

PROBLEM 1, 2, & 3. Below

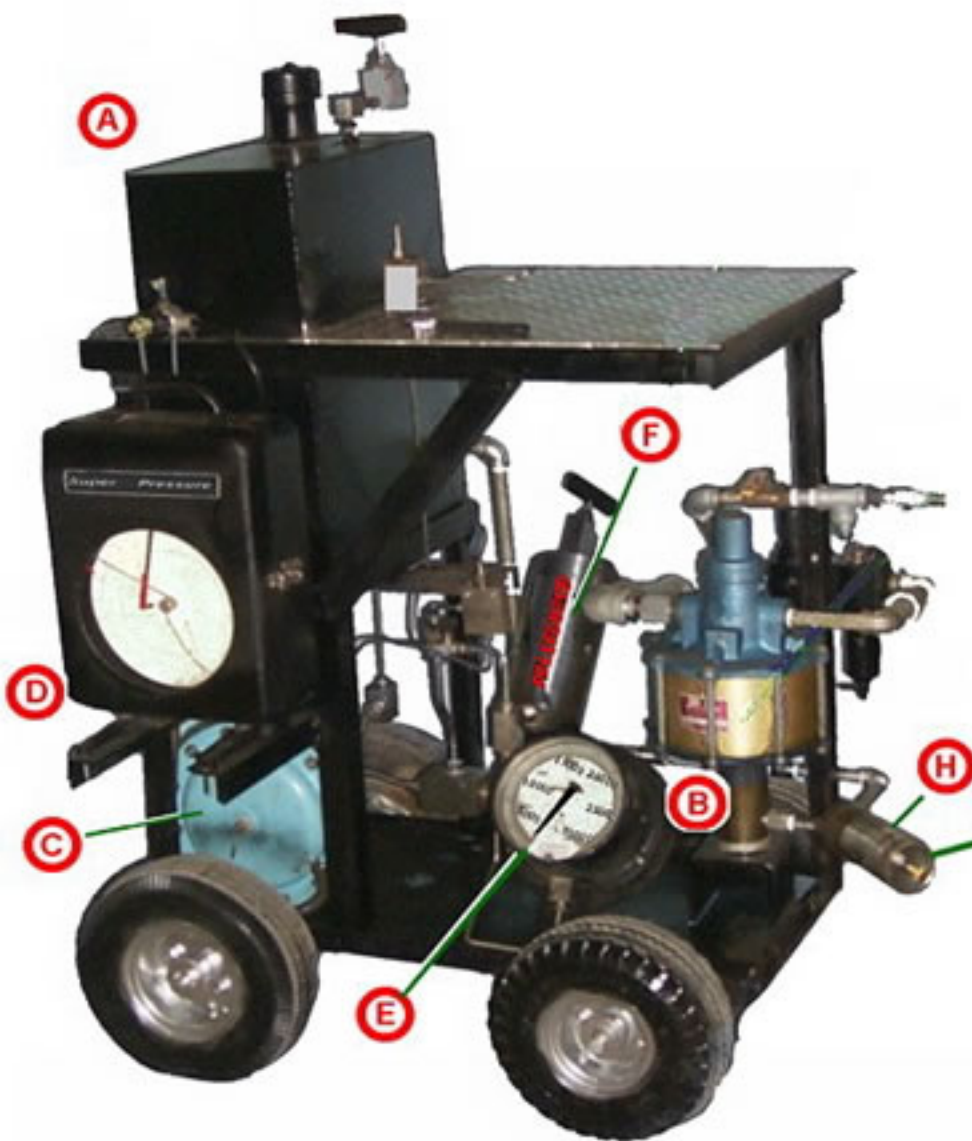
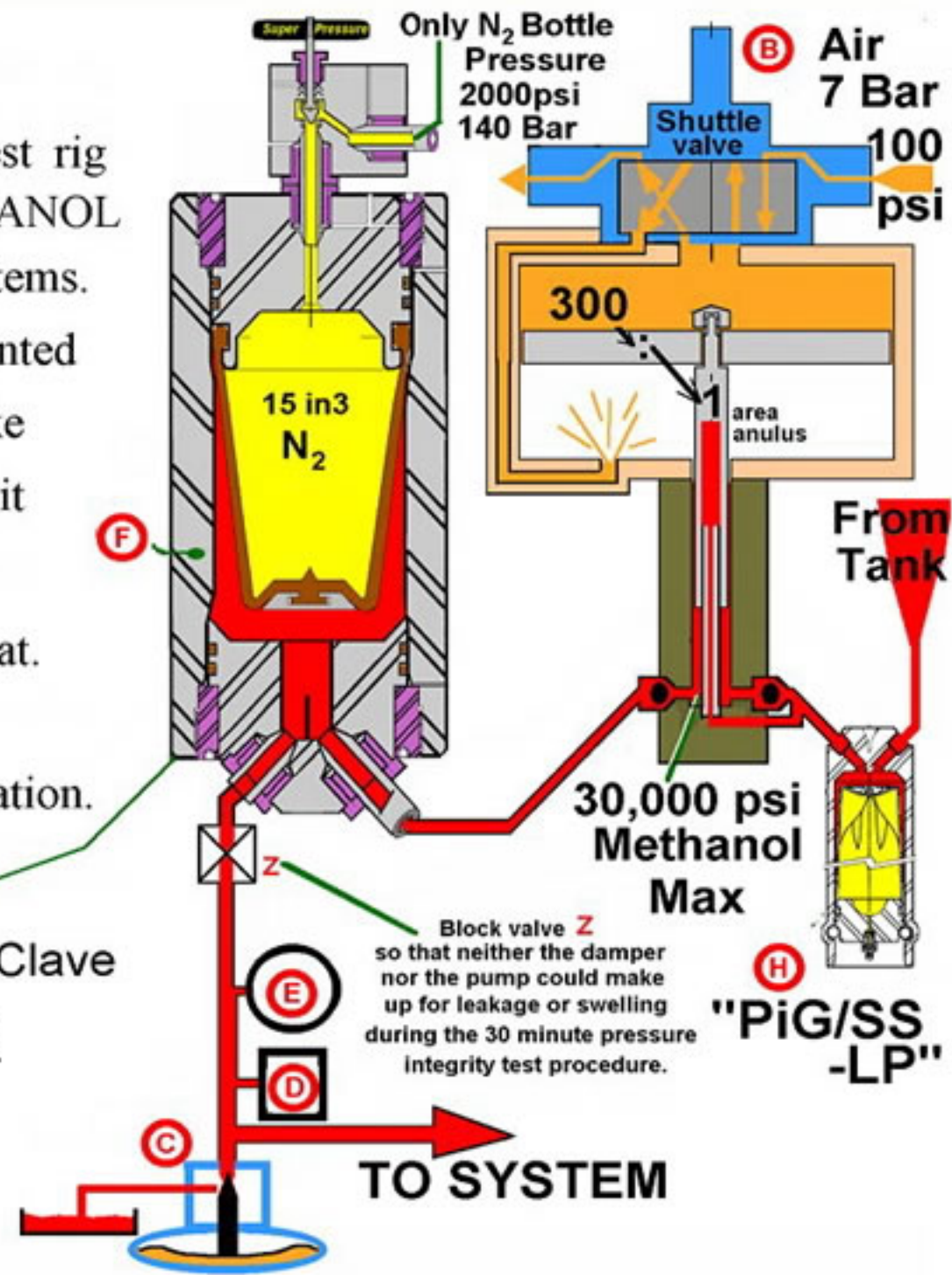
The National Oilwell ("O.W.E.CO") well head test rig (A) below, was re-deployed to 11,500 psi METHANOL and INHIBITOR pumping, to prove injection systems.

The fast return / suction stroke of pump (B) prevented the suction from fully filling. The discharge stroke began with a huge acceleration until the plunger hit the liquid and sent a shock into the system.

1. The pressure set valve (C) was blasted off its seat.
2. The chart recorder (D) was ruptured.
3. The certified gauge (E) immediately lost calibration.

ANSWER (F) "PiG" PIPEGUARD

pt. No. PiG / 0.25 Lt. / 1000 Br. / 9/16" AutoClave
From inventory in DUPLEX SS, intercepted
the shocking "pulsation",



RESULTS

Three days of procedures were then performed with no loss of calibration, nor disturbance of the pressure set valve, and with complete legibility of the chart recorder.

6% max residual shock.

(H) A **PIPEGUARD** PiG/SS-LP was added to the suction supply line from the tank, and resulted in:

1. A further 70% reduction in pulsation
2. A 225% increase in pumpable rate.
3. One year before recalibration was required.

Always address the suction system first.