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English Specification Guide ESP00-1  
Revised January 2005

## A Specification Guide For Manual Thermoplastic Valves & Actuators



Established in 1968



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# Type 21 ISOLATOR True Union Ball Valves



## 1. Type 21 True Union Ball Valves

### 1.1 PVC and CPVC

1.1.1 All True Union Ball valves in PVC or CPVC shall be specified Chemline Type 21 Isolator Series or equal sizes 1/2" to 2", rated at 230 psi maximum working pressure and 2-1/2", 3", & 4" 150 psi maximum working pressure with EPDM, Viton, CPE, Hypalon, or Nitrile seals. Cushioned Teflon PTFE ball seats shall be provided for positive closure with minimum stem torques.

1.1.2 All valves sizes 1/2" to 4" shall be supplied with double stem blowout-proof design o-rings for safety. The top o-ring groove shall be deeper so that if excessive force is applied it will shear and the lower o-ring will remain intact and the valve will continue to hold pressure.

1.1.3 All valves shall be full port and two-way blocking.

1.1.4 All valves 1/2" to 2" shall have threaded inserts and 2-1/2" to 4" shall have a pad mount for easy mounting to supports.

1.1.5 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2467.

1.1.6 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464. (Note 1)

1.1.7 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no cemented nipples. This to ensure maximum strength, close tolerance end to end dimensions and eliminating the possibility of cemented joint failures.

1.1.8 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

1.1.9 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

1.1.10 CPVC compound shall have an ASTM cell classification 23567-A with minimum suffix "A" designation for chemical resistance as per ASTM D-178

1.1.11 CPVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

1.1.12 All valves shall be custom tagged with manufacturers' inspection number to provide traceability. On request a certificate of material shall be provided certifying that the PVC or CPVC compound used shall conform in every respect to ASTM D-1784 and CSA B137.0 para 5.2.1.

(Note 1) - Threaded ends are available up to 4", but are not normally recommended in 3" or 4".

### 1.2 Polypropylene

1.2.1 All Polypropylene Ball valves shall be Chemline Type 21 Isolator Series True Union or equal in sizes 1/2" to 4" rated at 150 psi maximum working pressure with EPDM, Viton, CPE, Hypalon, or Nitrile seals. Cushioned Teflon PTFE ball seats shall be provided for positive closure with minimum stem torques.

1.2.2 All valves sizes 1/2" to 4" shall be supplied with double stem blowout-proof design o-rings for safety. The top o-ring groove shall be deeper so that if excessive force is applied it will shear and the lower o-ring will remain intact and the valve will continue to hold pressure.

1.2.3 All valves shall be full port and two-way blocking.

1.2.4 All valves 1/2" to 2" shall have threaded inserts and 2-1/2" to 4" shall have a pad mount for easy mounting to supports.

1.2.5 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464 and have stainless steel reinforcing bands to prevent creep. (Note 2).

1.2.6 Butt fusion ends 1/2" to 4" shall be compatible with Chemline polypropylene piping systems.

1.2.7 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no nipples or fabrication to ensure maximum strength and close tolerance end to end dimensions.

1.2.8 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

1.2.9 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

(Note 2) - Threaded ends are available up to 4", but are not normally recommended in 3" or 4".

### 1.3 PVDF

1.3.1 All PVDF Ball valves shall be Chemline Type 21 Isolator Series True Union or equal with sizes 1/2" to 2" rated at 230 psi maximum working pressure and 2-1/2", 3" and 4" at 150 psi maximum working pressure with EPDM, Viton, CPE, Hypalon, or Nitrile seals. Cushion Teflon PTFE ball seats shall be provided for positive closure with minimum stem torques.

1.3.2 All valves sizes 1/2" to 4" shall be supplied with double stem blowout-proof design o-rings for safety. The top o-ring groove shall be deeper so that if excessive force is applied it will shear and the lower o-ring will remain intact and the valve will continue to hold pressure.

# Type 21 ISOLATOR True Union Ball Valves



1.3.3 All valves shall be full port and two way blocking.

1.3.4 All valves 1/2" to 2" shall have threaded inserts and 2-1/2" to 4" shall have a pad mount for easy mounting to supports.

1.3.5 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464. (Note 3).

1.3.6 Butt fusion ends 1/2" to 4" shall be compatible with Chemline PVDF piping systems.

1.3.7 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no nipples or fabrication to ensure maximum strength and close tolerance end to end dimensions.

1.3.8 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

1.3.9 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.  
(Note 3) - Threaded ends are available up to 4", but are not normally recommended in 3" or 4".

# HC Series High Capacity 6" Ball Valves



## 2. HC Series High Capacity 6" Ball Valves

### 2.1 PVC, PP and PVDF

2.1.1 All high capacity 6" Ball valves in PVC, PP or PVDF shall be large port Chemline High Capacity HC series or equal, with EPDM, Viton, CPE, Nitrile or Hypalon seals. Cushioned Teflon PTFE ball seats shall be provided for positive closure with minimum stem torques.

2.1.2 All valves shall have Teflon trunion bearings and stem bearings to assure low torque and maintenance free operation. There shall be no cavity between the body and the ball.

2.1.3 Socket ends shall be Schedule 80 and conform to ASTM D-2467.

2.1.4 Flanged ends shall be ANSI Class 150.

2.1.5 PVC compound shall have an ASTM cell classification 13463-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

2.1.6 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

2.1.7 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

2.1.8 All valves shall be custom tagged to provide traceability.

# MT Series Multi Port Ball Valves



### 3. MT Series Multi Port Ball Valves

#### 3.1 PVC and CPVC

3.1.1 All Multi Port Ball Valves in PVC or CPVC sizes 1/2" to 4" shall be Chemline MT Series or equal with EPDM, Viton, CPE, Nitrile, or Hypalon seals. All ports shall be true union. Cushioned Teflon PTFE ball seats shall be provided for positive closure with minimum stem torques.

3.1.2 Seat carrier pieces are to screw in to both left and right ports allowing valve in both flow patterns to hold full system pressure while opposite union nut is removed for piping maintenance.

3.1.3 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464.

3.1.4 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464 (Note 4).

3.1.5 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no cemented nipples. This to ensure maximum strength, close tolerance end to end dimensions and eliminating the possibility of cemented joint failures.

3.1.6 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA report LO 4000-1172).

3.1.7 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

3.1.8 CPVC compound shall have an ASTM cell classification 23567-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784.

3.1.9 CPVC compound and EPDM seals shall meet CSA Standard B137.0, para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000 -1459).

3.1.10 All valves shall be custom tagged with manufacturers' inspection number to provide traceability. On request a certificate of material shall be provided certifying that the PVC or CPVC compound used shall conform in every respect to ASTM D-1784 and CSA B137.0 para 5.2.1.

(Note 4) - Threaded ends are available up to 4" but are not normally recommended in 3" or 4".

#### 3.2 PVDF

3.2.1 All Multi Port Ball Valves in PVDF sizes 1/2" to 4" shall be Chemline MTK Series or equal with Viton, CPE, Nitrile, or Hypalon seals. All ports shall be true union. Cushioned Teflon PTFE ball seats shall be provided for positive closure with minimum stem torques.

3.2.2 Seat carrier pieces are to screw in to both left and right ports allowing valve in both flow patterns to hold full system pressure while opposite union nut is removed for piping maintenance.

3.2.3 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464. (Note 5).

3.2.4 Butt fusion ends 1/2" to 4" shall be compatible with Chemline PVDF piping systems.

3.2.5 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no nipples or fabrication to ensure maximum strength and close tolerance end to end dimensions.

3.2.6 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

3.2.7 All valves shall be custom tagged with manufacturer's inspection number to provide traceability.

(Note 5) - Threaded ends are available to 4", but are not normally recommended in 3" or 4".

# GV Series Globe Valves



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### 4. GV Series Globe Valves

#### 4.1 PVC

4.1.1 All PVC globe valves 1/2" to 4" shall be Chemline GVA Series or equal with EPDM bonnet seal and stem packing.

4.1.2 1/2" to 2" shall be union bonnet design. 2-1/2" to 4" shall be outside spindle and yoke type with one piece moulded flanged bodies ANSI Class 150.

4.1.3 Threaded ends 1/2" to 2" shall be Schedule 80 and conform to ASTM D-2464.

4.1.4 Flanged ends 1/2" to 4" shall be one piece factory moulded flanged bodies, ANSI Class 150.

4.1.5 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

4.1.6 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

4.1.7 Disc shall be polypropylene conforming to ASTM D-4101 PP 0211B67272 material requirements.

4.1.8 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

#### 4.2 POLYPROPYLENE

4.2.1 All PP globe valves 1/2" to 4" shall be Chemline GVB Series or equal with EPDM bonnet seal and stem packing.

4.2.2 1/2" to 2" shall be union bonnet design. 2-1/2" to 4" shall be outside spindle and yoke type with one piece moulded flanged bodies ANSI Class 150.

4.2.3 Threaded ends 1/2" to 2" shall be Schedule 80 and conform to ASTM D-2464 and have stainless steel reinforcing bands to prevent creep.

4.2.4 Flanged ends 1/2" to 4" shall be one piece factory moulded flanged bodies, ANSI Class 150.

4.2.5 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

4.2.6 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

# CGA Series Gate Valves



### 5. CGA Series Gate Valves

#### 5.1 PVC

5.1.1 All PVC gate valves 1-1/2" to 14" shall be Chemline CGA Series or equal with PVC body flanged to ANSI Class 150, one piece moulded. Face to face dimensions of valves up to 8" size will conform to AWWA.

5.1.2 The "gate" shall be a cylindrical sliding plug precision machined from polypropylene, providing bubble tight closure and resistance to 29.9" mercury vacuum.

5.1.3 Valve is shall be supplied as standard with a sealed polycarbonate position indicator and shall have a shallow seating area in the bottom of valve body to reduce sediment build up.

5.1.4 PVC shafts shall be heavy duty, non-rising, with moulded-in steel core.

5.1.5 Stem and bonnet O-ring seals shall be EPDM.

5.1.6 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

5.1.7 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

5.1.8 Polypropylene disc material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

5.1.9 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

# TB Series Butterfly Valves



## 6. TB Series Butterfly Valves

### 6.1 PVC Body or PP Body

6.1.1 All butterfly valves sizes 1-1/2" to 14" with a PVC body shall be Chemline TBA Series or equal. They shall be wafer style with a one piece PVC moulded body and with a full set of ANSI Class 150 flange locating bolt holes.

6.1.2 All butterfly valves sizes 1-1/2" to 24" with a PP body shall be Chemline TBB Series or equal. They shall be wafer style with a one-piece PP moulded body and with a full set of ANSI Class 150 flange locating bolt holes. In sizes 6" to 24" all polypropylene bodies shall have stainless steel reinforcing bands to prevent creep.

6.1.3 Discs shall be solid PP (PVC, CPVC, or PVDF) and have double EPDM (or Nitrile, Hypalon, Neoprene, Viton or CPE) O-ring seals at the top and bottom assuring that the shaft is non-wetted.

6.1.4 Shaft shall be one piece high tensile stainless steel having engagement over the full length of the disc with no disc screws.

6.1.5 Seat shall be removable EPDM (Nitrile, Hypalon, Neoprene, Viton or CPE) and shall provide 100% bubble tight closure all sizes, with two concentric convex moulded rings on flanged face to function as a low torque gasket. Seat shall effectively isolate the body and shaft from the fluid media.

6.1.6 1-1/2" to 8" shall have handle lever moulded of polypropylene over a steel core and have a stainless steel 13-position lock.

6.1.7 8" to 24" shall be supplied with baked epoxy coated waterproof gear operator, with PVC covered handwheel shaft and O-ring seal, SS fasteners, sealed visual position indicator and open/close travel stops which allows adjustment for seat wear.

6.1.8 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784. (CSA Report LO 4000-1172)

6.1.9 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

6.1.10 CPVC compound shall have an ASTM cell classification 23567-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784.

6.1.11 CPVC compound and EPDM seals shall meet CSA Standard B137.0 Para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

6.1.12 Polypropylene discs and steel reinforced PP handle levers shall be moulded from polypropylene conforming to ASTM D-4101 PP 0211B67272 material requirements.

6.1.13 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

6.1.14 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

# DBK Series Low Leakage Damper Butterfly Valves



## 7. DBK Series Low Leakage Damper Butterfly Valves

### 7.1 PVDF Body and PVDF Disc

7.1.1 All butterfly valves 1-1/2" to 24" with PVDF body shall be Chemline DBK Series or equal. They shall be wafer style with a one piece PVDF moulded body and with a full set of ANSI Class 150 flange locating bolt holes.

7.1.2 Disc shall be solid PVDF.

7.1.3 Valve shaft shall be titanium and stem seals shall be Teflon "V" packing with Teflon compressor and stainless steel gland nut.

7.1.4 Shaft shall be one piece titanium having engagement over the full length of the disc with no disc screws.

7.1.5 1-1/2" to 8" shall have handle lever moulded of polypropylene over a steel core and have a stainless steel 13-position lock.

7.1.6 8" to 24" shall be supplied with baked epoxy coated waterproof gear operator, with PVC covered handwheel shaft and O-ring seal, SS fasteners and sealed visual position indicator.

7.1.7 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

7.1.8 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter 1, Part 177.2510 requirements for contact with food.

7.1.9 Required flange gaskets shall be Chemline GAP Series full face Class 150, raised face low torque type of Teflon PTFE bonded EPDM. (See Section 20)

7.1.10 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

# DV Series Diaphragm Valves



## 8. DV Series Diaphragm Valves

### 8.1 PVC, CPVC, PP and PVDF

8.1.1 All diaphragm valves in PVC, CPVC, PP and PVDF shall be Chemline DV Series or equal with sizes 1/2" to 10" flanged, 1/2" to 2" threaded or 1/2" to 2" true union. They shall have solid plastic bodies and bonnets, PP hand wheel and position indicator / travel stop (to prevent overtightening and premature diaphragm failure) with sealed polycarbonate cover. Internal metal parts shall be protected from external corrosive atmosphere with an O-ring bonnet seal.

8.1.2 Diaphragms shall be EPDM (Hypalon, Neoprene, Viton, Nitrile, CPE or two piece Teflon PTFE and EPDM).

8.1.3 PVDF valves shall have diaphragms with three piece Teflon PTFE and EPDM cushion and PVDF vapour barrier (to prolong diaphragm life).

8.1.4 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2467.

8.1.5 Threaded ends 1/2" to 2" shall be Schedule 80 and conform to ASTM D-2464.

8.1.6 Butt fusion ends 1/2" to 2" shall be compatible with Chemline polypropylene and PVDF piping systems.

8.1.7 Flanged ends 1/2" to 10" shall be one piece factory moulded flanged bodies, ANSI Class 150.

8.1.8 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

8.1.9 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

8.1.10 CPVC compound shall have an ASTM cell classification 23567-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784.

8.1.11 CPVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

8.1.12 All polypropylene material shall conform to the ASTM D-4101 PP 0211B67272 material requirements.

8.1.13 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter 1, Part 177.2510 requirements for contact with food.

8.1.14 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

# BT Series Ball Check Valves



## 9. BT Series Ball Check Valves

### 9.1 PVC, CPVC, PP and PVDF

9.1.1 All ball check valves in PVC, CPVC, PP or PVDF shall be Chemline BT Series or equal with EPDM (Viton or Teflon coated Viton) seats and union ends. Sizes 1/2" to 2" shall be slip-out true union style, sizes 3" and 4" shall be single union.

9.1.2 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2467.

9.1.3 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464 (Note 6).

9.1.4 Butt fusion ends 1/2" to 4" shall be compatible with Chemline polypropylene and PVDF piping systems.

9.1.5 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no cemented nipples. This to ensure maximum strength, close tolerance end to end dimensions and eliminating the possibility of cemented joint failures.

9.1.6 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

9.1.7 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity, (CSA Report LO 4000-1459).

9.1.8 CPVC compound shall have an ASTM cell classification 23567-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784.

9.1.9 CPVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

9.1.10 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

9.1.11 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

9.1.12 All valves shall be custom tagged with manufacturer's inspection number to provide traceability.

(Note 6) - Threaded ends are available up to 4", but are not normally recommended in 3" or 4".

# FV Series Foot Valves



## 10. FV Series Foot Valves

### 10.1 PVC and CPVC

10.1.1 All foot valves in PVC or CPVC shall be Chemline FV Series or equal with EPDM, Viton or Teflon coated Viton seats and slip out union ends.

10.1.2 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2467. Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464

10.1.3 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464 (Note 7).

10.1.4 PVC compound shall have an ASTM cell classification 12454-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

10.1.5 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA report LO 4000-1459).

10.1.6 CPVC compound shall have an ASTM cell classification 63567-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784.

10.1.7 CPVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA report LO 4000-1459).

10.1.8 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

(Note 7) - Threaded ends are available up to 4", but are not normally recommended in 3" or 4".

# SC Series Swing Check Valves



## 11. SC Series Swing Check Valves

### 11.1 PVC, Polypropylene and PVDF

11.1.1 All swing check valves in PVC, PP or PVDF sizes 3/4" to 8" shall be Chemline SC Series or equal with one piece factory moulded flanged body, ANSI Class 150.

11.1.2 PVC and Polypropylene Swing Check valves shall have a seat and gasket EPDM (or PTFE). Bonnet gasket shall be EPDM or PVDF bonded EPDM.

11.1.3 PVDF Swing Check valves shall have a seat and plug gasket of PTFE and a bonnet gasket of PVDF bonded EPDM.

11.1.4 PVC compound shall have an ASTM cell classification 12454-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784, (CSA Report LO 4000-1172).

11.1.5 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

11.1.6 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

11.1.7 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

11.1.8 All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

# WP Series Wafer Check Valves



## 12. WP Series Wafer Check Valves

### 12.1 PVC, PP and PVDF

12.1.1 All Wafer check valves shall be Chemline WP Series or equal available in sizes 2" to 12" in PVC, PP and PVDF rated at 150 psi working pressure.

12.1.2 PVC and PP Check valves shall be supplied with EPDM (or Viton) o-ring disc seals with 316 SS spring if required.

12.1.3 PVDF Check valves shall be supplied with Viton or Teflon encapsulated o-ring disc and seals and Hastelloy springs if required.

12.1.4. All valves shall be wafer type designed to fit between ANSI Class 150 flanges.

12.1.5 Check valves, sizes 2" to 8" shall be supplied with a spacer disc to provide maximum flow when the valve is open. Required flange gaskets shall be Chemline GA Series full face Class 150, raised face low torque type of EPDM or Teflon PTFE bonded to EPDM. (See Section 20).

12.1.6 All valves to be evaluated to withstand the 1000 hour sustained pressure test as outlined in ISO-DIS93-2 Table 2 for plastic valves.

12.1.7 All wafer check valves will be installed with a minimum 5 pipe diameter of straight pipe upstream. (i.e. pipe diameters from pump discharge, valves, reducers, elbows etc.)

12.1.8 All PVC wafer check valves 2" to 6" will have an upper temperature limit of 140° F.

12.1.9 All PVC wafer check valves 8" to 12" will have an upper temperature limit of 122° F.

12.1.10 All PP wafer check valves 2" to 6" will have an upper temperature limit of 176° F.

12.1.11 All PP wafer check valves 8" to 12" will have an upper temperature limit of 158° F.

12.1.12 All PVDF wafer check valves 2" to 6" will have an upper temperature limit of 203° F.

12.1.13 All PVDF wafer check valves 8" to 12" will have an upper temperature limit of 176° F.

12.1.14 All wafer check valves will have a maximum velocity in the pipe line of 5 ft/sec.

12.1.15. PVC compound shall have an ASTM cell classification 13463-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

12.1.16 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

12.1.17 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2, suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

12.1.18 All valves shall be custom tagged number to provide traceability.

# SI Series Gauge Isolators



### 13. SI Series Gauge Isolators

#### 13.1 PVC, PP and PVDF

13.1.1 All Gauge Isolators in PVC, PP or PVDF for ¼ or ½" media and ¼ or ½" gauge connections shall be Chemline SI Series or equal. The diaphragm shall have Teflon PTFE bonded to Hypalon to provide maximum chemical resistance.

13.1.2 Diaphragm shall be dished to reduce resistance to flex and increase accuracy, with a diameter of 2.15" for increased pressure sensitivity.

13.1.3 Diaphragm shall have a "lip" ring seal on outer edge for easier positioning and better sealing.

13.1.4 Process side of the Isolator shall be sloped to allow complete drainage of particles.

13.1.5 Fasteners shall be stainless steel.

13.1.6 Port connections shall be extra heavy walled to ensure safety.

13.1.7 Threaded ends shall be Schedule 80 and conform to ASTM D 2464 and have stainless steel reinforcing bands to prevent the risk of splitting.

13.1.8 Optional side fill port shall be available.

13.1.9 PVC compound shall have an ASTM cell classification 13463-A with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

13.1.10 All polypropylene material shall conform to ASTM D-4101 PP 0211D67272 material requirements.

13.1.11 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

13.1.12 All valves shall be custom tagged to provide traceability.

## SB 10 & SB 11 Series Back Pressure/Relief Valves

### 14. SB10 and SB 11 Series Back Pressure/ Relief Valves

#### 14.1 PVC, PP and PVDF

14.1.1 All Back Pressure/Relief Valves in PVC, PP or PVDF shall be Chemline SB10 or SB11 Series or equal in sizes 1/2" to 2". SB10 shall have an inlet pressure setting between 3 and 60 psi and SB11 shall have an inlet pressure setting of 7 to 150 psi. All valves shall have a maximum inlet pressure rating of 150 psi. Valves shall be suitable for aggressive clean non scaling chemicals.

14.1.2 Internal spring, spring adjusting screw and locking screws shall be 316 SS. Adjusting screw shall be protected with a plastic cap.

14.1.3 Diaphragm clamping screws shall be 316 stainless steel with plastic coated nuts.

14.1.4 All valves shall have a large Teflon coated control diaphragm to fully open at 10-15% over pressure, provide low hysteresis (back pressure) and no flutter.

14.1.5 Static seals shall be Viton or EPDM.

14.1.6 Socket ends 1/2" to 2" shall be Schedule 80 and conform to ASTM D-2467.

14.1.7 Threaded ends 1/2" to 2" shall be Schedule 80 and conform to ASTM D-2464.

14.1.8 Butt fusion ends in PP and PVDF shall be compatible with Chemline polypropylene and PVDF piping systems.

14.1.9 Flanged ends shall be ANSI Class 150.

14.1.10 PVC compound shall have an ASTM cell classification 13463-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

14.1.11 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

14.1.12 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

14.1.13 All valves shall be custom tagged to provide traceability.



# SB 12 Series Back Pressure/Relief Valves



## 15. SB 12 Series Back Pressure/Relief Valves

### 15.1 PVC, PP, and PVDF

15.1.1 All Back Pressure/Relief valves in PVC, PP or PVDF shall be Chemline SB12 Series or equal. Sizes 1/2" to 3" shall have an inlet pressure setting from 5 to 150 psi and 4" size shall have an inlet setting pressure of 7 to 90 psi. All valves shall have a maximum inlet pressure rating of 150 psi.

15.1.2 Internal spring, spring adjusting screw and locking screws shall be 316 SS. Adjusting screw shall be protected with a plastic cap.

15.1.3 Diaphragm clamping screws shall be 316 stainless steel with plastic coated nuts.

15.1.4 All valves shall have a large Teflon coated control diaphragm to fully open at 10-15% over pressure, provide low hysteresis (back pressure) and no flutter.

15.1.5 Static seals shall be Viton or EPDM.

15.1.6 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2467.

15.1.7 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464.

15.1.8 Butt fusion ends in PP and PVDF shall be compatible with Chemline polypropylene and PVDF piping systems.

15.1.9 Flanged ends shall be ANSI Class 150.

15.1.10 PVC compound shall have an ASTM cell classification 13463-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

15.1.11 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

15.1.12 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

15.1.13 All valves shall be custom tagged to provide traceability.

# SR 50 Series Pressure Regulating & Reducing Valves



## 16. SR 50 Series Pressure Regulating & Reducing Valves

### 16.1 PVC, PP and PVDF

16.1.1 All Pressure Reducing/Regulating valves in PVC, PP or PVDF shall be Chemline SR50 Series or equal. Sizes 1/2" to 1-1/2" shall have an outlet pressure setting of 15 to 135 psi and sizes 2" to 3" shall have an outlet pressure setting of 15 to 90 psi. All valves shall have a maximum inlet pressure rating of 150 psi. Valves shall be suitable for aggressive clean non scaling chemicals.

16.1.2 Internal spring, spring adjusting screw and locking screws shall be 316 SS. Adjusting screw shall be protected with a plastic cap.

16.1.3 Diaphragm clamping screws shall be 316 stainless steel with plastic coated nuts.

16.1.4 All valves shall have a large Teflon coated control diaphragm to fully open at 10-15% over pressure, provide low hysteresis (back pressure) and no flutter.

16.1.5 Static seals shall be Viton or EPDM.

16.1.6 Socket ends 1/2" to 3" shall be Schedule 80 and conform to ASTM D-2467.

16.1.7 Threaded ends 1/2" to 3" shall be Schedule 80 and conform to ASTM D-2464.

16.1.8 Butt fusion ends in PP and PVDF shall be compatible with Chemline polypropylene and PVDF piping systems.

16.1.9 Flanged ends shall be ANSI Class 150.

16.1.10 PVC compound shall have an ASTM cell classification 13463-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

16.1.11 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

16.1.12 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

16.1.13 All valves shall be custom tagged to provide traceability.

# EP Series Back Pressure/Relief Valves



## 17. EP Series Back Pressure/Relief Valves

### 17.1 PVC, PP, PVDF

17.1.1 All pressure relief valves 1/2" to 4" PVC, PP or PVDF shall be Chemline EP Series or equal. 1/2" to 2" shall be fully field adjustable for 7 to 90 psi relief. 2-1/2" to 4" shall be fully adjustable between 7 and 90 psi through the exchange of springs. Stem seal shall be Teflon PTFE bellows to assure reliable operation. Static seals shall be Hypalon (or Viton).

17.1.2 All PVC valves 1/2" to 1-1/4" shall have all external parts of PVC.

17.1.3 All PP valves 1/2" to 1-1/4" shall have all external parts made from PP which conforms to ASTM-4101 material requirements.

17.1.4 All PVDF valves 1/2" to 1-1/4" shall have all external parts made from PVDF which conforms to ASTM D-3222 material requirements.

17.1.5 1-1/2" to 4" valves shall have all external metal parts of 316 stainless steel for external corrosion resistance. Springs and metal base plates shall be additionally coated with Rilsan 11 nylon for external corrosion.

17.1.6 Threaded ends 1/2" to 2" shall be Schedule 80 and conform to ASTM D-2464.

17.1.7 Flanged ends 1/2" to 4" shall be one piece factory moulded flanged bodies, ANSI Class 150.

17.1.8 PVC compound shall have an ASTM cell classification 13463-A, with minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA Report LO 4000-1172).

17.1.9 PVC compound shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

17.1.10 All polypropylene material shall conform to ASTM D-4101 PP 0211B67272 material requirements.

17.1.11 All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also with USDA Title 21, Chapter I, Part 177.2510 requirements for contact with food.

17.1.12 All valves shall be custom tagged to provide traceability.

# YS Series High Capacity PVC Y Sediment Strainers



## 18. YS Series High Capacity PVC Y Sediment Strainers

### 18.1 PVC

18.1.1 All PVC Y sediment strainers 1/2" to 4" shall be Chemline YS Series or equal with sizes 1/2" to 2" rated at 150 psi, 3" and 4" at 85 psi.

18.1.2 All valves shall have transparent body True Union connections and fitted with screens with a full pipe bore diameter to obtain high filtering area.

18.1.3 Socket ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2467.

18.1.4 Threaded ends 1/2" to 4" shall be Schedule 80 and conform to ASTM D-2464 (Note 8).

18.1.5 Flanged ends 1/2" to 4" shall be ANSI Class 150, one-piece factory moulded, using no cemented nipples. This to ensure maximum strength, close tolerance end to end dimensions and eliminating the possibility of cemented joint failures.

18.1.6 PVC compound shall have an ASTM cell classification 12454-B with minimum suffix "B" designation for chemical resistance as per ASTM D-1784 (CSA report LO 4000-1172).

18.1.7 PVC compound and EPDM seals shall meet CSA Standard B137.0 para 5.2.1 environmental requirements for toxicity (CSA Report LO 4000-1459).

18.1.8 All valves shall be custom tagged with the manufacturers' inspection number to provide traceability.

(Note 8) - Threaded ends are available up to 4", but are not normally recommended in 3" or 4".

# GA Series Low Torques Flange Gaskets

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## 19. GA Series Flange Gaskets

### 19.1 EPDM

19.1.1 For all plastic flange connections EPDM flange gaskets shall be Chemline GAE Series or equal raised face low torque type.

19.1.2 Gaskets shall be full face to ANSI B16.1 (Class 150).

19.1.3 Gaskets shall have two concentric convex moulded rings between centre hole circle and bolt hole circle.

19.1.4 Lubricated flange bolts shall be tightened with a torque wrench evenly and in a symmetrical pattern, following recommended bolt torques published by Chemline.

### 19.2 Teflon PTFE bonded EPDM

19.2.1 For all plastic flange connections Teflon PTFE bonded EPDM flange gaskets shall be Chemline GAP Series or equal raised face low torque type.

19.2.2 Gaskets shall be full face to ANSI B16.1 (Class 150).

19.2.3 Gaskets shall have two concentric convex moulded rings between centre hole circle and bolt hole circle.

19.2.4 Lubricated flange bolts shall be tightened with a torque wrench evenly and in a symmetrical pattern, following recommended bolt torques published by Chemline.

# Valve Tagging (For Traceability)

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## 20. Valve Tagging (for traceability)

### 20.1 Plastic

20.1.1 Valve tags shall be engraved laminated plastic, affixed to valve with a plastic tie. Tag shall bear manufacturer's inspection number to provide traceability.

### 20.2 Stainless Steel

20.2.1 Valve tags shall be 304 stainless steel, affixed to valve with SS wire. Tag shall be stamped with manufacturer's inspection number to provide traceability.

### 20.3 Label

20.3 Computer imprinted corrosion resistant Mylar labels shall be permanently affixed to valves and bear the manufacturer's inspection number to provide traceability.



## 21.1 Pneumatic

21.1.1 All pneumatic actuators shall be Chemline PA-series or equal, double-opposed piston, rack and pinion, ¼ turn pneumatic rotary actuator with integral porting.

21.1.2 All pneumatic actuator body and end caps shall be of silicone-free cast aluminum with epoxy and Rilsan coating.

21.1.3 All pneumatic actuators shall conform to ISO-5211, DIN-3337, VDE-3845 and NAMUR standards for valve or accessory mounting and have ¼" NPT connections for direct mounting of non-NAMUR solenoids or fittings.

21.1.4 All pneumatic actuators shall be adaptable for modulation purposes through milliampere, voltage or air pressure control signal.

21.1.5 All pneumatic actuators shall have integral travel stops for fine adjustment of open and closed end-of-travel in the PAX10 size and larger.

21.1.6 All pneumatic actuators shall be capable of being actuated with air, water, natural gas or non-aggressive fluids up to 120 psi.

21.1.7 All double-acting actuators shall have torque outputs from 137 to 16718 in-lbs at 80 psi.

21.1.8 All spring return actuators shall have air-start/spring-end torque outputs from 79/58 to 10010/6708 in-lbs at 80 psi.

21.1.9 All pneumatic actuators shall have a double-square bottom female output shaft for adjustment by 45° increments when used with a square valve stem or coupling.

21.1.10 All pneumatic actuators shall be capable of operating in temperature conditions from -30°C to 90°C.

21.1.11 All pneumatic actuators shall have visual position indication as standard.

21.1.12 All pneumatic actuators shall be custom tagged with manufacturers' inspection number(s) to provide traceability.

## 21.2 Electric

### 21.2.1 Q-Series

21.2.1.1 All electric actuators shall be Chemline Q-series or equal, CSA-approved 1/4 turn reversible rotary actuator with embedded thermal overload protection switch.

21.2.1.2 All electric actuators shall have a 2-piece NEMA4X Zytel housing and stainless steel fasteners.

21.2.1.3 All electric actuators shall have a permanently-attached declutchable manual override and visual position indicator.

21.2.1.4 All electric actuators shall have voltage options of 120, 220, 12 & 24 VAC and 12/24 VDC.

21.2.1.5 All electric actuators shall have two fully adjustable, cam-actuated, end-of-travel limit switches of the single-pole, double-throw type rated to 250VAC and listed to carry a power load equal to or greater than the locked rotor current of the actuator.

21.2.1.6 All pneumatic actuators shall be capable of operating in temperature conditions from -10°C to 60°C.

21.2.1.7 All electric actuators shall have torque outputs from 150 to 300in-lbs.

21.2.1.8 All electric actuators shall have a permanently lubricated gear train.

21.2.1.9 All electric actuators shall have an ISO mounting bolt circle.

21.2.1.10 All electric actuators shall be available with terminal-strip-wired internal options such as extra limit switches, heater/thermostat, adjustable 3-position control, 4-20 mA positioners and/or output signal, battery backup or mechanical spring failsafe, feedback potentiometer, cycle length control, 2-wire control, mechanical brake and multi-turn capability.

21.2.1.11 All pneumatic actuators shall be custom tagged with manufacturers' inspection number(s) to provide traceability.





## 21.2 Electric

### 21.2.2 A-Series

21.2.2.1 All electric actuators shall be Chemline A-series or equal, CSA-approved 1/4 turn reversible rotary actuator with embedded thermal overload protection switch.

21.2.2.2 All electric actuators shall have a 2-piece NEMA4X die cast aluminum housing with thermally bonded epoxy powder coating and stainless steelfasteners.

21.2.2.3 All electric actuators shall have a permanently-attached declutchable manual override and visual position indicator.

21.2.2.4 All electric actuators shall be minimum 75% duty cycle for high cycling applications.

21.2.2.5 All electric actuators shall have voltage options of 120, 220, 12 & 24 VAC and 12/24 VDC.

21.2.2.6 All electric actuators shall have two fully adjustable, cam-actuated, end-of-travel limit switches of the snap-acting, double-throw type rated to 250VAC and listed to carry a power load equal to or greater than the locked rotor current of the actuator.

21.2.2.7 All pneumatic actuators shall be capable of operating in temperature conditions from -10°C to 60°C.

21.2.2.8 All electric actuators shall have torque outputs from 400 to 2000 in-lbs.

21.2.2.9 All electric actuators shall have a permanently lubricated gear train.

21.2.2.10 All electric actuators shall have an ISO mounting bolt circle.

21.2.2.11 All electric actuators shall be available with terminal-wired internal options such as extra limit switches, heater/thermostat, adjustable 3-position control, 4-20 mA positioners and/or output signal, battery backup or mechanical spring failsafe, feedback potentiometer, cycle length control, 2-wire control, mechanical brake and multi-turn capability.

21.2.2.12 All pneumatic actuators shall be custom tagged with manufacturers' inspection number(s) to provide traceability.

## 21.3 AS-I Bus System

21.3.1 All AS-I electric actuators shall be Chemline A-series or equal, CSA-approved, 1/4 turn reversible rotary actuator.

21.3.2 All electrically actuated AS-I bus systems shall have a double proximity switch and a PCB card installed inside the A-Series actuator without compromising the protection rating.

21.3.3 The proximity switch shall have 2 independent SPST contacts triggered by the standard actuator cams and enclosed in a Pocan® thermoplastic polyester housing NEMA 4X rated.

21.3.4 The PCB card shall be short-circuit protected, reverse polarity protected with 4 relay outputs. Relay outputs shall be rated 6 amps and accept 12VAC/VDC, 24VAC/VDC, 115 VAC or 220 VAC. The PCB card shall wire directly to an M12 connector for acceptance of AS-I power/signal.



### 21.4 Gear Operators

21.4.1 All gear operators shall be Chemline GO-Series or equal, with high strength aluminum alloy housing.

21.4.2 All gear operators shall conform to ISO-5211 for valve mounting.

21.4.3 All gear operators shall have interchangeable drive bushings for adapting to different valve stem shapes and sizes.

21.4.4 All gear operators shall have integral adjustable travel stops for fine adjustment of open and closed end-of-travel.

21.4.5 All gear operators shall be operated by means of a tubular steel handwheel.

21.4.6 All gear operators shall have torque outputs up to 7000 in-lbs, with an input torque requirement on only 609 in-lbs.

21.4.7 All gear operators shall have provision for installing accessories on top and operated from the top of the drive bushing.

21.4.8 All gear operators shall be capable of operating in temperature conditions from -30°C to 90°C.

21.4.9 All gear operators shall have visual position indication as standard.

21.4.10 All gear operators shall be custom tagged with manufacturers' inspection number(s) to provide traceability.

### 21.5 Chainwheel Operators

21.5.1 All chainwheel operators shall be Chemline CW-series or equal, Babbitt adjustable cast iron sprocket rim.

21.5.2 All chainwheel operators shall have an integral chain guide to permit reasonable side-pull on the chain and to keep the wheel from "gagging" on the chain.

21.5.3 All chainwheel operators shall use 304 stainless steel rust-proof lock link chain.

21.5.4 All gear operators shall attach directly to Chemline gate valves, or to the handwheel of Chemline GO-Series gear operators, as used on ball and butterfly valves.