



U.S. Department of Transportation  
Pipeline and Hazardous Materials  
Safety Administration

**MECHANICAL FITTING FAILURE REPORT FORM  
FOR CALENDAR YEAR 20\_\_\_\_  
FOR DISTRIBUTION OPERATORS**

INITIAL REPORT   
SUPPLEMENTAL REPORT

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2137-0522. Public reporting for this collection of information is estimated to be approximately 1 hour per submission, including the time for reviewing instructions, gathering the data needed, and completing and reviewing the collection of information. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, PHMSA, Office of Pipeline Safety (PHP-30) 1200 New Jersey Avenue, SE, Washington, D.C. 20590.

**PART A - OPERATOR INFORMATION**

**DOT USE ONLY**

1. NAME OF OPERATOR  
\_\_\_\_\_

2. OPERATOR'S 5 DIGIT IDENTIFICATION NUMBER  
\_ / \_ / \_ / \_ / \_

3. HEADQUARTERS NAME & ADDRESS

\_\_\_\_\_  
Number and Street  
\_\_\_\_\_  
City and County  
\_\_\_\_\_  
State and Zip Code

**PART B - PREPARER AND AUTHORIZED SIGNATURE**

\_\_\_\_\_  
(Type or print) Preparer's Name and Title

\_\_\_\_\_  
Area Code and Telephone Number

\_\_\_\_\_  
Preparer's email address

\_\_\_\_\_  
Area Code and Facsimile Number

Preparer's address:

\_\_\_\_\_  
Number and Street

\_\_\_\_\_  
City and County

\_\_\_\_\_  
State and Zip Code

\_\_\_\_\_  
Date Submitted

.....  
Authorized Alternative Reporting Submissions Only:

\_\_\_\_\_  
Name and Title of Person Signing

\_\_\_\_\_  
Area Code and Telephone Number

\_\_\_\_\_  
Authorized Signature

**PART C – MECHANICAL FITTING FAILURE DATA – (If the data about the “Manufacturer”, “Part or Model Number”, or” Lot Number” cannot be located with reasonable effort or if the data is unknown, enter “Unavailable”; do not leave data fields blank.)**

- 1) State in Which Fitting Failed: \_\_\_\_\_
- 2) Date of Failure: \_\_\_\_\_
- 3) Specify the Mechanical Fitting Involved:  Stab  Nut Follower  Bolted  Other Compression Type Fitting \_\_\_\_\_
- 4) Specify the Type of Mechanical Fitting:  Service or Main Tee  Tapping Tee  Transition Fitting  Coupling  Riser  
 Adapter  Valve  Sleeve  End Cap  Other \_\_\_\_\_
- 5) Leak Location:  Aboveground or  Belowground;  
 Inside or  Outside;  
 Main-to-Main or  Main-to-Service or  Service-to-Service or  Meter Set
- 6) Year Installed: \_\_\_\_\_
- 7) Year Manufactured: \_\_\_\_\_
- 8) If Neither Year Installed or Year Manufactured is Known, Provide Decade Installed: \_\_\_\_\_
- 9) Manufacturer: \_\_\_\_\_
- 10) Part or Model Number: \_\_\_\_\_
- 11) Lot Number: \_\_\_\_\_
- 12) Other Attributes: \_\_\_\_\_
- 13) Fitting Material:  Steel  Plastic  Combination Plastic and Steel  Brass  Unknown  Other \_\_\_\_\_
- 14) Specify the Two Materials Being Joined:
  - a) First Pipe  
 Nominal Size:  1/4"  1/2"  3/4"  1"  1-1/4"  1-1/2"  1-3/4"  2"  3"  4"  6"  8" or larger  
 Unit:  IPS or  CTS or  NPS  
  
 Material:  Steel  Cast/Wrought Iron  Ductile Iron  Copper  Plastic  Unknown  Other \_\_\_\_\_  
 ❖ If Plastic ⇨ Specify:  Polyethylene (PE)  Polyvinyl Chloride (PVC)  Cross-linked Polyethylene (PEX)  
 Polybutylene (PB)  Polypropylene (PP)  Acrylonitrile Butadiene Styrene (ABS)  Polyamide (PA)  
 Cellulose Acetate Butyrate (CAB)  Other ⇨ Specify: \_\_\_\_\_
  - b) Second Pipe  
 Nominal Size:  1/4"  1/2"  3/4"  1"  1-1/4"  1-1/2"  1-3/4"  2"  3"  4"  6"  8" or larger  
 Unit:  IPS or  CTS or  NPS  
  
 Material:  Steel  Cast/Wrought Iron  Ductile Iron  Copper  Plastic  Unknown  Other \_\_\_\_\_  
 ❖ If Plastic ⇨ Specify:  Polyethylene (PE)  Polyvinyl Chloride (PVC)  Cross-linked Polyethylene (PEX)  
 Polybutylene (PB)  Polypropylene (PP)  Acrylonitrile Butadiene Styrene (ABS)  Polyamide (PA)  
 Cellulose Acetate Butyrate (CAB)  Other ⇨ Specify: \_\_\_\_\_
- 15) Apparent Cause of Leak:
  - Corrosion
  - Natural Forces Was there thermal expansion/contraction?  Yes or  No
  - Excavation Damage Time excavation damage occurred?  At time of leak discovery or  Previous to leak discovery
  - Other Outside Force Damage
  - Material or Welds/Fusions Was the leak due to  Material Defect or  Design Defect
  - Equipment
  - Incorrect Operation
  - Other Explain: \_\_\_\_\_
- 16) How did the leak occur?  Leaked Through Seal or  Leaked Through Body or  Pulled Out
- 17) Operator's Internal Mechanical Fitting Failure Tracking Number (optional): \_\_\_\_\_  
 Record Identification Number <<This number will be auto-generated by PHMSA for each submitted mechanical fitting failure report.>>

**Instructions (rev xy/2013) for Form PHMSA F 7100.1-2 (rev xy/2013)**  
**MECHANICAL FITTING FAILURE REPORT FORM FOR CALENDAR YEAR 20\_\_ FOR DISTRIBUTION OPERATORS**

**Operators are required to begin collecting mechanical fitting failure information, excluding those that result only in non-hazardous leaks, beginning January 1, 2011.**

Reporting requirements for this form are contained in Title 49 of the Code of Federal Regulations § 192.1009, *What must an operator report when mechanical fittings fail?* and § 191.12 *Distribution Systems: Mechanical Fitting Failure Reports*. Each operator of a gas distribution pipeline, except for the operators of master meter systems or small liquefied petroleum gas (LPG) operators (see definitions below), must submit a report for each mechanical fitting failure excluding those that result only in non-hazardous leaks on a separate Department of Transportation Form PHMSA F 7100.1-2 for the preceding calendar year no later than **March 15<sup>th</sup>**. Operators are permitted to submit mechanical fitting failure report forms throughout the year.

If a mechanical fitting failure resulted in a reportable incident, both the mechanical fitting failure report (Form PHMSA F 7100.1-2) and gas distribution incident report (Form PHMSA F 7100-1) are required to be submitted.

Form PHMSA F 7100.1-2 and these instructions can be found on <http://phmsa.dot.gov/pipeline/library/forms>. The applicable documents are listed in the section titled Accident/Incident/Annual Reporting Forms.

**Online Reporting Requirements:**

Reports must be submitted online through the PHMSA Portal at <https://portal.phmsa.dot.gov/portal>, unless an alternate method is approved (see Alternate Reporting Methods below). You will not be able to submit reports until you have met all of the Portal registration requirements –

see [http://opsweb.phmsa.dot.gov/portal\\_message/PHMSA\\_Portal\\_Registration.pdf](http://opsweb.phmsa.dot.gov/portal_message/PHMSA_Portal_Registration.pdf)

Completing these registration requirements could take several weeks. Plan ahead and register well in advance of the report due date.

**Online Submission Instructions:**

1. Go to the PHMSA Portal at <https://portal.phmsa.dot.gov/portal>
2. Enter PHMSA Portal Username and Password; press *enter*
3. Select OPID: press “*continue*” button.
4. Under “Create Reports” locate the subheading “**Mechanical Fitting Failure**”
5. New reports can be entered individually or uploaded as a batch.
  - a. To create an individual report, select “Online form” and proceed with entering your data.  
**OR**
  - b. To upload a batch of reports, select “**Batch Upload**”. The batch upload option allows operators to submit multiple failures at once using a comma separated file (CSV) that is extracted from their own system or an Excel Spreadsheet (saved as a CSV). The file and data structure must comply with PHMSA’s requirements, which are in the Data Dictionary and Instructions. PHMSA also provides an Excel Template that operators can opt to use. All failures submitted via the batch upload process will receive a confirmation of the number of reports successfully uploaded, PHMSA report number for each failure, and a

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batch record number. A PDF copy is obtainable under “**Submitted Reports, Mechanical Fitting Failure**”.

To modify a submitted report, go to “**Submitted Reports, Mechanical Fitting Failure**” sub-heading. Locate the report by using the PHMSA Report #, Operator provided MFF unique ID, failure date, etc., select the record and click “**Create Supplemental**”. This will allow you to modify data in Part C.

6. Click “**Submit**” when finished.
7. A copy of the report can be printed or downloaded in either MS Excel or PDF format under the “**Submitted Reports**” heading.
8. For distribution pipelines subject to the jurisdiction of a State agency pursuant to certification under 49 U.S.C. § 60105, send a copy of the report to the State agency no later than March 15<sup>th</sup>.

**Alternative Reporting Methods:**

*\*\*\*Authorization from PHMSA is needed to submit the form using an alternative reporting method\*\*\**

Operators for whom electronic reporting imposes an undue burden and hardship may submit a written request for an alternate reporting method. Operators must follow the requirements in §191.7(d) to request an alternate reporting method and must comply with any conditions imposed as part of PHMSA’s approval of an alternate reporting method.

- 1.

**DEFINITIONS**

The following definitions are from §§ 192.3 and 192.1001:

1. “Distribution line” means a pipeline other than a gathering or transmission line.
2. “Operator” means a person who engages in the transportation of gas.
3. “Small LPG Operator” means an operator of a liquefied petroleum gas (LPG) distribution pipeline that serves fewer than 100 customers from a single source.
4. “Master Meter System” means a pipeline system for distributing gas within, but not limited to, a definable area, such as a mobile home park, housing project, or apartment complex, where the operator purchases metered gas from an outside source for resale through a gas distribution pipeline system. The gas distribution pipeline system supplies the ultimate consumer who either purchases the gas directly through a meter or by other means, such as by rents.
5. “Mechanical fitting” means a mechanical device used to connect sections of pipe. The term “Mechanical fitting” applies only to:
  - a. Stab Type fittings;
  - b. Nut Follower Type fittings;
  - c. Bolted Type fittings; or
  - d. Other Compression Type fittings.

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**OPERATORS**

6. "Hazardous Leak" means a leak that represents an existing or probable hazard to persons or property and requires immediate repair or continuous action until the conditions are no longer hazardous.

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**INSTRUCTIONS**

**PART A – OPERATOR INFORMATION**

Items 1-3 are auto-populated. If this information is incorrect, please contact PHMSA’s Information Resources Manager at (202) 366-8075.

**PART B - PREPARER AND AUTHORIZED SIGNATURE**

PREPARER is the name of the person most knowledgeable about the report or the person to be contacted for more information. Please include the direct phone number, email address, fax number, and address (e-mail address and/or fax are desired but not required). It should be noted that PHMSA will use your e-mail address to issue correspondence that is normally sent via mass mailings.

“Correspondence” includes notifications such as the annual reminder letter for Annual Report filings.

When submitting online your username and password take the place of the Authorized Signature.

Date Submitted: Enter the date the information was submitted.

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**PART C – MECHANICAL FITTING FAILURE DATA**

Make an entry in each block for which data are available. Some companies may have very old pipe for which installation records do not exist. Estimate data if necessary. Avoid entering “Unknown” if possible.

For reporting purposes operators must report failures which result in a hazardous leak during the calendar year that are associated with mechanical fittings. Report all types and all sizes of mechanical fitting failures which resulted in a hazardous leak regardless of the material composition of the fitting. The reporting requirements apply to failures in the bodies of mechanical fittings, failures in the joints between the fitting and the pipe, indications of leakage from the seals associated with the fitting, and partial or complete separation of the pipe away from the fitting. However, PHMSA does not seek information related to failures of cast iron bell and spigot joints unless the leak resulted from a failure of a mechanical fitting used to repair or reinforce a joint. Operators are to report mechanical fitting failures that resulted from any cause.

*State in Which Fitting Failed* - Enter the state where the mechanical fitting being reported failed.

*Date of Failure* – Enter the date which the mechanical fitting failure was identified. (mm/dd/yyyy)

*Specify the Mechanical Fitting Involved*–

- *Stab Type Mechanical Fitting* - Internally there are specially designed components including an elastomer seal, such as an “O” ring, and a gripping device to affect pressure sealing and pull-out resistance capabilities. Self-contained stiffeners are included in this type of fitting. With this style fitting the operator would have to prepare the pipe ends, mark the stab depth on the pipe, and “stab” the pipe in to the depth prescribed for the fitting being used.
- *Nut Follower Type Mechanical Fitting* – The components are generally a body; a threaded compression nut or a follower; an elastomer seal ring; a stiffener or an integrated stiffener for plastic pipe; and, with some, a gripping ring. Normally the design concept of this type of fitting typically includes an elastomer seal in the assembly. The seal, when compressed by tightening of a threaded compression nut grips the outside of the pipe, affecting a pressure-tight seal and, in some designs, providing pull-out resistance. For plastic pipe, the inside of the pipe wall should be supported by the stiffener under the seal ring and under the gripping ring (if incorporated in the design), to prevent collapse of the pipe. A lack of this support could result in a loss of the seal affected by the seal ring or the gripping of the pipe for pull-out resistance. This fitting style is normally used in pipelines 2-inches in diameter and smaller. There are two categories of this type of joining device manufactured. One type is provides a seal only, and the other provides a seal plus pipe restraint against pull-out.
- *Bolted Type Mechanical Fitting* – The bolt type mechanical fitting has similar components as the nut follower except instead of a threaded compression nut or

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follower, there is a bolt arrangement. This fitting style is most often used in pipelines 2-inches in diameter and larger.

- *Other Compression Type Fitting* – Use “Other” only if the fitting does not fit one of the above categories and is a compression type fitting.

*Specify the Type of Mechanical Fitting:* Select the type of fitting which failed. Service or Main Tee should be selected when the fitting provides for the diversion of the gas stream into a branch pipeline without the use of further “tapping” either through a built-in mechanism or external equipment. Tapping Tee should be selected when the fitting is externally attached to the pipeline and a cutter or tapping machine is used. Select “Other” if the fitting type is not listed and provide a description.

*Leak Location* – Select the location of the failed mechanical fitting in the pipeline system. Select either “Aboveground” or “Belowground”. Select either “Inside” or “Outside”. Select one from the following “Main-to-Main”, “Main-to-Service”, “Service-to-Service”, or “Meter Set”. Consider the riser to be part of the service.

*Year Installed* – Provide the year the fitting was installed. If the year installed can be reasonably estimated, please provide that date. Otherwise, see instructions below regarding Decade Installed. Select “Unknown” if the year of installation is not known or cannot be reasonably estimated.

*Year Manufactured* – Provide the year the fitting was manufactured. If the year manufactured can be reasonably estimated, please provide that date. Otherwise, see instructions below regarding decade of installation. Select “Unknown” if the year manufactured is not known or cannot be reasonably estimated.

*If Neither Year Installed or Year Manufactured is Known, Provide Decade Installed* – Use this field only if both the year the fitting was installed and the year it was manufacturer are unknown but the decade that it was installed is known (e.g., 1960-1969, 1970-1979, etc.). If all three fields are unknown, enter “Unknown” in this field. Leave blank if either the Year Installed or the Year Manufactured is known.

**If the data about the “Manufacturer”, “Part or Model Number”, or” Lot Number” cannot be located with reasonable effort or if the data is unknown, enter “unknown”; do not leave these data fields blank.**

*Manufacturer* – This is the name of the company that produced the fitting. The manufacturer name would typically be on a sticker attached to a fitting or product or it may be stamped into the fitting. Operators should take care in identifying the manufacturer. Some types of fittings are commonly referred to as “Dresser fittings” (for example) even though the particular fitting may have been manufactured by a different company. Operators should report here the company that actually manufactured the involved fitting when known. To improve data quality, we have created a drop down list with the most common manufacturers that were reported in 2011. This is not an exhaustive list. If you do not see the name of the manufacturer in the drop down, please select “Other”, and enter the name of the manufacturer in the text box that is provided. If you do not know the manufacturer, please select “unknown” from the drop down.



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*Part or Model Number* – Enter the part/model number used by the manufacturer to designate the failed fitting. If the Part or Model, Number is not known, then enter “unknown”.

*Lot Number* – Enter the manufacturing lot. If the Lot Number is not known, then enter “unknown”.

*Other Attributes* – Enter other distinguishing features which may assist in identifying the fitting. If you do not have other attributes to enter, leave this blank.

*Fitting Material* – Enter the material that forms the body of the fitting.

*Specify the Two Materials Being Joined* - For each pipe connected to the fitting, enter the nominal size and material. If the material is plastic, specify the type of plastic.

*Apparent Cause of Leak*– Enter the apparent cause of the leak using the definitions below:

**Leak causes are classified as:**

*CORROSION*: leak resulting from material loss in the pipe or other component that was caused by galvanic, bacterial, chemical, stray current, or other corrosive action.

*NATURAL FORCES*: leak resulting from earth movements, earthquakes, landslides, subsidence, lightning, heavy rains/floods, washouts, flotation, mudslide, scouring, temperature, frost heave, frozen components, high winds, or similar natural causes.

When *Natural Forces* is the leak cause, indicate if thermal expansion/contraction contributed to the fitting failure. *Thermal Expansion/contraction* means the fitting failed due to a change in dimensions in response to a change in temperature.

*EXCAVATION DAMAGE*: leak resulting from damage caused by earth moving or other equipment, tools, or vehicles. Include leaks from damage by operator's personnel or contractor or people not associated with the operator.

When *Excavation Damage* is the leak cause, indicate if the excavation damage occurred at the time the leak was discovered or if the damage occurred previous to when the leak was discovered.

*OTHER OUTSIDE FORCE DAMAGE*: Include leaks caused by fire or explosion and deliberate or willful acts, such as vandalism.

*MATERIAL OR WELDS/FUSIONS*: leak resulting from failure of original sound material from manufacture, fabrication, material, design, or other defect that eventually resulted in a leak. This includes leaks due to damage sustained in transportation to the construction or fabrication site. Also include leak resulting from a defect in the pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures. Leaks from material deterioration, other than corrosion, after exceeding the reasonable service life, are reported under Other.

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When *Material and Welds/Fusions* is the leak cause, indicate if the leak was caused by a material or design defect.

*Material Defect* means an inherent flaw in the material or weld that occurred in the manufacture or at a point prior to installation.

*Design Defect* means an aspect inherent in a component to which a subsequent failure has been attributed that is not associated with errors in installation. This could include, for example, errors in engineering design.

*EQUIPMENT*: leak resulting from malfunction of control/relief equipment including valves, regulators, or other instrumentation; or seal failures on gaskets, O-rings, seal/pump packing, or similar leaks. **Leaks resulting from construction or installation errors or failure to follow procedures should be reported in the “Incorrect Operation” category.**

*INCORRECT OPERATIONS*: *leaks* resulting from inadequate procedures or safety practices, failure to follow correct procedures, or other operator error. This category includes construction or installation defects resulting in a component being installed incorrectly. It could be due to poor workmanship, the procedure was not followed, or there were poor construction/installation procedures.

*OTHER*: leak resulting from any other cause, such as exceeding the service life, not attributable to the above causes. Specify in more detail the cause if select other.

*How did the leak occur?* – Enter whether the gas was escaping between the fitting and the pipe (leaked through seal), from the body of the fitting (leaked through body), or if the pipe had pulled out of the fitting.

*Operator’s Internal Mechanical Fitting Failure Tracking Number (optional)\**- If applicable, enter the operator’s unique tracking number assigned to identify this specific mechanical fitting failure. This field is intended to help operators easily track which mechanical fitting failures have been submitted to PHMSA. *\*Note: If you are submitting mechanical fitting failure reports via the batch upload process, this field is required.*