

## **MARK-3 Watson Edition Specification Document**

### **Pump Performance and Rating**

The pump/engine shall provide the following pump performance from 5 foot draft under standard NFPA conditions: 80 GPM (303 lpm) @ 100 PSI (6.9 BAR), 70 GPM (265 lpm) @ 150 PSI (10.3 BAR) and 40GPM (151 lpm) @ 250 PSI (17.2 BAR). The pump shall provide a maximum pressure of 380 PSI (26.2 BAR) and a maximum flow of 100 US gals/min (379 L/min). It shall be capable of operating to a maximum pressure of 600 PSI (41.5 BAR) and be capable of passing a hydrostatic test of 500 PSI (34.5 BAR) for 10 minutes per NFPA 1906 – NO EXCEPTIONS.

### **Pump Suction/Discharge Ports**

The pump intake shall be a 2" Male NPSH hose thread and be an integral part of the pump intake cover. The pump discharge shall be a 1-1/2" Male NPSH hose thread and shall be an integral part of the pump body. The pump intake and discharge threads shall be in locations where applicable hose thread adapters can be installed without interference. Both the intake and discharge of the unit shall be supplied with protective thread caps that secure to the unit to prevent loss.

### **Pump**

The pump shall be a 4-stage direct drive centrifugal pump with the pump body made of an anodized corrosive resistant aluminum. The impellers and distributors must be composite PPS GF reinforced to prevent galvanic corrosion from taking place between pump components – NO EXCEPTIONS.

The impellers shall be 2.99 inches (75.95 mm) in diameter. The pump shaft shall be stainless steel and supported by two maintenance free bearings – NO EXCEPTIONS.

One bearing shall be a sealed roller bearing located outside the pump body and one a bushing located within the pump intake cover. The pump drive shaft shall be separate yet in-line with the engine drive shaft and coupled to the engine through means of a gear grip couplings which shall also function as a dampening system between the pump and the engine. In addition, the pump seal shall be a mechanical rotary seal and shall incorporate a blister-resistant carbon seal face and silicon carbide seat – NO EXCEPTIONS.

The complete pump end shall be coupled to the engine through the means of a quick release clamp capable of being removed by hand and without any additional tools – NO EXCEPTIONS.

The quick release clamp system shall allow for the entire pump assembly, pump body with all its internal and external components, to be removable and capable of being service at a location away from the engine. It shall also allow for the swapping out of the same or different performance pump assemblies within a minute's time – NO EXCEPTIONS.

The pump shall be painted red – NO EXCEPTIONS.

## **Engine**

The engine shall be a 2-cycle, air-cooled, single cylinder 10 HP engine and shall be produced by the same manufacturer as the pump– NO EXCEPTIONS.

The engine shall have a 2.36 (60 mm) bore, 1.97 inches (50 mm) of stroke, and a displacement of 8.63 cubic inches (141 cc). It shall be capable of running on any commercially available unleaded gasoline (up to 10% ethanol) at a 50 :1 gas to oil mixture. It shall be capable of operating on any oil typically used with 2-stroke engines and shall be provided with a recoil start. The engine shall come with a back-up pulley and rope system starting system should the rewind starter fail – NO EXCEPTIONS.

A clear fuel line shall run from the unit's fuel fitting connection to the engine's carburetor so that the operator can visually detect when fuel has reached the carburetor. The engine shall be protected by an overspeed system that shuts the engine off when the pump loses prime.

A purge bulb shall connect to the engine's carburetor so that the operator can visually detect when the carburetor has been fully primed without flooding the engine – NO EXCEPTIONS.

## **Fuel Tank to Pump Fuel Line**

The unit shall offer an optional 5-foot fuel line with priming bulb that meets current US EPA evaporative emissions standard. A male fuel fitting shall be provided on the end that connects to the tank and a female fitting on the end that connects to the pump/engine unit.

## **Fuel Tank**

The unit shall offer an optional fuel tank. The fuel tank must have an integral carry handle, air vent, cap and chain. The tanks fuel line connection must have an integral check valve to prevent fuel from leaking out of the tank when the tank to pump fuel line is disconnected.

## **Air Intake**

The air intake of the engine shall have a cover plate that prevents hot embers from contacting the filter element. The air filter cover plate shall be easy to access and be removable for cleaning or replacing the air filter element. The air filter element must be replaceable.

## **Mounting Base**

The base of the unit shall be made of a composite frame with integrated backboard, aluminum crossmember and vibration mounts. The foot print of the base shall fully enclose the width and length of the unit.

The unit shall offer a pump carrying pack option for transporting the unit upon a fire fighter's back. The pumping unit shall attach to the carrying frame by a padded strap with military grade Fidlock® quick release system – NO EXCEPTIONS.

## **Controls**

The pump unit shall have the following engine controls: choke lever, shut-off, and throttle lever. The throttle lever shall have positive incremental adjustment to prevent the throttle lever from moving out of the operator's set position.

The pump shall have a user interface module (UIM) with a OFF button with daylight visible LEDs to display the engine operating status. The UIM must provide overspeed and overheat protection. It must allow for software access to logged events via USB-C connection and Bluetooth® wireless connectivity – NO EXCEPTIONS.

## **Weight & Dimensions**

The pump unit shall not exceed 44 lbs (20kg) and the overall dimensions shall be L 21.6 x W 12 x H 14.6" (L 549 x W 305 x H 371 mm).