

7-A Meters and Regulators

DESC O&M Manual - Version 2022.5 October 5, 2022

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1.0 SCOPE

The following Service Standard prescribes requirements for the installation of metering facilities on a customer's premises. Metering facilities include all aboveground components of a customer's meter set. These guidelines are applicable to all DENC and DESC customers.

2.0 REGULATORY REFERENCES

49 CFR Part 192 §§ [192.183](#), [192.187](#), [192.189](#), [192.353](#), [192.355](#), [192.357](#), [192.359](#)

3.0 PROCEDURE

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3.1 Location of Customer Meters and Regulators [[192.353](#)]

[3.1.1 General](#)

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3.1.1 General

- (a) Metering facilities *shall* be installed in readily accessible locations and be protected from corrosion and other damage. Likewise, metering facilities *should* not be installed in locations where access to utility meters or other electrical/mechanical equipment *may* be prohibited or encumbered.
- (b) Where practical, a three (3) foot separation should be maintained between the metering facility and any source of ignition. For the purposes of this standard, electric meters are not considered to be a source of ignition.

This three (3) foot measurement is measured from the regulator vent left, right, and out (circle), and continues upward and downward (a vertical column). However, a metering facility may be installed with less separation if the regulator vent is piped to meet the three (3) foot requirement.

- (c) Measures should be taken to avoid installation of a metering facility directly beneath or in front of a window or other building opening that may be used as a means of egress during an *emergency*.
- (d) In all cases, the upstream regulator in a series must be located outside the building, unless it is located in a separate metering or regulating building.
- (e) Each vault must be located in an accessible location and, so far as practical, away from:
 - (1) Street intersection or points where traffic is heavy or dense;
 - (2) Water, electric, steam, or other facilities

3.1.2 Outdoor Locations

- (a) Metering facilities should not be located in areas where the potential for damage by outside forces such as vehicles, lawn equipment, etc. may be anticipated. In the event such an area cannot be avoided, additional protection shall be provided in the form of a protective barrier.
- (b) Consideration should be given to the metering facility's proximity to:
 - (1) Building and/or equipment intake and exhaust vents
 - (2) Other building openings such as operable windows, crawl space vents, etc.
- (c) A metering facility should be installed in a location that allows for a three (3) foot (horizontal) separation from building openings and 10 feet away from forced air intakes. However, a metering facility may be installed with less separation where site conditions prohibit the desired separation; but when locating a metering facility directly beneath or in front of a building opening, measures *must* be taken to *pipe* regulator and relief vents away from or above the opening.

3.1.3 Indoor Locations [[ADB-2020-01](#)]

- (a) Locating a meter facility indoors is generally discouraged. However, it is recognized that circumstances may arise that will not facilitate an outdoor installation. In such cases, approval must be received from the Director prior to installation.
- (b) Service regulators shall be located as close as practical to the point where the *service line* enters the building.

- (c) Service regulators that may vent *gas* in their operation shall be vented to an outdoor location. Plastic piping/materials shall not be used for vent piping.
- (d) Meter facilities shall be installed in a well-ventilated location having a minimum three (3) foot separation from any source of ignition or heat that could cause damage.

3.2 Protection From Damage [[192.355](#)]

[3.2.1 Meter Contamination](#)

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3.2.1 Meter Contamination

- (a) Dust caps should remain on the meter until it is ready for installation to prevent dirt and other atmospheric contaminants from entering the meter. This is applicable for meters that are removed from service as well. A visual inspection for atmospheric or other liquid contaminants should be performed for any removed meter. The presence of identified contamination should be documented with a meter tag.
- (b) All foreign materials; including but not limited to nuts, nipples, and regulators, should be removed from the meter prior to it being returned to the Meter Shop.

3.2.2 Vacuum or Back Pressure

Metering facilities must be protected from customer equipment that may potentially develop a vacuum or back pressure. Check valves or other suitable devices should be installed prevent any potential damage.

3.3 Service Regulator / Relief Valve Vents

- (a) Vent terminations must be insect and rain resistant. This can be achieved by installing weather caps or elbows with screens.
- (b) Vents must terminate in a location where gas can vent freely into the atmosphere and away from any building opening
- (c) Vents should be located in areas that are not known to be subject to potential flooding. Should flooding occur:
 - (1) Meter facilities must be inspected for possible damage and repaired accordingly.
 - (2) Vents must be extended or relocated to a point where the vent termination is above the expected high-water elevation.

3.4 Pit and Vault Installation [[192.183](#)] [[192.187](#)] [[192.189](#)]

Installing meters in pits and/or vault can cause additional safety, installation, and maintenance concerns. This installation as well as alternatives should be considered and reviewed.

- (a) Each pit or vault that houses a customer meter or regulator must be designed and installed in a manner that will support any anticipated vehicular traffic.
- (b) Each pit, vault or curb box must be placed away from points of minimum elevation, catch basins, or places where the access cover will be in the path of surface waters.

- (a) A vault containing gas piping may not be connected by means of a drain connection to any other underground structure.
- (b) All electrical equipment in vaults must conform to the applicable requirements of Class 1, Group D, of the National Electrical Code.
- (c) Each underground vault or closed top put containing either a pressure regulating or reducing station, or a pressure limiting or relieving station, must be sealed, vented or ventilated, as follows:
 - (1) When the internal volume exceeds 200 cubic feet, the following requirements must be met:
 - (i) The vault or pit must be ventilated with two ducts, each having at least the ventilating effect of a pipe 4" in diameter
 - (ii) The ventilation must be enough to minimize the formation of combustible atmosphere in the vault or pit; and
 - (iii) The ducts must be high enough above grade to disperse any gas/air mixtures that might be discharged.
 - (2) When the internal volume is more than 75 cubic feet but less than 200 cubic feet, the following requirements must be met:
 - (i) If the vault or pit is sealed, each opening must have tight fitting cover without open holes through which an explosive mixture might be ignited, and there must be a means for testing the internal atmosphere before removing the cover;
 - (ii) If the vault or pit is vented, there must be a means of preventing external sources of ignition from reaching the vault atmosphere; or
 - (iii) If the vault or pit is ventilated, Paragraph 1 or 3 of this section applies.
 - (3) If a vault or pit covered by Paragraph 2 of this section is ventilated by openings in the covers of gratings and the ratio of the internal volume, in cubic feet, to the effective ventilating area of the cover or grating, in square feet, is less than 20 to 1, no additional ventilation is required.

3.5 Meter and Regulator Installation [[192.357](#)] [[192.359](#)] [[ADB-2020-01](#)]

See [section 6.0 Related Documents](#) for additional installation diagrams and instructions for meter and regulator sets.

- (a) Each meter and service regulator installed in a curb box must be installed such that all of the equipment can be properly operated and maintained.
- (b) Meter facilities shall be installed in a manner that will minimize any anticipated stresses upon the connecting piping and the meter.
- (c) The use of close nipples in the fabrication of meter facilities is discouraged; however, they may be used if deemed necessary. When used, the wall thickness remaining after the threads are cut must meet the minimum wall thickness requirements of the code.
- (d) The meter should be installed as near level as possible to assure its accuracy.
- (e) Take care to prevent installation of a meter facility where the meter may come into direct contact with soil or other potentially corrosive materials.
- (f) Hand-tighten the meter inlet and *outlet* swivels. Using a wrench, alternate between swivels and tighten approximately three flats. Take care to not over-tighten.
- (g) Each meter and service regulator installed in a curb box must be installed such that all of the equipment can be properly operated and maintained.
- (h) Verify the connection of vent lines for indoor service regulators during installation and other maintenance work.

3.6 Meter Testing

Periodic meter testing shall be conducted according to the following:

State Specific: South Carolina

[Meter Tests \(DESC OM-512\)](#) (PDF file)

4.0 TRAINING/QUALIFICATIONS

See the appropriate system Operator Qualification Program.

State Specific: South Carolina

[Slam Shut Regulator Training Video](#) (mp4 video)

5.0 DOCUMENTATION/FORMS

See [Chapter 7-B Service Lines and Valves, Section 5.0 Documentation/Forms](#).

6.0 RELATED DOCUMENTS

See also:

- [PHMSA Advisory Bulletin \(ADB-2020-01\)](#): *Requirements for Inside Meters and Regulators*

State Specific: South Carolina

- [Design and Installation Manual \(DESC\): 1023 - Installation of Customer Metering](#) (online manual)
- [Construction Detail Manual \(DESC\): Section 4 - Stations, 03 - Residential or Commercial Meter Set](#) (online manual)
- [Measurement Manual \(DESC\)](#) (online manual)

7.0 APPENDICES

State Specific: South Carolina

[Meter Tests \(DESC OM-512\)](#) (PDF file)

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