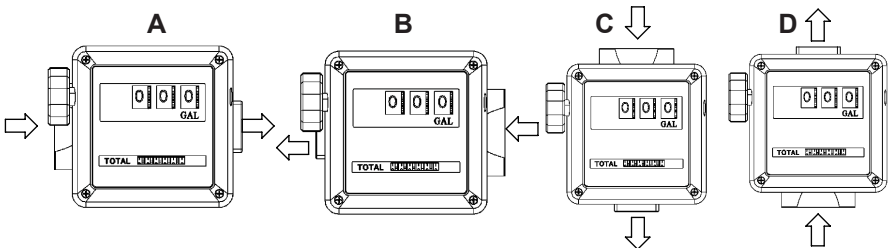
* This Mechanical Fuel Meter can be used to measure the flow of kerosene, diesel oil, water or other fluids of low viscosity.

PERSONAL SAFETY

- **Stay alert**, watch what you are doing and use common sense when operating a fuel meter. Do not use a fuel meter while you are tired or under the influence of drugs, alcohol or medication.
- **Dress properly**. Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts. Air vents often cover moving parts and should be avoided.
- **Use safety apparel and equipment**. Use safety goggles or safety glasses with side shields which comply with current national standards, or when needed, a face shield. Use as dust mask in dusty work conditions. This applies to all persons in the work area. Also use non-skid safety shoes, hardhat, gloves, dust collection systems, and hearing protection when appropriate.
- **Do not overreach**. Keep proper footing and balance at all times.

INSTALLATION

1. The meter can be installed in any position, directly on rigid pipelines or flexible hoses, or directly on pumps or tanks.
2. The meter flow direction is fixed and indicated by an arrow. The meter is supplied in the standard configuration (Figure A).
3. The counter and the cover can be rotated around the body in order to carry out the different configurations (Figures B, C & D).
4. The reset knob can be installed either on the right side or on the left side of the meter in order to modify the standard configuration, following the instructions provided in the section "Disassembly/Reassembly."
5. The meter body is equipped with holes which can be threaded for a possible fastening. If solid particles enter the measuring chamber the correct working of the nutating disk may be affected.
6. Always filter the fluid by installing a filter (included) on the meter inlet.



CALIBRATION

The meter is pre-calibrated in factory to be used with kerosene.

As specific operating conditions (such as real flow rate, nature and temperature of the measured fluid) 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 or when it is used to measure fluids other than kerosene.

CALIBRATION PROCEDURE

1. Unscrew the plug (see diagram, #22).
2. Purge the system (pump, pipelines & meter) of air by dispensing until the flow stream is full and steady.
3. Stop the flow by shutting off the nozzle, but let the pump continue to run.
4. Reset the batch register with the reset knob (#7).
5. Dispense at the most accurate flow rate, by using a calibrated container with a capacity of 5 gallons or more. Do not reduce the flow in order to reach the graduated zone of the calibrated container. Instead, use a "top-off" method, starting and stopping the full flow repeatedly until the required level is reached.
6. Compare the indication of the calibrated container (real value) with the meter's indicated value.
 - a) If the indicated value is higher than the real value, loosen the screw (#24).
 - b) If the indicated value is lower than the real value, tighten the screw (#24).
7. Repeat the steps 4 to 6 until satisfactory accuracy is achieved.
8. Tighten the plug (#22) again. The O-ring (#25) provided with the calibration screw will hold the new calibration position to avoid accidental loosening of the adjustment screw but does not seal the unit, so it is always necessary to properly fix the plug (#22) with the O-ring (#23).

USE

After installation and calibration, the meter is ready to work.

Turn the reset knob (#7) clockwise if it is mounted on the left of the meter and counterclockwise if it is mounted on right, until the batch register is completely reset. The total register cannot be reset in any way.



WARNING

Make sure that during use pressure does not exceed 50 PSI.

OPERATION

GRAVITY-FED SYSTEMS

The meter can also be used in gravity-fed fuel units where the flow is generated by the difference in fuel level between the tank and the nozzle outlet. As a general rule, a gravity-fed system composed of a tank off the ground that has the meter installed at the bottom of the tank, using a 9.8-ft. long 1" flexible pipe, guarantees a flow rate of approximately 8 GPM if the height difference is greater than 5 feet. Longer pipes or nozzles producing higher pressure losses will reduce the flow rate.

NOTE: Use of this meter for gravity-fed systems with level differences less than 3 feet is not recommended because the reduced flow rate causes the meter to work outside its guaranteed accuracy range. Onsite calibration is required in any gravity-fed installation.



WARNING

Before disassembling the meter, always make sure that all fluid is drained from the meter and pipes connected with the meter.

User can carry out periodic cleaning of the unit with a soft brush or small tool (i.e. a screw-driver). During cleaning, be careful not to damage the chamber or the disk. Carefully check the meter and replace any damaged parts. Only use the original spare part kits (not included) shown in PART LISTS AND DIAGRAM.

NOTE: A new calibration is always necessary after cleaning or replacing the meter parts.

DISASSEMBLY/REASSEMBLY

The meter can disassemble easily into its primary components without removing the body from the pipes.

METER UNIT

Disassemble the meter unit as follows:

1. Remove the reset knob (#7) by firmly pulling it straight out.
2. Loosen two retaining screws (#2).
3. Loosen two screws (#4).

To reassemble the unit, reverse the above procedure.

MEASURING CHAMBER

To enter the measuring chamber, operate as follows:

1. Disassemble the meter unit as the above steps 1-3.
2. Loosen the eight screws (#8).
3. Remove the body cover (#9), together with the gear unit.



WARNING:

Be careful not to damage the O-ring (#20).

4. Remove the whole measuring chamber (#19) by lifting it from the meter body (#21) and at the same time pulling it back towards the inlet in order to remove the O-ring (#27) from its seat at the outlet.
5. Remove the O-ring (#27) and divide the measuring chamber (#19) into two half to check the inside of the chamber containing the nutating disk.

To reassemble the chamber, reverse the above procedure. Be sure to:

1. Verify that the nutating disk rotates freely in the assembled chamber.
2. Install the O-ring (#20,#27) properly after inspecting and lubricating them with grease.
3. Make sure that when reattaching the cover to the body of the meter, the disk needle (#28) does not hit the driving lever (#17), which must remain free to be moved by the disk needle (#28)
4. Tighten the screws (#8) completely.

GEAR UNIT

To reach the gear unit components:

1. Remove the cover Assy (#8~#17).
2. Loosen the screws (#16).
3. Remove the gear plate (#14). Now all gears can be reached for inspection.
4. Should the Cover sealing (#12) be replaced, remove the bevel gear (#10) from the shaft by pulling straight out, and then remove the gear kit (#13) together with the shaft.

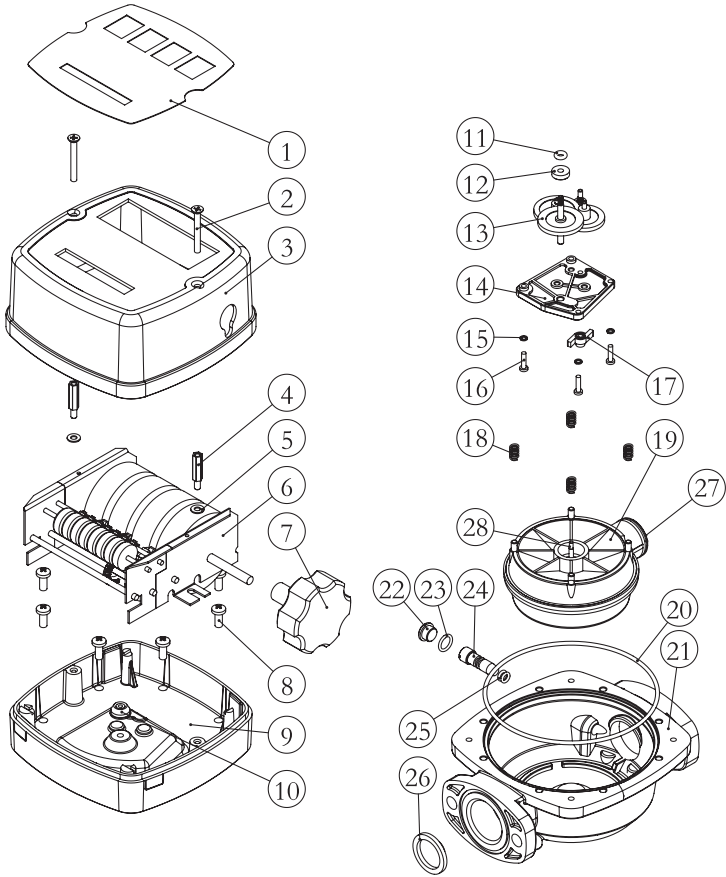
To reassemble, reverse the above described procedure paying particular attention to:

1. Lubricating the O-ring with grease before installation.
2. Checking that the gear unit can rotate freely before reattaching the cover.

MAINTENANCE

No ordinary maintenance is required if the meter is properly installed and used according to recommendations. 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 shown in section DISASSEMBLY/REASSEMBLY, and evaluate the filter's condition.

EXPLODED AND PARTS LIST



Part No.	Description	Q'ty	Part No.	Description	Q'ty
1	Name plate	1	15	Spring washer	3
2	Screw	2	16	Screw	3
3	External cover	1	17	Driving lever	1
4	Connecting screw	2	18	Spring	4
5	Washer	2	19	Measuring chamber Assy.	1
6	Meter	1	20	O-ring	1
7	Reset knob	1	21	Meter body	1
8	Screw	8	22	By-pass plug	1
9	Body cover	1	23	O-ring	1
10	Bevel gear	1	24	By-pass sadjusting screw	1
11	O-ring	1	25	O-ring	2
12	Cover sealing	1	26	Filter	1
13	Gear kit	1	27	O-ring	1
14	Gear plate	1	28	The disk needle	1



Macnaught Americas
(813) 628-5506 | info@macnaughtusa.com

* Read Manual Before Use!