Rittenhouse
375 Litre/120 US Gal
&
750 Litre/200 US Gal
Greenhouse Sprayer

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INTRODUCTION

Congratulations on your choice of a high quality Rittenhouse sprayer. Your sprayer is constructed of the finest materials available and with proper maintenance will give you years of trouble free service.

To ensure its best possible use, establish a good maintenance and safety program. Know your spraying requirements and how this machine can meet them. Please read the following instructions carefully.

We strongly recommend that you contact your local government department or other competent authority with regard to the spray program that will best suit your requirements.

To the extent that the law permits, M.K. Rittenhouse & Sons Ltd. disclaims any responsibility for loss of time or use of the product, or any other indirect, incidental or consequential damage, inconvenience or any damage due to faulty application of chemicals.

The advanced design of the Rittenhouse spray unit facilitates ease of use and convenient maintenance procedures. The pumps direct drive configuration eliminates the need for many troublesome belts and pulleys.

The tank is made of corrosion-free polyethylene. Brass, nylon, stainless steel and epoxy-coated aluminum are used extensively throughout the spraying system in order to practically eliminate clogging due to corrosion.

PRECAUTIONS

1. Check all fluid levels regularly.

2. Keep suction line clear and suction filter clean.

3. Do **NOT** run unit with suction valve closed.

4. If oil is milky and white in sight glass on diaphragm pump, shut machine down immediately.

5. Keep air vent in tank lid operational.

6. Ensure no liquids other than anti-freeze are in machine if there is possibility of freezing temperatures. Perform winterizing steps.

MAINTENANCE

PLASTIC TANK

a) Clean out after use. Do not leave chemicals in tank.

b) Ensure air vent in lid is kept clear and operational. Damage to the tank can occur if this is not done.

c) Store in covered area out of sunshine or cover tank when not in use with opaque material such as a canvas tarpaulin.

SUCTION LINE AND STRAINER

a) Ensure suction hoses and fittings between the tank and the pump are airtight.

b) The suction filter is removed by unscrewing the nylon bowl. Running clean water over it may clean the stainless steel screen. While the filter bowl is removed, check seal on bowl to ensure it is in good condition. Replace seal on bowl if it appears worn, cracked or misshapen. When reinstalling filter bowl, take care not to cross the threads on the bowl and only tighten by hand.

c) If the tank has liquid in it when the filter needs to be inspected, shut off the valve leading to the strainer from the tank. THIS VALVE MUST ALWAYS BE **OPEN** WHEN THE PUMP IS IN OPERATION OR DAMAGE TO THE PUMP COULD OCCUR.

DIAPHRAGM PUMP CARE AND MAINTENANCE

1. Check oil level regularly, checking every tankful would not hurt. Use SAE #30, **not** 10W30 oil. Maintain oil level halfway up on sight gauge.

2. Clean suction filter of all dirt, undissolved chemical, or other foreign debris when filling tank or more often if using dirty water supply or chemical that tends to clog suction filter. Clean if needed. If the tank has liquid in it when the filter needs to be inspected, shut off the valve leading to the strainer from the tank. This valve must always be open when the machine is operating or damage to the pump could occur.

3. There is an air valve on the pulsation damper chamber on the pump. Fill with air at 10% of your working pressure. Minimum charge should be 10 psi. To fill, set regulated air pressure to pressure desired in the damper. Checking with a tire gauge will let out too much air for accuracy.

4. When starting up, run machine for one or two minutes at zero pressure to evacuate air from the pump.

5. Adjust pressure relief valve to desired pressure. Turn the handle or knob in or out to increase or decrease pressure.

6. Check hydraulic agitation in tank (if fitted) for effective operation when filling the tank. Clean agitator orifice if necessary.

7. If oil is milky and white, shut machine down immediately. Since diaphragms are probably damaged.

8. If there will be possibility of freezing temperatures, perform winterizing procedure as described below.

9. Before operating in freezing weather, turn pump over by hand to make sure it will run free. If pump cannot be turned by hand, do NOT attempt to turn with engine or PTO as serious damage to the pump could result.

WINTERIZATION

1. Open all valves and remove drain plug from tank.

2. Run pump until it is completely dry. (Run it for a couple of minutes after you think it is dry) Do NOT run pump with suction valve closed.

3. Close valves but do not close suction valve. Replace drain plug in tank. Put automotive type radiator antifreeze in tank mixed 50/50. Run machine until antifreeze begins to come out of the nozzles. (Do NOT use diesel fuel.)

4. In spring, open valves, run pump and drain all hoses of antifreeze. Flush system with clean water.

SHUT DOWN

1. After each spray or when changing chemicals, flush out the pump, lines and gun by running the sprayer with clean water in the tank.

2. Open the drain valve and remove screen from the suction filter. Allow water to drain, then hose out the inside of the tank until clean. Clean strainer in suction filter and replace. Do not leave chemical mixture in tank.

3. If there is possibility of freezing temperatures, be sure to winterize machine.

TROUBLESHOOTING A SPRAYING SYSTEM FOR LACK OF PRESSURE

The following are the steps that should be taken to troubleshoot a sprayer system if inadequate pressure is being obtained.

Make sure there is adequate liquid in the spray tank.

- If the spray tank is empty, put some liquid in it before proceeding.

- If the liquid in the spray tank is near the bottom, swirling at the bottom of the tank may allow air into the suction line, which will cause the pressure to go up and down. Look inside the tank while running to see if this is happening.

Ensure the capacity of the pump is not being exceeded.

To check this it is necessary to determine the flow that is expected out of a single nozzle in your spray system by using method “A” or “B” below.

- Method A – if flow specifications are available for the nozzles that you are using, check the specifications for the flow from one nozzle at the pressure that you want to spray at.

- Method B – if nozzle flow specifications are not available, the flow from a nozzle may be determined manually by collecting the spray from one nozzle in a container for one minute and measuring how much liquid was collected in the container. This gives the flow per minute for a single nozzle.

- Then multiply the flow for each nozzle by the number of nozzle that you are using. This gives the total required flow per minute.

- Compare the total required flow to the maximum flow that the pumps is capable of. The total flow should be at least 20% less than the maximum pump flow. If not, then use fewer nozzles or use smaller nozzles or use a bigger pump.

Shut off all jet agitation (if fitted)

- If a jet agitator hose has blown off inside the spray tank, then all the pressure will be lost through the agitator line. If the spray works well only when the agitator is shut off, then this is the problem.

Look for overflow running back into the tank

- There is a hose running from the pressure regulator (the valve where you adjust your pressure) back to the spray tank. Look inside the tank when the pump is running and see if there is a substantial amount of liquid flowing back into the tank. If there is a lot of overflow and there is little or no pressure then the problem is that the seats in the pressure regulator are worn out or something is caught in the regulator causing it to stick open.
- If there is no overflow then there is a problem with something other than the pressure regulator.

Check the suction line for blockage

- The suction line is the hose that supplies the pump with liquid. Usually there is also a suction strainer in this line to protect the pump from foreign debris.

- Check for kinked or collapsed suction line. Note that the hose liner on an older suction hose may separate from the outer casing and could collapse without any visual indication from the outside of the hose. If in doubt, replace the hose being sure to use a hose with an embedded wire or plastic coil to prevent collapsing.

- Check that the suction strainer is clean and not clogged with dirt, debris or undissolved chemical.

- Check that the suction strainer shut-off valve is open (if fitted)

NOTE: If there is any restriction in the suction line, this will starve the pump. Pump starvation will rupture diaphragms in a diaphragm pump.

Check the suction line for air leaks

- Make sure that the gasket on the suction strainer is in place and that it is not cracked or worn out.

- Make sure all the fittings between the spray tank and the pump are tight. If a fitting is dripping while the unit is not in use it is a sure sign that there is a suction leak. Keep in mind that there may be a suction leak that shows no sign of dripping while the unit is not in use.

- Make sure that the hose clamps on the hoses between the spray tank and the pump are in good shape and are tight.

- Make sure that there are not cracks or holes in the hoses between the spray tank and the pump. If the hoses are getting old or if in doubt,

replace hose being sure to use a hose with an embedded wire or plastic coil to prevent collapsing.

Note: If air gets into the suction line anywhere it will cause the spray system to work very badly. This is what causes most pump problems. There may be air getting into the suction line even if liquid is not leaking out of the suction line so this must be inspected very carefully.

Diaphragm, piston and plunger pumps

- Check that the valves are in good condition. To check them, remove them from the pump and hold them up to the light. If you can see light peeking through the seating surfaces it would be a good idea to change them.

WARRANTY

M.K. Rittenhouse & Sons Ltd. Warrants to the original purchaser only that the sprayer is free, under normal use and maintenance, from any defects in materials and workmanship subject to the following terms and conditions:

1) The warranty period extends for one year from date of purchase.

2) This warranty shall not apply to any defects caused or repairs required as a result of alteration, misuse, abusive operation, negligence, accident, improper use or installation, and/of insufficient care.

3) This warranty shall not apply to diaphragms, piston cups, pump rollers, plungers, plunger seals, hoses or hose reel swivels or damage incurred as a result of the use of chemicals incompatible with system component materials or as a result of normal wear and tear.

4) Specific exclusions of this warranty include, but are not limited to, damage incurred to equipment as a result of:

    a) Freezing of liquids inside machine.
    b) Not maintaining proper lubricant levels or not maintaining frequency of application of lubricants such as grease.
    c) Running pump with clogged suction line or closed suction valve.
    d) Running pump dry or running vapor-locked pump.

5) This warranty shall not apply to any defects caused or repairs required as a result of not following the instructions in the instruction manual.

6) This warranty shall not apply to any defects to the surfaces of finish caused by normal weathering or wear and tear.

7) This warranty shall not apply to shipping charges. All warranty operations to be conducted at our factory in St. Catharines, Ontario.

8) This warranty constitutes the entire express warranty given by M.K. Rittenhouse & Sons Ltd. For the product named above and no Authorized Dealer or Retailer or his agent or employee is authorized to extend or enlarge this warranty on behalf of M.K. Rittenhouse & Sons Ltd.

9) To the extent that the law permits, M.K. Rittenhouse & Sons Ltd. Disclaims any responsibility for loss of time or use of the above named product, or any other indirect, incidental or consequential damage, inconvenience or any damage to the item being sprayed due to faulty application of chemicals or pressure.