MSS SP-6-2001

Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings

Standard Practice
Developed and Approved by the
Manufacturers Standardization Society of the
Valve and Fittings Industry, Inc.
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This MSS Standard Practice was developed under the consensus of MSS Technical Committees 102, 110, 201, and the MSS Coordinating Committee. The content of this Standard Practice is the result of the efforts of competent and concerned volunteers to provide an effective, clear, and non-exclusive specification that will benefit the industry as a whole. This MSS Standard Practice is intended as a basis for common practice by the manufacturer, the user, and the general public. The existence of an MSS Standard Practice does not in itself preclude the manufacture, sale or use of products not conforming to the Standard Practice Mandatory conformance is established only by reference in a code, specification, sales contract, or public law, as applicable.

Substantive changes in this 2001 edition are "flagged" by parallel bars as shown on the margins of this paragraph. The specific detail of the change may be determined by comparing the material flagged with that in the previous edition.

U. S. customary units in this SP are the standard; the metric (SI) units are only for reference.

Unless otherwise specifically noted in this MSS SP, any standard referred to herein is identified by the date of issue that was applicable to the referenced standard(s) at the date of issue of this MSS SP. (See Annex A).

Originally Approved December 1929

STANDARD FINISHES FOR CONTACT FACES OF PIPE FLANGES AND CONNECTING END FLANGES OF VALVES AND FITTINGS

1. SCOPE

1.1 This standard pertains to the finish of gasket contact faces of pipe flanges and end flanges of valves and fittings.

1.2 It is intended for application to products for which ASME B16 Standards do not contain complete facing finish requirements or for which there are no such Standards.

2. DEFINITIONS

2.1 ***Roughness Average.*** The term Ra (roughness average) is expressed in micro-inches (μin) [micro-meters (μm)].

2.2 ***Flange Facing Finish.*** The surface finish on the flange contact face, see Figure 1, that comes in contact with a gasket upon flange assembly.

3. REQUIREMENTS

3.1 Flange facing finish shall be judged by visual comparison with Ra standards (see ASME B46.1) and not by instruments having stylus tracers and electronic amplification. The finishes required are given in Table 1. Other finishes may be furnished by agreement between purchaser and manufacturer.

3.2 Dimensions shown (in Table 1) shall not be cause for rejection by depth gage measurement or precision instrument measurements.

4. LIMITATIONS

4.1 Surface finishes listed are not necessarily optimum for all gasket types of materials.

4.2 On flat faces, serrations need not extend beyond corresponding raised face diameter.

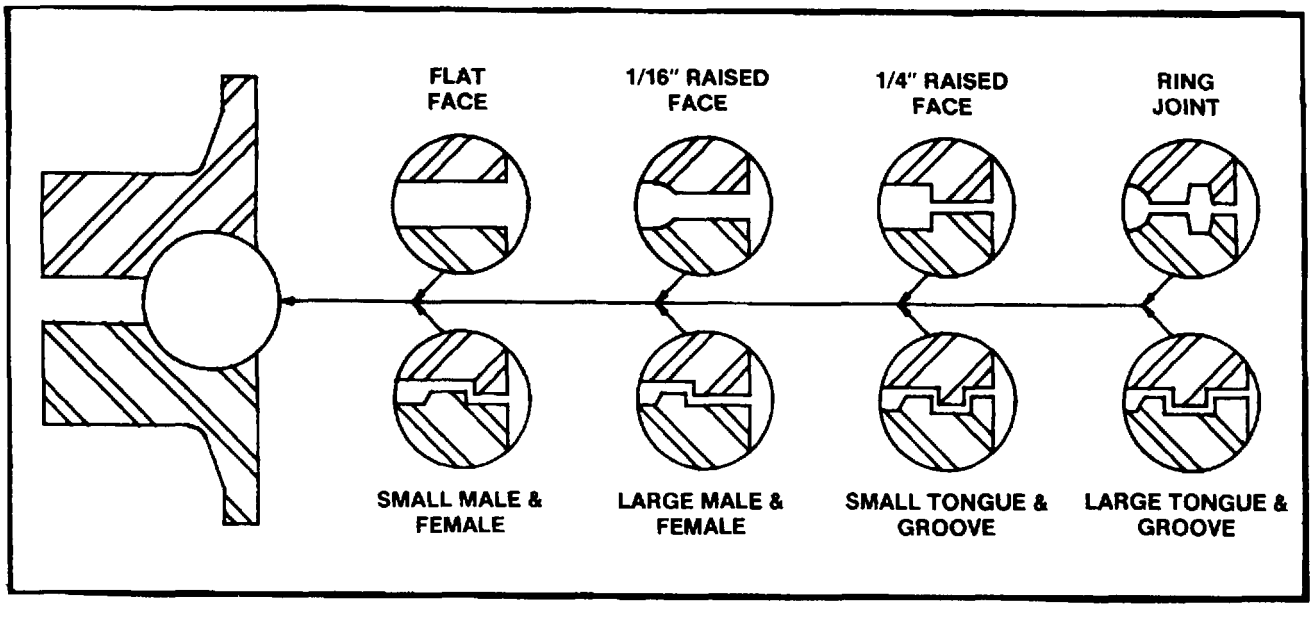

FIGURE 1 Types of Contact Faces for Flanges

TABLE 1 STANDARD FINISHES FOR CONTACT FACES OF PIPE FLANGES AND CONNECTING-END FLANGES OF VALVES AND FITTINGS

Type of Contact Faces	Steel	Ductile Iron	Gray Iron	Bronze
Flat or 1/16" (1.6 mm) Raised Face and 1/4" (6.4 mm) Raised and Large Male & Female	Serrated [a]: spiral or concentric, 45 to 55 per inch (18 to 21 per cm) recommended. The resultant surface finish shall have a 125 to 250 μin (3.2 to 6.3 μm) Ra.	Non-serrated [b]: 250 μin (6.3 μm) Ra max., or Serrated [a]: sprial or concentric, 11 to 50 per in. (5 to 19 per cm). Depth approx. 0.003 to 0.020 in. (0.075 to 0.51 mm)	Non-serrated [b]: 250 μin (6.3 μm) Ra max., or Serrated [a]: spiral, 11 to 50 per in. (5 to 19 per cm) or concentric, 8 or more per in. (4 or more per cm). Depth approx. 0.003 to 0.020 in. (0.075 to 0.51 mm)	Non-serrated [b]: 125 μin (3.2 μm) Ra max., or Serrated [a]: sprial or concentric, 30 to 80 per in. (12 to 31 cm). Depth approx. 0.003 to 0.020 in. (0.075 to 0.51 mm)
Small Male & Female, Large & Small Tongue & Groove	Serrated (as above) [a] or Non-serrated: 125 μin. (3.2 μm) Ra max.			
Ring Joint - Side Walls of Groove	Non-serrated: 63 μin. (1.6 μm) Ra max.	Non-serrated: 63 μin. (1.6 μm) Ra max.		

NOTES:

[a] Unless otherwise specified, the manufacturer may supply either spiral or concentric grooves for serrations. The spiral machining operation is commonly accomplished with the cutting tool having 0.06 in. (1.6 mm) or larger tip radius.

[b] Unless otherwise specified, the manufacturer may supply either the serrated (commonly accomplished with the cutting tool having 0.06 in. (1.6 mm) or larger tip radius) or smooth finish.

ANNEX A
REFERENCED STANDARDS AND APPLICABLE DATES

This Annex is an integral part of this Standard Practice and is placed after the main text for convenience.

Standard Name or Designation

ASME, ANSI/ASME, ANSI, ASME/ANSI

| B46.1 - 1995 Surface Texture (Surface Roughness, Waviness, and Lay)

The following organizations publish the above standard:

ANSI American National Standards Institute, Inc.
11 West 42nd Street, New York, NY 10036

ASME The American Society of Mechanical Engineers
Three Park Avenue, New York, NY 10016 - 5990

List of MSS Standard Practices
(Price List Available Upon Request)

Number	
SP-6-2001	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings
SP-9-2001	Spot Facing for Bronze, Iron and Steel Flanges
SP-25-1998	Standard Marking System For Valves, Fittings, Flanges and Unions
SP-42-1999	Class 150 Corrosion Resistant Gate, Globe, Angle and Check Valves with Flanged and Butt Weld Ends
SP-43-1991	(R 01) Wrought Stainless Steel Butt-Welding Fittings
SP-44-1996	Steel Pipeline Flanges
SP-45-1998	Bypass and Drain Connections
SP-51-2000	Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings
SP-53-1999	Quality Standard for Steel Castings and Forgings for Valves. Flanges and Fittings and Other Piping Componets - Magnetic Particle Examination Method
SP-54-1999	Quality Standard for Steel Castings for Valves, Flanges, and Fittings and Other Piping Components - Radiographic Examination Method
SP-55-1996	Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components - Visual Method for Evaluation of Surface Irregularities
SP-58-1993	Pipe Hangers and Supports - Materials, Design and Manufacture
SP-60-1999	Connecting Flange Joint Between Tapping Sleeves and Tapping Valves
SP-61-1999	Pressure Testing of Steel Valves
SP-65-1999	High Pressure Chemical Industry Flanges and Threaded Stubs for Use with Lens Gaskets
SP-67-1995	Butterfly Valves
SP-68-1997	High Pressure Butterfly Valves with Offset Design
SP-69-1996	Pipe Hangers and Supports - Selection and Application
SP-70-1998	Cast Iron Gate Valves, Flanged and Threaded Ends
SP-71-1997	Gray Iron Swing Check Valves, Flanged and Threaded Ends
SP-72-1999	Ball Valves with Flanged or Butt Welding Ends for General Service
SP-73-1991	(R 96) Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
SP-75-1998	Specification for High Test Wrought Butt Welding Fittings
SP-77-1995	(R 00) Guidelines for Pipe Support Contractual Relationships
SP-78-1998	Cast Iron Plug Valves, Flanged and Threaded Ends
SP-79-1999a	Socket-Welding Reducer Inserts
SP-80-1997	Bronze Gate, Globe, Angle and Check Valves
SP-81-2000	Stainless Steel, Bonnetless, Flanged, Knife Gate Valves
SP-82-1992	Valve Pressure Testing Methods
SP-83-1995	Class 3000 Steel Pipe Unions, Socket-Welding and Threaded
SP-85-1994	Cast Iron Globe & Angle Valves, Flanged and Threaded Ends
SP-86-1997	Guidelines for Metric Data in Standards for Valves, Flanges, Fittings and Actuators
SP-87-1991	(R 96) Factory-Made Butt-Welding Fittings for Class 1 Nuclear Piping Applications
SP-88-1993	Diaphragm Type Valves
SP-89-1998	Pipe Hangars and Supports - Fabrication and Installation Practices
SP-90-2000	Guidelines on Terminology for Pipe Hangers and Supports
SP-91-1992	(R 96) Guidelines for Manual Operations of Valves
SP-92-1999	MSS Valve User Guide
SP-93-1999	Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components-Liquid Penetrant Examination Method
SP-94-1999	Quality Std for Ferritic and Martensitic Steel Castings for Valves, Flanges, and Fittings and Other Piping Components-Ultrasonic Examination Method
SP-95-2000	Swage(d) Nipples and Bull Plugs
SP-96-1996	Guidelines on Terminology for Valves and Fittings
SP-97-1995	Integrally Reinforced Forged Branch Outlet Fittings-Socket Welding, Threaded and Buttwelding Ends
SP-98-1996	Protective Coatings for the Interior of Valves, Hydrants, and Fittings
SP-99-1994	Instrument Valves
SP-100-1997	Qualification Requirements for Elastomer Diaphragms for Nuclear Diaphragm Type Valves
SP-101-1989	Part-Turn Valve Actuator Attachment-Flange and Driving Component Dimensions and Performance Characteristics
SP-102-1989	Multi-Turn Valve Actuator Attachment - Flange and Driving Component Dimensions and Performance Characteristics
SP-103-1995	(R 00) Wrought Copper and Copper Alloy Insert Fittings for Polybutylene Systems
SP-104-1995	Wrought Copper Solder Joint Pressure Fittings
SP-105-1996	Instrument Valves for Code Applications
SP-106-1990	(R 96) Cast Copper Alloy Flanges and Flanged Fittings, Class 125, 150 and 300
SP-107-1991	(R 00) Transition Union Fittings for Joining Metal and Plastic Products
SP-108-1996	Resilient-Seated Cast Iron-Eccentric Plug Valves
SP-109-1997	Welded Fabricated Copper Solder Joint Pressure Fittings
SP-110-1996	Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends
SP-111-1996	Gray-Iron and Ductile-Iron Tapping Sleeves
SP-112-1999	Quality Standard for Evaluation of Cast Surface Finishes - Visual and Tactile Method. This SP must be sold with a 10-surface, three dimensional Cast Surface Comparator, which is a necessary part of the Standard. Additional Comparators may be sold separately at $25.00 each. Same quantity discounts apply on total order.
SP-113-2001	Connecting Joint between Tapping Machines and Tapping Valves
SP-114-1995	Corrosion Resistant Pipe Fittings Threaded and Socket Welding, Class 150 and 1000
SP-115-1999	Excess Flow Valves for Natural Gas Service
SP-116-1996	Service Line Valves and Fittings for Drinking Water Systems
SP-117-1996	Bellows Seals for Globe and Gate Valves
SP-118-1996	Compact Steel Globe & Check Valves - Flanged, Flangeless, Threaded & Welding Ends (Chemical & Petroleum Refinery Service)
SP-119-1996	Belled End Socket Welding Fittings, Stainless Steel and Copper Nickel
SP-120-1997	Flexible Graphite Packing System for Rising Stem Steel Valves (Design Requirements)
SP-121-1997	Qualification Testing Methods for Stem Packing for Rising Stem Steel Valves
SP-122-1997	Plastic Industrial Ball Valves
SP-123-1998	Non-Ferrous Threaded and Solder-Joint Unions for Use With Copper Water Tube
SP-124-2001	Fabricated Tapping Sleeves
SP-125-2000	Gray Iron and Ductile Iron In-Line, Spring-Loaded, Center-Guided Check Valves
SP-126-2000	Steel In-Line Spring-Assisted Center Guided Check Valves

(R YEAR) Indicates year standard reaffirmed without substantive changes

A large number of former MSS Practices have been approved by the ANSI or ANSI Standards, published by others. In order to maintain a single source of authoritative information, the MSS withdraws its Standard Practice in such cases.

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