

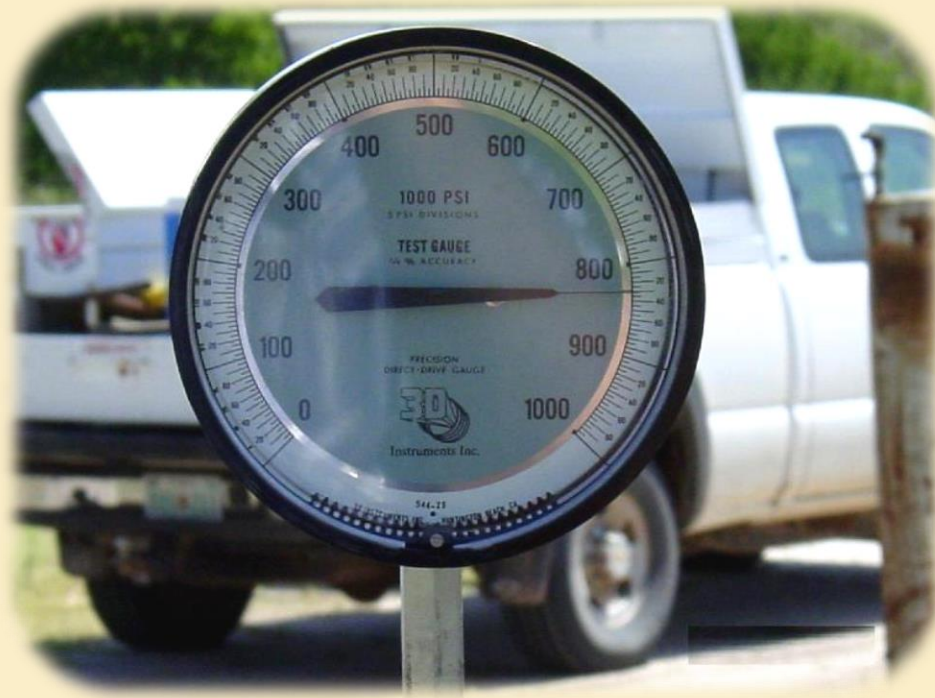


Part 192 Subpart J

Pressure Testing

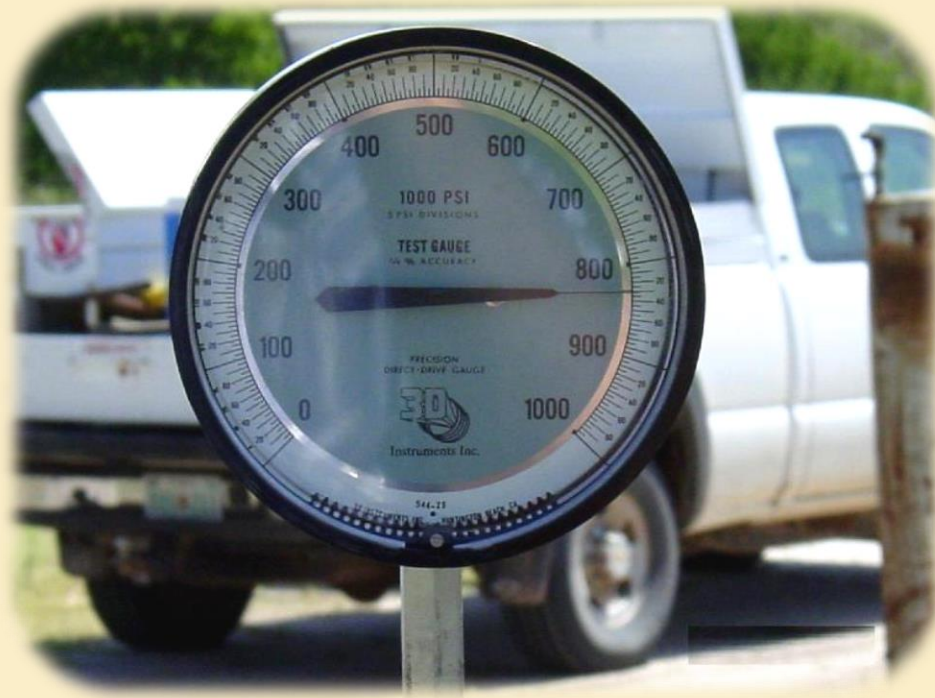
§192.501 Scope

This subpart prescribes minimum leak-test and strength-test requirements for pipelines.



Remember

While code does not specifically address it, verifiable, calibrated equipment must be used to ensure the accuracy of tests and setpoints.



§192.503 General

- (a) No person may operate a new segment of pipeline, or return to service a segment of pipeline that has been relocated or replaced, until-
 - (1) It has been tested in accordance with this subpart and §192.619 to substantiate the maximum allowable operating pressure; and
 - (2) Each potentially hazardous leak has been located and eliminated.

§192.3 Definitions

Maximum allowable operating pressure (MAOP) means the maximum pressure at which a pipeline or segment of a pipeline may be operated under this part.

R14-5-201. Definitions

14. "MAOP" means maximum allowable operating pressure, the maximum pressure at which a gas or LPG pipeline or segment of pipeline may be operated.

§192.503 General

- (b) The test medium must be liquid, air, natural gas [natural gas, flammable gas, or gas which is toxic or corrosive], or inert gas that is-
 - (1) Compatible with the material of which the pipeline is constructed;
 - (2) Relatively free of sedimentary materials;
and,
 - (3) Except for natural gas, nonflammable.

§192.503 General

- (c) Except as provided in [§192.505](#)(a), if air, natural gas, or inert gas is used as the test medium, the following maximum hoop stress limitations apply:

Class location	Maximum <i>hoop stress</i> allowed as percentage of <i>SMYS</i>	
	Natural Gas	Air or inert gas
1	80	80
2	30	75
3	30	50
4	30	40

§192.503 General

- (d) Each joint used to tie in a test segment of pipeline is excepted from the specific test requirements of this subpart, but each non-welded joint must be leak tested at not less than its operating pressure.



§192.503 General

- (e) If a component other than pipe is the only item being replaced or added to a pipeline, a strength test after installation is not required, if the manufacturer of the component certifies that:
 - (1) The component was tested to at least the pressure required for the pipeline to which it is being added;
 - (2) The component was manufactured under a quality control system that ensures that each item manufactured is at least equal in strength to a prototype and that the prototype was tested to at least the pressure required for the pipeline to which it is being added; or

§192.503 General

- (e) If a component other than pipe is the only item being replaced or added to a pipeline, a strength test after installation is not required, if the manufacturer of the component certifies that:
 - (3) The component carries a pressure rating established through applicable ASME/ANSI, Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS) specifications, or by unit strength calculations as described in §192.143.

§192.505 Strength test for steel pipeline to operate at 30 percent or more of SMYS.

- (a) Except for service lines, each segment of a steel pipeline that is to operate at a hoop stress of 30 percent or more of SMYS must be strength tested in accordance with this section to substantiate the proposed maximum allowable operating pressure.

§192.505 Strength test for steel pipeline to operate at 30 percent or more of SMYS.

- (a) In addition, in a Class 1 or Class 2 location, if there is a building intended for human occupancy within 300 feet (91 meters) of a pipeline, a hydrostatic test must be conducted to a test pressure of at least 125 percent of maximum operating pressure on that segment of the pipeline within 300 feet (91 meters) of such a building, but in no event may the test section be less than 600 feet (183 meters) unless the length of the newly installed or relocated pipe is less than 600 feet (183 meters). However, if the buildings are evacuated while the hoop stress exceeds 50 percent of SMYS air or inert gas may be used as the test medium.

§192.505 Strength test for steel pipeline to operate at 30 percent or more of SMYS.

- (b) In a Class 1 or Class 2 location, each compressor station, regulator station, and measuring station, must be tested to at least Class 3 location test requirements.
- (c) Except as provided in paragraph (e) of this section, the strength test must be conducted by maintaining the pressure at or above the test pressure for at least 8 hours.
- (d) For fabricated units and short sections of pipe, for which a post installation test is impractical, a preinstallation strength test must be conducted by maintaining the pressure for at least 4 hours.

§192.507 Test requirements for pipelines to operate at less than 30 percent of SMYS and at or above 100 psig.

- Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated at a hoop stress less than 30 percent of SMYS and at or above 100 psi (689 kPa) must be tested in accordance with the following:
 - (a) The pipeline operator must use a test procedure that will ensure discovery of all potentially hazardous leaks in the segment being tested.

§192.507 Test requirements for pipelines to operate at less than 30 percent of SMYS and at or above 100 psig.

- (b) If, during the test, the segment is to be stressed to 20 percent or more of SMYS and natural gas, inert gas, or air is the test medium-
 - (1) A leak test must be made at a pressure between 100 psi (689 kPa) gage and the pressure required to produce a hoop stress of 20 percent of SMYS; or
 - (2) The line must be walked to check for leaks while the hoop stress is held at approximately 20 percent of SMYS.

§192.507 Test requirements for pipelines to operate at less than 30 percent of SMYS and at or above 100 psig.

- (c) The pressure must be maintained at or above the test pressure for at least 1 hour.



§192.509 Test requirements for pipelines to operate below 100 psig.

- Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated below 100 psi (680 kPa) gage must be leak tested in accordance with the following:
 - (a) The test procedure used must ensure discovery of all potentially hazardous leaks in the segment being tested.
 - (b) Each main that is to be operated at less than 1 psi (6.9 kPa) gage must be tested to at least 10 psi (69 kPa) gage and each main to be operated at or above 1 psig must be tested to at least 90 psi (621 kPa) gage.

§192.511 Test requirements for service lines.

- (a) Each segment of a service line (other than plastic) must be leak tested in accordance with this section before being placed in service. If feasible, the service-line connection to the main must be included in the test; if not feasible, it must be given a leakage test at the operating pressure when placed in service.

§192.511 Test requirements for service lines.

- (b) Each segment of a service line (other than plastic) intended to be operated at a pressure of at least 1 p.s.i. (6.9 kPa) gage but not more than 40 p.s.i. (276 kPa) gage must be given a leak test at a pressure of not less than 50 p.s.i. (345 kPa) gage.



§192.511 Test requirements for service lines.

- (c) Each segment of a service line (other than plastic) intended to be operated at pressures of more than 40 p.s.i. (276 kPa) gage must be tested to at least 90 p.s.i. (621 kPa) gage, except that each segment of the steel service line stressed to 20 percent or more of SMYS must be tested in accordance with §192.507 of this subpart.

§192.513 Test requirements for plastic pipelines.

- (a) Each segment of a plastic pipeline must be tested in accordance with this section.
- (b) The test procedure must insure discovery of all potentially hazardous leaks in the segment being tested.



§192.513 Test requirements for plastic pipelines.

- (c) The test pressure must be at least 150 percent of the maximum operating pressure or 50 p.s.i. (345 kPa) gage, **whichever is greater.** However, the maximum test pressure may not be more than three times the pressure determined under §192.121, at a temperature not less than the pipe temperature during the test.



§192.513 Test requirements for plastic pipelines.

- (d) During the test, the temperature of thermoplastic material may not be more than 100(F (38(C), or the temperature at which the material's long-term hydrostatic strength has been determined under the listed specification, whichever is greater.



§192.515 Environmental protection and safety requirements.

- (a) In conducting tests under this subpart, each operator shall insure that every reasonable precaution is taken to protect its employees and the general public during the testing. Whenever the hoop stress of the segment of the pipeline being tested will exceed 50 percent of SMYS, the operator shall take all practicable steps to keep persons not working on the testing operation outside of the testing area until the pressure is reduced to or below the proposed maximum allowable operating pressure.

§192.515 Environmental protection and safety requirements.

- (b) The operator shall insure that the test medium is disposed of in a manner that will minimize damage to the environment.



§192.517 Records.

- (a) Each operator shall make, and retain for the useful life of the pipeline, a record of each test performed under §§ 192.505 and 192.507. The record must contain at least the following information:
 - (1) The operator's name, the name of the operator's employee responsible for making the test, and the name of any test company used.
 - (2) Test medium used.
 - (3) Test pressure.

§192.517 Records.

- (a) Each operator shall make, and retain for the useful life of the pipeline, a record of each test performed under §§ 192.505 and 192.507. The record must contain at least the following information:
 - (4) Test duration.
 - (5) Pressure recording charts, or other record of pressure readings.
 - (6) Elevation variations, whenever significant for the particular test.
 - (7) Leaks and failures noted and their disposition.

§192.517 Records.

- (b) Each operator must maintain a record of each test required by §§192.509, 192.511, and 192.513 for at least 5 years.

(Records Required to Document MAOP Will be Required for the Operational Life of the Pipeline)

§192.725 Test Requirements for Reinstating Service Lines

1. Retroactive – Applies to All Service Lines.
2. “Disconnected” Service Lines Must be Tested in Same Manner as New Service Lines
3. Test from Point of Disconnection to Service Line Valve (Unless Service to Customer Maintained)

Websites

ACC Pipeline Safety

<http://www.azcc.gov/divisions/safety/pipeline.asp>

PHMSA Pipeline Safety Regulations

<https://www.phmsa.dot.gov/standards-rulemaking/pipeline/standards-and-rulemaking-overview>