INTERNAL CHEMICAL HYDRAULIC VALVE

PART NUMBER

CH47003SST

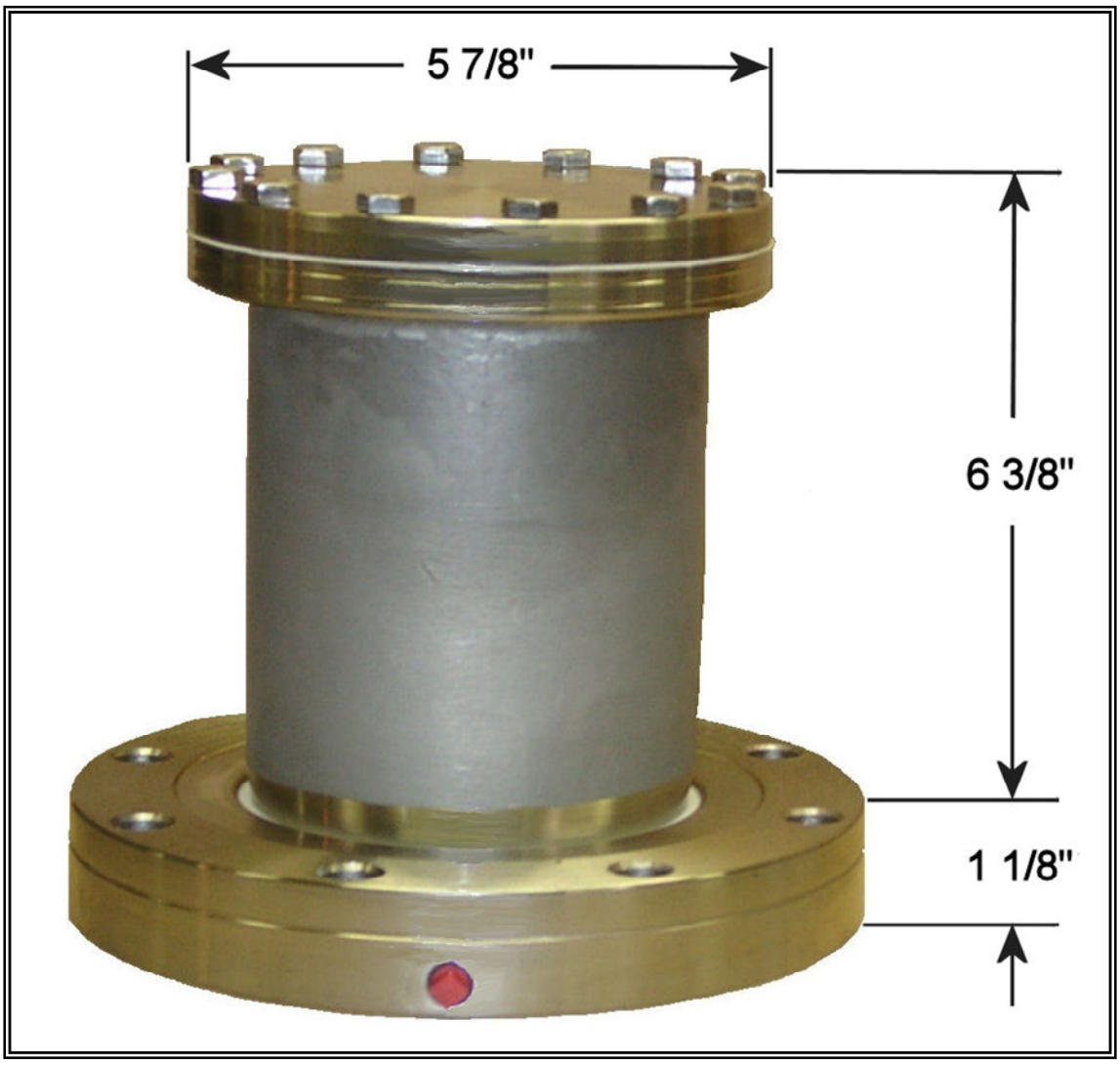

Table of Contents

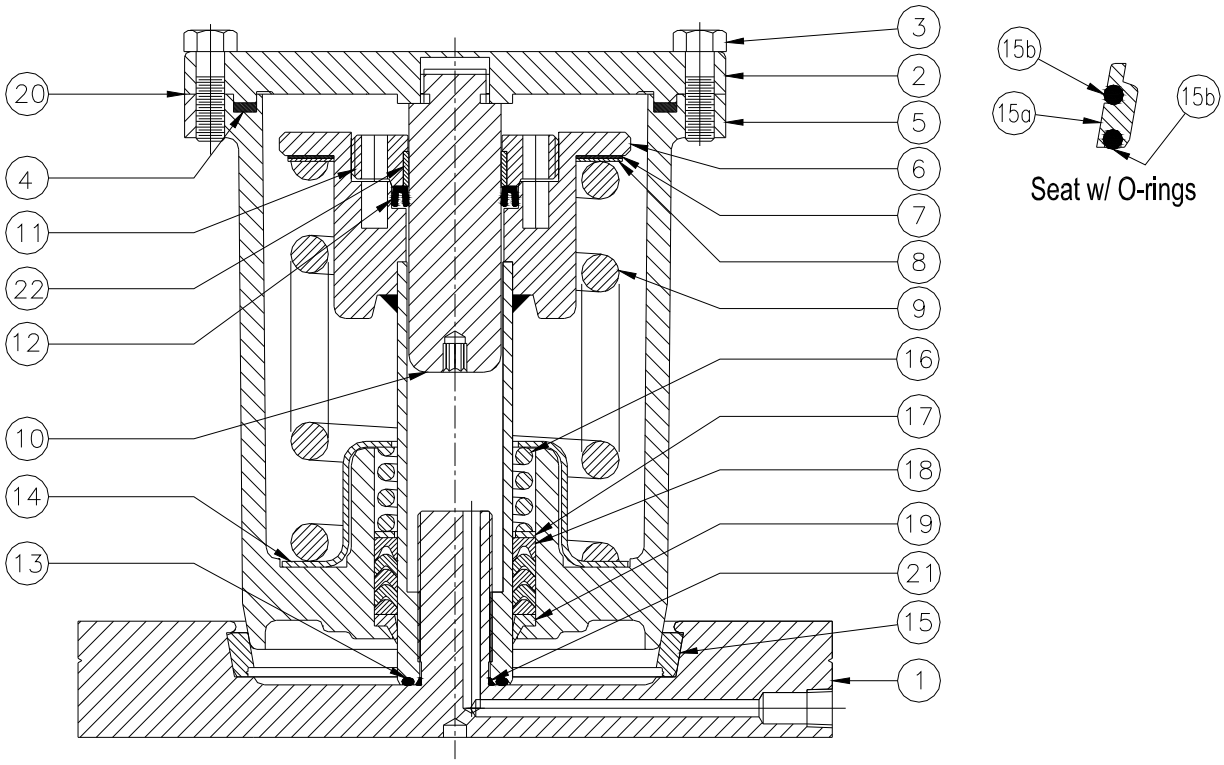

Figure 1

No.	Description	Req.	Material	Part No.
1	Seat Flange	1	316 Stnls	46937SS
2	Cover Plate	1	316 Stnls	75160SS
3	Cap Screw - Cover Plate	12	316 Stnls	9Q3305
4	Gasket - Cover Plate	1	Teflon	17295TF
5	Disc	1	316 Stnls	27996LC001
			Hast. C-22 Trim	28235LH001
6	Stem/Spring Retainer	1	316 Stnls	75224SS
7	Backup Shim-Spring	1	Teflon	16867TF
8	Shim-Spring	1	304 Stnls	16866SL
9	Main Spring	1	316 Stnls	16890SS
10	Piston	1	303 Stnls	75161SL
11	Seal Retainer	1	316 Stnls	75162SS
12	Main Hydraulic Seal	1	PTFE/302SS	75207SSTF
13	O-ring - Stem	1	Tef-Sil	75206TS

No.	Description	Req.	Material	Part No.
14	Packing Retainer	1	316 Stnls	19446SS
15	Replaceable Seat	1	Teflon	16644TF
			Kalrez	16644KA
15a	Replaceable Seat w/ O-rings		Teflon	18897TFTS
15b	Seat O-ring only	2	Tef-Sil	18246TS
			Kalrez	18246KA
16	Spring-Stuffing Box	1	316 Stnls	19616SS
17	Follower Washer	1	316 Stnls	19594SS
18	Packing Rings	Set	Teflon	15759TF
19	Wiper - Suffing Box	1	Teflon	15862TF
20	Gasket - Cover Plate	1	Teflon	19720TF
21	O-ring - Stem Backup	1	Viton	3926VT
22	Bearing Ring	1	Teflon/Graphite	75455TF

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 2535.5 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 Description and Intended Use

2.1 The Internal Chemical Hydraulic Valve is designed for use with a wide variety of chemicals. It is an internal self-closing stop valve, therefore it does not require under carriage crash protection. Available elbows are supplied with shear sections to meet 49CFR 178.345-8(a)(4), see catalog page Section 35 Page 5C for details.

2.2 A heavy mounting flange is provided to insure a flat surface for a positive seal. A replaceable Teflon® seat and a replaceable stem are provided for ease in repairing a damaged valve.

2.3 The 1/8 NPT hydraulic connection is located on the outside of the mounting flange. 1,500 psi minimum hydraulic line pressure is required to operate the valve, but do not exceed 4,000 psi hydraulic line pressure.

2.4 See section 35 page 3D & 3E for Betts Hydraulic Pump.

2.5 A complete information page can be found in our catalog Section 35 Page 5C & 5D.

3.0 Installation

3.1 A flat mounting surface must be provided for the valve. Recommended mounting pad with extended studs is MP19741LC found in Section 40 Page 1A of the Betts catalog.

3.2 Connect hydraulic line to 1/8” NPT fitting on O.D. of seat flange (1), leaving the fitting loose.

3.3 Operate pump until all air is bled from system.

3.4 Tighten fitting and refill pump reservoir.

3.5 Inspect all fittings for leaks.

4.0 Inspection and Testing

4.1 To test the valve seat:

4.1.1 Apply 5psi of air pressure to the underside of the valve flange.

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

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

4.1.4 Refer to section 5; Disassembly and Rebuild Instructions for proper procedures to replace the seat.

4.2 To test the valve for hydraulic leakage:

4.2.1 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).

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

4.2.3 There should be no loss of hydraulic pressure and the valve should drift closed.

4.2.4 Inspect area where the stem/spring retainer (6) meets the seat flange (1). There should be no hydraulic fluid leakage in this area.

4.2.5 If there is a loss in hydraulic pressure or the valve drifts closed, refer to section 5; Disassembly and Rebuild Instructions for proper repair procedures.

5.0 Disassembly and Rebuild Instructions

5.1 Rebuilding valve using replacement kit of Teflon® parts

- CH75358TF – Includes items 4,7,8,12,13,15,16,17,18,19,20,21
- CH75358TFTS – Includes items 4,7,8,12,13,15a,15b,16,17,18,19,20,21

5.1.2 Remove cap screws (3).

5.1.3 Cover plate (2) can now be removed. Use care to lift cover plate (2) straight up to prevent scratching or damaging piston (10).

5.1.4 Discard gaskets (4) and (20).

5.1.5 Inspect piston (10), if piston (10) is scratched or damaged it should be replaced.

5.1.6 Remove seal retainer (11) and stem/spring retainer (6) with spanner wrench 75325MS.

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

- Inspect bearing (22) for damage. Replace if necessary.
- If bearing is not present, inspect seal retainer (11) for counter bore to receive bearing. If the counter bore is not present, replace seal retainer (11) with the up to date version, including the bearing (22). See Engineering Bulletin 8-08 for more detail on the bearing (22).
- Remove hydraulic seal (12). Use care to not damage the sealing surface of the stem/spring retainer (6).
- Inspect stem/spring retainer (6); if stem is damaged or scratched it must be replaced.

5.1.7 Lift disc (5) off seat flange (1) and remove all components remaining in disc (5).

5.1.8 Remove seat (15) using care to prevent damage or scratches to the flange.

- Inspect seat flange (1) seat area. Flange must be replaced if there is any pitting or damage in this area.

5.1.9 Replace seat (15) into seat flange (1) being sure that it is completely installed into groove.

5.1.10 Replace wiper (19), packing (18), follower washer (17), spring-stuffing box (16) and packing retainer (14) into disc (5) with new parts included in kit.

5.1.11 Replace o-ring stem (13) and o-ring stem backup (21) and place disc (5) back onto seat flange (1).

5.1.12 Reinstall main spring (9) and shims (6) and (7).

5.1.13 Coat threads of seat flange (1) with a high quality removable thread lock compound (do not use too much, just enough to coat threads) and insert stem/spring retainer (6) through packing (18) and thread onto hub of seat flange (1); tighten to 90 ft lbs.

5.1.14 Insert new hydraulic seal (12) with lips facing inwards as shown.

5.1.15 Apply anti-seize compound and install seal retainer (11) and bearing (22); tighten to 30 ft lbs.

5.1.16 Install new gaskets (4) and (20) and bolt cover plate assembly (2) using cap screws (3); tighten cap screws to 40 ft lbs.

5.2 Conversion Kit - To convert CH45843SST to CH47003SST:

- CH75393SSTF – Includes items 1,2,4,6,7,8,10,11,12,13,15,16,17,18,19,20,21,22
- CH75393SSTS – Includes items 1,2,4,6,7,8,10,11,12,13,15a,15b,16,17,18,19,20,21,22

5.2.2 Completely disassemble old valve.

5.2.3 Place new seat flange (1) on table with stem side up. Wipe any dust and dirt from seat area and install new seat (15).

5.2.4 See steps 5.1.9 through 5.1.16.

SEE TROUBLE SHOOTING GUIDE ON PAGE 7

6.0 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 – stem (13) and/or o-ring – stem back up (21)	Refer to Section 5.1 for rebuilding valve.
	Damaged main hydraulic seal (12)	Refer to Section 5.1 for rebuilding valve.
	Damaged or missing bearing (22)	Refer to Section 5.1 for rebuilding valve. See Engineering Bulletin 8-08 for more detail on the bearing (22).
Hydraulic fluid leakage at stem/spring retainer (6) and seat flange (1)	Damaged o-ring – stem (13) and/or o-ring – stem back up (21)	Refer to Section 5.1 for rebuilding valve.
	Stem/spring retainer (6) has come loose from seat flange (1)	Refer to Section 5.1 for rebuilding valve to replace o-ring – stem (13) and o-ring – stem backup (21).
Bowing of cover plate (2)	Damaged main hydraulic seal (12)	Refer to Section 5.1 for rebuilding valve.
	Damaged or missing bearing (22)	Refer to Section 5.1 for rebuilding valve.
Must add hydraulic fluid to pump often	Damaged main hydraulic seal (12)	Refer to Section 5.1 for rebuilding valve.
	Damaged or missing bearing (22)	Refer to Section 5.1 for rebuilding valve.