CITY OF LOVELAND
FIRE AND RESCUE DEPARTMENT
410 E. Fifth Street • Loveland, Colorado 80537
(970) 962-2471 • FAX (970) 962-2912 • TDD (970) 663-5144

TYPE 6 AND PORTABLE PUMP OPERATIONS (1.1)

Developed by Engineer Greg Van Heel
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- NFPA 1906, 1901

TASK SKILL DESCRIPTION AND DETAIL

Efficiency in pump operations can be critical to successful wildland firefighting efforts. This guide is intended to create consistency for operations of Type 6 (Brush Patrol) engines. This is not intended to replace education and training of engineering and hydraulic principals related to pumping operations.

This guide is broken into three sections for each type of pump carried on the Brush Patrols:
Section A: Rear-Mounted 4-stoke pump
Section B: Flotopump
Section C: Portable Pump

Section A: Rear-Mounted 4-stoke pump

Starting the Pump

Prior to starting the pump, ensure drains and discharge valves are closed. This pump is equipped with an electric start which pulls power from the engine's battery. To start the pump turn on the battery switch near the driver-side floorboard.

Ensure battery switch is turned on.

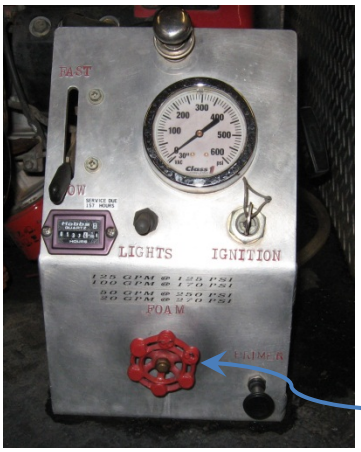
Fuel Shutoff

Choke

Ensure the fuel shutoff switch is turned downward to allow fuel to flow. If the engine is cold, pull out the choke. The pump can now be electrically started by the key (or the manual pull cord). If the pump will be not be employed immediately, circulate water to prevent overheating of the pump.

Flowing Foam

This pump is setup to use the Venturi Effect to inject Class A foam into the inlet of the pump. Prior to flowing foam, **the tank-fill valve MUST BE CLOSED** or the entire onboard water tank will get foamed. To engage the foam system, crack open the red foam valve (about 1/8th of a turn). Then open the quarter-turn valve on the foam line located near the pump inlet.



Crack open (1/8th turn)

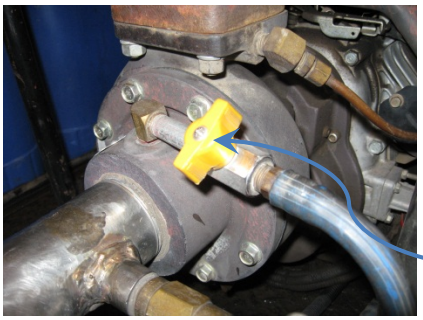
Open the foam line valve

Drafting

The pump is designed to draft from a static water supply using an exhaust primer. This primer uses the pump's engine exhaust to create a Venturi Effect which creates a low-pressure atmosphere inside the hard suction hose to establish a draft.

To establish a draft:

1) Attach the needed sections of hard suction to the pump inlet line.
2) Start pump and increase pump RPM to a fast rate.
3) Open valve to hard suction hose.
4) Turn yellow drafting valve inline on the pump inlet.
5) Pull out exhaust primer knob on pump panel.
6) Once water has entered the pump, slowly open a discharge to keep water moving.



Open Valve

Pull Primer

Drafting (con't)

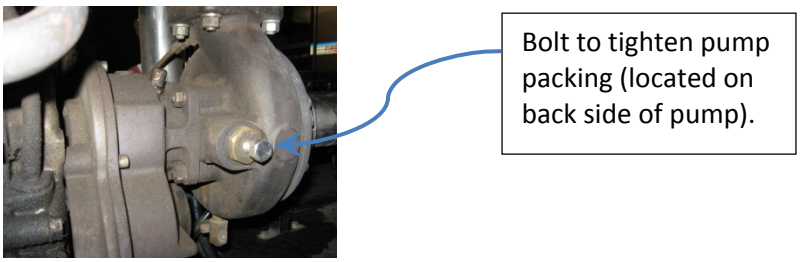
Typical drafting setup.

Water which is drafted from a pond or stream will typically be contaminated with algae and small organisms. Sandy or dirty water is especially harmful to the pump. When drafting operations have concluded, thoroughly flush the pump and tank with clean water.

Maintenance/Winterization

The pump is powered by a gasoline engine and should be maintained like any other gas engine (check oil, use fuel stabilizer, check air filter). However, the pump and valves require some additional maintenance to keep the pump operating efficiently.

The pump uses a putty-like graphite material as a pump packing. This packing helps to lubricate the pump housing and is intended to allow some water to leak to prevent the pump from overheating. The pump packing should be tightened occasionally for proper adjustment. **Packing should leak at rate of 60-100 drops per second when the pump is pressurized to 100 psi.** Tighten packing only 1/8 turn and watch for a few minutes to monitor changes in drip rate.

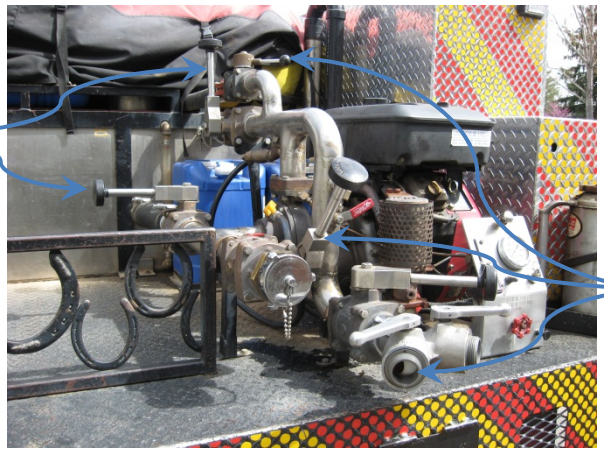


Maintenance/Winterization (con't)

During the winter months cold temperatures present a risk of freezing and damaging valves and pump components. To prevent this damage, the pump should be kept in a drained state. The tank-to-pump and tank-fill valves should be closed and all other valves should be left open at a 45-degree angle. (Leaving the valves fully open can cause damage from water trapped alongside of the ball valve, 45° position will prevent this damage). The pump should be drained of water as well.

Vehicle Maintenance has stated that during the winter months the pump only needs to be run on 30-day inspections, and can be skipped on the weekly "small engine day".

Tank-to-Pump and Tank-Fill valves completely closed to keep water out of piping.



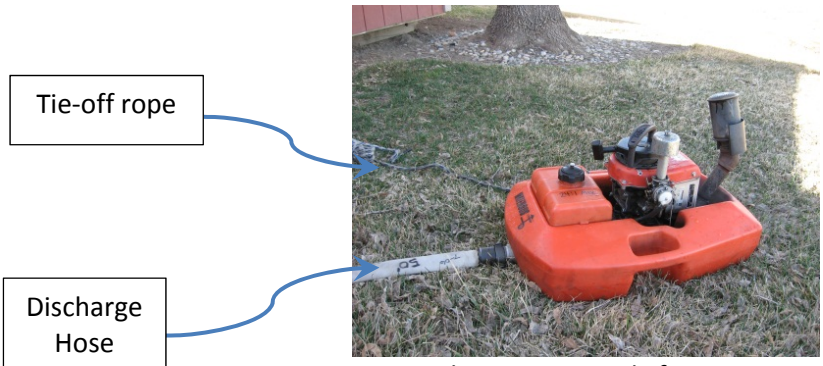
Most Valves at 45° to prevent freezing water damage.

Main pump drain valve open.

Section B: Floto-pump

The Floto-pump is a floating gasoline powered pump which delivers a constant gallonage. This pump is intended to be used from a static water source and typically utilized to fill tanks (booster tanks or porta-tanks).

Prior to starting the pump, connect a line to the discharge and tie off the rope to a solid object. The pump is a two-stroke engine which requires a 24:1 fuel mixture (DO NOT USE SAW MIX OIL, instead use 5.5 oz of #30 outboard oil mix per gallon of gasoline). To start the pump, open the vent on the fuel cap, engage the choke, and flip the switch to RUN. Push in the decompression valve and pull-start the engine. Once the engine starts it remains at low-idle until placed into water when a float triggers high idle.



Floto-pump ready for use.

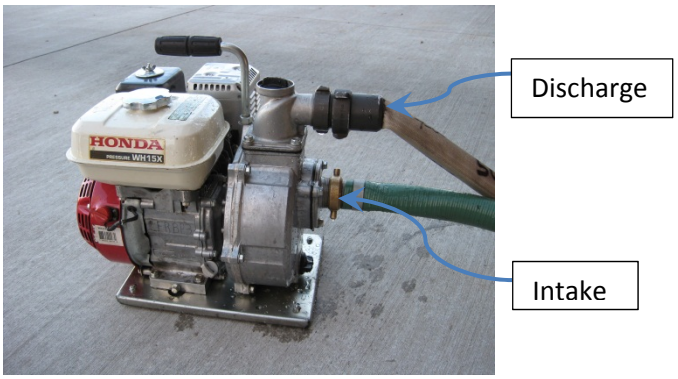
The Floto-pump can be tied off and started on dry ground before placing it into water; however it is water-cooled and must be quickly placed into water after starting. If the pump is difficult to start, try manually lifting the float to increase the idle speed. Once the pump is running and placed into water, it is self-priming but this may take up to 30 seconds. You can help speed up the priming by temporarily kinking the discharge line to build back pressure at the pump.

Section C: Portable pump

The portable pump is a small Honda four-stroke gasoline powered water pump with a dry weight of 50 pounds.

This pump is intended to be used from a static water source and typically utilized to fill tanks (booster tanks or porta-tanks). This pump may also be utilized as an in-line pump to boost pressure, but the operator must be **VERY CAREFUL** when utilizing the pump in this manner. The pump has a *maximum* allowable casing pressure of 60 psi. Since the pump generates approximately 50 psi at full throttle, the inlet pressure should remain at 10 psi or below. There is a strong possibility of severely damaging the pump when attempting to utilize it in-line, and this operation should be avoided if possible.

For best performance, place the pump near the water level of the static source. Attach the intake and discharge hoses prior to starting. Turn the fuel valve lever to ON, engage the choke, and turn the ignition switch ON. This pump **MUST BE PRIMED** with water prior to starting the engine. Failure to prime the pump will destroy the pump seal and severely damage the pump.



Fill pump casing completely with water prior to starting.

When pumping operations are complete, drain all water from the pump casing.

REFERENCE INFORMATION

Powerpoint presentations for the Floto-pump and Portable Pump can be found at:
V:\Fire\Suppression\Wildland\Wildland Training\Wildland training powerpoints