

MS153EMH

OPERATIONS MANUAL

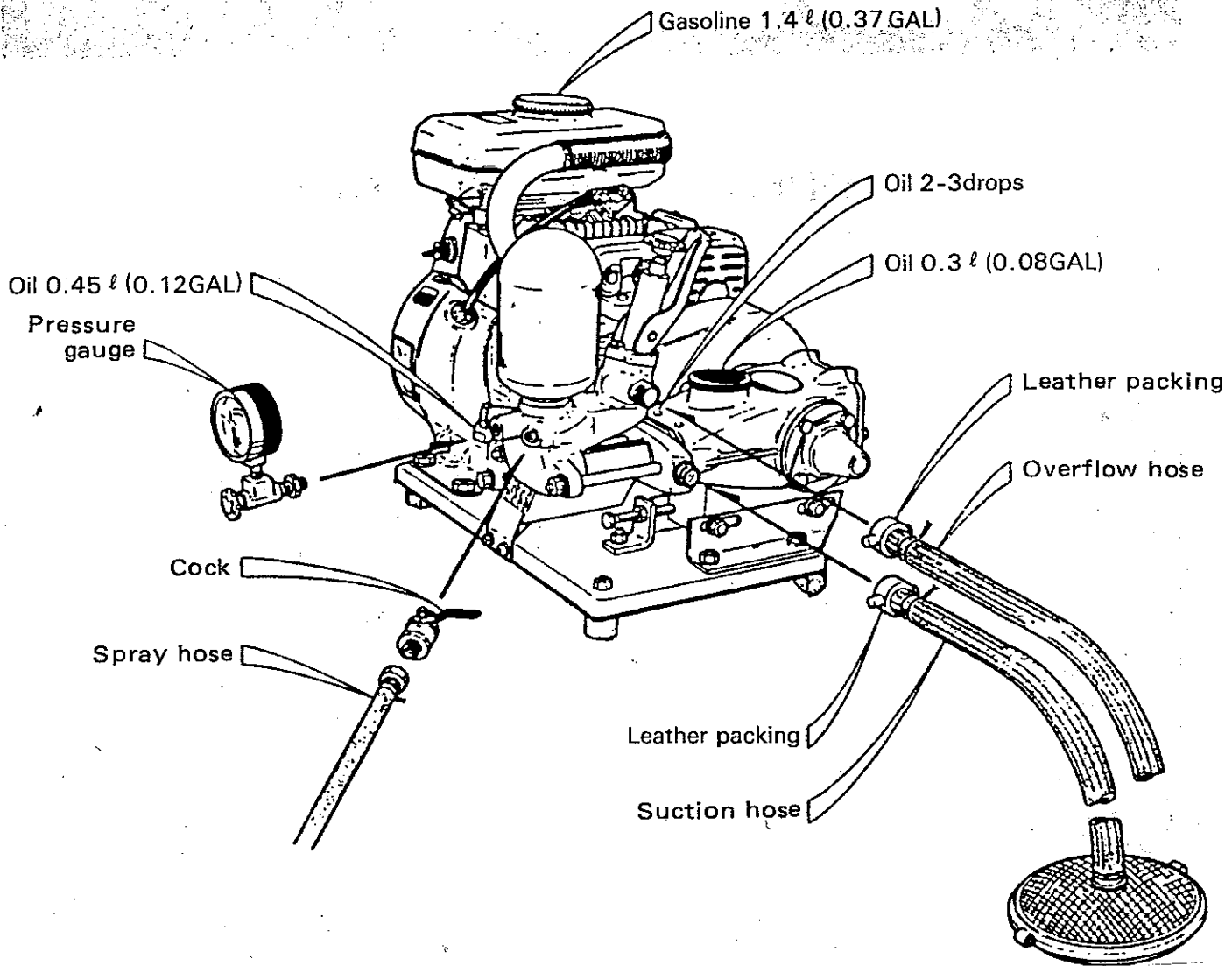
1. Specifications

Model		MS153EMH — Power Sprayer
Measurement		L x W x H — 455 x 415 x 370 mm (17.9 x 16.3 x 14.5 in.)
Dry Weight		20 kg (44 lbs)
Pump		
Model		MS153
Type		Duplex Piston Type
Suction Volume	Regular	11 l/min (2.9 G.P.M.)
	Maximum	14 l/min (3.7 G.P.M.)
Pressure	Regular	20 kg/cm ² (285 psi)
	Maximum	25 kg/cm ² (357 psi)
Revolution	Regular	920 rpm
	Maximum	1,100 rpm
Engine		
Model		Honda G100S1
Type		Air cooled, 4 cycle gasoline, side valve
Displacement		76 cc
Rating output		1.4 ps/3,600 rpm
Maximum output		2.0 ps
Accessories		
Suction hose		13 ϕ mm x 2.7 m with strainer ($\frac{1}{2}$ inch x 9 feet)
Overflow hose		13 ϕ mm x 2.7 m
Box spanner		19 mm
Operation Manual		Power Sprayer — 1 copy Engine — 1 copy



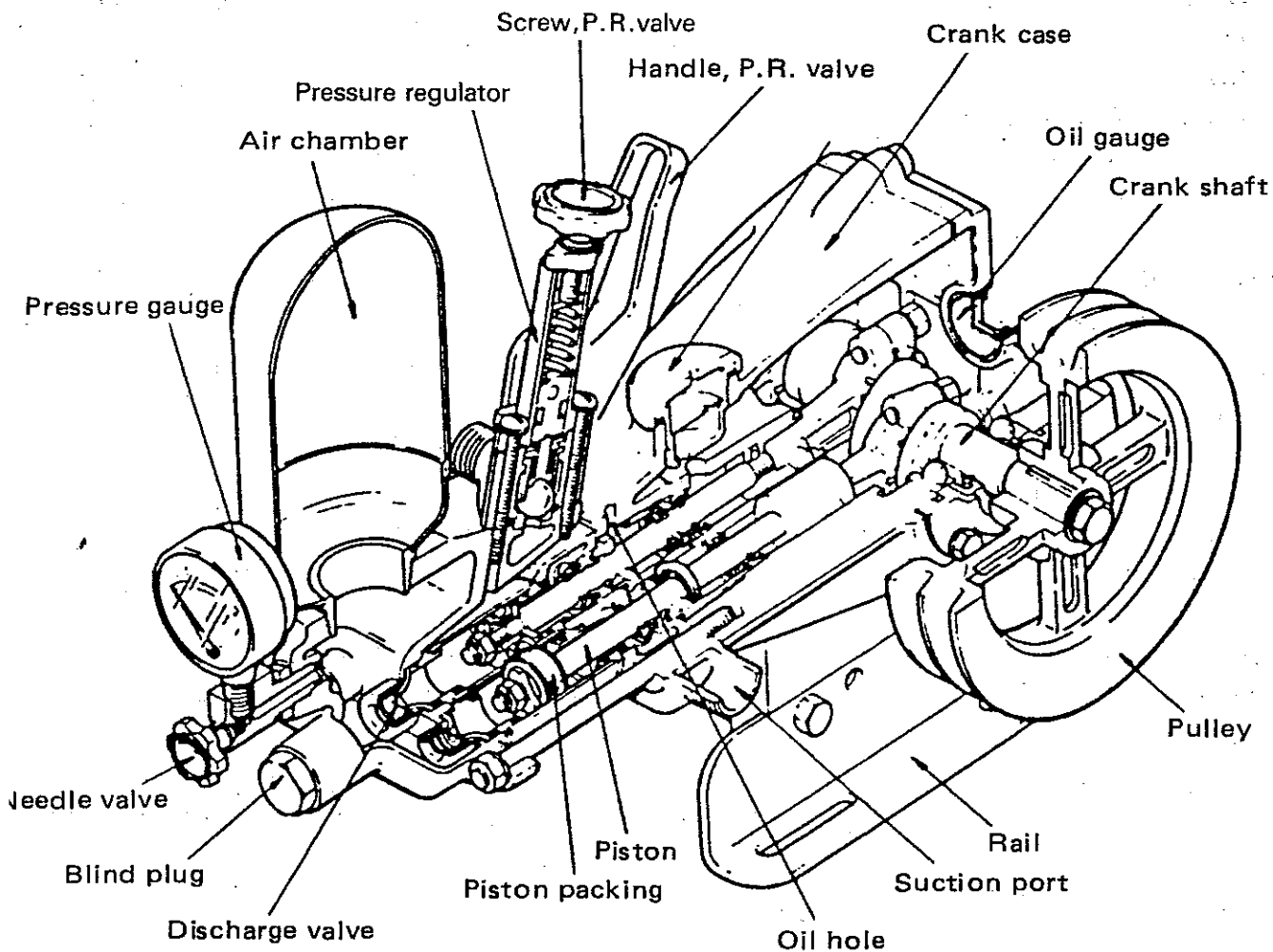
MARUYAMA MFG. CO., INC.

2. Read Operation Manual of engine first before running it and prepare as follows:



- a) Install pressure gauge to power sprayer at one of the two discharge ports.
- b) Install valve cock on power sprayer at discharge port.
- c) Fill engine with SAE #10w – 30 oil, adding it to the crankcase of the engine. (Check the level of oil with the oil gauge)
- d) Fill the pump crankcase with the same oil as used in the engine. NOTE: The proper oil level is to the middle dot on the oil sight gauge mounted to the crankcase.
- e) Add 2–3 drops of this same oil to the oil holes on the top front edge of the pump crankcase, just to the rear of the inlet manifold.
- f) Make sure that leather packings are not damaged or missing from the suction hose and overflow hose. Then attach the two hoses to the power sprayer.
- g) Use unleaded regular gasoline in the fuel tank.
- h) Make sure all screws, bolts, and nuts are secure.
- i) Check for tension of V-belt. Adjust as necessary by turning the tightening screw clockwise to increase belt tension.
- j) Make sure the pump has an adequate supply of water. Place the inlet line with strainer and bypass line into your chemical tank. Be sure the inlet strainer is submerged in the water before starting the unit. The pump is self-priming but dry running should not exceed 2 minutes.

POWER SPRAYER EXPLODED VIEW



3. Starting the unit & adjusting pressure.

- a) First, pull up the handle of the pressure relief valve, which is the bypass position. This lifts the spring tension off of the check ball, allows all pumped fluid to bypass to the tank via the return line.
- b) After starting the engine, keep it at an idling position for a while until warmed up (see engine's Operation Manual). The pump should prime itself quickly.
- c) After starting, make sure water from overflow hose returns to the chemical tank. The bypass line should be positioned to agitate the tank chemicals but not too close to the suction line. Excessive agitation by the suction line could cause it to draw air, cavitating the pump.
- d) There are two methods of adjusting pump pressure — with the discharge line closed or with the line open. For the first method, close the discharge cock on the power sprayer, then set the engine rpm that you want to use. Open the needle valve on the pressure gauge base $\frac{1}{4}$ turn from the closed position.
- e) To pressurize or load the pump, push down the handle of P.R. Valve. Adjust the screw of P.R. Valve to 20–25 kg/cm² (285–357 psi) while watching the pressure gauge. Once you have set your desired operating pressure, tighten the lock nut on the P.R. Valve. Make it secure to avoid its loosening during operation.
- f) The second method involves the same procedure except the discharge line is left open. This allows the operator to measure pressure settings when the nozzle is used. The nozzle orifice diameter and hose length will affect actual working pressure.

4. Operation and Stopping.

- a) Finish adding chemicals and water to the chemical tank if this has not been done as yet;
- b) Open the valve cock of the power sprayer and push down the handle of the P.R. valve. Then open the valve cock of the nozzle for spraying.
- c) Adjust engine rpm as needed during operation. A useful rule is that the bypass volume should equal 10% to 20% of the full suction capacity.
- d) After checking the pressure readings, always pull up the handle of P.R. valve and close the needle valve to prolong the life of the pressure gauge. Push down the handle again, then start to spray chemicals.

CAUTION: Use filtration mask, gloves, and protective clothing. Always apply chemicals from the windward direction to avoid chemical contact or drift.

When finishing spraying, pull up the handle of P.R. valve to decrease pressure, and stop spraying.

Slow down the engine and keep the engine at a low speed for 2—3 minutes to cool off the engine. Stop it.

NOTE: In case high engine rpm/pressure and flow are not required, usage at 2/3 throttle for lower rpm and pressure is recommended. This will prolong engine life and allow more economic operation.

NOTE: After use, thoroughly rinse the nozzle pump, lines and tank by spraying with clean water. This will help avoid chemical damage to any components, prolonging system life.

Remove the discharge hose from the power sprayer. Pull up the suction hose from chemical tank to suck in air. Open the valve cock of the power sprayer, run engine at a low rpm for 1 minute to completely drain water from the power sprayer.

Stop the engine immediately when no more water is discharged from the valve cock.

5. Maintenance and Storage.

Daily maintenance is important to prolong pump and engine life.

Check for items as follows:

- 1) Engine — See engine manual
- 2) Power sprayer

- Check for oil.

An oil change is required after the first 50 hours and at every 100 hours thereafter (SAE #30). Always change oil if it's color has turned white or another color. This usually means that water has contaminated the oil. The pump inlet seals and piston sleeves may be due for replacement. Check the sleeves for fine scratches or wear and replace as necessary.

- Check the tension of V belts and see if abnormal conditions such as excessive wear, deformation, damage, etc., are found. Replace as necessary.
- Check and tighten all nuts and bolts as needed.
- Make sure to drain all water from the power sprayer. This is especially important when preparing for storage or in winter months when freezing temperatures are possible.
- Make sure to clean the exterior surfaces of the power sprayer.
- Store the machine in a dry location. Protect it from dust and dirt by covering