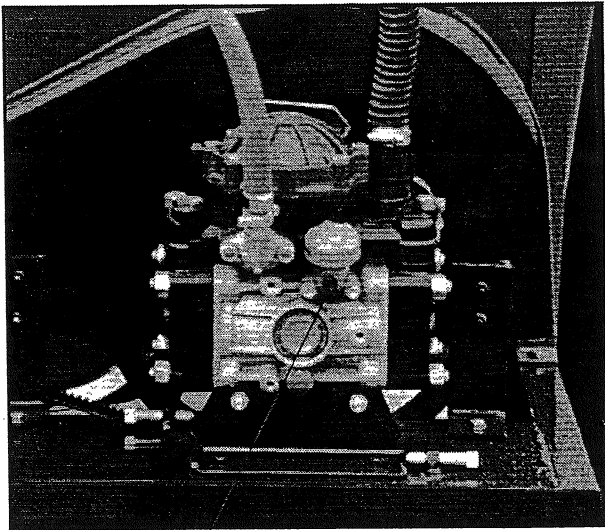


**On/Off Control.** Includes mag starter and is pre-wired to ensure proper motor rotation.



**Oil Sight Tube.** Oil should be visible approximately half way up the clear fill tube.

## DAILY OPERATION

*If your Inject-a-Cure system is equipped with an auxiliary fill pump, gas engine, hydraulic motor or other optional devices, refer to "Optional Equipment Operation and Maintenance" later in this manual for deviations to the following general operating instructions.*

### 1. Fill the Main Tank with Water

a) With irrigation system pressurized, open the fresh water fill valve "A" to begin filling the holding tank with water. As the tank nears full, the internal ball float valve will automatically shut off the flow of incoming water. Valve "A" is shown in the closed position in the above photo.



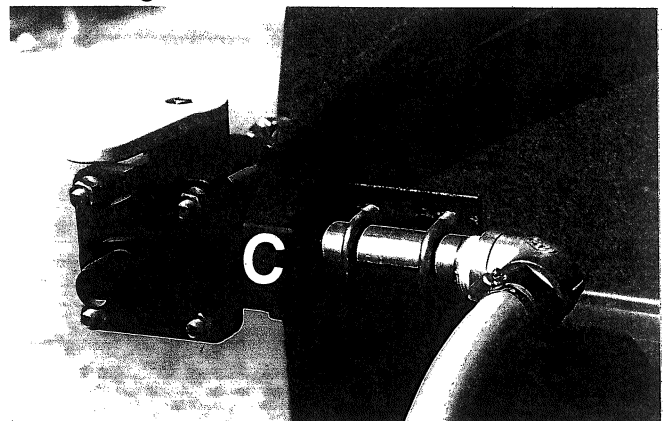
b) For *constant rate* output, close the fill valve "A" once the tank is full. This will allow the tank to empty, injecting a consistent, non-diluted solution.

For declining rate application, the fill valve "A" may be left open to maintain a *constant fluid level* in the tank. This will inject the soil amendment on a declining curve rate as the incoming water dilutes the slurry mix.

### 2. Turn the System On

a) Check that the redirect valve "B" located adjacent to the pump inlet debris screen is in the *CLOSED* position to draw liquid from the tank. (The handle should be facing away from tank (as shown). With handle turned to right, the pump will draw air only.

b) The discharge outlet valve "C" should be turned to the *CLOSED* position. (Handle should be turned in line with the discharge flow as shown). This allows the pump to start up under no-load conditions to increase motor or engine life.



c) Turn the machine "ON" at the control box to energize the pump and agitation bar.

d) Check for leaks around all fittings and the agitation shaft front bearing. A leaking front bearing housing can usually be stopped by turning the machine off, and simply tightening the packing gland. (See "Maintenance" later in this manual).

### 3. Add Amendments

a) For gypsum application, add approximately four pounds of solution grade gypsum for each gallon of water in the mixing tank (i.e. 300 gallon tank=1,200 pounds of gypsum, 600 gallon tank=2,400 pounds).

**CAUTION:** This Inject-a-Cure machine was designed for use with *true* solution grade gypsum only. Use of substandard gypsum can cause excessive wear, frequent filter flushing, clogging and may void the factory warranty. Please refer to "Solution Gypsum Specifications" later in this manual for the minimum specifications of acceptable product, prior to operation.

*When adding other amendments with, or instead of gypsum, be sure to first refer to "Compatible Amendments" in the Owner's Manual, to verify that it is an approved amendment, and also confirm how and at what rate to apply it. **ALWAYS** check with your amendment supplier as to compatibility, when mixing more than one amendment at a time.*

If adding gypsum from one ton bulk bags, be careful not to empty a full bag into the 300 gallon model, as this will overload the machine.

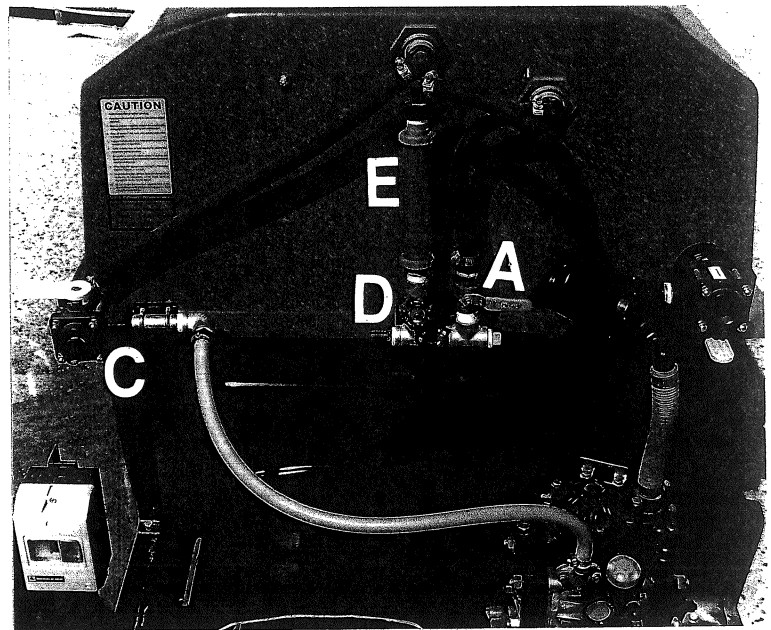
b) Allow the machine to operate for a few minutes to insure the slurry is completely and uniformly blended.

### 4. Adjust Output and Begin Injection

a) If a manual valve has been installed in the irrigation pipe at the point of injection, be sure to check that it is in the OPEN position.

b) Slowly rotate the Discharge Outlet Valve "C" to the OPEN position (handle to left), to begin injection. The diaphragm pump will automatically adjust discharge pressure to compensate for any irrigation line pressure, up to 150 psi.

c) Rotate the Fresh Water Bypass Valve "D", counterclockwise to the fully OPEN position. Then, read and note the *total* gallons per minute water flow, by reading the calibration lines on the fresh water sight glass (should be around 5-6 gpm with a standard pump).



d) Refer to the "Discharge Rate Chart" in this manual to determine the desired GPM of *slurry* output for the desired application rate. Then, subtract this number from the *total* GPM flow determined in Step c above.

e) Watch sight glass "E" and slowly rotate the Fresh Water Bypass Valve "D", clockwise to *reduce* the flow of fresh water *down* to the newly calculated net rate determined in Step d above.

**Example:** With Fresh Water Bypass Valve "D" turned all the way open, sight glass indicates 6 GPM *total* water flow. Desired injection rate is determined to be 2 gallons per minute of *slurry* ( $6-2=4$ ). Slowly close Fresh Water Valve "D", until the sight glass reads 4 gallons per minute. This will cause the diaphragm pump to automatically draw 4 gallons of fresh water, plus 2 gallons of slurry from the holding tank.

f) Reload the machine as desired when the water runs clear, or after refilling the tank in the constant rate (pump down) mode.

## MAINTENANCE

*You have selected the most "user-friendly", maintenance-free injection system available for gypsum and other powdered amendments. Care in selecting and using only true, high-grade solution gypsum (and other compatible amendments) will help keep your injector running smoothly with minimal attention.*

Your SDI machine was designed with common, brand name components wherever possible, to reduce replacement costs and insure parts availability when maintenance is necessary.

**For parts pricing or orders, call your local SDI Dealer or telephone (559) 734-5555.**

The following outlines the steps necessary to service and maintain your SDI injection system, to keep it running at its peak performance.

***Before Each Start-Up:***

1. Check that the oil is visible half way up on the clear sight tube on the diaphragm pump. (Fill with 30W non-detergent motor oil as necessary).
2. Turn the redirect valve to close off the fluid in the main tank and clean the debris filter located on the front of the machine (as well as any other debris screens that may be installed). Remember to turn the valve back on before starting the machine.
3. Check that internal ball float valve(s) are adjusted and working properly.
4. Take time to check over all fittings, clamps and connections to make sure all are secure and not leaking. Check that the belt is tight and the belt guard is in place.
5. If agitation shaft front bearing is leaking, simply tighten the adjusting nuts until the leak stops. **DO NOT OVERTIGHTEN** the Adjusting Nuts. Only about 1/4 to 1/2 turn on each of the adjusting nuts should be required to stop any leak.

Overtightening will lead to rapid wear of the packing material, and possibly the shaft itself. Occasional small adjustments are required to maintain the integrity of the seal. **DO NOT** attempt to avoid the regular interval by overtightening the packing nuts! If one or more turns of the adjusting nuts does not stop the leak, replace the packing material, or severe wear on the agitation shaft may result. (See Replace Packing Material below).

**Every 500 Hours**

1. Change the oil every 500 hours or three months, whichever comes first. To drain the oil, follow these procedures:

**D30 and D50:** Remove the drain plug and oil sight glass covers, and rotate shaft until the oil stops flowing out. Install the drain plug.

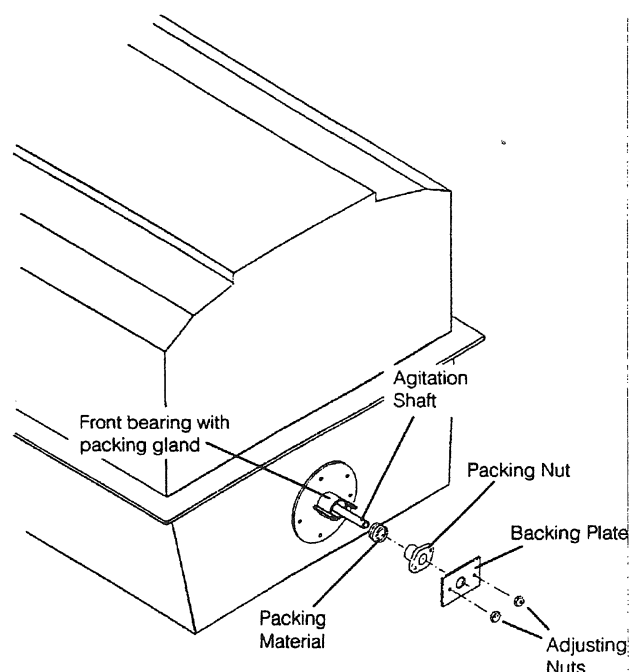
Slowly pour new oil into sight tube while turning the pump shaft. (Turning the pump shaft purges all the air out of the crank case). Always change oil when replacing diaphragms.

**Safety Note:** The bypass return outlet on the discharge valve and pressure relief valve must be connected directly to the main tank without any restrictions or valves.

**Annually or As Needed:**

**Replace Packing Material:** The packing gland is located on the front of the machine where the main agitator shaft extends out of the mixing tank. Once or twice a year (or whenever excessive leaking occurs that routine tightening of the adjustments will not stop), the packing material in the packing gland must be replaced as follows:

1. Turn off injector and secure against accidental start-up.
2. Remove fiberglass belt guard. Loosen both adjusting nuts, and slide the backing plate and packing nut out away from the packing gland.



3. Dig out and discard any remaining pieces of the old packing material.

4. Wind new packing material around the shaft, and use a screwdriver to push the packing material firmly down into the packing gland. Continue this process until the packing gland is full, then cut the packing rope off.

5. Slide the packing nut and backing plate back towards the packing gland and tighten the adjusting nuts down *hand tight*.

6. Replace the belt guard and start the injection machine. If the packing is leaking, turn off the machine and tighten the adjustment nuts approximately 1/4 turn each. Continue this procedure until the leaking stops. **DO NOT OVERTIGHTEN!**

### Valve Replacement

Occasionally, debris can build up and cause improper seating of the valves and/or damage to the o-rings, causing the pump to pulsate. To check for damage, follow these steps:

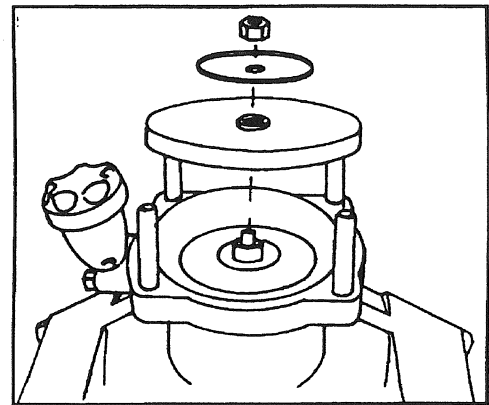
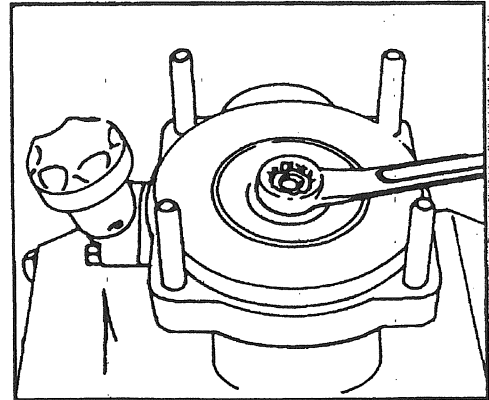
Remove the pump manifolds (heads). With the manifolds removed, valves can easily be removed and inspected for debris and wear. Replace valves, o-rings and manifolds as necessary.

### Diaphragm Replacement

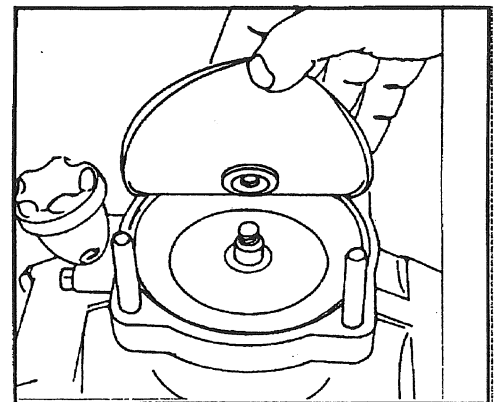
If pump oil becomes milky or it comes out the discharge outlet, one or more of the diaphragms have ruptured. The diaphragm material does age and should also be replaced annually, or earlier, under heavy use. To change diaphragms:

1. Drain the oil as instructed previously.
2. Remove the pump manifolds and valves.
3. Remove the pump head retaining nuts and heads.
4. Turn the crankshaft to bring the diaphragm to the top of its stroke. Insert a drift pin into the hole in the retaining stud to hold it in

place. Remove the retaining nut, retaining washer and the diaphragm.



5. Turn the crankshaft to bring the piston to the bottom of its stroke and seat the new diaphragm into the sleeve groove. Install the retaining washer and tighten the retaining nut while holding the retaining stud in place with the drift pin.



6. Clean any excess oil from the area and install the heads, valves and manifolds.

## Trouble Shooting Guide

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
The pump does not draw fluid.	Pump is drawing air. One or more pump valves are not seating properly. Suction line is plugged or collapsed. Clogged debris filter.	Turn redirect valve handle 90° Remove valve(s) and check for debris.  Examine suction hose for blockage. Clean debris filter.
The liquid flow is erratic.	The charge in the pulsation dampener is incorrect. One or more pump valves are not seating properly.	Check pressure in pulsation dampener (20-40% working pressure). Remove valve(s) and check for debris. Check and clean valve seats.
Output drops and the pump is noisy.	Oil level is too low.	Add 30W motor oil to bring level half way up sight glass.
Oil comes out the discharge port or oil is a milky color.	One or more diaphragms split.	Replace diaphragm(s). (Refer to Maintenance section.)
Pump seems to operate in reverse.	Electric motor wired backwards.	Have a certified electrician check and repair wiring.
Agitation shaft bearing leaking.	Packing gland loose. Worn out packing material.	Tighten packing nut on front. Replace with 1/4" Teflon packing.
Irrigation filters plugging or requiring frequent flushing.	Injecting too thick of slurry. Poor quality gypsum. Fresh water is contaminated.	Increase fresh water bypass g.p.m.  Install a screen on the incoming fresh water line.