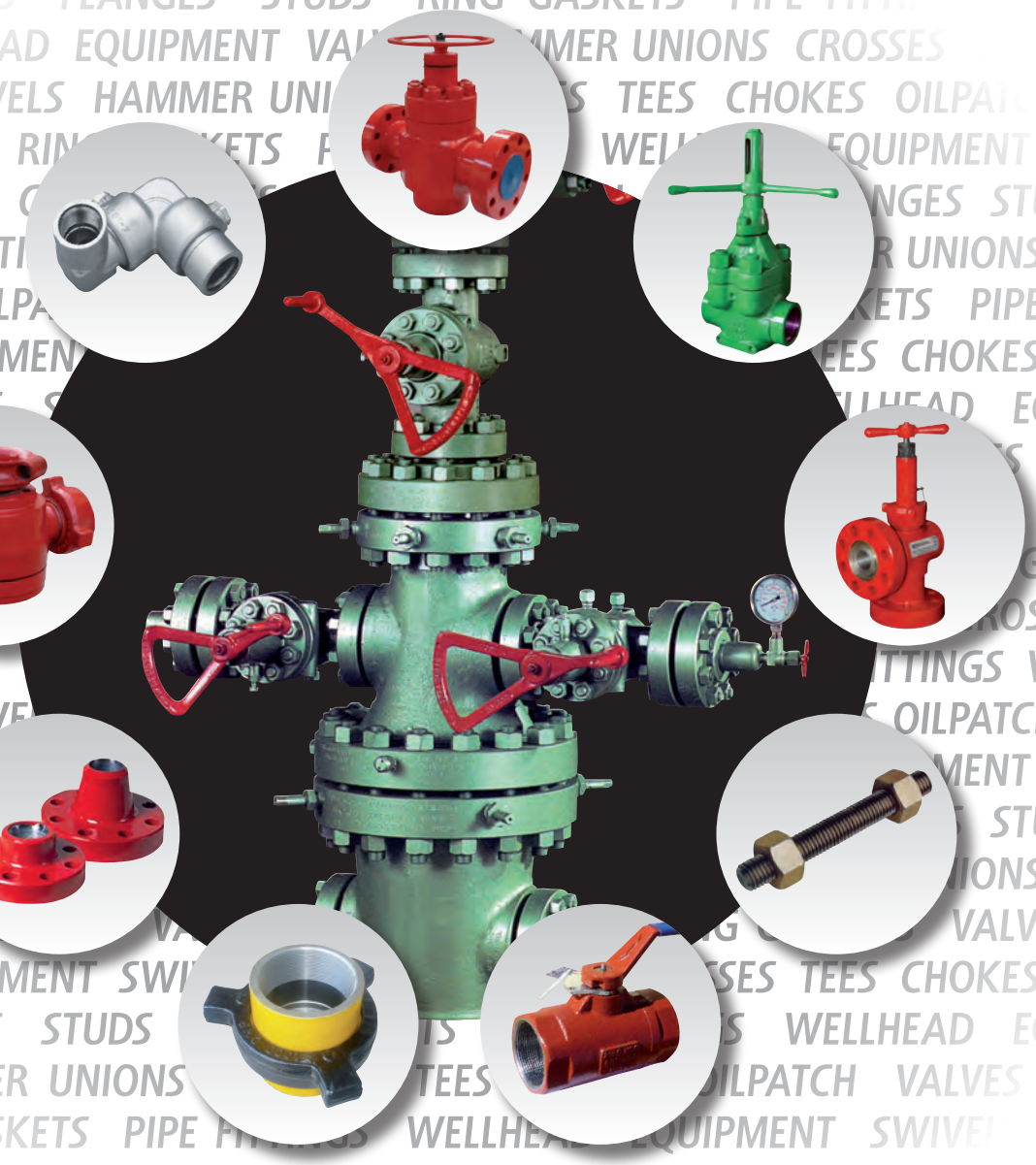
FAST TRACK SUPPLY

# Oilfield Products Composite Catalogue



GLOBAL SupplyLine

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Ph 08 8285 0000 sales@globalsupplyline.com.au
WA OFFICE: Ph 08 9255 1911 wa@globalsupplyline.com.au
QLD OFFICE: Ph 07 3899 6017 qld@globalsupplyline.com.au
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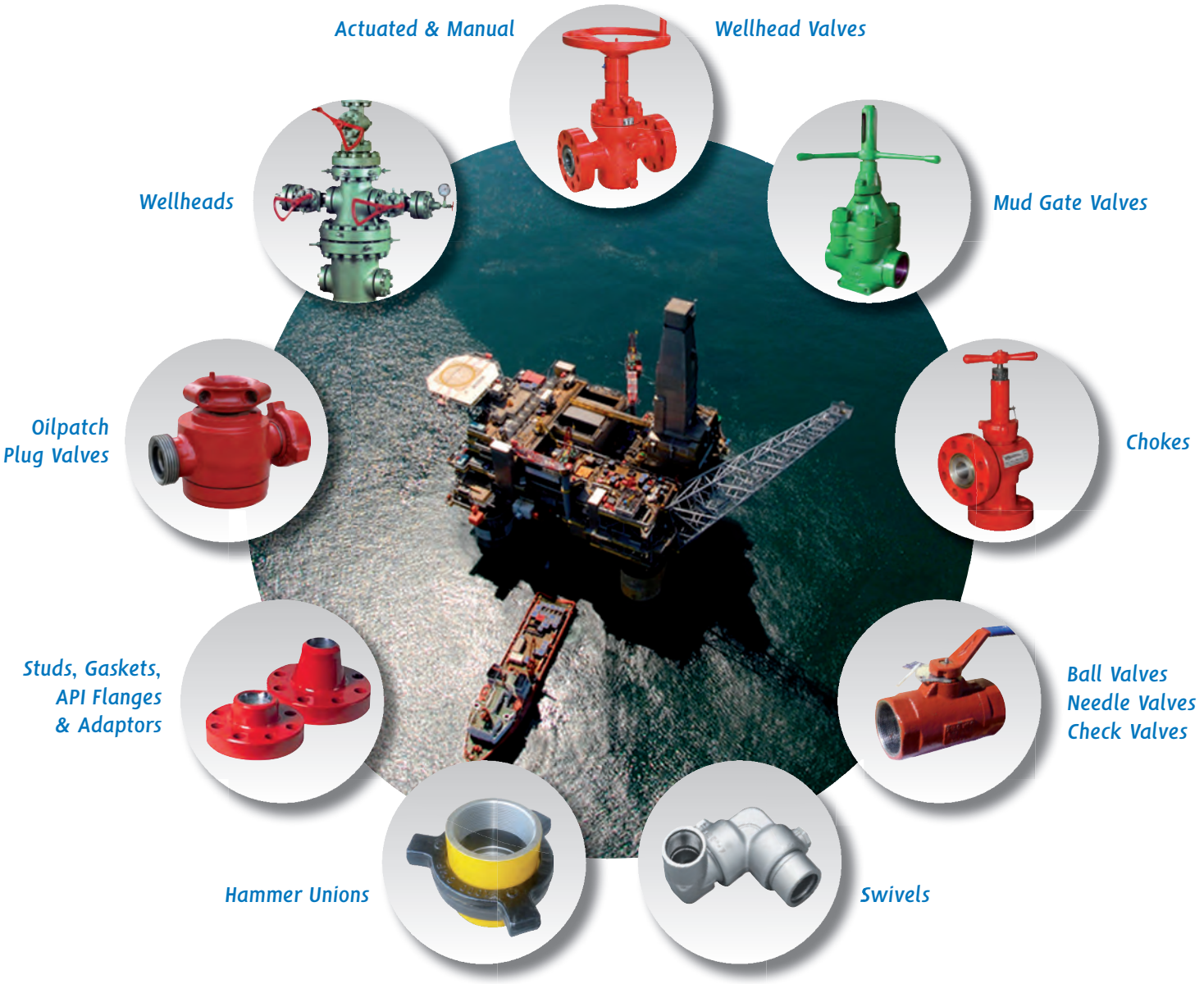
# Total Oilfield Solutions




We stock an extensive range of NACE Oilfield equipment in API6A licensed brands from API 2000 ~ 15000 psi.

- Chokes, expanding/slab Gate Valves, hydraulic & pneumatic actuated Gate Valves and 'DM' Style Mud Gate Valves.
- NPT and Flanged API Ball and Check Valves, Plug Valves with hammer union ends.
- FMC® and Cameron® style Braden Heads, Tubing Spools, Xmas Trees.
- Flanges in companion, weld neck, adaptor, DSA and blind.
- Buttweld Fittings schedule 40 up to XXS.
- Hammer Unions and Swivels.
- Gaskets, Studs.
- NPT (LP) Bull Plugs, Tees, Nipples and Elbows.

## DEALER INQUIRIES WELCOME

GLOBAL SupplyLine

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Global Supply Line has been an Australian leader since 1987 in the supply of various types of Valves, Flanges, Fittings and Wellhead Equipment. We carry a $50 million inventory in our Adelaide store of fully certified stock making us the biggest oilfield & pipeline products stockist in the southern hemisphere.

Our name is synonymous with high quality, and unparalleled dedication to excellence which has kept us at the forefront of the oil industry.

Australian Pipeline Valve and our fleet of brands are proven in the world market and are backed by Global Supply Line.

Global Supply Line has $20 million product liability insurance, our manufacturers hold relevant certifications such as ISO 9001, API6A etc.

We stock an extensive range of NACE Oilfield equipment in API6A licensed brands from API 2000 ~ 15000 psi.

- Chokes, expanding/slab Gate Valves and "DM" Style Mud Gate Valves.
- NPT and Flanged API Ball and Check Valves, Plug Valves with hammer union ends.
- FMC® & Cameron® style Braden Heads, Tubing Spools, Xmas Trees.
- Flanges in companion, weld neck, adaptor, DSA and blind.
- Buttweld Fittings schedule 40 up to XXS.
- Hammer Unions and Swivels.
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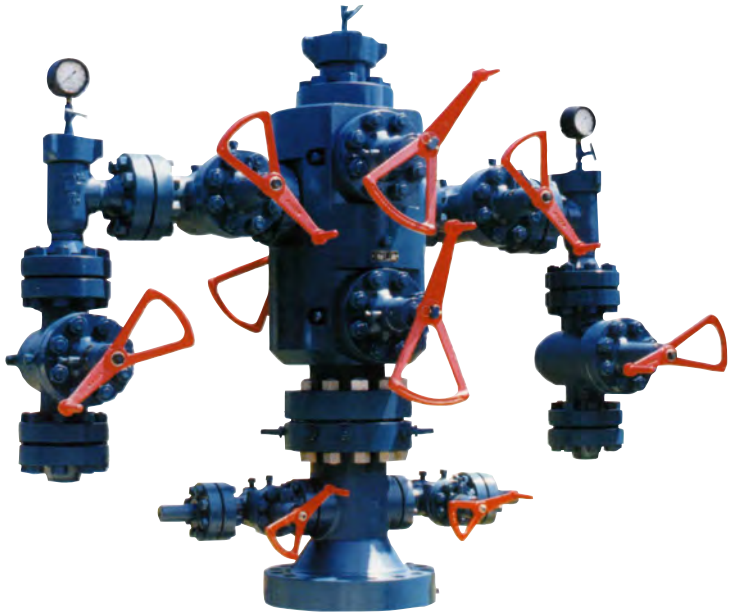
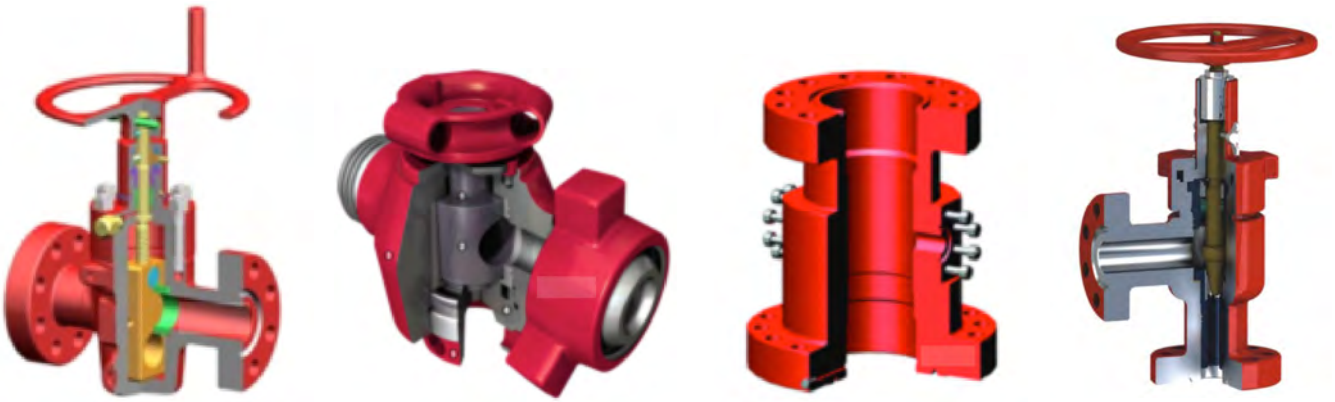
API6A



# QUALITY STANDARDS

Wellheads, fittings, flanges & valves supplied meet the following international standards:

| | |
|---|---|
| **API 6A** | Specifications for Wellhead and Christmas Tree Equipment. |
| **MSS-SP-75** | Specifications for High Test Wrought Butt Weld Fittings. |
| **ANSI B31.3** | Chemical Plant and Petroleum Refinery Piping. |
| **ANSI B16.9** | Factory Made Wrought Steel Butt Weld Fittings. |
| **NACE MR-01-75** | Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment. |
| **ASME VIII Div Sect 13.10** | Boiler and Pressure Vessel Code. |



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# TABLE OF CONTENTS

# INTRODUCTION 1

## Flanges / Boltings / Gaskets / Fittings

### Flanges
Global Supply Line supplies all types of Forged Flanges such as Weldneck, Slip-on, Socket Weld, Threaded and Blind as per ANSI B-16.5 & ASA B-16.5 covering sizes from 1/2" to 24", pressure ratings from class 150 to 2500 and temperature rating -20° F to 1500°F. Studs, Nuts, and Gaskets for these Flanges are also supplied.

Flanges to API specifications -6A such as 6B and 6BX (Threaded, Weldneck, Blind, Test, Integral, Adaptor & Companion Flanges) for any size & pressure rating from 2000 PSI to 10000 PSI are ex stock and up to 20000 PSI can be catered for. Large diametre flanges to API 605 from size NPS 26" to 48" and ratings 150 to 900 are also manufactured and supplied. Slip-on and Weldneck Flanges as per BS 3293 in class 150, 300, 400, 600 from size NPS 26" to 48" can also be manufactured. Ring joint Gaskets and Grooves are provided as per ASME B16.20, ANSI B16.5 & API-6A.

Orifice flanges/meter runs as per ANSI B16.36, API 2530 and AGA-3 specifications with orifice plates can also be provided for any class and size. Flanges to other standards such as BIS, BS, DIN, ISO, JIS, can also be manufactured to meet customer's requirements.

### Studs & Nuts
Global Supply Line supplies Studs & Nuts to API 6A & ANSI B16.5 in various materials and sizes.

### Gaskets
Global Supply Line supplies Ring Joint Gaskets in all sizes and materials to ASME B16.2 & API6A

### Flanged Fittings
Flanged, Studded Crosses and Tees from sizes 1.13/16" to 4.1/16" and for pressure ratings from 2000 PSI to 20000 PSI are manufactured and supplied.

### Pipe Fittings (Buttwelded)
Global Supply Line supplies Pipe Fittings Butt-Welded such as Elbows, Returns, Tees, Reducers etc. as per ASME B-16.9. The Butt-Welded Ends are prepared as per ANSI B16.25.

### Forged Socket Welded & Threaded Fittings
Forged, Socket Welded & Threaded Fittings can also be supplied ex stock to specifications ASME B-16.11 in pressure ratings of 2000, 3000 & 6000 PSI. (4000 PSI on indent basis)

### Seamless Pipe
Global Supply Line can also supply Line Pipe as per API5L, Seamless Tubing and Casing as per API 5CT and also Pipe as per ASTM standard in Carbon Steel, Alloy Steel and Stainless Steel.

### Sour Service
Flanges, Studs, Nuts, Ring Gaskets, Fittings & other Forged products are also manufactured adhering to NACE MR-01-75 where specified.

### Low Temperature & High Temperature Service
Special materials for low temperature service can also be provided for retention of ductility and resistance to shock loading. Similarly, special materials can be provided to cater for high temperature in the creep range.

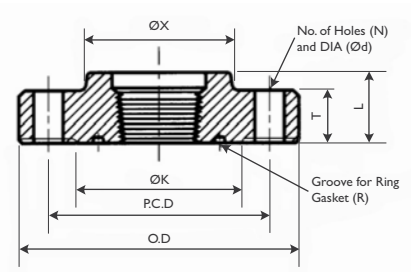
### Quality Control
Our Manufacturers Quality assurance is controlled by assuring quality right from raw material stage to finish stage. i.e. chemical analysis, micro & macro examination, physical testing, ultrasonic examination, radiography, impact testing, magnetic particle inspection, D.P. Test, hydrotest, air/nitrogen testing, gauging and dimensional inspection etc. at various stages as applicable. Full certification to DIN 500439.1B

Our manufacturer's quality systems are in place as per API Q1 and ISO 9001 Standards. API specifications 5 L, 5 CT, 6 A, 7, 11 VI & 16C can be provided where required.

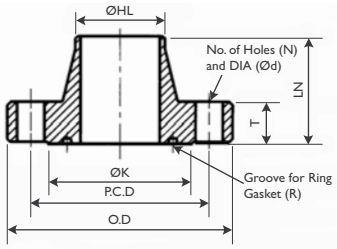
### Third Party Inspection
Products can be offered under third party inspection from Det Norske Veritas, Lloyds, Bureau Veritas, American Bureau of Shipping or as required by the customer.

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9001

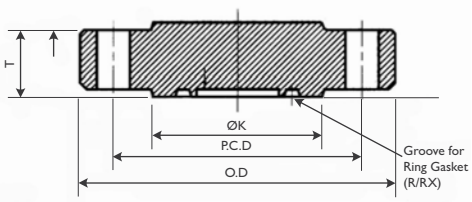
CERT: MEL6014010




Threaded Flange
(Fig. 1)




Weld Neck Flange
(Fig. 2)




Blind Flange
(Fig. 3)

*All dimensions are in inches

## 1 THREADED, BLIND & WELD NECK FLANGES (AS PER API-6A)

### (1-1) PRESSURE RATING:- API 6B-2000 PSI WP (With R or RX type Ring Gasket)

| SIZE | OD | T | ØK | PCD | N | Ød | L | ØX | LN | ØHL | R/RX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 1/16 | 6.50 | 1.31 | 4.25 | 5 | 8 | 0.75 | 1.75 | 3.31 | 3.19 | 2.38 | 23 |
| 2 9/16 | 7.50 | 1.44 | 5 | 5.88 | 8 | 0.88 | 1.94 | 3.94 | 3.44 | 2.88 | 26 |
| 3 1/8 | 8.25 | 1.56 | 5.75 | 6.62 | 8 | 0.88 | 2.12 | 4.62 | 3.56 | 3.50 | 31 |
| 4 1/16 | 10.75 | 1.81 | 6.88 | 8.50 | 8 | 1.00 | 2.44 | 6.00 | 4.31 | 4.50 | 37 |
| 5 1/8 | 13 | 2.06 | 8.25 | 10.50 | 8 | 1.12 | 2.69 | 7.44 | 4.81 | 5.56 | 41 |
| 7 1/16 | 14 | 2.19 | 9.5 | 11.50 | 12 | 1.12 | 2.94 | 8.75 | 4.94 | 6.63 | 45 |
| 9 | 16.5 | 2.50 | 11.88 | 13.75 | 12 | 1.25 | 3.31 | 10.75 | 5.56 | 8.63 | 49 |
| 11 | 20 | 2.81 | 14 | 17 | 16 | 1.38 | 3.69 | 13.50 | 6.31 | 10.75 | 53 |
| 13 5/8 | 22 | 2.94 | 16.25 | 19.25 | 20 | 1.38 | 3.94 | 15.75 | - | - | 57 |
| 16 3/4 | 27 | 3.31 | 20 | 23.75 | 20 | 1.62 | 4.50 | 19.50 | - | - | 65 |
| 21 1/4 | 32 | 3.88 | 25 | 28.50 | 24 | 1.75 | 5.38 | 24.00 | - | - | 73 |

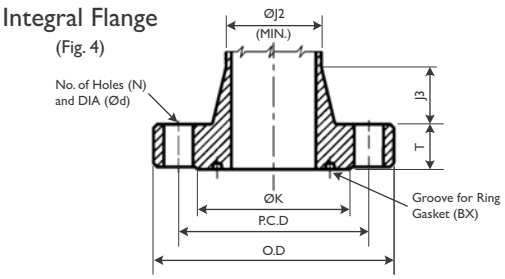
### (1-2) PRESSURE RATING:- API 6B-3000 PSI WP (With R or RX type Ring Gasket)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 1/16 | 8.50 | 1.81 | 4.88 | 6.50 | 8 | 1.00 | 2.56 | 4.12 | 4.31 | 2.38 | 24 |
| 2 9/16 | 9.62 | 1.94 | 5.38 | 7.50 | 8 | 1.12 | 2.81 | 4.88 | 4.44 | 2.88 | 27 |
| 3 1/8 | 9.50 | 1.81 | 6.12 | 7.50 | 8 | 1.00 | 2.44 | 5.00 | 4.31 | 3.50 | 31 |
| 4 1/16 | 11.50 | 2.06 | 7.12 | 9.5 | 8 | 1.25 | 3.06 | 6.25 | 4.81 | 4.50 | 37 |
| 5 1/8 | 13.75 | 2.31 | 8.50 | 11.00 | 8 | 1.38 | 3.44 | 7.50 | 5.31 | 5.56 | 41 |
| 7 1/16 | 15.00 | 250 | 9.50 | 12.50 | 12 | 1.25 | 3.69 | 9.25 | 5.81 | 6.63 | 45 |
| 9 | 18.50 | 2.81 | 12.12 | 15.50 | 12 | 1.50 | 4.31 | 11.75 | 6.69 | 8.63 | 49 |
| 11 | 21.50 | 3.06 | 14.25 | 18.50 | 16 | 1.50 | 4.56 | 14.50 | 7.56 | 10.75 | 53 |
| 13 5/8 | 24.00 | 3.44 | 16.50 | 21.00 | 20 | 1.50 | 4.94 | 16.50 | - | - | 57 |
| 16 3/4 | 27.75 | 3.94 | 20.62 | 24.25 | 20 | 1.75 | 5.06 | 20.00 | - | - | 66 |
| 20 3/4 | 33.75 | 4.75 | 25.50 | 29.25 | 20 | 2.12 | 6.75 | 24.50 | - | - | 74 |

### (1-3) PRESSURE RATING:- API 6B-5000 PSI WP (With R or RX type Ring Gasket)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 1/16 | 8.50 | 1.81 | 4.88 | 6.50 | 8 | 1.00 | 2.56 | 4.12 | 4.31 | 2.38 | 24 |
| 2 9/16 | 9.62 | 1.94 | 5.38 | 7.50 | 8 | 1.12 | 2.81 | 4.88 | 4.44 | 2.88 | 27 |
| 3 1/8 | 10.50 | 2.19 | 6.62 | 8.00 | 8 | 1.25 | 3.19 | 5.25 | 4.94 | 3.50 | 35 |
| 4 1/16 | 12.25 | 244 | 7.62 | 9.50 | 8 | 1.38 | 3.88 | 6.38 | 5.19 | 4.50 | 39 |
| 5 1/8 | 14.75 | 3.19 | 9.00 | 11.50 | 8 | 1.62 | 4.44 | 7.75 | 6.4 | 5.56 | 44 |
| 7 1/16 | 15.50 | 3.62 | 9.75 | 12.50 | 12 | 1.50 | 5.06 | 9.00 | 7.13 | 6.63 | 46 |
| 9 | 19 | 4.06 | 12.50 | 15.50 | 12 | 1.75 | 6.06 | 11.50 | 8.81 | 8.63 | 50 |
| 11 | 23 | 4.69 | 14.63 | 19.00 | 12 | 2.00 | 6.69 | 14.50 | 10.44 | 10.75 | 54 |

For Ring Gasket number and PCD of Ring Groove see Page 25, for Ring Groove dimensions see Page 28, 29.




*All dimensions are in inches

## 2 INTEGRAL FLANGES (AS PER API-6A)

### (2-1) PRESSURE RATING:- API 6BX-2000 PSI WP (With BX type Ring Gasket)

| SIZE | OD | T | ØK | PCD | N | Ød | ØJ2 | J3 | BX |
|---|---|---|---|---|---|---|---|---|---|
| 26¾ | 41.00 | 4.97 | 31.69 | 37.50 | 20 | 1.88 | 29.25 | 7.31 | 167 |
| 30 | 44.19 | 5.28 | 35.75 | 40.94 | 32 | 1.75 | 32.80 | 7.75 | 303 |

### (2-2) PRESSURE RATING:- API 6BX-3000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 26¾ | 43.38 | 6.34 | 32.75 | 39.38 | 24 | 2.12 | 30.56 | 7.31 | 168 |
| 30 | 46.68 | 6.58 | 36.31 | 42.94 | 32 | 2.00 | 34.30 | 7.75 | 303 |

### (2-3) PRESSURE RATING:- API 6BX-5000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 13⅝ | 26.50 | 4.44 | 18.00 | 23.25 | 16 | 1.75 | 16.69 | 4.50 | 160 |
| 16¾ | 30.38 | 5.13 | 21.06 | 26.62 | 16 | 2.00 | 20.75 | 3.00 | 162 |
| 18¾ | 35.62 | 6.53 | 24.69 | 31.62 | 20 | 2.12 | 23.56 | 6.00 | 163 |
| 21¼ | 39.00 | 7.12 | 27.62 | 34.88 | 24 | 2.12 | 26.75 | 6.50 | 165 |

### (2-4) PRESSURE RATING:- API 6BX-10000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 7.38 | 1.66 | 4.12 | 5.75 | 8 | 0.88 | 2.56 | 1.91 | 151 |
| 2 1/16 | 7.88 | 1.73 | 4.38 | 6.25 | 8 | 0.88 | 2.94 | 2.03 | 152 |
| 2 9/16 | 9.12 | 2.02 | 5.19 | 7.25 | 8 | 1.00 | 3.62 | 2.25 | 153 |
| 3 1/16 | 10.62 | 2.30 | 6.00 | 8.50 | 8 | 1.12 | 4.34 | 2.50 | 154 |
| 4 1/16 | 12.44 | 2.77 | 7.28 | 10.19 | 8 | 1.25 | 5.75 | 2.88 | 155 |
| 5⅛ | 14.06 | 3.12 | 8.69 | 11.81 | 12 | 1.25 | 7.19 | 3.19 | 169 |
| 7 1/16 | 18.88 | 4.06 | 11.88 | 15.88 | 12 | 1.62 | 10.00 | 3.75 | 156 |
| 9 | 21.75 | 4.88 | 14.12 | 18.75 | 16 | 1.62 | 12.88 | 3.69 | 157 |
| 11 | 25.75 | 5.56 | 16.88 | 22.25 | 16 | 1.88 | 15.75 | 4.06 | 158 |
| 13⅝ | 30.25 | 6.62 | 20.38 | 26.50 | 20 | 2.00 | 19.50 | 4.50 | 159 |
| 16¾ | 34.31 | 6.62 | 22.69 | 30.56 | 24 | 2.00 | 23.69 | 3.00 | 162 |
| 18¾ | 40.94 | 8.78 | 27.44 | 36.44 | 24 | 2.38 | 26.56 | 6.12 | 164 |
| 21¼ | 45 | 9.50 | 30.75 | 40.25 | 24 | 2.62 | 30.00 | 6.50 | 166 |

### (2-5) PRESSURE RATING:- API 6BX-15000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 8.19 | 1.78 | 4.19 | 6.31 | 8 | 1.00 | 2.81 | 1.88 | 151 |
| 2 1/16 | 8.75 | 200 | 4.50 | 6.88 | 8 | 1.00 | 3.25 | 2.12 | 152 |
| 2 9/16 | 10.00 | 2.25 | 5.25 | 7.88 | 8 | 1.12 | 3.94 | 2.25 | 153 |
| 3 1/16 | 11.31 | 2.53 | 6.06 | 9.06 | 8 | 1.25 | 4.81 | 2.50 | 154 |
| 4 1/16 | 14.19 | 3.09 | 7.62 | 11.44 | 8 | 1.50 | 6.25 | 2.88 | 155 |
| 7 1/16 | 19.88 | 4.69 | 12.00 | 16.88 | 16 | 1.62 | 10.88 | 2.62 | 156 |
| 9 | 25.50 | 5.75 | 15.00 | 21.75 | 16 | 2.00 | 13.75 | 4.88 | 157 |
| 11 | 32.00 | 7.38 | 17.88 | 28.00 | 20 | 2.12 | 16.81 | 9.28 | 158 |
| 13⅝ | 34.88 | 8.06 | 21.31 | 30.38 | 20 | 2.38 | 20.81 | 4.50 | 159 |
| 18¾ | 45.75 | 10.06 | 28.44 | 40.00 | 20 | 3.12 | 28.75 | 6.12 | 164 |

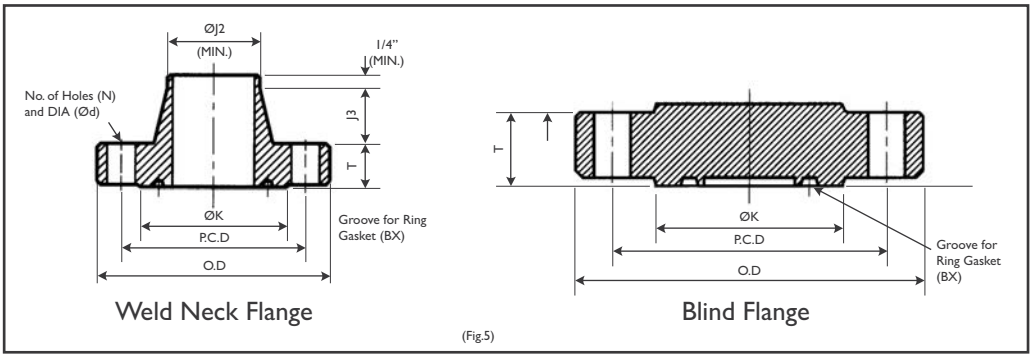
For Ring Gasket number and PCD of Ring Groove see Page 25, for Ring Groove dimensions see Page 30.

*All dimensions are in inches

## 2 INTEGRAL FLANGES (AS PER API-6A)

(2-6) PRESSURE RATING:- API 6BX-20000 PSI WP (With BX type Ring Gasket)

| SIZE | OD | T | ØK | PCD | N | Ød | ØJ2 | J3 | BX |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 7.38 | 1.66 | 4.12 | 5.75 | 8 | 0.88 | 2.56 | 1.91 | 151 |
| 2 1/16 | 7.88 | 1.73 | 4.38 | 6.25 | 8 | 0.88 | 2.94 | 2.03 | 152 |
| 2 9/16 | 9.12 | 2.02 | 5.19 | 7.25 | 8 | 1.00 | 3.62 | 2.25 | 153 |
| 3 1/16 | 10.62 | 2.30 | 6.00 | 8.50 | 8 | 1.12 | 4.34 | 2.50 | 154 |
| 4 1/16 | 12.44 | 2.77 | 7.28 | 10.19 | 8 | 1.25 | 5.75 | 2.88 | 155 |
| 7 1/16 | 18.88 | 4.06 | 11.88 | 15.88 | 12 | 1.62 | 10.00 | 3.75 | 156 |
| 9 | 21.75 | 4.88 | 14.12 | 18.75 | 16 | 1.62 | 12.88 | 3.69 | 157 |
| 11 | 25.75 | 5.56 | 16.88 | 22.25 | 16 | 1.88 | 15.75 | 4.06 | 158 |
| 13 5/8 | 30.25 | 6.62 | 20.38 | 26.50 | 20 | 2.00 | 19.50 | 4.50 | 159 |




(Fig.5)

*All dimensions are in inches

## 3 WELD NECK & BLIND FLANGES (AS PER API-6A)

(3-1) RATING:- API 6BX-10000 PSI WP (With BX type Ring Gasket)

| SIZE | OD | T | ØK | PCD | N | Ød | ØJ2 | J3 | BX |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 7.38 | 1.66 | 4.12 | 5.75 | 8 | 0.88 | 2.56 | 1.91 | 151 |
| 2 1/16 | 7.88 | 1.73 | 4.38 | 6.25 | 8 | 0.88 | 2.94 | 2.03 | 152 |
| 2 9/16 | 9.12 | 2.02 | 5.19 | 7.25 | 8 | 1.00 | 3.62 | 2.25 | 153 |
| 3 1/16 | 10.62 | 2.30 | 6.00 | 8.50 | 8 | 1.12 | 4.34 | 2.50 | 154 |
| 4 1/16 | 12.44 | 2.77 | 7.28 | 10.19 | 8 | 1.25 | 5.75 | 2.88 | 155 |
| 5 1/8 | 14.06 | 3.13 | 8.69 | 11.81 | 12 | 1.25 | 7.19 | 3.19 | 169 |
| 7 1/16 | 18.88 | 4.06 | 11.88 | 15.88 | 12 | 1.62 | 10.00 | 3.75 | 156 |
| 9 | 21.75 | 4.88 | 14.12 | 18.75 | 16 | 1.62 | 12.88 | 3.69 | 157 |
| 11 | 25.75 | 5.56 | 16.88 | 22.25 | 16 | 1.88 | 15.75 | 4.06 | 158 |
| 13 5/8 | 30.25 | 6.62 | 20.38 | 26.50 | 20 | 2.00 | 19.50 | 4.50 | 159 |
| 16 3/4 | 34.31 | 6.62 | 22.69 | 30.56 | 24 | 2.00 | 23.69 | 3.00 | 162 |

(3-2) RATING:- API 6BX-15000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 8.19 | 1.78 | 4.19 | 6.31 | 8 | 1.00 | 2.81 | 1.88 | 151 |
| 2 1/16 | 8.75 | 2.00 | 4.50 | 6.88 | 8 | 1.00 | 3.25 | 2.12 | 152 |
| 2 9/16 | 10.00 | 2.25 | 5.25 | 7.88 | 8 | 1.12 | 3.94 | 2.25 | 153 |
| 3 1/16 | 11.31 | 2.53 | 6.06 | 9.06 | 8 | 1.25 | 4.81 | 2.50 | 154 |
| 4 1/16 | 14.19 | 3.09 | 7.62 | 11.44 | 8 | 1.50 | 6.25 | 2.88 | 155 |
| 7 1/16 | 19.88 | 4.69 | 12.00 | 16.88 | 16 | 1.62 | 10.88 | 3.62 | 156 |

For Ring Gasket number and PCD of Ring Groove see Page 25, for Ring Groove dimensions see Page 30.

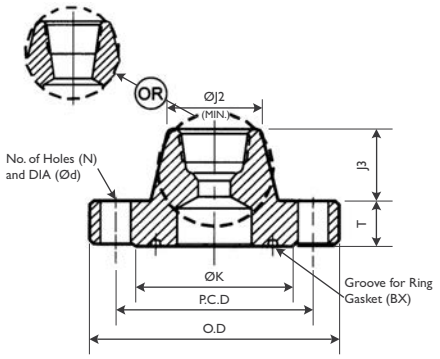
*All dimensions are in inches

## 3 WELD NECK & BLIND FLANGES (AS PER API-6A)

### (3-3) RATING:- API 6BX-20000 PSI WP (With BX type Ring Gasket)

| SIZE | OD | T | ØK | PCD | N | Ød | ØJ2 | J3 | BX |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 10.12 | 2.50 | 4.62 | 8.00 | 8 | 1.12 | 4.31 | 1.94 | 151 |
| 2 1/16 | 11.31 | 2.81 | 5.19 | 9.06 | 8 | 1.25 | 5.00 | 2.06 | 152 |
| 2 9/16 | 12.81 | 3.12 | 5.94 | 10.31 | 8 | 1.38 | 5.69 | 2.31 | 153 |
| 3 1/16 | 14.06 | 3.38 | 6.75 | 11.31 | 8 | 1.50 | 6.31 | 2.50 | 154 |
| 4 1/16 | 17.56 | 4.19 | 8.62 | 14.06 | 8 | 1.88 | 8.12 | 2.88 | 155 |
| 7 1/16 | 25.81 | 6.50 | 13.88 | 21.81 | 16 | 2.12 | 13.31 | 3.81 | 156 |

For Ring Groove dimensions see Page 30.




Blind and Test Flange
(Fig. 6)

*All dimensions are in inches

## 4 BLIND AND TEST FLANGES (AS PER API-6A)

### (4-1) PRESSURE RATING:- API 6BX-10000 PSI WP (With BX type Ring Gasket)

| SIZE | OD | T | ØK | PCD | N | Ød | ØJ2 | J3 | BX |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 7.38 | 1.66 | 4.12 | 5.75 | 8 | 0.88 | 2.56 | 1.91 | 151 |
| 2 1/16 | 7.88 | 1.73 | 4.38 | 6.25 | 8 | 0.88 | 2.94 | 2.03 | 152 |
| 2 9/16 | 9.12 | 2.02 | 5.19 | 7.25 | 8 | 1.00 | 3.62 | 2.25 | 153 |
| 3 1/16 | 10.62 | 2.30 | 6.00 | 8.50 | 8 | 1.12 | 4.34 | 2.50 | 154 |
| 4 1/16 | 12.44 | 2.77 | 7.28 | 10.19 | 8 | 1.25 | 5.75 | 2.88 | 155 |

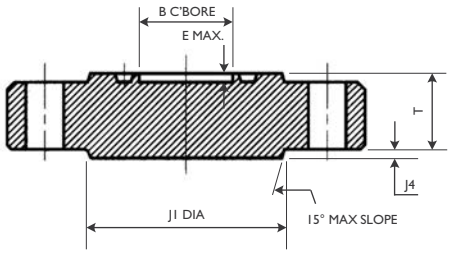
### (4-2) PRESSURE RATING:- API 6BX-15000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 8.19 | 1.78 | 4.19 | 6.31 | 8 | 1.00 | 2.81 | 1.88 | 151 |
| 2 1/16 | 8.75 | 2.00 | 4.50 | 6.88 | 8 | 1.00 | 3.25 | 2.12 | 152 |
| 2 9/16 | 10.00 | 2.25 | 5.25 | 7.88 | 8 | 1.12 | 3.94 | 2.25 | 153 |
| 3 1/16 | 11.31 | 2.53 | 6.06 | 9.06 | 8 | 1.25 | 4.81 | 2.50 | 154 |
| 4 1/16 | 14.19 | 3.09 | 7.62 | 11.44 | 8 | 1.50 | 6.25 | 2.88 | 155 |

### (4-3) PRESSURE RATING:- API 6BX-20000 PSI WP (With BX type Ring Gasket)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 13/16 | 10.12 | 2.50 | 4.62 | 8.00 | 8 | 1.12 | 4.31 | 1.94 | 151 |
| 2 1/16 | 11.31 | 2.81 | 5.19 | 9.06 | 8 | 1.25 | 5.00 | 2.06 | 152 |
| 2 9/16 | 12.81 | 3.12 | 5.94 | 10.31 | 8 | 1.38 | 5.69 | 2.31 | 153 |
| 3 1/16 | 14.06 | 3.38 | 6.75 | 11.31 | 8 | 1.50 | 6.31 | 2.50 | 154 |
| 4 1/16 | 17.56 | 4.19 | 8.62 | 14.06 | 8 | 1.88 | 8.12 | 2.88 | 155 |

For Ring Gasket number and PCD of Ring Groove see Page 25, for Ring Groove dimensions see Page 30.




Blind Flanges
(Fig. 7)

*All dimensions are in inches

## 5 BLIND FLANGES LARGE DIAMETRE (AS PER API-6A)

### (5-1) PRESSURE RATING:- API 6BX-2000 PSI WP (With BX type Ring Gasket)

| Nominal Size B | Flange Thickness T | Hub Diametr J1 | Groove Depth E | Added Hub Thickness, J4 |
|---|---|---|---|---|
| 26¾ | 4.97 | 32.91 | 0.844 | 0.38 |
| 30 | 5.28 | 36.69 | 0.906 | 0.69 |

### (5-2) PRESSURE RATING:- API 6BX-3000 PSI WP (With BX type Ring Gasket)

| | | | | |
|---|---|---|---|---|
| 26¾ | 6.34 | 34.25 | 0.844 | 0.00 |
| 30 | 6.58 | 38.19 | 0.906 | 0.50 |

### (5-3) PRESSURE RATING:- API 6BX-5000 PSI WP (With BX type Ring Gasket)

| | | | | |
|---|---|---|---|---|
| 13⅝ | 4.44 | 18.94 | 0.562 | 0.94 |
| 16¾ | 5.12 | 21.88 | 0.328 | 0.69 |
| 18¾ | 6.53 | 26.56 | 0.719 | 0.75 |
| 21¼ | 7.12 | 29.88 | 0.750 | 0.88 |

### (5-4) PRESSURE RATING:- API 6BX-10000 PSI WP (With BX type Ring Gasket)

| | | | | |
|---|---|---|---|---|
| 5⅛ | 3.12 | 8.81 | 0.375 | 0.25 |
| 7⅛ | 4.06 | 11.88 | 0.438 | 0.38 |
| 9 | 4.88 | 14.75 | 0.500 | 0.38 |
| 11 | 5.56 | 17.75 | 0.562 | 0.56 |
| 13⅝ | 6.62 | 21.75 | 0.625 | 0.69 |
| 16¾ | 6.62 | 25.81 | 0.328 | 1.19 |
| 18¾ | 8.78 | 29.62 | 0.719 | 1.00 |
| 21¼ | 9.50 | 33.38 | 0.750 | 1.25 |

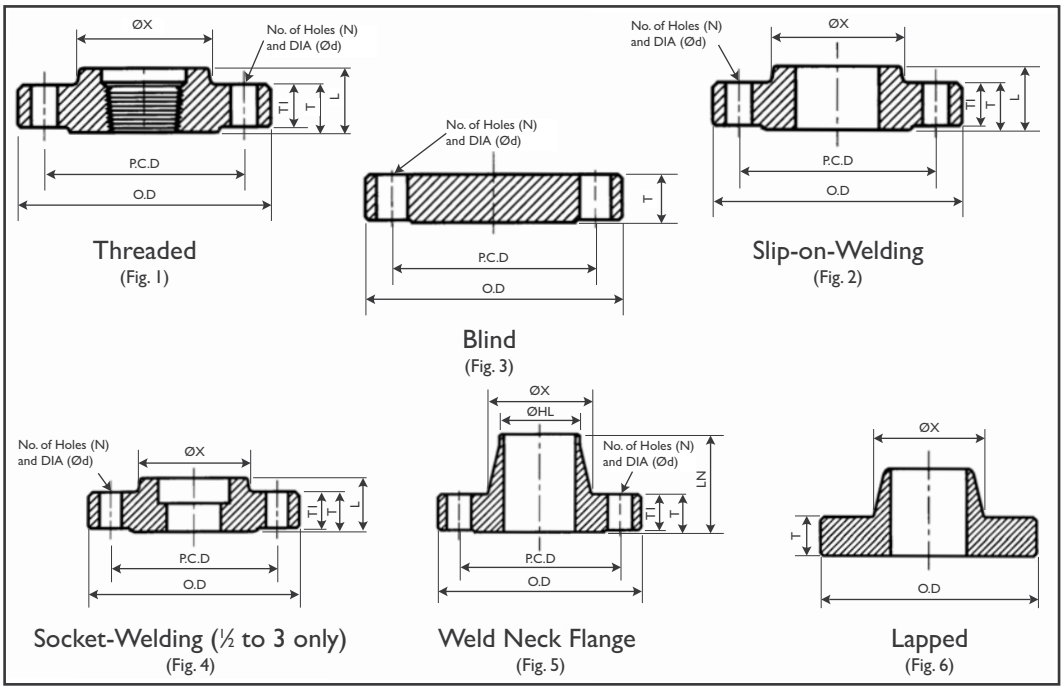
### (5-5) PRESSURE RATING:- API 6BX-15000 PSI WP (With BX type Ring Gasket)

| | | | | |
|---|---|---|---|---|
| 7⅛ | 4.69 | 12.81 | 0.438 | 0.31 |
| 9 | 5.75 | 17.00 | 0.500 | 0.56 |
| 11 | 7.38 | 23.00 | 0.562 | 0.50 |
| 13⅝ | 8.06 | 23.44 | 0.625 | 0.69 |
| 18¾ | 10.06 | 32.00 | 0.719 | 1.38 |

### (5-6) PRESSURE RATING:- API 6BX-20000 PSI WP (With BX type Ring Gasket)

| | | | | |
|---|---|---|---|---|
| 7⅛ | 6.50 | 15.19 | 0.438 | 0.31 |
| 9 | 8.06 | 18.94 | 0.500 | 0.25 |
| 11 | 8.81 | 22.31 | 0.562 | 0.50 |
| 13⅝ | 11.50 | 27.31 | 0.625 | 0.56 |

For Ring Gasket number and PCD of Ring Groove see Page 25, for Ring Groove dimensions see Page 30.




For more detailed RF/RTJ dimensions see our Flange & Fitting Catalogue

*All dimensions are in inches

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Socket Welding, Lapped & Welding Neck)

### (6-1) CLASS 150 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 3.50 | 0.44 | 1.19 | 2.38 | 4 | 0.62 | 0.62 | 1.88 | 0.84 |
| ¾ | 3.88 | 0.50 | 1.50 | 2.75 | 4 | 0.62 | 0.62 | 2.06 | 1.05 |
| 1 | 4.25 | 0.56 | 1.94 | 3.12 | 4 | 0.62 | 0.69 | 2.19 | 1.32 |
| 1¼ | 4.62 | 0.62 | 2.31 | 3.50 | 4 | 0.62 | 0.81 | 2.25 | 1.66 |
| 1½ | 5.00 | 0.69 | 2.56 | 3.88 | 4 | 0.62 | 0.88 | 2.44 | 1.90 |
| 2 | 6.00 | 0.75 | 3.06 | 4.75 | 4 | 0.75 | 1.00 | 2.50 | 2.38 |
| 2½ | 7.00 | 0.88 | 3.56 | 5.50 | 4 | 0.75 | 1.12 | 2.75 | 2.88 |
| 3 | 7.50 | 0.94 | 4.25 | 6.00 | 4 | 0.75 | 1.19 | 2.75 | 3.50 |
| 3½ | 8.50 | 0.94 | 4.81 | 7.00 | 8 | 0.75 | 1.25 | 2.81 | 4.00 |
| 4 | 9.00 | 0.94 | 5.31 | 7.50 | 8 | 0.75 | 1.31 | 3.00 | 4.50 |
| 5 | 10.00 | 0.94 | 6.44 | 8.50 | 8 | 0.88 | 1.44 | 3.50 | 5.56 |
| 6 | 11.00 | 1.00 | 7.56 | 9.50 | 8 | 0.88 | 1.56 | 3.50 | 6.63 |
| 8 | 13.50 | 1.12 | 9.69 | 11.75 | 8 | 0.88 | 1.75 | 4.00 | 8.63 |
| 10 | 16.00 | 1.19 | 12.00 | 14.25 | 12 | 1.00 | 1.94 | 4.00 | 10.75 |
| 12 | 19.00 | 1.25 | 14.38 | 17.00 | 12 | 1.00 | 2.19 | 4.50 | 12.75 |
| 14 | 21.00 | 1.38 | 15.75 | 18.75 | 12 | 1.12 | 2.25 | 5.00 | 14.00 |
| 16 | 23.50 | 1.44 | 18.00 | 21.25 | 16 | 1.12 | 2.50 | 5.00 | 16.00 |
| 18 | 25.00 | 1.56 | 19.88 | 22.75 | 16 | 1.25 | 2.69 | 5.50 | 18.00 |
| 20 | 27.50 | 1.69 | 22.00 | 25.00 | 20 | 1.25 | 2.88 | 5.69 | 20.00 |
| 24 | 32.00 | 1.88 | 26.12 | 29.50 | 20 | 1.38 | 3.25 | 6.00 | 24.00 |

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Socket Welding, Lapped & Welding Neck)

### (6-2) CLASS 300 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 3.75 | 0.56 | 1.50 | 2.62 | 4 | 0.62 | 0.88 | 2.06 | 0.84 |
| ¾ | 4.62 | 0.62 | 1.88 | 3.25 | 4 | 0.75 | 1.00 | 2.25 | 1.05 |
| 1 | 4.88 | 0.69 | 2.12 | 3.50 | 4 | 0.75 | 1.06 | 2.44 | 1.32 |
| 1¼ | 5.25 | 0.75 | 2.50 | 3.88 | 4 | 0.75 | 1.06 | 2.56 | 1.66 |
| 1½ | 6.12 | 0.81 | 2.75 | 4.50 | 4 | 0.88 | 1.19 | 2.69 | 1.90 |
| 2 | 6.50 | 0.88 | 3.31 | 5.00 | 8 | 0.75 | 1.31 | 2.75 | 2.38 |
| 2½ | 7.50 | 1.00 | 3.94 | 5.88 | 8 | 0.88 | 1.50 | 3.00 | 2.88 |
| 3 | 8.25 | 1.12 | 4.62 | 6.62 | 8 | 0.88 | 1.69 | 3.12 | 3.50 |
| 3½ | 9.00 | 1.19 | 5.25 | 7.25 | 8 | 0.88 | 1.75 | 3.19 | 4.00 |
| 4 | 10.00 | 1.25 | 5.75 | 7.88 | 8 | 0.88 | 1.88 | 3.38 | 4.50 |
| 5 | 11.00 | 1.38 | 7.00 | 9.25 | 8 | 0.88 | 2.00 | 3.88 | 5.56 |
| 6 | 12.50 | 1.44 | 8.12 | 10.62 | 12 | 0.88 | 2.06 | 3.88 | 6.63 |
| 8 | 15.00 | 1.62 | 10.25 | 13.00 | 12 | 1.00 | 2.44 | 4.38 | 8.63 |
| 10 | 17.50 | 1.88 | 12.62 | 15.25 | 16 | 1.12 | 2.62 | 4.62 | 10.75 |
| 12 | 20.50 | 2.00 | 14.75 | 17.75 | 16 | 1.25 | 2.88 | 5.12 | 12.75 |
| 14 | 23.00 | 2.12 | 16.75 | 20.25 | 20 | 1.25 | 3.00 | 5.62 | 14.00 |
| 16 | 25.50 | 2.25 | 19.00 | 22.50 | 20 | 1.38 | 3.25 | 5.75 | 16.00 |
| 18 | 28.00 | 2.38 | 21.00 | 24.75 | 24 | 1.38 | 3.50 | 6.25 | 18.00 |
| 20 | 30.50 | 2.50 | 23.12 | 27.00 | 24 | 1.38 | 3.75 | 6.38 | 20.00 |
| 24 | 36.00 | 2.75 | 27.62 | 32.00 | 24 | 1.62 | 4.19 | 6.62 | 24.00 |

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Lapped & Welding Neck)

### (6-3) CLASS 400 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 3.75 | 0.56 | 1.50 | 2.62 | 4 | 0.62 | 0.88 | 2.06 | 0.84 |
| ¾ | 4.62 | 0.62 | 1.88 | 3.25 | 4 | 0.75 | 1.00 | 2.25 | 1.05 |
| 1 | 4.88 | 0.69 | 2.12 | 3.50 | 4 | 0.75 | 1.06 | 2.44 | 1.32 |
| 1¼ | 5.25 | 0.81 | 2.50 | 3.88 | 4 | 0.75 | 1.12 | 2.62 | 1.66 |
| 1½ | 6.12 | 0.88 | 2.75 | 4.50 | 4 | 0.88 | 1.25 | 2.75 | 1.90 |
| 2 | 6.50 | 1.00 | 3.31 | 5.00 | 8 | 0.75 | 1.44 | 2.88 | 2.38 |
| 2½ | 7.50 | 1.12 | 3.94 | 5.88 | 8 | 0.88 | 1.62 | 3.12 | 2.88 |
| 3 | 8.25 | 1.25 | 4.62 | 6.62 | 8 | 0.88 | 1.81 | 3.25 | 3.50 |
| 3½ | 9.00 | 1.38 | 5.25 | 7.25 | 8 | 1.00 | 1.94 | 3.38 | 4.00 |
| 4 | 10.00 | 1.38 | 5.75 | 7.88 | 8 | 1.00 | 2.00 | 3.50 | 4.50 |
| 5 | 11.00 | 1.50 | 7.00 | 9.25 | 8 | 1.00 | 2.12 | 4.00 | 5.56 |
| 6 | 12.50 | 1.62 | 8.12 | 10.62 | 12 | 1.00 | 2.25 | 4.06 | 6.63 |
| 8 | 15.00 | 1.88 | 10.25 | 13.00 | 12 | 1.12 | 2.69 | 4.62 | 8.63 |
| 10 | 17.50 | 2.12 | 12.62 | 15.25 | 16 | 1.25 | 2.88 | 4.88 | 10.75 |
| 12 | 20.50 | 2.25 | 14.75 | 17.75 | 16 | 1.38 | 3.12 | 5.38 | 12.75 |
| 14 | 23.00 | 2.38 | 16.75 | 20.25 | 20 | 1.38 | 3.31 | 5.88 | 14.00 |
| 16 | 25.50 | 2.50 | 19.00 | 22.50 | 20 | 1.50 | 3.69 | 6.00 | 16.00 |
| 18 | 28.00 | 2.62 | 21.00 | 24.75 | 24 | 1.50 | 3.88 | 6.50 | 18.00 |
| 20 | 30.50 | 2.75 | 23.12 | 27.00 | 24 | 1.62 | 4.00 | 6.62 | 20.00 |
| 24 | 36.00 | 3.00 | 27.62 | 32.00 | 24 | 1.88 | 4.50 | 6.88 | 24.00 |

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Socket Welding, Lapped & Welding Neck)

(6-4) CLASS 600 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T1 | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 3.75 | 0.56 | 1.50 | 2.62 | 4 | 0.62 | 0.88 | 2.06 | 0.84 |
| ¾ | 4.62 | 0.62 | 1.88 | 3.25 | 4 | 0.75 | 1.00 | 2.25 | 1.05 |
| 1 | 4.88 | 0.69 | 2.12 | 3.50 | 4 | 0.75 | 1.06 | 2.44 | 1.32 |
| 1¼ | 5.25 | 0.81 | 2.50 | 3.88 | 4 | 0.75 | 1.12 | 2.62 | 1.66 |
| 1½ | 6.12 | 0.88 | 2.75 | 4.50 | 4 | 0.88 | 1.25 | 2.75 | 1.90 |
| 2 | 6.50 | 1.00 | 3.31 | 5.00 | 8 | 0.75 | 1.44 | 2.88 | 2.38 |
| 2½ | 7.50 | 1.12 | 3.94 | 5.88 | 8 | 0.88 | 1.62 | 3.12 | 2.88 |
| 3 | 8.25 | 1.25 | 4.62 | 6.62 | 8 | 0.88 | 1.81 | 3.25 | 3.50 |
| 3½ | 9.00 | 1.38 | 5.25 | 7.25 | 8 | 1.00 | 1.94 | 3.38 | 4.00 |
| 4 | 10.75 | 1.50 | 6.00 | 8.50 | 8 | 1.00 | 2.12 | 4.00 | 4.50 |
| 5 | 13.00 | 1.75 | 7.44 | 10.50 | 8 | 1.12 | 2.38 | 4.50 | 5.56 |
| 6 | 14.00 | 1.88 | 8.75 | 11.50 | 12 | 1.12 | 2.62 | 4.62 | 6.63 |
| 8 | 16.50 | 2.19 | 10.75 | 13.75 | 12 | 1.25 | 3.00 | 5.25 | 8.63 |
| 10 | 20.00 | 2.50 | 13.50 | 17.00 | 16 | 1.38 | 3.38 | 6.00 | 10.75 |
| 12 | 22.00 | 2.62 | 15.75 | 19.25 | 20 | 1.38 | 3.62 | 6.12 | 12.75 |
| 14 | 23.75 | 2.75 | 17.00 | 20.75 | 20 | 1.50 | 3.69 | 6.50 | 14.00 |
| 16 | 27.00 | 3.00 | 19.50 | 23.75 | 20 | 1.62 | 4.19 | 7.00 | 16.00 |
| 18 | 29.25 | 3.25 | 21.50 | 25.75 | 20 | 1.75 | 4.62 | 7.25 | 18.00 |
| 20 | 32.00 | 3.50 | 24.00 | 28.50 | 24 | 1.75 | 5.00 | 7.50 | 20.00 |
| 24 | 37.00 | 4.00 | 28.25 | 33.00 | 24 | 2.00 | 5.50 | 8.00 | 24.00 |

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Lapped & Welding Neck)

(6-5) CLASS 900 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T1 | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 4.75 | 0.88 | 1.50 | 3.25 | 4 | 0.88 | 1.25 | 2.38 | 0.84 |
| ¾ | 5.12 | 1.00 | 1.75 | 3.50 | 4 | 0.88 | 1.38 | 2.75 | 1.05 |
| 1 | 5.88 | 1.12 | 2.06 | 4.00 | 4 | 1.00 | 1.62 | 2.88 | 1.32 |
| 1¼ | 6.25 | 1.12 | 2.50 | 4.38 | 4 | 1.00 | 1.62 | 2.88 | 1.66 |
| 1½ | 7.00 | 1.25 | 2.75 | 4.88 | 4 | 1.12 | 1.75 | 3.25 | 1.90 |
| 2 | 8.50 | 1.50 | 4.12 | 6.50 | 8 | 1.00 | 2.25 | 4.00 | 2.38 |
| 2½ | 9.62 | 1.62 | 4.88 | 7.50 | 8 | 1.12 | 2.50 | 4.12 | 2.88 |
| 3 | 9.50 | 1.50 | 5.00 | 7.50 | 8 | 1.00 | 2.12 | 4.00 | 3.50 |
| 4 | 11.50 | 1.75 | 6.25 | 9.25 | 8 | 1.25 | 2.75 | 4.50 | 4.50 |
| 5 | 13.75 | 2.00 | 7.50 | 11.00 | 8 | 1.38 | 3.12 | 5.00 | 5.56 |
| 6 | 15.00 | 2.19 | 9.25 | 12.50 | 12 | 1.25 | 3.38 | 5.50 | 6.63 |
| 8 | 18.50 | 2.50 | 11.75 | 15.50 | 12 | 1.50 | 4.00 | 6.38 | 8.63 |
| 10 | 21.50 | 2.75 | 14.50 | 18.50 | 16 | 1.50 | 4.25 | 7.25 | 10.75 |
| 12 | 24.00 | 3.12 | 16.50 | 21.00 | 20 | 1.50 | 4.62 | 7.88 | 12.75 |
| 14 | 25.25 | 3.38 | 17.75 | 22.00 | 20 | 1.62 | 5.12 | 8.38 | 14.00 |
| 16 | 27.75 | 3.50 | 20.00 | 24.25 | 20 | 1.75 | 5.25 | 8.50 | 16.00 |
| 18 | 31.00 | 4.00 | 22.25 | 27.00 | 20 | 2.00 | 6.00 | 9.00 | 18.00 |
| 20 | 33.75 | 4.25 | 24.50 | 29.50 | 20 | 2.12 | 6.25 | 9.75 | 20.00 |
| 24 | 41.00 | 5.50 | 29.50 | 35.50 | 20 | 2.62 | 8.00 | 11.50 | 24.00 |

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Socket Welding, Lapped & Welding Neck)

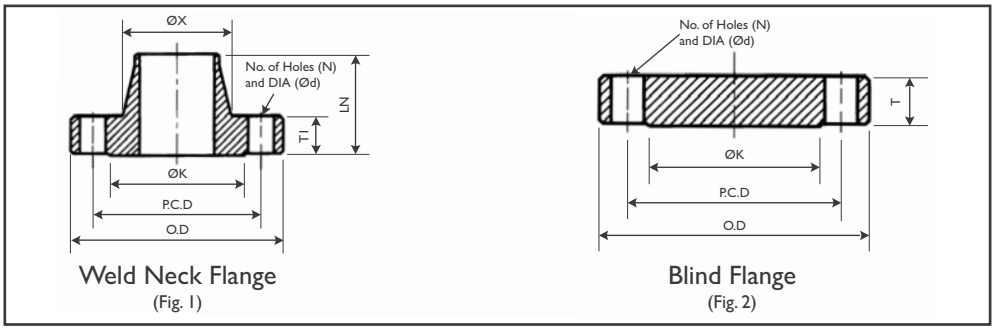
(6-6) CLASS 1500 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T1 | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 4.75 | 0.88 | 1.50 | 3.25 | 4 | 0.88 | 1.25 | 2.38 | 0.84 |
| ¾ | 5.12 | 1.00 | 1.75 | 3.50 | 4 | 0.88 | 1.38 | 2.75 | 1.05 |
| 1 | 5.88 | 1.12 | 2.06 | 4.00 | 4 | 1.00 | 1.62 | 2.88 | 1.32 |
| 1¼ | 6.25 | 1.12 | 2.50 | 4.38 | 4 | 1.00 | 1.62 | 2.88 | 1.66 |
| 1½ | 7.00 | 1.25 | 2.75 | 4.88 | 4 | 1.12 | 1.75 | 3.25 | 1.90 |
| 2 | 8.50 | 1.50 | 4.12 | 6.50 | 8 | 1.00 | 2.25 | 4.00 | 2.38 |
| 2½ | 9.62 | 1.62 | 4.88 | 7.50 | 8 | 1.12 | 2.50 | 4.12 | 2.88 |
| 3 | 10.50 | 1.88 | 5.25 | 8.00 | 8 | 1.25 | 2.88 | 4.62 | 3.50 |
| 4 | 12.25 | 2.12 | 6.38 | 9.50 | 8 | 1.38 | 3.56 | 4.88 | 4.50 |
| 5 | 14.75 | 2.88 | 7.75 | 11.50 | 8 | 1.62 | 4.12 | 6.12 | 5.56 |
| 6 | 15.50 | 3.25 | 9.00 | 12.50 | 12 | 1.50 | 4.69 | 6.75 | 6.63 |
| 8 | 19.00 | 3.62 | 11.50 | 15.50 | 12 | 1.75 | 5.62 | 8.38 | 8.63 |
| 10 | 23.00 | 4.25 | 14.50 | 19.00 | 12 | 2.00 | 6.25 | 10.00 | 10.75 |
| 12 | 26.50 | 4.88 | 17.75 | 22.50 | 16 | 2.12 | 7.12 | 11.12 | 12.75 |
| 14 | 29.50 | 5.25 | 19.50 | 25.00 | 16 | 2.38 | - | 11.75 | 14.00 |
| 16 | 32.50 | 5.75 | 21.75 | 27.75 | 16 | 2.62 | - | 12.25 | 16.00 |
| 18 | 36.00 | 6.38 | 23.50 | 30.50 | 16 | 2.88 | - | 12.88 | 18.00 |
| 20 | 38.75 | 7.00 | 25.25 | 32.75 | 16 | 3.12 | - | 14.00 | 20.00 |
| 24 | 46.00 | 8.00 | 30.00 | 39.00 | 16 | 3.62 | - | 16.00 | 24.00 |

## 6 FLANGES (Threaded, Slip-On Welding, Blind, Lapped & Welding Neck)

(6-7) CLASS 2500 FLANGES ( As per ANSI B16.5)

| SIZE | OD | T1 | ØX | PCD | N | Ød | L | LN | ØHL |
|---|---|---|---|---|---|---|---|---|---|
| ½ | 5.25 | 1.19 | 1.69 | 3.50 | 4 | 0.88 | 1.56 | 2.88 | 0.84 |
| ¾ | 5.50 | 1.25 | 2.00 | 3.75 | 4 | 0.88 | 1.69 | 3.12 | 1.05 |
| 1 | 6.25 | 1.38 | 2.25 | 4.25 | 4 | 1.00 | 1.88 | 3.50 | 1.32 |
| 1¼ | 7.25 | 1.50 | 2.88 | 5.12 | 4 | 1.12 | 2.06 | 3.75 | 1.66 |
| 1½ | 8.00 | 1.75 | 3.12 | 5.75 | 4 | 1.25 | 2.38 | 4.38 | 1.90 |
| 2 | 9.25 | 2.00 | 3.75 | 6.75 | 8 | 1.12 | 2.75 | 5.00 | 2.38 |
| 2½ | 10.50 | 2.25 | 4.50 | 7.75 | 8 | 1.25 | 3.12 | 5.62 | 2.88 |
| 3 | 12.00 | 2.62 | 5.25 | 9.00 | 8 | 1.38 | 3.62 | 6.62 | 3.50 |
| 4 | 14.00 | 3.00 | 6.50 | 10.75 | 8 | 1.62 | 4.25 | 7.50 | 4.50 |
| 5 | 16.50 | 3.62 | 8.00 | 12.75 | 8 | 1.88 | 5.12 | 9.00 | 5.56 |
| 6 | 19.00 | 4.25 | 9.25 | 14.50 | 8 | 2.12 | 6.00 | 10.75 | 6.63 |
| 8 | 21.75 | 5.00 | 12.00 | 17.25 | 12 | 2.12 | 7.00 | 12.50 | 8.63 |
| 10 | 26.50 | 6.50 | 14.75 | 21.25 | 12 | 2.62 | 9.00 | 16.50 | 10.75 |
| 12 | 30.00 | 7.25 | 17.38 | 24.38 | 12 | 2.88 | 10.00 | 18.25 | 12.75 |




*All dimensions are in inches

## 7 FORGED STEEL FLANGES FOR PIPELINE SYSTEM (Blind & Welding Neck)

### (7-1) 150 lb MSS SP-44 FLANGES

| SIZE | OD | T | T1 | ØK | ØX | PCD | N | Ød | LN |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 19 | 1¼ | 1¼ | 15 | 14⅜ | 17 | 12 | 1 | 4½ |
| 14 | 21 | 1⅜ | 1⅜ | 16¼ | 15¾ | 18¾ | 12 | 1⅛ | 5 |
| 16 | 23½ | 1⅞ | 1⅞ | 18½ | 18 | 21¼ | 16 | 1⅛ | 5 |
| 18 | 25 | 1⅞ | 1⅞ | 21 | 19⅞ | 22¾ | 16 | 1¼ | 5½ |
| 20 | 27½ | 1 11/16 | 1 11/16 | 23 | 22 | 25 | 20 | 1¼ | 5 11/16 |
| 22 | 29½ | 1 13/16 | 1 13/16 | 25¼ | 24 | 27¼ | 20 | 1⅜ | 5⅞ |
| 24 | 32 | 1⅞ | 1⅞ | 27¼ | 26⅛ | 29½ | 20 | 1⅜ | 6 |
| 26 | 34¼ | 2 1/16 | 2 1/16 | 29½ | 26⅜ | 31¾ | 24 | 1⅜ | 4¾ |
| 28 | 36½ | 2 3/16 | 2 3/16 | 31½ | 28⅝ | 34 | 28 | 1⅜ | 4 5/16 |
| 30 | 38¾ | 2 5/16 | 2 5/16 | 33¾ | 30¾ | 36 | 28 | 1⅜ | 5⅜ |
| 32 | 41¾ | 3 3/16 | 3 3/16 | 36 | 32¾ | 38½ | 28 | 1⅝ | 5 11/16 |
| 34 | 43¾ | 3¼ | 3¼ | 38 | 34¾ | 40½ | 32 | 1⅝ | 5⅞ |
| 36 | 46 | 3 5/16 | 3 5/16 | 40¼ | 36¾ | 42¾ | 32 | 1⅝ | 6 3/16 |
| 40 | 50¾ | 2⅜ | 3½ | 40¾ | 43¾ | 47¼ | 36 | 1⅝ | 6¾ |
| 42 | 53 | 2⅜ | 3¾ | 47 | 44¾ | 49½ | 36 | 1⅝ | 6 15/16 |
| 48 | 59½ | 2¾ | 4⅛ | 53½ | 50¾ | 56 | 44 | 1⅝ | 7¼ |

### (7-2) 300 lb MSS SP-44 FLANGES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 20½ | 2 | 2 | 15 | 14¾ | 17¾ | 16 | 1¼ | 5⅛ |
| 14 | 23 | 2⅛ | 2⅛ | 16¼ | 16¾ | 20¼ | 20 | 1¼ | 5⅝ |
| 16 | 25½ | 2¼ | 2¼ | 18½ | 19 | 22½ | 20 | 1⅜ | 5¾ |
| 18 | 28 | 2⅜ | 2⅜ | 21 | 21 | 24¾ | 24 | 1⅜ | 6¼ |
| 20 | 30½ | 2½ | 2½ | 23 | 23⅛ | 27 | 24 | 1⅜ | 6⅜ |
| 22 | 33 | 2⅝ | 2⅝ | 25¼ | 25¼ | 29¼ | 24 | 1⅝ | 6½ |
| 24 | 36 | 2¾ | 2¾ | 27¼ | 27⅝ | 32 | 24 | 1⅝ | 6⅝ |
| 26 | 38¼ | 3⅛ | 3 5/16 | 29½ | 28⅜ | 34½ | 28 | 1¾ | 7¼ |
| 28 | 40¾ | 3⅜ | 3⅜ | 31½ | 30½ | 37 | 28 | 1¾ | 7¾ |
| 30 | 43 | 3⅜ | 3¾ | 33¾ | 32 5/16 | 39¼ | 28 | 1⅞ | 8¼ |
| 32 | 45¼ | 3⅜ | 3 15/16 | 36 | 34 11/16 | 41½ | 28 | 2 | 8¾ |
| 34 | 47½ | 4 | 4⅛ | 38 | 36⅞ | 43½ | 28 | 2 | 9⅛ |
| 36 | 50 | 4 | 4⅜ | 40¼ | 39 | 46 | 32 | 2⅛ | 9½ |
| 40 | 55 | 4½ | 6 5/16 | 45 | 43 7/16 | 50¾ | 36 | 2⅛ | 10½ |
| 42 | 57 | 4⅝ | 6 7/16 | 47 | 45 7/16 | 52¾ | 36 | 2⅛ | 10⅞ |
| 48 | 63½ | 5 | 6 15/16 | 55 | 52½ | 59 | 36 | 2⅜ | 11¾ |

*All dimensions are in inches

## 7 FORGED STEEL FLANGES FOR PIPELINE SYSTEM (Blind & Welding Neck)

### (7-3) 400 lb MSS SP-44 FLANGES

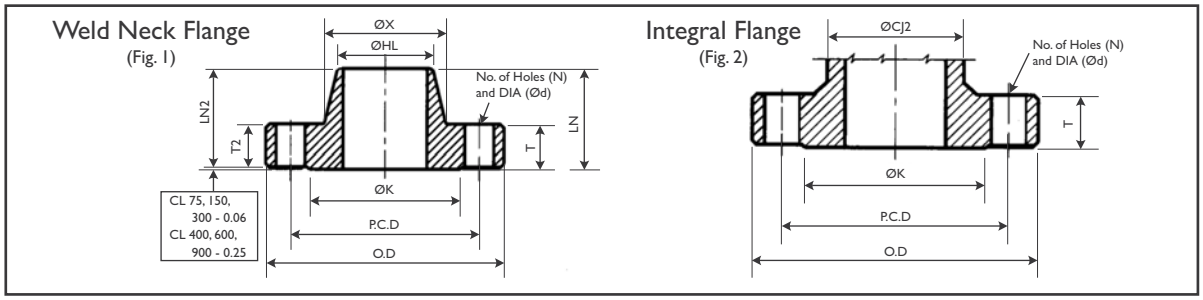
| SIZE | OD | T | T1 | ØK | ØX | PCD | N | Ød | LN |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 20½ | 2¼ | 2¼ | 15 | 14⅜ | 17¾ | 16 | 1⅜ | 5⅜ |
| 14 | 23 | 2⅜ | 2⅜ | 16¼ | 16¾ | 20¼ | 20 | 1⅜ | 5⅞ |
| 16 | 25½ | 2½ | 2½ | 18½ | 19 | 22½ | 20 | 1½ | 6 |
| 18 | 28 | 2⅝ | 2⅝ | 21 | 21 | 24¾ | 24 | 1½ | 6½ |
| 20 | 30½ | 2¾ | 2¾ | 23 | 23⅛ | 27 | 24 | 1⅝ | 6⅝ |
| 22 | 33 | 2⅞ | 2⅞ | 25¼ | 25¼ | 29¼ | 24 | 1¾ | 6¾ |
| 24 | 36 | 3 | 3 | 27¼ | 27⅜ | 32 | 24 | 1⅞ | 6⅞ |
| 26 | 38¼ | 3½ | 3⅜ | 29½ | 28⅝ | 34½ | 28 | 1⅞ | 7⅜ |
| 28 | 40¾ | 3¾ | 4⅛ | 31½ | 30 13/16 | 37 | 28 | 2 | 8⅛ |
| 30 | 43 | 4 | 4⅜ | 33¾ | 32 15/16 | 39¼ | 28 | 2⅛ | 8⅝ |
| 32 | 45¼ | 4¼ | 4 9/16 | 36 | 35 | 41½ | 28 | 2⅛ | 9⅛ |
| 34 | 47½ | 4⅜ | 4 13/16 | 38 | 37 1/16 | 43½ | 28 | 2⅛ | 9½ |
| 36 | 50 | 4½ | 5 1/16 | 40¼ | 39⅜ | 46 | 32 | 2⅛ | 9⅞ |
| 40 | 55 | 5 | 6 5/16 | 45 | 44 | 50¾ | 32 | 2⅜ | 11 |
| 42 | 57 | 5⅛ | 6 7/16 | 47 | 45½ | 52¾ | 32 | 2⅜ | 11⅜ |
| 48 | 64½ | 5⅞ | 6 15/16 | 55 | 52¾ | 59 | 32 | 2⅞ | 12⅝ |

### (7-4) 600 lb MSS SP-44 FLANGES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 22 | 2⅝ | 2⅝ | 15 | 15¾ | 19¼ | 20 | 1⅜ | 6⅛ |
| 14 | 23¾ | 2¾ | 2¾ | 16¼ | 17 | 20¾ | 20 | 1½ | 6½ |
| 16 | 27 | 3 | 3 | 18½ | 19½ | 23¾ | 20 | 1⅝ | 7 |
| 18 | 29¼ | 3¼ | 3¼ | 21 | 21½ | 35¾ | 20 | 1¾ | 7¼ |
| 20 | 32 | 3½ | 3½ | 23 | 24 | 28½ | 24 | 1¾ | 7½ |
| 22 | 34¼ | 3¾ | 3¾ | 25¼ | 26¼ | 30⅝ | 24 | 1⅞ | 7¾ |
| 24 | 37 | 4 | 4 | 27¼ | 28¼ | 33 | 24 | 2 | 8 |
| 26 | 40 | 4¼ | 4 15/16 | 29½ | 29 7/16 | 36 | 28 | 2 | 8¾ |
| 28 | 42¼ | 4⅜ | 5 3/16 | 31½ | 31⅝ | 38 | 28 | 2⅛ | 9¼ |
| 30 | 44½ | 4½ | 5½ | 33¾ | 33 15/16 | 40¼ | 28 | 2⅛ | 9¾ |
| 32 | 47 | 4⅝ | 5 13/16 | 36 | 36⅛ | 42½ | 28 | 2⅜ | 10¼ |
| 34 | 49 | 4¾ | 6 1/16 | 38 | 38⅝ | 44½ | 28 | 2⅜ | 10⅝ |
| 36 | 51¾ | 4⅞ | 6⅜ | 40¼ | 40⅝ | 47 | 28 | 2⅝ | 11⅛ |
| 40 | 56¾ | 5⅜ | 6 5/16 | 45 | 44½ | 51¾ | 28 | 2⅞ | 12¼ |
| 42 | 58¾ | 5½ | 6 7/16 | 47 | 46½ | 53¾ | 28 | 2⅞ | 12¾ |
| 48 | 66 | 6¼ | 6 15/16 | 55 | 52¾ | 60¼ | 28 | 3⅛ | 14⅜ |

### (7-5) 900 lb MSS SP-44 FLANGES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 24 | 3⅛ | 3⅛ | 15 | 16½ | 21 | 20 | 1½ | 7⅛ |
| 14 | 25¼ | 3⅜ | 3⅜ | 16¼ | 17¾ | 22 | 20 | 1⅝ | 8⅜ |
| 16 | 27¾ | 3½ | 3½ | 18½ | 20 | 22¼ | 20 | 1¾ | 8½ |
| 18 | 31 | 4 | 4 | 21 | 22¼ | 27 | 20 | 2 | 9 |
| 20 | 33¾ | 4¼ | 4¼ | 23 | 24½ | 29½ | 20 | 2⅛ | 9¾ |
| 24 | 41 | 5½ | 5½ | 27¼ | 29½ | 35½ | 20 | 2⅝ | 11½ |
| 26 | 42¾ | 5½ | 6 5/16 | 29½ | 30½ | 37½ | 20 | 2⅞ | 11¼ |
| 28 | 46 | 5⅝ | 6¾ | 31½ | 32¾ | 40¼ | 20 | 3⅛ | 11¾ |
| 30 | 48½ | 5⅞ | 7⅛ | 33¾ | 35 | 42¾ | 20 | 3⅛ | 12¼ |
| 32 | 51¾ | 6¼ | 7⅜ | 36 | 37¼ | 45½ | 20 | 3⅜ | 13 |
| 34 | 55 | 6½ | 8 1/16 | 38 | 39⅜ | 48¼ | 20 | 3⅜ | 13¾ |
| 36 | 57½ | 6¾ | 8⅛ | 40¼ | 41⅞ | 50¾ | 20 | 3⅜ | 14¼ |




*All dimensions are in inches

## 8 FORGED STEEL FLANGES (As per API-605)

### (8-1) CLASS 75 WELD NECK & INTEGRAL FLANGES

| SIZE | OD | T | ØK | ØHL | J2 | PCD | N | Ød | LN |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 30.00 | 1.31 | 27.75 | 26.06 | 26.62 | 28.50 | 36 | 0.75 | 2.31 |
| 28 | 32.00 | 1.31 | 29.75 | 28.06 | 28.62 | 30.50 | 40 | 0.75 | 2.44 |
| 30 | 34.00 | 1.31 | 31.75 | 30.62 | 30.62 | 32.5 | 44 | 0.75 | 2.56 |
| 32 | 36.00 | 1.38 | 33.75 | 32.62 | 32.62 | 34.50 | 48 | 0.75 | 2.75 |
| 34 | 38.00 | 1.38 | 35.75 | 34.62 | 34.62 | 36.50 | 52 | 0.75 | 2.88 |
| 36 | 40.69 | 1.44 | 38.00 | 36.81 | 36.81 | 39.06 | 40 | 0.88 | 3.38 |
| 38 | 42.69 | 1.50 | 40.00 | 38.81 | 38.81 | 41.06 | 40 | 0.88 | 3.50 |
| 40 | 44.69 | 1.50 | 42.00 | 40.81 | 40.81 | 43.06 | 44 | 0.88 | 3.62 |
| 42 | 46.69 | 1.56 | 44.00 | 42.81 | 42.81 | 45.06 | 48 | 0.88 | 3.75 |
| 44 | 49.25 | 1.69 | 46.25 | 44.88 | 44.88 | 47.38 | 36 | 1.00 | 4.12 |
| 46 | 51.25 | 1.75 | 48.25 | 46.8 | 46.88 | 49.38 | 40 | 1.00 | 4.25 |
| 48 | 53.25 | 1.81 | 50.25 | 48.88 | 48.88 | 51.38 | 44 | 1.00 | 4.38 |
| 50 | 55.25 | 1.88 | 52.25 | 50.88 | 50.88 | 53.38 | 44 | 1.00 | 4.56 |
| 52 | 57.38 | 1.88 | 54.25 | 53.00 | 53.00 | 55.50 | 48 | 1.00 | 4.75 |
| 54 | 59.38 | 1.94 | 56.25 | 55.00 | 55.00 | 57.50 | 48 | 1.00 | 4.94 |
| 56 | 62.00 | 2.00 | 58.50 | 57.12 | 57.12 | 59.88 | 40 | 1.12 | 5.31 |
| 58 | 64.00 | 2.06 | 60.50 | 59.12 | 59.12 | 61.88 | 44 | 1.12 | 5.4 |
| 60 | 66.00 | 2.19 | 62.50 | 61.12 | 61.12 | 63.88 | 44 | 1.12 | 5.69 |

### (8-2) CLASS 150 WELD NECK & INTEGRAL FLANGES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 30.94 | 1.62 | 28.00 | 26.62 | 26.62 | 29.31 | 36 | 0.8 | 3.50 |
| 28 | 32.94 | 1.75 | 30.00 | 28.62 | 28.62 | 31.31 | 40 | 0.88 | 3.75 |
| 30 | 34.94 | 1.75 | 32.00 | 30.62 | 30.62 | 33.31 | 44 | 0.88 | 3.94 |
| 32 | 37.06 | 1.81 | 34.00 | 32.75 | 32.75 | 35.44 | 48 | 0.88 | 4.25 |
| 34 | 39.56 | 1.94 | 36.25 | 34.75 | 34.75 | 37.69 | 40 | 1.00 | 4.34 |
| 36 | 41.62 | 2.06 | 38.25 | 36.81 | 36.81 | 39.75 | 44 | 1.00 | 4.62 |
| 38 | 44.25 | 2.12 | 40.25 | 38.94 | 38.94 | 42.12 | 40 | 1.12 | 4.88 |
| 40 | 46.25 | 2.19 | 42.50 | 40.94 | 40.94 | 44.12 | 44 | 1.12 | 5.06 |
| 42 | 48.25 | 2.31 | 44.50 | 42.94 | 42.94 | 46.12 | 48 | 1.12 | 5.25 |
| 44 | 50.25 | 2.38 | 46.50 | 44.94 | 44.94 | 48.12 | 52 | 1.12 | 5.38 |
| 46 | 52.81 | 2.44 | 48.62 | 47.12 | 47.12 | 50.56 | 40 | 1.25 | 5.69 |
| 48 | 54.81 | 2.56 | 50.75 | 49.12 | 49.12 | 52.56 | 44 | 1.25 | 5.88 |
| 50 | 56.81 | 2.69 | 52.75 | 51.12 | 51.12 | 54.56 | 48 | 1.25 | 6.06 |
| 52 | 58.81 | 2.75 | 54.75 | 53.12 | 53.12 | 56.56 | 52 | 1.25 | 6.19 |
| 54 | 61.00 | 2.81 | 56.75 | 55.31 | 55.31 | 58.75 | 56 | 1.25 | 6.38 |
| 56 | 63.00 | 2.88 | 58.75 | 57.31 | 57.31 | 60.75 | 60 | 1.25 | 6.56 |
| 58 | 65.94 | 2.94 | 60.75 | 59.50 | 59.50 | 63.44 | 48 | 1.38 | 6.88 |
| 60 | 67.94 | 3.00 | 63.00 | 61.50 | 61.50 | 65.44 | 52 | 1.38 | 7.06 |

*All dimensions are in inches

## 8 FORGED STEEL FLANGES (As per API-605)

### (8-3) CLASS 300 WELD NECK & INTEGRAL FLANGES

| SIZE | OD | T | ØK | ØHL | J2 | PCD | N | Ød | LN |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 34.12 | 3.50 | 29.00 | 261.9 | 27.12 | 31.62 | 32 | 1.38 | 5.69 |
| 28 | 36.25 | 3.50 | 31.00 | 28.19 | 29.25 | 33.75 | 36 | 1.38 | 5.88 |
| 30 | 39.00 | 3.69 | 33.25 | 30.25 | 31.50 | 36.25 | 36 | 1.50 | 6.22 |
| 32 | 41.50 | 4.06 | 35.50 | 32.25 | 33.50 | 38.50 | 32 | 1.62 | 6.62 |
| 34 | 43.62 | 4.06 | 37.50 | 34.25 | 35.62 | 40.62 | 36 | 1.62 | 6.81 |
| 36 | 46.12 | 4.06 | 39.75 | 36.25 | 37.62 | 42.88 | 32 | 1.75 | 7.12 |
| 38 | 48.12 | 4.38 | 41.75 | 38.25 | 39.62 | 44.88 | 36 | 1.75 | 7.56 |
| 40 | 50.12 | 4.56 | 43.88 | 40.25 | 41.38 | 46.88 | 40 | 1.75 | 7.81 |
| 42 | 52.50 | 4.69 | 46.00 | 42.31 | 43.38 | 49.00 | 36 | 1.88 | 8.06 |
| 44 | 54.50 | 5.00 | 48.00 | 44.31 | 45.62 | 51.00 | 40 | 1.88 | 8.44 |
| 46 | 57.50 | 5.06 | 50.00 | 46.31 | 47.88 | 53.75 | 36 | 2.00 | 8.75 |
| 48 | 59.50 | 5.06 | 52.25 | 48.31 | 49.88 | 55.75 | 40 | .00 | 8.81 |
| 50 | 61.50 | 5.44 | 54.25 | 50.31 | 51.88 | 57.75 | 44 | 2.00 | 9.25 |
| 52 | 63.50 | 5.62 | 56.25 | 52.31 | 53.88 | 59.75 | 48 | 2.00 | 9.56 |
| 54 | 65.88 | 5.38 | 58.25 | 54.31 | 56.25 | 62.12 | 48 | 2.00 | 9.44 |
| 56 | 69.50 | 6.06 | 60.50 | 56.31 | 58.38 | 65.00 | 36 | 2.38 | 10.56 |
| 58 | 71.94 | 6.06 | 62.75 | 58.31 | 60.81 | 67.44 | 40 | 2.38 | 10.81 |
| 60 | 73.94 | 5.94 | 65.00 | 60.31 | 62.69 | 69.44 | 40 | 2.38 | 10.69 |

### (8-4) CLASS 400 WELD NECK FLANGES

| SIZE | OD | T2 | ØK | ØHL | ØX | PCD | N | Ød | LN2 |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 33.50 | 3.50 | 28.00 | 26.00 | 27.12 | 30.75 | 28 | 1.50 | 5.88 |
| 28 | 3600 | 3.75 | 30.00 | 28.00 | 29.12 | 33.00 | 24 | 1.62 | 6.25 |
| 30 | 38.25 | 4.00 | 32.25 | 30.00 | 31.25 | 35.25 | 28 | 1.62 | 6.69 |
| 32 | 40.75 | 4.25 | 34.38 | 32.00 | 33.25 | 37.50 | 28 | 1.75 | 7.06 |
| 34 | 42.75 | 4.38 | 36.50 | 34.00 | 35.38 | 39.50 | 32 | 1.75 | 7.38 |
| 36 | 45.50 | 4.69 | 38.62 | 36.00 | 37.50 | 42.00 | 28 | 1.88 | 7.88 |
| 38 | 47.50 | 4.88 | 40.75 | 38.00 | 39.50 | 44.00 | 32 | 1.88 | 8.12 |
| 40 | 50.00 | 5.12 | 43.00 | 40.00 | 41.50 | 46.25 | 32 | 2.00 | 8.50 |
| 42 | 52.00 | 5.25 | 45.00 | 42.00 | 43.62 | 48.25 | 32 | 2.00 | 8.81 |
| 44 | 54.50 | 5.50 | 47.25 | 44.00 | 45.62 | 50.50 | 32 | 2.12 | 9.19 |
| 46 | 56.75 | 5.75 | 49.50 | 46.00 | 47.75 | 52.75 | 36 | 2.12 | 9.62 |
| 48 | 59.50 | 6.00 | 51.50 | 48.00 | 49.88 | 55.25 | 28 | 2.38 | 10.12 |
| 50 | 61.75 | 6.19 | 53.62 | 50.00 | 52.00 | 57.50 | 32 | 2.38 | 10.56 |
| 52 | 63.75 | 6.38 | 55.62 | 52.00 | 54.00 | 59.50 | 32 | 2.38 | 10.88 |
| 54 | 67.00 | 6.69 | 57.88 | 54.00 | 56.12 | 62.25 | 28 | 2.62 | 11.38 |
| 56 | 69.00 | 6.88 | 60.12 | 56.00 | 58.25 | 64.25 | 32 | 2.62 | 11.75 |
| 58 | 71.00 | 7.00 | 62.12 | 58.00 | 60.25 | 66.25 | 32 | 2.62 | 12.06 |
| 60 | 74.25 | 7.31 | 64.38 | 60.00 | 62.38 | 69.00 | 32 | 2.88 | 12.56 |

*All dimensions are in inches

## 8 FORGED STEEL FLANGES (As per API-605)

### (8-5) CLASS 600 WELD NECK FLANGES

| SIZE | OD | T2 | ØK | ØHL | ØX | PCD | N | Ød | LN2 |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 35.00 | 4.38 | 28.62 | 26.00 | 27.50 | 31.75 | 28 | 1.75 | 7.12 |
| 28 | 37.50 | 4.56 | 30.88 | 28.00 | 29.62 | 34.00 | 28 | 1.88 | 7.50 |
| 30 | 40.25 | 4.94 | 33.12 | 30.00 | 31.75 | 36.50 | 28 | 2.00 | 8.06 |
| 32 | 42.75 | 5.12 | 35.25 | 32.00 | 33.88 | 38.75 | 28 | 2.12 | 8.50 |
| 34 | 45.75 | 5.56 | 37.50 | 34.00 | 36.00 | 41.50 | 24 | 2.38 | 9.19 |
| 36 | 47.75 | 5.75 | 39.75 | 36.00 | 38.12 | 43.50 | 28 | 2.38 | 9.56 |
| 38 | 50.00 | 6.00 | 41.50 | 38.00 | 40.25 | 45.75 | 28 | 2.38 | 10.00 |
| 40 | 52.00 | 6.25 | 43.75 | 40.00 | 42.25 | 47.75 | 32 | 2.38 | 10.38 |
| 42 | 55.25 | 6.62 | 46.00 | 42.00 | 44.38 | 50.50 | 28 | 2.62 | 11.00 |
| 44 | 57.25 | 6.81 | 48.25 | 44.00 | 46.50 | 52.50 | 32 | 2.62 | 11.38 |
| 46 | 59.50 | 7.06 | 50.25 | 46.00 | 48.62 | 54.75 | 32 | 2.62 | 11.81 |
| 48 | 62.75 | 7.44 | 52.50 | 48.00 | 50.75 | 57.50 | 32 | 2.88 | 12.44 |
| 50 | 65.75 | 7.75 | 54.50 | 50.00 | 52.88 | 60.00 | 28 | 3.12 | 12.94 |
| 52 | 67.75 | 8.00 | 56.50 | 52.00 | 54.88 | 62.00 | 32 | 3.12 | 13.25 |
| 54 | 70.00 | 8.25 | 58.75 | 54.00 | 57.00 | 64.25 | 32 | 3.12 | 13.75 |
| 56 | 73.00 | 8.56 | 60.75 | 56.00 | 59.12 | 66.75 | 32 | 3.38 | 14.25 |
| 58 | 75.00 | 8.75 | 63.00 | 58.00 | 61.12 | 68.75 | 32 | 3.38 | 14.56 |
| 60 | 78.50 | 9.19 | 65.25 | 60.00 | 63.38 | 71.75 | 28 | 3.62 | 15.31 |

### (8-6) CLASS 900 WELD NECK FLANGES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 40.25 | 5.31 | 30.00 | 26.00 | 29.25 | 35.50 | 20 | 2.62 | 10.19 |
| 28 | 43.50 | 5.81 | 32.25 | 28.00 | 31.38 | 38.25 | 20 | 2.88 | 10.88 |
| 30 | 46.50 | 6.12 | 34.50 | 30.00 | 35.50 | 40.75 | 20 | 3.12 | 11.38 |
| 32 | 48.75 | 6.31 | 36.50 | 32.00 | 35.75 | 43.00 | 20 | 3.12 | 11.94 |
| 34 | 51.75 | 6.75 | 39.00 | 34.00 | 37.88 | 45.50 | 20 | 3.38 | 12.56 |
| 36 | 53.00 | 6.81 | 40.50 | 36.00 | 40.00 | 47.25 | 24 | 3.12 | 12.81 |
| 38 | 57.50 | 7.50 | 43.25 | 38.00 | 42.25 | 50.75 | 20 | 3.62 | 13.88 |
| 40 | 59.50 | 7.75 | 45.75 | 40.00 | 44.38 | 52.75 | 24 | 3.62 | 14.31 |
| 42 | 61.50 | 8.12 | 47.75 | 42.00 | 46.31 | 54.75 | 24 | 3.62 | 14.62 |
| 44 | 64.88 | 8.44 | 50.00 | 44.00 | 48.62 | 57.62 | 24 | 3.88 | 15.38 |
| 46 | 68.25 | 8.88 | 52.50 | 46.00 | 50.88 | 60.50 | 24 | 4.12 | 16.19 |
| 48 | 70.25 | 9.19 | 54.50 | 48.00 | 52.88 | 62.50 | 24 | 4.12 | 16.50 |

## Studs & Nuts (As per 6A & ANSI B16.5)

### 1.1 Brief Description

Global Supply Line supplies studs and nuts to meet requirements of all API flanges as per API-6A, as well as flanges as per ANSI B16-5 and MSS-SP-44 & BS 3293.

### Studs & Nuts for API Flanges (Table - 1)

Studs and nuts shall meet the requirements of the applicable ASTM specs unless otherwise noted. Dimension and thread pitch shall be as per ASTM A193 for studs and ASTM A194 for nuts. The mechanical properties as specified in the table. API flanges takes precedence from those required by ASTM. Yield strength shall equal or exceed the minimum shown in the table.

### NACE Class - 1 Studs

a. UNS No. 05500 in the hot rolled and age hardened condition will have a hardness of RHRC 35 or lower and a minimum yield strength of 105000 PSI (725 MPA) for dia's up to 2.5" and of 95000 PSI for larger sizes.

b. ASTM A453 Gr 660 solution treated and age hardened will have a hardness of HRC 35 and lower and a minimum yield strength of 105,000 PSI for dia's up to 2.5" and of 95000 PSI for larger sizes.

### NACE Class - II Studs

a. ASTM A193 Gr B7M is provided at a minimum yield strength of 80,000 PSI for the API flanges for NACE MR 01-75 Class II only.

b. ASTM A320 grade L7M is provided at a minimum yield strength of 80000 PSI for API flanges for NACE MR 01-75 Class II only.

### NACE Class - III Studs

a. ASTM A193 Gr B7 is provided for non exposed service for the API flanges for NACE MR 01-75 Class III only.

b. ASTM A320 Gr L7 is provided for non exposed service for the API flanges for NACE MR 01-75 Class III only.

### NACE Nuts

a. ASTM A194 Gr 2 HM is provided for all API flange sizes and rated working pressures.

### Studs & Nuts for ANSI B-16.5 Flanges (Table - 2)

Bolting materials for high strength bolting having an allowable stress not less than those for ASTM A193 Gr. B7 are also listed. These and other materials of comparable strength and can be used.

### 1.2 Bolting requirements for API End Flanges - Applicable ASTM Specification Table - 1

| REQUIREMENT | MATERIAL CLASS | | | | | | |
|---|---|---|---|---|---|---|---|
| | AA, BB or CC | | DD, EE, FF & HH | | | | |
| | TEMPERATURE CLASSIFICATION | | TEMPERATURE CLASSIFICATION | | | | |
| | P, S, T or U | K, L, P, S, T or U | P, S, T or U | K, L, P, S, T or U | P, S, T or U | K, L, P, S, T or U | S, K, L, P, T or U |
| NACE MR0175 CLASS | NONE | NONE | III | III | II | II | I |
| SIZE AND RATED WORKING PRESSURE | ALL | ALL | ALL | ALL | ALL 2000 AND 3000PSI 5000PSI FLGS <13⅜ 10000PSI FLGS <4⅛ 150000PSI FLG <2⅛ ALL 20,000PSI | | ALL |
| BOLTING | | | | | | | |
| ASTM SPEC. GRADES AND MATERIALS | A193 GR B7 | A320 GR L7 OR L43 | A193 GR B7 | A320 GR L7 OR L43 | A193 GR B7M | A320 GR L7M | A453 GR 600 K-500 MONEL |
| YIELD STRENGTH, KSI, MINIMUM | 105 (≤2.5IN) 95 (>2.5IN) | 105 (≤2.5IN) 95 (>2.5IN) | 105 (≤2.5IN) 95 (>2.5IN) | 105 (≤2.5IN) 95 (>2.5IN) | 80 | 80 | 105 (≤2.5IN) 95 (>2.5IN) |
| HARDNESS PER NACE MR0175 | NO | NO | NO | NO | YES | YES | YES |
| CHARPY TESTING REQUIRED | NO | YES | NO | YES | NO | YES | NO |
| NUTS | | | | | | | |
| ASTM SPEC AND GRADES HEAVY | A194 2H, 2HM 4 OR 7 | A194 2H, 2HM 4 OR 7 | A194 2H, 2HM 4 OR 7 | A194 2H, 2HM 4 OR 7 | A194 GR 2HM | A194 GR 2HM | A194 GR 2HM |
| HARDNESS PER NACE MR0175 | NO | NO | NO | NO | YES | YES | YES |
| CHARPY TESTING REQUIRED | NO | NO | NO | NO | NO | NO | NO |

**1.3 BOLTING SPECIFICTIONS FOR ANSI B16.5 FLANGE**
(Applicable ASTM Specifications)
TABLE 2

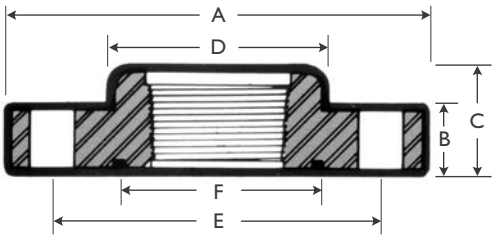
| BOLTING MATERIALS | | | | | | | |
|---|---|---|---|---|---|---|---|
| HIGH STRENGTH (Note No 2) | | INTERMEDIATE STRENGTH (Note No 3) | | LOW STRENGTH (Note No 4) | | NICKEL & SPECIAL ALLOY (Note No 5) | |
| SPEC - GR | Notes | SPEC - GR | Notes | SPEC - GR | Notes | SPEC - GR | Notes |
| A193 - B7 | | A193 - B5 | | A193 - B8 CL 1 | (6) | B164 | (7)(8)(9) |
| A193 - B16 | | A193 - B6 | | A193 - BBC CL 1 | (6) | B166 | (7)(8)(9) |
| A320 - L7 | (10) | A193 - B6X | | A193 - BBM CL 1 | (6) | B335 - N10665 | (7) |
| A320 - L7A | (10) | A193 - B7M | | A193 - BBT CL 1 | (6) | B408 | (7)(8)(9) |
| A320 - L7B | (10) | A193 - B8 CL2 | (11) | A193 - B8A | (6) | B473 | (7) |
| A320 - L7C | (10) | A193 - B8C CL2 | (11) | A193 - B8CA | (6) | B574 - N10276 | (7) |
| A320 - L73 | (10) | A193 - B8M CL2 | (11) | A193 - B8MA | (6) | - | |
| A354 - BC | | A193 - B8T CL2 | (11) | A193 - B8TA | (6) | - | |
| A354 - BD | | A320 - B8 CL2<br>A320 - B8C CL2 | (11)<br>(11) | A307 - B<br>A320 - B8 CL 1 | (12)<br>(6) | - | |
| A540 - B21 | | A320 - B8F CL2 | (11) | A320 - B8C CL 1 | (6) | - | |
| A540 - B22 | | A320 - B8M CL2 | (11) | A320 - B8M CL 1 | (6) | - | |
| A540 - B23 | | A320 - B8T CL2 | (11) | A320 - B8T CL 1 | (6) | - | |
| A540 - B24 | | A449 | (13) | - | | - | |
| - | | A453 - 651 | (14) | - | | - | |
| - | | A453 - 660 | (14) | - | | - | |

**General Note :**

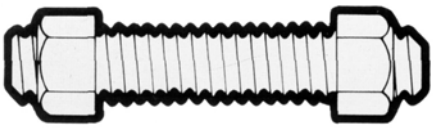
a. Bolting material will not be used beyond temperature limits specified in the governing Code.

**Notes :**

1. Repair welding of bolting material is prohibited
2. These bolting materials may be used with all listed materials and gaskets.
3. These bolting materials may be used with all listed materials and gaskets, provided it has been verified that as Sealed joint can be maintained under rated working pressure and temperature.
4. These bolting materials may be used with all listed materials but are limited to class 150 and class 300 Joints.
5. These materials may be used as bolting with comparable nickel and special alloy parts.
6. This austenitic stainless materials has been carbide solution treated but not strain hardened. Use A194 Nuts of corresponding material.
7. Nut may be machined from the same material or may be of a compatible grade of ASTM a194.
8. Maximum operating temperature is arbitrarily set at 500°F (260°C) because hard temper adversely affects design stress in the creep rupture range.
9. Forging quality not permitted unless the manufacturer tests them as required for other permitted conditions inthe same specification and certifies their final tensile, yield, and elongation properties to equal or exceed the requirements for one of the other permitted conditions.
10. The ferritic material is intended for low temperature service. Use A194 Gr 4 or Gr 7 nuts.
11. This austenitic stainless material has been carbide solution treated and strain hardened. Use A194 nuts of corresponding material.
12. This carbon steel fastener shall not be used above 400°F (200°C). See also note 4. Bolts with drilled or undersized heads shall not be used.
13. Acceptable nuts for use with quenched and tempered Bolts are A194 Gr 2 and Gr 2H. Mechanical property requirements for studs shall be the same as those for bolts.
14. This special alloy is intended for high temperature service with austenitic stainless steel.




API Flange



Flange Stud Bolt and Nuts

## 1.4 FLANGE CHART (showing stud bolt sizes as well as Ring Gasket Size)

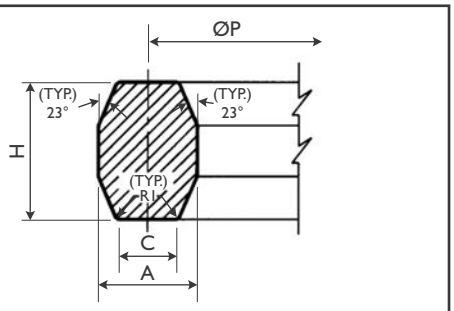
| API SPECS FOR RING-JOINT FLANGES | NEW API NOMINAL SIZE | FLANGE | | | | | | | API RING NO | STUDS WITH NUTS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A OD | B THICK-NESS | C TOTAL THICK-NESS | D DIAM. OF HUB | E DIAM. OF BOLT CIRCLE | F PCD RING GROOVE | APPROX WT LBS | | NO | SIZE | APPROX WT LBS PER SET | "OLD" NOMINAL SIZE |
| 960 PSI WP | 2" | 6½" | 1 5/16" | 1¾" | 3 5/16" | 5" | 3¼" | 9 lb | R-23 | 8 | 5/8 x 4¾ | 5 | 2" |
| | 2½" | 7½" | 1 7/16" | 1 15/16" | 3 15/16" | 5⅞" | 4" | 12 lb | R-26 | 8 | ¾ x 5¼ | 8 | 2½" |
| | 3" | 8¼" | 1 9/16" | 2⅛" | 4⅝" | 6⅝" | 4⅞" | 16 lb | R-31 | 8 | ¾ x 5½ | 8 | 3" |
| | 4" | 10" | 1 11/16" | 2 5/16" | 5¾" | 7⅞" | 5⅞" | 26 lb | R-37 | 8 | ⅞ x 6 | 11 | 4" |
| | 6" | 12½" | 1 15/16" | 2 9/16" | 8⅛" | 10⅝" | 8 5/16" | 44 lb | R-45 | 12 | ⅞ x 6½ | 19 | 6" |
| | 8" | 15 | 2 3/16" | 3" | 10¼" | 13" | 10⅝" | 67 lb | R-49 | 12 | 1 x 7⅞ | 27 | 8" |
| | 10" | 17½" | 2 7/16" | 3 3/16" | 12⅝" | 15¼" | 12¾" | 91 lb | R-53 | 16 | 1⅛ x 8⅛ | 50 | 10" |
| | 12" | 20½" | 2 9/16" | 3 7/16" | 14¾" | 17¾" | 15" | 129 lb | R-57 | 16 | 1¼ x 9 | 71 | 12" |
| 2000 PSI WP | 2 1/16" | 6½" | 1 5/16" | 1¾" | 3 5/16" | 5" | 3¼" | 9 lb | R-23 | 8 | ⅝ x 4½ | 5 | 2" |
| | 2 9/16" | 7½" | 1 7/16" | 1 15/16" | 3 15/16" | 5⅞" | 4" | 13 lb | R-26 | 8 | ¾ x 5 | 8 | 2½" |
| | 3⅛" | 8¼" | 1 9/16" | 2⅛" | 4⅝" | 6⅝" | 4⅞" | 16 lb | R-31 | 8 | ¾ x 5¼ | 8 | 3" |
| | 4 1/16" | 10¾" | 1 13/16" | 2 7/16" | 6" | 8½" | 5⅞" | 37 lb | R-37 | 8 | ⅞ x 6 | 12 | 4" |
| | 7 1/16" | 14" | 2 3/16" | 2 15/16" | 8¾" | 11½" | 8 5/16" | 80 lb | R-45 | 12 | 1 x 7 | 29 | 6" |
| | 9" | 16½" | 2½" | 3 5/16" | 10¾" | 13¾" | 10⅝" | 115 lb | R-49 | 12 | 1⅛ x 8 | 38 | 8" |
| | 11" | 20" | 2 13/16" | 3 11/16" | 13½" | 17" | 12¾" | 177 lb | R-53 | 16 | 1⅛ x 8¾ | 73 | 10" |
| | 13⅝" | 22" | 2 15/16" | 3 15/16" | 15¾" | 19¼" | 15" | 215 lb | R-57 | 20 | 1¼ x 9 | 91 | 12" |
| 3000 PSI WP | 2 1/16" | 8½" | 1 13/16" | 2⅝" | 4⅛" | 6½" | 3¾" | 25 lb | R-24 | 8 | ⅞ x 6 | 12 | 2" |
| | 2 9/16" | 9⅝" | 1 15/16" | 2 13/16" | 4⅞" | 7½" | 4¼" | 36 lb | R-27 | 8 | 1 x 6½ | 17 | 2½" |
| | 3 1/16" | 9½" | 1 13/16" | 2 7/16" | 5" | 7½" | 4⅞" | 31 lb | R-31 | 8 | ⅞ x 6 | 12 | 3" |
| | 4 1/16" | 11½" | 2 1/16" | 3 1/16" | 6¼" | 9¼" | 5⅞" | 53 lb | R-37 | 8 | 1⅛ x 7 | 24 | 4" |
| | 7 1/16" | 15" | 2½" | 3 11/16" | 9¼" | 12½" | 8 5/16" | 106 lb | R-45 | 12 | 1⅛ x 8 | 40 | 6" |
| | 9" | 18½" | 2 13/16" | 4 5/16" | 11¾" | 15½" | 10⅝" | 172 lb | R-49 | 12 | 1⅛ x 9 | 69 | 8" |
| | 11" | 21½" | 3 1/16" | 4 1/16" | 14½" | 18½" | 12¾" | 245 lb | R-53 | 16 | 1⅜ x 9½ | 95 | 10" |
| | 13⅝" | 24" | 3 7/16" | 4 15/16" | 16½" | 21" | 15" | 326 lb | R-57 | 20 | 1⅜ x 10¼ | 125 | 12" |
| 5000 PSI WP | 2 1/16" | 8½" | 1 13/16" | 2⅝" | 4⅛" | 6½" | 3¾" | 25 lb | R-24 | 8 | ⅞ x 6 | 12 | 2" |
| | 2 9/16" | 9⅝" | 1 15/16" | 2 13/16" | 4⅞" | 7½" | 4¼" | 36 lb | R-27 | 8 | 1 x 6½ | 17 | 2½" |
| | 3 1/16" | 10½" | 2 3/16" | 3 3/16" | 5¼" | 8" | 5⅜" | 48 lb | R-35 | 8 | 1⅛ x 7¼ | 24 | 3" |
| | 4 1/16" | 12¼" | 2 7/16" | 3⅞" | 6⅜" | 9½" | 6⅜" | 73 lb | R-39 | 8 | 1¼ x 8 | 35 | 4" |
| | 7 1/16" | 15½" | 3⅜" | 5 1/16" | 9" | 12½" | 8 5/16" | 164 lb | R-46 | 12 | 1⅜ x 10¾ | 75 | 6" |
| | 9" | 19" | 4 1/16" | 6 1/16" | 11½" | 15½" | 10⅝" | 258 lb | R-50 | 12 | 1⅜ x 12 | 124 | 8" |
| | 11" | 23" | 4 11/16" | 6 11/16" | 14½" | 19" | 12¾" | 436 lb | R-54 | 12 | 1⅞ x 13¾ | 187 | 10" |
| 10000 PSI WP (SERIES 2900) | 2" | 7¾" | 2⅜" | 4¾" | 3⅛" | 5¾" | 3⅛" | 28 lb | R-85 | 8 | ⅞ x 7 | 10 | 2" |
| | 2½" | 8⅞" | 2¾" | 5 1/16" | 3¾" | 6⅝" | 3 5/16" | 45 lb | R-86 | 8 | 1 x 8 | 14 | 2½" |
| | 3" | 10" | 3 1/16" | 5 11/16" | 4⅜" | 7½" | 3 15/16" | 57 lb | R-87 | 8 | 1⅛ x 9 | 20 | 3" |
| | 3½" | 11½" | 3⅜" | 5½" | 5" | 8½' | 4½" | 100 lb | R-89 | 8 | 1¼ x 9¾ | 28 | 3½" |
| | 4" | 12½" | 3⅝" | 6¼" | 5 9/16" | 9½" | 4⅞" | 104 lb | R-88 | 8 | 1⅜ x 10½ | 36 | 4" |
| | 10" | 20¾" | 5 11/16" | 11" | 11¾" | 16¾" | 10¼" | 600 lb | R-91 | 12 | 2 x 16½ | 177 | 10" |
| 10000 PSI WP (6 BX) | 1 13/16" | 7⅜" | 1 21/32" | - | 3½" | 5¾" | † 3.062" | - | BX-151 | 8 | ¾ x 5 | 8 | 1 13/16" |
| | 2 1/16" | 7⅞" | 1 49/64" | - | 3 5/16" | 6¼" | † 3.395" | - | BX-152 | 8 | ¾ x 5¼ | 8 | 2 1/16" |
| | 2 9/16" | 9½" | 2 1/64" | - | 4¾" | 7¼" | † 4.046" | - | BX-153 | 8 | ⅞ x 6 | 11 | 2 9/16" |
| | 3 1/16" | 10⅝" | 2 19/64" | - | 5 19/32" | 8½" | † 4.685" | - | BX-154 | 8 | 1 x 6¾ | 17 | 3 1/16" |
| | 4 1/16" | 12 7/16" | 2 48/64" | - | 7 3/16" | 10 3/16" | † 5.930" | - | BX-155 | 8 | 1⅛ x 8 | 26 | 4 1/16" |
| | 7 1/16" | 18⅞" | 4 1/16" | - | 11⅞" | 15⅞" | † 9.521" | - | BX-156 | 12 | 1½ x 11¼ | 95 | 7 1/16" |
| | 9" | 21¾" | 4⅞" | - | 14¾" | 18¾" | † 11.774" | - | BX-157 | 16 | 1½ x 13 | 112 | 9" |
| | 11" | 25¾" | 5 9/16" | - | 17¾" | 22¼" | † 14.064" | - | BX-158 | 16 | 1¾ x 15 | 160 | 11" |
| 15000 PSI WP (6 BX) | 1 13/16" | 8 3/16" | 1 25/32" | - | 3 27/32" | 6 5/16" | † 3.062" | - | BX-151 | 8 | ⅞ x 5½ | 9 | 1 13/16" |
| | 2 1/16" | 8¾" | 2" | - | 4⅜" | 6⅞" | † 3.395" | - | BX-152 | 8 | ⅞ x 6 | 11 | 2 1/16" |
| | 2 9/16" | 10" | 2¼" | - | 5 1/16" | 7⅞" | † 4.046" | - | BX-153 | 8 | 1 x 6¾ | 16 | 2 9/16" |
| | 3 1/16" | 11 5/16" | 2 17/32" | - | 6 1/16" | 9 1/16" | † 4.685" | - | BX-154 | 8 | 1⅛ x 7½ | 24 | 3 1/16" |
| | 4 1/16" | 14 3/16" | 3 9/32" | - | 7 1/16" | 11 7/16" | † 5.930" | - | BX-155 | 8 | 1⅜ x 9¼ | 29 | 4 1/16" |
| | 7 1/16" | 19⅞" | 4 11/16" | - | 12 13/16" | 16⅞" | † 9.521" | - | BX-156 | 16 | 1½ x 12¾ | 112 | 7 1/16" |
| | 9" | 25½" | 5¾" | - | 17" | 21¾" | † 11.774" | - | BX-157 | 16 | 1⅞ x 15¾ | 129 | 9" |
| | 11" | 32" | 7⅜" | - | 23" | 28" | † 14.064" | - | BX-158 | 20 | 2 x 19¼ | 228 | 11" |

# RING GASKETS & RING GROOVE DIMENSIONS 4

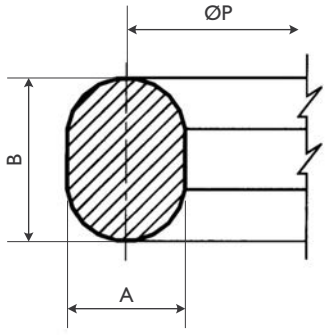
Ring Joint Gaskets are either octagonal or oval made to ASME B16.20 in various sizes. These are identified by numbers R, RX or BX that relate to Flange size, pressure, class, and appropriate standards ASME B16.20 or API6A.

Materials for these gaskets are selected based on suitability for service conditions. It is essential that Ring Joint Gaskets be of a hardness lower than the Flanges. The recommended hardness and their identification is given in table below:

| RING GASKET MATERIAL | MAXIMUM HARDNESS | | IDENTIFICATION | |
|---|---|---|---|---|
| | Brinell | Rockwell 'B' Scale | ASME B16.20 | API-6A |
| Soft Iron | 90 | 56 | D | D - 4 |
| Low Carbon Steel | 120 | 68 | S | S - 4 |
| 4 - 6 Chrome 1/2 Moly | 130 | 72 | F5 | - |
| Type 410 | 170 | 86 | S410 | - |
| Type 304 | 160 | 83 | S304 | S304 - 4 |
| Type 316 | 160 | 83 | S316 | S316 - 4 |
| Type 347 | 160 | 83 | S347 | - |




Octagonal
(Fig. 1)




Oval
(Fig. 2)

*All dimensions are in inches *Tolerances as per ASME B16.20

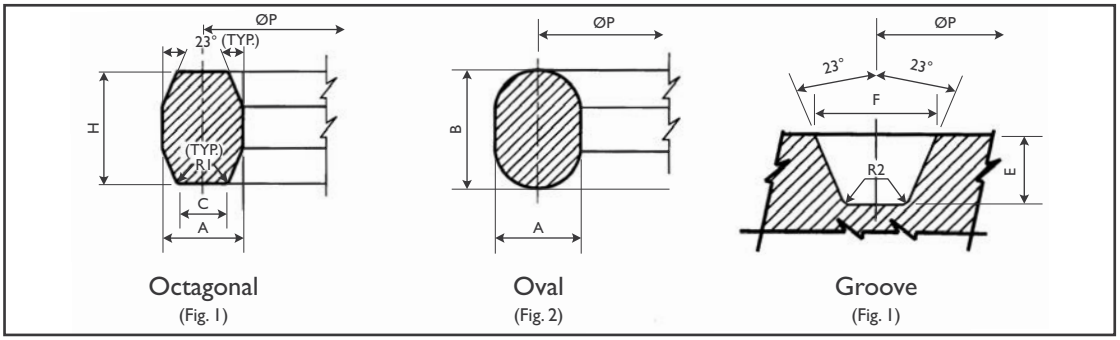
**1 TYPE R RING GASKETS (As per ASME B16.20)**

| RING NO. | ØP | A | B | H | C | R1 |
|---|---|---|---|---|---|---|
| R-11 | 1.344 | 0.250 | 0.44 | 0.38 | 0.170 | 0.06 |
| R-12 | 1.563 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-13 | 1.688 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-14 | 1.750 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-15 | 1.875 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-16 | 2.000 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-17 | 2.250 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-18 | 2.375 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-19 | 2.563 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-20 | 2.688 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-21 | 2.844 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-22 | 3.250 | 0.313 | 056 | 0.50 | 0.206 | 0.06 |
| R-23 | 3.250 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-24 | 3.750 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-25 | 4.000 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-26 | 4.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-27 | 4.250 | 0.438 | 0.75 | 0.63 | 0.305 | 0.06 |
| R-28 | 4.375 | 0.500 | 0.56 | 0.69 | 0.341 | 0.06 |
| R-29 | 4.500 | 0.313 | 0.69 | 0.50 | 0.206 | 0.06 |
| R-30 | 4.625 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-31 | 4.875 | 0.438 | 069 | 0.63 | 0.305 | 0.06 |
| R-32 | 5.000 | 0.500 | 0.75 | 0.69 | 0.341 | 0.06 |
| R-33 | 5.188 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-34 | 5.188 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-35 | 5.375 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-36 | 5.875 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-37 | 5.875 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-38 | 6.188 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 |
| R-39 | 6.375 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-40 | 6.750 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-41 | 7.125 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-42 | 7.500 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 |
| R-43 | 7.625 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-44 | 7.625 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-45 | 8.313 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-46 | 8.313 | 0.500 | 0.75 | 0.69 | 0.341 | 0.06 |

*All dimensions are in inches *Tolerances as per ASME B16.20

## 1 TYPE R RING GASKETS (As per ASME B16.20)

| RING NO. | ØP | A | B | H | C | R1 |
|---|---|---|---|---|---|---|
| R-47 | 9.000 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 |
| R-48 | 9.750 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-49 | 10.625 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-50 | 10.625 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 |
| R-51 | 11.000 | 0.875 | 1.13 | 1.06 | 0.583 | 0.06 |
| R-52 | 12.000 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-53 | 12.750 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-54 | 12.750 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 |
| R-55 | 13.500 | 1.125 | 1.44 | 1.38 | 0.780 | 0.09 |
| R-56 | 15.000 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-57 | 15.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-58 | 15.000 | 0.875 | 1.13 | 1.06 | 0.583 | 0.06 |
| R-59 | 15.625 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-60 | 16.000 | 1.250 | 1.56 | 1.50 | 0.879 | 0.09 |
| R-61 | 16.500 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-62 | 16.500 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 |
| R-63 | 16.500 | 1.000 | 1.31 | 1.25 | 0.681 | 0.09 |
| R-64 | 17.875 | 0.313 | 0.56 | 0.50 | 0.205 | 0.06 |
| R-65 | 18.500 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-66 | 8.500 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 |
| R-67 | 18.500 | 1.125 | 1.44 | 1.38 | 0.780 | 0.09 |
| R-68 | 20.375 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-69 | 21.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 |
| R-70 | 21.000 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 |
| R-71 | 21.000 | 1.125 | 1.44 | 1.38 | 0.780 | 0.09 |
| R-72 | 22.000 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-73 | 23.000 | 0.500 | 0.75 | 0.69 | 0.341 | 0.06 |
| R-74 | 23.000 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 |
| R-75 | 23.000 | 1.250 | 1.56 | 1.50 | 0.879 | 0.09 |
| R-76 | 26.500 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 |
| R-77 | 27.250 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 |
| R-78 | 27.250 | 1.000 | 1.31 | 1.25 | 0.681 | 0.09 |
| R-79 | 27.250 | 1.375 | 1.75 | 1.63 | 0.977 | 0.09 |
| R-80 | 24.250 | 0.313 | N/A | 0.50 | 0.206 | 0.06 |
| R-81 | 25.000 | 0.563 | N/A | 0.75 | 0.377 | 0.06 |
| R-82 | 2.250 | 0.438 | N/A | 0.63 | 0.305 | 0.06 |
| R-84 | 2.500 | 0.438 | N/A | 0.63 | 0.305 | 0.03 |
| R-85 | 3.125 | 0.500 | N/A | 0.69 | 0.341 | 0.06 |
| R-86 | 3.563 | 0.625 | N/A | 0.81 | 0.413 | 0.06 |
| R-87 | 3.938 | 0.625 | N/A | 0.81 | 0.413 | 0.06 |
| R-88 | 4.875 | 0.750 | N/A | 0.94 | 0.485 | 0.06 |
| R-89 | 4.500 | 0.750 | N/A | 0.94 | 0.485 | 0.06 |
| R-90 | 6.125 | 0.875 | N/A | 1.06 | 0.583 | 0.06 |
| R-91 | 10.250 | 1.250 | N/A | 1.50 | 0.879 | 0.09 |
| R-92 | 9.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.03 |
| R-93 | 29.500 | 0.750 | N/A | 0.94 | 0.485 | 0.06 |
| R-94 | 31.500 | 0.750 | N/A | 0.94 | 0.485 | 0.06 |
| R-95 | 33.750 | 0.750 | N/A | 0.94 | 0.485 | 0.06 |
| R-96 | 36.000 | 0.875 | N/A | 1.06 | 0.583 | 0.06 |
| R-97 | 38.000 | 0.875 | N/A | 1.06 | 0.583 | 0.06 |
| R-98 | 40.250 | 0.875 | N/A | 1.06 | 0.583 | 0.06 |
| R-99 | 9.250 | 0.438 | N/A | 0.63 | 0.305 | 0.03 |
| R-100 | 29.500 | 1.125 | N/A | 1.38 | 0.780 | 0.09 |
| R-101 | 31.500 | 1.250 | N/A | 1.50 | 0.879 | 0.09 |
| R-102 | 33.750 | 1.250 | N/A | 1.50 | 0.879 | 0.09 |
| R-103 | 36.000 | 1.250 | N/A | 1.50 | 0.879 | 0.09 |
| R-104 | 38.000 | 1.375 | N/A | 1.63 | 0.977 | 0.09 |
| R-105 | 40.250 | 1.375 | N/A | 1.63 | 0.977 | 0.09 |

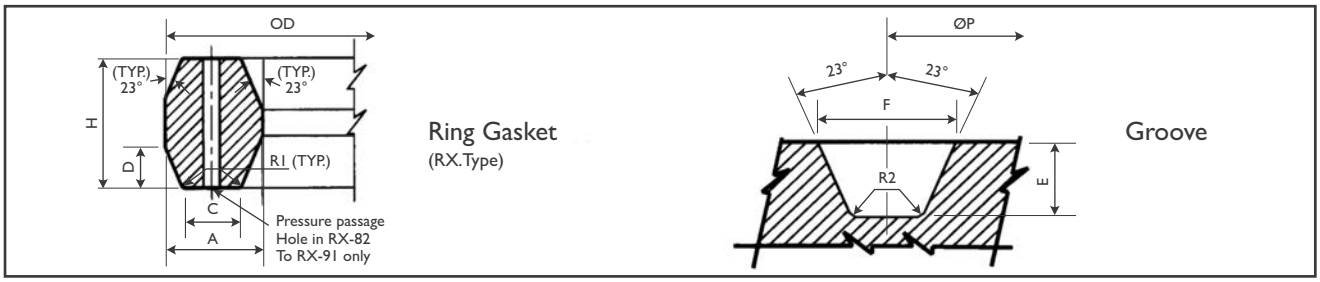



*All dimensions are in inches *Tolerances as per API-6A *S = Approx Distance between made-up Flanges

## 2 TYPE R RING GASKETS & GROOVES (As per API6A)

| RING NO. | ØP | A | B | H | C | R1 | E | F | R2 | S |
|---|---|---|---|---|---|---|---|---|---|---|
| R-20 | 2.688 | 0.313 | 0.56 | 0.50 | 0.206 | 0.06 | 0.25 | 0.344 | 0.03 | 0.16 |
| R-23 | 3.250 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-24 | 3.750 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-26 | 4.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-27 | 4.250 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-31 | 4.875 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-35 | 5.375 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-37 | 5.875 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-39 | 6.375 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-41 | 7.125 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-44 | 7.625 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 031 | 0.469 | 0.03 | 0.19 |
| R-45 | 8.313 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-46 | 8.313 | 0.500 | 0.75 | 0.69 | 0.341 | 0.06 | 0.38 | 0.531 | 0.06 | 0.19 |
| R-47 | 9.000 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 | 0.50 | 0.781 | 0.06 | 0.16 |
| R-49 | 10.625 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-50 | 10.625 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 | 0.44 | 0.656 | 0.06 | 0.16 |
| R-53 | 12.750 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-54 | 12.750 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 | 0.44 | 0.656 | 0.06 | 0.16 |
| R-57 | 15.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-63 | 16.500 | 1.000 | 1.31 | 1.25 | 0.681 | 0.09 | 0.62 | 1.063 | 0.09 | 0.22 |
| R-65 | 18.500 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-66 | 18.500 | 0.625 | 0.88 | 0.81 | 0.413 | 0.06 | 0.44 | 0.656 | 0.06 | 0.16 |
| R-69 | 21.000 | 0.438 | 0.69 | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-70 | 21.000 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 | 0.50 | 0.781 | 0.06 | 0.19 |
| R-73 | 23.000 | 0.500 | 0.75 | 0.69 | 0.341 | 0.06 | 0.38 | 0.531 | 0.06 | 0.13 |
| R-74 | 23.00 | 0.750 | 1.00 | 0.94 | 0.485 | 0.06 | 0.50 | 0.781 | 0.06 | 0.19 |
| R-82 | 2.250 | 0.438 | - | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-84 | 2.500 | 0.438 | - | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |
| R-85 | 3.125 | 0.500 | - | 0.69 | 0.341 | 0.06 | 0.38 | 0.531 | 0.06 | 0.13 |
| R-86 | 3.563 | 0.625 | - | 0.81 | 0.413 | 0.06 | 0.44 | 0.656 | 0.06 | 0.16 |
| R-87 | 3.938 | 0.625 | - | 0.81 | 0.413 | 0.06 | 0.44 | 0.656 | 0.06 | 0.16 |
| R-88 | 4.875 | 0.750 | - | 0.94 | 0.485 | 0.06 | 0.50 | 0.781 | 0.06 | 0.19 |
| R-89 | 1.500 | 0.750 | - | 0.94 | 0.485 | 0.06 | 0.50 | 0.781 | 0.06 | 0.19 |
| R-90 | 6.125 | 0.875 | - | 1.06 | 0.583 | 0.06 | 0.56 | 0.906 | 0.06 | 0.19 |
| R-91 | 10.25 | 1.250 | - | 1.50 | 0.879 | 0.09 | 0.69 | 1.313 | 0.09 | 0.16 |
| R-99 | 9.250 | 0.438 | - | 0.63 | 0.305 | 0.06 | 0.31 | 0.469 | 0.03 | 0.19 |

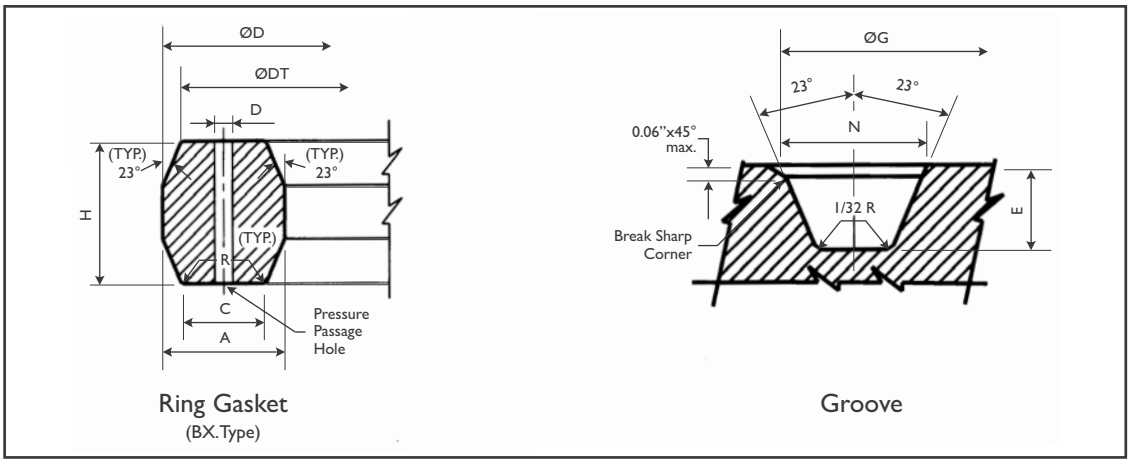
# RING GASKETS & RING GROOVE DIMENSIONS 4




*All dimensions are in inches *Tolerances as per API-6A *S = Approx Distance between made-up Flanges

## 3 RX TYPE PRESSURE ENERGIZED RING GASKETS & GROOVES (As per API6A)

| RING NO. | ØP | OD | A | C | D | H | R1 | E | F | R2 | S |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RX-20 | 2.688 | 3.000 | 0.344 | 0.182 | 0.125 | 0.750 | 0.06 | 0.25 | 0.344 | 0.03 | 0.38 |
| RX-23 | 3.250 | 3.672 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-24 | 3.750 | 4.172 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-25 | 4.000 | 4.313 | 0.344 | 0.182 | 0.125 | 0.750 | 0.06 | 0.25 | 0.344 | 0.03 | - |
| RX-26 | 4.000 | 4.406 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-27 | 4.250 | 4.656 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-31 | 4.875 | 5.297 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-35 | 5.375 | 5.797 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-37 | 5.875 | 6.297 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-39 | 6.375 | 6.797 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-41 | 7.125 | 7.547 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-44 | 7.625 | 8.047 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-45 | 8.313 | 8.734 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-46 | 8.313 | 8.750 | 0.531 | 0.263 | 0.188 | 1.125 | 0.06 | 0.38 | 0.531 | 0.06 | 0.47 |
| RX-47 | 9.000 | 9.656 | 0.781 | 0.407 | 0.271 | 1.625 | 0.09 | 0.50 | 0.781 | 0.06 | 0.91 |
| RX-49 | 10.625 | 11.047 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-50 | 10.625 | 11.156 | 0.656 | 0.335 | 0.208 | 1.250 | 0.06 | 0.44 | 0.656 | 0.06 | 0.47 |
| RX-53 | 12.750 | 13.172 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-54 | 12.750 | 13.281 | 0.656 | 0.335 | 0.208 | 1.250 | 0.06 | 0.44 | 0.656 | 0.06 | 0.47 |
| RX-57 | 15.000 | 15.422 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-63 | 16.500 | 17.391 | 1.063 | 0.582 | 0.333 | 2.000 | 0.09 | 0.63 | 1.063 | 0.09 | 0.84 |
| RX-65 | 18.500 | 18.922 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-66 | 18.500 | 19.031 | 0.656 | 0.335 | 0.208 | 1.250 | 0.06 | 0.44 | 0.656 | 0.06 | 0.47 |
| RX-69 | 21.000 | 21.422 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-70 | 21.000 | 21.656 | 0.781 | 0.407 | 0.271 | 1.625 | 0.09 | 0.50 | 0.781 | 0.06 | 0.72 |
| RX-73 | 23.000 | 23.469 | 0.531 | 0.263 | 0.208 | 1.250 | 0.06 | 0.38 | 0.531 | 0.06 | 0.59 |
| RX-74 | 23.000 | 23.656 | 0.781 | 0.407 | 0.271 | 1.625 | 0.09 | 0.50 | 0.781 | 0.06 | 0.72 |
| RX-82 | 2.250 | 2.672 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-84 | 2.500 | 2.922 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-85 | 3.125 | 3.547 | 0.531 | 0.263 | 0.167 | 1.000 | 0.06 | 0.38 | 0.531 | 0.06 | 0.38 |
| RX-86 | 3.563 | 4.078 | 0.594 | 0.335 | 0.188 | 1.125 | 0.06 | 0.44 | 0.656 | 0.06 | 0.38 |
| RX-87 | 3.938 | 4.453 | 0.594 | 0.335 | 0.188 | 1.125 | 0.06 | 0.44 | 0.656 | 0.06 | 0.38 |
| RX-88 | 4.875 | 5.484 | 0.688 | 0.407 | 0.208 | 1.250 | 0.06 | 0.50 | 0.781 | 0.06 | 0.38 |
| RX-89 | 4.500 | 5.109 | 0.719 | 0.407 | 0.208 | 1.250 | 0.06 | 0.50 | 0.781 | 0.06 | 0.38 |
| RX-90 | 6.125 | 6.875 | 0.781 | 0.479 | 0.292 | 1.750 | 0.09 | 0.56 | 0.906 | 0.06 | 0.72 |
| RX-91 | 10.250 | 11.297 | 1.188 | 0.780 | 0.297 | 1.781 | 0.09 | 0.69 | 1.313 | 0.09 | 0.75 |
| RX-99 | 9.250 | 9.672 | 0.469 | 0.254 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | 0.47 |
| RX-201 | 1.813 | 2.026 | 0.226 | 0.126 | 0.057 | 0.445 | 0.02 | 0.16 | 0.219 | 0.03 | - |
| RX-205 | 2.250 | 2.453 | 0.219 | 0.120 | 0.072 | 0.437 | 0.02 | 0.16 | 0.219 | 0.02 | - |
| RX-210 | 3.500 | 3.844 | 0.375 | 0.213 | 0.125 | 0.750 | 0.03 | 0.25 | 0.375 | 0.03 | - |
| RX-215 | 5.125 | 5.547 | 0.469 | 0.210 | 0.167 | 1.000 | 0.06 | 0.31 | 0.469 | 0.03 | - |

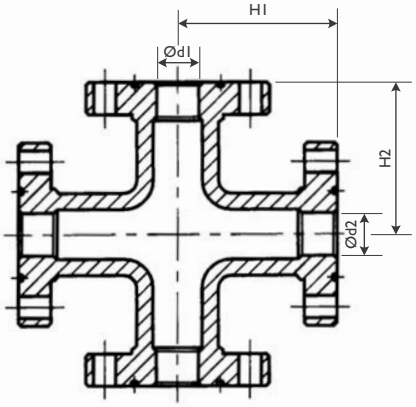



*All dimensions are in inches *Tolerances as per API-6A

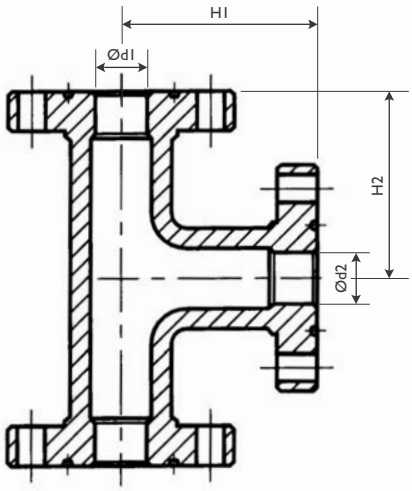
## 4 BX TYPE PRESSURE ENERGIZED RING GASKETS & GROOVES (As per API6A)

| RING NO. | NO. SIZE | OD | H | A | ODT | C | D | E | G | N |
|---|---|---|---|---|---|---|---|---|---|---|
| BX 150 | 1 1/16 | 2.842 | 0.366 | 0.366 | 2.790 | 0.314 | 0.06 | 0.22 | 2.893 | 0.450 |
| BX 151 | 1 3/16 | 3.008 | 0.379 | 0.379 | 2.954 | 0.325 | 0.06 | 0.22 | 3.062 | 0.466 |
| BX 152 | 2 1/16 | 3.334 | 0.403 | 0.403 | 3.277 | 0.346 | 0.06 | 0.23 | 3.395 | 0.498 |
| BX 153 | 2 9/16 | 3.974 | 0.448 | 0.448 | 3.910 | 0.385 | 0.06 | 0.27 | 4.046 | 0.554 |
| BX 154 | 3 1/16 | 4.600 | 0.488 | 0.488 | 4.531 | 0.419 | 0.06 | 0.30 | 4.685 | 0.606 |
| BX 155 | 4 1/16 | 5.825 | 0.560 | 0.560 | 5.746 | 0.481 | 0.06 | 0.33 | 5.930 | 0.698 |
| BX 156 | 7 1/16 | 9.367 | 0.733 | 0.733 | 9.263 | 0.629 | 0.12 | 0.44 | 9.521 | 0.921 |
| BX 157 | 9 | 11.593 | 0.826 | 0.826 | 11.476 | 0.709 | 0.12 | 0.50 | 11.774 | 1.039 |
| BX 158 | 11 | 13.860 | 0.911 | 0.911 | 13.731 | 0.782 | 0.12 | 0.56 | 14.064 | 1.149 |
| BX 159 | 13 5/8 | 16.800 | 1.012 | 1.012 | 16.657 | 0.869 | 0.12 | 0.62 | 17.033 | 1.279 |
| BX 160 | 13 5/8 | 15.850 | 0.938 | 0.541 | 15.717 | 0.408 | 0.12 | 0.56 | 16.063 | 0.786 |
| BX 161 | 16 5/8 | 19.347 | 1.105 | 0.638 | 19.191 | 0.482 | 0.12 | 0.67 | 19.604 | 0.930 |
| BX 162 | 16 5/8 | 18.720 | 0.560 | 0.560 | 18.641 | 0.481 | 0.06 | 0.33 | 18.832 | 0.705 |
| BX 163 | 18 3/4 | 21.896 | 1.185 | 0.684 | 21.728 | 0.516 | 0.12 | 0.72 | 22.185 | 1.006 |
| BX 164 | 18 3/4 | 22.463 | 1.185 | 0.968 | 22.295 | 0.800 | 0.12 | 0.72 | 22.752 | 1.290 |
| BX 165 | 21 1/4 | 24.595 | 1.261 | 0.728 | 24.417 | 0.550 | 0.12 | 0.75 | 24.904 | 1.071 |
| BX 166 | 21 1/4 | 25.198 | 1.261 | 1.029 | 25.020 | 0.851 | 0.12 | 0.75 | 25.507 | 1.373 |
| BX 167 | 26 3/4 | 29.896 | 1.412 | 0.516 | 29.696 | 0.316 | 0.06 | 0.84 | 30.249 | 0.902 |
| BX 168 | 26 3/4 | 30.128 | 1.412 | 0.632 | 29.928 | 0.432 | 0.06 | 0.84 | 30.481 | 1.018 |
| BX 169 | 5 1/8 | 6.831 | 0.624 | 0.509 | 6.743 | 0.421 | 0.06 | 0.38 | 6.955 | 0.666 |
| BX 170 | 9 | 8.584 | 0.560 | 0.560 | 8.505 | 0.481 | 0.06 | 0.33 | 8.696 | 0.705 |
| BX 171 | 11 | 10.529 | 0.560 | 0.560 | 10.450 | 0.481 | 0.06 | 0.33 | 10.641 | 0.705 |
| BX 172 | 13 5/8 | 13.113 | 0.560 | 0.560 | 13.034 | 0.481 | 0.06 | 0.33 | 13.225 | 0.705 |
| BX 303 | 30 | 33.573 | 1.494 | 0.668 | 33.361 | 0.457 | 0.06 | 0.89 | 33.949 | 1.078 |

*All dimensions are in inches




API Flanged Cross
(Fig. 1)




API Flanged Tee
(Fig. 2)

## API FLANGED CROSSES AND TEES (As per API-6A)

(1-1) PRESSURE RATING:- 2000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 2 1/16 | 2 1/16 | 5.81 | 5.81 |
| 2 9/16 | 2 1/16 | 5.94 | 6.31 |
| 2 9/16 | 2 9/16 | 6.56 | 6.56 |
| 3 1/8 | 2 1/16 | 6.06 | 6.69 |
| 3 1/8 | 2 9/16 | 6.56 | 6.81 |
| 3 1/8 | 3 1/8 | 7.06 | 7.06 |
| 4 1/16 | 2 1/16 | 6.31 | 7.94 |
| 4 1/16 | 2 9/16 | 6.81 | 8.06 |
| 4 1/16 | 3 1/8 | 7.19 | 8.19 |
| 4 1/16 | 4 1/16 | 8.56 | 8.56 |

(1-2) PRESSURE RATING:- 3000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 3 1/8 | 2 1/16 | 7.31 | 7.81 |
| 3 1/8 | 2 9/16 | 7.88 | 7.94 |
| 3 1/8 | 3 1/8 | 7.56 | 7.56 |
| 4 1/16 | 2 1/16 | 7.56 | 8.81 |
| 4 1/16 | 2 9/16 | 8.12 | 8.94 |
| 4 1/16 | 3 1/8 | 8.06 | 8.81 |
| 4 1/16 | 4 1/16 | 9.06 | 9.06 |

(1-3) PRESSURE RATING:- 5000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 2 1/16 | 2 1/16 | 7.31 | 7.31 |
| 2 9/16 | 2 1/16 | 7.44 | 7.88 |
| 2 9/16 | 2 9/16 | 8.31 | 8.31 |
| 3 1/8 | 2 1/16 | 7.69 | 8.31 |
| 3 1/8 | 2 9/16 | 8.25 | 8.44 |
| 3 1/8 | 3 1/8 | 9.31 | 9.31 |
| 4 1/16 | 2 1/16 | 7.94 | 9.19 |
| 4 1/16 | 2 9/16 | 8.50 | 9.31 |
| 4 1/16 | 3 1/8 | 8.94 | 9.56 |
| 4 1/16 | 4 1/16 | 10.81 | 10.81 |

(1-4) PRESSURE RATING:- 10000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 2 1/16 | 1 13/16 | 6.67 | 6.84 |
| 2 1/16 | 2 1/16 | 6.92 | 6.92 |
| 2 9/16 | 1 13/16 | 6.95 | 7.47 |
| 2 9/16 | 2 1/16 | 7.20 | 7.55 |
| 2 9/16 | 2 9/16 | 7.83 | 7.83 |
| 3 1/16 | 1 13/16 | 7.23 | 8.22 |
| 3 1/16 | 2 1/16 | 7.48 | 8.30 |
| 3 1/16 | 2 9/16 | 8.11 | 8.58 |
| 3 1/16 | 3 1/16 | 8.86 | 8.86 |
| 4 1/16 | 1 13/16 | 7.81 | 9.25 |
| 4 1/16 | 2 1/16 | 8.06 | 9.33 |
| 4 1/16 | 2 9/16 | 8.69 | 9.61 |
| 4 1/16 | 3 1/16 | 9.44 | 9.89 |
| 4 1/16 | 4 1/16 | 10.34 | 10.34 |

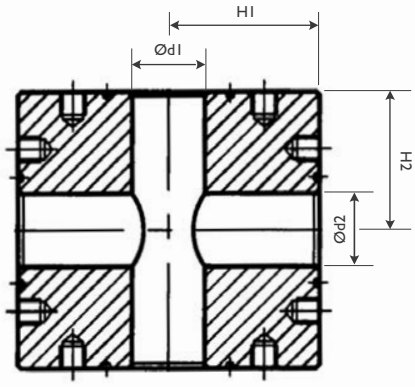
(1-5) PRESSURE RATING:- 15000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 2 1/16 | 1 13/16 | 7.34 | 7.41 |
| 2 1/16 | 2 1/16 | 762 | 7.62 |
| 2 9/16 | 1 13/16 | 7.59 | 8.03 |
| 2 9/16 | 2 1/16 | 7.88 | 8.25 |
| 2 9/16 | 2 9/16 | 8.50 | 8.50 |
| 3 1/16 | 1 13/16 | 7.86 | 8.69 |
| 3 1/16 | 2 1/16 | 8.16 | 8.91 |
| 3 1/16 | 2 9/16 | 8.78 | 9.16 |
| 3 1/16 | 3 1/16 | 9.44 | 9.44 |
| 4 1/16 | 1 13/16 | 8.69 | 10.25 |
| 4 1/16 | 2 1/16 | 8.97 | 10.47 |
| 4 1/16 | 2 9/16 | 9.59 | 10.72 |
| 4 1/16 | 3 1/16 | 10.25 | 11.00 |
| 4 1/16 | 4 1/16 | 11.69 | 11.69 |

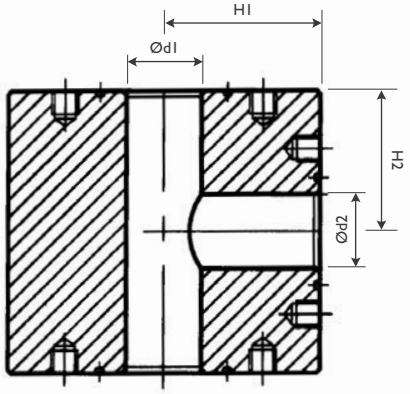
(1-6) PRESSURE RATING:- 20000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 1 13/16 | 1 13/16 | 8.94 | 8.94 |
| 2 1/16 | 1 13/16 | 9.25 | 9.53 |
| 2 1/16 | 2 1/16 | 9.84 | 9.84 |
| 2 9/16 | 1 13/16 | 9.56 | 10.28 |
| 2 9/16 | 2 1/16 | 10.16 | 10.59 |
| 2 9/16 | 2 9/16 | 10.91 | 10.91 |
| 3 1/16 | 1 13/16 | 9.94 | 10.91 |
| 3 1/16 | 2 1/16 | 10.53 | 10.22 |
| 3 1/16 | 2 9/16 | 11.28 | 11.53 |
| 3 1/16 | 3 1/16 | 11.91 | 11.91 |
| 4 1/16 | 1 13/16 | 11.12 | 12.66 |
| 4 1/16 | 2 1/16 | 11.72 | 12.66 |
| 4 1/16 | 2 9/16 | 12.47 | 13.28 |
| 4 1/16 | 3 1/16 | 13.09 | 13.66 |
| 4 1/16 | 4 1/16 | 14.84 | 14.84 |

*All dimensions are in inches




API Studded Cross
(Fig 3)




API Studded Tee
(Fig 3)

## API STUDDED CROSSES & TEES (As per API-6A)

(1-1) PRESSURE RATING:- 2000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 2 1/16 | 2 1/16 | 3.50 | 3.50 |
| 2 1/16 | 2 1/16 | 3.50 | 4.00 |
| 2 9/16 | 2 9/16 | 4.50 | 4.50 |
| 3 1/8 | 2 1/16 | 3.50 | 4.50 |
| 3 1/8 | 2 9/16 | 4.50 | 4.50 |
| 3 1/8 | 3 1/8 | 4.50 | 4.50 |
| 4 1/16 | 2 1/16 | 4.50 | 5.50 |
| 4 1/16 | 2 9/16 | 4.50 | 5.50 |
| 4 1/16 | 3 1/8 | 4.50 | 5.50 |
| 4 1/16 | 4 1/16 | 5.50 | 5.50 |

(1-2) PRESSURE RATING:- 3000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 3 1/8 | 2 1/16 | 4.50 | 5.00 |
| 3 1/8 | 2 9/16 | 5.00 | 5.00 |
| 3 1/8 | 3 1/8 | 5.00 | 5.00 |
| 4 1/16 | 2 1/16 | 4.50 | 6.12 |
| 4 1/16 | 2 9/16 | 5.00 | 6.12 |
| 4 1/16 | 3 1/8 | 5.00 | 6.12 |
| 4 1/16 | 4 1/16 | 6.12 | 6.12 |

(1-3) PRESSURE RATING:- 5000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 2 1/16 | 2 1/16 | 4.50 | 4.50 |
| 2 9/16 | 2 1/16 | 4.50 | 5.00 |
| 2 9/16 | 2 9/16 | 5.00 | 5.00 |
| 3 1/8 | 2 1/16 | 4.50 | 5.50 |
| 3 1/8 | 2 9/16 | 5.50 | 5.50 |
| 3 1/8 | 3 1/8 | 5.50 | 5.50 |
| 4 1/16 | 2 1/16 | 4.50 | 6.50 |
| 4 1/16 | 2 9/16 | 5.00 | 6.50 |
| 4 1/16 | 3 1/8 | 5.50 | 6.50 |
| 4 1/16 | 4 1/16 | 6.50 | 6.50 |

(1-4) PRESSURE RATING:- 10000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 1 13/16 | 1 13/16 | 4.38 | 4.38 |
| 2 1/16 | 1 13/16 | 4.38 | 4.38 |
| 2 1/16 | 2 1/16 | 4.38 | 4.38 |
| 2 9/16 | 1 13/16 | 4.50 | 5.12 |
| 2 9/16 | 2 1/16 | 4.50 | 5.12 |
| 2 9/16 | 2 9/16 | 5.12 | 5.12 |
| 3 1/16 | 1 13/16 | 4.50 | 5.88 |
| 3 1/16 | 2 1/16 | 4.50 | 5.88 |
| 3 1/16 | 2 9/16 | 5.12 | 5.88 |
| 3 1/16 | 3 1/16 | 5.88 | 5.88 |
| 4 1/16 | 1 13/16 | 4.50 | 6.88 |
| 4 1/16 | 2 9/16 | 4.50 | 6.88 |
| 4 1/16 | 2 9/16 | 5.12 | 6.88 |
| 4 1/16 | 3 1/16 | 5.88 | 6.88 |
| 4 1/16 | 4 1/16 | 6.88 | 6.88 |

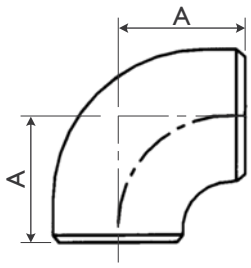
(1-5) PRESSURE RATING:- 15000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 1 13/16 | 1 13/16 | 5.00 | 5.00 |
| 2 1/16 | 1 13/16 | 5.00 | 5.00 |
| 2 1/16 | 2 1/16 | 5.00 | 5.00 |
| 2 9/16 | 1 13/16 | 5.50 | 5.50 |
| 2 9/16 | 2 1/16 | 5.50 | 5.50 |
| 2 9/16 | 2 9/16 | 5.50 | 5.50 |
| 3 1/16 | 1 13/16 | 6.31 | 6.31 |
| 3 1/16 | 2 1/16 | 6.31 | 6.31 |
| 3 1/16 | 2 9/16 | 6.31 | 6.31 |
| 3 1/16 | 3 1/16 | 6.31 | 6.31 |
| 4 1/16 | 1 13/16 | 7.62 | 7.62 |
| 4 1/16 | 2 1/16 | 7.62 | 7.62 |
| 4 1/16 | 2 9/16 | 7.62 | 7.62 |
| 4 1/16 | 3 1/16 | 7.62 | 7.62 |
| 4 1/16 | 4 1/16 | 7.62 | 7.62 |

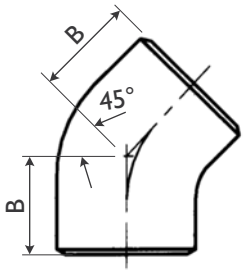
(1-6) PRESSURE RATING:- 20000 PSI

| NOMINAL SIZE & BORE | | CENTRE TO FACE | |
|---|---|---|---|
| Ød1 (vertical) | Ød2 (Outlet) | H2 (Vertical) | H1 (Horizontal) |
| 1 13/16 | 1 13/16 | 6.47 | 6.47 |
| 2 1/16 | 1 13/16 | 6.47 | 6.47 |
| 2 1/16 | 2 1/16 | 6.47 | 6.47 |
| 2 9/16 | 1 13/16 | 7.28 | 7.28 |
| 2 9/16 | 2 1/16 | 7.28 | 7.28 |
| 2 9/16 | 2 9/16 | 7.28 | 7.28 |
| 3 1/16 | 1 13/16 | 7.97 | 7.97 |
| 3 1/16 | 2 1/16 | 7.97 | 7.97 |
| 3 1/16 | 2 9/16 | 7.97 | 7.97 |
| 3 1/16 | 3 1/16 | 7.97 | 7.97 |
| 4 1/16 | 1 13/16 | 9.91 | 9.91 |
| 4 1/16 | 2 1/16 | 9.91 | 9.91 |
| 4 1/16 | 2 9/16 | 9.91 | 9.91 |
| 4 1/16 | 3 1/16 | 9.91 | 9.91 |
| 4 1/16 | 4 1/16 | 9.91 | 9.91 |

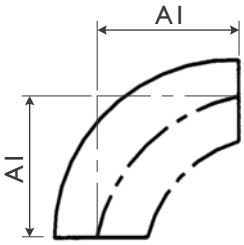
## 1 BUTT WELDED FITTINGS (ASME B 16. 9)




Straight type Long Radius Elbow (90°)




Straight type Long Radius Elbow (45°)




Reducing type Long Radius Elbow (90°)

*All dimensions are in inches

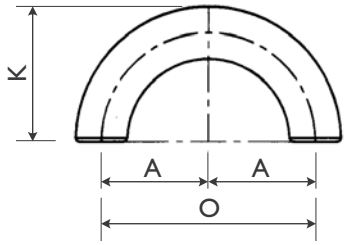
| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | Centre to End | |
|---|---|---|---|
| | | 90 deg Elbows A | 45 deg Elbows B |
| ½ | 0.84 | 1.50 | 0.62 |
| ¾ | 1.05 | 1.50 | 0.75 |
| 1 | 1.32 | 1.50 | 0.88 |
| 1¼ | 1.66 | 1.88 | 1.00 |
| 1½ | 1.90 | 2.25 | 1.12 |
| 2 | 2.38 | 3.00 | 1.38 |
| 2½ | 2.88 | 3.75 | 1.75 |
| 3 | 3.50 | 4.50 | 2.00 |
| 3½ | 4.00 | 5.25 | 2.25 |
| 4 | 4.50 | 6.00 | 2.50 |
| 5 | 5.56 | 7.50 | 3.12 |
| 6 | 6.62 | 9.00 | 3.75 |
| 8 | 8.62 | 12.00 | 5.00 |
| 10 | 10.75 | 15.00 | 6.25 |
| 12 | 12.75 | 18.00 | 7.50 |
| 14 | 14.00 | 21.00 | 8.75 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | Centre to End | |
|---|---|---|---|
| | | 90 deg Elbows A | 45 deg Elbows B |
| 16 | 16.00 | 24.00 | 10.00 |
| 18 | 18.00 | 27.00 | 11.25 |
| 20 | 20.00 | 30.00 | 12.50 |
| 22 | 22.00 | 33.00 | 13.50 |
| 24 | 24.00 | 36.00 | 15.00 |
| 26 | 26.00 | 39.00 | 16.00 |
| 28 | 28.00 | 42.00 | 17.25 |
| 30 | 30.00 | 45.00 | 18.50 |
| 32 | 32.00 | 48.00 | 19.75 |
| 34 | 34.00 | 51.00 | 21.00 |
| 36 | 36.00 | 54.00 | 22.25 |
| 38 | 38.00 | 57.00 | 23.62 |
| 40 | 40.00 | 60.00 | 24.88 |
| 42 | 42.00 | 63.00 | 26.00 |
| 44 | 44.00 | 66.00 | 27.38 |
| 46 | 46.00 | 69.00 | 28.62 |
| 48 | 48.00 | 72.00 | 29.88 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre to End A1 |
|---|---|---|---|
| | Large End | Small End | |
| 2 x 1½ | 2.38 | 1.90 | 3.00 |
| 2 x 1¼ | 2.38 | 1.66 | 3.00 |
| 2 x 1 | 2.38 | 1.32 | 3.00 |
| 2½ x 2 | 2.88 | 2.38 | 3.75 |
| 2½ x 1½ | 2.88 | 1.90 | 3.75 |
| 2½ x 1¼ | 2.88 | 1.66 | 3.75 |
| 3 x 2½ | 3.50 | 2.88 | 4.50 |
| 3 x 2 | 3.50 | 2.38 | 4.50 |
| 3 x 1½ | 3.50 | 1.90 | 4.50 |
| 3½ x 3 | 4.00 | 3.50 | 5.25 |
| 3½ x 2½ | 4.00 | 2.88 | 5.25 |
| 3½ x 2 | 4.00 | 2.38 | 5.25 |
| 4 x 3½ | 4.50 | 4.00 | 6.00 |
| 4 x 3 | 4.50 | 3.50 | 6.00 |
| 4 x 2½ | 4.50 | 2.88 | 6.00 |
| 4 x 2 | 4.50 | 2.38 | 6.00 |
| 5 x 4 | 5.56 | 4.50 | 7.50 |
| 5 x 3½ | 5.56 | 4.00 | 7.50 |
| 5 x 3 | 5.56 | 3.50 | 7.50 |
| 5 x 2½ | 5.56 | 2.88 | 7.50 |
| 6 x 5 | 6.62 | 5.56 | 9.00 |
| 6 x 4 | 6.62 | 4.50 | 9.00 |
| 6 x 3½ | 6.62 | 4.00 | 9.00 |
| 6 x 3 | 6.62 | 3.50 | 9.00 |
| 8 x 6 | 8.62 | 6.62 | 12.00 |
| 8 x 5 | 8.62 | 5.56 | 12.00 |
| 8 x 4 | 8.62 | 4.50 | 12.00 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre to End A1 |
|---|---|---|---|
| | Large End | Small End | |
| 10 x 8 | 10.75 | 8.62 | 15.00 |
| 10 x 6 | 10.75 | 6.62 | 15.00 |
| 10 x 5 | 10.75 | 5.56 | 15.00 |
| 12 x 10 | 12.75 | 10.75 | 18.00 |
| 12 x 8 | 12.75 | 8.62 | 18.00 |
| 12 x 6 | 12.75 | 6.62 | 18.00 |
| 14 x 12 | 14.00 | 12.75 | 21.00 |
| 14 x 10 | 14.00 | 10.75 | 21.00 |
| 14 x 8 | 14.00 | 8.62 | 21.00 |
| 16 x 14 | 16.00 | 14.00 | 24.00 |
| 16 x 12 | 16.00 | 12.75 | 24.00 |
| 16 x 10 | 16.00 | 10.75 | 24.00 |
| 18 x 16 | 18.00 | 16.00 | 27.00 |
| 18 x 14 | 18.00 | 14.00 | 27.00 |
| 18 x 12 | 18.00 | 12.75 | 27.00 |
| 18 x 10 | 18.00 | 10.75 | 27.00 |
| 20 x 18 | 20.00 | 18.00 | 30.00 |
| 20 x 16 | 20.00 | 16.00 | 30.00 |
| 20 x 14 | 20.00 | 14.00 | 30.00 |
| 20 x 12 | 20.00 | 12.75 | 30.00 |
| 20 x 10 | 20.00 | 10.75 | 30.00 |
| 24 x 22 | 24.00 | 22.00 | 36.00 |
| 24 x 20 | 24.00 | 20.00 | 36.00 |
| 24 x 18 | 24.00 | 18.00 | 36.00 |
| 24 x 16 | 24.00 | 16.00 | 36.00 |
| 24 x 14 | 24.00 | 14.00 | 36.00 |
| 24 x 12 | 24.00 | 12.75 | 36.00 |

## 1 BUTT WELDED FITTINGS (ASME B16.9)



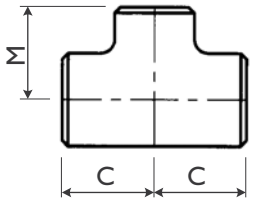

Long Radius Returns

*All dimensions are in inches

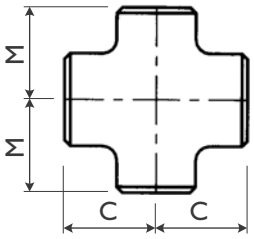
| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | Centre - to - Centre O | Back - to - Face K |
|---|---|---|---|
| ½ | 0.840 | 3.00 | 1.875 |
| ¾ | 1.050 | 2.25 | 1.6875 |
| 1 | 1.315 | 3.00 | 2.1875 |
| 1¼ | 1.660 | 3.75 | 2.75 |
| 1½ | 1.900 | 4.50 | 3.25 |
| 2 | 2.375 | 6.00 | 4.1875 |
| 2½ | 2.875 | 7.50 | 5.1875 |
| 3 | 3.500 | 9.00 | 6.25 |
| 3½ | 4.000 | 10.50 | 7.25 |
| 4 | 4.500 | 12.00 | 8.25 |
| 5 | 5.563 | 15.00 | 10.3125 |
| 6 | 6.625 | 18.00 | 12.3125 |
| 8 | 8.625 | 24.00 | 16.3125 |
| 10 | 10.750 | 30.00 | 20.375 |
| 12 | 12.750 | 36.00 | 24.38 |
| 14 | 14.000 | 42.00 | 28.00 |
| 16 | 16.000 | 48.00 | 32.00 |
| 18 | 18.000 | 54.00 | 36.00 |
| 20 | 20.000 | 60.00 | 40.00 |
| 22 | 22.000 | 66.00 | 44.00 |
| 24 | 24.000 | 72.00 | 48.00 |

**Note:**
Dimensions A is equal to one - half of dimensions O.

## 1 BUTT WELDED FITTINGS (ASME B16.9)



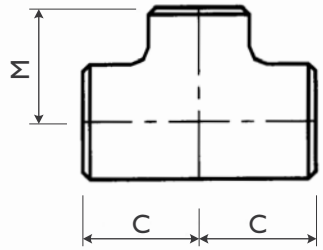

Straight Tees



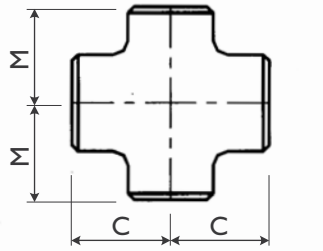

Straight Crosses

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | Centre - to - End | |
|---|---|---|---|
| | | Run C | Outlet M |
| ½ | 0.840 | 1.00 | 1.00 |
| ¾ | 1.050 | 1.125 | 1.125 |
| 1 | 1.315 | 1.50 | 1.50 |
| 1¼ | 1.660 | 1.875 | 1.875 |
| 1½ | 1.900 | 2.25 | 2.25 |
| 2 | 2.375 | 2.50 | 2.50 |
| 2½ | 2.875 | 3.00 | 3.00 |
| 3 | 3.500 | 3.375 | 3.375 |
| 3½ | 4.000 | 3.75 | 3.75 |
| 4 | 4.500 | 4.125 | 4.125 |
| 5 | 5.563 | 4.875 | 4.875 |
| 6 | 6.625 | 5.625 | 5.625 |
| 8 | 8.625 | 7.00 | 7.00 |
| 10 | 10.750 | 8.50 | 8.50 |
| 12 | 12.750 | 10.00 | 10.00 |
| 14 | 14.000 | 11.00 | 11.00 |
| 16 | 16.000 | 12.00 | 12.00 |
| 18 | 18.000 | 13.50 | 13.50 |
| 20 | 20.000 | 15.00 | 15.00 |
| 22 | 22.000 | 16.50 | 16.50 |
| 24 | 24.000 | 17.00 | 17.00 |
| 26 | 26.000 | 19.50 | 19.50 |
| 28 | 28.000 | 20.50 | 20.50 |
| 30 | 30.000 | 22.00 | 22.00 |
| 32 | 32.000 | 23.50 | 23.50 |
| 34 | 34.000 | 25.00 | 25.00 |
| 36 | 36.000 | 26.50 | 26.50 |
| 38 | 38.000 | 28.00 | 28.00 |
| 40 | 40.000 | 29.50 | 29.50 |
| 42 | 42.000 | 30.00 | 28.00 |
| 44 | 44.000 | 32.00 | 30.00 |
| 46 | 46.000 | 33.50 | 31.50 |
| 48 | 48.000 | 35.00 | 33.00 |

## 1 BUTT WELDED FITTINGS (ASME B16.9)




Reducing Outlet Tees




Reducing Outlet Crosses

### Reducing Tees & Crosses

*All dimensions are in inches

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre - to - End | |
|---|---|---|---|---|
| | Run | Outlet | Run C | Outlet M |
| ½ x ½ x ¼ | 0.840 | 0.68 | 1.00 | 1.00 |
| ½ x ½ x ⅜ | 0.840 | 0.54 | 1.00 | 1.00 |
| ¾ x ¾ x ⅜ | 1.050 | 0.84 | 1.12 | 1.12 |
| ¾ x ¾ x ½ | 1.010 | 0.68 | 1.12 | 1.12 |
| 1 x 1 x ¾ | 1.315 | 1.05 | 1.50 | 1.50 |
| 1 x 1 x ½ | 1.315 | 0.84 | 1.50 | 1.50 |
| 1¼ x 1¼ x 1 | 1.66 | 1.32 | 1.88 | 1.88 |
| 1¼ x 1¼ x ¾ | 1.66 | 1.05 | 1.88 | 1.88 |
| 1¼ x 1¼ x ½ | 1.66 | 0.84 | 1.88 | 1.88 |
| 1½ x 1½ x 1¼ | 1.90 | 1.66 | 2.25 | 2.25 |
| 1½ x 1½ x 1 | 1.90 | 1.32 | 2.25 | 2.25 |
| 1½ x 1½ x ¾ | 1.90 | 1.05 | 2.25 | 2.25 |
| 1½ x 1½ x ½ | 1.90 | 0.84 | 2.25 | 2.25 |
| 2 x 2 x 1½ | 2.375 | 1.90 | 2.50 | 2.38 |
| 2 x 2 x 1¼ | 2.375 | 1.66 | 2.50 | 2.25 |
| 2 x 2 x 1 | 2.375 | 1.32 | 2.50 | 2.00 |
| 2 x 2 x ¾ | 2.375 | 1.05 | 2.50 | 1.75 |
| 2½ x 2½ x 2 | 2.875 | 2.38 | 3.00 | 2.75 |
| 2½ x 2½ x 1½ | 2.875 | 1.90 | 3.00 | 2.62 |
| 2½ x 2½ x 1¼ | 2.875 | 1.66 | 3.00 | 2.50 |
| 2½ x 2½ x 1 | 2.875 | 1.32 | 3.00 | 2.25 |
| 3 x 3 x 2½ | 3.50 | 2.88 | 3.38 | 3.25 |
| 3 x 3 x 2 | 3.50 | 2.38 | 3.38 | 3.00 |
| 3 x 3 x 1½ | 3.50 | 1.90 | 3.38 | 2.88 |
| 3 x 3 x 1¼ | 3.50 | 1.66 | 3.38 | 2.75 |
| 3½ x 3½ x 3 | 4.00 | 3.50 | 3.75 | 3.62 |
| 3½ x 3½ x 2½ | 4.00 | 2.88 | 3.75 | 3.50 |
| 3½ x 3½ x 2 | 4.00 | 2.38 | 3.75 | 3.25 |
| 3½ x 3½ x 1½ | 4.00 | 1.90 | 3.75 | 3.12 |
| 4 x 4 x 3½ | 4.50 | 4.00 | 4.12 | 4.00 |
| 4 x 4 x 3 | 4.50 | 3.50 | 4.12 | 3.88 |
| 4 x 4 x 2½ | 4.50 | 2.88 | 4.12 | 3.75 |
| 4 x 4 x 2 | 4.50 | 2.38 | 4.12 | 3.50 |
| 4 x 4 x 1½ | 4.50 | 1.90 | 4.12 | 3.38 |
| 5 x 5 x 4 | 5.563 | 4.50 | 4.88 | 4.62 |
| 5 x 5 x 3½ | 5.563 | 4.00 | 4.88 | 4.50 |
| 5 x 5 x 3 | 5.563 | 3.50 | 4.88 | 4.38 |
| 5 x 5 x 2½ | 5.563 | 2.88 | 4.88 | 4.25 |
| 5 x 5 x 2 | 5.563 | 2.38 | 4.88 | 4.12 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre - to - End | |
|---|---|---|---|---|
| | Run | Outlet | Run C | Outlet M |
| 6 x 6 x 5 | 6.625 | 5.56 | 5.62 | 5.38 |
| 6 x 6 x 4 | 6.625 | 4.50 | 5.62 | 5.12 |
| 6 x 6 x 3½ | 6.625 | 4.00 | 5.62 | 5.00 |
| 6 x 6 x 3 | 6.625 | 3.50 | 5.62 | 4.88 |
| 6 x 6 x 2½ | 6.625 | 2.88 | 5.62 | 4.75 |
| 8 x 8 x 6 | 8.625 | 6.62 | 7.00 | 6.62 |
| 8 x 8 x 5 | 8.625 | 5.56 | 7.00 | 6.38 |
| 8 x 8 x 4 | 8.625 | 4.50 | 7.00 | 6.12 |
| 8 x 8 x 3½ | 8.625 | 4.00 | 7.00 | 6.00 |
| 10 x 10 x 8 | 10.75 | 8.62 | 8.50 | 8.00 |
| 10 x 10 x 6 | 10.75 | 6.62 | 8.50 | 7.62 |
| 10 x 10 x 5 | 10.75 | 5.56 | 8.50 | 7.50 |
| 10 x 10 x 4 | 10.75 | 4.50 | 8.50 | 7.25 |
| 12 x 12 x 10 | 12.75 | 10.75 | 10.00 | 9.50 |
| 12 x 12 x 8 | 12.75 | 8.62 | 10.00 | 9.00 |
| 12 x 12 x 6 | 12.75 | 6.62 | 10.00 | 8.62 |
| 12 x 12 x 5 | 12.75 | 5.56 | 10.00 | 8.50 |
| 14 x 14 x 12 | 14.00 | 12.75 | 11.00 | 10.62 |
| 14 x 14 x 10 | 14.00 | 10.75 | 11.00 | 10.12 |
| 14 x 14 x 8 | 14.00 | 8.62 | 11.00 | 9.75 |
| 14 x 14 x 6 | 14.00 | 6.62 | 11.00 | 9.38 |
| 16 x 16 x 14 | 16.00 | 14.00 | 12.00 | 12.00 |
| 16 x 16 x 12 | 16.00 | 12.75 | 12.00 | 11.62 |
| 16 x 16 x 10 | 16.00 | 10.75 | 12.00 | 11.12 |
| 16 x 16 x 8 | 16.00 | 8.62 | 12.00 | 10.75 |
| 16 x 16 x 6 | 16.00 | 6.62 | 12.00 | 10.38 |
| 18 x 18 x 16 | 18.00 | 16.00 | 13.50 | 13.00 |
| 18 x 18 x 14 | 18.00 | 14.00 | 13.50 | 13.00 |
| 18 x 18 x 12 | 18.00 | 12.75 | 13.50 | 12.62 |
| 18 x 18 x 10 | 18.00 | 10.75 | 13.50 | 12.12 |
| 18 x 18 x 8 | 18.00 | 8.62 | 13.50 | 11.75 |
| 20 x 20 x 18 | 20.00 | 18.00 | 15.00 | 14.50 |
| 20 x 20 x 16 | 20.00 | 16.00 | 15.00 | 14.00 |
| 20 x 20 x 14 | 20.00 | 14.00 | 15.00 | 14.00 |
| 20 x 20 x 12 | 20.00 | 12.75 | 15.00 | 13.62 |
| 20 x 20 x 10 | 20.00 | 10.75 | 15.00 | 13.12 |
| 20 x 20 x 8 | 20.00 | 8.62 | 15.00 | 12.75 |
| 22 x 22 x 20 | 22.00 | 20.00 | 16.50 | 16.00 |
| 22 x 22 x 18 | 22.00 | 18.00 | 16.50 | 15.50 |

## 1 BUTT WELDED FITTINGS (ASME B16.9)

### Reducing Tees & Crosses

*All dimensions are in inches

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre - to - End | |
|---|---|---|---|---|
| | Run | Outlet | Run C | Outlet M |
| 22 x 22 x 16 | 22.00 | 16.00 | 16.50 | 15.00 |
| 22 x 22 x 14 | 22.00 | 14.00 | 16.50 | 15.00 |
| 22 x 22 x 12 | 22.00 | 12.75 | 16.50 | 14.625 |
| 22 x 22 x 10 | 22.00 | 10.75 | 16.50 | 14.125 |
| 24 x 24 x 22 | 24.00 | 22.00 | 17.00 | 17.00 |
| 24 x 24 x 20 | 24.00 | 20.00 | 17.00 | 17.00 |
| 24 x 24 x 18 | 24.00 | 18.00 | 17.00 | 16.50 |
| 24 x 24 x 16 | 24.00 | 16.00 | 17.00 | 16.00 |
| 24 x 24 x 14 | 24.00 | 14.00 | 17.00 | 16.00 |
| 24 x 24 x 12 | 24.00 | 12.75 | 17.00 | 15.625 |
| 24 x 24 x 10 | 24.00 | 10.75 | 17.00 | 15.125 |
| 26 x 26 x 24 | 26.00 | 24.00 | 19.50 | 19.00 |
| 26 x 26 x 22 | 26.00 | 22.00 | 19.50 | 18.50 |
| 26 x 26 x 20 | 26.00 | 20.00 | 19.50 | 18.00 |
| 26 x 26 x 18 | 26.00 | 18.00 | 19.50 | 17.50 |
| 26 x 26 x 16 | 26.00 | 16.00 | 19.50 | 17.00 |
| 26 x 26 x 14 | 26.00 | 14.00 | 19.50 | 17.00 |
| 26 x 26 x 12 | 26.00 | 12.75 | 19.50 | 16.625 |
| 28 x 28 x 26 | 28.00 | 26.00 | 20.50 | 20.50 |
| 28 x 28 x 24 | 28.00 | 24.00 | 20.50 | 20.00 |
| 28 x 28 x 22 | 28.00 | 22.00 | 20.50 | 19.50 |
| 28 x 28 x 20 | 28.00 | 20.00 | 20.50 | 19.00 |
| 28 x 28 x 18 | 28.00 | 18.00 | 20.50 | 18.50 |
| 28 x 28 x 16 | 28.00 | 16.00 | 20.50 | 18.00 |
| 28 x 28 x 14 | 28.00 | 14.00 | 20.50 | 18.00 |
| 28 x 28 x 12 | 28.00 | 12.75 | 20.50 | 17.625 |
| 30 x 30 x 28 | 30.00 | 28.00 | 22.00 | 21.50 |
| 30 x 30 x 26 | 30.00 | 26.00 | 22.00 | 21.50 |
| 30 x 30 x 24 | 30.00 | 24.00 | 22.00 | 21.00 |
| 30 x 30 x 22 | 30.00 | 22.00 | 22.00 | 20.50 |
| 30 x 30 x 20 | 30.00 | 20.00 | 22.00 | 20.00 |
| 30 x 30 x 18 | 30.00 | 18.00 | 22.00 | 19.50 |
| 30 x 30 x 16 | 30.00 | 16.00 | 22.00 | 19.00 |
| 30 x 30 x 14 | 30.00 | 14.00 | 22.00 | 19.00 |
| 30 x 30 x 12 | 30.00 | 12.75 | 22.00 | 18.625 |
| 30 x 30 x 10 | 30.00 | 10.75 | 22.00 | 18.125 |
| 32 x 32 x 30 | 32.00 | 30.00 | 23.50 | 23.00 |
| 32 x 32 x 28 | 32.00 | 28.00 | 23.50 | 22.50 |
| 32 x 32 x 26 | 32.00 | 26.00 | 23.50 | 22.50 |
| 32 x 32 x 24 | 32.00 | 24.00 | 23.50 | 22.00 |
| 32 x 32 x 22 | 32.00 | 22.00 | 23.50 | 21.50 |
| 32 x 32 x 20 | 32.00 | 20.00 | 23.50 | 21.00 |
| 32 x 32 x 18 | 32.00 | 18.00 | 23.50 | 20.50 |
| 32 x 32 x 16 | 32.00 | 16.00 | 23.50 | 20.00 |
| 32 x 32 x 14 | 32.00 | 14.00 | 23.50 | 20.00 |
| 34 x 34 x 32 | 34.00 | 32.00 | 25.00 | 24.50 |
| 34 x 34 x 30 | 34.00 | 30.00 | 25.00 | 24.00 |
| 34 x 34 x 28 | 34.00 | 28.00 | 25.00 | 23.50 |
| 34 x 34 x 26 | 34.00 | 26.00 | 25.00 | 23.50 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre - to - End | |
|---|---|---|---|---|
| | Run | Outlet | Run C | Outlet M |
| 34 x 34 x 24 | 34.00 | 24.00 | 25.00 | 23.00 |
| 34 x 34 x 22 | 34.00 | 22.00 | 25.00 | 22.50 |
| 34 x 34 x 20 | 34.00 | 20.00 | 25.00 | 22.00 |
| 34 x 34 x 18 | 34.00 | 18.00 | 25.00 | 21.50 |
| 34 x 34 x 16 | 34.00 | 16.00 | 25.00 | 21.00 |
| 36 x 36 x 34 | 36.00 | 34.00 | 26.50 | 26.00 |
| 36 x 36 x 32 | 36.00 | 32.00 | 26.50 | 25.50 |
| 36 x 36 x 30 | 36.00 | 30.00 | 26.50 | 25.00 |
| 36 x 36 x 28 | 36.00 | 28.00 | 26.50 | 24.50 |
| 36 x 36 x 26 | 36.00 | 26.00 | 26.50 | 24.50 |
| 36 x 36 x 24 | 36.00 | 24.00 | 26.50 | 24.00 |
| 36 x 36 x 22 | 36.00 | 22.00 | 26.50 | 23.50 |
| 36 x 36 x 20 | 36.00 | 20.00 | 26.50 | 23.00 |
| 36 x 36 x 18 | 36.00 | 18.00 | 26.50 | 22.50 |
| 36 x 36 x 16 | 36.00 | 16.00 | 26.50 | 22.00 |
| 38 x 38 x 36 | 38.00 | 36.00 | 28.00 | 28.00 |
| 38 x 38 x 34 | 38.00 | 34.00 | 28.00 | 27.50 |
| 38 x 38 x 32 | 38.00 | 32.00 | 28.00 | 27.00 |
| 38 x 38 x 30 | 38.00 | 30.00 | 28.00 | 26.50 |
| 38 x 38 x 28 | 38.00 | 28.00 | 28.00 | 25.50 |
| 38 x 38 x 26 | 38.00 | 26.00 | 28.00 | 25.50 |
| 38 x 38 x 24 | 38.00 | 24.00 | 28.00 | 25.00 |
| 38 x 38 x 22 | 38.00 | 22.00 | 28.00 | 24.50 |
| 38 x 38 x 20 | 38.00 | 20.00 | 28.00 | 24.00 |
| 38 x 38 x 18 | 38.00 | 18.00 | 28.00 | 23.50 |
| 40 x 40 x 38 | 40.00 | 38.00 | 29.50 | 29.50 |
| 40 x 40 x 36 | 40.00 | 36.00 | 29.50 | 29.00 |
| 40 x 40 x 34 | 40.00 | 34.00 | 29.50 | 28.50 |
| 40 x 40 x 32 | 40.00 | 32.00 | 29.50 | 28.00 |
| 40 x 40 x 30 | 40.00 | 30.00 | 29.50 | 27.50 |
| 40 x 40 x 28 | 40.00 | 28.00 | 29.50 | 26.50 |
| 40 x 40 x 26 | 40.00 | 26.00 | 29.50 | 26.50 |
| 40 x 40 x 24 | 40.00 | 24.00 | 29.50 | 26.00 |
| 40 x 40 x 22 | 40.00 | 22.00 | 29.50 | 25.50 |
| 40 x 40 x 20 | 40.00 | 20.00 | 29.50 | 25.00 |
| 40 x 40 x 18 | 40.00 | 18.00 | 29.50 | 24.50 |
| 42 x 42 x 40 | 42.00 | 40.00 | 30.00 | 28.00 |
| 42 x 42 x 38 | 42.00 | 38.00 | 30.00 | 28.00 |
| 42 x 42 x 36 | 42.00 | 36.00 | 30.00 | 28.00 |
| 42 x 42 x 34 | 42.00 | 34.00 | 30.00 | 28.00 |
| 42 x 42 x 32 | 42.00 | 32.00 | 30.00 | 28.00 |
| 42 x 42 x 30 | 42.00 | 30.00 | 30.00 | 28.00 |
| 42 x 42 x 28 | 42.00 | 28.00 | 30.00 | 27.50 |
| 42 x 42 x 26 | 42.00 | 26.00 | 30.00 | 27.50 |
| 42 x 42 x 24 | 42.00 | 24.00 | 30.00 | 26.00 |
| 42 x 42 x 22 | 42.00 | 22.00 | 30.00 | 26.00 |
| 42 x 42 x 20 | 42.00 | 20.00 | 30.00 | 26.00 |
| 42 x 42 x 18 | 42.00 | 18.00 | 30.00 | 25.50 |
| 42 x 42 x 16 | 42.00 | 16.00 | 30.00 | 25.00 |

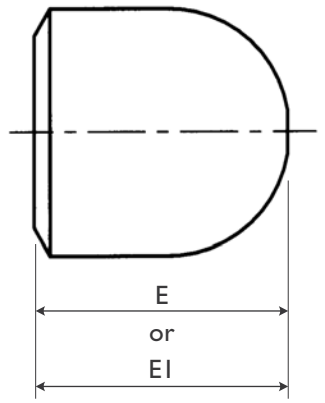
## 1 BUTT WELDED FITTINGS (ASME B16.9)

### Reducing Tees & Crosses

*All dimensions are in inches

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | Centre - to - End | |
|---|---|---|---|---|
| | Run | Outlet | Run C | Outlet M |
| 44 x 44 x 42 | 44.00 | 42.00 | 32.00 | 30.00 |
| 44 x 44 x 40 | 44.00 | 40.00 | 32.00 | 29.50 |
| 44 x 44 x 38 | 44.00 | 38.00 | 32.00 | 29.00 |
| 44 x 44 x 36 | 44.00 | 36.00 | 32.00 | 28.50 |
| 44 x 44 x 34 | 44.00 | 34.00 | 32.00 | 28.50 |
| 44 x 44 x 32 | 44.00 | 32.00 | 32.00 | 28.00 |
| 44 x 44 x 30 | 44.00 | 30.00 | 32.00 | 28.00 |
| 44 x 44 x 28 | 44.00 | 28.00 | 32.00 | 27.50 |
| 44 x 44 x 26 | 44.00 | 26.00 | 32.00 | 27.50 |
| 44 x 44 x 24 | 44.00 | 24.00 | 32.00 | 27.50 |
| 44 x 44 x 22 | 44.00 | 22.00 | 32.00 | 27.00 |
| 44 x 44 x 20 | 44.00 | 20.00 | 32.00 | 27.00 |
| 46 x 46 x 44 | 46.00 | 44.00 | 33.50 | 31.50 |
| 46 x 46 x 42 | 46.00 | 42.00 | 33.50 | 31.00 |
| 46 x 46 x 40 | 46.00 | 40.00 | 33.50 | 30.50 |
| 46 x 46 x 38 | 46.00 | 38.00 | 33.50 | 30.00 |
| 46 x 46 x 36 | 46.00 | 36.00 | 33.50 | 30.00 |
| 46 x 46 x 34 | 46.00 | 34.00 | 33.50 | 29.50 |
| 46 x 46 x 32 | 46.00 | 32.00 | 33.50 | 29.50 |
| 46 x 46 x 30 | 46.00 | 30.00 | 33.50 | 29.00 |
| 46 x 46 x 28 | 46.00 | 28.00 | 33.50 | 29.00 |
| 46 x 46 x 26 | 46.00 | 26.00 | 33.50 | 29.00 |
| 46 x 46 x 24 | 46.00 | 24.00 | 33.50 | 28.50 |
| 46 x 46 x 22 | 46.00 | 22.00 | 33.50 | 28.50 |
| 48 x 48 x 46 | 48.00 | 46.00 | 35.00 | 33.00 |
| 48 x 48 x 44 | 48.00 | 44.00 | 35.00 | 33.00 |
| 48 x 48 x 42 | 48.00 | 42.00 | 35.00 | 32.00 |
| 48 x 48 x 40 | 48.00 | 40.00 | 35.00 | 32.00 |
| 48 x 48 x 38 | 48.00 | 38.00 | 35.00 | 32.00 |
| 48 x 48 x 36 | 48.00 | 36.00 | 35.00 | 31.00 |
| 48 x 48 x 34 | 48.00 | 34.00 | 35.00 | 31.00 |
| 48 x 48 x 32 | 48.00 | 32.00 | 35.00 | 31.00 |
| 48 x 48 x 30 | 48.00 | 30.00 | 35.00 | 30.00 |
| 48 x 48 x 28 | 48.00 | 28.00 | 35.00 | 30.00 |
| 48 x 48 x 26 | 48.00 | 26.00 | 35.00 | 30.00 |
| 48 x 48 x 24 | 48.00 | 24.00 | 35.00 | 29.00 |
| 48 x 48 x 22 | 48.00 | 22.00 | 35.00 | 29.00 |

## 1 BUTT WELDED FITTINGS (ASME B16.9)




Caps

**General Notes:**
The shape of these Caps shall be ellipsoidal and shall conform to the shape requirements as given in the ASME Boiler & Pressure Vessel Code.

**Notes:**

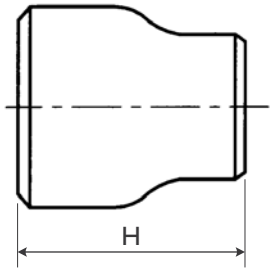
a. Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length E."

b. Length E1 applies for thickness greater than that given in column "Limiting Wall Thickness" for NPS 24 and smaller. For NPS 26 and larger, length E1 shall be by agreement between manufacturer and purchaser.

*All dimensions are in inches

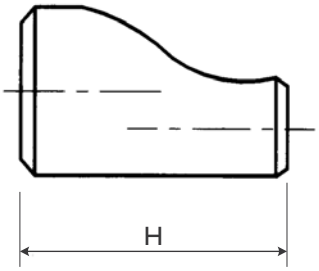
| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | Length E | Limiting Wall Thickness for Length E | Length E1 |
|---|---|---|---|---|
| ½ | 0.84 | 1.00 | 0.147 | 1.00 |
| ¾ | 1.05 | 1.00 | 0.154 | 1.00 |
| 1 | 1.315 | 1.50 | 0.179 | 1.50 |
| 1¼ | 1.66 | 1.50 | 0.191 | 1.50 |
| 1½ | 1.90 | 1.50 | 0.20 | 1.50 |
| 2 | 2.375 | 1.50 | 0.218 | 1.75 |
| 2½ | 2.875 | 1.50 | 0.276 | 2.00 |
| 3 | 3.50 | 2.00 | 0.30 | 2.50 |
| 3½ | 4.00 | 2.50 | 0.318 | 3.00 |
| 4 | 4.50 | 2.50 | 0.337 | 3.00 |
| 5 | 5.563 | 3.00 | 0.375 | 3.50 |
| 6 | 6.625 | 3.50 | 0.432 | 4.00 |
| 8 | 8.625 | 4.00 | 0.50 | 5.00 |
| 10 | 10.75 | 5.00 | 0.50 | 6.00 |
| 12 | 12.75 | 6.00 | 0.50 | 7.00 |
| 14 | 14.00 | 6.50 | 0.50 | 7.50 |
| 16 | 16.00 | 7.00 | 0.50 | 8.00 |
| 18 | 18.00 | 8.00 | 0.50 | 9.00 |
| 20 | 20.00 | 9.00 | 0.50 | 10.00 |
| 22 | 22.00 | 10.00 | 0.50 | 10.00 |
| 24 | 24.00 | 10.50 | 0.50 | 12.00 |
| 26 | 26.00 | 10.50 | - | - |
| 28 | 28.00 | 10.50 | - | - |
| 30 | 30.00 | 10.50 | - | - |
| 32 | 32.00 | 10.50 | - | - |
| 34 | 34.00 | 10.50 | - | - |
| 36 | 36.00 | 10.50 | - | - |
| 38 | 38.00 | 12.00 | - | - |
| 40 | 40.00 | 12.00 | - | - |
| 42 | 42.00 | 12.00 | - | - |
| 44 | 44.00 | 13.50 | - | - |
| 46 | 46.00 | 13.50 | - | - |
| 48 | 48.00 | 13.50 | - | - |

## 1 BUTT WELDED FITTINGS (ASME B16.9)




Concentric Reducers

Eccentric Reducers




*All dimensions are in inches

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | End - to - End H |
|---|---|---|---|
| | Large End | Small End | |
| ¾ x ⅜ | 1.05 | 0.675 | 1.50 |
| ¾ x ½ | 1.05 | 0.840 | 1.50 |
| 1 x ¾ | 1.32 | 1.05 | 2.00 |
| 1 x ½ | 1.32 | 0.84 | 2.00 |
| 1¼ x 1 | 1.66 | 1.315 | 2.00 |
| 1¼ x ¾ | 1.66 | 1.05 | 2.00 |
| 1¼ x ½ | 1.66 | 0.840 | 2.00 |
| 1½ x 1¼ | 1.90 | 1.660 | 2.50 |
| 1½ x 1 | 1.90 | 1.315 | 2.50 |
| 1½ x ¾ | 1.90 | 1.05 | 2.50 |
| 1½ x ½ | 1.90 | 0.84 | 2.50 |
| 2 x 1½ | 2.38 | 1.90 | 3.00 |
| 2 x 1¼ | 2.38 | 1.66 | 3.00 |
| 2 x 1 | 2.38 | 1.315 | 3.00 |
| 2 x ¾ | 2.38 | 1.050 | 3.00 |
| 2½ x 2 | 2.88 | 2.375 | 3.50 |
| 2½ x 1½ | 2.88 | 1.900 | 3.50 |
| 2½ x 1¼ | 2.88 | 1.660 | 3.50 |
| 2½ x 1 | 2.88 | 1.315 | 3.50 |
| 3 x 2½ | 3.50 | 2.875 | 3.50 |
| 3 x 2 | 3.50 | 2.375 | 3.50 |
| 3 x 1½ | 3.50 | 1.90 | 3.50 |
| 3 x 1¼ | 3.50 | 1.660 | 3.50 |
| 3½ x 3 | 4.00 | 3.50 | 4.00 |
| 3½ x 2½ | 4.00 | 2.875 | 4.00 |
| 3½ x 2 | 4.00 | 2.375 | 4.00 |
| 3½ x 1½ | 4.00 | 1.90 | 4.00 |
| 3½ x 1¼ | 4.00 | 1.66 | 4.00 |
| 4 x 3½ | 4.50 | 4.00 | 4.00 |
| 4 x 3 | 4.50 | 3.50 | 4.00 |
| 4 x 2½ | 4.50 | 2.875 | 4.00 |
| 4 x 2 | 4.50 | 2.375 | 4.00 |
| 4 x 1½ | 4.50 | 1.90 | 4.00 |
| 5 x 4 | 5.56 | 4.50 | 5.00 |
| 5 x 3½ | 5.56 | 4.00 | 5.00 |
| 5 x 3 | 5.56 | 3.50 | 5.00 |
| 5 x 2½ | 5.56 | 2.875 | 5.00 |
| 5 x 2 | 5.56 | 2.375 | 5.00 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | End - to - End H |
|---|---|---|---|
| | Large End | Small End | |
| 6 x 5 | 6.625 | 5.563 | 5.50 |
| 6 x 4 | 6.625 | 4.50 | 5.50 |
| 6 x 3½ | 6.625 | 4.00 | 5.50 |
| 6 x 3 | 6.625 | 3.50 | 5.50 |
| 6 x 2½ | 6.625 | 2.875 | 5.50 |
| 8 x 6 | 8.625 | 6.625 | 6.00 |
| 8 x 5 | 8.625 | 5.563 | 6.00 |
| 8 x 4 | 8.625 | 4.50 | 6.00 |
| 8 x 3½ | 8.625 | 4.00 | 6.00 |
| 10 x 8 | 10.75 | 8.625 | 7.00 |
| 10 x 6 | 10.75 | 6.625 | 7.00 |
| 10 x 5 | 10.75 | 5.563 | 7.00 |
| 10 x 4 | 10.75 | 4.50 | 7.00 |
| 12 x 10 | 12.75 | 10.75 | 8.00 |
| 12 x 8 | 12.75 | 8.625 | 8.00 |
| 12 x 6 | 12.75 | 6.625 | 8.00 |
| 12 x 5 | 12.75 | 5.563 | 8.00 |
| 14 x 12 | 14.00 | 12.75 | 13.00 |
| 14 x 10 | 14.00 | 10.75 | 13.00 |
| 14 x 8 | 14.00 | 8.625 | 13.00 |
| 14 x 6 | 14.00 | 6.625 | 13.00 |
| 16 x 14 | 16.00 | 14.00 | 14.00 |
| 16 x 12 | 16.00 | 12.75 | 14.00 |
| 16 x 10 | 16.00 | 10.75 | 14.00 |
| 16 x 8 | 16.00 | 8.625 | 14.00 |
| 18 x 16 | 18.00 | 16.00 | 15.00 |
| 18 x 14 | 18.00 | 14.00 | 15.00 |
| 18 x 12 | 18.00 | 12.75 | 15.00 |
| 18 x 10 | 18.00 | 10.75 | 15.00 |
| 20 x 18 | 20.00 | 18.00 | 20.00 |
| 20 x 16 | 20.00 | 16.00 | 20.00 |
| 20 x 14 | 20.00 | 14.00 | 20.00 |
| 20 x 12 | 20.00 | 12.75 | 20.00 |
| 22 x 20 | 22.00 | 20.00 | 20.00 |
| 22 x 18 | 22.00 | 18.00 | 20.00 |
| 22 x 16 | 22.00 | 16.00 | 20.00 |
| 22 x 14 | 22.00 | 14.00 | 20.00 |

## 1 BUTT WELDED FITTINGS (ASME B16.9)

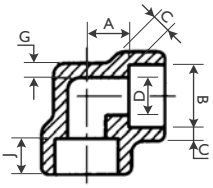
### Concentric & Eccentric Reducers

*All dimensions are in inches

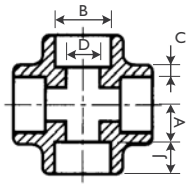
| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | End - to - End H |
|---|---|---|---|
| | Large End | Small End | |
| 24 x 22 | 24.00 | 22.00 | 20.00 |
| 24 x 20 | 24.00 | 20.00 | 20.00 |
| 24 x 18 | 24.00 | 18.00 | 20.00 |
| 24 x 16 | 24.00 | 16.00 | 20.00 |
| 26 x 24 | 26.00 | 24.00 | 24.00 |
| 26 x 22 | 26.00 | 22.00 | 24.00 |
| 26 x 20 | 26.00 | 20.00 | 24.00 |
| 26 x 18 | 26.00 | 18.00 | 24.00 |
| 28 x 26 | 28.00 | 26.00 | 24.00 |
| 28 x 24 | 28.00 | 24.00 | 24.00 |
| 28 x 20 | 28.00 | 20.00 | 24.00 |
| 28 x 18 | 28.00 | 18.00 | 24.00 |
| 30 x 28 | 30.00 | 28.00 | 24.00 |
| 30 x 26 | 30.00 | 26.00 | 24.00 |
| 30 x 24 | 30.00 | 24.00 | 24.00 |
| 30 x 20 | 30.00 | 20.00 | 24.00 |
| 32 x 30 | 32.00 | 30.00 | 24.00 |
| 32 x 28 | 32.00 | 28.00 | 24.00 |
| 32 x 26 | 32.00 | 26.00 | 24.00 |
| 32 x 24 | 32.00 | 24.00 | 24.00 |
| 34 x 32 | 34.00 | 32.00 | 24.00 |
| 34 x 30 | 34.00 | 30.00 | 24.00 |
| 34 x 26 | 34.00 | 26.00 | 24.00 |
| 34 x 24 | 34.00 | 24.00 | 24.00 |
| 36 x 34 | 36.00 | 34.00 | 24.00 |
| 36 x 32 | 36.00 | 32.00 | 24.00 |
| 36 x 30 | 36.00 | 30.00 | 24.00 |
| 36 x 26 | 36.00 | 26.00 | 24.00 |
| 36 x 24 | 36.00 | 24.00 | 24.00 |

| Nominal Pipe Size (NPS) | Outside Diameter at Bevel D | | End - to - End H |
|---|---|---|---|
| | Large End | Small End | |
| 38 x 36 | 38.00 | 36.00 | 24.00 |
| 38 x 34 | 38.00 | 34.00 | 24.00 |
| 38 x 32 | 38.00 | 32.00 | 24.00 |
| 38 x 30 | 38.00 | 30.00 | 24.00 |
| 38 x 28 | 38.00 | 28.00 | 24.00 |
| 38 x 26 | 38.00 | 26.00 | 24.00 |
| 40 x 38 | 40.00 | 38.00 | 24.00 |
| 40 x 36 | 40.00 | 36.00 | 24.00 |
| 40 x 34 | 40.00 | 3.00 | 24.00 |
| 40 x 32 | 40.00 | 32.00 | 24.00 |
| 40 x 30 | 40.00 | 30.00 | 24.00 |
| 42 x 40 | 42.00 | 40.00 | 24.00 |
| 42 x 38 | 42.00 | 38.00 | 24.00 |
| 42 x 36 | 42.00 | 36.00 | 24.00 |
| 42 x 34 | 42.00 | 34.00 | 24.00 |
| 42 x 32 | 42.00 | 32.00 | 24.00 |
| 42 x 30 | 42.00 | 30.00 | 24.00 |
| 44 x 42 | 44.00 | 42.00 | 24.00 |
| 44 x 40 | 44.00 | 40.00 | 24.00 |
| 44 x 38 | 44.00 | 38.00 | 24.00 |
| 44 x 36 | 44.00 | 36.00 | 24.00 |
| 46 x 44 | 46.00 | 44.00 | 28.00 |
| 46 x 42 | 46.00 | 42.00 | 28.00 |
| 46 x 40 | 46.00 | 40.00 | 28.00 |
| 46 x 38 | 46.00 | 38.00 | 28.00 |
| 48 x 46 | 48.00 | 46.00 | 28.00 |
| 48 x 44 | 48.00 | 44.00 | 28.00 |
| 48 x 42 | 48.00 | 42.00 | 28.00 |
| 48 x 40 | 48.00 | 40.00 | 28.00 |

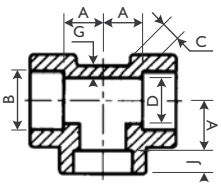
# SOCKET WELDING FITTINGS 7



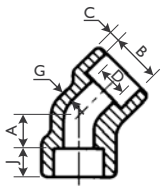

90° Elbow
(Fig. 1)



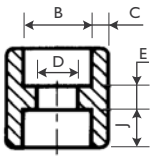

Cross
(Fig. 2)



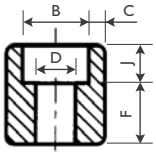

Tee
(Fig. 3)



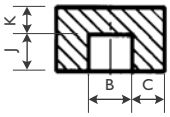

45° Elbow
(Fig. 4)




Coupling
(Fig. 5)




Half Coupling
(Fig. 6)

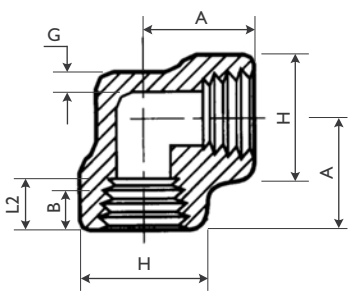



Cap
(Fig. 7)

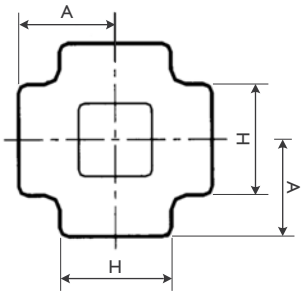
*All dimensions are in inches

## 2 SOCKET-WELDING FITTINGS (As per ANSI/ASME B16.11)

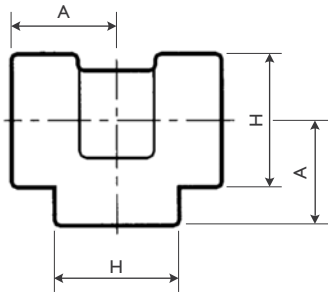
| NOM. PIPE SIZE:- | | | ⅛ | ¼ | ⅜ | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B (Socket Bore Dia.) | | | 0.430<br>0.420 | 0.565<br>0.555 | 0.700<br>0.690 | 0.865<br>0.855 | 1.075<br>1.065 | 1.340<br>1.330 | 1.685<br>1.675 | 1.925<br>1.915 | 2.416<br>2.406 | 2.921<br>2.906 | 3.590<br>3.535 | 4.560<br>4.545 |
| D (Bore Dia) (Class Designation) | 3000 | | 0.299<br>0.239 | 0.394<br>0.334 | 0.523<br>0.463 | 0.652<br>0.592 | 0.854<br>0.794 | 1.079<br>1.019 | 1.410<br>1.350 | 1.640<br>1.580 | 2.097<br>2.037 | 2.529<br>2.409 | 3.128<br>3.008 | 4.086<br>3.966 |
| | 6000 | | 0.189<br>0.126 | 0.280<br>0.220 | 0.389<br>0.329 | 0.494<br>0.434 | 0.642<br>0.582 | 0.845<br>0.785 | 1.190<br>1.130 | 1.368<br>1.308 | 1.717<br>1.657 | | | |
| | 9000 | | | | | 0.282<br>0.222 | 0.464<br>0.404 | 0.629<br>0.569 | 0.926<br>0.866 | 1.130<br>1.070 | 1.533<br>1.473 | | | |
| C (Socket Wall Thickness) (Class Designation) | 3000 | Ave | 0.125 | 0.149 | 0.158 | 0.184 | 0.193 | 0.224 | 0.239 | 0.250 | 0.273 | 0.345 | 0.375 | 0.421 |
| | | Min | 0.125 | 0.130 | 0.138 | 0.161 | 0.168 | 0.196 | 0.208 | 0.218 | 0.238 | 0.302 | 0.327 | 0.368 |
| | 6000 | Ave | 0.156 | 0.181 | 0.198 | 0.235 | 0.274 | 0.312 | 0.312 | 0.351 | 0.430 | | | |
| | | Min | 0.135 | 0.158 | 0.172 | 0.204 | 0.238 | 0.273 | 0.273 | 0.307 | 0.374 | | | |
| | 9000 | Ave | | | | 0.368 | 0.385 | 0.448 | 0.478 | 0.500 | 0.545 | | | |
| | | Min | | | | 0.322 | 0.337 | 0.682 | 0.418 | 0.438 | 0.477 | | | |
| G (Body Wall) (Class Designation) | 3000 | Min | 0.095 | 0.119 | 0.126 | 0.147 | 0.154 | 0.179 | 0.191 | 0.200 | 0.218 | 0.276 | 0.300 | 0.337 |
| | 6000 | Min | 0.124 | 0.145 | 0.158 | 0.188 | 0.219 | 0.250 | 0.250 | 0.281 | 0.344 | | | |
| | 9000 | Min | | | | 0.294 | 0.308 | 0.358 | 0.382 | 0.400 | 0.436 | | | |
| J (Depth of Socket) | | Min | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.50 | 0.62 | 0.62 | 0.62 | 0.75 |
| A (Centre to Bottom of Socket) (90° Elbows, Tees & Crosses) (Class Designation) | 3000 | | 0.44 | 0.44 | 0.53 | 0.62 | 0.75 | 0.88 | 1.06 | 1.25 | 1.50 | 1.62 | 2.25 | 2.62 |
| | 6000 | | 0.44 | 0.53 | 0.62 | 0.75 | 0.88 | 1.06 | 1.25 | 1.50 | 1.62 | | | |
| | 9000 | | | | | 1.00 | 1.12 | 1.25 | 1.38 | 1.50 | 2.12 | | | |
| A (Centre to Bottom of Socket) (45° Elbows) (Class Designation) | 3000 | | 0.31 | 0.31 | 0.31 | 0.44 | 0.50 | 0.56 | 0.69 | 0.81 | 1.00 | 1.12 | 1.25 | 1.62 |
| | 6000 | | 0.31 | 0.31 | 0.44 | 0.50 | 0.56 | 0.69 | 0.81 | 1.00 | 1.12 | | | |
| | 9000 | | | | | 0.62 | 0.75 | 0.81 | 0.88 | 1.00 | 1.12 | | | |
| E (Coupling) | | | 0.25 | 0.25 | 0.25 | 0.38 | 0.38 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.75 | 0.75 |
| F (Half Coupling) | | | 0.62 | 0.62 | 0.69 | 0.88 | 0.94 | 1.12 | 1.19 | 1.25 | 1.62 | 1.69 | 1.75 | 1.88 |
| TOLERANCE ± | A | | 0.03 | 0.03 | 0.06 | 0.06 | 0.06 | 0.08 | 0.08 | 0.08 | 0.08 | 0.10 | 0.10 | 0.10 |
| | E | | 0.06 | 0.06 | 0.12 | 0.12 | 0.12 | 0.16 | 0.16 | 0.16 | 0.16 | 0.20 | 0.20 | 0.20 |
| | F | | 0.03 | 0.03 | 0.06 | 0.06 | 0.06 | 0.08 | 0.08 | 0.08 | 0.08 | 0.10 | 0.10 | 0.10 |
| K (Min) (End Wall Thickness) (Class Designation) | 3000 | | 0.19 | 0.19 | 0.19 | 0.25 | 0.25 | 0.8 | 0.38 | 0.44 | 0.50 | 0.62 | 0.75 | 0.88 |
| | 6000 | | 0.25 | 0.25 | 0.25 | 0.31 | 0.31 | 0.44 | 0.44 | 0.50 | 0.62 | 0.75 | 0.88 | 1.12 |
| | 9000 | | | | | 0.44 | 0.50 | 0.56 | 0.56 | 0.62 | 0.75 | | | |



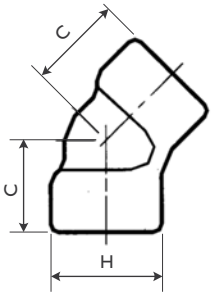

90° Elbow
(Fig. 1)




Cross
(Fig. 2)




Tee
(Fig. 3)

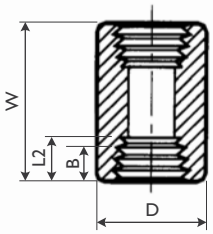



45° Elbow
(Fig. 4)

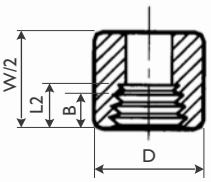
*All dimensions are in inches

## 3 ELBOWS, TEES & CROSSES (As per ANSI/ASME B16.11)

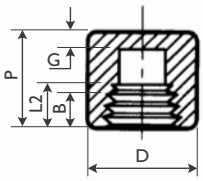
| NOM. PIPE SIZE:- | | ⅛ | ¼ | ⅜ | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** (Centre to End) (Elbows, Tees & Crosses) | 2000 | 0.81 | 0.81 | 0.97 | 1.12 | 1.31 | 1.50 | 1.75 | 2 | 2.38 | 3.00 | 3.38 | 4.19 |
| | 3000 | 0.81 | 0.97 | 1.12 | 1.31 | 1.50 | 1.75 | 2.00 | 2.38 | 2.50 | 3.25 | 3.75 | 4.50 |
| | 6000 | 0.97 | 1.12 | 1.31 | 1.50 | 1.75 | 2.00 | 2.38 | 2.50 | 3.25 | 3.75 | 4.19 | 4.50 |
| **C** (Centre to End) (45° Elbow) | 2000 | 0.69 | 0.69 | 0.75 | 0.88 | 1.00 | 1.12 | 1.31 | 1.38 | 1.69 | 2.06 | 2.50 | 3.12 |
| | 3000 | 0.69 | 0.75 | 0.88 | 1.00 | 1.12 | 1.31 | 1.38 | 1.69 | 1.72 | 2.06 | 2.50 | 3.12 |
| | 6000 | 0.75 | 0.88 | 1.00 | 1.12 | 1.31 | 1.38 | 1.69 | 1.72 | 2.06 | 2.50 | 3.12 | 3.12 |
| **H** (O.D.) | 2000 | 0.88 | 0.88 | 1.00 | 1.31 | 1.50 | 1.81 | 2.19 | 2.44 | 2.97 | 3.62 | 4.31 | 5.75 |
| | 3000 | 0.88 | 1.00 | 1.31 | 1.50 | 1.81 | 2.19 | 2.44 | 2.97 | 3.31 | 4.00 | 4.75 | 6.00 |
| | 6000 | 1.00 | 1.31 | 1.50 | 1.81 | 2.19 | 2.44 | 2.97 | 3.31 | 4.00 | 4.75 | 5.75 | 6.00 |
| **G** (Min. Wall Thickness) | 2000 | 0.125 | 0.125 | 0.125 | 0.125 | 0.125 | 0.145 | 0.153 | 0.158 | 0.168 | 0.221 | 0.236 | 0.258 |
| | 3000 | 0.125 | 0.130 | 0.138 | 0.161 | 0.170 | 0.196 | 0.208 | 0.219 | 0.281 | 0.301 | 0.348 | 0.440 |
| | 6000 | 0.250 | 0.260 | 0.275 | 0.321 | 0.336 | 0.391 | 0.417 | 0.436 | 0.476 | 0.602 | 0.655 | 0.735 |
| **B (Minimum Length of Internal Thread)** | | 0.25 | 0.32 | 0.36 | 0.43 | 0.50 | 0.58 | 0.67 | 0.70 | 0.75 | 0.93 | 1.02 | 1.09 |
| **L2 (Effective Length of External Thread)** | | 0.264 | 0.402 | 0.408 | 0.534 | 0.546 | 0.683 | 0.707 | 0.724 | 0.757 | 1.138 | 1.20 | 1.30 |



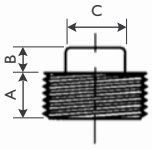

Coupling
(Fig. 1)



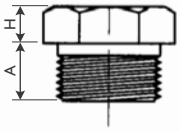

Half Coupling
(Fig. 2)



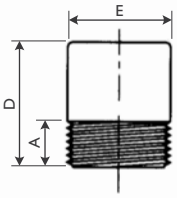

Cap
(Fig. 3)



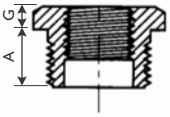

Square Head Plug
(Fig. 4)



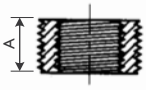

Hex Head Plug
(Fig. 4)




Round Head Plug
(Fig. 6)




Hex Head Bushing
(Fig. 7)




Flush Bushing
(Fig. 8)

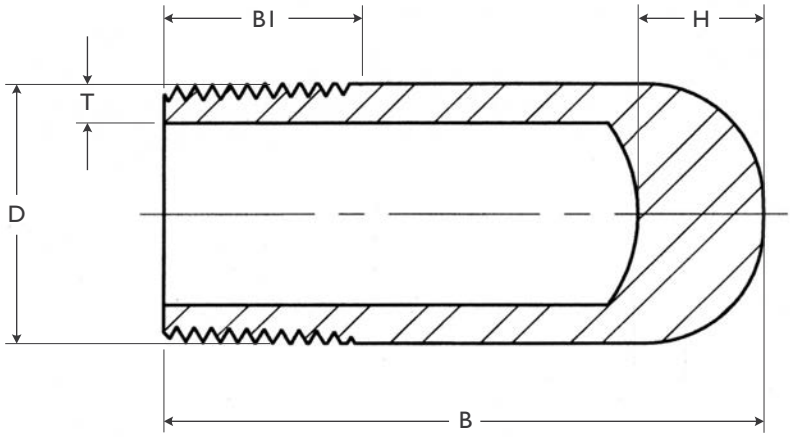
*All dimensions are in inches

## 4 COUPLINGS AND CAPS (As per ANSI/ASME B16.11)

| NOM. PIPE SIZE:- | | ⅛ | ¼ | ⅜ | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W (End to End) COUPLING | 3000 | 1.25 | 1.38 | 1.50 | 1.88 | 2.00 | 2.38 | 2.62 | 3.12 | 3.38 | 3.62 | 4.25 | 4.75 |
| | 6000 | | | | | | | | | | | | |
| P (End to End) CAP | 3000 | 0.75 | 1.00 | 1.00 | 1.25 | 1.44 | 1.62 | 1.75 | 1.75 | 1.88 | 2.38 | 2.56 | 2.69 |
| | 6000 | | 1.06 | 1.06 | 1.31 | 1.50 | 1.69 | 1.81 | 1.88 | 2.00 | 2.50 | 2.69 | 2.94 |
| D (Outside Diameter) | 3000 | 0.62 | 0.75 | 0.88 | 1.12 | 1.38 | 1.75 | 2.25 | 2.50 | 3.00 | 3.62 | 4.25 | 5.50 |
| | 6000 | 0.88 | 1.00 | 1.25 | 1.50 | 1.75 | 2.25 | 2.50 | 3.00 | 3.62 | 4.25 | 5.00 | 6.25 |
| G (Min. End Wall Thickness) | 3000 | 0.19 | 0.19 | 0.19 | 0.25 | 0.25 | 0.38 | 0.38 | 0.44 | 0.50 | 0.62 | 0.75 | 0.88 |
| | 6000 | | 0.25 | 0.25 | 0.31 | 0.31 | 0.44 | 0.44 | 0.50 | 0.62 | 0.75 | 0.88 | 1.12 |
| B (Minimum Length of Internal Thread) | | 0.25 | 0.32 | 0.36 | 0.43 | 0.50 | 0.58 | 0.67 | 0.70 | 0.75 | 0.93 | 1.02 | 1.09 |
| L2 (Effective Length of External Thread) | | 0.264 | 0.402 | 0.408 | 0.534 | 0.546 | 0.683 | 0.707 | 0.724 | 0.757 | 1.138 | 1.20 | 1.30 |

## 5 PLUGS AND BUSHINGS (As per ANSI/ASME B16.11)

| NOM. PIPE SIZE:- | | ⅛ | ¼ | ⅜ | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A (Length Minimum) | | 0.38 | 0.44 | 0.50 | 0.56 | 0.62 | 0.75 | 0.81 | 0.81 | 0.88 | 1.06 | 1.12 | 1.25 |
| PLUGS (SQUARE HEAD) | B (Height of Sq.)(Min) | 0.25 | 0.25 | 0.31 | 0.38 | 0.44 | 0.50 | 0.56 | 0.62 | 0.69 | 0.75 | 0.81 | 1.00 |
| | C (Width Flats)(Min) | 0.28 | 0.38 | 0.44 | 0.56 | 0.62 | 0.81 | 0.94 | 1.12 | 1.31 | 1.50 | 1.69 | 2.50 |
| PLUGS (ROUND HEAD) | E (Nominal Dia of Hand) | 0.41 | 0.53 | 0.69 | 0.84 | 1.06 | 1.31 | 1.69 | 1.91 | 2.38 | 2.88 | 3.50 | 4.50 |
| | D (Length)(Min) | 1.38 | 1.62 | 1.62 | 1.75 | 1.75 | 2.00 | 2.00 | 2.00 | 2.50 | 2.75 | 2.75 | 3.00 |
| Hex Plugs & Bushings | F (Width Flats, not shown) | 0.44 | 0.62 | 0.69 | 0.88 | 1.06 | 1.38 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.60 |
| | G (Bushing) | | 0.12 | 0.16 | 0.19 | 0.22 | 0.25 | 0.28 | 0.31 | 0.34 | 0.38 | 0.41 | 0.50 |
| | H (Plug) | 0.25 | 0.25 | 0.31 | 0.31 | 0.38 | 0.38 | 0.56 | 0.62 | 0.69 | 0.75 | 0.81 | 1.00 |



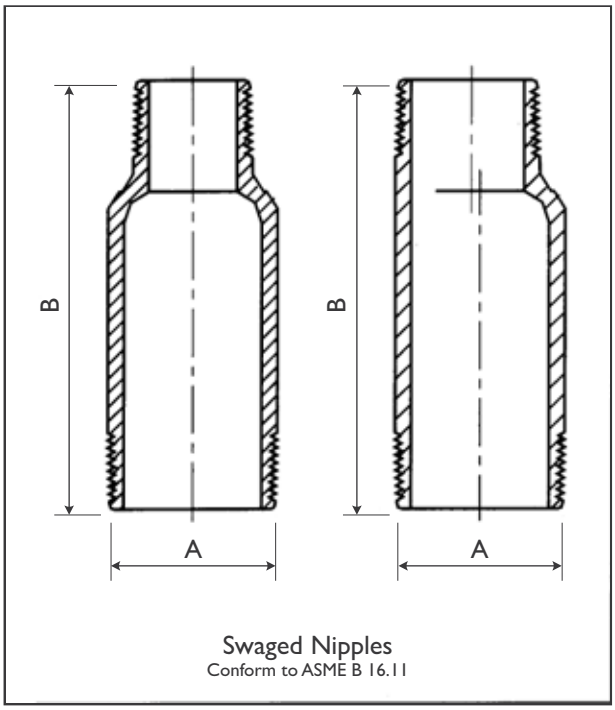

*All dimensions are in inches

## 6 BULL PLUGS (As per MSS-SP-95-2000)

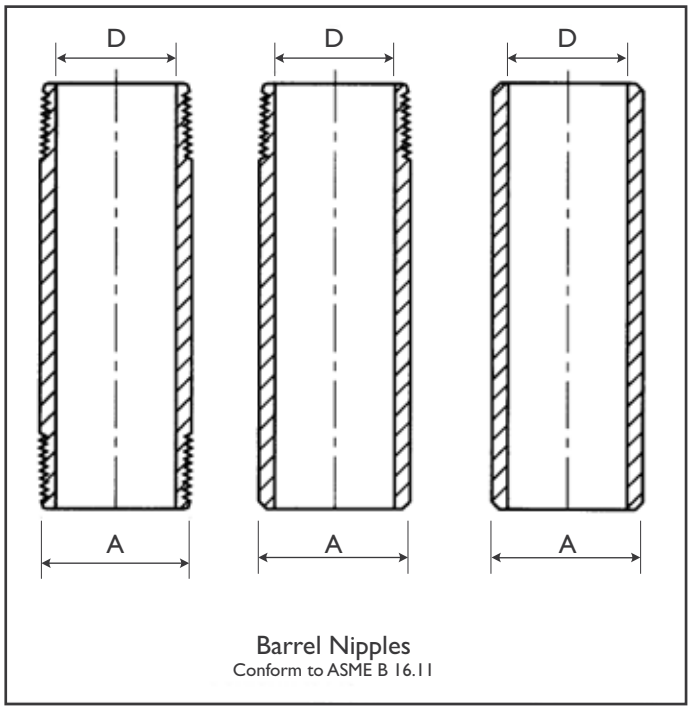
| Size (in) | D | B | B1 | T Min | | | | H |
|---|---|---|---|---|---|---|---|---|
| | | | | Sch 40 (STD) | Sch 80 (XS) | Sch 160 | XXSS | |
| ⅛ | 10.3 | 34 | 9.5 | 1.73 | 2.41 | 3.20 | 4.8 | 14 |
| ¼ | 13.7 | 34 | 11.0 | 2.24 | 3.02 | 3.70 | 6.1 | 14 |
| ⅜ | 17.1 | 57 | 12.5 | 2.31 | 3.20 | 4.00 | 6.4 | 14 |
| ½ | 21.3 | 64 | 14.5 | 2.77 | 3.73 | 4.78 | 7.47 | 14 |
| ¾ | 26.7 | 70 | 16.0 | 2.87 | 3.91 | 5.56 | 7.82 | 18 |
| 1 | 33.4 | 6 | 19.0 | 3.38 | 4.56 | 6.35 | 9.09 | 18 |
| 1¼ | 42.2 | 83 | 20.5 | 3.56 | 4.85 | 6.35 | 9.70 | 18 |
| 1½ | 48.3 | 89 | 20.5 | 3.68 | 5.05 | 7.14 | 10.15 | 18 |
| 2 | 60.3 | 102 | 22.0 | 3.91 | 5.54 | 8.74 | 11.07 | 20 |
| 2½ | 73.0 | 127 | 27.0 | 5.16 | 7.01 | 9.53 | 14.02 | 20 |
| 3 | 88.9 | 152 | 28.5 | 5.49 | 7.60 | 11.13 | 15.24 | 20 |
| 4 | 114.3 | 178 | 32.0 | 6.35 | 8.08 | 13.49 | 17.12 | 20 |

(1) Thread in Accordance with ASME B1.20.1
(2) Wall Thickness (T Min.) in Accordance with ASME B36.10M

Threaded and tapped ½" on request.
API EUE etc. 2⅜", 2⅞", 3½" etc also available, see Page 59.




Swaged Nipples
Conform to ASME B 16.11




Barrel Nipples
Conform to ASME B 16.11

### Schedule 40

| Size | DIMENSION | |
|---|---|---|
| | A | D |
| ⅛ | 13/32 | .268 |
| ¼ | 35/64 | .362 |
| ⅜ | 43/64 | .492 |
| ½ | 27/32 | .622 |
| ¾ | 1 1/16 | .823 |
| 1 | 1 5/16 | 1.047 |
| 1¼ | 1 11/16 | 1.382 |
| 1½ | 1 29/32 | 1.611 |
| 2 | 2⅜ | 2.067 |
| 2½ | 2⅞ | 2.469 |
| 3 | 3½ | 3.067 |
| 4 | 4½ | 4.028 |

### Schedule 80

| Size | DIMENSION | |
|---|---|---|
| | A | D |
| ⅛ | 13/32 | .217 |
| ¼ | 35/64 | .303 |
| ⅜ | 43/64 | .422 |
| ½ | 27/32 | .548 |
| ¾ | 1 1/16 | .741 |
| 1 | 1 5/16 | .957 |
| 1¼ | 1 11/16 | 1.280 |
| 1½ | 1 29/32 | 1.500 |
| 2 | 2⅜ | 1.941 |
| 2½ | 2⅞ | 2.323 |
| 3 | 3½ | 2.902 |
| 4 | 4½ | 3.827 |

### Schedule XXS

| Size | DIMENSION | |
|---|---|---|
| | A | D |
| ⅛ | 13/32 | - |
| ¼ | 35/64 | - |
| ⅜ | 43/64 | - |
| ½ | 27/32 | .331 |
| ¾ | 1 1/16 | .434 |
| 1 | 1 5/16 | .599 |
| 1¼ | 1 11/16 | .898 |
| 1½ | 1 29/32 | 1.099 |
| 2 | 2⅜ | 1.504 |
| 2½ | 2⅞ | 1.772 |
| 3 | 3½ | 2.999 |
| 4 | 4½ | 3.154 |

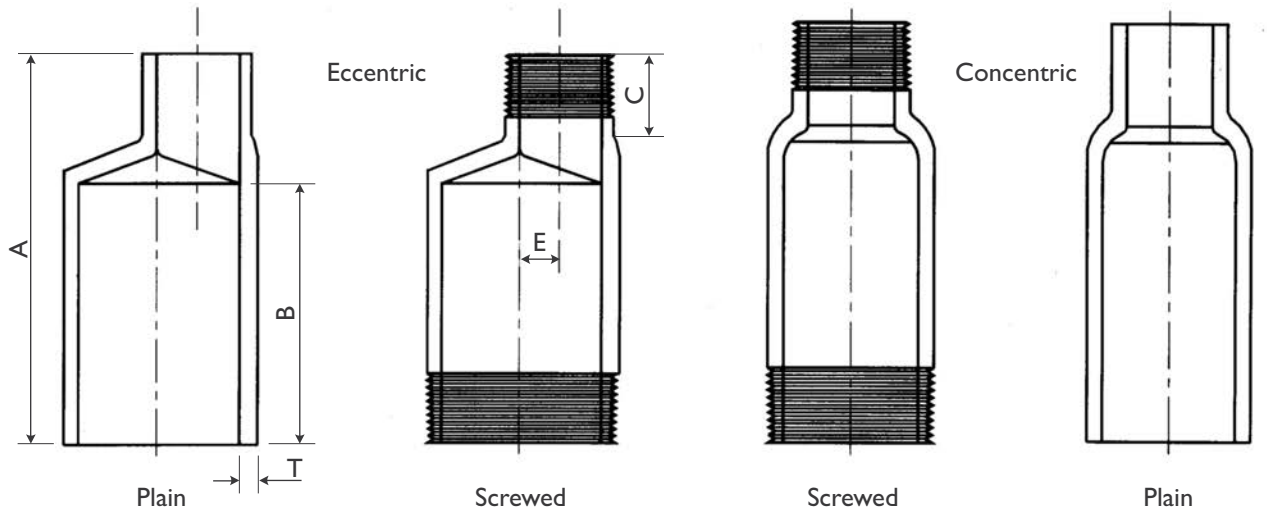
| Size | DIMENSION |
|---|---|
| | B |
| ¼ | 2 |
| ⅜ | 2.5 |
| ½ | 2¾ |
| ¾ | 3 |
| 1 | 3½ |
| 1¼ | 4 |
| 1½ | 4½ |
| 2 | 6 |
| 2½ | 6 |
| 3 | 6 |
| 4 | 6 |
| - | - |

**Note:**

a. All dimensions are in inches.

b. Other sizes and threads as per API, ASME can be provided on request. Other lengths available.

Also see nipples on Page 60.




Swaged Nipples
Conform to BS 3799

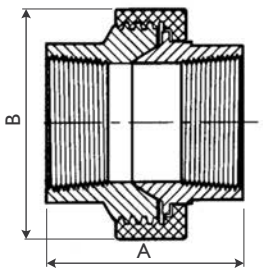
| Nominal Size | | Parallel Length | | | Eccentricity E | | Thickness T and t* | | |
|---|---|---|---|---|---|---|---|---|---|
| | | (min) A | (min) B | (min) C | 3000 PSI | 6000 PSI | Screwed/Plain 3000 PSI | Plain 6000 PSI | Screwed 6000 PSI |
| in | mm | mm | mm | mm | mm | mm | | | |
| ⅜ x ¼ | (10x8) | 76 | 48 | 16 | 1.6 | - | | - | - |
| ½ x ⅜ | (15x10) | 89 | 56 | 19 | 1.6 | - | | - | - |
| ½ x ¼ | (15x8) | 89 | 56 | 19 | 3.2 | - | | - | - |
| ¾ x ½ | (20x15) | 95 | 57 | 22 | 2.4 | 2.4 | | Schedule 160 | XXS |
| ¾ x ⅜ | (20x10) | 95 | 57 | 22 | 4.0 | - | | - | - |
| 1 x ¾ | (25x20) | 102 | 64 | 22 | 2.8 | 2.0 | | | |
| 1 x ⅛ | (25x15) | 102 | 64 | 22 | 5.2 | 4.4 | | | |
| 1½ x 1 | (40x25) | 114 | 70 | 25 | 6.7 | 6.4 | | | |
| 1½ x ¾ | (40x20) | 114 | 70 | 25 | 9.5 | 8.3 | | | |
| 1½ x ½ | (40x15) | 114 | 70 | 25 | 11.9 | 10.7 | Schedule 80 | | |
| 2 x 1½ | (50x40) | 165 | 108 | 29 | 5.6 | 5.2 | | | |
| 2 x 1 | (50x25) | 165 | 108 | 29 | 12.7 | 11.5 | | | |
| 2 x ¾ | (50x20) | 165 | 108 | 29 | 15.5 | 13.5 | | | |
| 2 x ½ | (50x15) | 165 | 108 | 29 | 17.5 | 15.9 | | Schedule 160 | Double extra strong |
| 2½ x 2 | (65x50) | 178 | 114 | 32 | 4.8 | 3.2 | | | |
| 2½ x 1½ | (65x40) | 178 | 114 | 32 | 10.3 | 8.3 | | | |
| 3 x 2½ | (80x65) | 203 | 133 | 41 | 7.1 | 6.7 | | | |
| 3 x 2 | (80x50) | 203 | 133 | 41 | 11.9 | 9.9 | | | |
| 3 x 1½ | (80x40) | 203 | 133 | 41 | 17.5 | 15.5 | | | |
| 4 x 3 | (100x80) | 229 | 140 | 48 | 11.9 | 10.7 | | | |
| 4 x 2½ | (100x65) | 229 | 140 | 48 | 19.1 | 17.5 | | | |

**Note:**

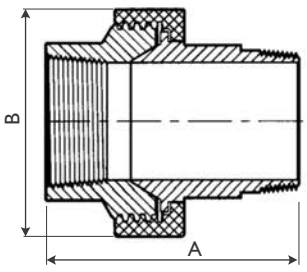
a. (*) Thickness and outside diameters of swage nipples shall correspond to those of the appropriate nominal pipe size.

b. Other sizes and threads as per API, ASME and BS can be supplied.

(SCREWED END) Conform to ASME B 16.11

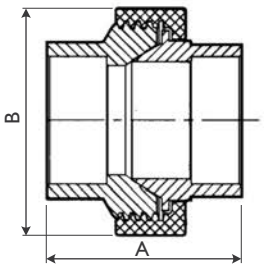



Union Female - Female

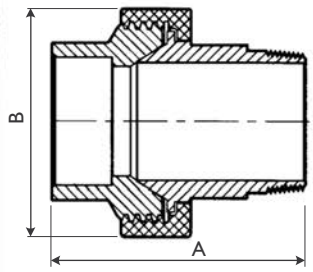



Union Male - Female

(SOCKET WELD END) Conform to ASME B 16.11




Union Female - Female




Union Male - Female

**Rating 3000 LBS**

| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 1⅞ | 1⁷⁄₁₆ |
| ¼ | 1⅞ | 1⁷⁄₁₆ |
| ⅜ | 2¹⁄₃₂ | 1¹³⁄₁₆ |
| ½ | 2³⁄₁₆ | 1⅞ |
| ¾ | 2⁵⁄₁₆ | 2³⁄₁₆ |
| 1 | 2⁷⁄₁₆ | 2¹¹⁄₁₆ |
| 1¼ | 2²⁵⁄₃₂ | 3⅝₃₂ |
| 1½ | 3⅛ | 3⅜ |
| 2 | 3⁹⁄₁₆ | 4⅛ |

**Rating 3000 LBS**

| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 2⁵⁄₁₆ | 1⁷⁄₁₆ |
| ¼ | 2½ | 1⁷⁄₁₆ |
| ⅜ | 2²¹⁄₃₂ | 1¹³⁄₁₆ |
| ½ | 2³¹⁄₃₂ | 1⅞ |
| ¾ | 3⅝₃₂ | 2³⁄₁₆ |
| 1 | 3⁷⁄₁₆ | 2¹¹⁄₁₆ |
| 1¼ | 3¹³⁄₁₆ | 3⅝₃₂ |
| 1½ | 4⅛ | 3⅜ |
| 2 | 4⅝ | 4⅛ |

**Rating 3000 LBS**

| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 1⅞ | 1⁷⁄₁₆ |
| ¼ | 1⅞ | 1⁷⁄₁₆ |
| ⅜ | 2¹⁄₃₂ | 1¹³⁄₁₆ |
| ½ | 2³⁄₁₆ | 1⅞ |
| ¾ | 2⁵⁄₁₆ | 2³⁄₁₆ |
| 1 | 2⁷⁄₁₆ | 2¹¹⁄₁₆ |
| 1¼ | 2²⁵⁄₃₂ | 3⅝₃₂ |
| 1½ | 3⅛ | 3⅜ |
| 2 | 3⁹⁄₁₆ | 4⅛ |

**Rating 3000 LBS**

| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 2⁵⁄₁₆ | 1⁷⁄₁₆ |
| ¼ | 2½ | 1⁷⁄₁₆ |
| ⅜ | 2²¹⁄₃₂ | 1¹³⁄₁₆ |
| ½ | 2³¹⁄₃₂ | 1⅞ |
| ¾ | 3⅝₃₂ | 2³⁄₁₆ |
| 1 | 3⁷⁄₁₆ | 2¹¹⁄₁₆ |
| 1¼ | 3¹³⁄₁₆ | 3⅝₃₂ |
| 1½ | 4⅛ | 3⅜ |
| 2 | 4⅝ | 4⅛ |

**Rating 6000 LBS**

| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 2¹⁄₃₂ | 1¹³⁄₁₆ |
| ¼ | 2³⁄₁₆ | 1⅞ |
| ⅜ | 2⁵⁄₁₆ | 2³⁄₁₆ |
| ½ | 2⁷⁄₁₆ | 2¹¹⁄₁₆ |
| ¾ | 2²⁵⁄₃₂ | 3⅝₃₂ |
| 1 | 3⅛ | 3⅜ |
| 1¼ | 3⁹⁄₁₆ | 4⅛ |
| 1½ | - | - |

**Rating 6000 LBS**

| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 2²¹⁄₃₂ | 1¹³⁄₁₆ |
| ¼ | 2³¹⁄₃₂ | 1⅞ |
| ⅜ | 3⅝₃₂ | 2³⁄₁₆ |
| ½ | 3⁷⁄₁₆ | 2¹¹⁄₁₆ |
| ¾ | 3¹³⁄₁₆ | 3⅝₃₂ |
| 1 | 4⅛ | 3⅜ |
| 1¼ | 4⅝ | 4⅛ |
| 1½ | - | - |

**Rating 6000 LBS**

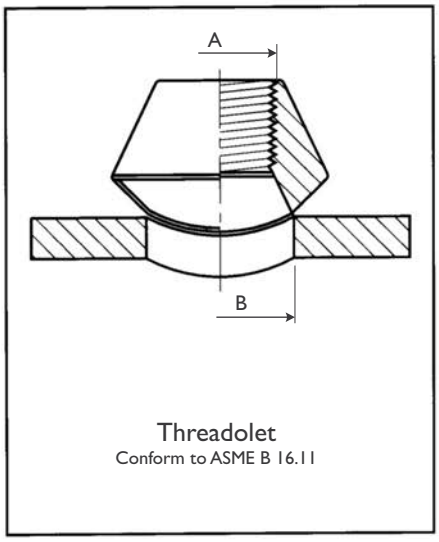
| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 1⅞ | 1⁷⁄₁₆ |
| ¼ | 2¹⁄₃₂ | 1¹³⁄₁₆ |
| ⅜ | 2³⁄₁₆ | 1⅞ |
| ½ | 2⁵⁄₁₆ | 2³⁄₁₆ |
| ¾ | 2⁷⁄₁₆ | 2¹¹⁄₁₆ |
| 1 | 2²⁵⁄₃₂ | 3⅝₃₂ |
| 1¼ | 3⅛ | 3⅜ |
| 1½ | 3⁹⁄₁₆ | 4⅛ |

**Rating 6000 LBS**

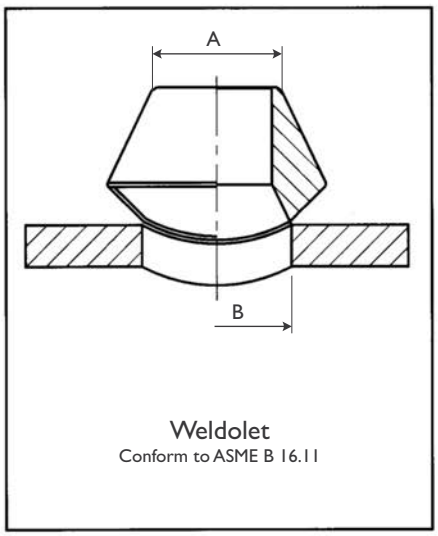
| Size | DIMENSION | |
|---|---|---|
| | A | B |
| ⅛ | 2½ | 1⁷⁄₁₆ |
| ¼ | 2²¹⁄₃₂ | 1¹³⁄₁₆ |
| ⅜ | 2³¹⁄₃₂ | 1⅞ |
| ½ | 3⅝₃₂ | 2³⁄₁₆ |
| ¾ | 3⁷⁄₁₆ | 2¹¹⁄₁₆ |
| 1 | 3¹³⁄₁₆ | 3⅝₃₂ |
| 1¼ | 4⅛ | 3⅜ |
| 1½ | 4⅝ | 4⅛ |

Also see Hammer Unions Page 100.

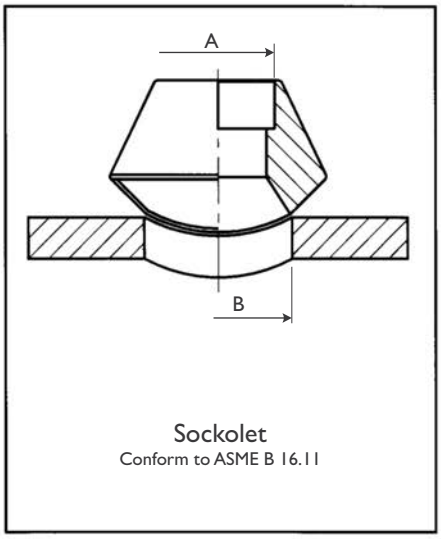
# BRANCHED CONNECTIONS 8




Threadolet
Conform to ASME B 16.11




Weldolet
Conform to ASME B 16.11




Sockolet
Conform to ASME B 16.11

| Nominal Run Pipe | Outlet | DIMENSION | |
|---|---|---|---|
| | | A | B |
| ⅛ | ⅛ | 13/32 | 5/8 |
| ¼ | ¼ | 35/64 | 5/8 |
| ⅜ | ⅜ | 43/64 | ¾ |
| ½ | ½ | 27/32 | 15/16 |
| ¾ | ¾ | 1 1/16 | 1 3/16 |
| 1 | 1 | 1 5/16 | 1 7/16 |
| 1 ¼ | 1 ¼ | 1 11/16 | 1 ¾ |
| 1 ½ | 1 ½ | 1 29/32 | 2 |
| 2 | 2 | 2 3/8 | 2 9/16 |
| 2 ½ | 2 ½ | 2 7/8 | 3 |
| 3 | 3 | 3 ½ | 3 11/16 |
| 4 | 4 | 4 ½ | 4 ¾ |

| Nominal Run Pipe | Outlet | DIMENSION | |
|---|---|---|---|
| | | A | B |
| ½ | ½ | 27/32 | 15/16 |
| ¾ | ¾ | 1 1/16 | 1 3/16 |
| 1 | 1 | 1 5/16 | 1 7/16 |
| 1 ¼ | 1 ¼ | 1 11/16 | 1 ¾ |
| 1 ½ | 1 ½ | 1 29/32 | 2 |
| 2 | 2 | 2 3/8 | 2 3/16 |
| 2 ½ | 2 ½ | 2 7/8 | 3 |
| 3 | 3 | 3 ½ | 3 11/16 |
| 4 | 4 | 4 ½ | 4 ¾ |
| 5 | 5 | 5 5/16 | 5 13/16 |
| 6 | 6 | 6 5/8 | 6 11/16 |
| 8 | 8 | 8 5/8 | 8 11/16 |
| 10 | 10 | 10 ¾ | 10 7/16 |
| 12 | 12 | 12 23/32 | 13 |
| 14 | 14 | 14 | 14 5/16 |
| 16 | 16 | 16 | 16 ½ |
| 18 | 18 | 18 | 18 5/8 |
| 20 | 20 | 20 | 20 13/16 |
| 24 | 24 | 24 | 25 ⅛ |

| Nominal Run Pipe | Outlet | DIMENSION | |
|---|---|---|---|
| | | A | B |
| ⅛ | ⅛ | .420<br>.430 | 5/8 |
| ¼ | ¼ | .555<br>.565 | 5/8 |
| ⅜ | ⅜ | .690<br>.700 | ¾ |
| ½ | ½ | .855<br>.865 | 15/16 |
| ¾ | ¾ | 1.065<br>1.075 | 1 3/16 |
| 1 | 1 | 1.330<br>1.340 | 1 7/16 |
| 1 ¼ | 1 ¼ | 1.675<br>1.685 | 1 ¾ |
| 1 ½ | 1 ½ | 1.915<br>1.925 | 2 |
| 2 | 2 | 2.406<br>2.416 | 2 9/16 |
| 2 ½ | 2 ½ | 2.906<br>2.921 | 3 |
| 3 | 3 | 3.535<br>3.550 | 3 11/16 |
| 4 | 4 | 4.545<br>4.560 | 4 ¾ |

**Note:**

a. All dimensions are in inches.

b. Other sizes and threads as per API, ASME can be provided on request.

# SEAMLESS PIPE SIZES

9

### Outside Diameter and Wall Thickness

**STANDARD SIZES (ANSI B36.10)**

| Nom. Pipe Size | OD at Bevel | WALL THICKNESS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sch. 5S | Sch. 10S | Sch. 10 | Sch. 20 | Sch. 30 | STD | Sch. 40 | XS | Sch. 60 | Sch. 80 | Sch. 100 | Sch. 120 | Sch. 140 | Sch. 160 | XXS |
| ⅛ | 0.405 | | 0.049 | | | | 0.068 | 0.068 | 0.095 | | 0.095 | | | | | |
| ¼ | 0.540 | | 0.065 | | | | 0.088 | 0.088 | 0.119 | | 0.119 | | | | | |
| ⅜ | 0.675 | | 0.065 | | | | 0.091 | 0.091 | 0.126 | | 0.126 | | | | | |
| ½ | 0.840 | 0.065 | 0.083 | | | | 0.109 | 0.109 | 0.147 | | 0.147 | | | | 0.188 | 0.294 |
| ¾ | 1.050 | 0.065 | 0.083 | | | | 0.113 | 0.113 | 0.154 | | 0.154 | | | | 0.219 | 0.308 |
| 1 | 1.315 | 0.065 | 0.109 | | | | 0.133 | 0.133 | 0.179 | | 0.179 | | | | 0.250 | 0.358 |
| 1¼ | 1.660 | 0.065 | 0.109 | | | | 0.140 | 0.140 | 0.191 | | 0.191 | | | | 0.250 | 0.382 |
| 1½ | 1.900 | 0.065 | 0.109 | | | | 0.145 | 0.145 | 0.200 | | 0.200 | | | | 0.281 | 0.400 |
| 2 | 2.375 | 0.065 | 0.109 | | | | 0.154 | 0.154 | 0.218 | | 0.218 | | | | 0.344 | 0.436 |
| 2½ | 2.875 | 0.083 | 0.120 | | | | 0.203 | 0.203 | 0.276 | | 0.276 | | | | 0.375 | 0.552 |
| 3 | 3.500 | 0.083 | 0.120 | | | | 0.216 | 0.216 | 0.300 | | 0.300 | | | | 0.438 | 0.600 |
| 3½ | 4.000 | 0.083 | 0.120 | | | | 0.226 | 0.226 | 0.318 | | 0.318 | | | | | |
| 4 | 4.500 | 0.083 | 0.120 | | | | 0.237 | 0.237 | 0.337 | | 0.337 | | 0.438 | | 0.531 | 0.674 |
| 5 | 5.563 | 0.109 | 0.134 | | | | 0.258 | 0.258 | 0.375 | | 0.375 | | 0.500 | | 0.625 | 0.750 |
| 6 | 6.625 | 0.109 | 0.134 | | | | 0.280 | 0.280 | 0.432 | | 0.432 | | 0.562 | | 0.719 | 0.864 |
| 8 | 8.625 | 0.109 | 0.148 | | 0.250 | 0.277 | 0.322 | 0.322 | 0.500 | 0.406 | 0.500 | 0.594 | 0.719 | 0.812 | 0.906 | 0.875 |
| 10 | 10.75 | 0.134 | 0.165 | | 0.250 | 0.307 | 0.365 | 0.365 | 0.500 | 0.500 | 0.594 | 0.719 | 0.844 | 1.000 | 1.125 | 1.000 |
| 12 | 12.75 | 0.156 | 0.180 | | 0.250 | 0.330 | 0.375 | 0.406 | 0.500 | 0.562 | 0.688 | 0.844 | 1.000 | 1.125 | 1.312 | 1.000 |
| 14 | 14.00 | 0.156 | 0.188 | 0.250 | 0.312 | 0.375 | 0.375 | 0.438 | 0.500 | 0.594 | 0.750 | 0.938 | 1.094 | 1.250 | 1.406 | |
| 16 | 16.00 | 0.165 | 0.188 | 0.250 | 0.312 | 0.375 | 0.375 | 0.500 | 0.500 | 0.656 | 0.844 | 1.031 | 1.219 | 1.438 | 1.594 | |
| 18 | 18.00 | 0.165 | 0.188 | 0.250 | 0.312 | 0.438 | 0.375 | 0.562 | 0.500 | 0.750 | 0.938 | 1.156 | 1.375 | 1.562 | 1.781 | |
| 20 | 20.00 | 0.188 | 0.218 | 0.250 | 0.375 | 0.500 | 0.375 | 0.594 | 0.500 | 0.812 | 1.031 | 1.281 | 1.500 | 1.750 | 1.969 | |
| 22 | 22.00 | 0.188 | 0.218 | 0.250 | 0.375 | 0.500 | 0.375 | | 0.500 | 0.875 | 1.125 | 1.375 | 1.625 | 1.875 | 2.125 | |
| 24 | 24.00 | 0.218 | 0.250 | 0.250 | 0.375 | 0.562 | 0.375 | 0.688 | 0.500 | 0.969 | 1.219 | 1.531 | 1.812 | 2.062 | 2.344 | |
| 26 | 26.00 | | | 0.312 | 0.500 | | 0.375 | | 0.500 | | | | | | | |
| 28 | 28.00 | | | 0.312 | 0.500 | 0.625 | 0.375 | | 0.500 | | | | | | | |
| 30 | 30.00 | 0.250 | 0.312 | 0.312 | 0.500 | 0.625 | 0.375 | | 0.500 | | | | | | | |
| 32 | 32.00 | | | 0.312 | 0.500 | 0.625 | 0.375 | 0.688 | 0.500 | | | | | | | |
| 34 | 34.00 | | | 0.312 | 0.500 | 0.625 | 0.375 | 0.688 | 0.500 | | | | | | | |
| 36 | 36.00 | | | 0.312 | 0.500 | 0.625 | 0.375 | 0.750 | 0.500 | | | | | | | |
| 38 | 38.00 | | | | | | 0.375 | | 0.500 | | | | | | | |
| 40 | 40.00 | | | | | | 0.375 | | 0.500 | | | | | | | |
| 42 | 42.00 | | | | | | 0.375 | | 0.500 | | | | | | | |
| 44 | 44.00 | | | | | | 0.375 | | 0.500 | | | | | | | |
| 46 | 46.00 | | | | | | 0.375 | | 0.500 | | | | | | | |
| 48 | 48.00 | | | | | | 0.375 | | 0.500 | | | | | | | |

**Note:**
GSL can supply the above Pipe in Carbon Steel, Alloy Steel & Stainless Steel. Please contact us for your requirements.

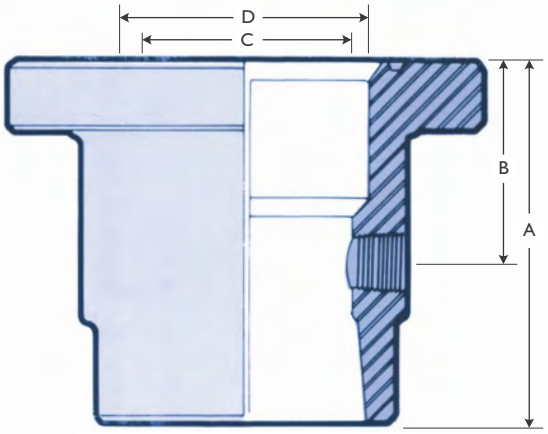
## C-22 CASING HEADS

C-22 Casing Heads are straight bore bowl designs which avoid damage to the sealing (packoff) areas caused by drilling tools and permit hanging more weight than tapered bowls. C-29 Bowl also available.

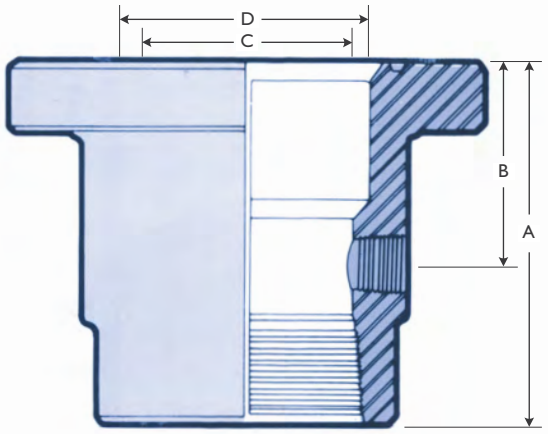
Normally furnished with threaded outlets. Longer bowls and optional lock-downs are available on request. Bottom preparation is threaded or slip-on welding, may be provided with O-Rings.

| Part No. | Top Flange*2 | | Bottom* Prep (in) | Outlets† (in) | Dimensions (in) | | | | Approx. Weight Lbs |
|---|---|---|---|---|---|---|---|---|---|
| | Size (in) | Size (KPSI) | | | A | B | C | D | |
| - | 9 | 2 | 7" 8rd | 2" Thd | 15 | 8 1/16 | 6⅛ | 8¾ | 210 |
| - | 9 | 3 | 7" 8rd | 2" Thd | 15⅛ | 9 3/16 | 6⅛ | 8¾ | 240 |
| - | 9 | 2 | 7⅝" 8rd | 2" Thd | 15 | 8 1/16 | 7 | 8¾ | 210 |
| - | 9 | 3 | 7⅝" 8rd | 2" Thd | 15⅛ | 9 3/16 | 7 | 8¾ | 240 |
| 277 | 9 | 2 | 8⅝" 8rd | 2" Thd | 15⅛ | 8 7/16 | 8 | 8¾ | 180 |
| 280 | 9 | 3 | 8⅝" 8rd | 2" Thd | 15⅛ | 9 3/16 | 8 | 8¾ | 240 |
| - | 9 | 5 | 8⅝" 8rd | 2" Thd | 15⅛ | 9 3/16 | 8 | 8¾ | 250 |
| 201 | 11 | 2 | 8⅝" 8rd | 2" Thd | 15 5/16 | 9¼ | 8 | 10⅛ | 340 |
| 213 | 11 | 3 | 8⅝" 8rd | 2" Thd | 16½ | 9 3/16 | 8 | 10⅛ | 460 |
| 225 | 11 | 5 | 8⅝" 8rd | 2" Thd | 18¾ | 11¼ | 8 | 10⅛ | 710 |
| 202 | 11 | 2 | 9⅝" 8rd | 2" Thd | 15¾ | 9¼ | 9 | 10⅛ | 320 |
| 214 | 11 | 3 | 9⅝" 8rd | 2" Thd | 16¾ | 9 3/16 | 9 | 10⅛ | 430 |
| 226 | 11 | 5 | 9⅝" 8rd | 2" Thd | 16¾ | 9 3/16 | 9 | 10⅛ | 680 |
| 203 | 11 | 2 | 10¾" 8rd | 2" Thd | 15¾ | 9¼ | 10 | 10⅛ | 300 |
| 215 | 11 | 3 | 10¾" 8rd | 2" Thd | 16¾ | 9 3/16 | 10 | 10⅛ | 410 |
| 227 | 11 | 5 | 10¾" 8rd | 2" Thd | 16¾ | 9 3/16 | 10 | 10⅛ | 590 |
| 207 | 13⅜ | 2 | 11¼" 8rd | 2" Thd | 17⅜ | 9⅜ | 11 | 13½ | 469 |
| 219 | 13⅜ | 3 | 11¼" 8rd | 2" Thd | 17⅜ | 9¼ | 11 | 13½ | 587 |
| - | 13⅜ | 3 | 12¼" 8rd | 2" Thd | 16 1/16 | 9⅜ | 12½ | 13½ | 500 |
| 208 | 13⅜ | 2 | 13⅜" 8rd | 2" Thd | 15 | 9⅜ | 12½ | 13½ | 380 |
| 220 | 13⅜ | 3 | 13⅜" 8rd | 2" Thd | 16 1/16 | 9⅜ | 12½ | 13½ | 500 |
| 244 | 13⅜ | 5 | 13⅜" 8rd | 2" Thd | 18½ | 12⅛ | 12½ | 13½ | 1430 |
| - | 16¾ | 2 | 16" 8rd | 2" Thd | 18⅛ | 10⅝ | 15¼ | 16⅝ | 980 |
| - | 16¾ | 3 | 16" 8rd | 2" Thd | 18⅛ | 10⅝ | 15¼ | 16⅝ | 995 |
| - | 20¾ | 3 | 20" 8rd | 2" Thd | 21¾ | 13 3/16 | 19 3/16 | 20⅛ | 1250 |
| - | 21¼ | 2 | 20" 8rd | 2" Thd | 21¾ | 13 3/16 | 19 3/16 | 20⅛ | 1400 |

† Available with Flanged Outlets
*2 Available with Lockdown Screws
* Available with S.O.W. Bottom Preparation
* Available with O-Rings




C-22 CASING HEAD
SLIP-ON WELD PREPARATION




C-22 CASING HEAD
8RD BOTTOM PREPARATION

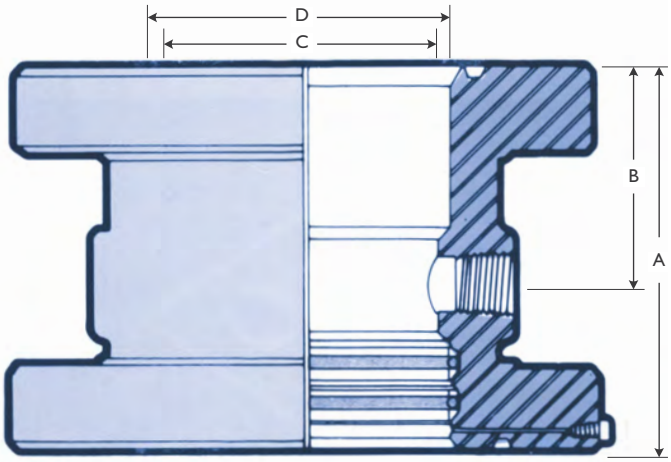
## C-22 CASING SPOOLS

C-22 Casing Head Spools are straight bore bowl designs. Bottom preparation is of the R-Seal Type. Outlets are available threaded, studded or extended neck flanged.

Spools utilize the same C-22 automatic Casing Hangers as Casing Heads adding to equipment flexibility. Bowl Protectors and lockdowns are available on request. C-29 Bowl also available.

| Part No. | Bottom Flange | | Top Flange | | Bottom Prep* | Outlet† (in) | Dimensions (in) | | | | Approx. Weight Lb. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size (in) | WP (KPSI) | Size (in) | WP (KPSI) | | | A | B | C | D | |
| - | 11 | 2 | 11 | 2 | R-Seal | 2" LPO | 17¼ | 8¾ | 10 | 10⅛ | 520 |
| 644 | 11 | 3 | 11 | 5 | R-Seal | 2" LPO | 17¼ | 8¾ | 10 | 10⅛ | 660 |
| 614 | 11 | 5 | 11 | 5 | R-Seal | 2" LPO | 17¼ | 8¾ | 10 | 10⅛ | 710 |
| 607 | 13⅝ | 2 | 11 | 2 | R-Seal | 2" LPO | 17¼ | 8¾ | 10 | 10⅛ | 680 |
| 654 | 13⅝ | 2 | 11 | 3 | R-Seal | 2" LPO | 17¼ | 8¾ | 10 | 10⅛ | 680 |
| 602 | 13⅝ | 3 | 11 | 3 | R-Seal | 2" LPO | 17¼ | 8¾ | 10 | 10⅛ | 710 |
| 604 | 13⅝ | 3 | 11 | 5 | R-Seal | 2" LPO | 24¾ | 12½ | 10 | 10⅛ | 1100 |
| 647 | 13⅝ | 5 | 11 | 5 | R-Seal | 2" LPO | 24¾ | 12½ | 10 | 10⅛ | 1254 |
| 645 | 13⅝ | 5 | 11 | 10 | R-Seal | 1 13/16 SSO | 26 5/16 | 14 1/16 | 9 | 10⅛ | 1948 |
| 661 | 13⅝ | 5 | 13⅝ | 5 | R-Seal | 2" LPO | 26 5/16 | 14 1/16 | 9 | 10⅛ | 1893 |
| - | 16¾ | 2 | 11 | 3 | R-Seal | 2" LPO | 17¼ | 8⅛ | 10 | 10⅛ | 846 |
| - | 16¾ | 3 | 11 | 3 | R-Seal | 2" LPO | 17⅛ | 8⅛ | 10 | 10⅛ | 1080 |
| 662 | 16¾ | 3 | 11 | 5 | R-Seal | 2" LPO | 22⅛ | 12½ | 10 | 10⅛ | 1300 |
| - | 16¾ | 3 | 13⅝ | 3 | R-Seal | 2" LPO | 24½ | 13½ | 10 | 10⅛ | 1452 |
| 623 | 20¾ | 3 | 13⅝ | 5 | R-Seal | 2" LPO | 24½ | 12½ | 12½ | 13½ | 2450 |
| - | 21¼ | 2 | 13⅜ | 3 | R-Seal | 2" LPO | 26¾ | 14⅜ | 12½ | 13½ | 2063 |
| - | 21¼ | 3 | 13⅜ | 3 | R-Seal | 2" LPO | 26¾ | 14⅜ | 12½ | 13½ | 2063 |

† Available with Flanged or Studded Outlets.
* Available with 9", 10¾" Blank Bottom Preparation.
* Available with "00" Bottom.



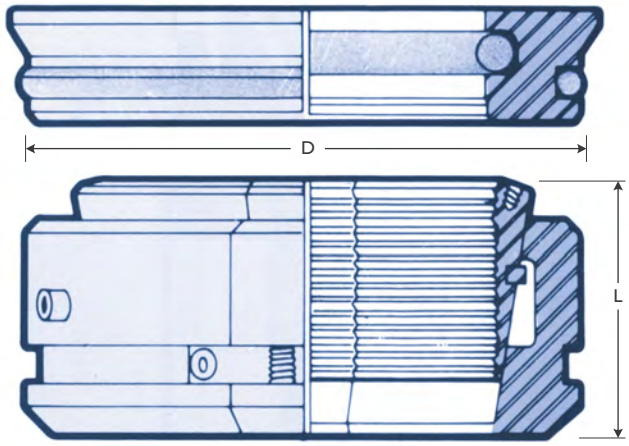

C-22 CASING SPOOL
"00" BOTTOM PREPARATION

## C-21 CASING HANGERS WITH TYPE "H" SEAL

C-22 Casing Hangers consist of slips, slip bowls and floating type "H" seal rings. Slips and bowl wrap around the casing. The seal ring slips over casing and into casing head after casing has been suspended and cut off, providing positive annulus packoff.

| Part No. | Bowl Size (in) | Casing Size (in) | Dimensions (in) | | Approx. Weight Lbs |
|---|---|---|---|---|---|
| | | | D | L | |
| 401 | 11 | 4½ | 10 13/16 | 4 13/32 | 94 |
| - | 11 | 5 | 10 13/16 | 4 7/16 | 90 |
| 422 | 11 | 5½ | 10 13/16 | 4 7/16 | 79 |
| - | 11 | 6⅝ | 10 13/16 | 4 7/16 | 84 |
| - | 11 | 7 | 10 13/16 | 4 13/32 | 67 |
| - | 11 | 7⅝ | 10 13/16 | 4 13/16 | 59 |
| - | 13¾ | 4½ | 13 7/16 | 4 13/16 | 150 |

Other sizes upon request.



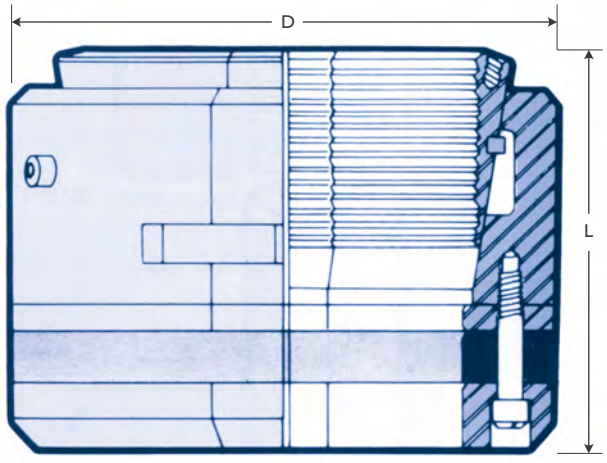

C-21 CASING HANGER

## CASING HANGERS FOR C-22 CASING HEADS AND SPOOLS

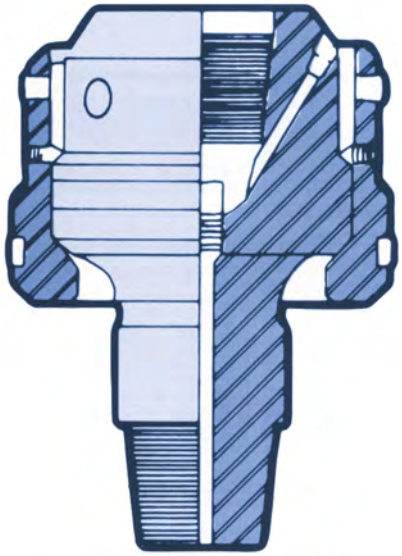
C-22 Casing Hangers combine packoff and slip bowl, and slip into a single unit. The packoff automatically seals the casing annulus below the slips when casing load is applied, allowing annulus packoff before removing BOPs.

| Part No. | Bowl Size (in) | Casing Size (in) | Dimensions (in) | | Approx. Weight Lbs |
|---|---|---|---|---|---|
| | | | D | L | |
| 425 | 9 | 4½ | 8 1/16 | 8 1/16 | 45 |
| - | 9 | 5 | 8 1/16 | 8 1/16 | 40 |
| 426 | 9 | 5½ | 8 1/16 | 8 1/16 | 34 |
| 402 | 11 | 4½ | 10 13/16 | 8 1/16 | 95 |
| 417 | 11 | 5 | 10 13/16 | 8 1/16 | 89 |
| 414 | 11 | 5½ | 10 13/16 | 8 1/16 | 89 |
| 416 | 11 | 7 | 10 13/16 | 8 1/16 | 79 |
| 415 | 11 | 7⅝ | 10 13/16 | 8 1/16 | 60 |
| 423 | 13⅝ | 4½ | 13 7/16 | 8 1/16 | 167 |
| 424 | 13⅝ | 5½ | 13 7/16 | 8 1/16 | 160 |
| 418 | 13⅝ | 7 | 13 7/16 | 8 1/16 | 152 |
| 419 | 13⅝ | 7⅝ | 13 7/16 | 8 1/16 | 140 |
| 420 | 13⅝ | 8⅝ | 13 7/16 | 8 1/16 | 25 |
| 421 | 13⅝ | 9⅝ | 13 7/16 | 8 1/16 | 108 |
| - | 16¼ | 9⅝ | 16 5/16 | 9 | 281 |
| - | 16¼ | 10¾ | 16 5/16 | 9 | 233 |
| - | 20¼ | 13⅜ | 20 1/16 | 9 | 310 |

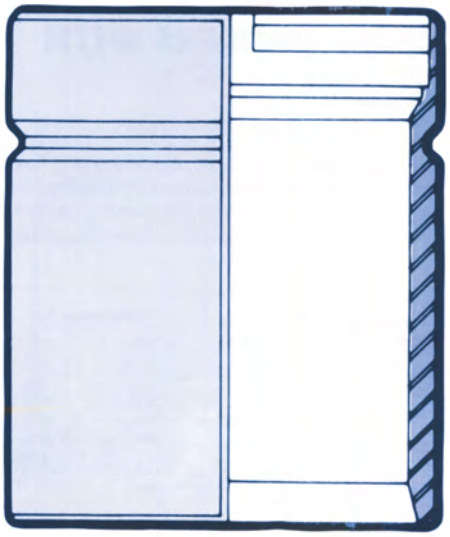
Other sizes upon request.




C-22 CASING HANGER



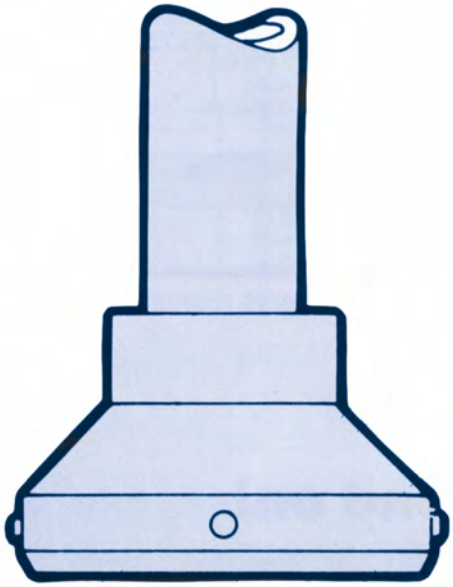
TEST PLUG AND RUNNING TOOL*
COMBINATION 10" AND 12"



BOWL PROTECTOR*

## ACCESSORIES

Tools shown are available for use in C-22 Casing Heads.
Bowl protectors minimize wear in the casing head bore. Test plugs allow testing BOP and connections above casing head.



RETRIEVING TOOL*

TEST PLUG*

*Sizes and prices available upon request.

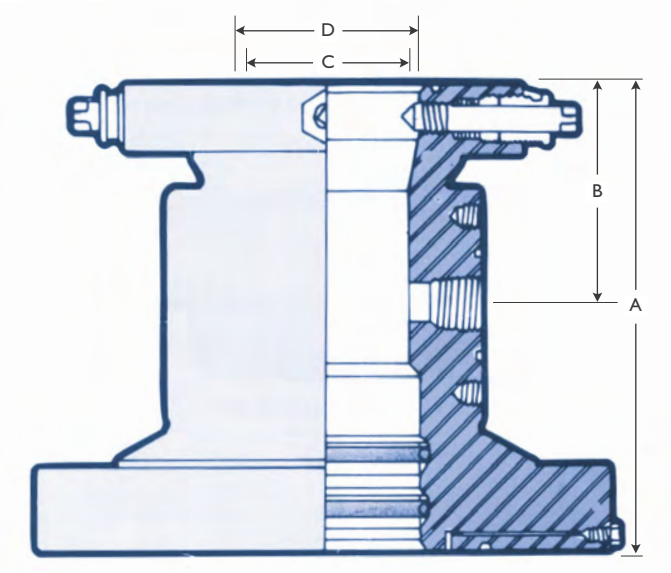
## T-16 TUBING HEADS

T-16 Tubing Heads are tapered-bore heads and are available in various sizes and pressure ratings. Outlets are 2" threaded or studded. Larger outlets are available on request. Studded outlets will accept V-R Plugs enabling removal or repair of full opening valves.

Lockdown screws are supplied in top flanges enabling tubing hangers or stripper rubbers to be locked in bowl.

T-16 Tubing Heads are supplied with 9" blank bottoms or "00" bottom as well as R-Seal bottoms.

| Part No. | Bottom Flange | | Top Flange | | Outlets (in) | Bottom Prep (in) | Dimensions (in) | | | | Approx Weight Lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size (in) | WP (PSI) | Size (in) | WP (KPSI) | | | A | B | C | D | |
| 855 | 9 | 2 | 7 1/16 | 2 | 2 LPO | 9 BLK | 17 1/2 | 8 3/4 | 6 3/8 | 7 | 530 |
| 856 | 9 | 3 | 7 1/16 | 3 | 2 LPO | 9 BLK | 17 1/2 | 8 3/4 | 6 3/8 | 7 | 530 |
| 806 | 11 | 2 | 7 1/16 | 2 | 2 LPO | 9 BLK | 15 13/16 | 7 5/16 | 6 3/8 | 7 | 420 |
| 807 | 11 | 3 | 7 1/16 | 3 | 2 LPO | 9 BLK | 15 1/2 | 6 3/4 | 6 3/8 | 7 | 480 |
| 808 | 11 | 3 | 7 1/16 | 3 | 2 LPO | 9 BLK | 18 5/16 | 8 5/16 | 6 3/8 | 7 | 615 |
| 810 | 11 | 3 | 7 1/16 | 3 | 2 SSO | 9 BLK | 18 5/16 | 18 5/16 | 6 3/8 | 7 | 620 |
| 828 | 11 | 3 | 7 1/16 | 5 | 2 SSO | 9 BLK | 20 1/8 | 10 5/16 | 6 3/8 | 7 | 670 |
| - | 11 | 5 | 7 1/16 | 5 | 2 SSO | 9 BLK | 20 1/8 | 9 3/4 | 6 3/8 | 7 | 870 |
| - | 13 5/8 | 2 | 7 1/16 | 2 | 2 LPO | 10 3/4 BLK | 18 5/8 | 9 1/8 | 6 3/8 | 7 | 600 |
| - | 13 5/8 | 2 | 7 1/16 | 3 | 2 LPO | 10 3/4 BLK | 20 1/8 | 9 1/8 | 6 3/8 | 7 | 650 |
| 830 | 13 5/8 | 3 | 7 1/16 | 3 | 2 LPO | 10 3/4 BLK | 20 1/4 | 9 5/8 | 6 3/8 | 7 | 759 |
| - | 13 5/8 | 3 | 7 1/16 | 3 | 2 SSO | 10 3/4 BLK | 20 1/4 | 9 5/8 | 6 3/8 | 7 | 770 |
| - | 13 5/8 | 3 | 7 1/16 | 5 | 2 SSO | 10 3/4 BLK | 18 5/8 | 9 5/16 | 6 3/8 | 7 | 880 |



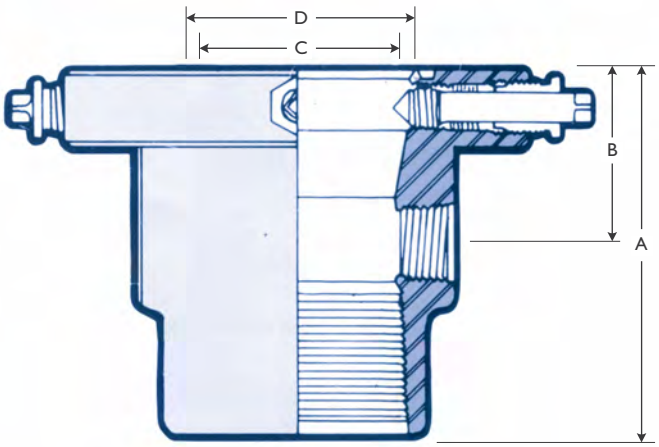

T-16 TUBING HEAD

## T-16 THREADED BOTTOM TUBING HEADS

T-16 Threaded Bottom Tubing Heads are for low pressure and shallow well service. Heads accept T-16 and WA-5 tubing hangers and stripper rubber.

| Part No. | Size (in) | Bottom | | Side Outlet (in) | Dimensions (in) | | | | Approx Weight Lbs |
|---|---|---|---|---|---|---|---|---|---|
| | | WP (KPSI) | Thread* (in) | | A | B | C | D | |
| 800 | 7 1/16 | 2 | 4 1/2 OD 8rd | 2 | 14 1/16 | 6 7/8 | 4 3/32 | 7 | 154 |
| 801 | 7 1/16 | 2 | 5 1/2 OD 8rd | 2 | 14 1/16 | 6 7/8 | 5 | 7 | 146 |
| - | 7 1/16 | 2 | 7 OD 8rd | 2 | 14 1/16 | 6 7/8 | 6 1/8 | 7 | 129 |
| 802 | 7 1/16 | 3 | 4 1/2 OD 8rd | 2 | 14 1/16 | 6 7/8 | 4 3/32 | 7 | 198 |
| 803 | 7 1/16 | 3 | 5 1/2 OD 8rd | 2 | 14 1/16 | 6 7/8 | 5 | 7 | 192 |
| - | 7 1/16 | 3 | 7 OD 8rd | 2 | 14 1/16 | 6 7/8 | 6 1/8 | 7 | 166 |

*Available with slip-on weld bottom preparation.

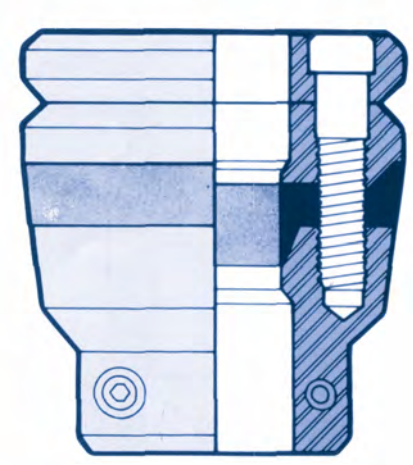



T-16 TUBING HEAD WITH THREADED BOTTOM

## TUBING HANGERS FOR T-16 TUBING HEADS

WA-5 Tubing Hangers are slick jont, wrap-around that can ben wrapped around any joint of tubing not requiring a polished joint. They can be lowered through BOP equipment and locked in place, allowing removal of BOP equipment while keeping the well under control. The upper section of the Christmas tree is installed on tubing threads or on a BO-2 coupling, permitting the operator to maintain control of the well while manipulating the tubing to set the packer.

| Part No. | Size (in) | Approx. Weight Lbs |
|---|---|---|
| 1216 | 7 1/16 x 2 5/8 OD | 32 |
| 1217 | 7 1/16 x 2 5/8 OD | 30 |
| | 7 1/16 x 3 1/2 OD | 28 |



WA-5 TUBING HANGER

## TUBING HANGERS FOR T-16 TUBING HEADS

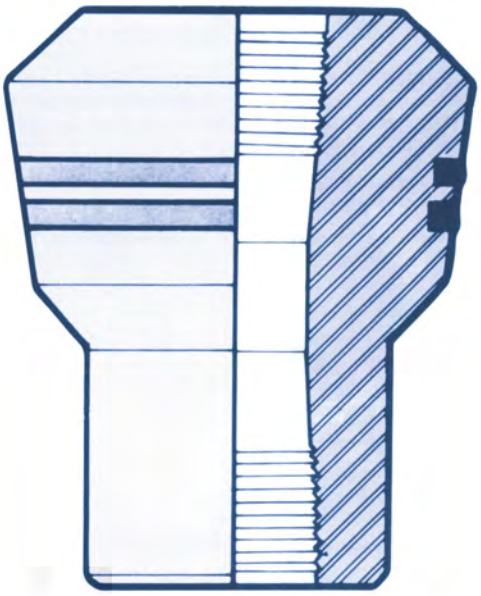
T-16 Tubing Hangers are threaded mandrel hangers with packing rings for annulus packoff. The T-16-B is the same type adding preparations for back pressure valves.

### T-16

| Part No. | Size (in) | Approx. Weight Lbs |
|---|---|---|
| 1221 | 7⅛ x 2⅜ OD EUE | 58 |
| 1222 | 7⅛ x 2⅞ OD EUE | 56 |
| - | 7⅛ x 3½ OD EUE | 56 |

### T-16-B

| Part No. | Size (in) | Approx. Weight Lbs |
|---|---|---|
| - | 7⅛ x 2⅜ OD | 50 |
| - | 7⅛ x 2⅞ OD | 45 |
| - | 7⅛ x 3½ OD | 48 |

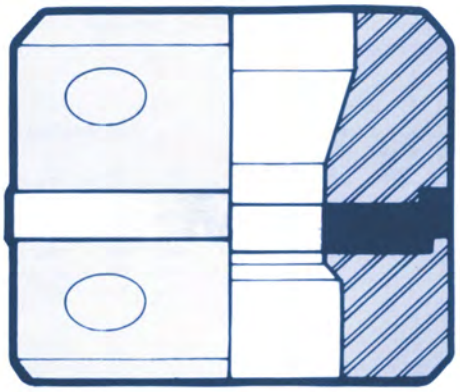


T-16 TUBING HANGER

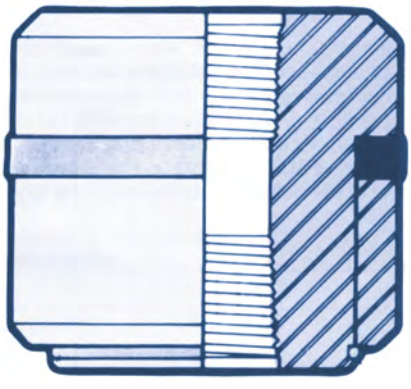
## TC-1W AND TC-1A TUBING HANGERS FOR TCM TUBING HEADS

The TC-1W is a slick joint, wrap-around hanger not requiring a polished joint. The TC-1A is a threaded hanger with an automatic, load actuated packoff. Also available with back pressure valve preparation.

| Part No. | Description | Size 7⅛ x 2⅜ | Approx Weight Lbs | Size 7⅛ x 2⅞ | Approx Weight Lbs | Size 7⅛ x 3½ OD | Approx Weight Lbs |
|---|---|---|---|---|---|---|---|
| | Single | | | | | | |
| 1210, 1211, 1212 | TC-1A | | 60 | | 60 | | 55 |
| | TC-1A (For BP Valve) | | 72 | | 64 | | 60 |
| 1203, 1204 | TC-1W | | 70 | | 65 | | 60 |



TC-1W TUBING HANGER



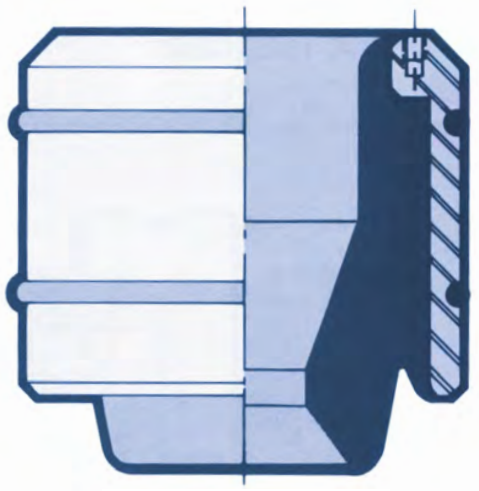
TC-1A TUBING HANGER

## TCM STRIPPER RUBBER

The TCM stripper rubber allows the operator to run or pull tubing under pressure. The TCM stripper fits all TCM tubing heads. Maximum working pressure 3000 psi.

| Sizes | Part No. |
|---|---|
| 7⅛ x 2⅝ | 1225 |
| 7⅛ x 2⅛ | 1226 |

Other sizes available upon request.
T-16 Stripper Rubber available upon request.

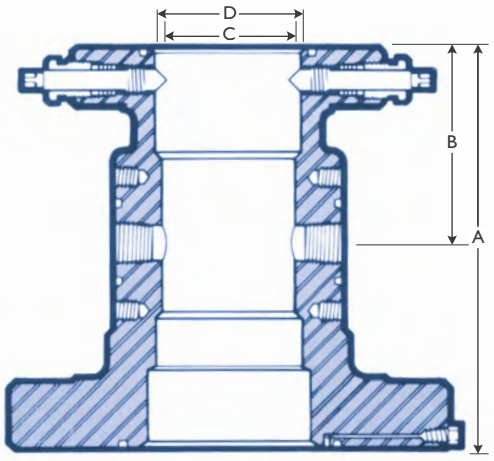


TCM STRIPPER RUBBER

## TCM AND TCD TUBING HEADS

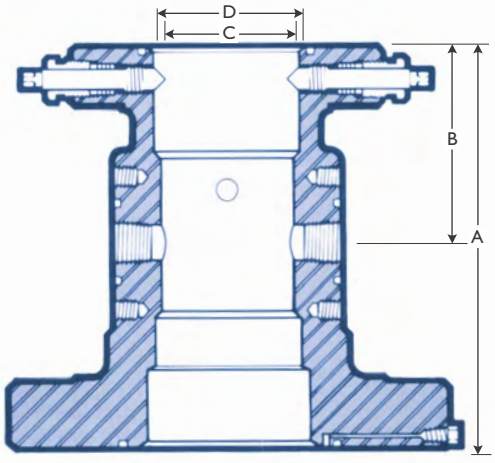
TCM and TCD tubing heads are straight bore bowl designs. They are available in various sizes and working pressures up to 15,000 psi. Outlets are threaded or studded with larger outlets available upon request. Studded outlets accept V.R. plugs. TCM heads will accommodate 4-0 reducer bushings with 9" blank bottom preparation in bottom flange. They will accommodate 7⅝" with full 6 13/16" opening bores through 5,000 lb. W.P.

| Part No. | Bottom Flange | | Top Flange | | Outlets (in) | Bottom Prep (in) | Dimensions (in) | | | | Approx Weight lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size (in) | WP (KPSI) | Size (in) | WP (KPSI) | | | A | B | C | D | |
| 854 | 9 | 2 | 7⅛ | 2 | 2 LPO | 9 BLK | 18⅛ | 10⅞ | 6 13/16 | 7 | 350 |
| - | 9 | 2 | 7⅛ | 2 | 2 SSO | 9 BLK | 18⅛ | 10⅞ | 6 13/16 | 7 | 355 |
| - | 9 | 2 | 7⅛ | 3 | 2 LPO | 9 BLK | 20¼ | 9⅜ | 6 13/16 | 7 | 400 |
| - | 9 | 3 | 7⅛ | 3 | 2 LPO | 9 BLK | 21¼ | 10¼ | 6 13/16 | 7 | 500 |
| - | 9 | 3 | 7⅛ | 3 | 2 SSO | 9 BLK | 21¼ | 10¼ | 6 13/16 | 7 | 505 |
| 806 | 11 | 2 | 7⅛ | 2 | 2 LPO | 9 BLK | 18⅛ | 10⅞ | 6 13/16 | 7 | 440 |
| - | 11 | 2 | 7⅛ | 2 | 2 SSO | 9 BLK | 18⅛ | 10⅞ | 6 13/16 | 7 | 445 |
| 824 | 11 | 2 | 7⅛ | 3 | 2 LPO | 9 BLK | 20¾ | 10 | 6 13/16 | 7 | 550 |
| 821 | 11 | 3 | 7⅛ | 3 | 2 LPO | 9 BLK | 20⅛ | 10⅞ | 6 13/16 | 7 | 600 |
| 825 | 11 | 3 | 7⅛ | 3 | 2 SSO | 9 BLK | 20⅛ | 10⅞ | 6 13/16 | 7 | 605 |
| 841 | 11 | 3 | 7⅛ | 5 | 2 SSO | 9 BLK | 24⅞ | 11⅛ | 6 13/16 | 7 | 790 |
| 851 | 11 | 5 | 7⅛ | 5 | 2 SSO | 9 BLK | 24⅞ | 11⅛ | 6 13/16 | 7 | 880 |
| 871 | 11 | 5 | 7⅛ | 10 | 1 13/16 SSO | 9 BLK | 26½ | 14⅝ | 6 13/16 | 7 | 856 |
| 884 | 11 | 10 | 7⅛ | 10 | 1 13/16 SSO | 9 BLK | 24⅞ | 12¾ | 6¾ | 7 | 1318 |
| 891 | 11 | 10 | 7⅛ | 15 | 1 13/16 SSO | 9 BLK | 26½ | 12 13/16 | 6⅞ | 7 | 1384 |
| - | 11 | 3 | 9 | 3 | 2 SSO | 9 BLK | 22⅜ | 11¾ | 7 | 8¾ | 755 |
| - | 11 | 3 | 9 | 5 | 2 SSO | 9 BLK | 23¼ | 11⅝ | 7 | 8¾ | 805 |
| - | 11 | 5 | 9 | 10 | 1 13/16 SSO | 9 BLK | 24¼ | 13⅜ | 7 | 8¾ | 1249 |
| - | 11 | 10 | 9 | 10 | 1 13/16 SSO | 9 BLK | 28 | 14 | 7 | 8¾ | 1700 |
| - | 13⅝ | 2 | 7⅛ | 2 | 2 LPO | 9 BLK | 20¾ | 10 | 6 13/16 | 7 | 490 |
| - | 13⅝ | 2 | 7⅛ | 2 | 2 SSO | 9 BLK | 20¾ | 10 | 6 13/16 | 7 | 495 |
| - | 13⅝ | 2 | 7⅛ | 3 | 2 LPO | 9 BLK | 20 | 9½ | 6 13/16 | 7 | 620 |
| - | 13⅝ | 2 | 7⅛ | 3 | 2 SSO | 9 BLK | 20 | 9½ | 6 13/16 | 7 | 625 |
| 829 | 13⅝ | 3 | 7⅛ | 3 | 2 LPO | 9 BLK | 24⅜ | 11½ | 6 13/16 | 7 | 675 |
| - | 13⅝ | 3 | 7⅛ | 3 | 2 SSO | 9 BLK | 24⅜ | 11½ | 6 13/16 | 7 | 680 |
| - | 13⅝ | 3 | 7⅛ | 5 | 2 LPO | 9 BLK | 24¼ | 11¾ | 6 13/16 | 7 | 800 |
| 846 | 13⅝ | 3 | 7⅛ | 5 | 2 SSO | 9 BLK | 24¼ | 11¾ | 6 13/16 | 7 | 805 |
| - | 13⅝ | 2 | 9 | 2 | 2 LPO | 10¾ BLK | 22 | 10⅜ | 8¼ | 8¾ | 500 |
| - | 13⅝ | 2 | 9 | 2 | 2 SSO | 10¾ BLK | 22 | 10⅜ | 8¼ | 8¾ | 505 |
| - | 13⅝ | 2 | 9 | 3 | 2 LPO | 10¾ BLK | 20 | 9½ | 8¼ | 8¾ | 650 |
| - | 13⅝ | 2 | 9 | 3 | 2 SSO | 10¾ BLK | 20 | 9½ | 8¼ | 8¾ | 655 |
| - | 13⅝ | 3 | 9 | 3 | 2 LPO | 10¾ BLK | 22¾ | 10⅞ | 8¼ | 8¾ | 700 |
| - | 13⅝ | 3 | 9 | 3 | 2 SSO | 10¾ BLK | 22¾ | 10⅞ | 8¼ | 8¾ | 705 |
| - | 13⅝ | 3 | 9 | 5 | 2 LPO | 10¾ BLK | 22¾ | 11⅛ | 8¼ | 8¾ | 745 |
| - | 13⅝ | 3 | 9 | 5 | 2 SSO | 10¾ BLK | 22¾ | 11⅛ | 8¼ | 8¾ | 750 |
| - | 13⅝ | 5 | 11 | 10 | 1 13/16 SSO | 10¾ BLK | 28 13/16 | 14 11/16 | 9 | 10⅛ | 1754 |




TCM BLANK BOTTOM TUBING HEAD

If conversion from single completion to multiple completion is required, TC Tubing Heads are adaptable to dual. An alignment pin is used to align dual hanger.

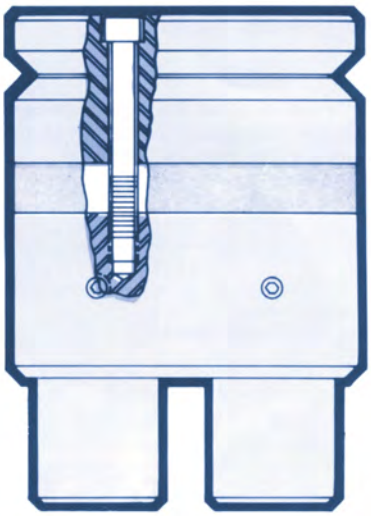



TCD BLANK BOTTOM TUBING HEAD

## DUAL TUBING HANGER

### TYPE TC

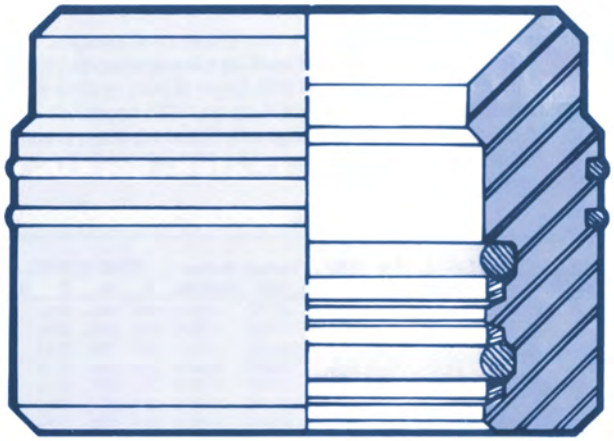
The TC Tubing Hanger is used on dual tubing completions



TYPE TC TUBING HANGER

## 4-0 REDUCER BUSHING

| Part No. | Size (in) | Casing Size (in) | Approx. Weight Lbs |
|---|---|---|---|
| 1026 | 9 | 4½ | 85 |
| - | 9 | 5 | 75 |
| 1027 | 9 | 5½ | 68 |
| 1028 | 9 | 7 | 43 |
| 1029 | 9 | 7⅝ | 30 |
| - | 10¾ | 7 | 93 |
| - | 10¾ | 7⅝ | 75 |
| - | 10¾ | 8⅝ | 50 |

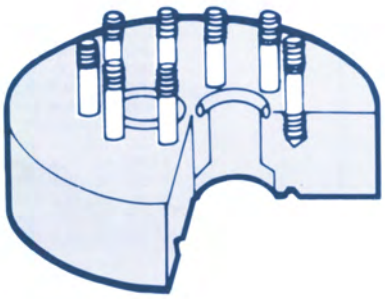


4/0 REDUCER BUSHING

## DUAL ADAPTOR

| Part No. | Bottom Flange | | Top Flange (in) | Approx. Weight Lbs |
|---|---|---|---|---|
| | Size (in) | WP (KPSI) | | |
| - | 7 1/16 | 5 | 2 1/16 x 2 1/16 | 225 |
| - | 9 | 5 | 2 1/16 x 2 1/16 | 350 |
| - | 11 | 5 | 3 1/8 x 3 1/8 | 570 |

Other sizes available upon request.



DUAL ADAPTOR

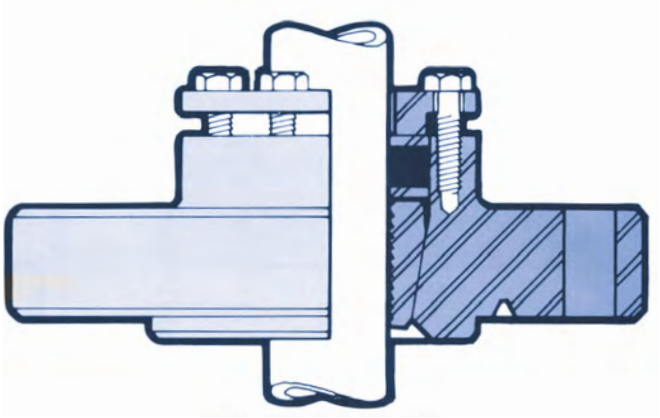
## TUBING HEAD ADAPTORS

### TYPE AW- ATTACHMENTS

AW-1 Attachments provide an assembly where well completion requires suspension of tubing with slips. Manual pack-off is included.

| Part No. | Flange | | Tubing Size (in) | Approx. Weight Lbs |
|---|---|---|---|---|
| | Size (in) | WP (KPSI) | | |
| 1453 | 7⅛ | 2 | 2⅜ | 164 |
| 1454 | 7⅛ | 2 | 2⅞ | 160 |
| 1457 | 7⅛ | 2 | 3½ | 154 |
| 1455 | 7⅛ | 2 | 2⅜ | 189 |
| 1456 | 7⅛ | 2 | 2⅞ | 185 |
| - | 7⅛ | 2 | 3½ | 181 |

Other sizes available upon request.

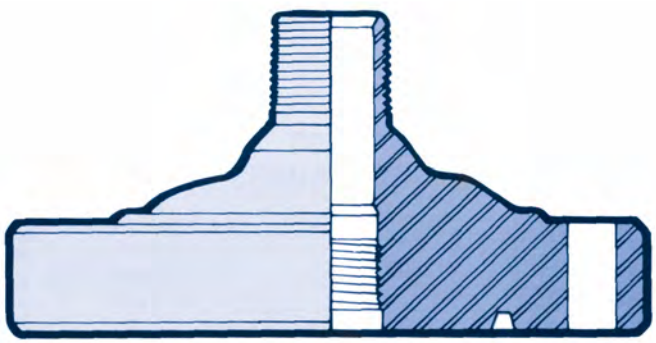


TYPE AW-1 ATTACHMENT

### B-1 ADAPTORS

| Part No. | Bottom Flange | | Top Thread & Bottom Thread (in) | Approx. Weight Lbs |
|---|---|---|---|---|
| | Size (in) | WP (KPSI) | | |
| 1401 | 7⅛ | 2 | 2⅜ OD EUE | 103 |
| 1402 | 7⅛ | 2 | 2⅞ OD EUE | 102 |
| 1461 | 7⅛ | 2 | 3½ OD EUE | 101 |
| 1403 | 7⅛ | 2 | 2⅜ OD EUE | 132 |
| 1404 | 7⅛ | 2 | 2⅞ OD EUE | 131 |
| 1462 | 7⅛ | 2 | 3½ OD EUE | 130 |

Other sizes available upon request.

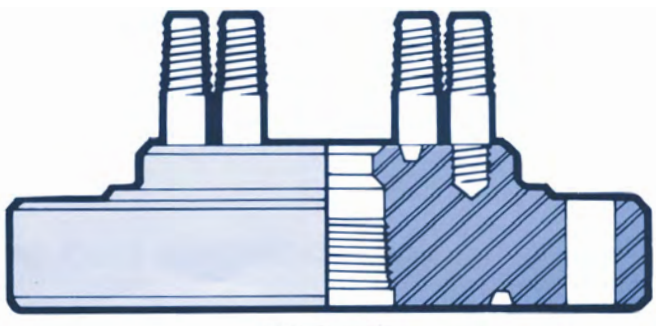


B-1 ADAPTOR

### B-2-P ADAPTORS

| Part No. | Bottom Flange | | Top Flange | | Thread Size (in) | Approx Weight Lbs |
|---|---|---|---|---|---|---|
| | Size (in) | WP (KPSI) | Size (in) | WP (KPSI) | | |
| - | 7⅛ | 2 | 2⅛ | 2 | 2⅜ | 123 |
| - | 7⅛ | 2 | 2⅛ | 2 | 2⅞ | 115 |
| - | 7⅛ | 2 | 3⅛ | 2 | 3½ | 108 |
| 1405 | 7⅛ | 3 | 2⅛ | 5 | 2⅜ | 157 |
| 1406 | 7⅛ | 3 | 2⅛ | 5 | 2⅞ | 149 |
| 1407 | 7⅛ | 5 | 2⅛ | 5 | 2⅜ | 230 |
| 1408 | 7⅛ | 5 | 2⅛ | 5 | 2⅞ | 220 |

Other sizes available upon request.



B-2-P ADAPTOR

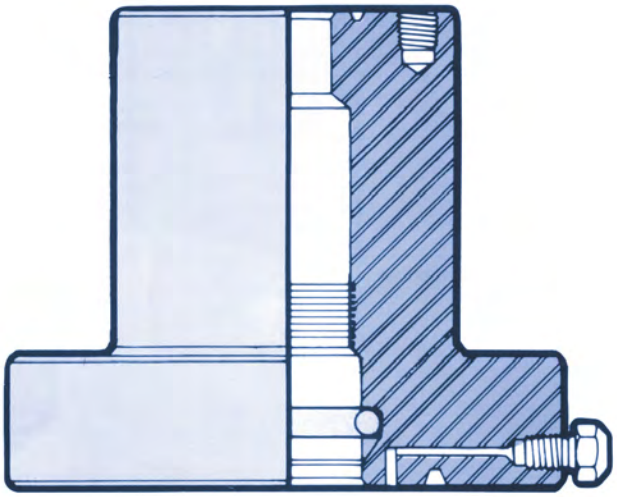
## TUBING HEAD ADAPTORS

BO-2 Tubing Head Adaptors combined with BO-2 Hanger Couplings having Type "H" back pressure valve preparation and utilising a Acme thread makeup provides easy installation and reliable high pressure connection.

When needed, the back pressure valve can be installed for valve repair, removal, installation or changeout of complete Christmas tree. BO-2s are equipped with test ports for testing all seals.

| Part No. | Bottom Flange | | Top Flange | | Tubing Size (in) | Approx Weight Lbs |
|---|---|---|---|---|---|---|
| | Size (in) | WP (KPSI) | Size (in) | WP (KPSI) | | |
| 1601 | 7 1/16 | 3 | 2 1/16 | 5 | 2 3/8 | 259 |
| 1602 | 7 1/16 | 3 | 2 9/16 | 5 | 2 7/8 | 259 |
| - | 7 1/16 | 3 | 3 1/8 | 3 | 3 1/2 | 255 |
| 1603 | 7 1/16 | 5 | 2 1/16 | 5 | 2 3/8 | 281 |
| 1604 | 7 1/16 | 5 | 2 9/16 | 5 | 2 7/8 | 281 |
| - | 7 1/16 | 5 | 3 1/8 | 5 | 3 1/2 | 277 |
| 1611 | 7 1/16 | 5 | 2 1/16 | 10 | 2 3/8 | 278 |
| 1605 | 7 1/16 | 5 | 2 9/16 | 10 | 2 7/8 | 278 |
| 1606 | 7 1/16 | 10 | 2 1/16 | 10 | 2 3/8 | 483 |
| 1607 | 7 1/16 | 10 | 2 9/16 | 10 | 2 7/8 | 483 |
| 1608 | 7 1/16 | 10 | 3 1/16 | 10 | 3 1/2 | 479 |
| - | 7 1/16 | 15 | 2 1/16 | 15 | 2 3/8 | 601 |
| 1610 | 7 1/16 | 15 | 2 9/16 | 15 | 2 7/8 | 601 |
| - | 7 1/16 | 15 | 3 1/16 | 15 | 3 1/2 | 597 |

Other sizes available upon request.



BO-2 ADAPTOR

## BO-2 HANGER COUPLINGS AND BACK PRESSURE VALVES

| Part No. | Size | Approx. Weight Lbs |
|---|---|---|
| 1617 | 2 3/8 OD EUE x 2 3/8 OD EUE | 22 |
| 1615 | 2 7/8 OD EUE x 2 7/8 OD EUE | 15 |
| 1616 | 3 1/2 OD EUE x 3 1/2 OD EUE | 35 |

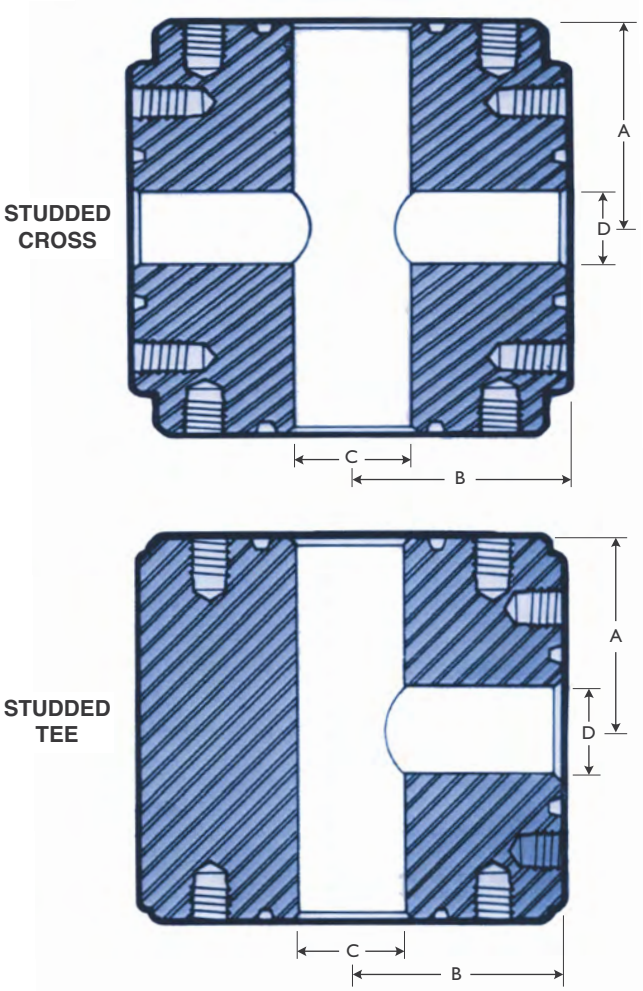
TYPE H BACK PRESSURE VALVE

BO-2 COUPLING

## CROSSES AND TEES

| Part No. | Tee Part No. | Run | Outlets | Dimensions (in) | | | | Approx Weight lbs |
|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | |
| - | - | 2 1/16-2,000 | 2 1/16-2,000 | 3 1/2 | 3 1/2 | 2 1/16 | 2 1/16 | 80 |
| - | - | 2 1/16-5,000 | 2 1/16-5,000 | 4 1/2 | 4 1/2 | 2 1/16 | 2 1/16 | 200 |
| - | 2001 | 2 9/16-2,000 | 2 1/16-2,000 | 3 1/2 | 4 | 2 9/16 | 2 1/16 | 125 |
| - | 2002 | 2 9/16-5,000 | 2 1/16-5,000 | 4 1/2 | 5 | 2 9/16 | 2 1/16 | 290 |
| - | - | 3 1/8-2,000 | 2 1/16-2,000 | 3 1/2 | 4 1/2 | 3 1/8 | 2 1/16 | 165 |
| - | - | 3 1/8-2,000 | 3 1/8-2,000 | 4 1/2 | 4 1/2 | 3 1/8 | 3 1/8 | 198 |
| - | - | 3 1/8-3,000 | 2 1/16-5,000 | 4 1/2 | 5 | 3 1/8 | 2 1/16 | 264 |
| - | - | 3 1/8-3,000 | 3 1/8-3,000 | 5 | 5 | 3 1/8 | 3 1/8 | 264 |
| - | - | 3 1/8-5,000 | 2 1/16-5,000 | 4 1/2 | 5 1/2 | 3 1/8 | 2 1/16 | 300 |
| - | - | 3 1/8-5,000 | 3 1/8-5,000 | 5 1/2 | 5 1/2 | 3 1/8 | 3 1/8 | 386 |
| - | - | 4 1/16-2,000 | 2 1/16-2,000 | 4 1/2 | 5 1/2 | 4 1/16 | 2 1/16 | 231 |
| - | - | 4 1/16-2,000 | 4 1/16-2,000 | 5 1/2 | 5 1/2 | 4 1/16 | 4 1/16 | 405 |
| - | - | 4 1/16-3,000 | 2 1/16-5,000 | 4 1/2 | 6 | 4 1/16 | 2 1/16 | 374 |
| - | - | 4 1/16-3,000 | 4 1/16-3,000 | 6 | 6 | 4 1/16 | 4 1/16 | 495 |
| - | - | 4 1/16-5,000 | 2 1/16-5,000 | 4 1/2 | 6 1/2 | 4 1/16 | 2 1/16 | 407 |
| 2402 | - | 4 1/16-5,000 | 2 9/16-5,000 | 5 | 6 1/2 | 4 1/16 | 2 9/16 | 447 |
| 2406 | - | 4 1/16-5,000 | 3 1/8-5,000 | 5 1/2 | 6 1/2 | 4 1/16 | 3 1/8 | 488 |
| - | - | 4 1/16-5,000 | 4 1/16-5,000 | 6 1/2 | 6 1/2 | 4 1/16 | 4 1/16 | 565 |
| - | - | 1 13/16-10,000 | 1 13/16-10,000 | 4 3/8 | 4 3/8 | 1 13/16 | 1 13/16 | 191 |
| - | - | 1 13/16-15,000 | 1 13/16-15,000 | 5 | 5 | 1 13/16 | 1 13/16 | 257 |
| - | 2403 | 2 1/16-10,000 | 1 13/16-10,000 | 4 3/8 | 4 3/8 | 2 1/16 | 1 13/16 | 191 |
| - | - | 2 1/16-10,000 | 2 1/16-10,000 | 4 3/8 | 4 3/8 | 2 1/16 | 2 1/16 | 191 |
| - | - | 2 1/16-15,000 | 1 13/16-15,000 | 5 | 5 | 2 1/16 | 1 13/16 | 257 |
| 2401 | 2004 | 2 1/16-10,000 | 1 13/16-10,000 | 4 1/2 | 5 1/8 | 2 1/16 | 1 13/16 | 246 |
| - | - | 2 9/16-10,000 | 2 1/16-10,000 | 4 1/2 | 5 1/8 | 2 9/16 | 2 1/16 | 246 |
| - | - | 2 9/16-10,000 | 2 9/16-10,000 | 5 1/8 | 5 1/8 | 2 9/16 | 2 9/16 | 286 |
| - | 2005 | 2 9/16-15,000 | 1 13/16-15,000 | 5 1/2 | 5 1/2 | 2 9/16 | 1 13/16 | 389 |
| - | - | 2 9/16-15,000 | 2 1/16-15,000 | 5 1/2 | 5 1/2 | 2 9/16 | 2 1/16 | 389 |
| - | 2006 | 3 1/16-10,000 | 2 1/16-10,000 | 4 1/2 | 5 1/8 | 3 1/16 | 2 1/16 | 370 |
| - | - | 3 1/16-10,000 | 2 9/16-10,000 | 5 1/8 | 5 1/8 | 3 1/16 | 2 9/16 | 407 |
| - | - | 3 1/16-10,000 | 3 1/16-10,000 | 5 1/8 | 5 1/8 | 3 1/16 | 3 1/16 | 480 |
| - | - | 4 1/16-10,000 | 2 1/16-10,000 | 4 1/2 | 6 1/8 | 4 1/16 | 2 1/16 | 486 |
| - | - | 4 1/16-10,000 | 2 9/16-10,000 | 5 1/8 | 6 1/8 | 4 1/16 | 2 9/16 | 537 |
| - | - | 4 1/16-10,000 | 3 1/16-10,000 | 5 1/8 | 6 1/8 | 4 1/16 | 3 1/16 | 614 |
| - | - | 4 1/16-10,000 | 4 1/16-10,000 | 6 1/8 | 6 1/8 | 4 1/16 | 4 1/16 | 702 |

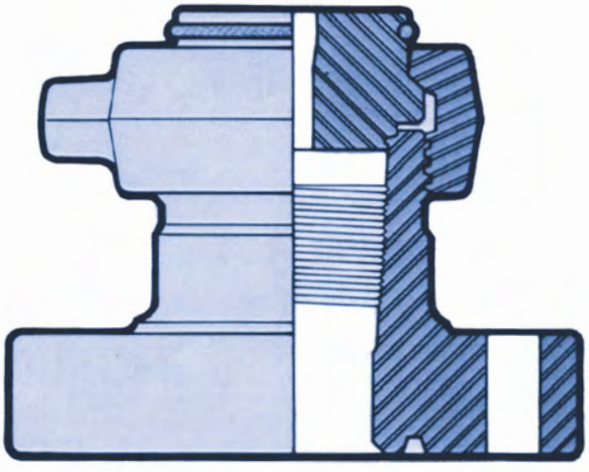
For 20,000 PSI and other sizes see Page 31.




## BOTTOM HOLE TEST ADAPTORS (TREE CAP)

Available in various sizes and working pressures up to 15,000 PSI.

| Part No. | Lower Conn. | Bore | Lift Thread | Approx Weight lbs |
|---|---|---|---|---|
| - | 2 1/16-2,000 | 2 1/16 | 2 1/8 EUE | 36 |
| 2601 | 2 1/16-5,000 | 2 1/16 | 2 1/8 EUE | 52 |
| - | 2 9/16-2,000 | 2 9/16 | 2 1/8 EUE | 40 |
| 2602 | 2 9/16-5,000 | 2 9/16 | 2 1/8 EUE | 60 |
| 2603 | 2 1/16-10,000 | 2 1/16 | 2 1/8 EUE | 84 |
| 2614 | 2 1/16-15,000 | 2 1/16 | 2 1/8 EUE | 90 |
| 2604 | 2 9/16-10,000 | 2 9/16 | 2 1/8 EUE | 88 |
| 2615 | 2 9/16-15,000 | 2 9/16 | 2 1/8 EUE | 95 |
| 2605 | 3 1/16-10,000 | 3 1/16 | 3 1/2 EUE | 95 |
| 2616 | 3 1/16-15,000 | 3 1/16 | 3 1/2 EUE | 103 |



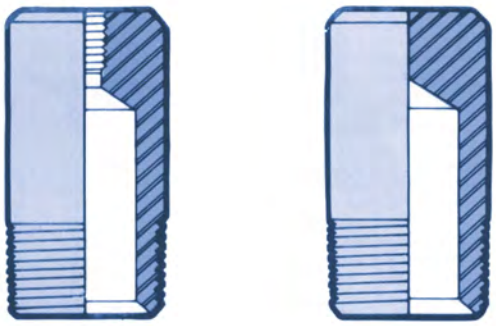
BOTTOM HOLE TEST ADAPTOR

## BULL PLUGS AND NIPPLES

### BULL PLUGS

| Part No. | Size (in) |
|---|---|
| S4201 | 2 LP |
| S4202 | 2⅜ EUE 8rd |
| - | 2½ LP |
| - | 2⅞ EUE 8rd |
| - | 3 LP |
| - | 4 LP |
| S4204 | 2⅜ 8rd ½ NPT |
| S4205 | 2⅞ 8rd ½ NPT |
| S4203 | 2 LPO ½ NPT |

Other sizes on request. For NPT (LP) ⅜" to 4" see Page 43



BULL PLUGS

### DOUBLE X NIPPLES

| Part No. | Size (in) | Length (in) |
|---|---|---|
| S4002 | 2 LP | 6 |
| S4001 | 2 LP | 8 |
| - | 2½ LP | 6 |
| - | 2½ LP | 8 |
| - | 3 LP | 6 |
| - | 3 LP | 8 |
| - | 4 LP | 6 |
| - | 4 LP | 8 |
| S4003 | 2⅜ 8rd | 6 |
| S4004 | 2⅞ 8rd | 6 |

Other sizes available upon request.

Also see Page 44.

DOUBLE X NIPPLE

### REINSTALLATION NIPPLE

Specifications

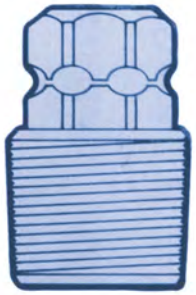
| Part No. | Size | Length |
|---|---|---|
| S4106 | 2" | 8" |

REINSTALLATION NIPPLE

### VALVE REMOVAL PLUG

VR Plugs

| Part No. | Size |
|---|---|
| S3220 | 1¼" |
| S3221 | 1½" |

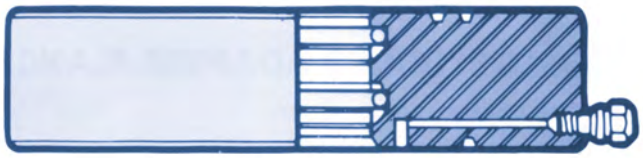


VALVE REMOVAL PLUG

## FLANGES, ADAPTORS, PACKOFF AND STEEL FITTINGS

U-00 Packoff Flanges are designed to slip over the casing above the primary seal between casing. Installed between heads to provide an extra safety fature, they also adapt flange size and upgrade working pressures. Available in both double-stud and drill-through.

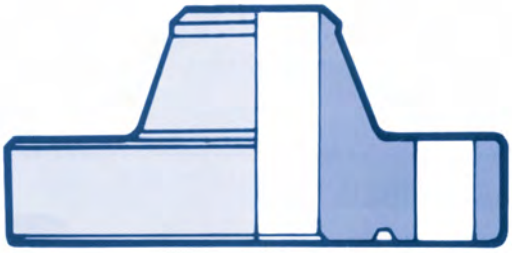
| Part No. | Casing Size (in) | Flange Size (in) | Flange WP (KPSI) | Approx. Weight Lbs. |
|---|---|---|---|---|
| - | 5½ | 11 | 2 | 348 |
| - | 5½ | 11 | 3 | 407 |
| - | 5½ | 11 | 5 | 587 |
| - | 7 | 11 | 2 | 329 |
| - | 7 | 11 | 3 | 389 |
| - | 7 | 11 | 5 | 564 |
| - | 7⅝ | 11 | 2 | 321 |
| - | 7⅝ | 11 | 3 | 481 |
| - | 7⅝ | 11 | 5 | 553 |
| - | 8⅝ | 13⅝ | 2 | 385 |
| - | 8⅝ | 13⅝ | 3 | 472 |
| - | 8⅝ | 13⅝ | 5 | 91 |
| - | 9⅝ | 13⅝ | 2 | 368 |
| - | 9⅝ | 13⅝ | 3 | 455 |
| - | 9⅝ | 13⅝ | 5 | 669 |
| - | 9⅝ | 11 | 10 | 752 |



U-00 PACKOFF ADAPTOR FLANGE

## WELD NECK FLANGE

See Section 2 (1.1 to 1.3 and 3.1 to 3.3)

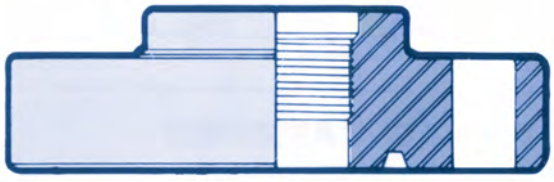


WELD NECK FLANGE

## COMPANION FLANGE

| Part No. | Flange Size (in) | Flange WP (KPSI) | Outlet Prep | Approx. Weight Lbs. |
|---|---|---|---|---|
| 3001 | 2⅛ | 2 | 2 LP | 20 |
| 3003 | 2⅛ | 5 | 2 LP | 31 |
| 3005 | 2⅛ | 5 | 2⅜ 8rd | 31 |
| 3006 | 2⅞ | 5 | 2 LP | 42 |
| 3007 | 2⅞ | 5 | 2⅜ 8rd | 42 |
| 3009 | 1 13/16 | 10 | 2 LP | 23 |
| 3012 | 2⅛ | 10 | 2 LP | 27 |
| 3019 | 2⅛ | 10 | 2⅜ 8rd | 27 |
| 3035 | 1 13/16 | 10 | 2⅜ 8rd | 23 |
| 3020 | 2⅞ | 10 | 2⅜ 8rd | 40 |
| 3034 | 1 13/16 | 15 | 2 LP | 30 |
| 3014 | 1 13/16 | 15 | 2⅜ 8rd | 30 |

Other sizes see Section (1.1 to 1.3)

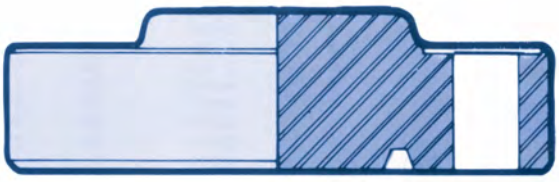


COMPANION FLANGE

## BLIND FLANGE

| Part No. | Flange Size (in) | Flange WP (KPSI) | Outlet | Approx. Weight Lbs. |
|---|---|---|---|---|
| 3010 | 2⅛ | 5 | Blind | 31 |

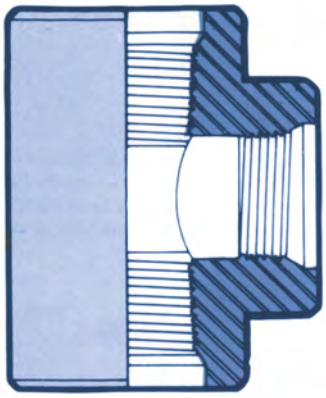
Other sizes see Section 2 (Part 4 to Part 5)



BLIND FLANGE

## FLOW TEES

| Part No. | Run (in) | Outlet (in) | Approx. Weight Lbs. |
|---|---|---|---|
| 2201 | 2⅛8rd | 2 LPO | 20 |
| 2202 | 2⅛8rd | 2 LPO | 17 |

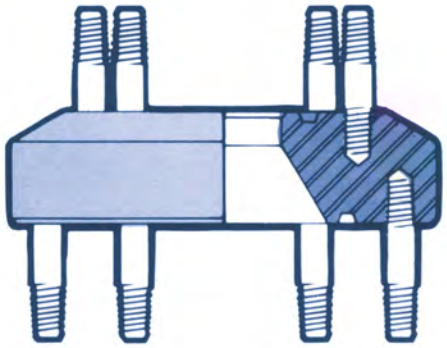


FLOW TEE
FORGED STEEL

## DOUBLE STUDDED ADAPTOR FLANGES

AA-4 Double Studded Adapter Flange
11" 2000# x 11" 3000#
11" 3000# x 11" 5000#
11" 5000# x 11" 10000#
13⅝" 3000# x 11" 5000#
13⅝" 5000# x 11" 5000#

Other sizes available upon request.



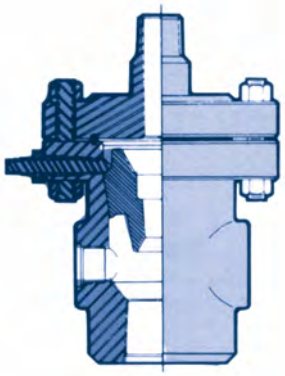
DOUBLE STUDDED ADAPTOR FLANGE

## ASSEMBLIES WELLHEAD

### T-16, B-1 ASSEMBLY

| Part No. | Top Flange | | Bottom Connection (in) | Tubing Size (in) | Outlet Size (in) | Approx. Weight Lbs. |
|---|---|---|---|---|---|---|
| | Size (in) | WP (PSI) | | | | |
| 3401 | 7⅛ | 2 | 2 LP | 2⅜ | 2 LPO | 277 |
| 3402 | 7⅛ | 2 | 2 LP | 2⅛ | 2 LPO | 276 |
| 3403 | 7⅛ | 2 | 2⅜ 8rd | 2⅜ | 2 LPO | 269 |
| 3404 | 7⅛ | 2 | 2 LP | 2⅛ | 2 LPO | 268 |
| 3405 | 7⅛ | 2 | 2⅛ 8rd | 2⅜ | 2 LPO | 252 |
| 3406 | 7⅛ | 2 | 2 LP | 2⅛ | 2 LPO | 251 |
| 3407 | 7⅛ | 3 | 2 LP | 2⅜ | 2 LPO | 350 |
| 3408 | 7⅛ | 3 | 2⅜ 8rd | 2⅛ | 2 LPO | 349 |
| 3409 | 7⅛ | 3 | 2⅜ 8rd | 2⅜ | 2 LPO | 344 |
| 3410 | 7⅛ | 3 | 2⅛ 8rd | 2⅛ | 2 LPO | 341 |
| 3411 | 7⅛ | 3 | 2 LP | 2⅜ | 2 LPO | 318 |
| 3412 | 7⅛ | 3 | 2⅜ 8rd | 2⅛ | 2 LPO | 317 |

Other sizes available upon request.

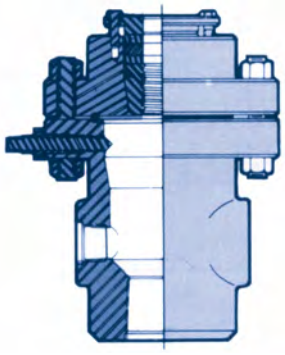


LOW PRESSURE HEAD T-16, B-1 ASSEMBLY

### T-16, AW-1 ASSEMBLY WELLHEAD

| Part No. | Top Flange | | Bottom Connection (in) | Tubing Size (in) | Outlet Size (in) | Approx. Weight Lbs. |
|---|---|---|---|---|---|---|
| | Size (in) | WP (KPSI) | | | | |
| 3413 | 7⅛ | 2 | 4½ 8rd | 2⅜ | 2 LPO | 335 |
| 3414 | 7⅛ | 2 | 4½ 8rd | 2⅛ | 2 LPO | 331 |
| 3415 | 7⅛ | 2 | 5½ 8rd | 2⅜ | 2 LPO | 327 |
| 3416 | 7⅛ | 2 | 5½ 8rd | 2⅛ | 2 LPO | 323 |
| 3417 | 7⅛ | 2 | 7 8rd | 2⅜ | 2 LPO | 310 |
| 3418 | 7⅛ | 2 | 7 8rd | 2⅛ | 2 LPO | 306 |
| 3419 | 7⅛ | 3 | 4½ 8rd | 2⅜ | 2 LPO | 404 |
| 3420 | 7⅛ | 3 | 4½ 8rd | 2⅛ | 2 LPO | 400 |
| 3421 | 7⅛ | 3 | 5½ 8rd | 2⅜ | 2 LPO | 398 |
| 3422 | 7⅛ | 3 | 5½ 8rd | 2⅛ | 2 LPO | 394 |
| 3423 | 7⅛ | 3 | 7 8rd | 2⅜ | 2 LPO | 372 |
| 3424 | 7⅛ | 3 | 7 8rd | 2⅛ | 2 LPO | 368 |

Other sizes available upon request.



LOW PRESSURE HEAD T-16, AW-1 ASSEMBLY

# Oilfield Products
# Products You Can Count On

EXACT EQUIVALENTS PRODUCED BY API6A LICENSED MANUFACTURER

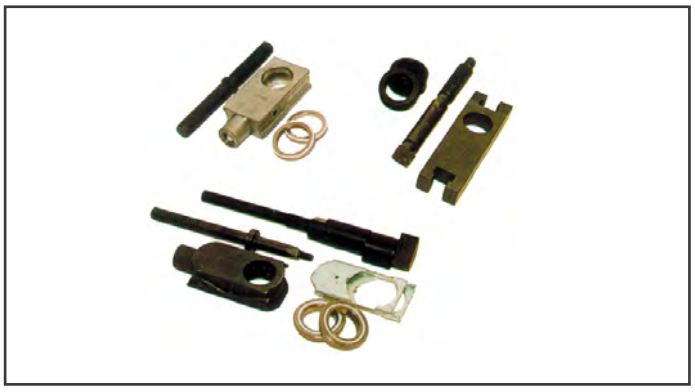
## FMC/OCT STYLE EQUIPMENT:

BO-2 COUPLINGS C21, C22, & C29
CASING HANGERS BOTTOM HOLE TEST
ADAPTERS, PE SEALS MANDREL AND
WRAPAROUND TUBING HANGERS

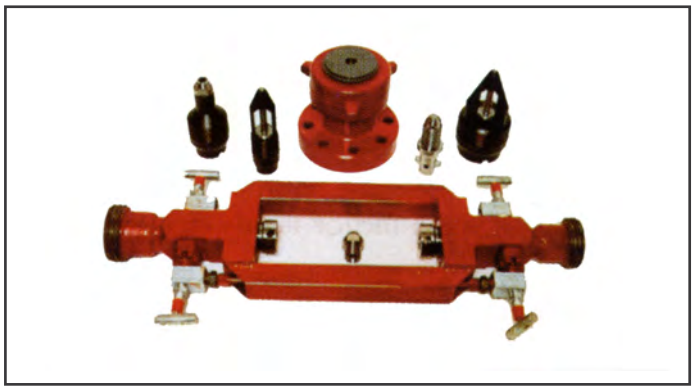
## CIW STYLE EQUIPMENT:

CASING HANGERS, TUBING HANGERS
"R" SEALS, "X" BUSHINGS,
"HB" COUPLINGS, BULL PLUGS,
NIPPLES, RING GASKETS, VR PLUGS

GATE VALVE REPLACEMENT PARTS FOR
DEMCO, CIW, FMC/OCT, GRAY, WKM, SPM



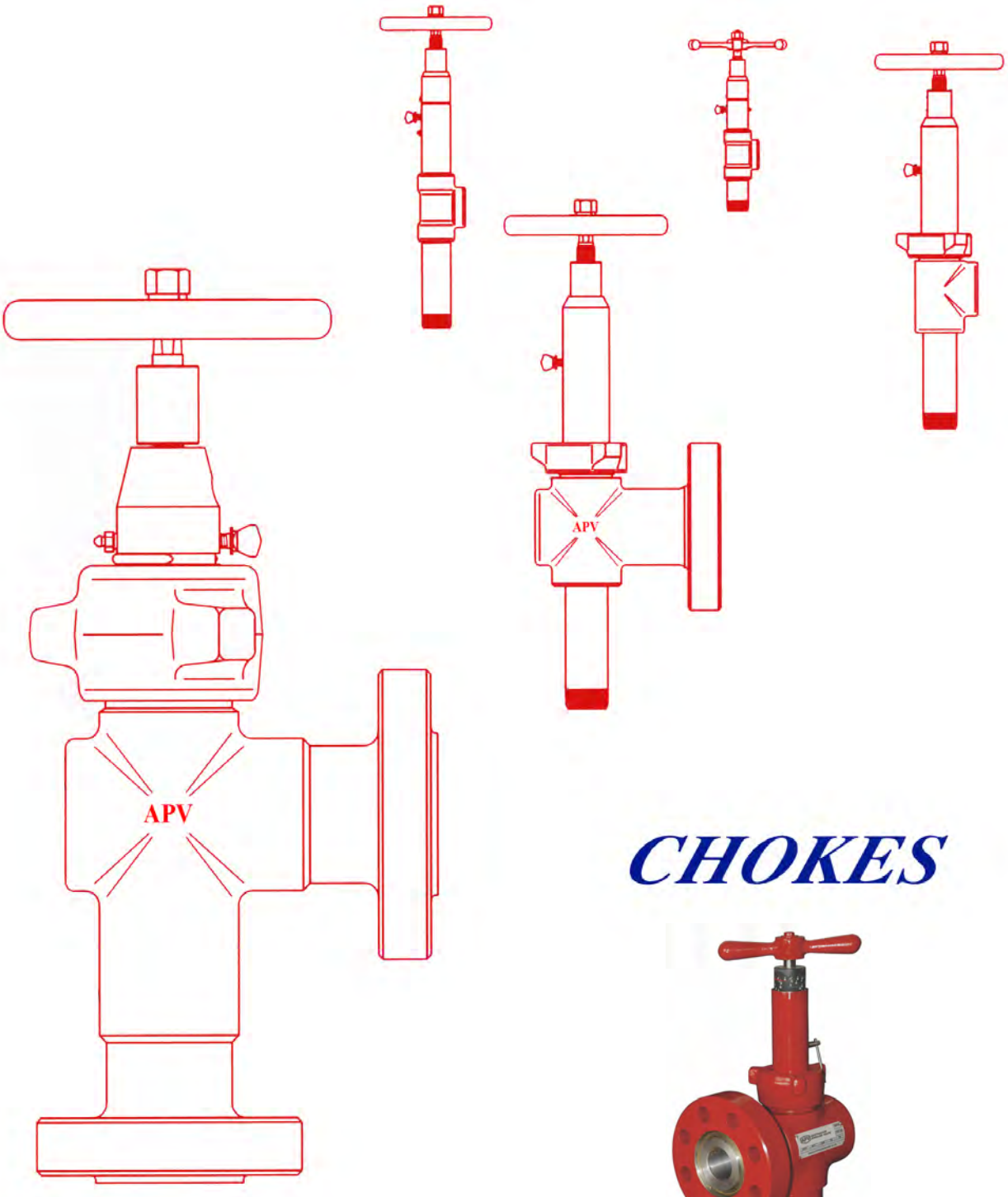
CIW TYPE LUBRICATORS, "H" BACK
PRESSURE & TWO-WAY CHECK VALVES



6A LICENSE

LOWER PRICES & SHORTER DELIVERIES

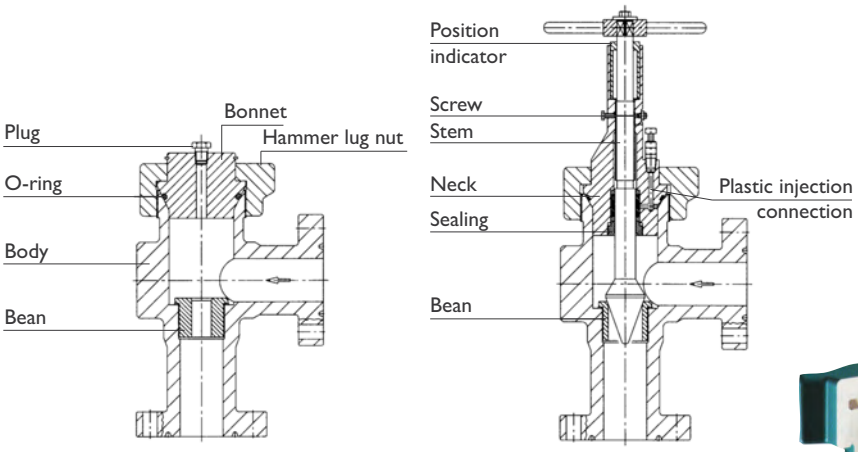
APV
AUSTRALIAN
PIPELINE VALVE®




## CHOKES

APV
AUSTRALIAN PIPELINE VALVE®

## API6A CHOKE




Available in flanged and screwed type. (mandrel type)

### POSITIVE CHOKE

The flow rate is determined by the choke bean, which are changeable. Positive chokes can be converted readily to adjustable choke by replacement of the interchangeable bonnets and internals.

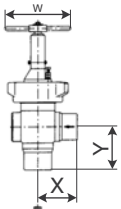
### ADJUSTABLE CHOKE

The flow rate can be adjusted.

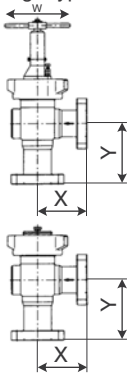
**TRIM/SERVICE:-** See Page 69 and 74 to 77.

FIXED VARIABLE

B
mandrel type

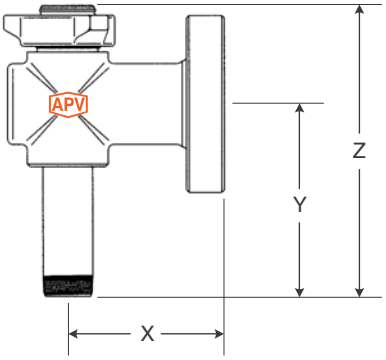


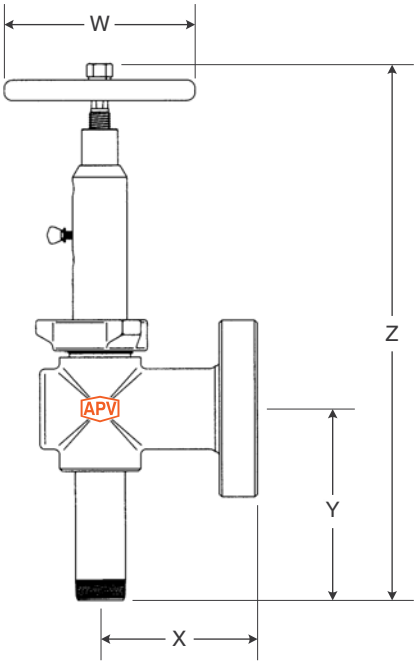

A
flange type

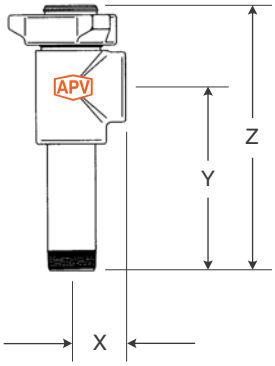


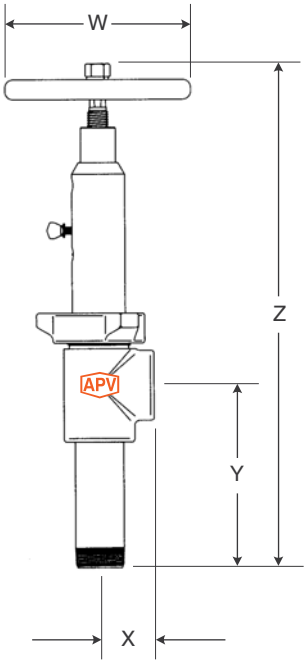

| Flange Size | Mandrel Size | Working Pressure PSI | Type | w | | x | | y | | z | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | mm | in | mm | in | mm | in | mm | in |
| **Maximum bean size 1" (Orifice)** | | | | | | | | | | | |
| - | 2" LP | 3000 | B | | | 87.3 | 3 7/16" | 115.9 | 4 9/16" | | |
| - | 2" LP | 5000 | B | | | 87.3 | 3 7/16" | 115.9 | 4 9/16" | | |
| 2 1/16" | - | 2000 | A | | | 169.9 | 6 1/16" | 198.4 | 7 13/16" | | |
| 2 1/16" | - | 5000 | A | | | 174.6 | 6 7/8" | 203.2 | 8" | | |
| 2 9/16" | - | 5000 | A | | | 176.2 | 6 15/16" | 209.6 | 8 1/4" | | |
| 3 1/8" | - | 3000 | A | | | 198.4 | 7 13/16" | 227.0 | 8 15/16" | | |
| 3 1/8" | - | 5000 | A | | | 246.1 | 9 11/16" | 242.9 | 9 9/16" | | |
| 2 1/16" | - | 10000 | A | | | 195.3 | 7 11/16" | 223.8 | 8 13/16" | | |
| 2 9/16" | - | 10000 | A | | | 208.0 | 8 3/16" | 236.5 | 9 5/16" | | |
| **Maximum bean size 2" (Orifice)** | | | | | | | | | | | |
| - | - | 3000 | B | | | 114.3 | 4 1/2" | 177.8 | 7" | | |
| 2 1/16" | - | 5000 | A | | | 227.0 | 8 15/16" | 290.5 | 11 7/16" | | |
| 2 9/16" | - | 5000 | A | | | 225.4 | 8 7/8" | 298.5 | 11 3/4" | | |
| 3 1/8" | - | 2000 | A | | | 225.4 | 8 7/8" | 288.9 | 11 3/8" | | |
| 3 1/8" | - | 3000 | A | | | 225.4 | 8 7/8" | 288.9 | 11 3/8" | | |
| 3 1/8" | - | 5000 | A | | | 225.4 | 8 7/8" | 288.9 | 11 3/8" | | |
| 4 1/16" | - | 3000 | A | | | 263.5 | 10 3/8" | 295.3 | 11 5/8" | | |
| 4 1/16" | - | 5000 | A | | | 263.5 | 10 3/8" | 320.7 | 12 5/8" | | |
| 2 1/16" | - | 10000 | A | | | 263.5 | 10 3/8" | 304.8 | 12" | | |
| 2 9/16" | - | 10000 | A | | | 263.5 | 10 3/8" | 298.6 | 11 3/4" | | |
| 3 1/16" | - | 10000 | A | | | 263.5 | 10 3/8" | 298.5 | 11 3/4" | | |

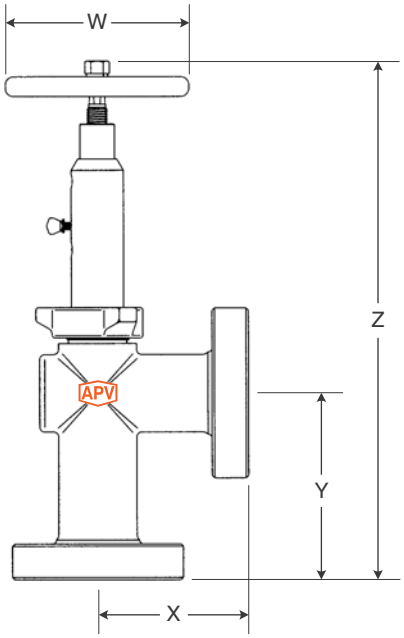
## DIFFERENT CONFIGURATIONS



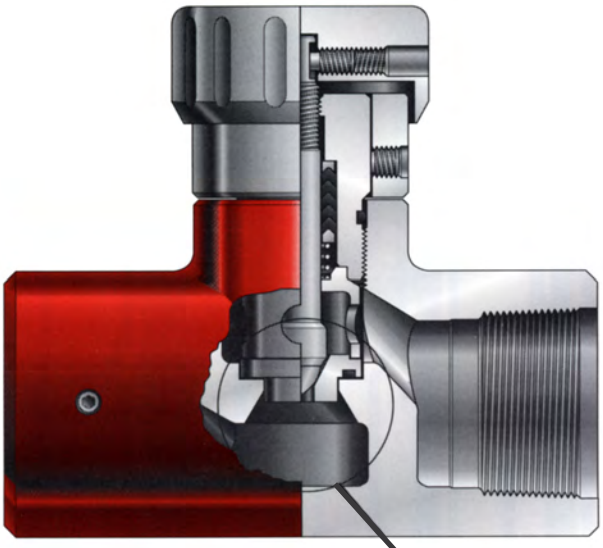



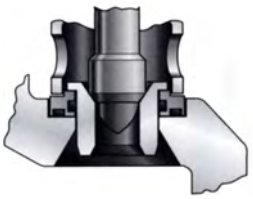



## FCV SERIES FLOW CONTROL VALVES



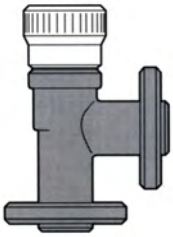
*FCV Flow Control Valve*

**Optional Reverse Flow Check Seat**

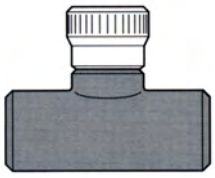


**APV FCV Series Flow Control Valves** are manually adjusted valves designed to provide repeatable settings. Available in 1 and 2-inch body sizes and a wide range of bodies and trim configurations, these valves feature an adjustable handwheel calibrated in sixty-fourths of an inch, and teflon packing for positive seal and maintenance. threaded connections are rated for Service up to 3700 PSI. They are designed to operate in any position and to resist the effects of vibration on the selected setting. Their construction allows easy inspections or replacement of internals without removing the valve from the line. Type 316, 410 or duplex stainless steel bodies, and stainless steel handles and indicator rings are available for corrosive service.

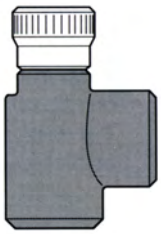
Valve trims and seats are available in 1/8, 1/4, 1/2, 3/4 and 1 inch trim sizes in stainless steel, hard chrome and tungsten carbide materials.



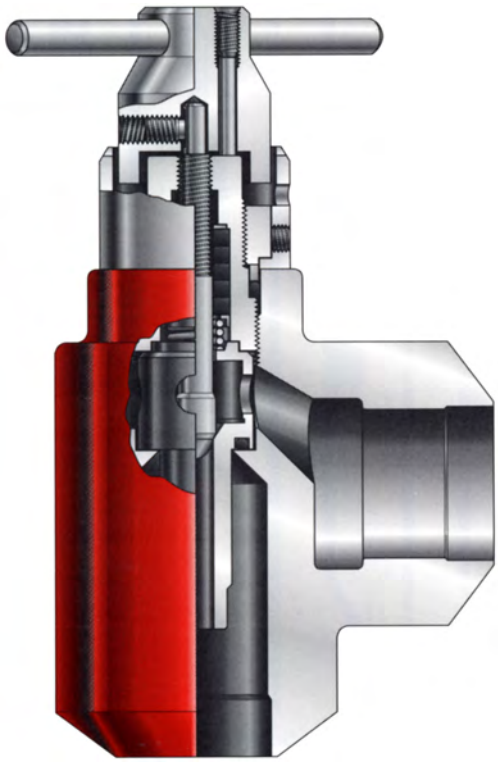
1-Inch Flanged Angle Body



2-Inch Through Body



2-Inch Thread Angle Body



*FCVT High Temperature Flow Control Valve*

**APV FCVT High Temperature Flow Control Valves** are designed for steam injection or other high temperature gas or liquid service. Rated at 3700 psi working pressure at 150°C, these angle body valves feature 1/4, 1/2, 3/4 and 1 inch size trim with stainless steel, hard chrome or tungsten carbide long throat trim and high temperature packing. The high temperature configuration is also available in adjustable choke valve model (ACVT-5). This valve series is also available with flanged end connections.

## FCV SERIES REPAIR INSTRUCTIONS

AUSTRALIAN PIPELINE VALVE®

### Redressing the FCV
***Removing the Trim***

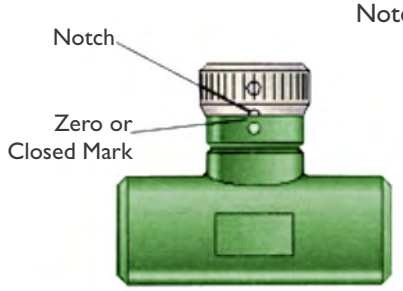



Figure 1

Note:

Notice that the handle has a notch for setting and reading the adjustment of the valve. Directly above and below this notch (when the valve is closed) are the set screws.

1. Open the valve two full terms.
2. Bleed all pressure from the valve.

Caution:

*Escaping gas under pressure. Wear ear protection and warn others in the vicinity.*

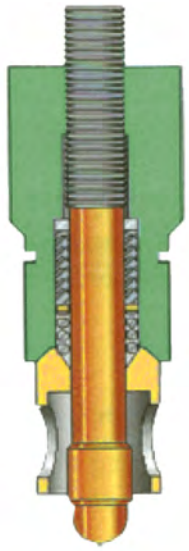


Figure 2

3. Remove the locking set screw from the handle and loosen the remaining set screws from with a 3/16" allen wrench.
4. Remove the handle. The primary set screw should be loosened three full turns to clear stem. Remove the flow indicator ring.
5. Use and adjustment spanner with 1/4" diameter pin (Pt. #10525-S) to remove the packing gland, stem, spring, spacer, and washers. (Figure 2)

***Removing the Packing***

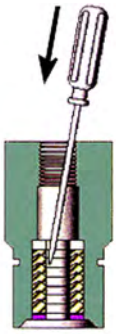


Figure 3

1. Unscrew the stem and remove it from the packing gland. The spacer, spring, and washer will now be free for removal.
2. Push the packing our of the gland with a screwdriver. Remove one or two packing rings at time until all are removed.

Caution:

*Be very careful not to scratch the packing bore.*

## FCV SERIES REPAIR INSTRUCTIONS

APV AUSTRALIAN PIPELINE VALVE®

### *Installing the Packing*

Use special tool 13647-S to install the packing. This tool is customized to exactly fit the packing.

1. Be sure the bore is not scratched or pitted. Grease it with Lubriplate 630 AA.
2. Put Lubriplate between each chevron. With the gland upside down, push each packing chevron ring in place.
3. Apply Lubriplate to the end of the 13647-S tool. The Lubriplate on the end of the 13647-S will pick up the chevron seals (Figure 4)

Note: The first chevron pushed into the gland must have a flat bottom.

4. Push the chevron seals into the bore one at a time (Figure 5).
5. Fit the spring washer, spring, and spacer over the packing as shown. Maintain 8/64" to 15/64" spring compression by removing m/no more than one packing chevron and/or adding spacer washers above or below the spring (Figure 6).
6. Lubriplate the stem and push it through the spacer, spring, spring washer, and packing. Taking care not to damage the stem seating surface, thread the top of the stem into the gland.

Figure 4

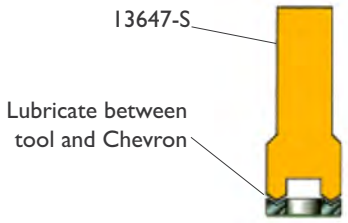



Figure 5

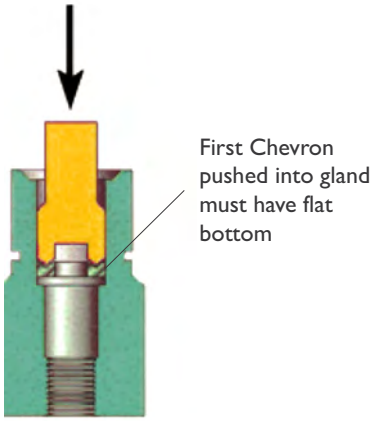
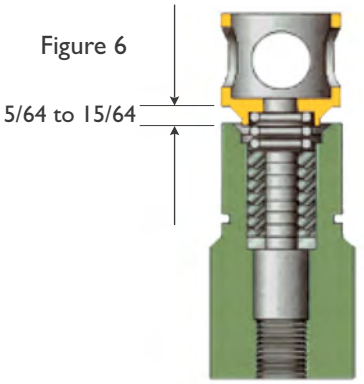
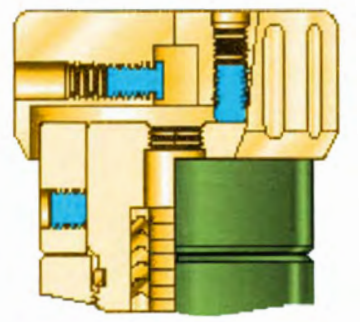



Figure 6




### *Seat and Stem Maintenance*

Figure 7



1. Be sure that the stem and seat are lapped and coated with grease.
2. Put the o-ring in the seat using Lubriplate and install it in the body with the o-ring side down.
3. Re-fit handle to the stem with one set screw. Ensure the screw is set on the stem flat. Turn the stem to the full-up position and wipe the o-ring and the O.D. of the gland with grease before screwing the packing gland into the body with an adjustable spanner.
4. Touch the seat with the gland and stop. Unscrew one-half turn. Run the stem down to assume alignment of the seat. Run the stem up two turns and then tighten the gland securely. Run the stem down snug against the seat.
5. Remove the handle and place the indicator ring on the packing gland.
6. Replace the handle. Raise or lower the handle so that its bottom edge is even with the zero mark on the indicator. Tighten the first set screw to lock the handle to the stem. Lock the flow indicator ring to the packing gland. Use the second handle set screw to lock the first handle set screw.

## WFC SERIES WATERFLOOD CONTROL VALVES

APV AUSTRALIAN PIPELINE VALVE®

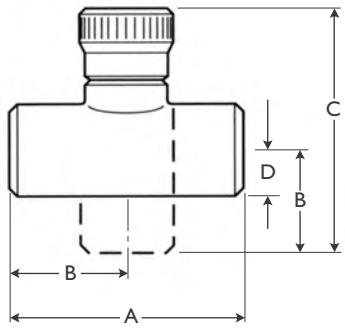
**APV WFC Waterflood Control Valves** are designed specifically for waterflood applications. they are available in either 1 or 2-inch angle body configurations with threaded, buttweld or flanged connections. This design contains a long throat seat to control the turbulence and erosion associated with liquid service. Standard features of this valve include the adjustable hand wheel calibrated in sixty-fourths of an inch and teflon packing for positive seal and minimum maintenence. An optional feature is the availability of a secondary positive choke bean for high pressure differentials. This feature is designed for a 60% and 40% pressure drop across the primary and secondary controls respectively.

Stainless steel, hard chrome or tungsten carbide trims are available in 1/8, 1/4, 1/2, 3/4 and 1 inch trim sizes. The long throat seat, stainless steel handle and indicator ring are standard.

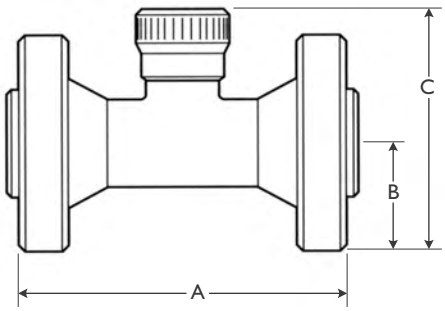
*WFC Waterflood Valve*

## DIMENSIONAL DATA FOR FCV, WFC AND FCV-2X

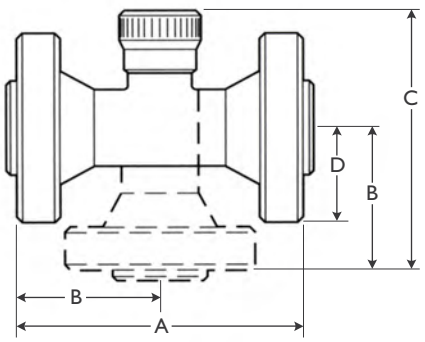
| End Connections | Dimensions (inches) | | | | | | | | | | | | Approximate Weight in Lbs. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | | | B | | | C | | | D | | | | | |
| Type / Size | 1 | 2 | 2x | 1 | 2 | 2x | 1 | 2 | 2x | 1 | 2 | 2x | 1 | 2 | 2x |
| Screwed | 6.30 | 7.80 | | 2.95 | 3.90 | | 7.90 | 8.81 | | 1.06 | 1.72 | | 10 | 20 | |
| Butt Weld | 5.00 | 6.75 | | 2.50 | 3.37 | | 7.45 | 8.065 | | 1.06 | 1.72 | | 10 | 20 | |
| Socket Weld | 5.12 | 6.75 | | 2.56 | 3.37 | | 7.51 | 8.65 | | 1.06 | 1.72 | | 10 | 20 | |
| Series 150 RF | | 9.00 | | | 4.50 | | | 9.78 | | | 3.00 | | | 32 | |
| Series 300 RF | | 10.00 | | 5.00 | | | | 10.28 | | | 3.25 | | | 32 | |
| Series 600 RF | 8.50 | 11.50 | 11.50 | 4.25 | 5.75 | 5.75 | 9.20 | 11.03 | 9.65 | 2.44 | 3.25 | 3.25 | 18 | 40 | 34 |
| Series 600 RJ | 8.50 | 11.62 | 11.60 | 4.25 | 5.81 | 5.81 | 9.20 | 11.09 | 9.71 | 2.44 | 3.25 | 3.25 | 18 | 40 | 34 |
| Series 1500 RF | 10.00 | 14.50 | | 5.00 | 7.25 | | 9.95 | 12.53 | | 2.94 | 4.25 | | 30 | 70 | |
| Series 1500 RJ | 10.00 | 14.62 | | 5.00 | 7.31 | | 9.95 | 12.59 | | 2.94 | 4.25 | | 30 | 70 | |
| Series 900 RF | 10.00 | 14.50 | 14.50 | 5.00 | 7.25 | 7.25 | 9.95 | 12.53 | 11.25 | 2.94 | 4.25 | 4.25 | 30 | 70 | |
| Series 900 RJ | 10.00 | 14.62 | 14.62 | 5.00 | 7.31 | 7.31 | 9.95 | 12.59 | 11.21 | 2.94 | 4.25 | 4.25 | 30 | 70 | 90 |
| API 3000 | | 14.62 | | | 7.31 | | | 12.59 | | | 4.25 | | | 70 | |
| API 5000 | | 14.62 | | | 7.31 | | | 12.59 | | | 4.25 | | | 70 | |




FCV - WFC




FCV - FLANGED




FCV - 2X

# API6A GATE VALVES



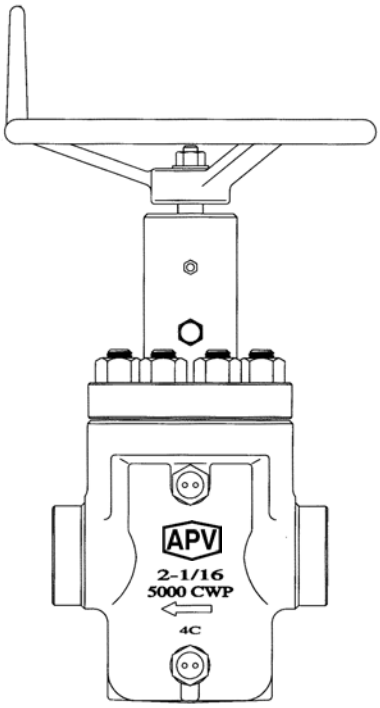
## OVERVIEW

### MODEL M/HM & FC GATE VALVE OVERVIEW

APV API6A Gate Valves are integral body, bi-directional, parallel sided gate valves that are available in solid slab with a floating seat (Model FC) where the sealing force supplied by line pressure, or in expanding self energised slab (Model R).

The Type 'M', 'HM' and 'FC' Gate Valves are proven designs that have been standard in the oil field for more than forty years. Because of APV's commitment to quality and the reliability of these standard designs, these valves can be maintained anywhere in the world, even in the most remote locations, without having to procure hard to find parts.

Available from 1-13/16" to 7-1/16" and from 2,000 psi to 15,000 PSI working pressures.




## FEATURES AND BENEFITS

**MINIMAL TORQUE:** Upper and lower bearings are used to minimize operating stem torque and are isolated from well fluids to increase durability.

**BI-DIRECTIONAL SEALS:** The one piece, parallel sided (Model FC) slab gate seals on a floating seat. The sealing force is supplied by line pressure. The expanding type self energised slab (Model M/HM) seals on both seats.

**METAL TO METAL STEM BACK SEAT:** The gate stem has a bevelled shoulder which allows for metal-to-metal sealing to the bonnet seat.

**FULL THROUGH CONDUIT:** The full through conduit I.D. provides smooth flow with minimal turbulence as well as providing an unobstructed passage for well intervention tools.

**REPLACEABLE GATE AND SEATS:** Gate and seats are field-replaceable.

**RE-ENERGIZEABLE STEM PACKING:** The Stem Packing can be re-energized by injection plastic sealant in between the packing stacks.

**STEM PACKING REPLACEABLE WITH VALVE UNDER PRESSURE:** The bonnet stem to back-seat seal allows the stem packing to be replaced with the valve under pressure.

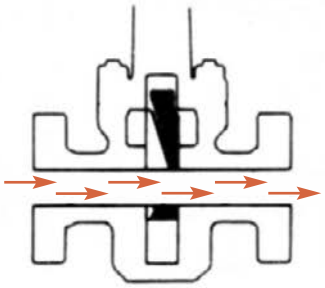
**GREASE FITTING** The valve body may be greased through the fitting provided in the valve Bonnet.

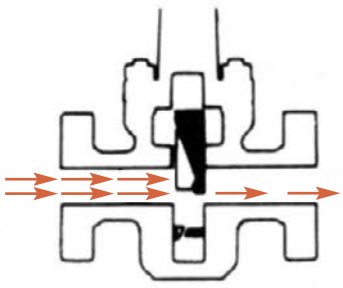
## OPERATION

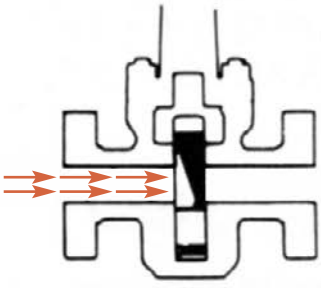
**TO CLOSE THE VALVE**, rotate the handwheel clockwise, the gate will move downward to the bottom of the body, then rotate the handwheel counter-clockwise one half of a rotation to permit the gate movement under pressure. Do not "cheat".

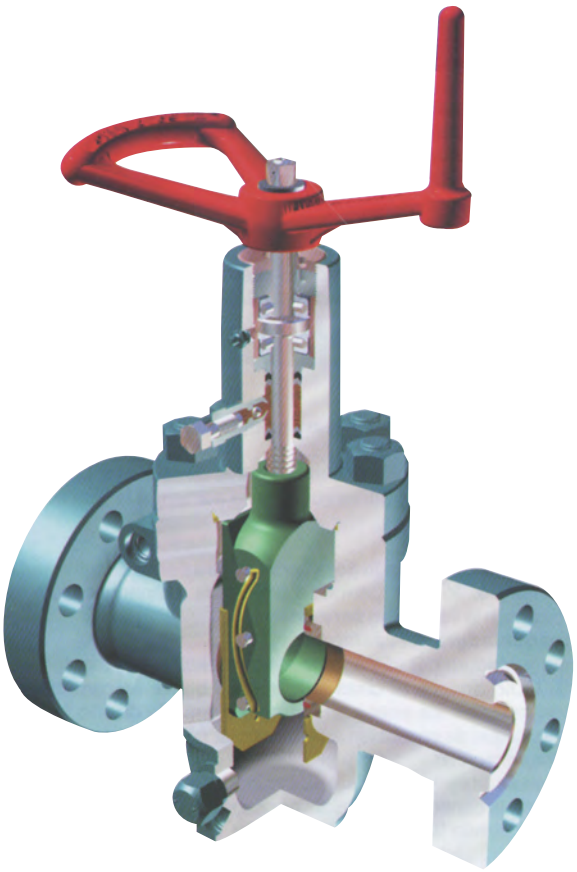
**TO OPEN THE VALVE**, rotate the handwheel counter-clock-wise until the gate stops at the bonnet

**TO CLOSE THE VALVE**, rotate the handwheel clockwise until the gate stops at the bottom.









**API Spec 6A Gate Valves**

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## MODEL M/HM GATE VALVE

### FEATURES

#### FULL BORE THROUGH-CONDUIT

The through-conduit design of the model "M" and "HM" gives a full round bore. Destructive turbulence is eliminated.

#### SEALS WITHOUT LUBRICATION

Model "M" and "HM" gate valves do not require lubrication for positive sealing in normal operation. Lubrication can be employed as an emergency measure to help effect a temporary seal in the event the gate or seals have become damaged by foreign matter in the valve.
Two safety-capped grease fittings are provided so that the entire valve body can be filled with grease.

#### REPACKABLE UNDER PRESSURE

APV plastic stem packing can be added to the packing box while the valve is under pressure.

#### SEAT INSERTS GIVE DOUBLE SEAL

Seat inserts of PTFE (tetrafluoroethylene resin) give an initial PTFE-to-metal seal in addition to the metal-to-metal seal which is obtained when the gate assembly is fully expanded. All metal to metal stellite faced seating also available.

### TRIM CHART

| Application | *H2S | **CO2 | Fluid Class |
|---|---|---|---|
| General Service (A) Non Corrosive | <0.05 | <7 | AA |
| General Service (B) Slightly corrosive (Low CO2) | <0.05 | 7 to 30 | BB |
| General Service (C) Moderately to highly corrosive (High CO2) | <0.05 | >30 | CC |
| Sour Service (D) Meets Nace MR-0175 H2S | >0.05 | <7 | DD |
| Sour Service (E) Slightly corrosive H2S (Low CO2) | >0.05 | 7 to 30 | EE |
| Sour Service mod. (H) to highly corrosive (High CO2 + H2S) | >0.05 | >30 | FF |
| Sour Service mod. to highly corrosive and chlorides (High H2S high CO2) | >0.05 | >30 | HH |

* Hydrogen sulphide partial pressure (in psi a) as defined by NACE MR - 01 - 75

** Partial pressure of carbon dioxide (in psi a).
Formula: Partial pressure (PP) = well pressure (psi) X percent of constituent in total well fluid X 1/100
Example: CO2 PP= 3000 psi X 4% x 1/100 = 120 psi*
Material must be chosen to resist CO2 weight loss corrosion.

## MODEL M & HM

## RUGGED & DEPENDABLE PROVEN DESIGN

The APV API6A valve is designed for the primary control of high pressure gas and fluid. The valve is a through-conduit type allowing positive closure of the full bore. In both the open/close positions the expanding gate is forced into contact with the seats by the wedging force derived from the design of the gate.

The gate assembly design is a two-piece design with the stem to gate interface on the gate major segment sub-assembly. The gate assembly is bored with the port size, and milled with the "V" surface to accommodate the minor segment sub-assembly.

The gate assembly design uses the "V" to force the two segments out and into contact with the seats as shown in the illustration. The lateral travel generated with this design promotes a complete seal between the seat and gate. This feature promotes the use of this valve in all pressure ranges when a positive seal is required with no pressure assisting the closure.

## FIELD PROVEN DESIGN FEATURES

**INTEGRAL CAST STEEL BODY** of the valve meets or exceed the API Standard 6A and NACE MR-01-75 requirements. Forged body also available.

**BONNET** on the valve uses standard field service tools for valve maintenance.

**EXTERNAL GREASE FITTING** to ensure easy access for lubrication.

**COATED STEMS** for reduced friction.

High Efficiency Thrust Bearings are used to reduce torque to a minimum.

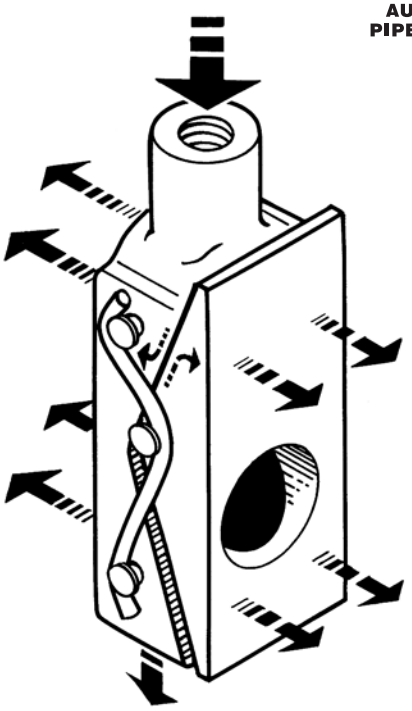
**SECONDARY PLASTIC** packing injection port for emergency pack-off.

**AUXILIARY OPERATORS** are easily installed.

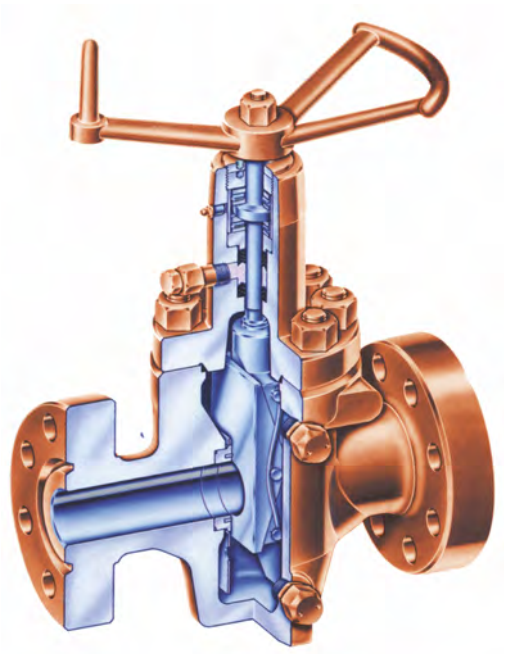
**EXPANDING GATE ASSEMBLY** ensures a positive seal. The M and HM series valve offer a dual sealing design with an elastomeric low pressure seal in addition to metal-to-metal high pressure sealing. All metal to metal stellite faced seating also available. Floating seated style with pressure energised solid slab is also available (Type FC).

**SEAT** design eliminates the seat from being displaced from the pocket by high pressure. The seats are field replaceable without moving the valves from the tree.

**TRIMS AVAILABLE** for eight standard service environments. Special trims are available on request from APV to meet the most demanding environments.



**CONCEPT OF EXPANDING GATE (MODEL M)**
(Solid Floating Gate also Available type FC)



**MODEL M**

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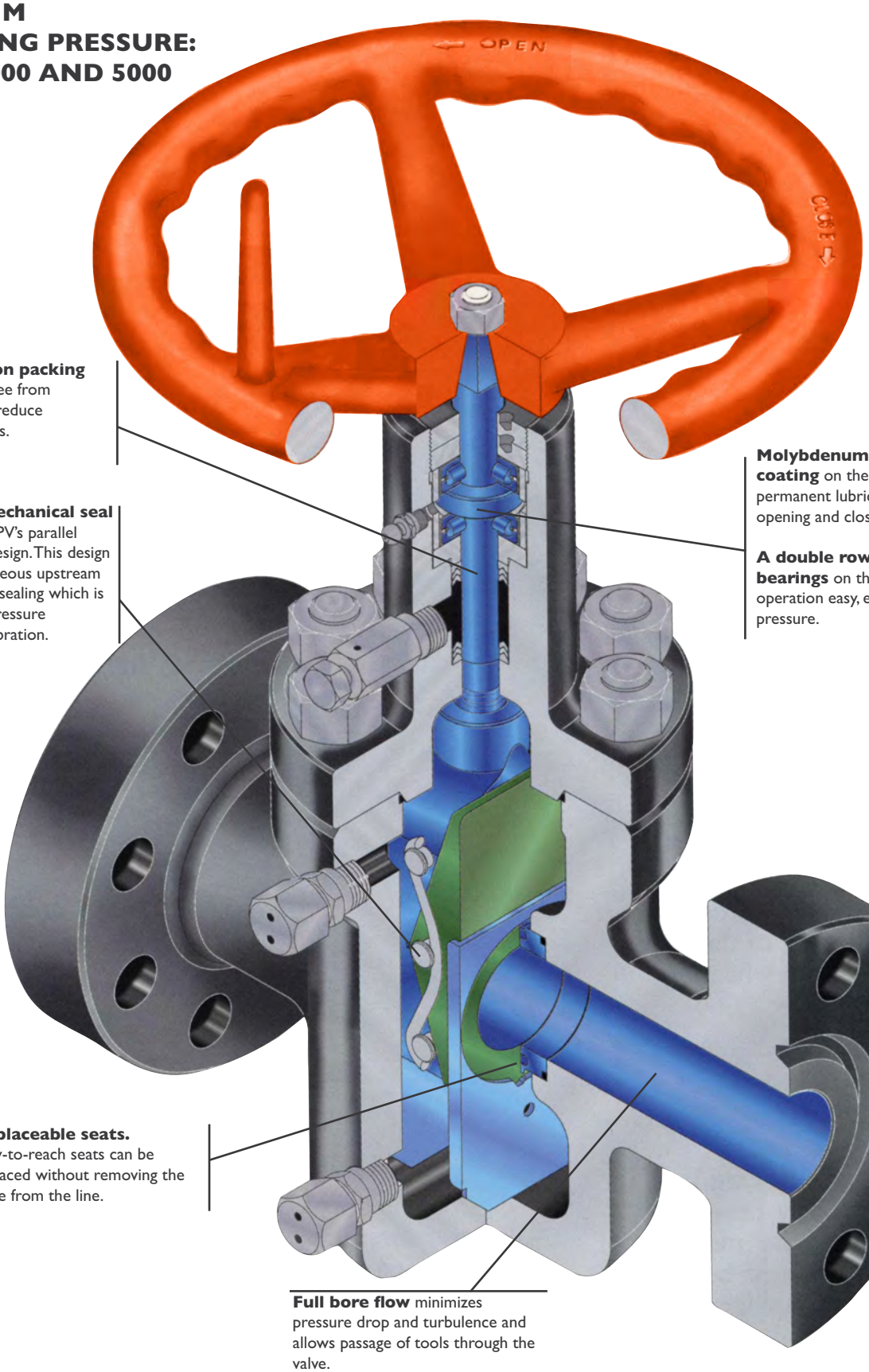
## EXPANDING SEAL

**MODEL M**
**WORKING PRESSURE: 2000, 3000 AND 5000 PSI**




**Plastic/chevron packing** stays clean and free from contaminants to reduce maintenance costs.

**Dead-tight mechanical seal** is assured with APV's parallel expanding gate design. This design provides simultaneous upstream and downstream sealing which is not affected by pressure fluctuations or vibration.

**Molybdenum disulfide coating** on the stem provides a permanent lubrication for easier opening and closing.

**A double row of roller thrust bearings** on the stem makes operation easy, even under full pressure.

**Replaceable seats.** Easy-to-reach seats can be replaced without removing the valve from the line.

**Full bore flow** minimizes pressure drop and turbulence and allows passage of tools through the valve.

## MODEL HM WORKING PRESSURE: 10,000 AND 15,000PSI

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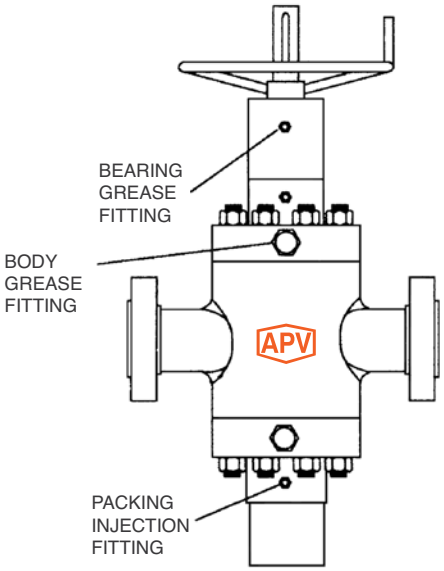


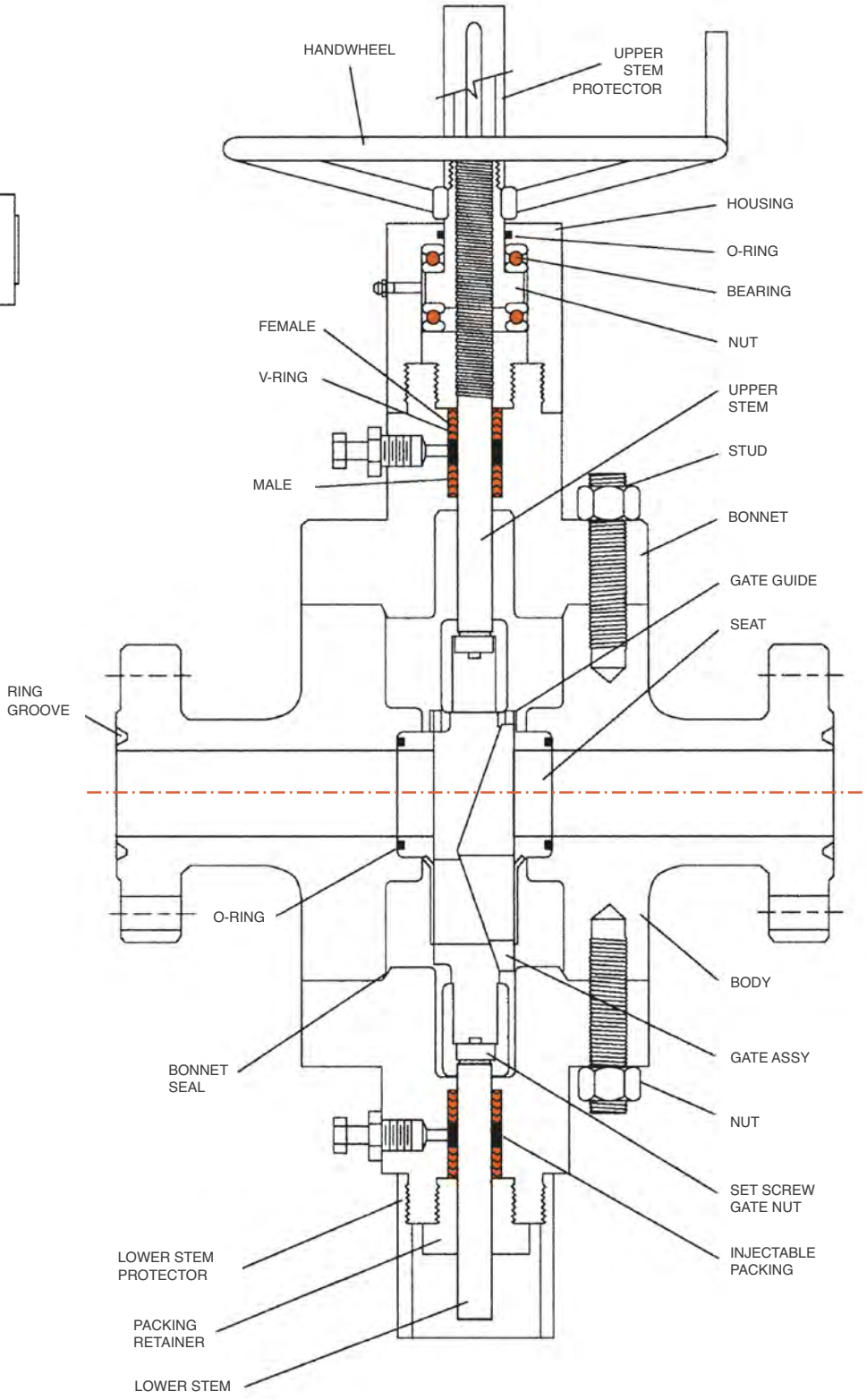

## DIMENSIONS MODEL M AND FC API GATE VALVE

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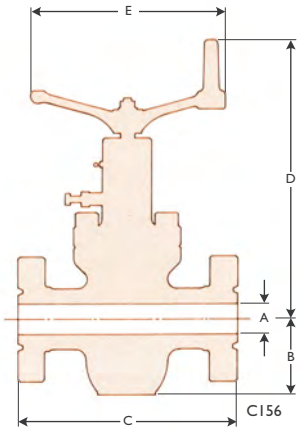
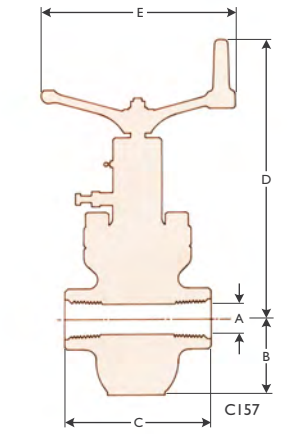



### FLANGED END VALVES 2000, 3000, 5000 PSI MODEL M AND FC

| Size | Working Pressure | A | B | C | D | E | N* | Weight lbs |
|---|---|---|---|---|---|---|---|---|
| 2 1/16" | 2000<br>3000, 5000 | 2 1/16 | 4 13/16<br>5 1/16 | 11 5/8<br>14 5/8 | 19 1/4<br>19 7/16 | 11<br>13 | 13 | 91<br>150 |
| 2 9/16" | 2000<br>3000, 5000 | 2 9/16 | 5 5/8<br>5 15/16 | 13 1/8<br>16 5/8 | 20 3/16<br>20 7/16 | 13<br>16 | 15 1/2 | 125<br>205 |
| 3 1/8" | 2000<br>3000<br>5000 | 3 1/16-3 1/8 | 6 15/16<br>7 5/16<br>7 5/16 | 14 1/8<br>17 1/8<br>18 5/8 | 22 1/2<br>22 3/4<br>22 3/4 | 13<br>16<br>16 | 20 | 181<br>265<br>296 |
| 4 1/16" | 2000<br>3000<br>5000 | 4 1/8 | 8 5/8<br>9 1/16<br>9 1/16 | 17 1/8<br>20 1/8<br>21 5/8 | 25 15/16<br>26 3/8<br>26 3/8 | 16<br>20<br>20 | 24 1/2 | 345<br>515<br>530 |

*Number of turns to open.

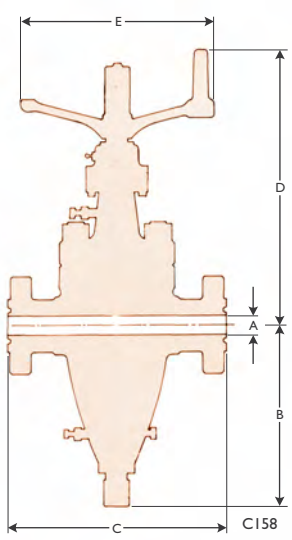



### THREADED VALVES 2000, 3000, 5000 PSI WP MODEL M AND FC

| Size | Working Pressure | A | B | C | D | E | N* | Weight lbs |
|---|---|---|---|---|---|---|---|---|
| 2 1/16" | 2000<br>3000, 5000 | 2 1/16 | 4 13/16<br>5 1/16 | 6 5/8 | 19 1/4<br>19 7/16 | 11<br>13 | 13 | 91<br>150 |
| 2 9/16" | 2000<br>3000, 5000 | 2 9/16 | 5 5/8<br>5 15/16 | 10 1/4 | 20 3/16<br>20 7/16 | 13<br>16 | 15 1/2 | 125<br>205 |
| 3 1/8" | 2000<br>3000, 5000 | 3 1/16-3 1/8 | 6 15/16<br>7 5/16 | 11 3/8 | 22 1/2<br>22 3/4 | 13<br>16<br>16 | 20 | 181<br>265<br>296 |
| 4 1/16" | 2000<br>3000, 5000 | 4 1/8 | 8 5/8<br>9 1/16 | 13 | 25 15/16<br>26 3/8 | 16<br>20<br>20 | 24 1/2 | 345<br>515<br>530 |

*Number of turns to open.

## MODEL HM API GATE VALVE




### FLANGED END VALVES 10000 PSI WP MODEL HM

| Size | A | B | C | D | E | N* | Weight lbs |
|---|---|---|---|---|---|---|---|
| 1 13/16 | 1 13/16 | 14 5/8 | 18 1/4 | 21 3/4 | 14 | 14 | 275 |
| 2 1/16 | 2 1/16 | 16 | 20 1/2 | 23 3/4 | 18 | 12 | 545 |
| 2 9/16 | 2 9/16 | 19 | 22 1/4 | 26 1/2 | 20 | 15 | 565 |
| 3 1/16 | 3 1/16 | 21 1/4 | 24 3/8 | 29 1/2 | 24 | | 900 |
| 4 1/16 | 4 1/16 | 27 1/2 | 26 3/8 | 36 3/4 | 26 | 23 | 1080 |

*Number of turns to open.

### FLANGED END VALVES 15000 PSI WP MODEL HM

| Size | A | B | C | D | E | N* | Weight lbs |
|---|---|---|---|---|---|---|---|
| 1 13/16 | 1 13/16 | 14 1/2 | 18 1/4 | 21 1/2 | 12 | 12 | 280 |
| 2 1/16 | 2 1/16 | 16 | 20 1/2 | 23 | 18 | 14 | 490 |
| 2 9/16 | 2 9/16 | 19 | 22 1/4 | 25 | 20 | 15 | 570 |
| 3 1/16 | 3 1/16 | 21 | 24 3/8 | 29 | 23 | 18 | 850 |
| 4 1/16 | 4 1/16 | 26 | 26 3/8 | 36 | 26 | 23 | 1080 |

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## APV STANDARDS

APV Standards comply with technical specification API-6A. The description for APV equipment consists of a general description, working pressure, temperature rating, material class rating, product specification level (PSL) and performance requirement (PR). These ratings are defined in the following API-6A tables.

To comply with API-6A (ISO 10423), APV offers:
Pressure ratings in psi: 2000, 3000, 5000, 10,000 & 15,000.
Temperature ratings: L, P, R, S, T, U, V, X, & Y.
Material class: AA, BB, CC, DD, EE, FF & HH.
Product specification level: 1, 2, 3 & 4 (PSL 1, 2, 3, 4)
Performance requirement: 1 & 2.

### RECOMMENDED MINIMUM PSL FOR PRIMARY PARTS

| NACE | No | Yes | Yes | Yes | No | Yes |
|---|---|---|---|---|---|---|
| High H2S Concentrate | No | No | Yes | No | No | Yes |
| Close Proximity * | No | No | No | Yes | Yes | Yes |
| ***Rated Working Pressure, PSI :-*** | | | | | | |
| | PSL | PSL | PSL | PSL | PSL | PSL |
| 5,000 | 1 | 1 | 2 | 2 | 1 | 3 |
| 10,000 | 2 | 2 | 3 | 3 | 3 | 4 |
| 15,000 and up | 3 | 3 | 4 | 4 | 4 | 4 |

* See paragraph A5 of API-6A 17a. Ed.

**PR1** is standard
**PR2** also available (increased cycle times on test required)

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## API MATERIAL REQUIREMENTS

| MATERIAL CLASS | MINIMUM MATERIAL REQUIREMENTS | |
|---|---|---|
| | BODY, BONNET & FLANGE | PRESSURE CONTROLLING PARTS |
| AA - General Service | Carbon or low alloy steel | Carbon or low alloy steel |
| BB - General Service | Carbon or low alloy steel | Stainless Steel |
| CC - General Service | Stainless Steel | Stainless Steel |
| DD - Sour Service [a] | Carbon or low alloy steel [b] | Carbon or low alloy steel [b] |
| EE - Sour Service [a] | Carbon or low alloy steel [b] | Stainless Steel [b] |
| FF - Sour Service [a] | Stainless Steel [b] | Stainless Steel [b] |
| HH - Sour Service [a] | CRAs [bcd] | CRAs [bcd] |

As per API6A (ISO 10423) 2013:
a As defined by ISO 15156 (all parts) (NACE MR0175) (see API6A)
b In accordance with ISO 15156 (all parts) (NACE MR0175) (see API6A)
c CRA required on retained fluid-wetted surfaces only; CRA cladding of low-alloy steel is permitted (see API6A)
d CRA as defined in API6A; ISO 15156 (all parts) (NACE MR0175; see API6A) definition of CRA does not apply.

## API TEMPERATURE RATINGS

| TEMPERATURE CLASSIFICATION | OPERATING RANGE | | | | | |
|---|---|---|---|---|---|---|
| | F° | | | C° | | |
| | MIN. | | MAX. | MIN. | | MAX. |
| K | -75 | to | 180 | -60 | to | 82 |
| L | -50 | to | 180 | -46 | to | 82 |
| N | -50 | to | 140 | -46 | to | 60 |
| P | -20 | to | 180 | -29 | to | 82 |
| R* | Room Temperature* | | | | | |
| S | 0 | to | 140 | -18 | to | 60 |
| T | 0 | to | 180 | -18 | to | 82 |
| U | 0 | to | 250 | -18 | to | 121 |
| V | 35 | to | 250 | 2 | to | 121 |
| X* | 0 | to | 350 | -18 | to | 177 |
| Y* | 0 | to | 650 | -18 | to | 343 |

*No longer referenced in API6A/ISO10423 - 2013

## API PRESSURE/TEMPERATURE RATINGS (Y)*

| | TEMPERATURE IN °F | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0 to 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 |
| Rated Working Pressure PSI | 2000 | 1955 | 1905 | 1860 | 1810 | 1735 | 1635 | 1540 | 1430 |
| | 3000 | 2930 | 2860 | 2785 | 2715 | 2605 | 2455 | 2310 | 2145 |
| | 5000 | 4880 | 4765 | 4645 | 4525 | 4340 | 4090 | 3850 | 3575 |

*Based on 'Y' Temp. Due to elastomers Gate Valves & Chokes are temp 'T' or 'U' as standard hence consult separate chart

### PSL (PRODUCT SPECIFICATION LEVEL) MATERIAL REQUIREMENTS

PSL Material Requirements are found in API Specification 6A, Specification for Wellhead and Christmas Tree Equipment Section 400

### PSL (PRODUCT SPECIFICATION LEVEL) QUALITY CONTROL

PSL Quality Control is found in API Specification 6A, Specification for Wellhead and Christmas Tree Equipment Section 400

### PSL (PERFORMANCE REQUIREMENTS) LEVELS

There are two Performance Requirement Levels, PR1 and PR2. The latter represents more rigorous performance requirements. See API Specification 6A, Section 300 and Section 900.
Section 905 covers valves (905.3 - Flowline Valves, 9.5.5 - Actuated Valves).

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## API6A TRIM TYPES

| TRIM CODE | API SPEC, 6A RETAINED FLUID RATING | TRIM TYPE |
|---|---|---|
| T-21 | AA | **STANDARD TRIM**<br>For essentially non corrosive liquids or gases. Typical are crude and reined oils, natural or refined gases and processed hydrocarbons. Typical uses are wellheads, manifolds, flowlines, and other similar installations requiring a through conduit valve. The temperature limitations are 0° to 250°F (-17.7°C to 121°C). |
| T-22 | BB | **STAINLESS TRIM**<br>For Substantially the same service as T-21 but where the corrosion resistance of 13% Chrome Stainless Steel internal parts are desirable. Also usable for mildly corrosive fluids and gases where limited corrosion of the internal body surfaces can be tolerated. The temperature limitations are 0° to 250°F (-17.7°C to 121°C). Recommended when partial pressure of $CO^2$ is greater than 7.3. (Refer page 71) |
| T-23 | CC | **FULL STAINLESS STEEL TRIM**<br>For any liquid or gaseous product for which the resistance of the 13% Chrome Stainless is adequate. Also used where the resistance of Stainless Steel is desirable from the standpoint of product purity. The temperature limitations are 0° to 250°F (-17.7°C to 121°C). Recommended when partial pressure of $CO^2$ is greater than 30. (Refer page 71). |
| T-24<br>S-24 | DD<br>EE | **SOUR GAS & OIL**<br>Primarily for sour gas and oil where resistance to Hydrogen Sulfide embrittlement is required. Also suitable for other chemicals, products or hydrocarbons when H2S is present. May be used when $CO^2$ is present in smaller amount then H2S. The temperature limitations are 0° to 250°F (-17.7°C to 121°C). |
| T-26 | FF | **STAINLESS SOUR GAS AND OIL TRIM**<br>Primarily for sour gas and oil when the $CO^2$ exceeds the H2S content. It is intended to provide resistance to the metal loss type of corrosion usually associated with $CO^2$, plus resistance to Hydrogen Sulfide embrittlement. The temperature limitations are 0° to 250°F (-17.7°C to 121°C). |
| T-27 | | **WATERFLOOD (UNINHIBITED)**<br>Primarily for use in untreated or uninhibited brackish saline water typically associated with oilfield waterflood projects and/or disposal wells in which the internal plastic coating of the body surfaces provides resistance to salt water corrosion. The internal parts are also resistant to Sulfide embrittlement and corrosion. The temperature limitation are 0° to 250°F (-17.7°C to 121°C). |
| T-36 | AA | **LOW TEMPERATURE - STANDARD TRIM - GENERAL OILFIELD**<br>For essentially non-corrosive liquids or gases. Typical examples are crude and refined oils, natural or refined gases and processed hydrocarbons. Typical uses are wellheads, manifolds, flowlines and other similar installations requiring a through conduit valve. The temperature limitations are -50° to 180° F. (-45°C to 82°C). |
| T-37<br>S-37 | DD<br>EE | **LOW TEMPERATURE - SOUR GAS AND OIL**<br>Primarily for sour gas and oil where resistance to Hydrogen Sulfide embrittlement is required. Also suitable for other chemicals, products or hydrocarbons when H2S is present. May be used when $CO^2$ is present in smaller amounts than H2S. The temperature limitations are -50° to 180° F (-45°C to 82°C) |

**SPECIAL TRIMS AND TEMPERATURE RANGES AVAILABLE UPON REQUEST.**

## VALVE TRIM CHART FOR API6A GATE & CHOKE VALVES

APV AUSTRALIAN PIPELINE VALVE®

**API 6A TEMPERATURE CLASS P: SERVICE -20°F TO 180°F (-29°C TO 82°C)**

| SERVICE | TRIM | API MATERIAL CLASS | PRESSURE RATING PSI | MATERIALS | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | BODY & BONNET | BONNET SEAL | GATE* & SEGMENT | SEAT | STEM |
| General Oilfield Gas, Oil | T21 | AA | 2,000<br>3,000<br>5,000 | Carbon or Low Alloy Steel | CS | 410<br>316 | 410<br>316 | 410<br>316 |
| General Moderately Corrosive $CO^2$ | T22 | BB | 2,000<br>3,000<br>5,000 | Carbon or Low Alloy Steel | SS | 410<br>316 | 410 | 17-4PH<br>410 |
| General Moderately Corrosive $CO^2$ | T23 | CC | 2,000<br>3,000<br>5,000 | API 60K CA6NM Stainless Steel | SS | 410 | 410 | 17-4PH w/MDC[5] |
| Sour ($H_2S$) Service NACE[4] MR01-75 | T24 | DD | 2,000<br>3,000<br>5,000 | API 60 K Alloy Steel | SS | 4130 or 17-4PH Nitrided | 4130 | 17-4PH w/MDC[5] |
| Sour ($H_2S$) Service NACE[4] MR01-75 | S24 | EE | 2,000<br>3,000<br>5,000 | API 60 K Alloy Steel | SS | 4130 or 17-4PH Nitrided | 410 | 17-4PH w/MDC[5] |
| Corrosive ($CO^2$) & Sour ($H^2S$) NACE[4] MR01-75 | T26 | FF | 2,000<br>3,000<br>5,000 | API 60K CA6NM Stainless Steel | SS | 17-4PH | 17-4PH | 17-4PH w/MDC[5] |
| Waterflood | T27 | EE | 2,000<br>3,000<br>5,000 | API 60K Alloy Steel w/Plastic Coat | SS | 17-4PH | 17-4PH | 17-4PH w/MDC[5] |
| **API 6A TEMPERATURE CLASS L: SERVICE -50°F TO 180°F (-46°C TO 82°C)** | | | | | | | | |
| General Oilfield Gas, Oil | T36 | AA | 2,000<br>3,000<br>5,000 | API 60 K Alloy Steel | CS | 4130 | 4130 | 17-4PH w/MDC[5] |
| Sour ($H^2S$) Service NACE[4] MR01-75 | T37 | DD | 2,000<br>3,000<br>5,000 | API 60 K Alloy Steel | SS | 4130 | 4130 | 17-4PH w/MDC[5] |
| Sour ($H^2S$) Service NACE[4] MR01-75 | S37 | EE | 2,000<br>3,000<br>5,000 | API 60 K Alloy Steel | SS | 17-4PH | 4130 | 17-4PH w/MDC[5] |

1 QPQ NITRIDE
2 TFE TEFLON
3 HF6 STELLITE #6
4 CHARPY V NOTCH IMPACT TEST
5 MDC MOLYBDENUM DISULFIDE COATING

* or , in the case of chokes relates to needle/disc/bean.
This list is provided as a guide only. Australian Pipeline Valve reserves the right to provide alternate materials without prior notice.

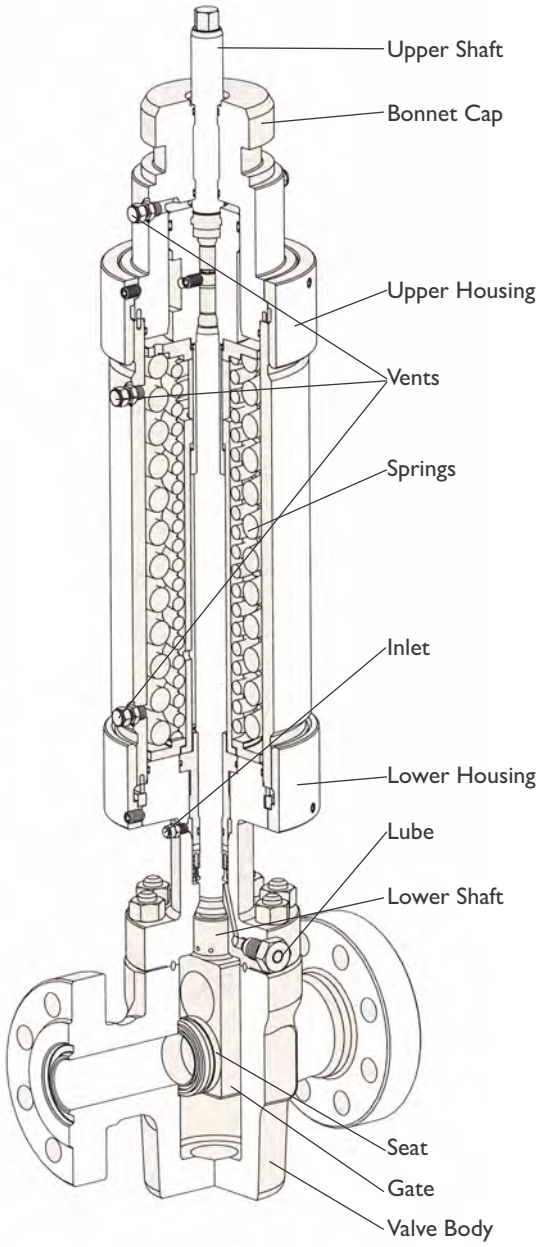
## EXCERPT FOR REFERENCE ONLY
## SEE API SPECIFICATION 6A

AUSTRALIAN PIPELINE VALVE®

| API NOMINAL SIZE | FLANGE | | | | API RING NO | BOLTING | |
|---|---|---|---|---|---|---|---|
| | O.D. | THICKNESS | BOLT CIRCLE DIAMETER | O.D. OF RING GROOVE | | NO | SIZE |
| 2,000 PSI CWP | | | | | | | |
| 2 1/16 | 6 1/2 | 1 5/16 | 5 | 3 23/32 | R-23 | 8 | 5/8 x 4 1/2 |
| 2 9/16 | 7 1/2 | 1 7/16 | 5 7/8 | 4 11/16 | R-26 | 8 | 3/4 x 5 |
| 3 1/8 | 8 1/4 | 1 9/16 | 6 5/8 | 5 11/32 | R-31 | 8 | 3/4 x 5 1/4 |
| 4 1/16 | 10 3/4 | 1 13/16 | 8 1/2 | 6 11/32 | R-37 | 8 | 7/8 x 6 |
| 7 1/16 | 14 | 2 1/8 | 11 1/2 | 8 25/32 | R-45 | 12 | 1 x 7 |
| 9 | 16 1/2 | 2 3/16 | 13 3/4 | 11 3/32 | R-49 | 12 | 1 1/8 x 7 3/4 |
| 11 | 20 | 2 13/16 | 17 | 13 7/32 | R-53 | 16 | 1 1/4 x 8 3/4 |
| 13 3/8 | 22 | 2 15/16 | 19 1/16 | 15 15/32 | R-57 | 20 | 1 1/4 x 9 |
| 3,000 PSI CWP | | | | | | | |
| 2 1/16 | 8 1/2 | 1 13/16 | 6 1/2 | 4 7/32 | R-24 | 8 | 7/8 x 6 |
| 2 9/16 | 9 5/8 | 1 15/16 | 7 1/2 | 4 23/32 | R-27 | 8 | 1 x 6 1/2 |
| 3 1/8 | 9 1/2 | 2 3/16 | 7 1/2 | 5 11/32 | R-31 | 8 | 7/8 x 6 |
| 4 1/16 | 11 1/2 | 2 7/16 | 9 1/4 | 6 11/32 | R-37 | 8 | 1/8 x 7 |
| 7 1/16 | 15 | 3 5/8 | 12 1/2 | 8 25/32 | R-45 | 12 | 1 1/8 x 7 3/4 |
| 9 | 18 1/2 | 4 1/16 | 15 1/2 | 11 3/32 | R-49 | 12 | 1 3/8 x 9 |
| 11 | 21 1/2 | 4 11/16 | 18 1/2 | 13 7/32 | R-53 | 16 | 1 3/8 x 9 1/2 |
| 13 3/8 | 24 | 4 7/16 | 21 | 15 15/32 | R-57 | 20 | 1 3/8 x 10 1/4 |
| 5,000 PSI CWP | | | | | | | |
| 2 1/16 | 8 1/2 | 1 13/16 | 6 1/2 | 4 7/32 | R-24 | 88 | 7/8 x 6 |
| 2 9/16 | 9 5/8 | 1 15/16 | 7 1/2 | 4 23/32 | R-27 | 8 | 1 x 6 1/2 |
| 3 1/8 | 10 1/2 | 2 3/16 | 8 | 5 27/32 | R-35 | 8 | 1 1/8 x 7 1/4 |
| 4 1/16 | 12 1/4 | 2 7/16 | 9 1/2 | 6 27/32 | R-39 | 8 | 1 1/4 x 8 |
| 7 1/16 | 15 1/2 | 3 5/8 | 12 1/2 | 8 27/32 | R-46 | 12 | 1 3/8 x 10 1/2 |
| 9 | 19 | 4 1/16 | 15 1/2 | 11 9/32 | R-50 | 12 | 1 5/8 x 12 |
| 11 | 23 | 4 11/16 | 19 | 13 13/32 | R-54 | 12 | 1 7/8 x 13 3/4 |
| 13 3/8 | 26 1/2 | 4 7/16 | 23 1/4 | 16 1/16 | BX-160 | 16 | 1 7/8 x 17 1/2 |
| 10,000 PSI CWP | | | | | | | |
| 1 13/16 | 7 3/8 | 1 21/32 | 5 3/4 | 3 1/16 | BX-151 | 8 | 3/4 x 5 1/4 |
| 2 1/16 | 7 7/8 | 1 47/64 | 6 1/4 | 3 25/64 | BX-152 | 8 | 3/4 x 5 1/4 |
| 2 9/16 | 9 1/8 | 2 1/64 | 7 1/4 | 4 3/64 | BX-153 | 8 | 7/8 x 6 1/4 |
| 3 1/16 | 10 5/8 | 2 19/64 | 8 1/2 | 4 11/16 | BX-154 | 8 | 1 x 7 |
| 4 1/16 | 12 7/16 | 2 49/64 | 10 3/16 | 5 15/16 | BX-155 | 8 | 1 1/8 x 8 1/4 |
| 7 1/16 | 18 7/8 | 4 1/16 | 15 7/8 | 9 33/64 | BX-156 | 12 | 1 1/2 x 11 1/2 |
| 9 | 21 3/4 | 4 7/8 | 18 3/4 | 11 49/64 | BX-157 | 16 | 1 1/2 x 13 1/4 |
| 11 | 25 3/4 | 5 5/16 | 22 1/4 | 14 1/16 | BX-158 | 16 | 1 3/4 x 15 |
| 13 3/8 | 30 1/4 | 6 5/8 | 26 1/2 | 17 1/32 | BX-159 | 20 | 1 5/8 x 12 3/4 |
| 15,000 PSI CWP | | | | | | | |
| 1 13/16 | 8 3/16 | 1 25/32 | 6 5/16 | 3 1/16 | BX-151 | 8 | 7/8 x 5 3/4 |
| 2 1/16 | 8 3/4 | 2 | 6 7/8 | 3 25/64 | BX-152 | 8 | 7/8 x 6 1/4 |
| 2 9/16 | 10 | 2 1/4 | 7 7/8 | 4 3/64 | BX-153 | 8 | 1 x 7 |
| 3 1/16 | 11 5/16 | 2 17/32 | 9 1/16 | 4 11/16 | BX-154 | 8 | 1 1/8 x 7 3/4 |
| 4 1/16 | 14 3/16 | 3 3/32 | 11 7/16 | 5 15/16 | BX-155 | 8 | 1 3/8 x 9 1/4 |
| 7 1/16 | 19 7/8 | 4 11/16 | 16 7/8 | 9 33/64 | BX-156 | 16 | 1 1/2 x 12 3/4 |

# HYDRAULIC ACTUATED SLAB GATE VALVE (SSV)

APV AUSTRALIAN PIPELINE VALVE®

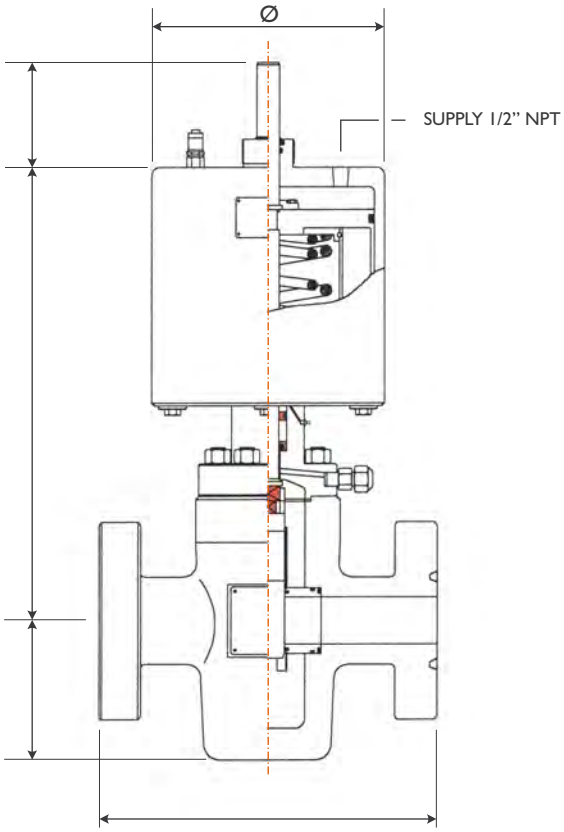



The SSV Gate Valve Actuator operates with hydraulic pressure. Pressure is applied to the top of the piston. This process is designed to open a normally closed (reverse) gate valve, or close a normally open gate valve.

Actuators are returned to their normal position by the flowline pressure acting upon the diameter of the shaft.

## SDV-ASSY PNEUMATIC ACTUATED GATE VALVE 3000-10,000 PSI

APV AUSTRALIAN PIPELINE VALVE®

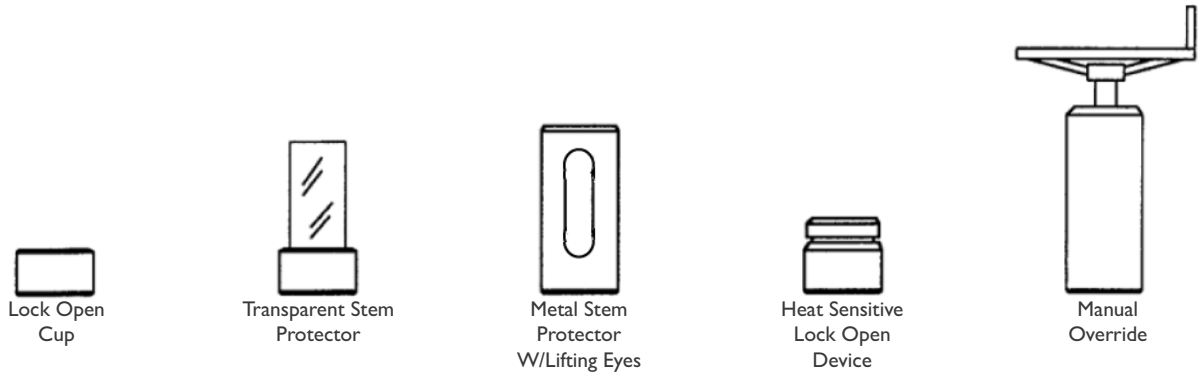


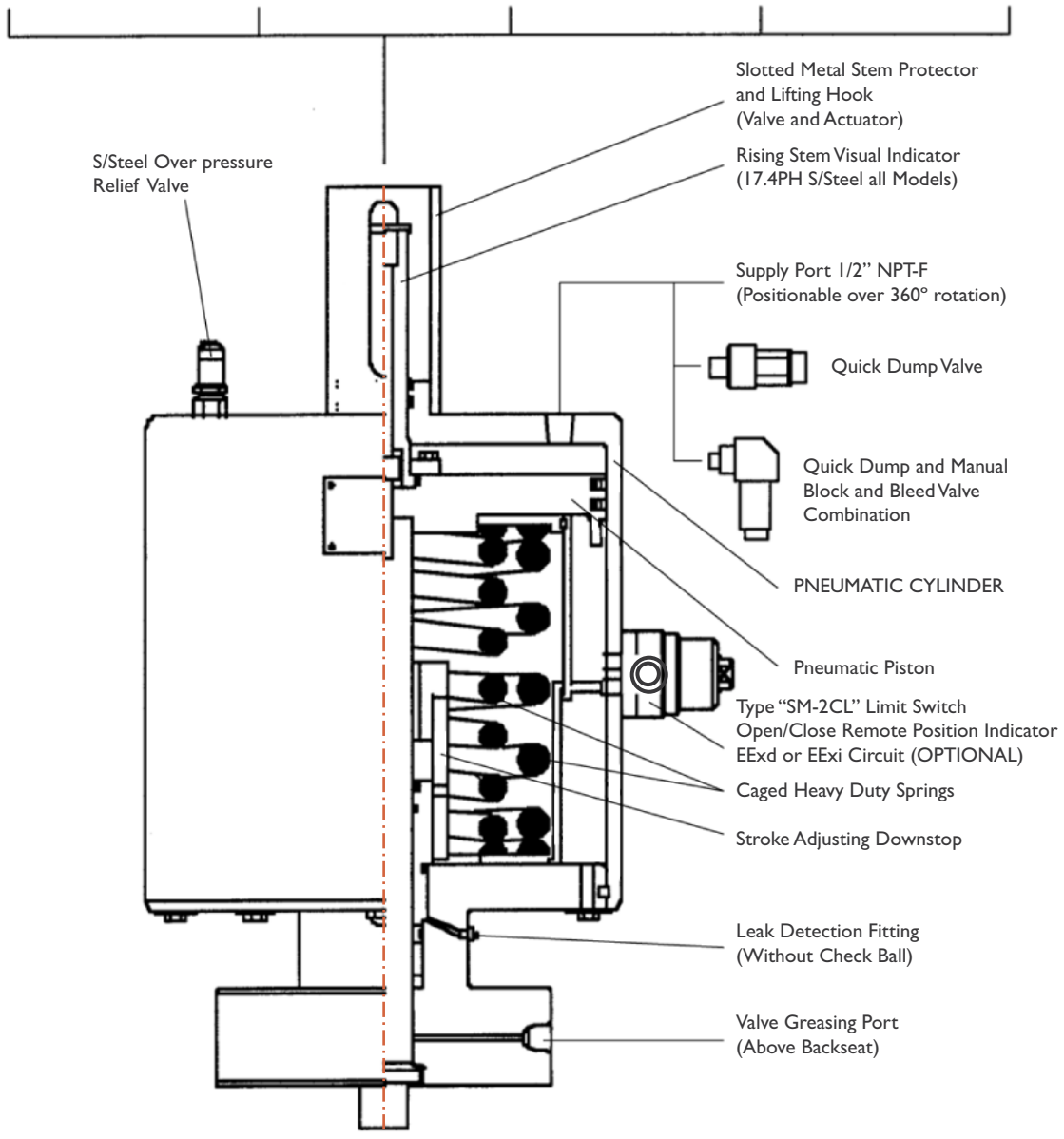

### TECHNICAL DATA

**SIZE:** 1 13/16" - 7 1/16" API 6A
**VALVE SERIES:** M 30SL
**ACTUATOR TYPE:** OFS/PN-29SLA
**VALVE ACTION:** SDV-SSV (Fail Safe Close) BI-DIRECTIONAL
**ASSEMBLY No:** 94176 for SDV-SSV
**BORE:** 79.3 mm.
**CYLINDER PRESSURE RATING:** Up to 250 PSI
**CONTROL PRESSURE (Bar):** (0.03 x Valve Pressure) + 1
**WEIGHT:** Kg.

APV AUSTRALIAN PIPELINE VALVE®

# QUICK DISCONNECT PNEUMATIC ACTUATOR ACCESSORIES



API6A

AUSTRALIAN PIPELINE VALVE®

# API6A MUD GATE VALVE X-DM

## PRODUCT DESCRIPTION

The Mud Gate Valve, with superior design features and precision workmanship is proven to meet the harsh drilling requirements in today's oilfields.
The Valve conforms to the standard dimensions and pressure rating of 3000 and 5000 PSI working pressure, and temperature service up to 400°F.
The Valve standard trim includes 316SS, Gates 316SS Stems and Buna N seats, optional trims are available which include Ni Plated, Carbon Steel, Monel and Aluminium Bronze gates. Seats are offered in Viton and Hypalon and optional 303SS Stem is available.

## CONSTRUCTION

All the Valves conform to API flange specification in all pressure class ratings. The valves have rising stems that are driven by a double threaded hub for quick opening and closing with minimum turning effort. The permanently lubricated stems and stem screws are a fully sealed assembly consisting of homogenous and fabric backed rings for high and low pressure sealing.

## APPLICATION FOR THE MUD GATE VALVE

Mud pump lines and Standpipe manifolds, Oil and gas pipelines, Sour gas and crude oil, Corrosive water flood lines, Cementing services, Wellheads, Well treating chemicals.

## PARTS INTERCHANGE

Our X-DM parts are fully interchangeable.

## END CONNECTIONS

Available in Buttweld, NPT female, hammer union ends, flanged, male threaded etc.

API6A

# API6A MUD GATE VALVE X-DM

AUSTRALIAN PIPELINE VALVE®

## APPLICATION

- Drilling and well-treating chemicals
- Sour gas and crude oil
- Abrasive drilling mud
- Pipelines and manifolds
- Wellheads
- Water, oil and gas lines
- Cements and slurries
- Corrosive water flood lines
- Up to 5000 PSI and 400°F services


## SEAT ELASTOMERS

**Buna N** (nitrile) is the basic seat elastomer. It is excellent for petroleum oil an gases, fueled oils and alcohols from -10°F to +200°F. **Hypalon** is optionally offered compounded for maximum chemical resistance, particularly suited for oxidizing acids, it resists hydrocarbon oils and fuels from -10°F to +250°F. **Viton** is highly resistant to mineral acids and hydrocarbons and resists moderate concentrations of hydrogen sulphide. Serviceable from -10F to +400°F (Not suitable for steam)

## PLASTIC COATINGS

Internally plastic-coated valve bodies and bonnet are available on request.

## TESTING

Mud Gate Valves are hydrostatically tested. Stem seal, body and seat are inspected for zero leakage under pressure, before acceptance.

## WELD END DIMENSIONS

Weld End bodies are machined at each end to match the corresponding pipe OD and ID.

| NOMINAL SIZE in. | (mm) | OD | ID | | | |
|---|---|---|---|---|---|---|
| | | | Sch. 40 | Sch. 80 | Sch. 160 | XXH |
| 1½ | (40) | 1.900 | 1.610 | 1.500 | - | - |
| 2 | (50) | 2.375 | 2.067 | 1.939 | 1.687 | 1.503 |
| 2½ | (65) | 2.875 | 2.469 | 2.323 | 2.125 | 1.771 |
| 3 | (80) | 3.500 | 3.068 | 2.900 | 2.624 | 2.300 |
| 4 | (100) | 4.500 | 4.026 | 3.826 | 3.438 | 3.152 |
| 5 | (125) | 5.563 | - | 4.813 | 4.313 | 4.063 |
| 6 | (150) | 6.625 | 6.065 | 5.761 | 5.187 | 4.897 |

## PRESSURE RATINGS OF VALVE

| CLASS 400 | CLASS 600 | CLASS 900 | CLASS 1500 | 1000 WP | 2000 WP | 3000 WP | 5000 WP | 7500 WP |
|---|---|---|---|---|---|---|---|---|
| 900 WP | 1480 WP | 2220 WP | 3705 WP | 1000 WP | 2000 WP | 3000 WP | 5000 WP | 7500 WP |
| 1500 Test | 2225 Test | 3350 Test | 5575 Test | 2000 Test | 4000 Test | 6000 Test | 7500 Test* | 11,250 Test |

* 3 inch & below are tested to 10,000 psi, 4" & above 7500 psi except on special orders.

Valve rating must be selected to match the piping system in which the valve will be installed.
Shown below are working pressures at 100°F for ASTM A106 Grade B and AISI 4130 60K minimum yield pipe in sizes corresponding to APV Gate Valves.

## PRESSURE RATINGS OF PIPE

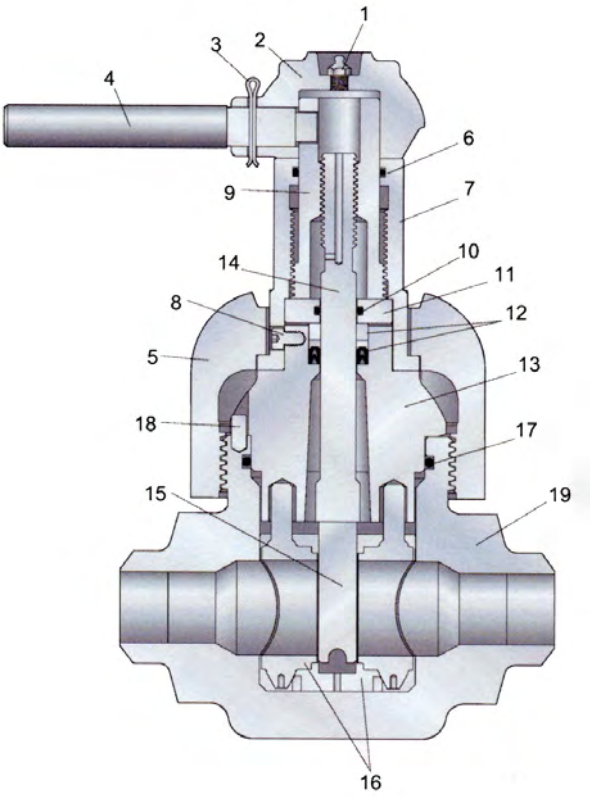
| SIZE in. | (mm) | ASTM A106 GRADE B | | | | 4130 60K Min Yield XXH |
|---|---|---|---|---|---|---|
| | | Sch. 40 | Sch. 80 | Sch. 160 | XXH | |
| 1½ | (40) | 1340 | 2430 | - | - | - |
| 2 | (50) | 1210 | 2220 | 4300 | 5970 | 10234 |
| 2½ | (65) | 1620 | 2590 | 3950 | 6590 | - |
| 3 | (80) | 1460 | 2370 | 3930 | 5880 | 10080 |
| 4 | (100) | 1300 | 2130 | 3830 | 5150 | 8826 |
| 5 | (125) | - | 1970 | 3730 | 4650 | 7971 |
| 6 | (150) | 1110 | 1970 | 3650 | 4724 | 8098 |
| 8 | (200) | 1030 | 1790 | - | - | - |

API6A

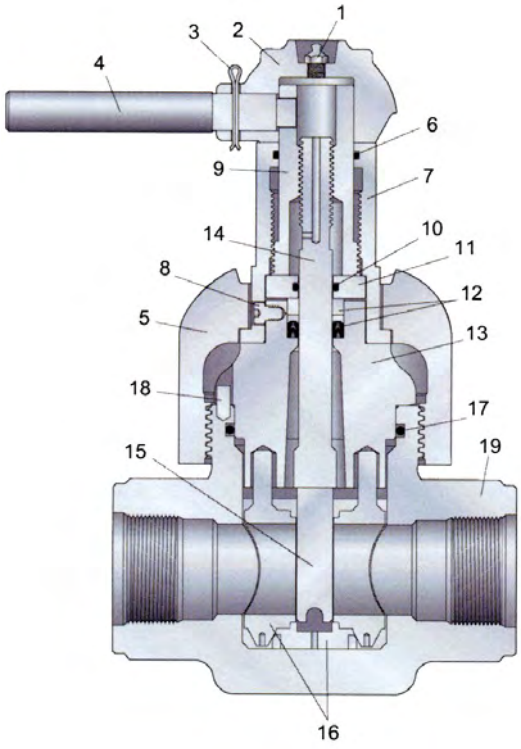
AUSTRALIAN PIPELINE VALVE®

# API6A MUD GATE VALVE X-DM

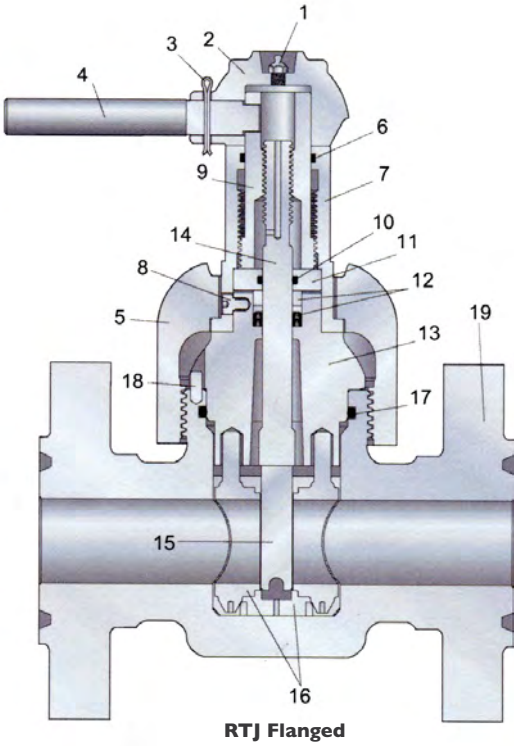
## 2” 2000, 3000 & 5000 PSI




Butt Weld End




Screwed End




RTJ Flanged

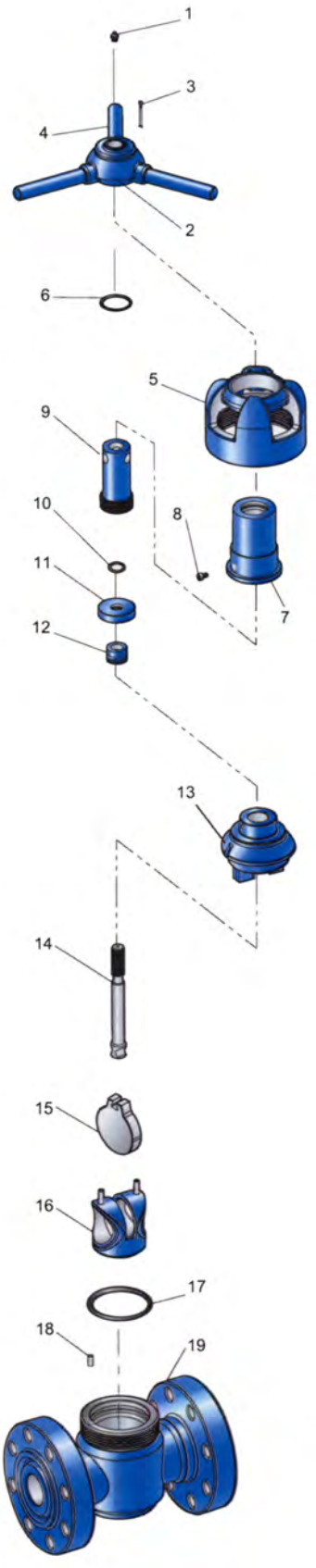
APV AUSTRALIAN PIPELINE VALVE®

# API6A MUD GATE VALVE X-DM

## BILL OF MATERIAL
## 2" - 2000, 3000 & 5000 WP

| Item No. | Description | |
|---|---|---|
| 1 | Lube Fitting | Steel |
| 2 | Hub Assembly | Steel |
| 3 | Pin, Lock Handle | Steel |
| 4 | Lock Handle | Steel |
| 5 | Coupling | WCB Steel |
| 6 | Stem Screw Seal | 70 D Buna-N<br>75 D Viton |
| 7 | Screw Housing | Steel |
| 8 | Lock Screw | Steel |
| 9 | Stem Screw | Steel |
| 10 | Secondary Seal | 90 D Buna-N<br>90 D Viton |
| 11 | Retainer | Steel |
| 12 | Stem Seal Assembly<br>(includes bronze bushing) | 90 D Buna-N<br>90 D Viton |
| 13 | Bonnet (A487 Steel) | 4130<br>1029 |
| 14 | Stem 316SS | 316SS or 410SS |
| 15 | Gate 316SS | 316SS or 410SS |
| 16 | Seat Steel | 90 D Buna-N |
| | Seat 316SS or 410SS | 70 D Buna-N<br>90 D Viton |
| 17 | Bonnet Seal | 90 D Buna-N<br>90 D Viton |
| 18 | Index Pin | Steel |
| 19 | Body<br>Screwed End | LP (NPT)<br>EUE |
| | Flanged End | RTJ |
| | Weld End | Sch 80<br>Sch XXH<br>Sch 160 |

Example only, parts and materials can vary according to specified trim, pressure and model variations.
Refer to as-built drawing for each pressure class.



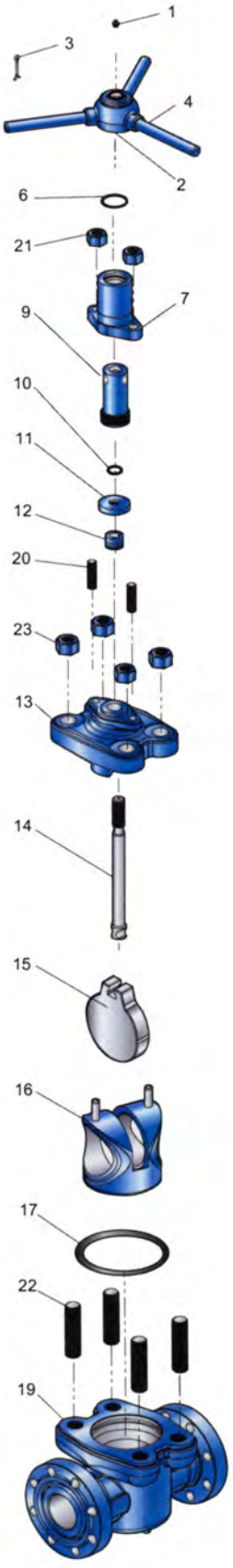
AUSTRALIAN PIPELINE VALVE®

# API6A MUD GATE VALVE X-DM

## BILL OF MATERIAL
## 3" AND 4" - 3000 & 5000 WP

| Item No. | Description | |
|---|---|---|
| 1 | Lube Fitting | Steel |
| 2 | Hub Assembly | Steel |
| 3 | Pin, Lock Handle | Steel |
| 4 | Lock Handle | Steel |
| 6 | Stem Screw Seal | Buna-N<br>Viton |
| 7 | Screw Housing | Steel |
| 9 | Stem Screw | Steel |
| 10 | Secondary Seal | Buna-N<br>Viton |
| 11 | Retainer | Steel |
| 12 | Stem Seal Assembly<br>(includes bronze bushing) | 90 D Viton |
| 13 | Bonnet | A-487 Steel |
| 14 | Stem | 316SS or 410SS |
| 15 | Gate | 316SS or 410SS |
| 16 | Seat Steel | 70 D Buna-N |
| | Seat 316SS or 410SS | 70 D Buna-N<br>90 D Viton |
| 17 | Bonnet Seal | Buna-N<br>Viton |
| 19 | Body<br>Screwed End | LP (NPT)<br>NUE<br>EUE |
| | Flanged End | RTJ |
| | Weld End | Sch 80<br>Sch XXH<br>Sch 160 |
| 20 | Bonnet Stud (2) A-320-L7 or B7 | Each |
| 21 | Bonnet Stud Nut (2) A-320-L7 or 2H | Each |
| 22 | Body Stud (4 Required) A-320-L7 or B7 | Each |
| 23 | Body Stud Nut (4) A-320-L7 or 2H | Each |

Example only, parts can vary according to specified trim on different sizes. Refer to as-built drawing.
For 4" 3000 and 5000 consult as-built drawing as design is slightly different.

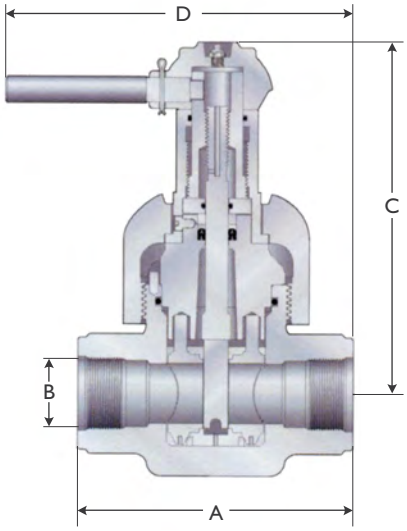


# API6A MUD GATE VALVE X-DM

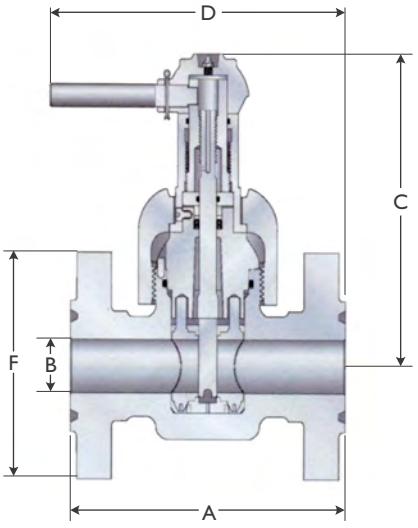
AUSTRALIAN PIPELINE VALVE®

## 2000, 3000 AND 5000 WP

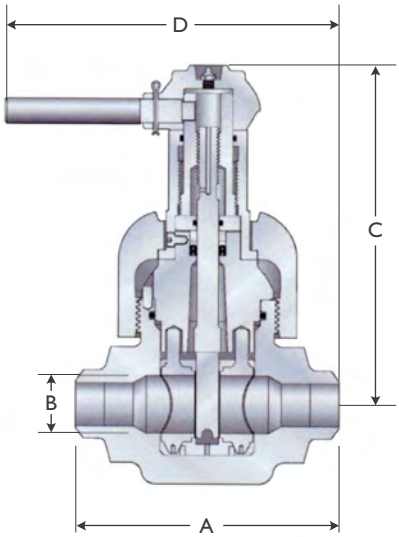
| Pressure Rating | | 2000 WP (4,000 PSI Test) | | | 3000 WP (6,000 PSI Test) | | | 5000 WP (10,000 PSI Test) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | | 2 | 3 | 4 | 2 | 3 | 4 4⅛ | 2 | 3 | 4 4⅛ | 5 x 4 | 6 x 4 |
| | | in | in | in | in | in | in | in | in | in | in | in |
| A | Screwed End | 9 | 11 | 13 | 9 | 11 | 13 | 9 | 11 | 13 | 13 | N/A |
| | Weld End | 9 | 11 | 13 | 9 | 11 | 13 | 9 | 11 | 13 | 13 | 13 |
| | Flanged End | 11⅝ | 14⅛ | 16⅜ | 11⅝ | 14⅛ | 16⅜ | 12⅛ | 15⅝ | 18 | 29 | N/A |
| B | (Bore) | 2 | 3 | 4 | 2 | 3 | 4 | 2 | 3 | 4 | 4 | 4 |
| C | (Open) | 13 | 18 | 21¼ | 13 | 18 | 21¼ | 13 | 18 | 24⅝ | 24⅝ | 24⅝ |
| D | (Handle) | 14 | 19 | 23 | 14 | 19 | 23 | 14 | 19 | 23 | 23 | 23 |
| F | (Flange Diameter) | 6½ | 8¼ | 10¾ | 8½ | 9½ | 11½ | 8½ | 10½ | 12¼ | 14¾ | N/A |
| | Flange Bolts (Qty) | (8) | (8) | (8) | (8) | (8) | (8) | (8) | (8) | (8) | (8) | N/A |
| | Size | ⅝ | ¾ | ⅞ | ⅞ | ⅞ | 1⅛ | ⅞ | 1⅛ | 1¼ | 1½ | N/A |
| | Ring No. (RTJ) | R23 | R31 | R37 | R24 | R31 | R37 | R24 | R35 | R39 | R44 | N/A |




**Screwed-End Body**




**Flanged-End Body**




**Weld-End Body**

## SWING CHECK NPT SCREWED END - BOLTED BONNET TO 5000 PSI

AUSTRALIAN PIPELINE VALVE®

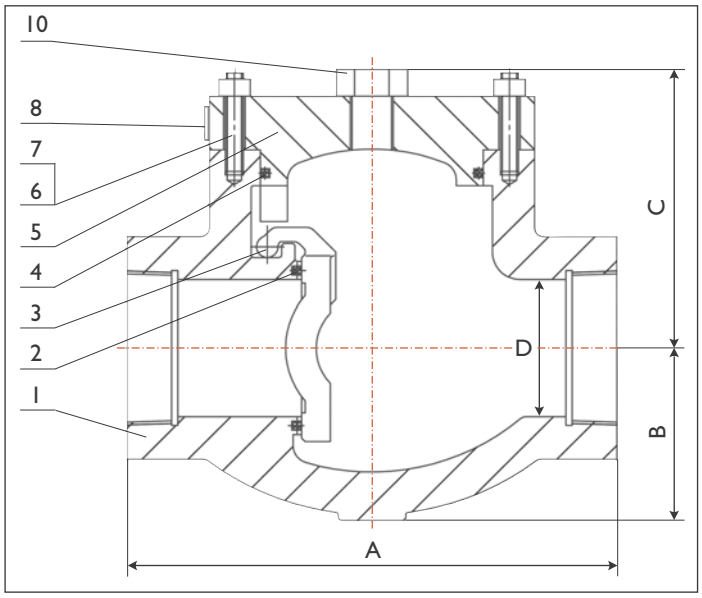



**FIG. NO. APSCF01**

### SPECIFICATION:

- Design: BS5352, API6D/6A
- Ends: ANSI B16.5
- Face to Face: B16.10
- Nace MR-01-75

Screwed Bonnet also available.

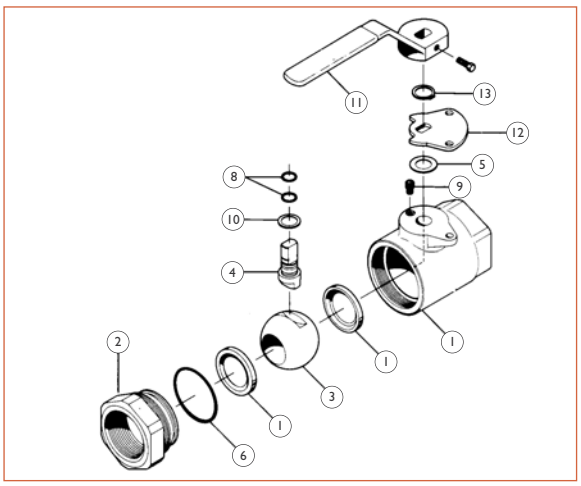
| | |
|---|---|
| **Body (1)** | ASTM A216 Gr.WCB |
| **Cover (5)** | ASTM A216 Gr.WCB |
| **Disk, Arm (3) and Pin** | ASTM A351 Gr. CF8M or A216 Gr.WCB + 410SS |
| **Bushings** | 316SS/CR13 SS |
| **Disc Seal (2)** | Viton/F6/CPTFE/PEEK |
| **Cover Seal (4)** | Buna-N/Viton/Spiral Wound |
| **Cover Stud (6)** | ASTM A193 Gr. B7 |
| **Cover Nut (7)** | ASTM A194 Gr. 2H |
| **Plug (10)** | ASTM A105 |
| **Name Plate (8)** | Aluminium |

**Note:** Material specifications conform to latest edition of NACE MR-0175

### DIMENSIONS (inch)

| NOMINAL SIZE | MOP (PSI) | A | B | C | D (NOMINAL) |
|---|---|---|---|---|---|
| 2 NPT | 1000 | 9 | 2⅜ | 4½ | 2 |
| 3 NPT | | 10¾ | 3 | 5⅛ | 3 |
| 4 NPT | | 12 | 3 3/16 | 6 1/16 | 4 |
| 2 NPT | 1500 | 9 | 2⅜ | 4½ | 2 |
| 3 NPT | | 10¾ | 3 | 5⅛ | 3 |
| 4 NPT | | 12 | 3 3/16 | 6 1/16 | 4 |
| 2 NPT | 2000 | 9 | 2⅜ | 4½ | 2 |
| 3 NPT | | 10¾ | 3 | 5⅛ | 3 |
| 4 NPT | | 12 | 3 3/16 | 6 1/16 | 4 |
| 2 NPT | 3000 | 9 | 2⅜ | 4½ | 2 |
| 3 NPT | | 10¾ | 3 | 5⅛ | 3 |
| 4 NPT | | 12 | 3 3/16 | 6 1/16 | 4 |
| 2 NPT | 4000 | 9 | 2⅜ | 4½ | 2 |
| 2 NPT | 5000 | 9 | 2⅜ | 4½ | 2 |

## OILPATCH BALL VALVE FS660 (FS660-SKF) 2000 to 3000 PSI




APV
AUSTRALIAN PIPELINE VALVE®

- API2000 to API3000
- Proven rugged design
- Firesafe design
- Emergency grease injection facility to stem

**Style S-KF**

### PARTS LIST & MATERIALS

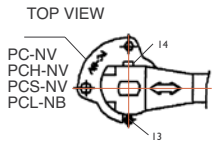
| INDEX | DESCRIPTION | CARBON STEEL | ALL SS |
|---|---|---|---|
| 1 | Body | Carbon Steel | 316SS |
| 2 | Adaptor | Carbon Steel | 316SS |
| 3 | Ball | 316 Stainless Steel | |
| 4 | Stem | 316 Stainless Steel | |
| 5 | Stem Bearing | Nylon | |
| 6 | Body Seal | Viton | |
| 7 | Seat | Nylon or PEEK | |

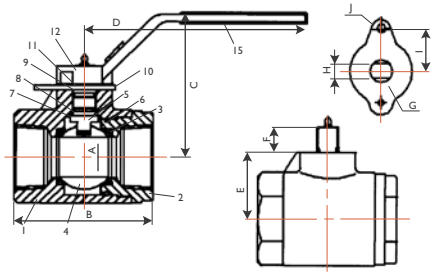
| INDEX | DESCRIPTION | CARBON STEEL | ALL SS |
|---|---|---|---|
| 8 | Stem Seal | Viton | |
| 9 | Stop Screw | Steel | 316SS |
| 10 | Thrust Bearing | Teflon | |
| 11 | Handle/Sq. Nut | Ductile Iron | |
| 12 | Stop Plate | Steel + ZP | 316SS |
| 13 | Retainer | Spring Steel | 316SS |
| | | | |

### DIMENSIONS

| SIZE | C | | D | |
|---|---|---|---|---|
| 2C (Brown)* | mm | inch | mm | inch |
| 2" x 2" | 150.7 | 5.93 | 381 | 15 |

* 3000 PSI Brown




| ITEM | PART NAME | MATERIAL | | | QTY |
|---|---|---|---|---|---|
| | | PC-NV PCH-NV | PCS-NV | PCL-NB | |
| 1 | Body | A216-WCB | A351-CF8M | A352-LCC | 1 |
| 2 | End Caps | A216-WCB | A351-CF8M | A352-LCC | 1 |
| 3 | Seats | Nylon MOS2 | | | 2 |
| 4 | Ball | A276-316 | | A276-316 | 1 |
| 5 | Stem | A276-316 | | A276-316 | 1 |
| 6 | Body O-Ring | Viton | | NBR | 1 |
| 7 | Gasket | PTFE | | PTFE | 1 |
| 8 | Stem O-Ring | Viton | | NBR | 2 |
| 9 | Thrust Bearing | PTFE | | PTFE | 1 |
| 10 | Stop Plate | Steel | | Steel | 1 |
| 11 | Snag Ring | Steel | | Steel | 1 |
| 12 | Handle | A216-WCB | | A216-WCB | 1 |
| 13 | Stop Screw | Steel | | Steel | 1 |
| 14 | Handle Bolt | Steel | | Steel | 1 |
| 15 | Plastic Cover | Vinyl | | Vinyl | 1 |

| | | PRESSURE RATING (PSI) | | | |
|---|---|---|---|---|---|
| MATERIAL | | WCB | | LCC | SS |
| COLOUR | | RED | BROWN | BLACK | - |
| SIZE | inch | PC-NV | PCH-NV | PCL-NB | PCS-NV |
| 2A | 1"x 1" | 2500 | 3000 | 2500 | - |
| 2K | 1½"x1½" | 2500 | - | - | - |
| 2B | 2"x1½" | 2500 | 3000 | 2500 | 3000 |
| 2C | 2"x2" | 2160 | 3000 | 2160 | 3000 |
| 2D | 3"x2" | 2160 | - | 2160 | - |
| 2L | 2½"x2½" | 2160 | * | - | - |
| 2E | 3"x3" | 1500 | * | 1500 | - |
| 2F | 4"x3" | 1500 | - | 1500 | - |
| 2M | 4"x4" | 750 | - | - | - |

* 2½", 3" 3000psi refer FS660.

Ball Valve c/w Integral Hammer Union Ends for Quick Changeouts on Tanker Unloading Manifolds.

| SIZE | | A (NB) | | B | | C | | D | | E | | F | | G | | H | | I | | J | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch |
| 2A | 1"x 1" | 25.4 | 1 | 101.6 | 4 | 79.7 | 3.14 | 160 | 6.3 | 43.3 | 1.703 | 19.9 | 0.783 | 15.88 | 0.625 | 9.5 | 0.374 | 30.5 | 1.201 | 10.5 | 0.413 |
| 2K | 1½"x1½ | 38.1 | 1.5 | 139.7 | 5.5 | 140.8 | 5.54 | 216 | 8.5 | 66.5 | 2.618 | 26.1 | 1.028 | 22.2 | 0.874 | 14.3 | 0.563 | 43 | 1.693 | 10.5 | 0.413 |
| 2B | 2"x1½" | 38.1 | 1.5 | 139.7 | 5.5 | 140.8 | 5.54 | 216 | 8.5 | 66.5 | 2.618 | 26.1 | 1.028 | 22.2 | 0.874 | 14.3 | 0.563 | 43 | 1.693 | 10.5 | 0.413 |
| 2C† | 2"x2" | 50.8 | 2 | 152.4 | 6 | 152.1 | 5.9 | 216 | 8.5 | 77.8 | 3.063 | 26 | 1.024 | 22.2 | 0.874 | 14.3 | 0.563 | 43 | 1.693 | 10.5 | 0.413 |
| 2D | 3"x2" | 50.8 | 2 | 209.4 | 8.25 | 152.1 | 5.9 | 216 | 8.5 | 77.8 | 3.063 | 26 | 1.024 | 22.2 | 0.874 | 14.3 | 0.563 | 43 | 1.693 | 10.5 | 0.413 |
| 2L | 2½"x2½ | 65 | 2.56 | 177.8 | 7 | 167.5 | 6.59 | 381 | 15 | 93 | 3.661 | 25.4 | 1 | 22.2 | 0.874 | 14.3 | 0.563 | 54 | 2.126 | 10.5 | 0.413 |
| 2E | 3"x3" | 76.2 | 3 | 222.3 | 8.75 | 1.75 | 6.89 | 381 | 15 | 101.6 | 4 | 34.9 | 1.374 | 31.7 | 1.248 | 15.8 | 0.622 | 54 | 2.126 | 10.5 | 0.413 |
| 2F | 4"x3" | 76.2 | 3 | 222.3 | 8.75 | 1.75 | 6.89 | 381 | 15 | 101.6 | 4 | 34.9 | 1.374 | 31.7 | 1.248 | 15.8 | 0.622 | 54 | 2.268 | 10.5 | 0.413 |
| 2M | 4"x4" | 103.5 | 4.07 | 238.2 | 9.38 | 200.5 | 7.89 | 460 | 18.11 | 125 | 4.921 | 34.3 | 1.35 | 34.8 | 1.37 | 18.9 | 0.744 | 54 | 2.126 | 10.5 | 0.413 |

† Red (2160 PSI)

## BALL VALVE 3000 PSI FS660 SERIES - (FS660-72)

FIRESAFE CERTIFIED API607 5TH EDITION AND API6FA 3RD EDITION

AUSTRALIAN PIPELINE VALVE®

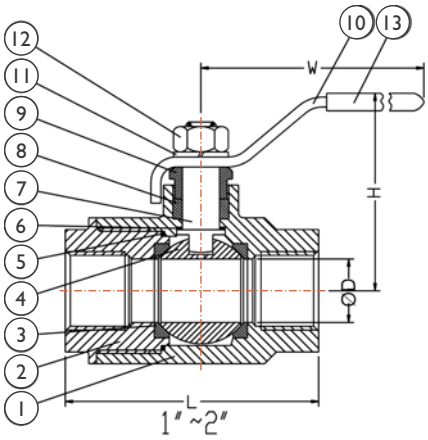
## ID# A72-100-AF26

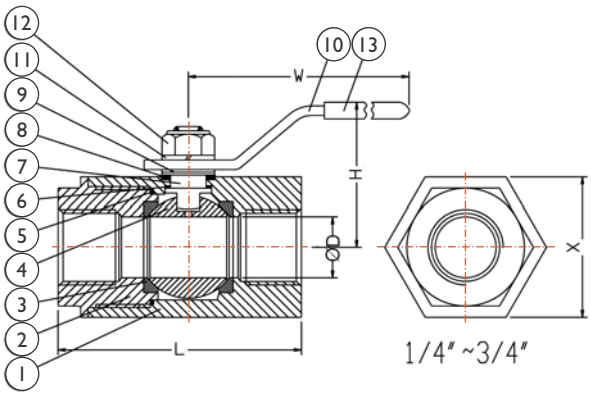
### FEATURES

- 3,000 PSI cold, Non-shock
- Proven Design
- Full Port (2" size is full port to schedule 160)
- Nylon or Delrin seats, PTFE or graphite seals
- Heavy duty lockable handle
- Stainless ball and stem
- 2 piece body


### OPTIONS

- Padlocking device
- 250Lb. steam trim




### MATERIALS LIST

| ITEM | DESCRIPTION | STAINLESS STEEL | CARBON STEEL |
|---|---|---|---|
| 1 | Body | ASTM A351-CF8M | ASTM A216-WCB/A108 |
| 2 | End Cap | ASTM A351-CF8M | ASTM A216-WCB/A108 |
| 3 | Seat | NYLON / DELRIN | NYLON / DELRIN |
| 4 | Ball | ASTM A351-CF8M/316 | ASTM A351-CF8/304 |
| 5 | Gasket | PTFE | PTFE |
| 6 | Thrust Washer | PTFE | PTFE |
| 7 | Stem | ASTM A276-316 | ASTM A276-304 |
| 8 | Stem Packing | PTFE / GRAPHITE | PTFE / GRAPHITE |
| 9 | Belleville Washer | AISI 301 | AISI 301 |
| 10 | Handle | AISI 304 | ZINC PLATED STEEL |
| 11 | Handle Washer | AISI 304 | AISI 304 |
| 12 | Anti-Vibration Nut | AISI 304 | AISI 301 |
| 13 | Handle Cover | PVC | PVC |

### DIMENSIONS

| SIZE | | ØD | | L | | H | | W | | X | | Cv* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH | MM | INCH | MM | INCH | MM | INCH | MM | INCH | MM | INCH | MM | |
| ¼" | 8 | 0.50 | 12.7 | 2.72 | 69.0 | 2.64 | 67.0 | 4.80 | 122.0 | 1.61 | 41.0 | |
| ⅜" | 10 | | | | | | | | | | | |
| ½" | 15 | | | | | | | | | | | 16 |
| ¾" | 20 | 0.75 | 19.0 | 33.48 | 88.5 | 2.91 | 74.0 | 5.83 | 148.0 | 1.81 | 46.0 | 33 |
| 1" | 25 | 1.00 | 25.40 | 4.02 | 102.0 | 3.15 | 80.0 | 6.61 | 168.0 | | | 47 |
| 1¼" | 32 | 1.26 | 32.00 | 4.55 | 115.5 | 3.39 | 86.0 | | | | | 81 |
| 1½" | 40 | 1.50 | 38.00 | 4.88 | 124.0 | 4.76 | 121.0 | 10.23 | 260.0 | | | 105 |
| 2" | 50 | 1.75 | 44.50 | 5.87 | 149.0 | 4.96 | 126.0 | | | | | 275 |

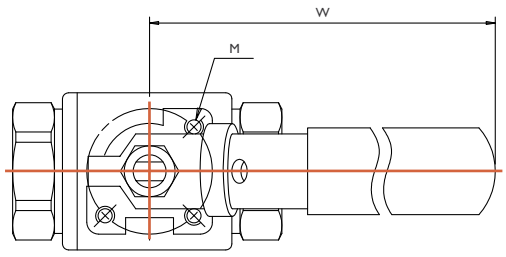
* The Cv factor is the gallons of water per minute that the valve will pass with 1 PSI pressure drop.

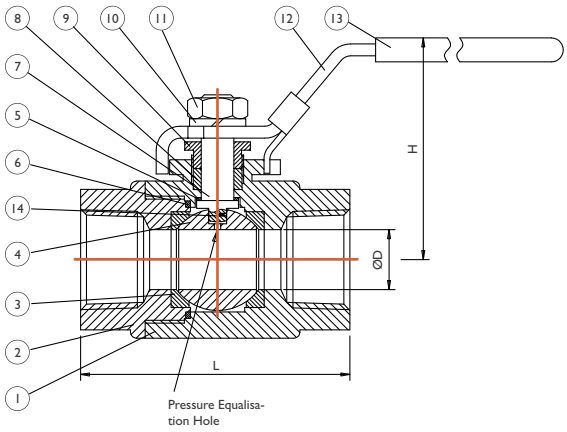
This catalogue is general in it's nature and the design and materials can change at any time. This catalogue is to be used as a guide only.

## BALL VALVE 3000 & 6000 PSI FS660 Series

AUSTRALIAN PIPELINE VALVE®

FIRESAFE CERTIFIED API607 5TH EDITION AND API6FA 3RD EDITION




## MATERIALS LIST

| NO. | PART NAME | STAINLESS STEEL | CARBON STEEL |
|---|---|---|---|
| 1 | Body | ASTM A351 CF8M | ASTM A216 WCB |
| 2 | Body Cap | ASTM A351 CF8M | ASTM A216 WCB |
| 3 | Seat | Delrin | |
| 4 | Ball | ASTM A351 CF8M | |
| 5-1 | Thrust Washer | PTFE | |
| 5-2 | | Graphite | |
| 6 | Body Gasket | Graphite | |
| 7 | Stem | ASTM A276 316 | |
| 8 | Stem Packing | Graphite | |
| 9 | Gland | AISI 304 | |
| 10 | Spring Washer | AISI 304 | |
| 11 | Handle Nut | AISI 304 | |
| 12 | Handle | AISI 304 | |
| 13 | Sleeve | Vinyl Plastisol | |
| 14 | Anti-Static Device | AISI 304 | |

Other special materials are available for seats:
PTFE + 316; Carbon Graphite; Vespel, Delrin, PEEK
Technical information upon request.

## FEATURES

- Two Piece Body Screwed Ends
- Investment Cast Body
- Blow Out Proof Stem / Floating Ball
- Fire-Safe API607 5th Edition, API6FA 3rd Edition
- Adjustable Packing Gland
- Standard Locking Handle
- Actuator Mounting Pad
- Ball includes Pressure Equalisation Hole to prevent trapped pressure in body cavity which prevents seat damage due to thermal cycling
- Threads conform to ANSI B1.20.1, BS21, DIN259/2999
- Mount Pad

### API 3000 - 3000 PSI WOG

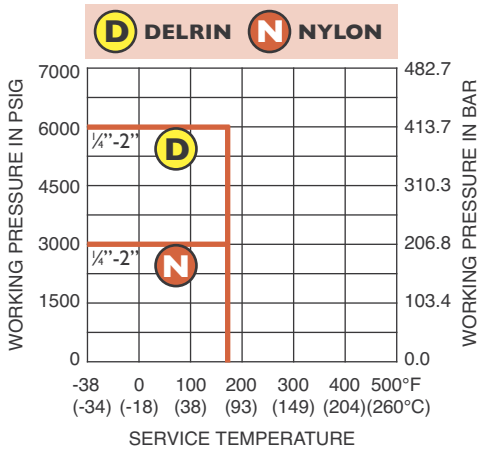
Max Working pressure: 207 bar @ 38°C - 3000 psi @ 100°F
Seat Nylon / Delrin

### CLASS 2500 - 6000 PSI WOG

Max Working pressure: 413 bar @ 38°C - 6000 psi @ 100°F
Seat Nylon / Delrin

| TEST PRESSURE 8NB - 50NB (¼" ~ 2") | |
|---|---|
| Shell Test | 9000PSI |
| HPC Test | 6600PSI |
| LPC Test | 80 - 100PSI |

### P-T RATINGS




## DIMENSIONS

| SIZE | | ØD | | L | | H | | W | | ISO 5211 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IN | DN | IN | MM | IN | MM | IN | MM | IN | MM | | |
| 1/4" | 8 | 0.25 | 6.4 | 3.00 | 76.2 | 1.92 | 48.8 | 5.00 | 127.0 | F03 | 3xM5 |
| 3/8" | 10 | 0.50 | 12.7 | 4.00 | 101.6 | | | | | | |
| 1/2" | 15 | 0.50 | 12.7 | 4.00 | 101.6 | | | | | | |
| 3/4" | 20 | 0.75 | 19.1 | 4.25 | 108.0 | 2.56 | 65.0 | 5.83 | 148.1 | F04 | |
| 1" | 25 | 1.00 | 25.4 | 4.5 | 114.3 | 3.45 | 87.6 | 8.10 | 205.7 | F05 | 3xM6 |
| 11/4" | 32 | 1.50 | 38.1 | 5.25 | 133.4 | 4.13 | 104.9 | 10.00 | 254.0 | F07 | 3xM8 |
| 11/2" | 40 | | | | | | | | | | |
| 2" | 50 | | | 6.25 | 158.8 | | | | | | |

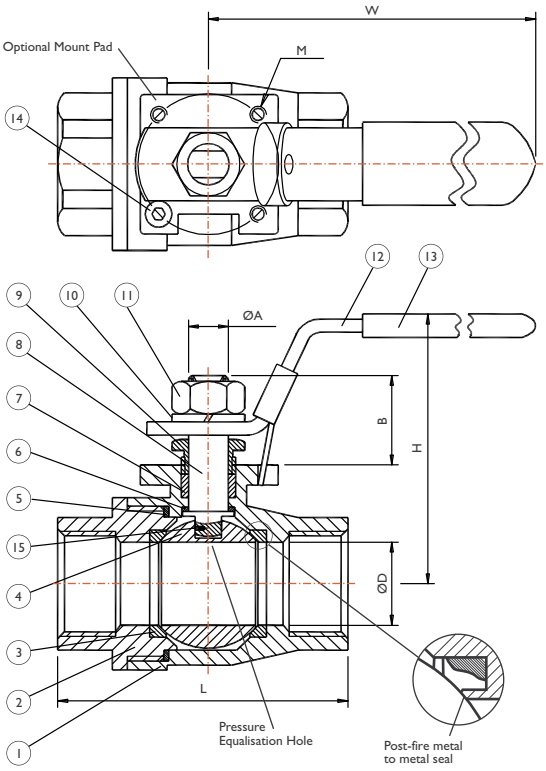
## BALL VALVE FIRESAFE 2 PIECE BODY CLASS 800 & 900 FS660 SERIES

APV
AUSTRALIAN PIPELINE VALVE®

FIRESAFE CERTIFIED API607 5TH EDITION AND API6FA 3RD EDITION

### FEATURES

- 2000 psi CWP (800 Class) with RPTFE seats.
- 2220 psi CWP (900 Class) with Nylon seats.
- Reinforced TFE seats increase durability.
- Adjustable packing gland.
- Bottom-loaded blow-out proof stem.
- Low operating torque to reduce automation costs.
- Optional mounting pad complies with ISO 5211 for ease and interchangeability of actuation.
- Basic design complies with ANSI B16.34 & MSS SP-110.
- NPT threaded ends complies with ANSI B 1.20.1.
- BSP and buttweld also available.
- Graphite gasket & stem packing prevent post-fire external leakage.
- Tested according to MSS SP-110/API 598.
- Ball includes Pressure Equalisation Hole to prevent trapped pressure in body cavity which prevents seat damage due to thermal cycling.

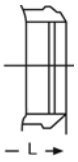



### MATERIALS LIST

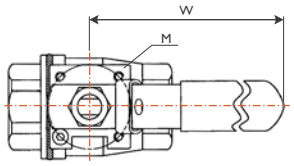
| NO. | PARTS | STAINLESS | CARBON STEEL |
|---|---|---|---|
| 1 | Body | ASTM A351-CF8M/316 | ASTM A216-WCB/A105 |
| 2 | End Cap | ASTM A351-CF8M/316 | ASTM A216-WCB/A105 |
| 3 | Seat | RPTFE / Delrin | RPTFE / Delrin |
| 4 | Ball | ASTM A351-CF8M/316 | ASTM A351-CF8M/316 |
| 5 | Gasket | Graphite | Graphite |
| 6 | Thrust Washer | PTFE | PTFE |
| 7 | Stem Packing | Graphite | Graphite |
| 8 | Stem | ASTM A276-316 | ASTM A276-304 |
| 9 | Gland | AISI 304 | AISI 304 |
| 10 | Spring Washer | AISI 304 | AISI 304 |
| 11 | Handle Nut | AISI 304 | AISI 304 |
| 12 | Handle | AISI 304 | Zinc Plated Steel |
| 13 | Handle Cover | PVC | PVC |
| 14 | Stop Screw | AISI 304 | AISI 304 |
| 15 | Anti-Static | AISI 304 | AISI 304 |

### OPTIONS

-K: Locking Device
-V: Vented Ball

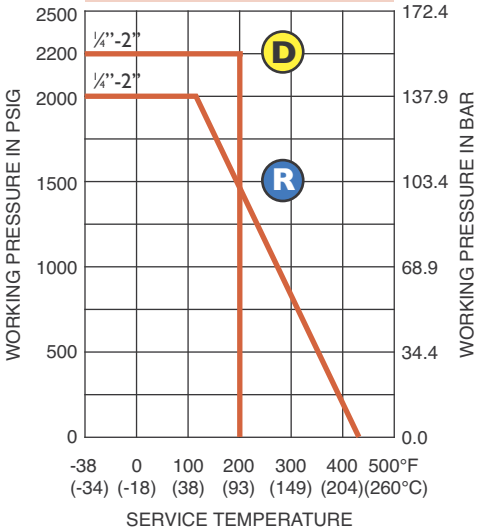



Buttweld Ends




Option:- Seal welded body version also available

### P-T RATINGS




### DIMENSIONS

| SIZE | | ØD | | L | | ØJ | | K | | ØG*2 | | H | | W | | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | mm |
| ¼" | 8 | 0.43 | 11 | 2.12/2.32 | 54/58 | 0.31 | 8 | 0.59 | 8 | | | 2.13 | 54 | 4.7 | 120 | M5 |
| ⅜" | 10 | 0.49 | 12.5 | 2.36/2.40 | 58/61 | 0.31 | 8 | 0.59 | 8 | | | 2.13 | 54 | 4.7 | 120 | M5 |
| ½" | 15 | 0.59 | 15 | 2.40/2.52 | 61/64 | 0.31 | 8 | 0.47 | 12 | 1.42 | 36 | 2.44 | 62 | 3.94 | 100 | M5 |
| ¾" | 20 | 0.79 | 20 | 2.87/3.11 | 73/79 | 0.39 | 10 | 0.53 | 13.5 | 1.42 | 36 | 2.68 | 68 | 4.76 | 121 | M5 |
| 1" | 25 | 1.00 | 25.4 | 3.35/4.53 | 85/115 | 0.47 | 12 | 0.71 | 18 | 1.65 | 42 | 3.15 | 80 | 6.02 | 153 | M5 |
| 1¼" | 32 | 1.26 | 32 | 3.78/4.49 | 96/114 | 0.47 | 12 | 0.71 | 18 | 1.65 | 42 | 3.39 | 86 | 6.02 | 153 | M5 |
| 1½" | 40 | 1.50 | 38 | 4.29/4.53 | 109/115 | 0.55 | 14 | 0.71 | 18 | 1.97 | 50 | 3.39 | 86 | 7.09 | 180 | M6 |
| 2" x 1½" | 50 x 40 | 1.50 | 38 | | | 0.55 | 14 | 0.71 | 18 | 1.97 | 50 | 3.39 | 86 | 7.09 | 180 | M6 |
| 2" | 50 | 1.97 | 50 | 5.11/5.28 | 130/134 | 0.55 | 14 | 0.71 | 18 | 1.97 | 50 | 3.74 | 95 | 7.09 | 180 | M6 |
| 2½" | 65 | 2.56 | 65 | 6.61/7.28 | 168/185 | 0.79 | 20 | 1.14 | 29 | 2.76 | 70 | 5.20 | 132 | 10.43 | 265 | M8 |
| 3" x 2½" | 80 x 65 | 2.56 | 65 | 7.28/8.66 | 185/220 | | | 1.14 | 29 | | | 7.24 | 184 | 13.78 | 350 | |
| 3" | 80 | 3.15 | 80 | * | * | 0.79 | 20 | 1.14 | 29 | 2.76 | 70 | 5.63 | 143 | 10.43 | 265 | M8 |
| 4" x 3" | 100 x 80 | 3.5 | 80 | * | * | 0.79 | 20 | 1.14 | 29 | | | 5.63 | 143 | 10.43 | 265 | |
| 4" | 100 | 3.94 | 100 | 9.09/10.24 | 231/260 | 0.98 | 25 | 1.57 | 40 | | | 6.93 | 176 | 11.02 | 280 | |

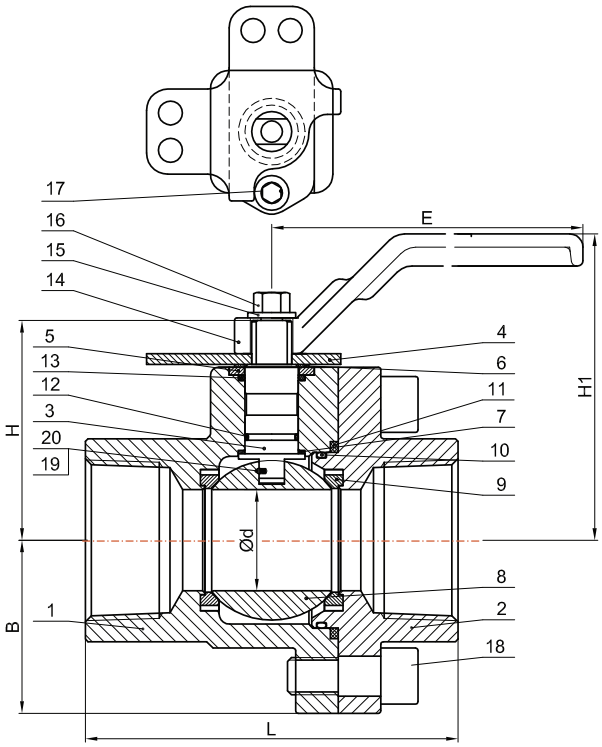
* 2 1/2" to 4" see separate drawing, *2 Mount pad is optional and dimensions can vary.

## BALL VALVES 2 PIECE BOLTED BODY 2000 TO 5000 PSI MODEL 326-FUS

APV
AUSTRALIAN PIPELINE VALVE®

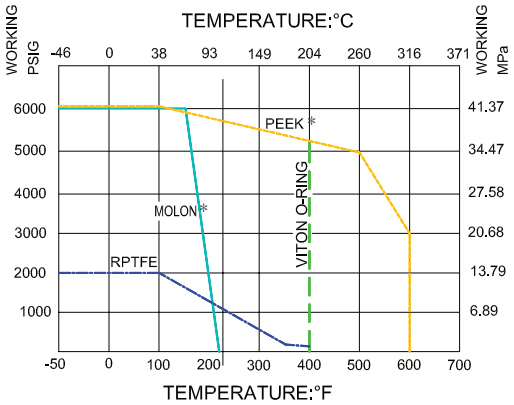
### FEATURES

- 2 Piece, Full Port and Reduced Port
- Blowout-Proof Stem with O-Ring
- Conforms to ASME B16.34
- Fire Safe Design
- Bolted Construction,
- Anti-Static
- NACE MR0175
- Balon® Style





### PRESSURE/TEMPERATURE CURVE




*Larger sizes are rated at lower pressures. Consult APV.

### DIMENSIONS:

| SIZE | d | L | B | H | HI | E |
|---|---|---|---|---|---|---|
| 1" FP | 25 | 98 | 43 | 51 | 99 | 180 |
| 1½" FP | 38 | 133 | 65 | 83 | 115 | 200 |
| 2" RP | 38 | 140 | 65 | 83 | 115 | 200 |
| 2" FP | 50 | 146 | 78 | 92 | 124 | 280 |

### MATERIALS LIST:

| NO. | PART | MATERIAL STANDARD | MATERIAL (NACE) | | QTY. |
|---|---|---|---|---|---|
| | | | 2000 WOG | 5000* WOG | |
| 1 | Body | A216 WCB | A216 WCB | A216 WCB | 1 |
| 2 | Cap | A216 WCB | A216 WCB | A216 WCB | 1 |
| 3 | Stem | Carbon Steel Zinc Plated A311-79 Class B | A479-316 | A479-316 | 1 |
| 4 | Locking Stopper | C/S | C/S | C/S | 1 |
| 5 | Locking Plate | C/S | C/S | C/S | 1 |
| 6 | Washer | RPTFE | RPTFE | RPTFE | 1 |
| 7 | Stem Thrust Washer | RPTFE | RPTFE | MOLON | 1 |
| 8 | Ball | AISI 1018 Nickel Chrome Plated | A351 CF8M | A351 CF8M | 1 |
| 9 | Seat | RPTFE | RPTFE | MOLON | 2 |
| 10 | O-Ring | BUNA | VITON | VITON | 1 |
| 11 | Gasket | Graphite | Graphite | Graphite | 1 |
| 12 | O-Ring | BUNA | VITON | VITON | 1 |
| 13 | O-Ring | BUNA | VITON | VITON | 1 |
| 14 | Handle | C/S | C/S | C/S | 1 |
| 15 | Washer | C/S | C/S | C/S | 1 |
| 16 | Bolt | C/S | C/S | C/S | 1 |
| 17 | Cap Screw | C/S | C/S | C/S | 1 |
| 18 | Cap Screw | A193 B7 | A193 B7M | A193 B7M | 6 |
| 19 | Ball | 304 | 304 | 304 | 1 |
| 20 | Spring | 304 | 304 | 304 | 1 |

*3000 WOG in larger sizes. Consult APV.

APV AUSTRALIAN PIPELINE VALVE®

## OILPATCH BUTTERFLY VALVES X-NE-C (X-DEMC-0)

SUPERSEAL®

### DEMCO STYLE
- Parts fully interchange

### BLOWOUT PROOF STEM
- Tapered stem shoulder

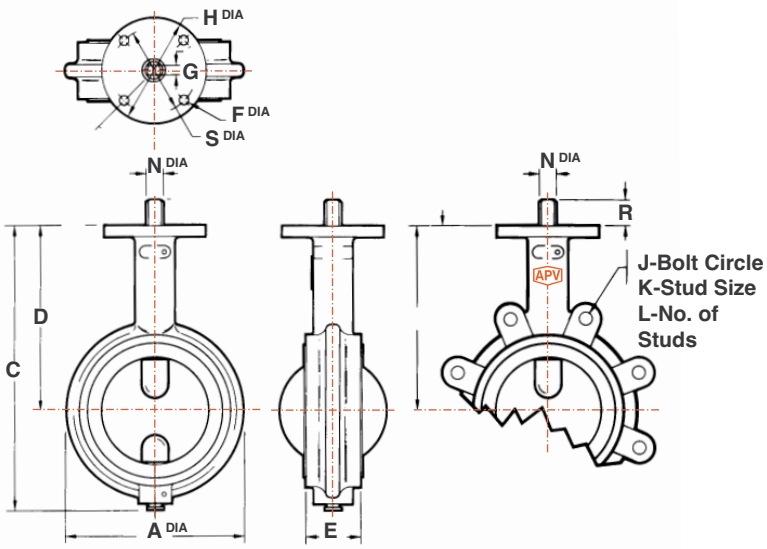
### POSITIVE STEM/DISC ORIENTATION
- Handle indicates disc position.

### HIGH FLOW DISC
- No stem boss in the path of line fluid.

### INCREASED PRESSURE RANGE
- Standard 200 psi.
- High pressure 285 psi.

### LONG NECK
- Available in all body and trim options.

### PROVEN DESIGN
- Suit ANSI 125/150 or AS/BS Table D, E Flanging.




### DIMENSIONS

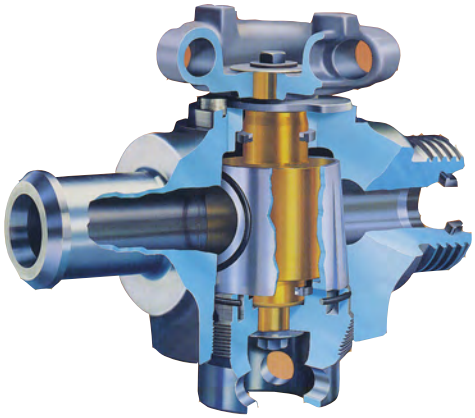
| Valve Size | A | C | D | E | F | G | H | J | K | L | N | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2” | 4.12 | 8.44 | 5.62 | 1.74 | 0.408 | 0.375 | 4.00 | | | | 0.625 | 3.25 |
| 2½” | 4.88 | 9..19 | 6.12 | 1.86 | 0.408 | 0.35 | 4..00 | | | | 0.625 | 3.25 |
| 3” | 5.38 | 9.69 | 6.38 | 1.86 | 0.408 | 0.375 | 4.00 | | | | 0.625 | 3.25 |
| 4” | 6.88 | 11 | 7.12 | 2.11 | 0.408 | 0.375 | 4.00 | | | | 0.625 | 3.25 |
| 5” | 7.75 | 12.12 | 7.75 | 2.24 | 0.408 | 0.500 | 4.00 | | | | 0.838 | 3.25 |
| 6” | 8.75 | 13.25 | 8.25 | 2.24 | 0.408 | 0.500 | 4.00 | | | | 0.838 | 3.25 |
| 8” | 11 | 15.56 | 9.44 | 2.54 | 0.533 | 0.500 | 6.00 | | | | 0.838 | 5.00 |
| 10” | 13.38 | 18.69 | 11.25 | 2.74 | 0.533 | 0.625 | 6.00 | | | | 0.963 | 5.00 |
| 12” | 16.12 | 21.69 | 12.19 | 3.24 | 0.533 | 0.750 | 6.00 | | | | 1.338 | 5.00 |

## OILPATCH PLUG VALVES NON LUBRICATED

APV AUSTRALIAN PIPELINE VALVE®

Quarter-turn valves for standard and sour gas services to 20,000 psi. Rugged plug valves 1 to 3 inches and with threaded or detachable Weco® style wing union ends.
Used for cementing, fracturing, acidizing and other high-pressure lines which handle slurries, abrasives, drilling muds, chemicals and other similar products. These valves are equivalent to SPM® style.

We also can also supply model MC-OD-PV which is equivalent to Lo-Torc® style (even parts interchange).

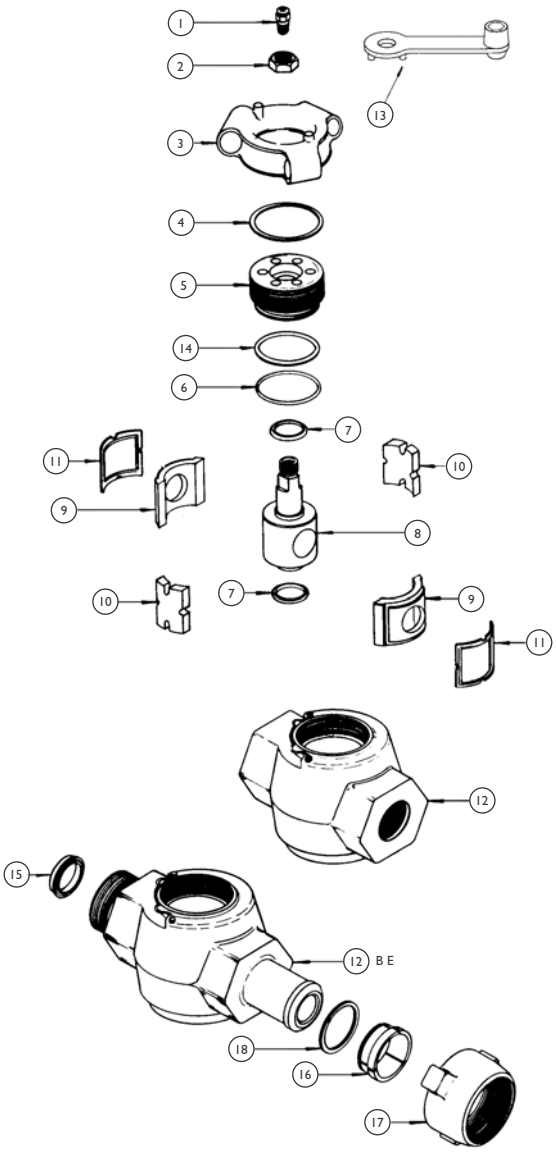


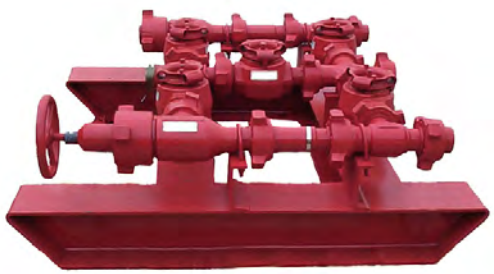
**Floating segments ensure positive seal**
Two seal segments which float slightly to offset possible micro-expansion of the valve body in extreme high-pressure applications and to ensure a positive seal at all times.

**Easy operation under pressure**
The plug valve's cylindrical plug fits between a set of seal and side segments to prevent the plug from sticking to the valve body, permitting easy operation under pressure.

**Visible indication of valve position**
A visible, quarter-turn stop on the plug cap indicated clearly when the valve is fully open or fully closed. A detent spring holds the valve in the desired position.

**In-line maintenance**
Can be rebuilt in-line by replacing the side and seal segments.



| ITEM | QTY. | DESCRIPTION |
|---|---|---|
| 1 | 1 | Grease Fitting |
| 2 | 1 | Hex Nut |
| 3 | 1 | Plug Cap |
| 4 | 1 | Gasket |
| 5 | 1 | Body Cap |
| 6 | 1 | O-Ring |
| 7 | 2 | O-Ring / Packing Assy |
| 8 | 1 | Plug |
| 9 | 2 | Seal Segments |
| 10 | 2 | Side Segments |
| 11 | 2 | Seal |
| 12 | 1 | Body, 2" Fem. LPTL |
| 12 | 1 | Body, 2" Fig. 1502 Union Connections |
| 12 | 1 | Body, 2" Fem. LPTL |
| 12 | 1 | Body, 2" Fem. LPTL |
| 12 | 1 | Body, 2" Fig. 1002 Union Connections |
| 13 | 1 | Wrench, Body Cap |
| 14 | 1 | Back-Up Ring |
| 15 | 1 | Retainer Ring |
| 16 | 3 | Segments |
| 17 | 1 | Wing Nut |
| 18 | 1 | Seal Ring |

# PLUG VALVES



| SIZE | TYPE | RATED CWP | TYPE CONNECTION |
|---|---|---|---|
| 1 | 1 x 1 | 5000 | 1" Female Line Pipe Thread |
| 1 | 1 x 2 | 15000 | 2" Male Line Pipe Thread Long |
| 1 | 1 x 2 x 1 | 15000 | 2" Male LPTL x Female LPT |
| 1 | 1 x 1 | 15000 | 1" Fig. 1502 Female x 1" Fig. 1502 Male |
| 1 | 1 x 1½ | 15000 | 1½" Fig. 1502 Female x 1½" Fig. 1502 Male |
| 1 | 1 x 2 | 15000 | 2" Fig. 1502 Female x 2" Fig. 1502 Male |
| 1 | 1 x 2 | 15000 | 2" Fig. 1502 Female x 2" Fig. 1502 Male |
| 1½ | 1½ x 1½ | 10000 | 1½" Female Line Pipe Thread |
| 1½ | 1½ x 1½ | 15000 | 1½" Fig. 1502 Female x 1½" Fig. 1502 Male |
| 1½ | 1½ x 2 | 15000 | 1½" Fig. 1502 Female x 2" Fig. 1502 Male |
| 2 | 2 x 2 | 5000 | 2" Female Line Pipe Thread Long |
| 2 | 2 x 2 | 10000 | 2" Female Line Pipe Thread Long |
| 2 | 2 x 2 | 10000 | 2" Fig. 1002 Female x 2" Fig. 1002 Male |
| 2 | 2 x 2 | 15000 | 2" Female Line Pipe Thread Long |
| 2 | 2 x 2 | 15000 | 2" Fig. 1502 Female x 2" Fig. 1502 Male |
| 2 | 2 x 2 | 15000 | 2" Fig. 1502 Female x 2" Fig. 1502 Male |

3 inch also available.

## DIMENSIONAL DETAILS

| 1" and 2" 5,000 CWP | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | PORT SIZE | THREAD SIZE | APPROX WEIGHT LBS |
| 6 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 1" LPT | 20 |
| 8.50 | 3.28 | 6 | 8.25 | 6.81 | 1.75* | 2" LPTL | 43 |

*2 1/16" Port model UT also available.

| 1½" and 2" 10,000 CWP | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | PORT SIZE | THREAD SIZE | APPROX WEIGHT LBS |
| 7.31 | 3.28 | 6 | 8.25 | 6.81 | 1.30 | 1½" LPT | 55 |
| 8.50 | 3.28 | 6 | 8.25 | 6.81 | 1.75* | 2" LPTL | 52 |

*2 1/16" Port model UT also available.

| 2" 15,000 CWP | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | PORT SIZE | THREAD SIZE | APPROX WEIGHT LBS |
| 8.50 | 3.44 | 6.63 | 8.50 | 7.89 | 1.75 | 2" LPTL | 85 |

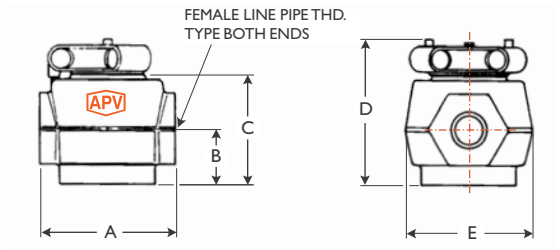
3 inch also available.

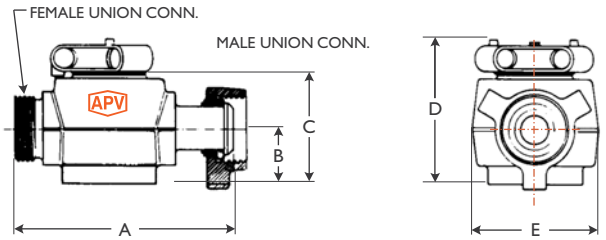
| 1", 1½" and 2" 10,000 and 15,000 CWP | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | PORT SIZE | UNION SIZE | APPROX WEIGHT LBS |
| 10.56 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 1" - 1502 | 50 |
| 10.56 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 1½" - 1502 | 54 |
| 10.56 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 2" - 1502 | 57 |
| 10.56 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 2" - 1502 | 57 |
| 12.63 | 3.28 | 6 | 8.25 | 6.81 | 1.30 | 1½" - 1502 | 51 |
| 12.63 | 3.28 | 6 | 8.25 | 6.81 | 1.30 | 1½" F, 2" M | 53 |
| 12.63 | 3.28 | 6 | 8.25 | 6.81 | 1.75 | 2" - 1002 | 51 |
| 13.87 | 3.44 | 6.63 | 8.50 | 7.89 | 1.75 | 2" - 1502 | 100 |

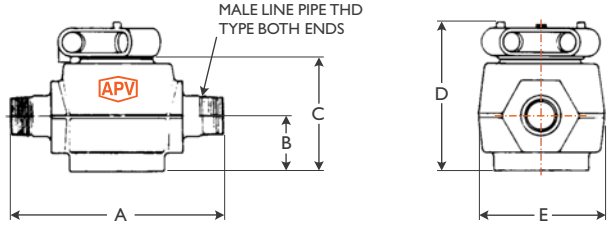
3 inch also available.

| 2" 15,000 CWP | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | PORT SIZE | THREAD SIZE | APPROX WEIGHT LBS |
| 9.13 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 2" LPTL | 27 |
| 9.13 | 2.31 | 4.62 | 7.37 | 4.88 | .87 | 2" M x 1" F | 30 |

3 inch also available.



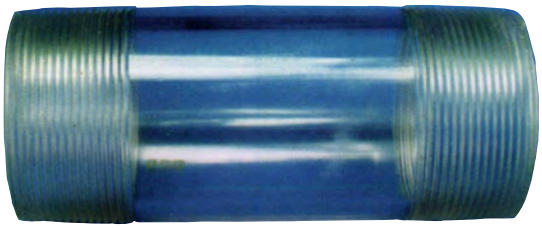



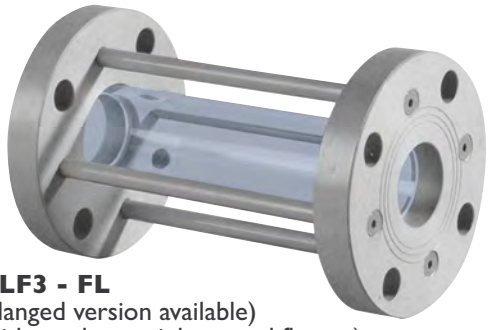
## SIGHT GLASS NPT (LP)

How much money do you lose each year because of inefficient gauging methods, malfunctioning separating equipment or human error resulting in oil going down the disposal well with salt water.

The Flowturn SIGHT GLASS is made from a tough, shatter-resistant polycarbonate. This type of plastic has more than 30 times the impact resistance of safety glass, withstands prolonged exposure to ultraviolet rays, and can be used in temperatures ranging from -150 degrees to 165 degrees F.



**SLF 3**



**SLF3 - FL**
(flanged version available)
with steel or stainless steel flanges)

### WARNING

* Always place the pipe wrench on the metal connections and not the sight glass itself when tightening, and never tighten or loosen under pressure.
* Avoid direct contact with strong acids or chemicals such as carbon disulfide, acetone etc.
* The Flowturn Sight Glass should always be installed in a "T" when used in a flow line to eliminate breaking or bending that may occur due to vibrations from a hard flowing well or the pumping unit.
* Use 500PSI rated glass for storage tank drain lines only. Never use 500psi rated on flow lines, use 1000 or 1500 PSI rated glass on flow line.

### CHEMICAL COMPATIBILITY

The following list shows the chemical classes which the Sight Glasses may be exposed to and the effects that may be experienced in oil tank applications. For other applications please advise your service and fluid type.

| | |
|---|---|
| **Acids** | No effect under the most common conditions of concentration and temperature |
| **Alcohol** | Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures result in etching and attack evidenced by decomposition. |
| **Alkalis** | Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures result in etching and attack evidenced by decomposition. |
| **Aliphatic Hydrocarbons** | Generally compatible. |
| **Amines** | Surface crystallization and chemical attack. **AVOID**. |
| **Aromatic Hydrocarbons** | Partial solvents and severe stress cracking agents. **AVOID**. |
| **Detergents and Cleaners** | Mild soap solutions are compatible. Strong alkaline materials should be avoided. |
| **Esters** | Cause severe crystallization. Partial solvents. **AVOID**. |
| **Greases and Oils** | Pure petroleum types generally compatible. Many additives used with them are not. |
| **Halogenated Hydrocarbons** | Solvents. **AVOID**. |
| **Ketones** | Cause sever crystallization and stress cracking. Partial solvents. **AVOID**. |
| **Silicone Oil & Greases** | Generally compatible up 185°F. Some contain aromatic hydrocarbons which should be **avoided.** |

### ULTRAVIOLET RADIATION STABILITY

| Property | Rating at given time (% of original) |
|---|---|
| **Impact Strength** | 95% after 7 years |
| **Tensile Strength** | 85% after 1 year and up to 5 years |
| | 67% after 7 years |
| **Elongation** | 75% after 1 year |
| **Light Transmission** | 80% after 5 years |

### SIZE/WEIGHT/RATING

| Catalogue | Size | Weight | Rating | Thread |
|---|---|---|---|---|
| **SG0500** | 2" x 8" | 318 Gram | 500 PSI | NPT |
| **SG100** | 2" x 8" | 410 Gram | 1000 PSI | NPT |
| **SG1500** | 2" x 8" | 535 Gram | 1500 PSI | NPT |
| **SG0500-3** | 3" x 8" | 535 Gram | 500 PSI | NPT |
| **SG0500-4** | 4" x 8" | 590 Gram | 500 PSI | NPT |

# SIGHT GLASS

11

## SIGHT GLASS FLANGED & SCREWED

**Model SLSG125CI (iron)**
**Model SLSG150CS (steel)**
**Model SLSG150SS (S/S)**

### PRESSURE RATINGS

Standard steel/SS flanged sight glass is 200psi (1378 kpa) CWP (maximum temp 200°C) 232psi (1600 kpa) also available. For higher pressure refer SLF1 sight glass. The iron body sight glass (screwed and flanged) is only rated to 100psi (700 kpa) but 1000 kpa is available on request.

### APPLICATIONS

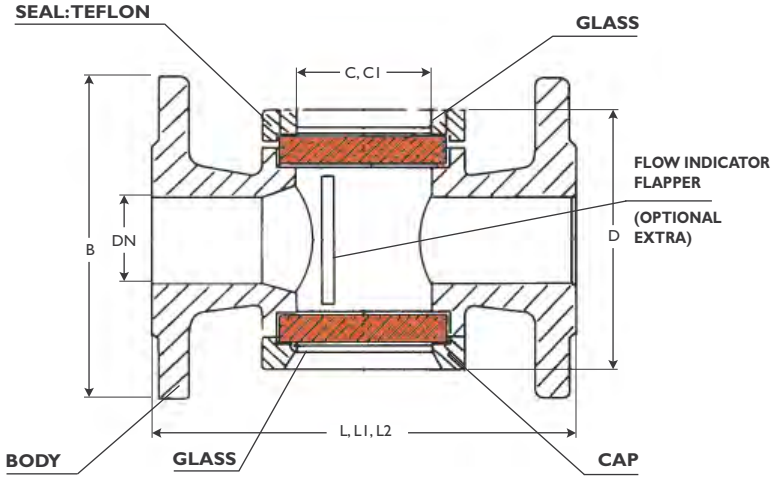
Water, oil water, air and gas. If Mica glass is fitted then saturated steam up to 230PSI at 200°C can be accommodated. For corrosive/abrasive fluids check material grades for compatibility, this is purchaser's responsibility and if for such an application you must state in writing.

### LININGS

Special linings, coatings on request.

### END CONNECTIONS

Available in screwed ends (NPT, BSP) and flanged in drilling to suit BS Table D & E, DIN/JIS, ANSI 125, 150 (our standard model is not full ANSI class 150 rated).



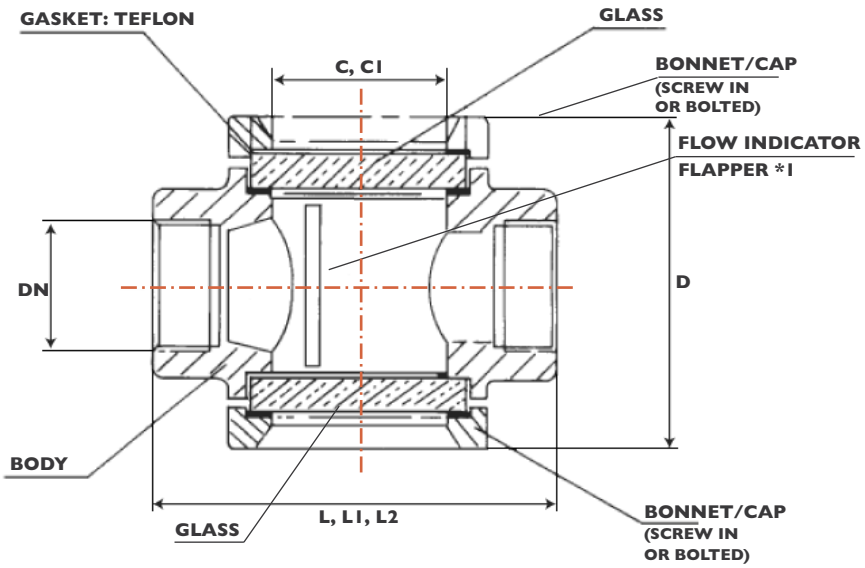

### DIMENSIONS (MM) FLANGED SIGHT GLASS

| SIZE (DN) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 130 | 130 | 130 | 170 | 166 | 180 | 230 | 240 | 260 | 360 | 390 | 600 | |
| L1 | 135 | 135 | 160 | 180 | 174 | 200 | 245 | 270 | 320 | 380 | 420 | | |
| L2 | | 145 | 170 | 200 | 200 | 220 | 270 | 310 | 350 | 400 | 480 | | |
| B | 95 | 105 | 115 | 140 | 150 | 165 | 185 | 200 | 220 | 250 | 285 | 340 | |
| D | 70 | 90 | 90 | 120 | 120 | 140 | 170 | 200 | 220 | 270 | 300 | 350 | |
| C | 32 | 39 | 43 | 50 | 50 | 60 | 80 | 80 | 110 | 130 | 160 | 160 | |
| * C1 | 40 | 50 | 50 | 65 | 65 | 80 | 104 | 125 | 125 | 175 | 175 | 175 | |
| WT. Kg | 3 | 4 | 5 | 7 | 8 | 10 | 14 | 19 | 25 | 35 | 45 | 70 | |

# SIGHT GLASS

11

Model SLSG-S




## BILL OF MATERIALS (SCREWED AND FLANGED UNITS)

| COMPONENTS | IRON | CF8 SS *2 | CF8M SS *2 | CAST STEEL |
|---|---|---|---|---|
| **Body** | FC20 | CF8 or 304 | CF8M or 316 | Carbon Steel |
| **Window Bonnet/Cap *3** | FC20 | CF8 or 304 | CF8M or 316 | Carbon Steel |
| **Glass** | Glass | Tempered Glass | Tempered Glass | Tempered Glass |
| **Bolting** | Steel | S/S | S/S | Steel or B7 |
| **Sight Indicator Flapper *1** | Steel | S/S | S/S | Steel |
| **Gasket** | Non Asbestos | Teflon | Teflon | Teflon or Spiral Wound |

*1 Optional, can also be supplied with a nylon ball on request.
*2 Can also be equivalent grade i.e. SCS13, SCS14.
*3 In smaller sizes the cover is usually screw in design.

Model SLSG-SLF3

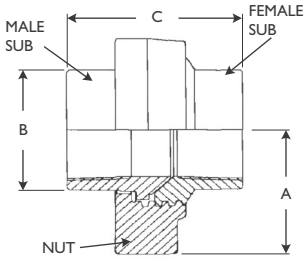
Optional Bubble Window with optional ball flow detector

## DIMENSIONS SCREWED SIGHT GLASSES (MM)

| SIZE | 10/15 | 20 | 25 | 32 | 40 | 50 |
|---|---|---|---|---|---|---|
| **L** | 100 | 90 | 119 | 125 | 135 | 145 |
| **L1** | 180 | 113 | 120 | 145 | 145 | 170 |
| **L2** | 120 | 120 | 138 | 150 | 150 | 180 |
| **D** | 70 | 90 | 90 | 120 | 120 | 140 |
| **C** | 24 | 30 | 30 | 42 | 42 | 55 |
| **C1** | 40 | 50 | 50 | 65 | 65 | 80 |
| **WT. Kg** | 1.5 | 2 | 2 | 4 | 4 | 6.5 |

* 1 Available in short, regular & long pattern

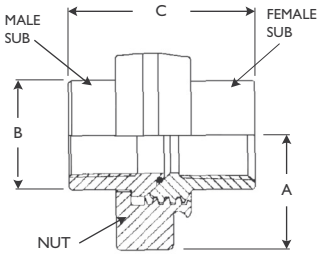
## HAMMER UNIONS WECO STYLE HIGH PRESSURE




2000 PSI CWP (Fig 200)

### FIGURE 200

Pressure Rating: 2000 PSI (cold working pressure)
Applications: General service manifolds and lines. Economical general purpose union; 1" to 10" sizes; LP (NPT) or Buttweld ends.




2000 PSI CWP (Fig 206)

### FIGURE 206

Pressure Rating: 2000 PSI (cold working pressure)
Applications: Manifold and line connections, suction service. NACE/H2S service available.
Features: O-Ring in male sub improves sealing and protects metal-to-metal seal against corrosion; O-Ring can be replaced to extend union service life. LP (NPT) or Buttweld ends.

### DIMENSIONS FIG 200/206 FORGED STEEL (MM)

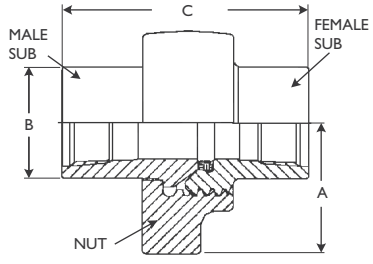
| Nominal Bore Inch (mm) | Clearance Radius A (mm) | Outside Diameter B (mm) | End to End Threaded C (mm) | Material | |
|---|---|---|---|---|---|
| | | | | SUB* | NUT |
| 1" (25) | 50 | 40 | 66 | SF | MIC |
| 1¼" (32) | 56 | 51 | 71 | SF | MIC |
| 1½" (40) | 64 | 57 | 71 | SF | MIC |
| 2" (50) | 76 | 71 | 83 | SF | MIC |
| 2½" (65) | 90 | 84 | 105 | SF | MIC |
| 3" (80) | 102 | 104 | 115 | SF | SF |
| 4" (100) | 119 | 130 | 125 | SF | SF |
| 6" (150) | 159 | 191 | 169 | SF | SC |
| 8" (200) | 189 | 243 | 183 | SF | SC |
| 10" (250) | 229 | 292 | 231 | SF | SC |

SF = Steel forging; SC = Steel casting; MIC = Malleable iron casting
*Subs are 4130/4140 but A105N also available.

### DIMENSIONS FIG 602 FORGED STEEL (MM)

| Nominal Pipe Size | (in) (mm) | 1 25 | 1¼ 32 | 1½ 40 | 2 50 | 2½ 65 | 3 80 | 4 100 |
|---|---|---|---|---|---|---|---|---|
| A Clearance Radius | (mm) | 59 | 83 | 81 | 92 | 99 | 114 | 132 |
| B Outside Diameter | (mm) | 44 | 65 | 65 | 75 | 89 | 106 | 133 |
| C End to End Threaded | (mm) | 90 | 124 | 124 | 133 | 156 | 159 | 210 |
| D End to End Buttweld | (mm) | 90 | 124 | 119 | 152 | 143 | 144 | 144 |
| Weight | (kg) | 105 | 4.5 | 4.2 | 5.4 | 7.3 | 10 | 14 |
| Material | (Sub)* | SF | SF | SF | SF | SF | SF | SF |
| | (Nut) | SF | SF | SF | SF | SF | SF | SF |

SF = Steel forging
Sour Service: Olive Green for Nace/H2S service, full certification
*Subs are 4130/4140 but A105N also available.




6000 PSI CWP (Fig 602)

### FIGURE 602

Pressure Rating: 6000 PSI (414 bar)(cold working pressure)
Applications: Manifold and line connections, and mud service. Standard or NACE/H2S service.
Features: Compact, Replaceable, lip-type seal provides primary seal, protects secondary metal-to-metal seal, minimizes flow turbulence. Buttweld or NPT (LP) available. All components are forged steel

DNV
ISO 9001

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION

API16C, API15CT, API16A, API6A

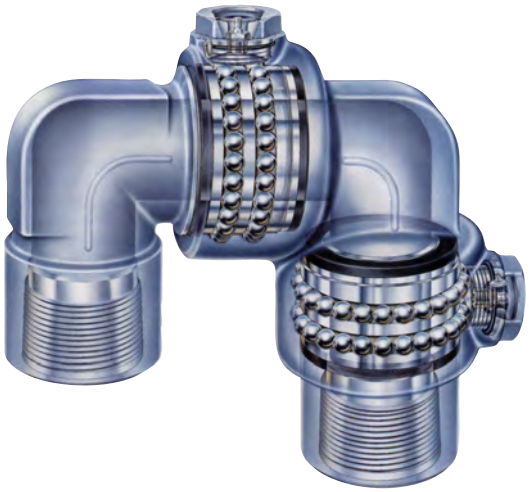

Ball Valve c/w Integral Hammer Union Ends for Quick Changeouts on Tanker Unloading Manifolds.

## SWIVEL JOINTS SHORT SWEEP

**APPLICATIONS** Transfer lines, temporary flow lines, discharge lines, auxiliary flow lines, water lines and other general-service oilfield applications

**SIZES** Ranging from 10NB (3/8") to 300NB (12")

**STYLES** 10, 20, 30, 40, 50, 60, 70, 80

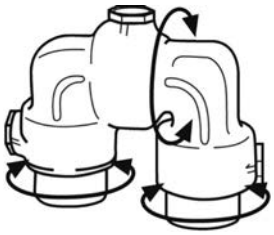


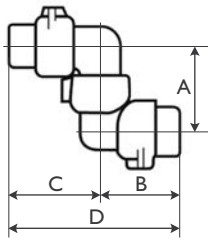
Swivel joints are available in eight basic styles. Details of the four major types are displayed below. Style 20, 60, 70 & 80 also available. These styles permit 360 degree rotation and movement in one, two or three planes. They can be combined in an unlimited variety of ways to suit practically any installation

**NOTE:** Although swivel joints can be rotated while under fluid pressure, they are not recommended for services requiring continuous rotary motion.

All are manufactured from 4130/4140 forged steel.

### STYLE 10
#### 3 SWIVELS, 2 ELBOWS



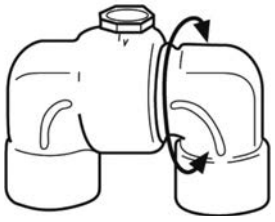


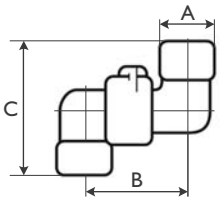

**DIMENSIONS (MM)**

| SIZES (in) | ⅜" - ½" | 1" | 2" | 2.5" | 3" | 4" |
|---|---|---|---|---|---|---|
| End Connections | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female |
| A | | 98 | 156 | 194 | 194 | 232 |
| B | | 98 | 146 | 175 | 175 | 194 |
| C | | 105 | 146 | 175 | 175 | 194 |
| D | | 203 | 292 | 349 | 349 | 387 |
| WT (Kg) | | 3.18 | 10.45 | 17.73 | 15.91 | 24.09 |

All sizes in MM

### STYLE 40
#### SINGLE SWIVEL, 2 ELBOWS

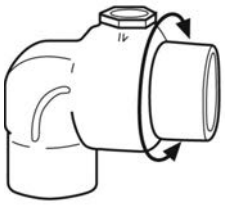


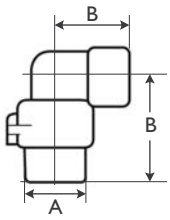



**DIMENSIONS (MM)**

| SIZES (in) | 1" | 2" | 2.5" | 3" | 4" |
|---|---|---|---|---|---|
| End Connections | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female |
| A | 41 | 75 | 102 | 102 | 128 |
| B | 92 | 156 | 194 | 194 | 235 |
| C | 127 | 178 | 235 | 235 | 254 |
| WT (Kg) | 1.59 | 5.68 | 12.12 | 10.91 | 13.18 |

## STYLE 30
### SINGLE SWIVEL, 1 ELBOW



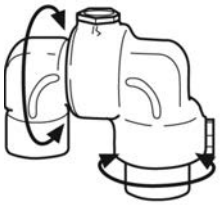


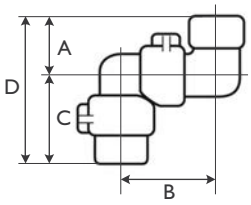

### DIMENSIONS (MM)

| SIZES (in) | 1" | 2" | 3" | 4" |
|---|---|---|---|---|
| End Connections | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female |
| A | 41 | 75 | 102 | 128 |
| B | 64 | 89 | 117 | 127 |
| C | 98 | 146 | 175 | 197 |
| WT (Kg) | 1.59 | 4.55 | 9.09 | 10.91 |

All sizes in MM

## STYLE 50
### TWO SWIVELS, 2 ELBOWS






### DIMENSIONS (MM)

| SIZES (in) | 1" | 2" | 2.5" | 3" | 4" |
|---|---|---|---|---|---|
| End Connections | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female | Threaded NPT Female |
| A | 64 | 89 | 117 | 117 | 127 |
| B | 92 | 156 | 194 | 194 | 232 |
| C | 98 | 146 | 175 | 175 | 194 |
| D | 162 | 235 | 292 | 292 | 321 |
| WT (Kg) | 2.27 | 8.18 | 14.09 | 12.73 | 18.18 |

All sizes in MM

### End Connections

LP (NPT) Female X Female, B/Weld. Flanged and Union End on request

### Pressure Rating

| | |
|---|---|
| 1000 PSI | Code Blue |
| 6000 PSI | Code Silver |
| 10000 PSI | Code Black |

### Long Sweep

Also available

### Sour Service

H2S / NACE Service also available.

Certification available on all sizes

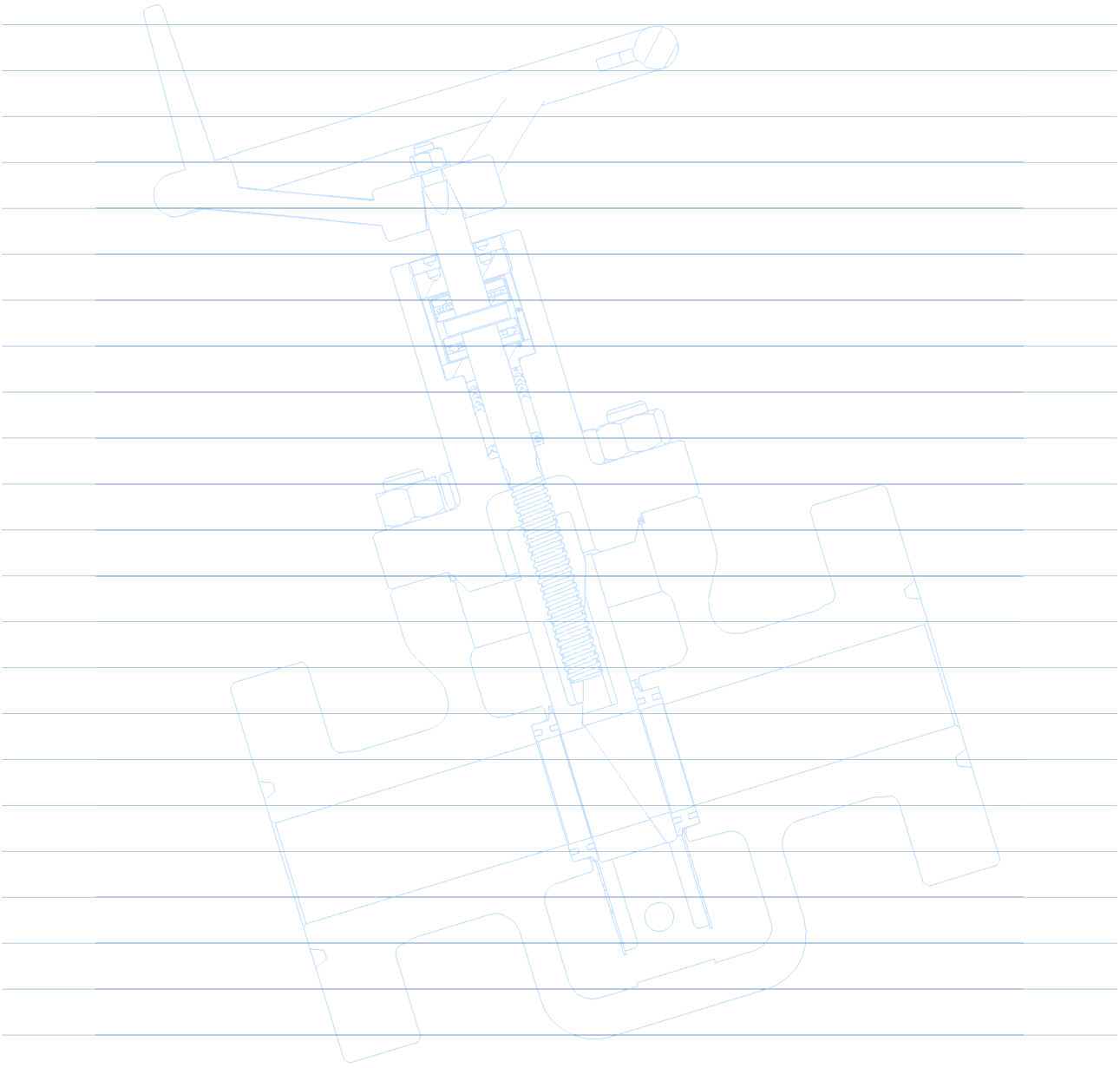
ISO 9001

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION

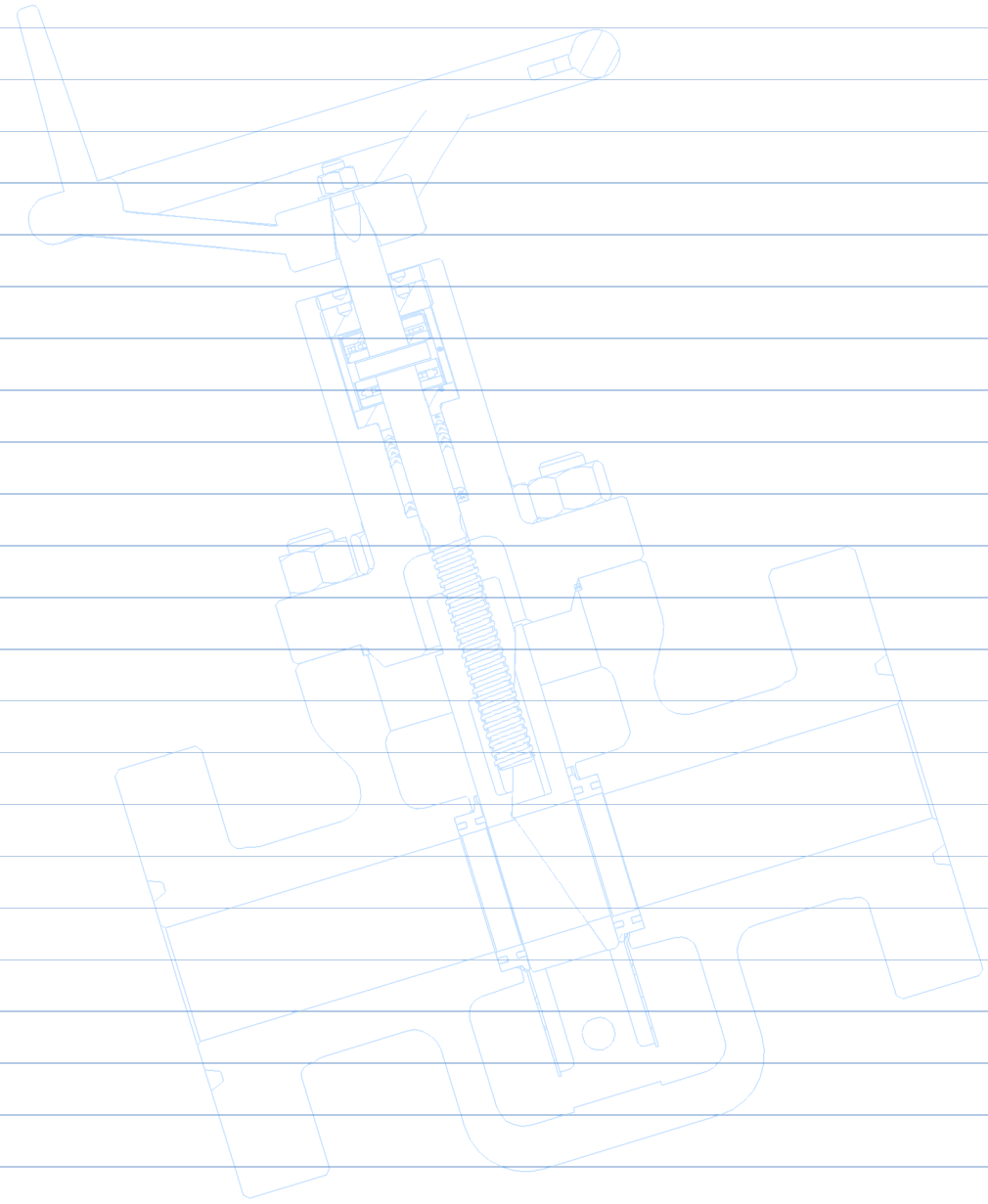
API16C, API15CT, API16A, API6A

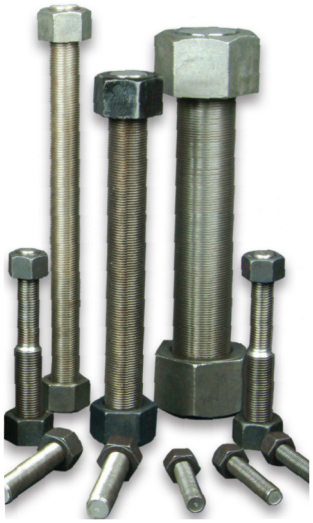
# Notes

# Notes



# Notes





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