



SOUTHWEST GAS CORPORATION
ENGINEERING STAFF
MATERIAL SPECIFICATION

Section No.:	MS G-1
Page No.:	1 of 14
Issue Date:	03/01/16
Superseded Date:	02/24/15

Prepared By: Engineering Staff 
Approved By: Jerome T. Schmitz 

FILTERS AND STRAINERS
Strainer, Tee

1. SCOPE

This specification covers tee strainers in sizes 1-inch NPS and larger. Tee strainers will have pressure ratings corresponding to ANSI Classes 150, 300, 400 and 600.

All tee strainers covered by this specification, when installed as a single component, may be installed without an installation pressure test. When an installation pressure test is required, maximum installation test pressure will not exceed the shell test pressure specified in Paragraph 4.8.

2. APPLICABLE DOCUMENTS

- 2.1 American National Standards Institute (ANSI) B-1.20.1, "Pipe Threads, General Purpose (INCH)."
- 2.2 American National Standards Institute (ANSI) B_16.25, "Buttwelding Ends."
- 2.3 American National Standards Institute (ANSI) B_16.5, "Pipe Flanges and Flanged Fittings."
- 2.4 American National Standards Institute (ANSI) B_31_8, "Gas Transmission and Distribution Piping Systems."
- 2.5 American National Standards Institute (ANSI) Z-55.1 "Finishes for Industrial Apparatus and Equipment."
- 2.6 American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section IX, "Welding Qualifications."
- 2.7 ASTM International (ASTM) A-234, "Standard Specification for Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures."
- 2.8 American Petroleum Institute (API) Standard 1104, "Welding of Pipelines and Related Facilities."
- 2.9 American Petroleum Institute (API) Specification 6D, "Specification for Pipeline Valves."
- 2.10 United States Department of Transportation (DOT), Code of Federal Regulations, Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards."

NOTE: Unless otherwise specified, the editions of the above documents incorporated by DOT 49 CFR 192 are applicable. Documents not incorporated by DOT 49 CFR 192 will be the most recent edition.



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3. TERMINOLOGY

3.1 General

- 3.1.1 "Southwest Gas," "Southwest" or "SWG" wherever used in this specification and other related documents will refer exclusively to Southwest Gas Corporation.
- 3.1.2 The terms "approved," "as approved," "satisfactory," "as directed," "or equal" or other similar terms wherever used in this specification and other related documents will mean "as determined by Southwest Gas," unless specifically stated otherwise.
- 3.1.3 "Product Information Package" or "PIP" wherever used in this specification and other related documents will mean the required technical product information that a manufacturer must submit to Southwest to determine if the product is suitable for use by Southwest, unless specifically stated otherwise.

3.4 The following ANSI Class ratings will mean the corresponding CWPs as recognized by Southwest Gas:

ANSI Class	CWP (psig)
150	275
300	720
400	960
600	1440

TABLE G-1.1

4. MATERIALS AND MANUFACTURING

- 4.1 Tee strainers purchased to this specification will be manufactured, as a minimum, in accordance with ANSI B-31.8 and any additional requirements as defined in this specification.
- 4.2 Killed steel, made by one or more of the following processes; open hearth, basic oxygen or electric furnace, will be used exclusively in the manufacturing of fittings to this specification.
- 4.3 Tee strainer bodies constructed from prefabricated fittings will meet the requirements of ASTM A-234.



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4. MATERIALS AND MANUFACTURING (Cont'd)

- 4.4 Tee strainers with one piece bodies and components not constructed from prefabricated fittings will be made with material listed in API Specification 6D.
- 4.5 All baskets will be manufactured from 304 stainless steel with 40 mesh size perforations unless a different mesh or material is specified on the purchase order.
- 4.6 Tee strainers will be required to have drain vents if specified on the purchase order.
- 4.7 Tee Strainer Ends
 - 4.7.1 Flanges will conform to ANSI B-16.5. Only weld neck flanges will be used for fabricated strainers.
 - 4.7.2 Thread ends will conform to the line pipe thread requirements of ANSI B-1.20.1.
 - 4.7.3 Weld ends will conform to ANSI B-16.25.
- 4.8 Each tee strainer will be subjected to a hydrostatic shell test in accordance with API Specification 6D. Minimum test pressure and test durations are shown below. Southwest reserves the right to require higher hydrostatic test pressures.

TEE STRAINER TEST PRESSURES	
ANSI Class	Shell Hydrostatic (psig)
150	425
300	1100
400	1450
600	2175

TABLE G-1.2

DURATION OF HYDROSTATIC TESTS	
Strainer Size (inches)	Shell Test (minutes)
2 through 4	2
6 through 10	5
12 through 18	15
20 and larger	30

TABLE G-1.3



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4. MATERIALS AND MANUFACTURING (Cont'd)

- 4.9 All components and sealing elements will be compatible with natural gas and other agents and debris commonly found in natural gas pipelines.
- 4.10 All welds will conform to ASME Boiler and Pressure Vessel Code, Section IX or API Standard 1104.
- 4.11 The end-to-end dimension tolerance will not exceed 1/16" (1.59 mm) from the dimension shown in Section 13, measured from any point on the sealing face on one flange or weld face to the corresponding location on the other flange or weld face.
- 4.12 Flanges will be installed so that they are parallel. To check, level the face of one flange. A level placed on the face of the other flange will require a shim no more than 1/16" (1.59 mm) thick placed on the outer edge of the face to achieve a level condition.
- 4.13 Flanges will be oriented to match standard "two-hole" leveled flange connections.
- 4.14 Unless otherwise specified, all tee strainers shall be coated with an Industrial Gray Coating No. 49 per ANSI Z-55.1. The paint system used shall be one of the systems listed in Tables G-1.1 and G-1.2 or a pre-approved equivalent.



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4. MATERIALS AND MANUFACTURING (Cont'd)

APPROVED PAINT SYSTEMS				
SYSTEM NUMBER	SURFACE PREPARATION	PRIMER COAT	INTERMEDIATE COAT	FINISH COAT
1	Solvent Cleaning (SSPC-SP 1) THEN Power Tool Cleaning (SSPC-SP 3) Rusted Spots	High-Build Polyamide Epoxy, DFT 4.0 to 5.0 Mils.	None	Aliphatic Polyurethane DFT 2.0 to 3.0 Mils.
2	Solvent Cleaning (SSPC-SP 1) THEN Power Tool Cleaning (SSPC-SP 3) Rusted Spots	Modified Alkyd, Inhibited, Chromate and Lead-Free, DFT 2.0 Mils.	Alkyd Enamel, DFT 1.5 to 2.0 Mils.	Alkyd Enamel, DFT 1.5 to 2.0 Mils.
3	Solvent Cleaning (SSPC-SP 1) THEN Power Tool Cleaning (SSPC-SP 3) Rusted Spots	Aluminum Flake Epoxy Mastic, DFT 4.0 to 5.0 Mils.	None	Aliphatic Polyurethane DFT 2.0 to 3.0 Mils.

TABLE G-1.4



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4. MATERIALS AND MANUFACTURING (Cont'd)

APPROVED PAINT SYSTEMS MANUFACTURER'S PART NUMBERS				
SYSTEM NUMBER	CARBOLINE	SHERWIN WILLIAMS	RUST-OLEUM	KRYLON
1 ¹	801	B58 T 104	9100 Series	
	834	B65 W 300 Series	9400 Series	
2 ¹	GP-818	B50 HZ 1	7669	00691
	Subsil B	B56 Series	7686	00871
3 ¹	Carbomastic 15	B62 S 100		
	834	B65 W 300 Series		

¹ For each paint system, the top part number is for the primer and the bottom part number is for the top coat.

TABLE G-1.5



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5. PERFORMANCE REQUIREMENTS

- 5.1 The tee strainers will be capable of withstanding the test pressures listed in Paragraph 4.8 for at least 8 hours with water, air or nitrogen without any detrimental effects to the strainer.
- 5.2 The tee strainers will be designed to prevent debris from traveling around the strainer basket. Any seals or o-rings used for this purpose will be compatible with natural gas and debris commonly found in natural gas pipelines.
- 5.3 The strainer basket will be easily removed, cleaned and serviced while the tee strainer is installed and pressure is relieved from the line.

6. DIMENSIONS AND TOLERANCES

- 6.1 Flange dimensions and tolerances will conform to ANSI B-16.5.
- 6.2 Thread end dimensions and tolerances will conform to ANSI B-1.20.1.
- 6.3 Weld end dimensions and tolerances will conform to ANSI B-16.25.
- 6.4 Face-to-face, end-to-end and face-to-end dimensions and tolerances for tee strainers not made with prefabricated fittings are shown in Appendix A.
- 6.5 Face-to-face, end-to-end and face-to-end dimensions and tolerances for tee strainers made with prefabricated butt-weld tees are shown in Appendix B.
- 6.6 Tolerances will be 1/16" for end-to-end dimensions.

7. INSPECTION

- 7.1 Successful review of the PIP, as well as any future reference by SWG to the Seller's part number or internal code number in any future contract or purchase, will mean only that no conflict with the specification was found and will not relieve the Seller from meeting all the requirements of this specification.
- 7.2 SWG retains the option to inspect the manufacture and testing of any and all materials, products or systems referenced in this specification that are sold to SWG.



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7. INSPECTION (Cont'd)

- 7.3 SWG will make appropriate inspections and tests of any and all materials, products or systems supplied to this specification. SWG will have the right, at their option, to reject any material which fails to conform to this specification. Any such rejection may take place at the manufacturer's facility; the supplier's warehouse or any subsequent delivery location, before or after SWG assumes possession. Notice of the rejection will be made promptly to the supplier by SWG. The defective product will be replaced or returned for credit at the manufacturer's expense.
- 7.4 Any changes in the manufacturing of previously approved materials, products or systems described in this material specification for sale to SWG, must be approved by SWG's Engineering Staff. **Failure to obtain SWG's approval may be cause for rejection and disqualification as an approved supplier.**

8. CERTIFICATION

The manufacturer's or supplier's certification will be furnished to Southwest. This certification will state that a sample representing each lot has been manufactured, tested and inspected in accordance with this specification and that all requirements have been met. When specified in the purchase order or contract, a report of results will be provided. Upon the request of Southwest, the certification of an independent third party indicating conformance to this specification may be considered at Southwest's expense.

9. SAFETY DATA SHEETS

In accordance with law, the seller will supply Safety Data Sheets for all applicable items supplied under this specification to the following:

- 1) The Receiving Location
- 2) Engineering Staff
- 3) Southwest Gas Corporation
Corporate Safety
Mail Station LVA-581
P.O. Box 98510
Las Vegas, NV 89193-8510



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10. PRODUCT MARKING

- 10.1 The direction of flow will be either cast or stamped into all tee strainers.
- 10.2 All tee strainers sold to Southwest will be marked with the manufacturer's name or trade mark, the manufacturer's part number, material identification, nominal pipe size and ANSI Class rating. Southwest retains the right to require the tee strainers to be marked with Southwest's purchase order number.

11. PACKAGING AND PACKAGE MARKING

Tee strainers with threaded ends will be free of paint and be plugged with thread protectors. Flange ends and weld ends will have a suitable protector to prevent damage to contact surfaces and prevent contamination of the strainer.

12. STOCK CLASSIFICATION DESCRIPTION

STRAINER, TEE; ___ INCH WITH _____ ENDS (FLANGE, THREADED, WELD OR WELD X FLANGE); ANSI CLASS ___; 304 SS BASKET, 40 MESH; PRETESTED; WITH DRAIN VENT (OPTIONAL).



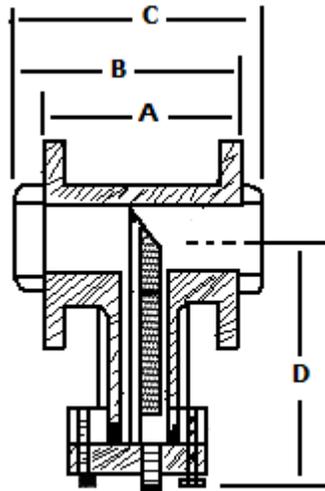
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APPENDIX A



NPS	A		B		COMMON	
	150 Inches	300 Inches	150 Inches	300 Inches	C Inches	D Inches
1	—	—	—	—	5.00	4.47
1 1/4	—	—	—	—	5.00	4.47
2	7.00	8.50	7.75	8.50	8.50	5.88
3	8.00	11.13	9.56	11.13	11.13	7.44
4	9.00	12.00	10.50	12.00	12.00	4.81
6	10.50	15.88	13.19	15.88	15.88	10.69
8	11.50	16.50	14.00	16.50	16.50	N/A
10	13.00	18.00	15.50	18.00	18.00	N/A
12	14.00	19.75	16.88	19.75	19.75	N/A

N/A = Not available.

TABLE G-1.6



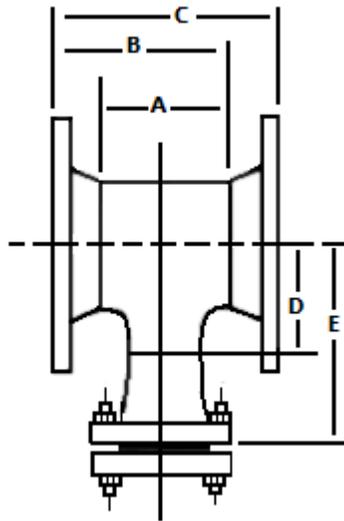
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APPENDIX B
End-to-End Dimensions for Tee Strainers with Prefabricated Tees



NPS	COMMON		B		C		D	
	A	D	150	300	150	300	150	300
	Inches							
2	5.00	2.50	7.50	7.75	10.00	10.50	5	5.25
2 1/2	6.00	3.00	8.75	9.00	11.50	12.00	6.63	6.00
3	6.75	3.38	9.50	9.88	12.25	13.00	6.13	6.50
4	8.25	4.13	11.25	11.63	14.25	15.00	7.13	7.50
5	9.75	4.88	13.25	13.63	16.75	17.50	8.38	8.75
6	11.25	5.63	14.75	15.13	18.25	19.00	9.13	9.50
8	14.00	7.00	18.00	18.38	22.00	22.75	11.00	11.38
10	17.00	8.50	21.00	21.63	25.00	26.25	12.50	13.13
12	20.00	10.00	24.50	25.13	29.00	30.25	14.50	15.13
16	24.00	12.00	29.00	29.75	34.00	35.50	17.00	17.75
20	30.00	15.00	35.69	36.38	41.38	42.75	20.69	21.38
24	34.00	17.00	40.00	40.63	46.00	47.25	23.00	23.63

TABLE G-1.7