

PUMP TEST SYSTEM

Operation / Maintenance Manual

SERIAL NUMBER:

CONTENTS

1	SYSTEM OVERVIEW	3
2	FACILITIES (HOOK-UPS)	5
3	CONTROLS	6
3.1	RESERVOIR FILL AND DRAIN	6
3.2	PUMP AIR SUPPLY	6
3.3	PUMP FLUID DISCHARGE PRESSURE AND FLOW	6
3.4	AIR PURGE (PUMP BLOWOUT).....	6
4	TYPICAL PUMP TEST	7
4.1	FILL DI RESERVOIR.....	7
4.2	ATTACH FLUID PLUMBING.....	7
4.3	ATTACH AIR SUPPLY	9
4.4	START PUMP.....	9
4.5	PERFORM FUNCTION TESTS	9
4.6	INITIAL WATER PURGE.....	10
4.7	FINAL AIR PURGE.....	10
4.8	SUCTION TEST	10

1 SYSTEM OVERVIEW

TTE-0013 PUMP TEST SYSTEM

This system provides basic control and monitoring of pump functions for the purpose of verifying pump integrity.

The Pump Rebuild Test Station incorporates a recirculating reservoir designed to be filled and drained with DI water for each individual pump test (3-5 gallons/pump).

The following tests can be performed using this system.

- **Dry Suction Test** – This test is run prior to pumping of DI water to test the ability of the pump to create a vacuum capable of lifting chemical to the inlet.
- **Proof Run Test** – This series of tests verifies the pumping capabilities of the pump including flow and cycle rates at given air supply pressures, ability to not stall against a dead head, and to check for the presence of leaks.
- **Partial Dry Suction Test** – This test verifies the pumps' ability to create a vacuum after the initial break-in of testing.

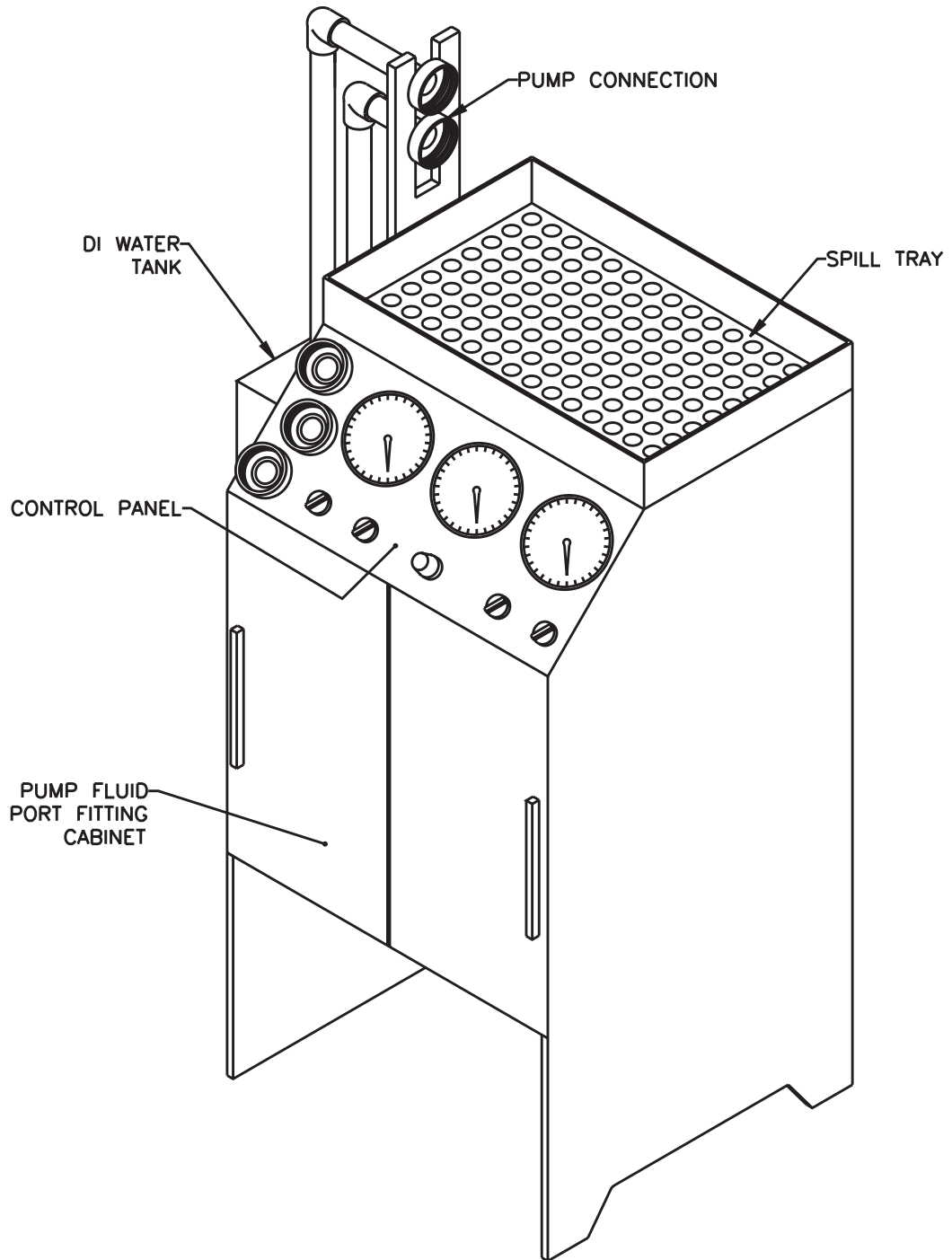


Figure 1-1

2 FACILITIES (HOOK-UPS)

- DI water supply to ¾" NPT port of fill valve on rear of unit labeled "DI In". (Water supply not to exceed 50°C temperature.)
- DI water drain to ¾" NPT port of drain valve on rear of unit labeled "DI Drain".
- DI water drain to ½" NPT port at rear of unit labeled "Open Drain".
- Clean dry air or nitrogen supply to ¼" NPT connection at rear of unit labeled "CDA Supply".



Figure 2-1: Position DI Control Valves as Shown

3 CONTROLS

3.1 RESERVOIR FILL AND DRAIN

- Functions are controlled by the “Fill” and “Drain” valves on the front control panel.
- To prevent over-filling the reservoir and the possibility of a large DI water spill; the “Fill” function is through a momentary operator valve, which requires manual activation during the fill process.
- Filling the reservoir requires visual reference through the clear reservoir cover.
- The “Drain” valve has a selector operator, Counter Clock Wise (CCW) = Off, Clock Wise (CW) = On.

3.2 PUMP AIR SUPPLY

- Pressure is controlled by the “Regulator” on the front control panel.
- Pull the knob to unlock, turn CW to increase pressure.
- Monitor set pressure with the “Supply Pres” gauge.
- On-Off control of the supply air is through the “Pump Air” valve selector operator, CCW = Off, CW = On.

3.3 PUMP FLUID DISCHARGE PRESSURE AND FLOW

- Controlled with the PVC ball valve in the discharge plumbing. (Handle in vertical position = Full Open.)
- Monitor fluid pressure on the “Back Pres” gauge.
- There is no flow-monitoring device in the system.

3.4 AIR PURGE (PUMP BLOWOUT)

- Control purge pressure with the “Regulator”.
- Purge On-Off control with the “Air Purge” selector valve knob.

4 TYPICAL PUMP TEST

Due to differences in each pump, especially those with a long operating and rebuild history, there will not be extremely repeatable test results. Example: A Model 110 pump running at 50-psi air supply pressure vs. 30 psi back pressure may have a 20% variance in cycle rate compared to another tested at the same conditions. This does not necessarily indicate that one pump will out-perform the other in the actual application. An observant test technician will rapidly develop an ability to differentiate normal from abnormal functionality.

Trebor customer service can assist in establishing test procedures that best suit the pump type and intended use. Standard test procedure forms are attached for reference.

4.1 FILL DI RESERVOIR

Fill DI reservoir to desired level. (Make sure the “Drain” valve is Off.)

4.2 ATTACH FLUID PLUMBING

- Attach the fluid plumbing to the fluid ports of the pump.
- Fluid port adapter can be found in the cabinet behind the sliding doors. There are two types of adapter ports for each pump size and are determined by whether the pump has NPT or adapter port style threads. Use of the incorrect style may permanently damage the pump body. The pipe thread (NPT) types do not have the significant 45° chamfer on their lead ends and will require the use of PTFE thread tape to prevent thread leakage.
- The straight “adapter thread” types have a noticeable 45° chamfer on their nose ends and require an O-ring to seal the fitting.
- Thread both types into the pump body only hand tight. Adapter thread types must “bottom out” in the fluid ports.
- Attach the inlet and discharge plumbing unions to the “fluid port adapter” unions on the test pump.
- Open the PVC ball valve on the discharge plumbing.

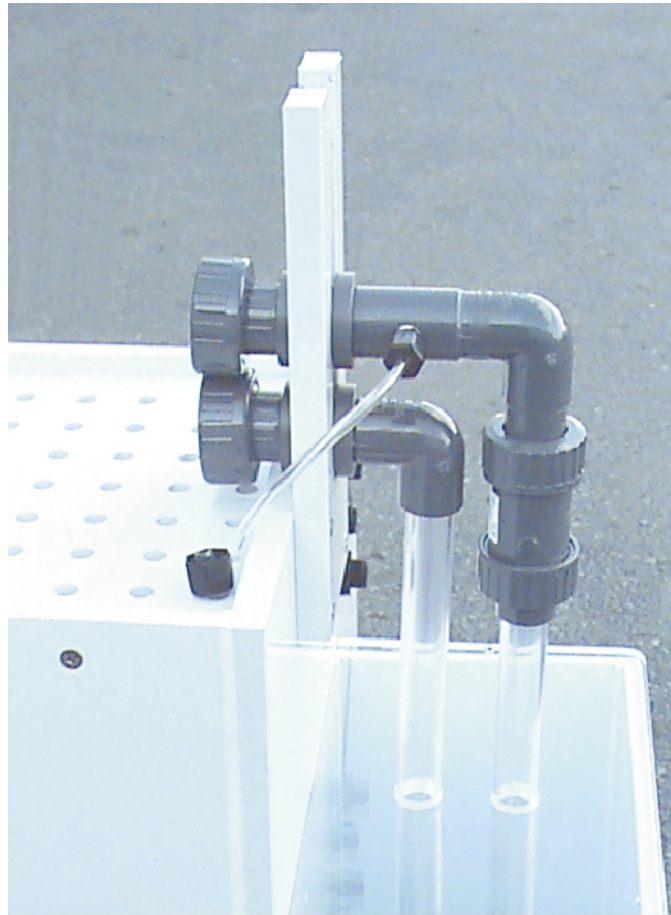


Figure 4-1: Attach Plumbing Guide and Plumbing as Shown



Figure 4-2: Fluid Port Adapters and Locating Plate (inside cabinet)

4.3 ATTACH AIR SUPPLY

- Attach air supply tube to the pump. (The supply tube protrudes through the top perforated plate.)
- There are three 3/8" tube fittings threaded into the cabinet side labeled "Pump Air Supply Adapters". Match with the air supply port size of the pump being tested.

4.4 START PUMP

- Start pump; adjust air "regulator" until "Supply Pres" reads \approx 45 psi.
- Open "Pump Air" valve, pump should start cycling immediately. Water should rise in the fluid supply plumbing and pump through the discharge plumbing back into the reservoir.

4.5 PERFORM FUNCTION TESTS

Perform function tests per Pump Model Procedure or your established procedure.

For example:

- 2 minutes; 60-psi air supply with discharge valve full open.

- 1 minute; 60-psi air supply with 30-psi backpressure.
- 45-psi air supply with discharge valve full closed, for the purpose of “check muffler” adjustment.
- Observe for fluid leaks at high backpressure condition for one minute.

4.6 INITIAL WATER PURGE

- Initial water purge.
- Pump cycling @ pressure you select with discharge valve full open.
- Activate reservoir “Drain” valve and allow pump to cycle until water no longer discharges from pump. Turn “Pump Air” off.

4.7 FINAL AIR PURGE

- Disconnect fluid discharge and inlet plumbing at union connections. Connect the “Purge Supply” fitting on the control panel to the inlet adapter of the pump.
- Connect the “Purge Return” fitting to the outlet adapter of the pump.
- Set the Regulator” to 40 psi.
- Open the “Pump Air” valve.
- Hold the pump in various positions while it cycles and purges the majority of residual water. (One minute is usually sufficient.)
- Close valve and disconnect “Purge Supply and Return” fittings.

4.8 SUCTION TEST

- Connect the “Vacuum Connect” fitting to the inlet adapter of the pump.
- Set the “Regulator” to 40 psi.
- Open the “Pump Air” valve and observe the “Vacuum” gauge highest reading.
- **Note:** The suction test is best performed after wet test cycling because “seating” of the check valve components is more complete and the reading is more indicative of true performance.
- Do **not** continue dry cycling for extended periods as undue wear will occur.
- Close valves and disconnect test pump from system.