

# 1025 - Excess Flow Valves (EFV)

Effective 07/22/2020

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## **1. GENERAL**

1. This section presents requirements for the excess flow valve (EFV) in distribution piping systems.
2. An EFV is a spring loaded check valve that activates at a set flow rate and is designed to limit the flow of gas in the event of a service line break. The EFV is designed to allow a slight bleed by of gas and to automatically reset after the service line has been repaired. DESC shall use excess flow valves that meet the specifications found in [49 CFR Part 192 Section 192.381](#).

## **2. DEFINITION**

1. 49 CFR 192 Definitions ([192.383](#)) related to EFV installation:
  1. Replaced service line means a natural gas service line where the fitting that connects the service line to the main is replaced or the piping connected to this fitting is replaced.
  2. Service line serving single-family residence means a natural gas service line that begins at the fitting that connects the service line to the main and serves only one single-family residence.

3. Installation required. An excess flow valve (EFV) installation must comply with the performance standards in [§192.381](#). The operator must install an EFV unless one or more of the following conditions is present:
  1. The service line operates at a pressure of 10 psig or less throughout the year ;
  2. The operator has prior experience with contaminants in the gas stream that could interfere with the EFV's operation or cause loss of service to a residence;
  3. An EFV could interfere with necessary operation or maintenance activities, such as blowing liquids from the line; or
  4. An EFV meeting performance standards in [§192.381](#) is not commercially available to the operator

### **3. APPLICATION**

1. EFV's shall be installed on any new or replaced service line serving the following types of services before the line is activated:
  1. A single service line to one single family residence;
  2. A branched service line to a single family residence installed concurrently with the primary single family service line;
  3. A branched service line to a single family residence installed off a previously installed single family residence service line that does not have an EFV;
  4. Multi-family residences with known customer loads not exceeding 1,000 SCFH per service, at time of service installation based on meter capacity, and
  5. A single, small commercial customer served by a single service line with a known customer load not exceeding 1,000 SCFH, at the time of meter installation, based on installed meter capacity.
2. EFV installations are the preferred safety measure for connected loads of 2,600 cfh (at 10 psig) and multi-meter sets when possible.
3. Curb valves are the preferred safety measure for
  1. Schools, Churches, Hospitals, High Rise Apartments, other limited mobility facilities, and all commercial services 2" and above.
  2. Locations where the meter valves are located inside or enclosed in such a way that would prevent ready access in the event of an emergency (i.e. meters in basements, parking garages, etc).
4. Curb valves are required if the installation of an EFV is not possible on customer loads exceeding 1000 SCFH.
5. If it is determined by Engineering that an EFV cannot be installed on a particular service line then the reason shall be indicated in the remarks section of the service order and in the comments section of CIS for that location
6. An EFV may be required or preferred even if any of the following conditions exist, but the standardized EFV's may not be adequate. Contact Engineering for evaluation, design, and procedures:
  1. Customer has an anticipated load is greater than 2,600 cfh (at 10 psig).

2. The service line length is longer than 300 feet.
3. The service line operates at 10 psig or less at any time during the year.
7. On any existing residential service without an EFV, if the service tee or more than 50% of the piping directly connected to the service tee is being replaced, and EFV shall be installed.
8. If an existing residential customer requests an EFV, an EFV shall be installed at the customer's expense.

#### 4. LOCATION & INSTALLATION

1. For service lines the preferred application has the EFV incorporated into the tapping tee
2. If using a tapping tee without an EFV, an EFV coupling shall be installed and located as near as practical to the tapping tee.
  1. When using an EFV coupling for a branch/split service install the EFV as near as practical to the tapping tee connection of the host service line and not at the location where the branch/split occurs.
    1. Manager approval is required for the rare circumstance that the host service is inaccessible and the EFV installed on branch/split.
  2. Refer to example drawings:
    1. [DI 1025 - EFV Example Service Drawing](#)
    2. [DI 1025 - EFV Example Installation Drawing](#)
3. On service installations where a curb valve is installed the EFV should be installed upstream of the curb valve. Reference D&I [1020 - Service Lines](#) for further clarification on curb valves and EFV's.
4. All EFVs must be installed in accordance with the manufacturer's installation instructions to ensure that they operate as designed
  1. All service lines will be cleared of any obstructions by purging the line with air prior to the connection to the EFV (EFV could be in the tapping tee or a coupling).
  2. Install EFV with the arrow on the fitting pointing in the same direction as the flow of gas in the service line.
  3. The service riser piping immediately below the stopcock shall be clearly marked with a metal tag and/or a wrap- around plastic label designed to visually indicate that the service is equipped with an EFV.
5. If the EFV coupling is used, the following instructions shall be followed:
  1. Locate EFV as near as practical to the main. Weld/fuse/stab the EFV to an 18" piece of pipe downstream of the tapping tee (or Farm Tap) outlet.
  2. When crossing a road or if main is under the pavement install EFV at least 3 feet from the edge of pavement. This will allow for adequate working room if future maintenance or replacement is required.
  3. A Farm Tap installation will utilize two EFV's. (See [Detail 4.02.105 - Farm Tap High Pressure Service Assembly](#))

4. The first EFV will be a Steel EFV "stick" located per 4.4.2.1-3. This will protect the steel portion of the Farm Tap before the 1st Cut Regulator.
5. The second EFV will be installed on the plastic pipe downstream of the Farm Tap regulator(s) per 4.b.I and will protect the plastic portion of the Farm Tap service line.
6. Note: By using two EFV's in this configuration the plastic service line will be protected if hit downstream of the plastic EFV and will not rely on the steel EFV which may or may not shut off based on Farm Tap regulator design capacity. The regulator(s) used in the Farm Tap are designed to have a specific capacity for each installation. This capacity may or may not shut the EFV when the damage occurs on the downstream side of the Farm Tap regulator(s).

## 5. TESTING

1. EFV's are to be tested as installed in the service line. In cases where an EFV coupling is added to an existing service, standard test procedures as found in O&M [Ch 9 Pressure Test Requirements](#), [Ch 12-F Reinstating and Pressure Testing of Service Lines/Abandonment or Deactivation of Facilities](#) should be followed; this coupling may be soap tested as the final tie-in.
2. Services with the EFV's installed can be pressure tested from the riser to the service tee without tripping the EFV; this is the preferred method for testing.
3. Pressure testing from the service tee to the riser may cause the EFV to actuate if the test medium is introduced too rapidly.
4. If the EFV is activated allow 5 min for a ¾" service to reset. Note: longer or larger services may take 7 - 10 mins.

## 6. PURGING

1. Purge the service line through the meter cock plus a second valve temporarily installed downstream of the meter cock with a 3" nipple and a cap. Drill an orifice in the cap using a 7/64" bit size. The orifice in the cap will be used to control the purge rate. The second valve will minimize valve lubricant being displaced in the meter cock. (See [Detail 3.04.100 - Purge Stack - Service Line](#))
2. Purging a Service Line during initial installation of Service Line or after a Service Line repair
  1. To purge an EFV-equipped service line:
    1. Install a second stopcock and nipple (to be used as a purge valve stopcock) on the riser stopcock.
    2. Open the riser stopcock, then rapidly open the purge valve stopcock to test the EFV. The EFV should shut off and minimize the flow of natural gas.
    3. To re-set the EFV close the purge valve stopcock and wait until the service line has had time to re-pressurize. Allow 3 minutes re-set time for a ½" service, 5 minutes for a ¾" service, and 7 minutes for a 1-1/4" service..
    4. Place the "orifice" cap (cap with 7/64" orifice drilled in top of cap) on purge valve stopcock/nipple assembly and slowly open the purge valve stopcock. Purge the service line.

## 7. STANDARD EFV CAPACITY CHARTS

Design Pressure (PSIG)	EFV Capacity (SCFH) - Plastic	EFV Capacity (SCFH) - Steel
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10	600	1800	2600	800	2600
20	700	2100	3000	900	3000
30	800	2400	3500	1100	3500
60*	1000	3000	4500	1400	4500

1. Reference [EFV Line Protection Calculator](#) for additional information.
2. \*Contact Engineering and/or Material Coordinator for other EFV specifications and options if needed outside of the listed standard.

## 8. SETTING THE METER

1. When setting the meter on a single-family residence service line or on a split or branch service line:
  1. Install a second stopcock and nipple (to be used as a purge valve stopcock) on the riser stopcock.
  2. Place the "orifice" cap (cap with 7/64" orifice drilled in top of cap) on purge valve stopcock/nipple assembly and slowly open the purge valve stopcock to check that service line is fully purged and ready for meter to be set.

## 9. RESETTNG AN EXISTING EFV

1. If service line was damaged, then repair (and test per [Ch 12-F Reinstating and Pressure Testing of Service Lines/Abandonment or Deactivation of Facilities](#)) all damage to the service line downstream of the EFV.
2. If service line was not damaged but activated:
  1. Ensure all valves downstream of the EFV are closed and perform pressure test on the service.
  2. Pressurize inlet side of the EFV.
    1. For ½" services up to 100 feet in length, allow at least 3 minutes for the line to pressurize and for the pressure to equalize across the EFV.
    2. For services over 100 feet in length, allow 5 minutes for the line to pressurize and for the pressure to equalize across the EFV.
    3. Slowly open the stopcock to initiate gas service to the customer. Opening the stopcock quickly may cause the EFV to close prematurely in which case, repeat steps 1 and 2.
    3. If the EFV fails to reset after multiple attempts, if possible, cut out EFV and send to Material Failure Investigator. If EFV is unable to be removed, abandon tee in place and notify MFI.
  4. Purge per [Section 6](#) above.

## 10. RECORD KEEPING

1. The EFVs installation on the single residential customer's service line shall be documented on the Service Order and in CSR Desktop on the Delivery Point panel). The model of excess flow valve (ex. 600, 800, 1800, or 2,600) shall be indicated in service remarks to be readily available to

Operations and Service personnel. This information shall be made available to all Operations personnel responding to customer requests or emergencies.

## FORMS AND REFERENCES

- [DI 1025 - SC-Excess Flow Valves and Split Branch Services Rev 2](#) [PDF file]
- [EFV Line Protection Calculator](#) [Excel file]

(UNCONTROLLED IF PRINTED)