PART NUMBERS (Including, but not inclusive)

CH46955SST, CH46955LHT, CH46949SST, CH46949LHT, CH46955

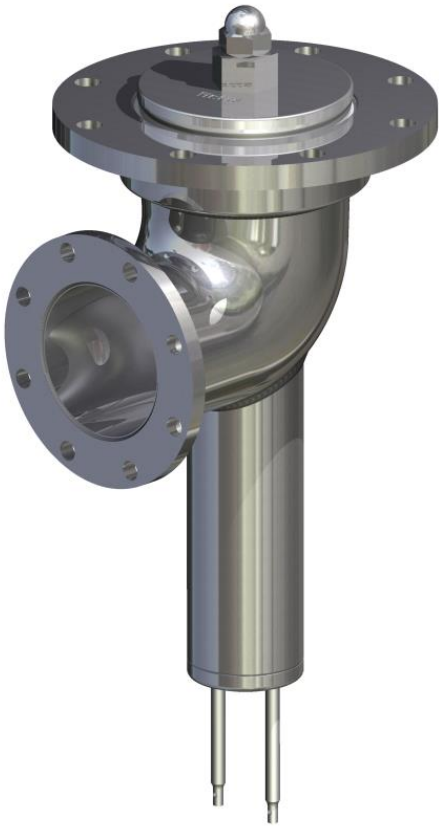


Table of Contents:

1.0 General

1.1 It is strongly recommended that this entire manual be read prior to any operation, disassembly, or assembly of this equipment.

1.2 Betts Industries Inc. provides this manual as a guideline for reference only and assumes no responsibility for personal or property damage that may occur in conjunction with this manual. Betts Industries Inc. cannot be held responsible for incorrect installation, operation, or maintenance of product.

1.3 Betts Industries Inc. recommends all equipment be placed on a regular maintenance schedule that includes the routine replacement of seals and gaskets and visual inspection for leaks and corrosion. The end user must make their own determination and set their own schedule based upon use and environment. In some cases, regulations may dictate the minimum testing frequency of items. Make sure operators are aware of all applicable codes.

1.4 Only trained personnel should attempt to perform maintenance on this equipment.

1.5 As with any maintenance work, proper safety gear and procedures must be used at all times. A list of hazards may include but are not limited to contents under pressure, loaded springs, residual product, flammable liquid and vapors, pinch points.

1.6 Safety alert symbols are used to alert operator to potential personal injury hazards. These symbols are per ANSI Z535.4 and are listed below. Operator MUST obey all instructions that follow a safety symbol.

Alerts will be used to indicate known safety concerns. Additional concerns are possible and should be identified and avoided by the operator.

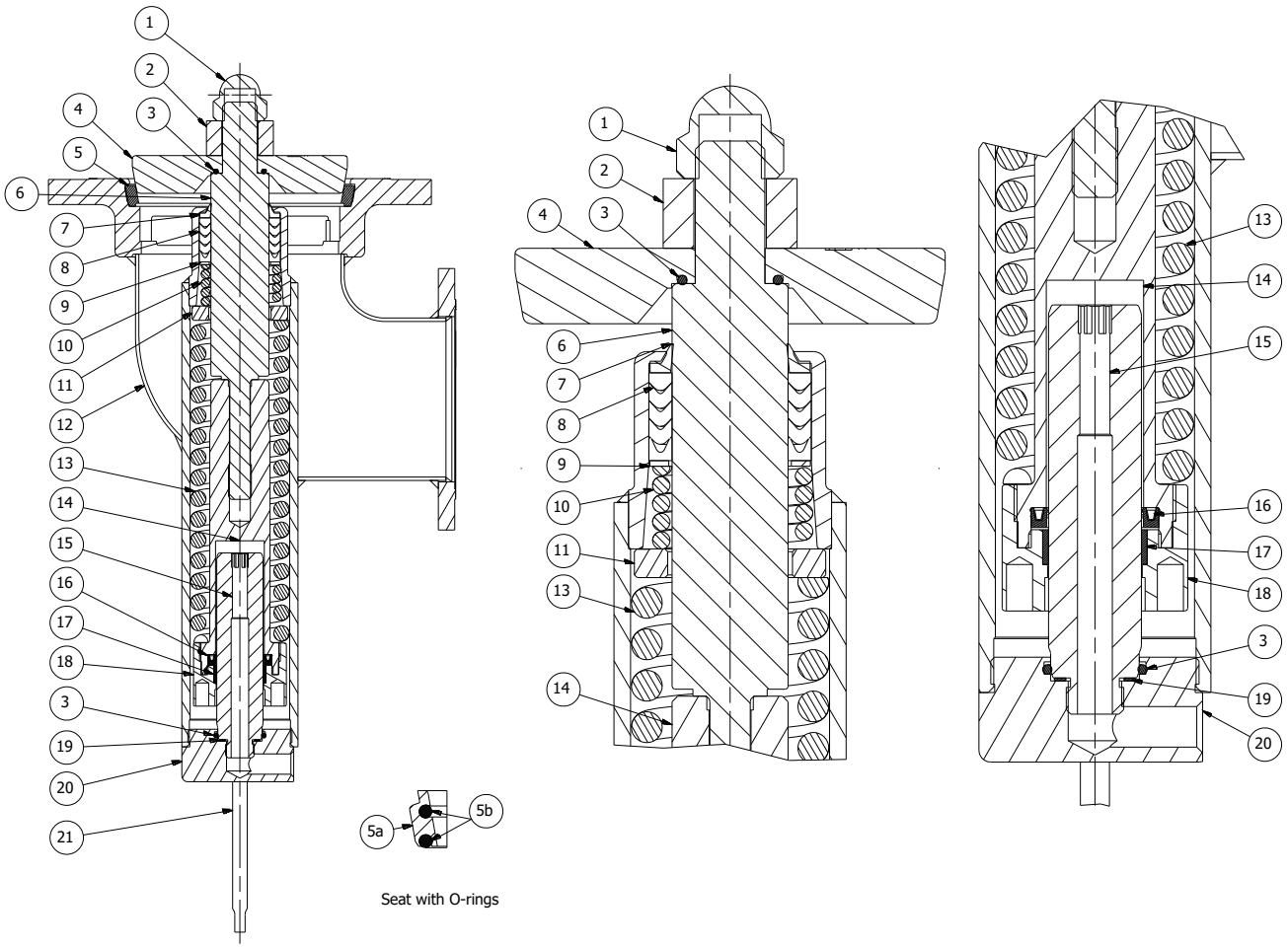
⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, **will result** in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, **could result** in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, **may result** in minor or moderate injury. It may also be used to alert against unsafe practices.

1.7 Product Warranty shall be void if product is subject to misapplication, misuse, neglect, alteration, or damage.

1.8 Specific design details described in this document are for reference only and are subject to change without notice. See Betts Industries Inc. web page for the most recent revision to this document. www.bettsind.com

1.9 For additional questions or more detailed technical assistance, contact the Betts Industries Inc. Sales or Engineering Department at (814)723-1250.

2.0 Parts List



No.	Description	Req.	Material	Part No.
1	Cap Nut	1	316 Stainless	16672SS
2	Cap Collar	1	316 Stainless	16671SS
3	O-Ring Seal	1	Tef-Sil	75206TS
4	Disc	1	316 Stainless	16743SS
			Hastelloy C-22 Trim	16743LH
5	Replaceable Seat	1	PTFE	16644TF
			Viton	16644VT
5a	Replaceable Seat w/ O-rings		PTFE/Tef-Sil	18897TFTS
5b	Seat O-ring Only	2	Tef-Sil	18246TS
6	Upper Stem	1	316 Stainless	28202SS
			Hastelloy C276	28202HC
7	Wiper		PTFE	15862TF
			PEEK	15862PK
8	Packing Rings (Set of 5)	1	PTFE	15759TF
9	Follower Washer	1	316 Stainless	19594SS

No.	Description	Req.	Material	Part No.
10	Packing Spring	1	316 Stainless	19616SS
11	Washer - Main Spring	1	304 Stainless	15684SL
12	4x3 Body Assembly	1	316 Stainless	26099SS
	4x3 Jacketed Body Assembly		316 Stainless	35086SS
	4x4 Body Assembly		316 Stainless	45608SS
	4x4 Jacketed Body Assembly		316 Stainless	N/A
13	Main Spring	1	E-coated steel	18850EY
14	Lower Stem	1	303 Stainless	28201SL
15	Piston	1	303 Stainless	75136SL
16	Main U-cup Seal	1	302SS/PTFE	75207SSTF
17	Bearing	1	Carbon PTFE	75455TF
18	Seal Retainer Ring	1	303 Stainless	75190SL
19	Seal Washer	1	Fiber	9Z6185
20	Piston Holder	1	316 Stainless	75137SS
21	Indicator Pins	2	304 Stainless	16133SL

3.0 Description and Intended Use

3.1 The Chemical Hydraulic Valve is designed for use with a wide variety of chemicals. A replaceable Teflon® seat and removable disc are provided for ease in repairing should damage occur from dirt or other foreign material.

3.2 A heavy mounting flange with record finish is provided to insure a flat gasketing surface.

3.3 ¼ NPT Hydraulic connection is conveniently located at the base of the piston cylinder. Indicator pins, which move in relation to the piston, show the position of the disc at all times.

3.4 This external self-closing stop valve does NOT contain a shear section. The cargo tank must protect the valve by providing suitable protection as specified in 49 CFR 178.345-8(a)(2).

3.5 1,500 psi minimum hydraulic line pressure required to operate valve, but do not exceed 3,000 psi hydraulic line pressure.

3.6 A complete information page can be found in our catalog Section 35 Page 1A, 1B, 2C, 2D, and 2E. Also available is a wall chart showing all parts; chart number 5VCH02.

4.0 Installation

4.1 A flat mounting surface must be provided for the valve. Recommended mounting pad is MP19752LC found in Section 40 Page 1A of the Betts catalog.

4.2 Gaskets are available to seal between the mounting flange and the inlet flange of the valve. See section 40 of the catalog for details.

4.3 Connect hydraulic line to 1/4” NPT fitting on O.D. of the piston holder (18), leaving the fitting loose.

4.4 Ensure that no Teflon® tape and/or thread sealant gets into hydraulic system.

4.5 Operate pump until all air is bled from system.

4.6 Tighten fitting and refill pump reservoir.

4.7 Inspect all fittings for leaks.

5.0 Inspection and Testing

5.1 To test the valve seat:

5.1.1 Apply 5psi of air pressure to the outlet of the valve.

5.1.2 Apply soapy water to the seat area and inspect for leakage.

5.1.3 If leakage is found, the seat will need replaced.

5.1.4 Apply soapy water to the indicator pins (21) and inspect for leakage.

5.1.5 If leakage is found, the wiper (7) and packing (8) will need replaced.

5.1.6 Refer to section 6; Disassembly and Rebuild Instructions for proper procedures to replace the seat (5) and/or wiper (7)/packing (8).

5.2 To test the valve for hydraulic leakage:

5.2.1 Apply 3000 psi of hydraulic pressure to the hydraulic port and seal off from pump if possible. (This is done to ensure that any leaks found are not due to the pump).

5.2.2 Allow the valve to remain in the open position for at least 1 minute.

5.2.3 There should be no loss of hydraulic pressure and the valve should not drift closed.

5.2.4 Inspect the indicator pins (21), there should be no hydraulic fluid leakage in this area.

5.2.5 If there is a loss in hydraulic pressure or the valve drifts closed, refer to section 6; Disassembly and Rebuild Instructions for proper repair procedures.

6.0 Disassembly and Rebuild Instructions

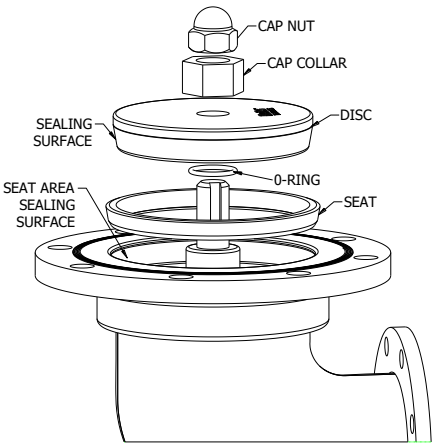
6.1 To replace disc (4) and/or seat (5):

6.1.1 Attach hydraulic line and slightly open valve.

6.1.2 Hold cap collar (2) and remove cap nut (1).

6.1.3 Remove disc (4) and O-ring (3) from disc (4).

* Special note: If valve was manufactured prior to February 1, 2016, a flat PTFE washer, 16690TF, was used in place of the O-ring. (see EB-01-16 for more information).



6.1.4 Remove seat (5) using care to prevent damage or scratches to the seat area of the flange.

- Inspect seat area of flange. Valve body must be replaced if there is any pitting or damage in this area.

6.1.5 Place new seat (5) into seat area of flange, being sure that it is completely installed into groove.

6.1.6 Install O-ring (3) into disc (4) and reinstall disc (4), cap collar (2) and cap nut (1). Holding cap collar (2), torque cap nut (1) to approximately 40 ft-lbs.

* Special note: If valve was manufactured prior to February 1, 2016, a flat PTFE washer, 16690TF, was used in place of the O-ring (3). Therefore, if the disc (4) does not have a groove to accept the O-ring (3), use the flat PTFE washer, 16690TF, in place of the O-ring (3). (see EB-01-16 for more information).

6.1.7 Relieve hydraulic pressure and test valve. See section 5.1.

6.2 Rebuilding valve using replacement kit of PTFE parts

- CH75296TF - Includes items – 3,5,7,8,9,10,16,17,19
- CH75296TFTS - Includes items – 3,5a,7,8,9,10,16,17,19

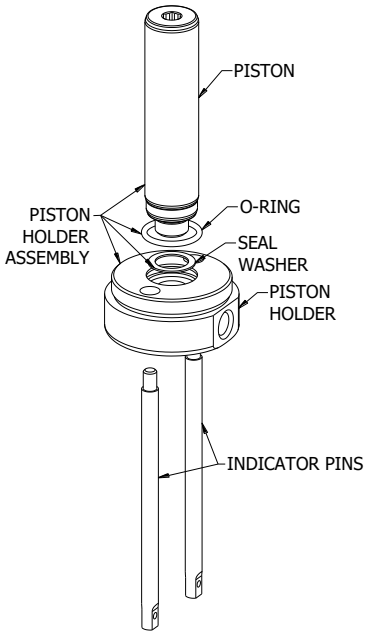
6.2.1 Disconnect hydraulic line.

6.2.2 Hold valve in vice by cap collar (2).

6.2.3 Unscrew indicator pins (21) and piston holder assembly (15 and 20).

6.2.4 Unscrew piston (15) from piston holder (20) by holding piston holder (20) in vice and using allen wrench in end of piston (15).

- Inspect piston (15) for scratches or pitting. Replace if these cannot be easily removed by polishing.



6.2.5 Using care not to damage the seal surface of the piston holder (20), remove the O-ring seal (3) and seal washer (19).

6.2.6 Insert new seal washer (19) and O-ring (3) being very careful not to kink the O-ring (3).

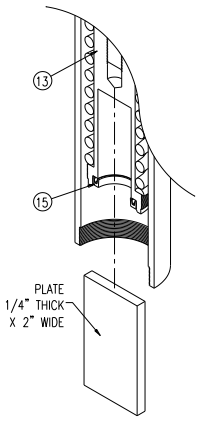
6.2.7 Apply lubricant to O-ring seal surface of piston (15) and also apply a high quality removable thread lock compound to threads of piston (15) and assemble to piston holder (20).

- Torque piston to approximately 30 ft-lbs.

6.2.8 Set piston assembly aside.

⚠ WARNING	**PRE-LOADED SPRING:** Use caution when unloading and loading spring; force is high and could cause bodily harm if not contained properly.

6.2.9 Hold cap collar stationary while using spanner wrench (16236MS) to unscrew seal retainer ring (18).

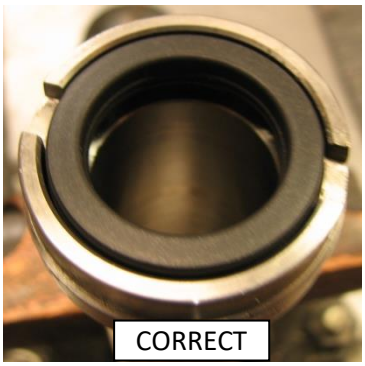


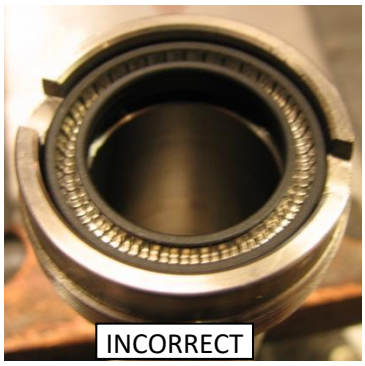
- If lower stem (14) unscrews from the upper stem (6) it will be necessary to clamp lower stem (14) in a vice to unscrew seal retainer ring (18). Care should be taken not to damage the lower stem (14) by applying too much pressure with the vice.
- If lower stem (14) remains in valve body after the seal retainer ring (18) was removed, continue to hold the cap collar (2) and insert a ¼" thick x 2" wide piece of plate into the slots on the lower stem (14) and unscrew lower stem (14).

6.2.10 Remove bearing (17) from seal retainer ring (18) and replace with new from kit.

- If bearing is not present, inspect seal retainer (18) for counter bore to receive bearing. If the counter bore is not present, replace seal retainer (18) with the up to date version, including the bearing (17). See Engineering Bulletin 8-08 for more detail on the bearing (17).

6.2.11 Using care not to damage the seal surface of the seal retainer ring (18), remove old main seal (16) and install new main seal (16) into lower stem (14).





6.2.12 Do NOT press main seal (16) into place by hand. Simply place as shown above, apply high quality anti-seize compound to threads of seal retainer (18) and screw back onto lower stem (14). This will seat the main seal (16) in place without damage.

6.2.13 Remove main spring (13), washer – main spring (11), packing spring (10), and follower washer (9). Inspect for damage on these parts and replace if necessary.

6.2.14 Use care not to damage stuffing box, remove old packing (8) and wiper (7).

6.2.15 Clean and inspect stuffing box where packing (8) and wiper (7) are located.

- If the stuffing box is scratched and/or pitted, the valve body (12) must be replaced.

6.2.16 Remove seat (5) using care to prevent damage or scratches to the seat area of the flange.

- Inspect seat area of flange. Valve body must be replaced if there is any pitting or damage in this area.

6.2.17 Place new seat (5) into seat area of flange, being sure that it is completely installed into groove.

6.2.18 Holding the cap collar (2), removed the cap nut (1) from the upper stem (6) and remove the disc from the upper stem (6).

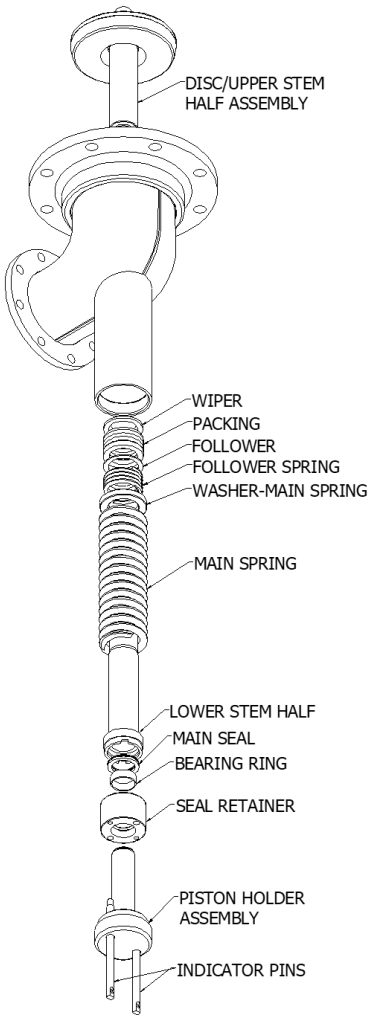
6.2.19 Carefully remove the O-ring (3) from the underside of the disc (4). Inspect the groove and disc (4) for any pitting or damage. Replace with new parts if needed.

6.2.20 Inspect upper stem (6).

- Replace upper stem (6) if it is scratched and/or pitted enough to not be easily removed by polishing.

6.2.21 Install new O-ring (3) into disc (4) and reinstall disc (4), cap collar (2), and cap nut (1) to upper stem (6). While holding the cap collar (2), torque cap nut (1) to approximately 40 ft-lbs.

6.2.22 Hold cap collar (2) of disc/upper stem assembly in vice and lower valve body (12) over upper stem half/disc assembly into valve and install new wiper (7) and packing (8) in orientation shown in parts list in section 2.



6.2.23 Reinstall follower washer (9), packing spring (10), washer – main spring (11) and main spring (13).

- Washer-main spring (11) should be installed with the knurled side away from the main spring (13).

6.2.24 Apply a high quality anti-seize compound to lower threads of upper stem (6) and while holding the cap collar (2), carefully install lower stem (14) to upper stem (6) compressing the main spring (13).

⚠ WARNING	**PRE-LOADED SPRING:** Use caution when unloading and loading spring; force is high and could cause bodily harm if not contained properly.

6.2.25 Reinstall piston holder assembly (20) & (15).

- Snug piston holder (20) to stuffing box, then while still holding cap collar (2), rotate body to align the holes in piston holder (20) with threaded holes in seal retainer ring (18).

6.2.26 Reinstall indicator pins (21).

6.3 Conversion Kit – Kits are available to convert from old style single piece stem to new style 2 piece stem. See catalog Section 35 page 2D for more info.

6.3.1 Completely disassemble old valve and reassemble with new components from kit (see steps in section 6.2).

SEE TROUBLESHOOTING GUIDE AT THE END OF THIS MANUAL

Troubleshooting Guide

NOTE: MOST HYDRAULIC FAILURES CAN BE ATTRIBUTED TO THE PRESENCE OF DIRT OR FOREIGN MATERIAL IN THE HYDRAULIC SYSTEM. IT IS IMPERATIVE THAT ALL COMPONENTS ARE CLEAN AND ONLY NEW, CLEAN FLUID IS USED.

Problem	Cause	Solution
Valve drifts closed	Hydraulic pump malfunction	See MM-HP001 for hydraulic pump trouble shooting guide
	Air in system	Loosen fittings on all valves Operate pump until all air is bled from system Tighten all fittings
	Damaged O-ring (3) on piston (15) or damaged piston (15)	Refer to Section 6 for rebuilding valve
	Damaged main u-cup seal (16)	Refer to Section 6 for rebuilding valve
	Damaged or missing bearing (17)	Refer to Section 6 for rebuilding valve. See Engineering Bulletin 8-08 for more detail on the bearing (17)
Product leaking out of indicator pins (21)	Damage to wiper (7), packing rings (8) or upper stem (6)	Refer to Section 6 for rebuilding valve
Product leaking past seat (5)	Seat (5) or sealing surface of valve body (12) damaged	Refer to Section 6 for rebuilding valve