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## 3 PC Full Port Ball Valves

*Flo-Tite's Unique...*

### MULTI-CHOICE SERIES

*Over 36 years of performance history*

#### Models:

300 - (316SS)

200 - (WCB)



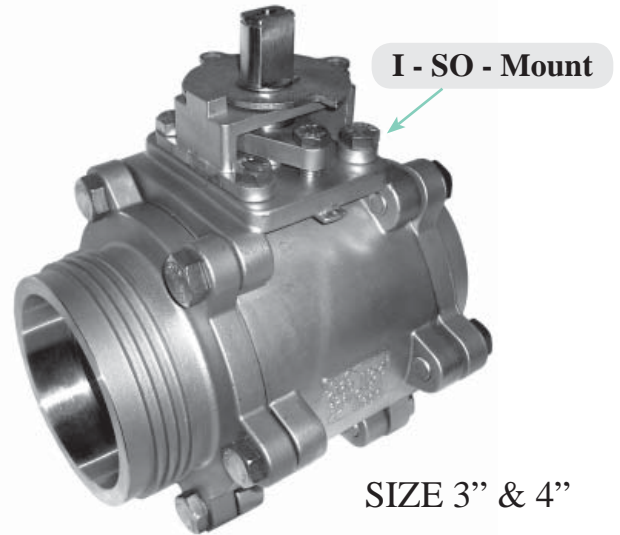
Cap Screw Bolting

SIZE 1/4" - 2 1/2"

Optional 6" thru 12"

**1500 WOG** size 1/4"-2 1/2"

**1250 WOG** size 3" - 4"



I - SO - Mount

SIZE 3" & 4"

Shown with Optional  
Weld-in-Place Technology  
Heat Diffusion Design

#### SPECIAL FEATURES

- I-SO-MOUNT TYPE AUTOMATION PAD
- WELD IN PLACE DESIGN
- SECONDARY MEDIA CONTAINMENT
- LIVE-LOADED STEM ASSEMBLIES
- SWING-OUT BODY DESIGN
- SAFETY LOCKING HANDLE
- ANTI-STATIC GROUNDING DEVICE
- SUPER-TEK SEATS, STANDARD
- SECONDARY METAL SEAT OPTION
- CAVITY FILLER - ALL SIZES OPTION
- METAL NAME PLATES IDENTIFY ALL SOFT PARTS
- 4" STEM EXTENSION OPTION

#### END CAP SELECTION

- THREADED (NPT)
- SOCKET WELD
- BUTT WELD
- ANSI 150/300 FLANGED CONNECTIONS
- TRI CLAMP-SANITARY END
- CAM LOCK
- TUBE END
- FLUSH BOTTOM TANK
- EXTENDED END SW
- EXTENDED END B/W  
*V-Port Control Valve Characterized  
Ball V15°, V30°, V60°, V90°, specials*

#### UNIQUE DESIGN

- **SIZE Range**  
1/4" thru 4"  
Optional 6"~12"
- **1500 WOG/150 WSP**  
1/4" ~ 2-1/2",  
**1250 WOG/150 WSP**  
3" - 4"  
**ANSI 150/300 6"~12"**
- **CAP SCREWS** are used to insure precise alignment of valve center body to end caps. This high-end design feature eliminates through bolts, nuts, washers and their related problems.

*Unique 3PC Design Serves As Both Valve And Union  
Eliminating the Need and Cost of Two Sets of Heavy Flanges*

## DESIGN & TECHNICAL DATA

### Model Numbers:

#### End Connections:

| STAINLESS | CARBON | CONNECTIONS:           |
|-----------|--------|------------------------|
| 310       | 210    | THREADED END           |
| 320       | 220    | SOCKET WELD            |
| 330       | 230    | BUTT WELD              |
| 340       | 240    | 150 LB. FLANGE         |
| 350       | 250    | TRI CLAMP-SANITARY END |
| 360       | 260    | CAM LOCK               |
| 370       | 270    | TUBE END               |
| 395       | 395    | EXTENDED END B/W       |
| 390       | 290    | GROOVED END            |
| TK300     | TK200  | FLUSH BOTTOM TANK      |

Any combination of above end connections are available C/F.

Consult Ball Valve Identification Code Guide for Full Part Number, Tech Bulletin page 188

### SPECIFICATION STANDARDS:

- Threaded End, ANSI B1.20.1 NPT
- Socket Weld, ANSI B16.11
- Butt Weld MSS SP72
- Meets WW-V35C Type II
- Composition: SS Style
- Shell Wall ANSI B16.34
- Flanged End Class 150 or 300
- Valve Body and Caps are high quality investment castings
- NACE MR-01.75 compliant
- ISO 5211 Mounting Pad
- All Valves have CE Marking
- Marking Compliance to MSS SP-25

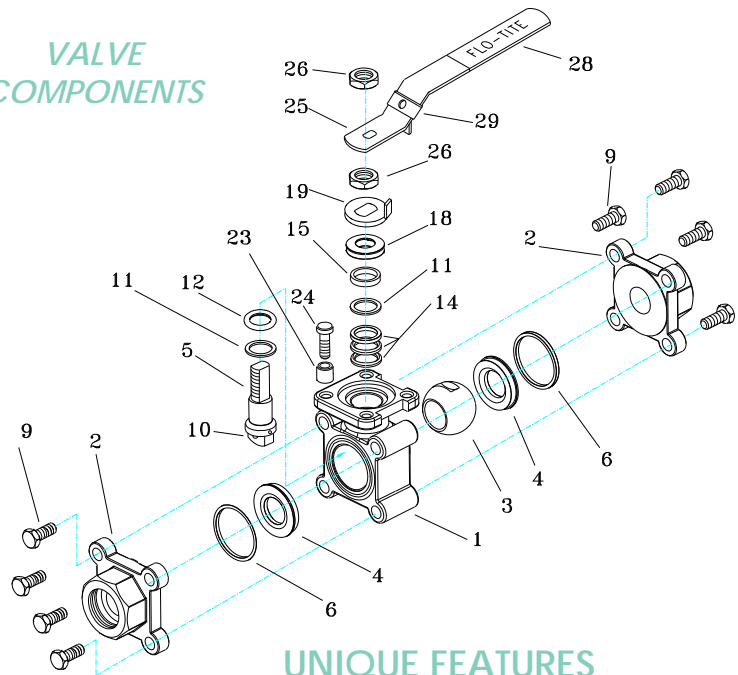
### RATINGS:

- Pressure Rating:  
Size 1/4" thru 2 1/2" - 1500 WOG;  
Size 3" & 4" 1250 WOG  
Threaded, Socket Weld  
Butt Weld schedules 5, 10, & 40  
Size 6" and larger Contact Factory
- Flanged End ANSI 150/300
- Steam Rating: 150 PSI WSP  
250 PSI steam rated valves are available with Super-Tek III or S-Tek(50/50) seats
- Vacuum service to 20 microns

*All Valves Tested to MSS SP-72 at 100 psi under Water in Open and Closed Positions*

### Exploded View For 1/4"~2-1/2"

#### VALVE COMPONENTS



#### UNIQUE FEATURES

##### Ball Design Added Safety Feature:

As an added safety feature, there is a hole in the stem slot of each ball to equalize pressure between the body cavity and the flow stream when valve is in the open position.

##### Relief Holes in Seats Relieve Pressure Past the Upstream Seat.

##### Flo-Tite's

safety lockable handle designed to prevent accidental movement.



The valve can also be padlocked to limit unwanted access.

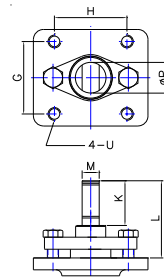
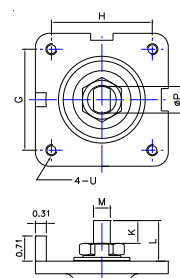
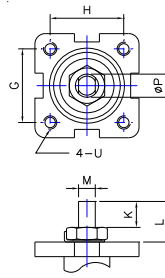
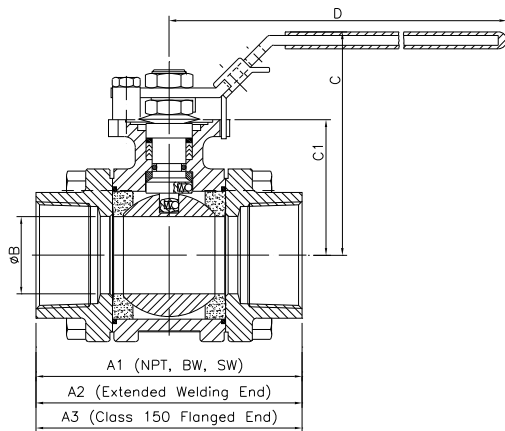


### Flo-Tite's QUALITY CONTROL INCLUDES:

- ✓ ✓ All castings go through spectroscopic analysis
- ✓ ✓ Microstructure test after solution heat treating
- ✓ ✓ Inspection of appearance after shot blasting

- ✓ ✓ Size/dimension gauge test after CNC machining
- ✓ ✓ Final air pressure leakage test at 100 PSI under water in Open and Closed positions.

***All 316 Stainless Steel Cast Valves Are Passivated As Standard***



**NOTE: Verify the Mounting dimensions before manufacturing actuator mounting hardware.**

| Size       | G     | H     | L    | K    | M     | P    | U          |
|------------|-------|-------|------|------|-------|------|------------|
| 1/2", 3/4" | 1.169 | 1.169 | 0.55 | 0.32 | 0.250 | 0.38 | #10-24unc  |
| 1", 1 1/4" | 1.392 | 1.392 | 0.75 | 0.43 | 0.315 | 0.44 | 1/4-20unc  |
| 1 1/2", 2" | 1.949 | 1.949 | 0.91 | 0.55 | 0.374 | 0.63 | 5/16-18unc |
| 2-1/2"     | 2.840 | 2.840 | 1.14 | 0.69 | 0.472 | 0.75 | 5/16-18unc |
| 3", 4"     | 2.840 | 2.840 | 3.07 | 1.75 | 0.669 | 1.10 | 1/2-13unc  |

## BILL OF MATERIALS: Size 1/4" thru 4" inch

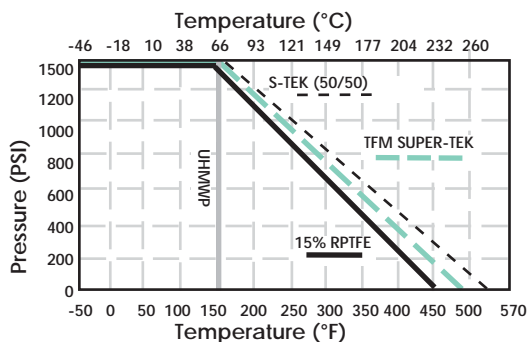
| No. | Part Name               | 300 Series Stainless Steel           | 200 Series Carbon Steel              | Qty    |
|-----|-------------------------|--------------------------------------|--------------------------------------|--------|
| 1   | Body                    | ASTM A351 CF8M - 316                 | ASTM A216 Gr. WCB                    | 1      |
| 2   | End Cap Connector       | ASTM A 351 CF8M @                    | ASTM A216 Gr. WCB                    | 2      |
| 3   | Ball                    | ASTM A351 CF8M - 316                 | ASTM A351 CF8M - 316                 | 1      |
| 4   | Seat *                  | Super-Tek TFM or RTFE                | Super-Tek TFM or RTFE                | 2      |
| 5   | Stem                    | ASTM A276 Type 316                   | ASTM A276 Type 316                   | 1      |
| 6   | Body Seal *             | Super-Tek TFM or RTFE                | Super-Tek TFM or RTFE                | 2      |
| 9   | Body Bolt               | SS304 / ASTM A193 B8                 | SS304 / ASTM A193 B7                 | 8 / 12 |
| 10  | Anti-Static             | SS316                                | SS316                                | 2      |
| 11  | Thrust Bearing *        | 25% Carbon TFM                       | 25% Carbon TFM                       | 1      |
| 12  | Guide Seal * #          | Viton O-Ring (C/F for other options) | Viton O-Ring (C/F for other options) | 1      |
| 14  | Stem Packing            | Super-Tek TFM or RTFE                | Super-Tek TFM or RTFE                | 3      |
| 15  | Packing Follower        | SS304                                | SS304                                | 1      |
| 18  | Belleville Washer       | SS301                                | SS301                                | 2      |
| 19  | Lock Washer             | SS304                                | SS304                                | 1      |
| 23  | Valve Stop - Set Sleeve | SS304                                | SS304                                | 1      |
| 24  | Valve Stop - Bolt       | SS304                                | SS304                                | 1      |
| 25  | Lever Handle            | SS304                                | SS304                                | 1      |
| 26  | Thin Nut                | SS304                                | SS304                                | 2      |
| 28  | Lever Sleeve            | Plastic                              | Plastic                              | 1      |
| 29  | Locking Device          | SS304                                | SS304                                | 1      |

\* Recommended Spare Parts (Consult factory for B8 and B7 bolting) @ SS Weld Ends use CF3M-316L # Check media compatibility

## DIMENSIONS, TORQUES, AND WEIGHTS:

| Size   | A1   | A2    | A3    | B     | C1   | C    | D     | Weight (lbs) | Torque (in-lbs) | Cv   |
|--------|------|-------|-------|-------|------|------|-------|--------------|-----------------|------|
| 1/4"   | 2.84 | 5.57  | 4.39  | 0.374 | 1.54 | 2.60 | 6.50  | 2.1          | 50              | 20   |
| 3/8"   | 2.84 | 5.57  | 4.39  | 0.50  | 1.54 | 2.60 | 6.50  | 2.1          | 50              | 24   |
| 1/2"   | 2.84 | 5.57  | 4.39  | 0.59  | 1.54 | 2.60 | 6.50  | 2.1          | 50              | 30   |
| 3/4"   | 3.35 | 6.06  | 5.80  | 0.79  | 1.66 | 2.91 | 6.50  | 2.4          | 70              | 50   |
| 1"     | 3.62 | 6.32  | 5.97  | 0.98  | 2.05 | 3.43 | 7.87  | 3.5          | 95              | 94   |
| 1-1/4" | 4.33 | c/f   | -     | 1.26  | 2.21 | 3.62 | 7.87  | 5.1          | 190             | 185  |
| 1-1/2" | 4.84 | 6.94  | 8.03  | 1.50  | 2.60 | 4.13 | 9.84  | 8.0          | 200             | 265  |
| 2"     | 5.59 | 7.76  | 9.04  | 2.00  | 2.95 | 4.53 | 9.84  | 12.0         | 340             | 502  |
| 2-1/2" | 7.26 | c/f   | -     | 2.56  | 3.39 | 5.04 | 9.84  | 22.0         | 480             | 812  |
| 3"     | 7.95 | 9.45  | 10.10 | 2.99  | 3.72 | 6.42 | 15.35 | 32.5         | 780             | 1148 |
| 4"     | 9.06 | 10.56 | 13.90 | 4.02  | 4.35 | 7.09 | 15.35 | 56.0         | 1600            | 2130 |

## PRESSURE & TEMPERATURE DATA



## OPTIONAL SEAT MATERIALS

- UHMWPE-Ultra High Molecular Weight Polyethylene
- Carbon Filled Teflon
- Bronze Filled Teflon
- Stainless Teflon
- Virgin Teflon
- Peek
- Super-Tek (TFM)
- Super-Tek III (Carbon/TFM)
- Cavity Fillers

\* Carbon Steel Bodies are Black Phosphate Coated for Added Corrosion Resistance

\* All Carbon Body Valves Have Stainless Steel Hardware

*This brochure is general in nature and manufacturer reserves the right to alter dimensions, materials or to make design improvements.*

**Flo-Tite's Van Guard stem sealing system**, designed to minimize fugitive emissions. Increases safety and provides an immediate ball valve solution to the newer EPA performance requirements, for valves meeting with a leak rate of 500ppm.

**Flo-Tite's Van Guard seal**, state of the art stem sealing system. Incorporating a triple set of valve stem seals. This unique system eliminates the possibility of valve stem leaks in most all media applications.

#### STAGE I - FRONT LINE

Stage I provides a front line defense against leakage. The blow-out proof stem shoulder has a 45 degree bell shaped slope. The bell shaped design offers more sealing surface, effectively blocking all leak paths during rotation. The wedging action of the portion of the stem is far superior to the common small flat stem shoulder design.

#### STAGE II - GUIDE-SEAL

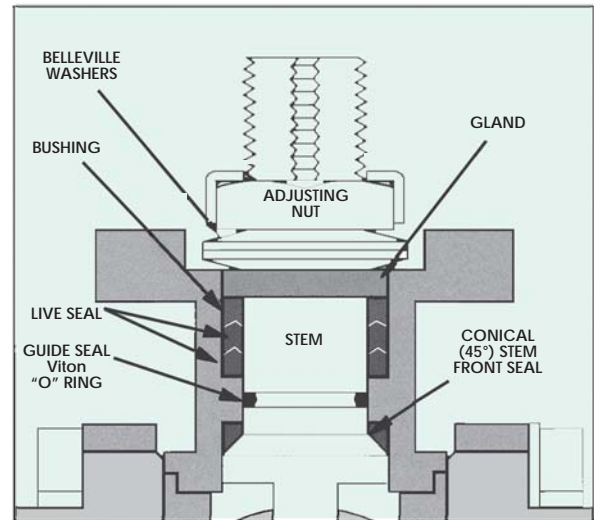
The O-ring originated early in valve design and has been a proven performer in high cycle applications. Its basic function reduces the potential of machining imperfections and provide a low torque flexible seal. This center guide also helps to maintain a perfect stem alignment, by eliminating side loading stress which can cause stem leaks.

**Standard offered with Viton material, consult factory if other material is required.**

#### STAGE III - LIVE-SEAL

Live-Seal is considered the intellectual component and the workhorse of Flo-Tite's Van Guard stem sealing system. Working in unison with stages I and II, stage III calls upon the use of V-Ring packing sets which expands side ways as it is compressed and pressurized blocking all air pockets. The Van-Guard stem system is energized by belleville washers which continuously adjusts packing compression to compensate for wear, pressure or temperature fluctuations.

Whether your service involves volatile organic compounds, volatile hazardous chemicals, or air pollutants. Flo-Tite's ball valves are by design dependable, long lasting and fully maintainable. Flo-Tite has various valve solutions and designs that provides end users freedom of choice for the toughest requirements imposed by the industry and by international standards.



### ADVANTAGES OF CAP SCREW BOLTING



Solid construction with double the number of body bolts threaded to more than half their length, results in a reduction in linear thermal expansion of the bolts and a dramatic decrease in the likelihood of leakage from the body. In addition, spring washers can be used to compensate for thermal contractions of valve parts during severe operation.



### MATERIAL IDENTIFICATION

Flo-Tite's marking system follows MSS SP-25-1998 guidelines. In addition to the cast body information, we have decided to add metal name plates that identify all valve soft parts. Valve users worldwide will be able to contact Flo-Tite quickly for any installation or service requirements as the company website address will be on all valves.

### WELD IN-PLACE

Super-Tek high temperature seat capabilities allow weld end ball valves to be welded to the piping system without disassembly following special welding procedures. This unique advantage results in ease of installation and cost savings while insuring full integrity of the factory assembled and tested valve.



Model #  
335/325  
Extended Ends



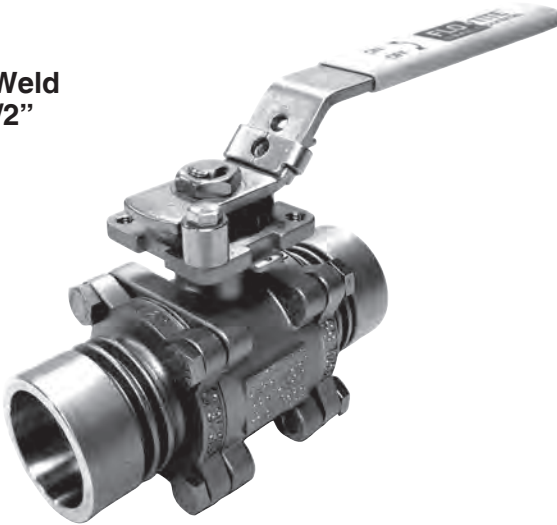
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## Multi-Choice Weld-In-Place Design

***Eliminate valve disassembly when welded ball valves are required.***

### Model Number

Socket Weld  
Size 1-1/2"



|             | Stainless Steel | Carbon Steel |
|-------------|-----------------|--------------|
| Butt Weld   | 335-SS          | 235-CS       |
| Socket Weld | 325-SS          | 225-CS       |

1500 WOG / 150 WSP  
Size Range 1/2" - 4"

### Features

- Safer Installation
- Reduced Liability
- Save Valuable Time
- Reduce Labor Cost
- Assures Fool-Proof Installation



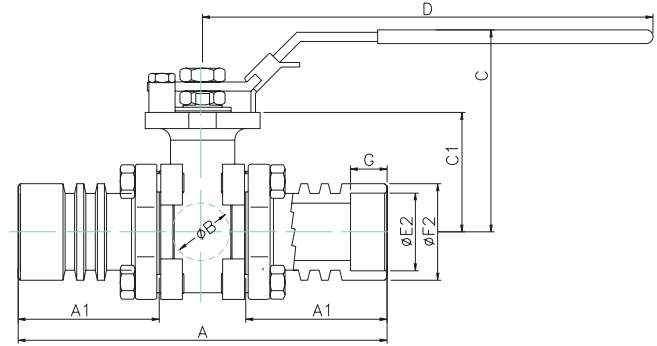
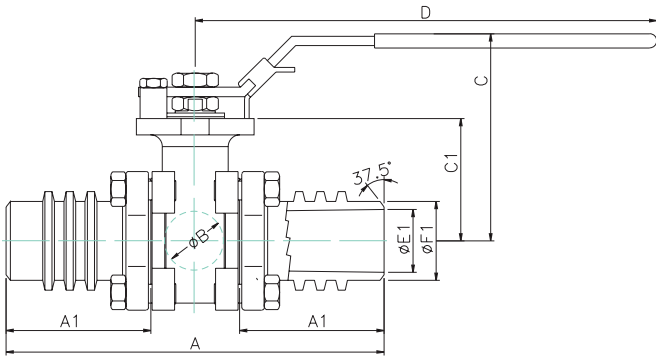
Butt Weld  
Size 3/4"

***Supertek III - High Temperature Body Seals - Standard***

## Flo-Tite's Weld-In-Place Design Advantage

Flo-Tites' Multi-Choice 3PC series ball valves in socket and butt weld connections offer an important advantage of integral extended end caps with heat sink rings that have a series of radiator-type grooves cast into the outside diameter. This creates an increased surface area, allowing more heat to dissipate during welding while protecting the valve seat materials from rapid damaging heat transfer. This unique design allows Flo-Tite's 3PC soft-seated valves to be welded to the piping system without disassembly and without special welding procedures. Flo-Tite's special end cap design is supported with Super-Tek III high temperature body seals and SuperTek TFM seats, which are provided standard in this high performance ball valve. Our unique design also minimizes potential installation errors, while providing a cost effective and safe installation for both manual and automated ball valves.

## Dimensions / Tech Data



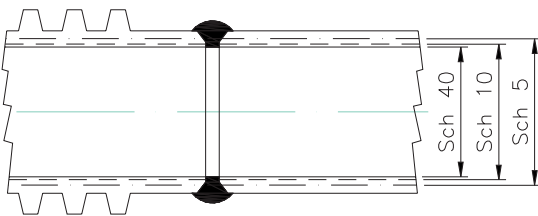
| Size   | A     | A1   | B    | C    | C1   | D    | Sch 40 |      | Sch 10 |      | Sch 5 |      | E2   | F2   | G    |
|--------|-------|------|------|------|------|------|--------|------|--------|------|-------|------|------|------|------|
|        |       |      |      |      |      |      | E1     | F1   | E1     | F1   | E1    | F1   |      |      |      |
| 1/2"   | 5.57  | 2.26 | 0.59 | 2.60 | 1.54 | 6.50 | 0.62   | 0.84 | 0.67   | 0.84 | 0.71  | 0.84 | 0.85 | 1.10 | 0.50 |
| 3/4"   | 6.06  | 2.38 | 0.79 | 2.91 | 1.66 | 6.50 | 0.82   | 1.05 | 0.88   | 1.05 | 0.92  | 1.05 | 1.07 | 1.39 | 0.56 |
| 1"     | 6.32  | 2.42 | 0.98 | 3.43 | 2.05 | 7.87 | 1.05   | 1.31 | 1.10   | 1.31 | 1.19  | 1.31 | 1.33 | 1.65 | 0.63 |
| 1 1/2" | 6.94  | 2.33 | 1.50 | 4.13 | 2.60 | 9.84 | 1.61   | 1.90 | 1.68   | 1.90 | 1.77  | 1.90 | 1.91 | 2.36 | 0.75 |
| 2"     | 7.76  | 2.51 | 1.97 | 4.53 | 2.95 | 9.84 | 2.07   | 2.38 | 2.16   | 2.38 | 2.25  | 2.38 | 2.41 | 2.91 | 0.87 |
| 3"     | 9.45  | 2.72 | 2.99 | 6.40 | 3.72 | 15.4 | 3.07   | 3.50 | 3.26   | 3.50 | 3.33  | 3.50 | 3.54 | 4.17 | 0.98 |
| 4"     | 10.56 | 2.84 | 4.02 | 7.10 | 4.35 | 15.4 | 4.03   | 4.50 | 4.26   | 4.50 | 4.33  | 4.50 | 4.54 | 5.31 | 1.18 |

All weld end connections are either 316L/CF3M or WCB A216 carbon steel. Schedule 40 standard, optional Sch 5 or Sch 10.

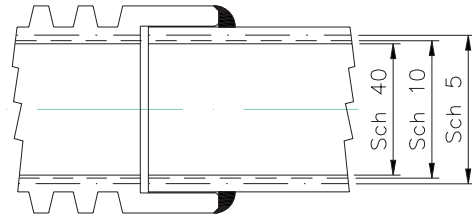
Schedule 80 & Schedule 160 are available in other Flo-Tite's Models

## Flo-Tite's welding ends are according to ASME B16.11

### Butt Weld End



### Socket Weld End



The butt weld ends are prepared by beveling each end of the valve to match a similar bevel on the pipe. The two ends are then butted to the pipe line and joined with a full penetration weld.

**BW Tube ID also available C/F**

The socket weld ends are prepared by boring in each end of the valve a socket with a inside diameter slightly larger than the pipe outside diameter. The pipe slips into the socket where it butts against a shoulder and then joins to the valve with a filled weld.