

MARK-3 Quick Guide

This Quick Guide shows the basic operation of the WATERAX MARK-3 4-stage high pressure pump.

- The WATERAX MARK-3 pairs a WATERAX 4-stage pump end and 185cc 2-cycle engine.
- For detailed instructions on using and troubleshooting your engine and pump end, as well as full service and maintenance instructions, refer to our website to download the *MARK-3 Owner's Manual*.
- For full specifications and performance curves, see the *MARK-3 Data Sheet*.



Warnings and Safety Precautions

This warning label appears on all WATERAX pumps to identify safety hazards as follows:



READ YOUR OWNER'S MANUAL!

The improper use of this pump could result in serious injuries as well as damage to the unit. Read the *MARK-3 Owner's Manual* before using your pump unit and follow the safety instructions in this Quick Guide. It contains very important safety information that **MUST** be read, understood and followed to safeguard you and your equipment from harm, as well as for the proper use and care of your engine. Use only fuel and oil type as recommended.



GENERAL WARNINGS:

- Do not operate if mentally or physically fatigued.
- Inspect hoses and piping to avoid burst injuries.
- No modifications and/or alterations may be made to the pump. Any such modifications void the pump warranty and can endanger pump operators.
- Do not operate the pump above the maximum rated pressure. Use only pipe, hose, and fittings rated at or above the maximum pressure rating of the pump or system design.
- Slowly close valves. Use slow close valves wherever possible to safeguard operators and prevent damage from water hammer.
- Dry weight of the unit: 59 lbs.



WEAR EAR AND EYE PROTECTION.

Always wear eye and ear protection when operating the pump unit. Sound level of the unit: 113 dB(A).



NEVER RUN THE ENGINE IN A CLOSED OR CONFINED AREA. Exhaust gas contains carbon monoxide which is poisonous to humans. Avoid inhalation of exhaust gas.



REFUEL ENGINE WITH CARE. Gasoline is extremely flammable, and gasoline vapor can explode. Refuel in a well-ventilated area, with the engine stopped.



NEVER TOUCH ANY EXHAUST SYSTEM PARTS WHILE ENGINE IS RUNNING. Always allow enough time, after stopping the unit, for proper cooling of these parts and surrounding areas.



CAREFUL NOT TO PINCH YOUR FINGERS. Do not place your fingers near the cooling fan and the engine output shaft when the engine is running.

EQUIPMENT DAMAGE PREVENTION:

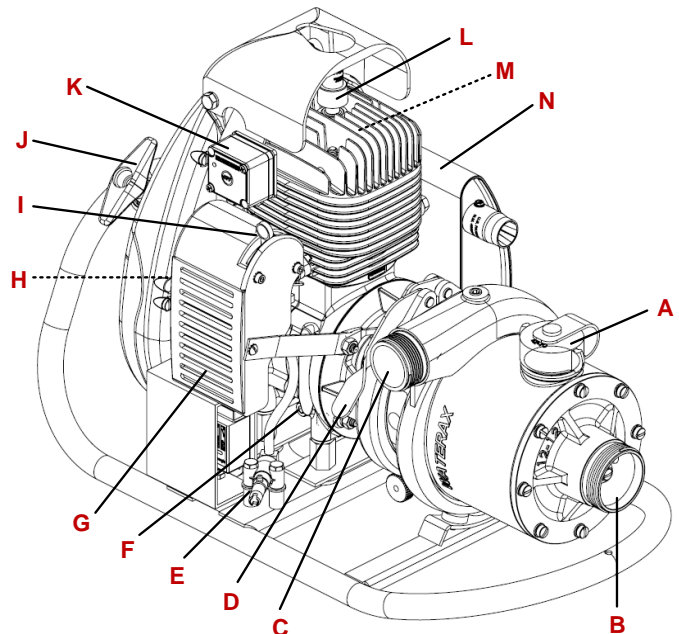
- Flush the pump with fresh water if the pump has been used to pump salty, brackish, high mineral content water, water containing debris, or foam injected water. Check that debris is cleared before using the pump again.
- Always draft water using a suction hose strainer.

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Parts Identification

- A. Priming cap
- B. Pump intake (suction)
- C. Pump discharge
- D. Quick release pump clamp
- E. Fuel connection*
- F. Engine drain plug
- G. Air filter
- H. Choke (not shown)
- I. Throttle
- J. Rewind starter
- K. Digital Overspeed Switch (DOS)
- L. Spark plug
- M. Decompression switch – optional (not shown)
- N. Muffler

* Mercury fuel fitting shown.



To operate the MARK-3 unit:

1. Supply recommended fuel to engine.

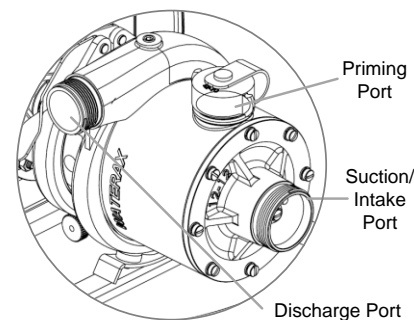
- a. Carefully mix the fuel using fresh 87 octane unleaded automotive gasoline (maximum 10% ethanol) and high quality two-cycle mixing oil with API-TC, JASO-FD and ISO-L-EGD certification (e.g., Amsoil Saber® Professional Synthetic) at a gas/oil ratio of **50:1**. Mix well.

Important: Ensure that the fuel tank is positioned away and at a safe distance of the muffler to avoid any potential accident. Always refuel with care.

- b. Connect fuel supply line to fuel tank.
- c. Prime fuel supply line to evacuate air bubbles.
- d. Connect fuel supply line to engine fuel connection.
- e. Pump fuel up to carburetor.

Important: Careful not to flood the engine when pumping fuel up to the carburetor; gently squeeze the priming bulb.

NOTICE
50:1
FUEL MIX RATIO



- 2. **Connect the suction hose**, using a universal hose coupling wrench to tighten coupling firmly. Connect the footvalve strainer to male end of suction hose, then fill suction hose with water and connect to pump intake.
- 3. **Unless using the WATERAX hand primer, connect the discharge hose, nozzles, etc., to pump**, and tighten firmly with coupling wrench.

- ! **DO NOT** run engine with pump disconnected.
- ! **DO NOT** run pump when dry.
- ! **DO NOT** allow footvalve strainer to rest on bottom of lake or riverbed. Check strainer frequently to make sure that it is not clogged with moss, leaves, etc.
- ! **DO NOT** lift strainer from water while the pump is operating. Use a rope or other means to keep strainer at proper height, approximately 1 foot (30 cm) below water surface. If strainer is too close to the water surface, it will draw air and pump may lose prime.

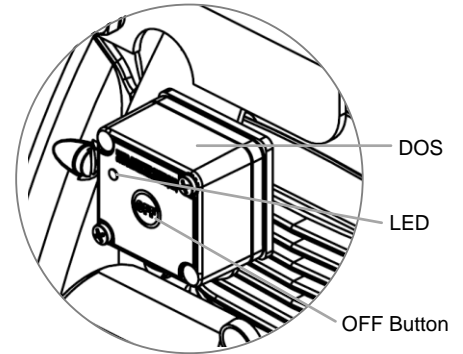
4. Prime the pump.

Manual Priming: Open the priming cap and fill pump with water manually. Firmly tighten priming cap. Pump can also be primed by “jerking” the suction hose until water flows from the pump’s discharge port.

WATERAX hand primer: Connect hand primer to pump discharge. Pump until water is drawn into the pump. Install discharge hose, nozzles, etc. to pump and tighten firmly with coupling wrench.

5. Start the engine.

- a. Power up DOS: crank engine 1-2 times, DOS LED will blink.
- b. Close/engage choke, if engine is cold.
- c. Move throttle lever to “START”/“WARM UP” position (approximately 3 increments from idle position).
- d. If equipped with a decompression switch (located on the cylinder head), push down the valve. The valve will close automatically upon engine startup.
- e. Slowly crank engine until resistance (past compression).
- f. Give starter cord a quick and steady pull.
- g. Once engine starts, slowly open/disengage choke and allow engine to warm up for a **minimum of 2 minutes** before using full throttle.



⚠ Failure to allow the engine to warm up may lead to piston scoring and possibly more serious engine damage.

6. Discharge water.

Once the pump is primed, and with the engine running, you can begin to discharge water.

- a. If pressure does not build in the discharge hose, the pump has not been fully primed. Prime the pump again.
- b. The engine works best at wide open throttle. Vary the discharge nozzle opening to adjust the pump performance.

Important: Do not use a nozzle larger than ½” (12.7 mm).

⚠ **DO NOT** leave the pump running with all the discharge valves closed for more than one minute, or else the pump may overheat and become damaged. To avoid this, a re-circulation line (if provided) should be opened or a discharge line left slightly open to allow fresh water to continue to enter the pump.

Digital Overspeed Switch (DOS):

The Digital Overspeed Switch continuously monitors the engine’s speed. In the event of an overspeed condition which will occur during a loss of prime, the DOS will automatically shut down the engine to prevent the risk of damage to the engine and pump.

The DOS has an integrated LED for troubleshooting and an OFF switch to manually shut down the engine.

Important: Cut-out switch must not be made inoperative.

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To shut down and store the MARK-3 unit:

1. **Shut down the pump.**
 - a. Gradually reduce the engine speed and move throttle to “STOP” position.
 - b. Allow unit to run for approximately 2 minutes with throttle in this position for proper cool down.
 - c. Press and hold the “OFF” button on the DOS until engine shuts down.
 - d. Drain pump after final use.
2. **Check and store the pump.**
 - a. If the pump was last run with foam or water that is salty, brackish or high in mineral content, flush the pump with fresh water for a minimum of 2 minutes or until the water is clear.
 - b. Completely drain the pump of all water.
 - c. Visually inspect the pump end. Clean any dirt or debris from the pump unit. If necessary, a mild soap and water solution can be used. Note and report any performance irregularities or any abnormal mechanical sounds.
 - d. For long term storage, drain the carburetor of the fuel. Pour 5 mL (0.17 oz.) of 4-cycle engine oil (any viscosity will do). Slowly crank the engine to cover the piston rings, cylinder and crankshaft with oil to protect the components from corrosion. Storage seal fogging oil can also be used.
Important: 2-cycle oil is not recommended as preservation oil; it tends to attract moisture.
 - e. Follow any other product, component, apparatus, and departmental procedures and/or guidelines before placing the unit in storage. Make sure all necessary tools, spares, and accessories are with the pump.

To operate the MARK-3 unit in cold weather:

- The pump can be run in below freezing temperatures if certain precautions are taken to avoid the formation of ice in the pump.
- After priming the pump, the unit should be run at low speed for a short period of time to allow all components to warm up before continuing with the remaining operating procedures.
- Unless wrapped in a heater, drain the pump of all water if it is stopped for any length of time. The engine/drive unit should be turned over a few revolutions to make sure all water has been removed from the pump. Drain the pump priming line if a primer has been used.
- After use, drain the pump, manifolds, and lines of all water. You can also pour some RV antifreeze into the pump and circulate it through the pump and plumbing system.

Warranty, Service and Support

Product and service documentation such as tech notes, data sheets, manuals and information on the limited warranty provided on products manufactured by *WATERAX* can be found on our Web site at: www.waterax.com

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