Water Pumping Equipment Instructions

1. Description of Units

a) **Four-inch power take off (PTO) pump and 30 feet of suction line**

- A tractor of at least 85 horsepower (hp) is required to drive the pump.
- The pump may be towed for short distances only at slow speeds, providing the PTO shaft is not connected.
- The pump weighs 800 pounds (lb.).

b) Six-inch aluminum pipe, 30-foot lengths, with couplers

- A female coupler on the pipe connects to the discharge hose at the pump.
- The bell end of the pipe contains a rubber seal. Care must be taken when laying the pipe to ensure that all seals are in place. Spare seals are located in the trailer tool box. Pipes should be laid with the latch on top whenever possible.

c) Small (half-mile) trailers

- There are approximately 90 lengths of pipe on each trailer.
- Total weight of the pipe and pipe trailer is 4,500 lb.

d) Large (1 mile) trailers

- There are approximately 180 lengths of pipe on each trailer.
- Total weight of the pipe and pipe trailer is 14,000 lb.

2. Towing the Pipe Trailers

The maximum safe speed for pulling loaded pipe trailers is 70 kilometres per hour (km/h).

a) Large (one-mile) trailers (Figure 1)

- A truck size of one ton or more is the minimum requirement to tow one-mile trailers. ***Important: Equipment will not be released if this requirement is not met.***
- Sturdy hitch located at the back of the tow vehicle even with the box is required (Figure 1). A double-nutted three-quarter inch (¾") drawbolt or drawpin is required to attach the clevis-type hitch to the vehicle hitch. The clevis hitch on the pipe trailer is adjustable so that the trailer can be towed level.
- Safety chains and a brake signal control board are supplied and ***must*** be hooked up to comply with Highway Traffic Board regulations. Place the control board on the seat beside the driver, attach the alligator clamps to your 12-volt truck battery and plug the control board into the receptacle on the trailer hitch. This will give you proper signal, brake lights and trailer brakes. Check for proper operation before towing.

b) **One-half mile (½ mile) trailers (Figure 2)**

- A heavy half-ton truck or three-quarter ton truck with a sturdy truck bumper is required to pull these trailers.
- A double nutted three-quarter inch (¾") drawbolt or drawpin is required to attach the clevis type hitch to the bumper (see Figure 2).

- Trailers are equipped with safety chains and a RV style electrical connector. This will give you the proper signal, brake lights and trailer brakes. Check for proper operation before towing. Between sunrise and sunset, a red flag of at least 300 millimetres (mm) by 300 mm (12" x 12") must be attached at the extreme rear end of the load when being transported on public roads and highways. ***These trailers, when loaded, may not be transported on public roads and highway between sunset and sunrise, or when visibility is poor.***

Figure 1

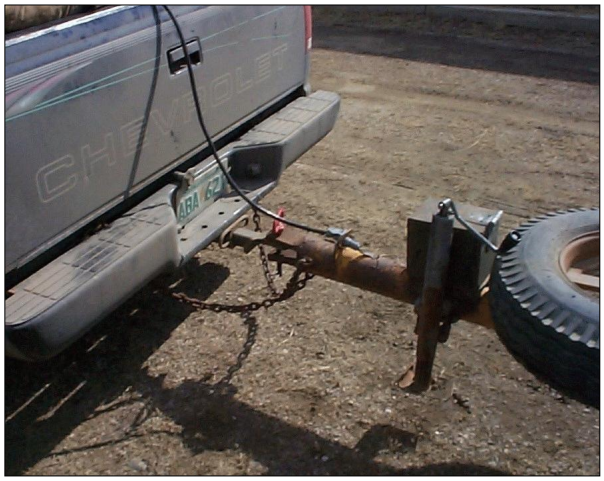

Figure 2

3. Setting, Priming, and Operating the Pump (Figure 3)

a) Locate the pump as low and as close as possible to the water source.

b) The water source covering the suction line should be a minimum of 3' deep. If it is less than 3' deep, a whirlpool will form and the pump will suck air. Some sites may require excavation.

c) Ensure the PTO shaft and pump are properly aligned, if not, dig down under the pump wheels if necessary. Adjust the pump hitch to align with the PTO shaft. ***DO NOT use a 1,000 PTO tractor on a 540 PTO pump.*** Secure the pump to the tractor drawbar while operating.

d) Be sure to properly grease the pump before starting it. A grease block with two nipples to grease the bottom shaft should have grease every five hours. The bottom shaft should not be submerged in the water.

e) Attach the suction line to the pump using the quick coupler. The suction line should be blocked up within 1 - 2' of the pump coupling so that it goes into the pump straight and does not allow air to leak in around the top of the quick coupler. To avoid impeller damage the suction screen must be left on the suction line at all times.

f) Have your tractor idling with the PTO disengaged. Open the valve (A-Figure 3) located near the rear of the pump and close the small T-drain valve (B-Figure 3) on the hand primer.

g) Pump the hand primer. This forces any air out of the system and sucks water into the suction line and pump. When pumping becomes hard and the handle will not move, immediately shut off valve A. Engage power take-off slowly and increase PTO speed to about 1/3 throttle. Once the pump has smoothed out and the line has filled, gradually build up to PTO speed. Starting out with too much throttle can blow seals in the pipeline near the pump.

h) An attendant is to be on duty throughout the pumping period.

4. If Pump Will Not Prime

a) Check suction line as air leaks can occur around the quick coupler where it fits into the pump's coupler. Be sure there are no obstructions around the rubber gasket. If it is not a snug seal, a thin gasket can be installed behind the rubber gasket. These are in the trailer tool box. Be sure the suction line is blocked up. Tighten clamps on the suction line.

c) There is a grease nipple on the bottom shaft; grease before priming pump. This seals the packing around the shaft.

d) Check the rubber diaphragm in the hand primer to be sure it is not cracked or torn.

e) The pumps are equipped with automatic discharge priming valves (C-Figure 3) which are located on the discharge side of the pump. Check these as a last resort to be sure the springs inside the valve are operable and the rubber flapper is closing properly.

e) If further problems occur, contact the regional pumping coordinator.

Figure 3

Figure 4

5. Unloading, Loading Trailers (Figure 4)

a) Each trailer has a prominent sign mounted at the front outlining the procedure for proper and safe unloading and reloading of the trailer. Follow the instruction procedure exactly as listed for your safety and the safety of those assisting you.

b) There should be a minimum of five persons (including the driver) to unload and load: two to unload, two to lay and connect the pipeline; and one to drive. ***Do not drop pipe from the load directly onto the ground.*** All pipes must be handled by hand. Start laying pipe at the pump.

c) **When pumping is complete, begin loading the pipes at the pump end and place the coupler (latched) end of pipe sections towards the front of the trailer as instructed by the sign. Suitably mark and load damaged pipes last with the bell end of the pipe to the front. When reloading the trailer, start loading pipe from pump end.**

IMPORTANT

1. ***Note:*** Equipment in your possession *must not* be released without the authority of the Water Security Agency or it's designate. Report all mechanical equipment failures to the Supplier at 306.867.9252.

2. Pumping should be discontinued in time to permit draining the pump and the pipes before the temperatures are below minus four degrees Centigrade (– 4° C) or 25 degrees Fahrenheit (25° F). ***Contrary to popular belief, the pipe will freeze during the pumping operation.***

For more information, contact a Water Security Agency Regional Office.

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