

Procedure

1. Sample Preparation

- 1.1. The sample shall be prepared for test by removing any internal components, by providing a pipe connection for water inlet and a means for air purge. This may require drilling and tapping additional holes in the sample, which should be located so as not to weaken the sample.
- 1.2. Minimum wall thicknesses shall be measured for all relevant locations of a test sample, including the side walls, the floor, flanges, etc. Where measuring beforehand is not practical or possible, the sample may have to be cut in half after the test to verify dimensions.

2. System Set-up

- 2.1. If hand preformed test preside to section 3. If automated test follow steps:

- 2.1.1. Do maintenance checks as per Maintenance Manual

- 2.1.2. Check to ensure 1" ball valve is in fully open position

- 2.1.3. Check to ensure the hand control valve is fully closed

- 2.1.4. 0-1000 PSI TESTS

- 2.1.4.1. Ensure both ¼" ball valves are fully open

- 2.1.5. 0-5000 PSI TESTS

- 2.1.5.1. Fully close the left ¼" ball valve that goes to 1000 PSI pressure transducer

- 2.1.5.2. Ensure the right ¼" ball valve that goes to the 5000 PSI pressure transducer is fully open

- 2.1.6. 0-10000 PSI TESTS

- 2.1.6.1. Fully close both ¼" ball valves that go to the 1000 PSI and 5000 PSI transducers

3. Equipment Set-up

- 3.1. 0-3000 PSI. For pressure tests in the 0-3000 psi range, standard schedule 40 pipe and fittings are adequate for sample connections. The shut-off valve for the 0-3000 psi gauge should be completely open for this testing. Zero the gauge before opening the water supply valve.

CAUTION

TO AVOID DAMAGING THE 0-3000 PSI GAUGE,
THE SHUT-OFF VALVE FOR THE 0-3000 PSI GAUGE
MUST BE CLOSED FOR PRESSURE EXCEEDING 3000 PSI

- 3.2. 0-10000 PSI. For pressure testing in the 0-10000 psi range, use only heavy-duty pipe and fittings (schedule 80 or better) and high-pressure hoses. The packing gland nuts of the control valve and the gauge shut-off valve must be tightened down. The shut-off valve for the 0-3000 psi gauge must be closed tight to prevent high pressure from destroying the gauge.

4. Pressure Calculation

- 4.1. In most cases, the required hydrostatic pressure will be four times the maximum internal pressure observed during explosion testing to procedure 415.

- 4.2. The rate of pressure increase shall be approximately 100 to 600 psi per minute, depending on the required pressure. Generally the lower the pressure, the lower the rate; the higher the pressure, the higher the rate.
- 4.3. In some cases, the required pressure is determined by a table in the appropriate standard, which should be provided by the test requestor
5. Applying Pressure Automatically (If manual control skip to Section 6)
 - 5.1. Enter Information into DAQ/ Controller via computer interface
 - 5.2. The control valve shall initially be in the completely open (counter-clockwise) position.
 - 5.3. The safety valve shall initially be in the completely closed (clockwise) position.
 - 5.4. Connect the sample to the plumbing using the appropriate connections for the required pressure.
 - 5.5. Open the water inlet valve fully.
 - 5.6. Purge all air from the sample by slowly opening the safety valve in the chamber. Rotation of the sample into different positions may be necessary to ensure that all air is expelled.
 - 5.7. Close the vent on the sample, and open the safety valve fully counter-clockwise.
 - 5.8. Arrange a guard around the sample to minimize danger from broken particles. Exit the chamber and close and latch the door.
 - 5.9. Set the motor starter switch to the ON position.

WARNING

NEVER ENTER THE CHAMBER WHILE MORE THAN
LINE PRESSURE IS APPLIED TO THE SAMPLE

CAUTION

NEVER SHUT OFF THE PUMP WITH MORE THAN
LINE PRESSURE APPLIED

CAUTION

IF ANY PRESSURE REGISTERS ON THE 0-3000 PSI GAUGE
DURING A 0-10000 PSI TEST, THE TEST SHALL BE IMMEDIATELY SHUT DOWN
AND THE 0-3000 PSI SHUT-OFF VALVES RETIGHTENED

- 5.10. Start the pump by pressing the green START button on the control station.
- 5.11. Using computer interface to the DAQ and Controller select "Start Test"
- 5.12. After the test is complete, fully turn the wheel counter-clockwise, then press the red STOP button on the control station.

CAUTION

NEVER SHUT THE WATER INLET VALVE
WHEN THE PUMP PLUNGERS ARE IN MOTION

- 5.13. After the pump has come to a complete halt, enter the chamber close the safety valve, and then close the water inlet valve.
6. Applying Pressure (Manual/ By Hand Valve)
- 6.1. The control valve shall initially be in the completely open (counter-clockwise) position.
- 6.2. The safety valve shall initially be in the completely closed (clockwise) position.
- 6.3. The shut-off valve shall be completely open (counter-clockwise) for 0-3000 psi testing, and completely closed (clockwise) for 0-10000 psi testing.
- 6.4. Connect the sample to the plumbing using the appropriate connections for the required pressure.
- 6.5. Open the water inlet valve fully.
- 6.6. Purge all air from the sample by slowly opening the safety valve in the chamber. Rotation of the sample into different positions may be necessary to ensure that all air is expelled.
- 6.7. Close the vent on the sample, and open the safety valve fully counter-clockwise.
- 6.8. Arrange a guard around the sample to minimize danger from broken particles. Exit the chamber and close and latch the door.
- 6.9. Set the motor starter switch to the ON position.

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IF ANY PRESSURE REGISTERS ON THE 0-3000 PSI GAUGE
DURING A 0-10000 PSI TEST, THE TEST SHALL BE IMMEDIATELY SHUT DOWN
AND THE 0-3000 PSI SHUT-OFF VALVES RETIGHTENED

- 6.10. Start the pump by pressing the green START button on the control station.
- 6.11. Slowly turn the wheel on the control valve clockwise until the required pressure is achieved. Slight adjustments may be needed to hold the required pressure for the determined length of time.
- 6.12. If the fracture of the sample is required, continue to turn the wheel clockwise after the required length of time is up.
- 6.13. After the test is complete, fully turn the wheel counter-clockwise, then press the red STOP button on the control station.

CAUTION

NEVER SHUT THE WATER INLET VALVE

WHEN THE PUMP PLUNGERS ARE IN MOTION

- 6.14. After the pump has come to a complete halt, enter the chamber close the safety valve, and then close the water inlet valve.