Fluid-fast filling and recirculation system

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The ‘fluid-fast filling and recirculation system’ will be used to fill the pipe (or device) under test to about 80 psi pressure to save test time. The fluid will be pumped back into the reservoir during the drain mode after testing. A booster pump is used to pump the fluid and two 3-way valves to change direction of the fluid during ‘fill’ and ‘drain’ mode.

The ‘fluid-fast filling and recirculation system’ consists of the following:

(a) A double containment fluid holding tank (barrel) to hold the test fluid

(b) A ¾ HP 115 VAC 5 stage booster pump to pump the fluid into the test device during filling and pump the fluid back into the tank after test during draining.

(c) An adjustable relief/bypass valve to limit the outlet pressure of the pump, set at 80 PSI

(d) Two three-way valves to change direction of the fluid for filling and draining

(e) A pressure gage to show the outlet pressure of the pump

(f) A switch to turn ON/OFF the pump

(g) A ‘Ground Fault Circuit Interrupter (GFCI)’ plug is used to cut-off the power to the motor when electrical safety is compromised.

(h) Required plumbing to pump the fluid during filling and draining

(i) A hose assembly with quick-connect ends to connect and disconnect the hose between the fluid fast filling and recycling system to the tester.

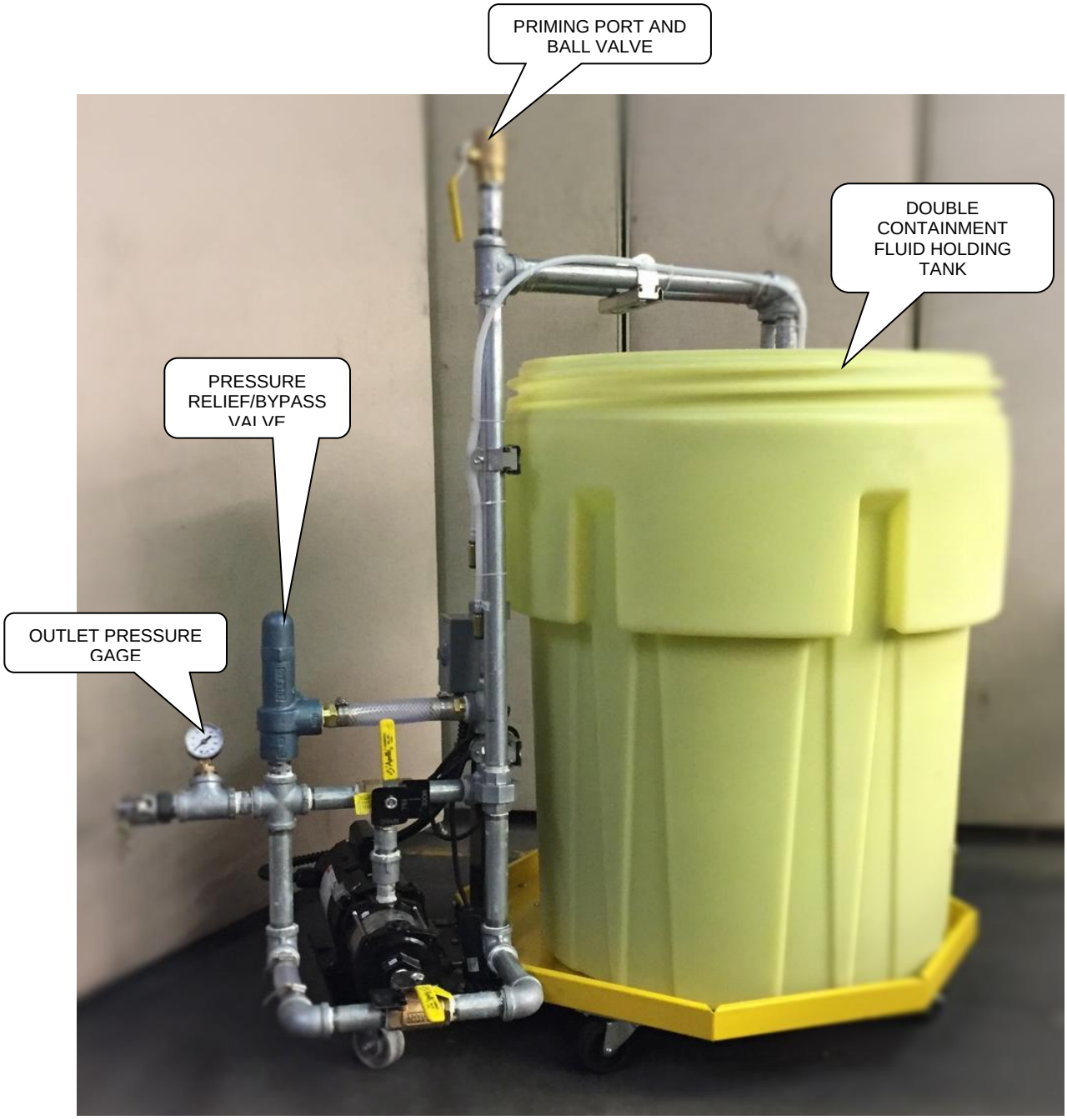
(j) Ball valves are included at both ends of the hose to prevent possible spillage of fluid.

(k) The whole system is on wheels for mobility.

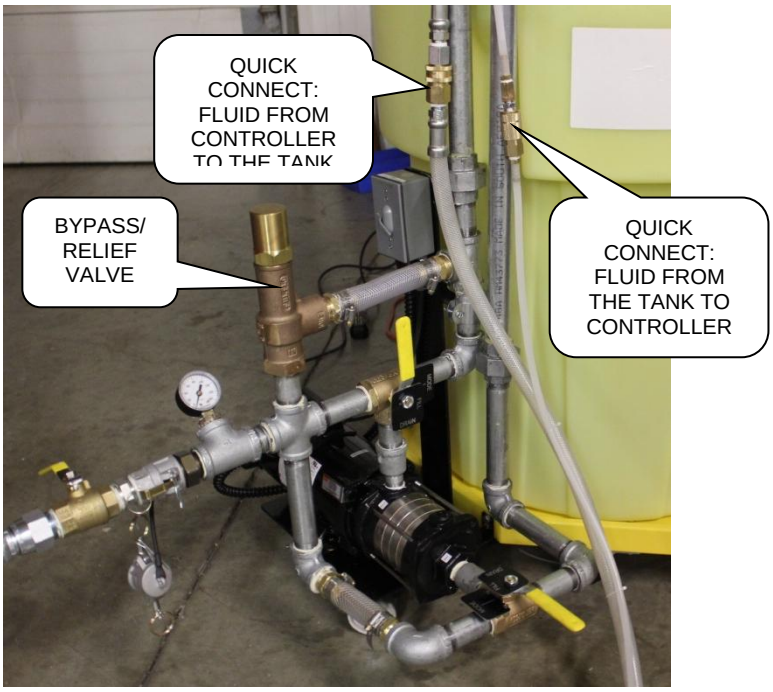
(l) Quick connect hose connections to connect ‘fluid in’ and ‘drain’ for the main controller

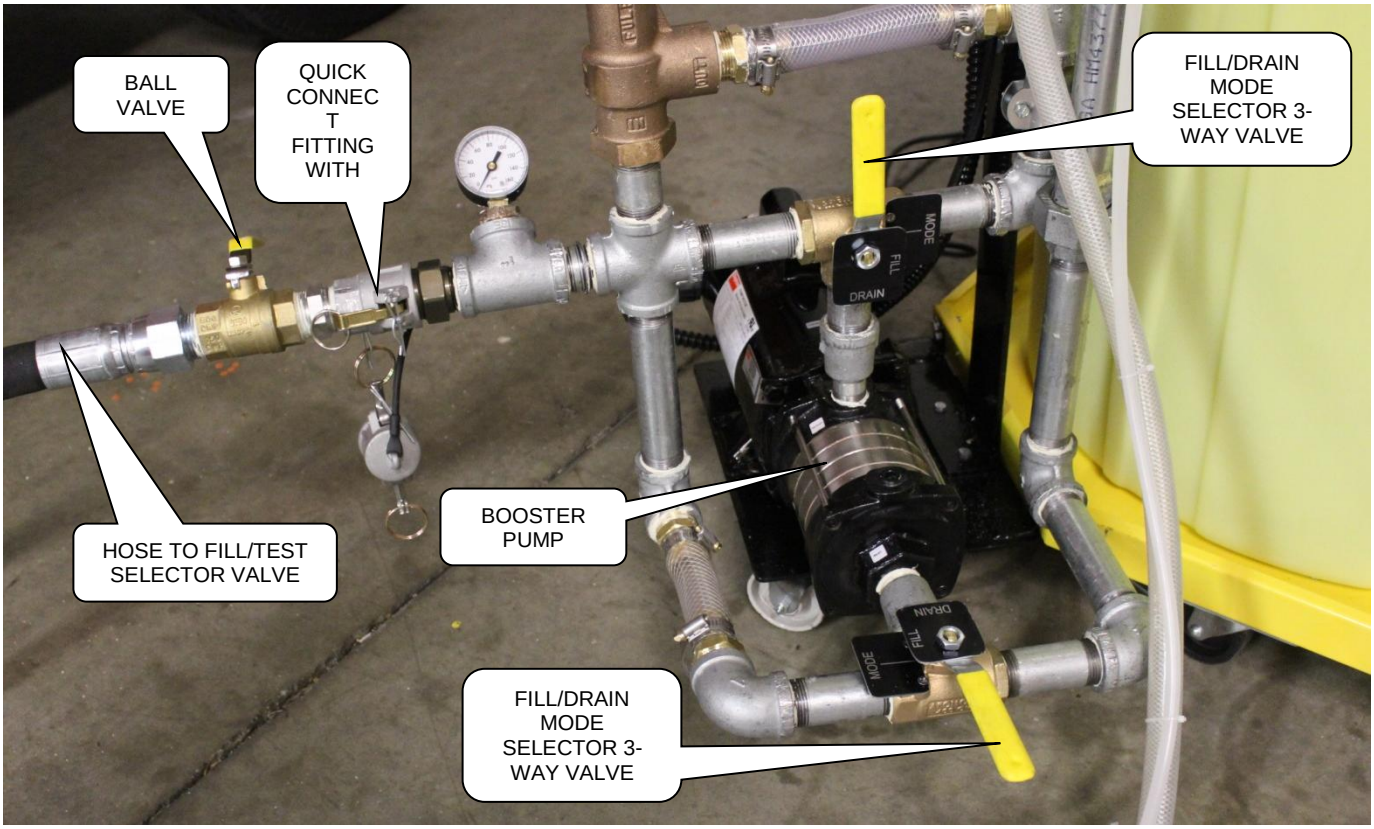
(m) Priming port with ball valve to prime the system for initial start up

Fluid fast filling and recirculation system – Major parts and assemblies




PUMP ON/OFF SWITCH


QUICK CONNECT: FLUID FROM CONTROLLER TO THE TANK
BYPASS/ RELIEF VALVE
QUICK CONNECT: FLUID FROM THE TANK TO CONTROLLER


BALL VALVE
QUICK CONNEC T FITTING WITH
FILL/DRAIN MODE SELECTOR 3-WAY VALVE
HOSE TO FILL/TEST SELECTOR VALVE
BOOSTER PUMP
FILL/DRAIN MODE SELECTOR 3-WAY VALVE

Fluid fast filling and recirculation system – Connections

1. Electrical connection: 115 VAC 15 amp GFCI plug.
2. Fluid Hose connections:
    a. to the controller fluid inlet (WATER IN)
    b. to the controller fluid outlet (DRAIN)
    c. to the Safety End shield (FILL/DRAIN) 3-way valve

Fluid fast filling and recirculation system – Filling and Priming

1. Install the hose on the outlet of the pump; lock and install the locking pins
2. Open the ball valve at the free end and place it inside the fluid holding tank
3. Close the ball valve on the hose that is close the pump
4. Set both the Mode Selector 3-way valves to FILL
5. Open the lid of the holding tank and fill the tank with required test fluid above half of the tank
6. Open the ball valve on the priming port on the suction pipe.
7. Fill the suction pipe with fluid, and close the priming ball valve.
8. Turn ON the pump and immediately open ball valve on the hose that is close to the pump.
9. The pump must be pumping fluid from the tank to the tank
10. Note the pressure gage, which will read close to zero psi
11. Slowly close the outlet of the ball valve at the free end of the hose
12. Now the pressure gage must read close to 80 psi
13. Turn OFF the pump

Now the Fluid fast filling and recirculation system is filled and primed; ready to connect to the tester.