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MASTER
MANUFACTURING

40 & 60 GALLON UTILITY SPRAYER



Operations Manual

Lawn Sprayer (SLJ-01-0xxx)

Skid Sprayer (SUJ-01-0xxx)

OPERATION

Service the engine with gas and oil according to the recommendations in the engine manual. Follow the engine manufacturer's instructions for starting and operating the engine.

Check the inside of the tank for any foreign objects or material that could cause damage to the pump.

Fill the tank with clean water. It is always better to have the tank at least half full of water before adding the chemical to avoid possible damage to the sprayer components by an undiluted chemical concentrate.

Before initially running the sprayer, loosen the tee handle of the relief valve. This adjustment should be checked while spraying because a pressure increase will be noted when the sprayer is shut off and the output of the pump is by-passed back to the tank through the relief valve.

Limit the pressure to 150 psi. The maximum operating speed of the pump is 2600 rpm. Excessive pressures and/or operating speeds will reduce the life of the pump. If, when adjusting the relief valve for more pressure, no increase in pressure occurs, it is an indication that the maximum output of the pump is being used. When the sprayer is shut off the pump will have to overcome the excessive tightness of the relief valve in order to by-pass back to the tank. This will cause pump strain and possible damage and should be avoided.

Choose an operating pressure that provides a spray pattern suitable for the particular operation. Follow the chemical manufacturer's recommendations for mixing and rates of application carefully. Judge the area sprayed by a tank full of spray material carefully to avoid over or under

application rates. Do not use your sprayer for pumping petroleum products, strong acids, paint or other thick materials with heavy viscosity.

General Sprayer Maintenance

Most spray materials are highly corrosive. The most important aspect of long dependable service from the sprayer is a thought cleaning immediately following each use. In addition, the residue of one type of chemical could cause an undesirable effect when a different chemical is used for a different purpose.

The most effective cleaning method is to pump several rinses of clean water through the tank, pump, hose and spray gun. A neutralizing agent such as a solution of Nutra-Sol, detergent or household ammonia as recommended by the chemical manufacturer can assist in removal of a persistent chemical. Avoid getting chemical on the engine and other external parts of the unit in order to preserve the finish. Remove external spray material deposits when cleaning and flushing unit. A coat of wax applied to the exterior will protect the paint and make clean up easier.

When the unit is thoroughly cleaned, remove the tank filter bowl and drain the water from the tank, spray gun, pump boom and spray gun hose.

Troubleshooting

In the event of inefficient operation or malfunction, check the following:

1. Clean the line strainer after each use or more often, if necessary. A plugged strainer will restrict the flow of liquid to the pump and

cause it to perform poorly. Always use clean water and keep the strainer screen in place. Sandy or gritty liquids will damage the components of the pump.

2. Check the hoses for any kinks or leaks. Avoid letting a hose touch the engine muffler or be subjected to other objects that could cut or damage it. Be sure that suction hose is not collapsed or plugged.
3. Check the spray gun for any obstructions, especially the nozzles. Nozzle tips should be removed and cleaned with a toothpick or similar object. Avoid nails, wires, etc., that could damage the tip opening. The nozzle screens of the boom accessory should also be removed and cleaned periodically. Inspect and replace worn tips to insure satisfactory spraying performance.

Storage

This sprayer should always be cleaned and drained before storage. If the unit will be subjected to freezing temperatures, it is imperative that the whole sprayer; pump, hoses, spray gun, gauge, etc., be completely drained and dry. Any water left in the system could cause extensive damage when it freezes. Follow the recommendations of the pump instructions for preventing internal pump corrosion and protection against the rotor and rollers gumming and sticking during storage.

Boom Operation

The spray nozzles used in the boom are marked with the capacity in gallons per minute of water at a pressure of 40 psi. A 3 tip has a capacity of .3 gpm at 40 psi. A 5 has a capacity of .5 gpm at 40 psi. etc.

The spray width coverage of the nozzle will vary according to the pressure, and nozzle height. The wide angle flat spray pattern increases as the pressure is increased.

The amount of material applied by the nozzle is changed by variations in spraying speed, different capacity nozzles, different nozzle spray width and spraying pressures. Other factors such as a heavier or lighter (specific gravity) spraying solution, a change in the chemical-water concentration ratio, worn tip, a worn pump, wheel

slippage, a pressure drop from the gauge to the boom, and a pressure gauge variation or malfunction can also cause variations in the rate of application. Uneven coverage can result from a clogged nozzle and a straining screen.

The spraying pressure is usually more in relation to the type of application and the type of tip used than to the rate of application. Since nozzle flow rate is almost proportional to the square root of pressure, it would take four times the amount of range from 10 to 40 psi. The rate of application can be changed somewhat by changing pressure but a considerable change is achieved by using a different capacity nozzle or (if possible) by changing the spraying ground speed.

Dividing the spraying width of the boom in feet into 1000 determines the travel distance required to cover 1000 sq. ft. For example, an 80" spray width will cover 1000 sq. ft. in 150 ft. of travel. Periodic calibration checks at the spraying speed and pressure assure correct application rates. The number of gallons required to refill the tank after spraying (starting with a full tank) over a test distance is the application rate for the area of the test distance.

Multiplying the application rate for the 1000 sq. ft. by 43.56 will determine the application rate per acre or dividing the rate per acre by 43.56 will determine the rate per 10000 sq. ft. If unknown, spraying speed can be determined by measuring the distance travelled in one minute. Every 88 ft. of travel is equal to 1 mph of speed. For instance, a distance of 308 ft. in one minute divided by 88 equals 3.5 mph.

A calibration check can also be made with the unit standing still and the boom spraying at the operation RPM an pressure. Catching the output of the one nozzle for the time it would take to travel the test distance and multiplying by the number of nozzles on the boom will yield the application rate. Water weighs 8.34 lbs. per gallon. Spraying solutions heavier than water cause a reduction in nozzle output, while solutions lighter than water will increase the nozzle output.