SD 3005A

SPENCE ENGINEERING COMPANY, INC.

Technical Data

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SD3005A/0607

Printed in the U.S.A.

TYPE E5 Main Valve

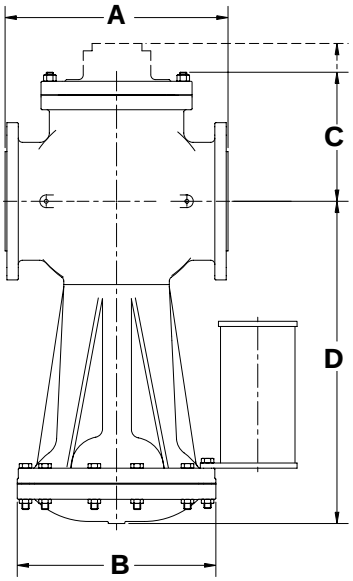


FIGURE 1

SPECIFICATION

The Spence type E5 Main Valve is self-operated, external pilot type, single seated, diaphragm actuated, normally closed design. The valve will function quickly and shut tight on dead end service. Internal parts including seats, discs and stems are of stainless steel. The diaphragm is a balanced Hycar material designed for high lift but low differential. There is an external condensation chamber supplied. The main valve spring shall operate on a 5 psi minimum differential. There are no springs in the steam flow path and no stuffing box.

Canadian Registration # OC 0591.9C

Valve Ends ASME/ANSI	Pressure PSIG (bar)		Temperature °F (°C)
CAST IRON			
Class 250 NPT	250 (17.2)	@	450 (232)
B16.1 Class 125 Flanged	125 (8.6)	@	450 (232)
B16.1 Class 250 Flanged	250 (17.2)	@	450 (232)
CAST STEEL			
B16.34 Class 300 NPT	300 (21.0)	@	600 (315)
B16.34 Class 150 Flanged	150 (10.3)	@	500 (260)
B16.34 Class 300 Flanged	300 (21.0)	@	600 (315)

DIMENSIONS (inches) **AND WEIGHTS** (pounds)

SIZE	A			B	C			D*		APPROX.WT				
					Std. Mount	Integral Mount				Iron,Brz.	Iron		Steel	
	ANSI NPT	ANSI 125	ANSI 250			CI	Stl.	ANSI 125	SCR 250	Stl.ANSI NPT	ANSI 125	ANSI 250	ANSI 150	ANSI 300
¾ (19)	4¾ (111)	— —	— —	6⅞ (175)	2⅞ (73)	3⅝ (92)	3½ (89)	11¼ (286)	11¼ (286)	23 (10)	— —	— —	— —	— —
1 (25)	5⅜ (137)	5½ (140)	6 (152)	6⅞ (175)	3⅝ (92)	4⅜ (111)	4⅜ (111)	11⅝ (295)	11⅝ (295)	24 (11)	30 (14)	33 (15)	35 (16)	39 (18)
1¼ (32)	6½ (165)	6¾ (171)	7¼ (184)	9⅛ (232)	4⅛ (105)	4 (102)	4⅝ (117)	13½ (343)	13½ (343)	49 (22)	46 (21)	49 (22)	58 (26)	63 (29)
1½ (38)	7¼ (184)	6⅞ (175)	7⅜ (187)	9⅛ (232)	4⅜ (111)	4½ (114)	5 (127)	13⅝ (346)	13⅝ (346)	53 (24)	58 (26)	68 (31)	67 (30)	74 (34)
2 (51)	7½ (191)	8½ (216)	9 (229)	11⅛ (283)	5¼ (133)	5 (127)	5⅝ (143)	16¼ (413)	16¼ (413)	84 (38)	90 (41)	97 (44)	113 (51)	120 (55)
2½ (64)	— —	9⅜ (238)	10 (254)	11⅛ (283)	5¾ (146)	5⅜ (137)	6 (152)	16½ (419)	16½ (419)	— —	97 (44)	112 (51)	130 (59)	135 (61)
3 (76)	— —	10 (254)	10¾ (273)	13½ (343)	6⅝ (168)	6⅜ (162)	7 (178)	19¼ (489)	19¼ (489)	— —	148 (67)	170 (77)	210 (95)	226 (103)
4 (102)	— —	11⅞ (302)	12½ (318)	13½ (343)	7⅝ (194)	6⅝ (168)	8 (203)	18⅜ (467)	23⅜ (594)	— —	208 (95)	293 (133)	307 (139)	330 (150)
5 (127)	— —	13⅝ (346)	14½ (368)	13½ (343)	8½ (216)	7⅜ (187)	8¾ (222)	18¾ (476)	23¾ (603)	— —	240 (109)	333 (151)	335 (152)	366 (166)
6 (152)	— —	15⅛ (384)	16 (406)	16¾ (425)	10 (254)	7 (178)	— —	23½ (597)	27⅜ (695)	— —	348 (158)	616 (280)	560 (254)	503 (274)
8 (203)	— —	19 (483)	20 (508)	16¾ (425)	11½ (292)	9¼ (235)	— —	23¾ (603)	29⅝ (752)	— —	650 (295)	814 (370)	795 (361)	862 (392)
10 (254)	— —	23⅝ (600)	25 (635)	20 (508)	13¾ (349)	— —	— —	30¾ (781)	35⅜ (899)	— —	910 (414)	1130 (513)	1345 (611)	1420 (645)
12 (305)	— —	26½ (673)	28 (711)	24¾ (629)	15⅞ (403)	— —	— —	39¾ (1010)	39¾ (1010)	— —	1580 (718)	1920 (872)	1990 (904)	2160 (982)

*Add 150% to D dimension for stem removal clearance.

RATED FLOW COEFFICIENTS (Cv)

SEAT FACTOR	REGULATOR SIZE												
	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12
Full	7.6	11.7	18.9	27.4	43	67	95	159	258	350	665	1018	1611
Normal	5.7	10.0	13.4	19.8	25	35	59	120	176	228	366	525	952

OPERATING PRINCIPLE

The regulator is operated by initial steam or fluid pressure. It is normally closed, being held so by initial pressure on the disc and by an internal main spring. When the pilot is opened (see pilot instructions), initial pressure flows through the pilot to the No. 8B tee. Bleedport No. 4A restricts the flow and pressure builds under the diaphragm and opens the main valve. The No. 5A elbow steadies the operation of the regulator.

Delivery pressure feeds back through the control pipe to the pilot diaphragm. As this pressure approaches a balance with the thrust of the adjusting spring, the pilot throttles the loading pressure. In turn, the main valve takes a position established by the loading pressure where just enough steam flows to maintain the set delivery pressure.

CONDENSATE CHAMBER

Main valves with large internal volumes, or valves used in relatively high pressure or superheat, may require more water than can be condensed from radiation alone. Live steam will rapidly degrade the rubber diaphragm of an E5 and generally yield poor control in other main valves. To prevent this from happening, the Condensation Chamber and the base are primed with water before start-up. As the pilot opens, medium pressure steam flows to the Condensation Chamber condensing the vapor in the presence of the prime and larger radiational area. The condensate exits the chamber through a No. 5B Open Elbow directed to the No. 5A Restriction Elbow in the hood. This condensate collecting under the diaphragm creates a loading pressure which forces the valve open.

RECOMMENDED INSTALLATION

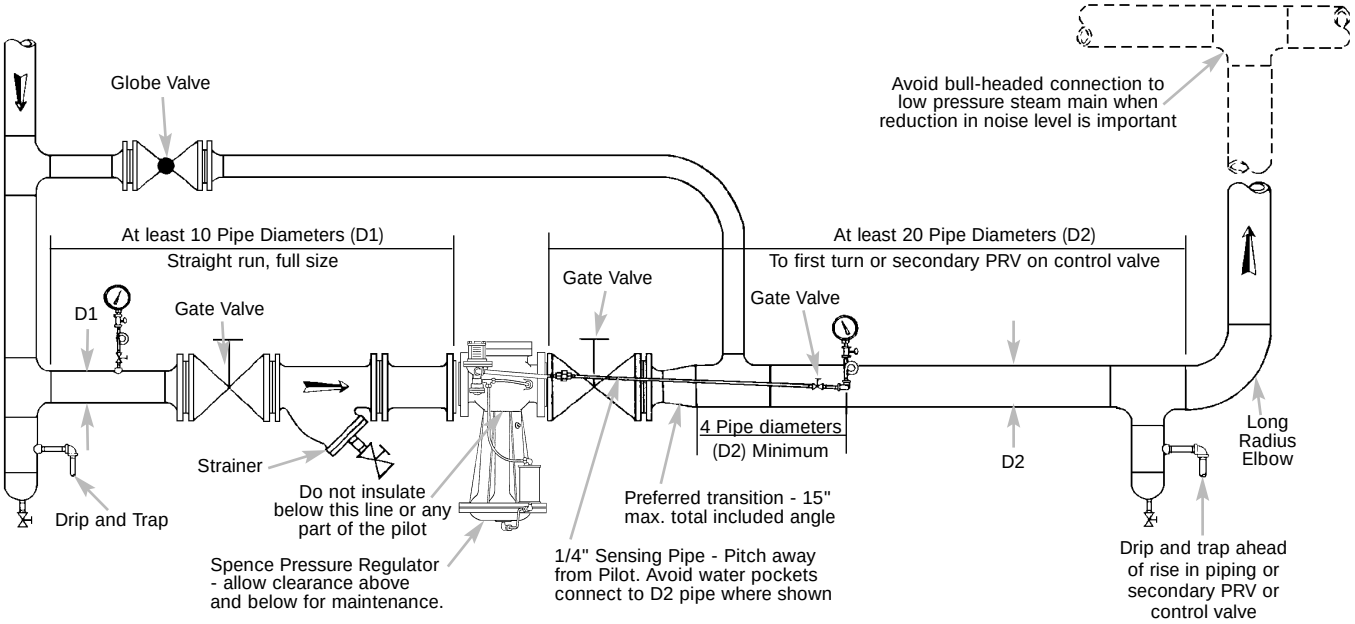


FIGURE 2

START-UP AND SETTING

Before placing the E5 valve in service, its base and condensation chamber must be primed (with water) in order to avoid damage to the diaphragm.

On pressure reducing valves like the E5D, use bypass line to fill the delivery system and raise pressure slightly below the normal requirement. Close pilot by releasing compression on adjusting spring. See Figure 3. Open 1/4" control pipe valve. See Figure 4. Crack outlet stop valve. Crack inlet stop valve. Blow down strainer.

Caution: Never open a reducing valve without positive indication that the high side is clear of condensate.

Open inlet stop valve and gradually compress adjusting spring until the valve opens and takes control at desired pressure. Alternately choke down on the bypass line and open outlet stop valve until the regulator is operational. See individual instructions for other pilots.

HYDROSTATIC TEST PROCEDURE

Install pilot according to instructions. Fully compress pilot spring and open inlet and outlet stop valves before filling system. *SLOWLY* fill system from inlet or high pressure side of regulator. Bleed off trapped air. *SLOWLY* develop test pressure up to *300 PSIG MAXIMUM.* If a higher presure is required **CONTACT FACTORY FIRST.** Test pressures may cause normally acceptable leakage at the diaphragm joint. Consult factory for hydrostatic test for other types of regulators.

"WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that the equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.***"**

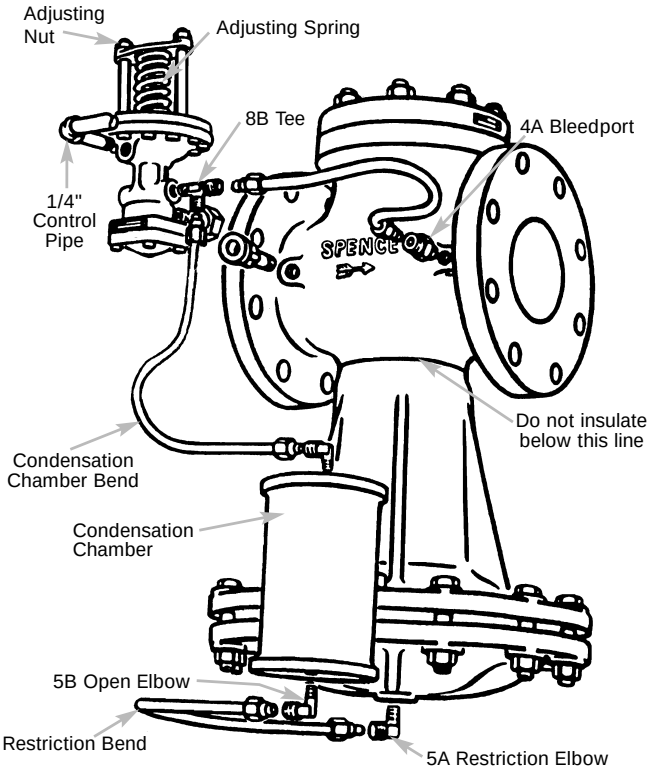


FIGURE 3
REGULATOR ASSEMBLY FOR TYPE E5 MAIN VALVE WITH CONDENSATION CHAMBER

INSTALLATION

PLANNING

Locate the valve in a straight run of horizontal pipe. Allow headroom above the valve for access through the blind flange. Provide clearance for stem withdrawal underneath. Prevent water hammer and erratic operation by installing traps to provide proper drainage before and after the valve and before secondary PRV or control valve. Avoid damaging effects of scale and dirt in pipe lines by using a strainer as shown in Figure 2. Provide a 3-valve by-pass to facilitate inspection without interrupting service.

To eliminate excessive noise and erratic regulation with steam and other compressible fluids, enlarge the delivery pipe size to effect a reasonable flow velocity at the reduced pressure. A tapered transition is recommended. If possible, avoid a sharp turn close to the regulator outlet and a bull-headed tee connection to the low pressure main.

Install initial and delivery pressure gages to indicate performance. If the pressure rating of the delivery system or connected equipment is less than the initial steam pressure, provide a safety valve.

MAIN VALVE

Flush the piping system thoroughly to clear it of welding beads, scale, sand, etc. Mount the main valve with diaphragm chamber down and arrow on body pointing in the direction of flow. Screwed end valves should be mounted in unions.

PILOT

Mount the pilot on either side of the main valve by means of 1/4" nipple and union provided. Make this connection to the 1/4" pipe tap at the inlet of the main valve as shown in Figure 4.

Fit No. 4A bleedport fitting into the 1/8" pipe tap at the outlet of the main valve body. Note bleed orifice in this fitting – vital to operation of regulator.

Fit No. 8B tee into 1/8" pipe tap in pilot. Select tap facing downstream.

Fit No. 5A elbow containing restriction orifice into 1/8" pipe tap on underside of main valve diaphragm chamber. If the initial pressure or pressure drop is less than 15 psi, a No. 5B open elbow is used.

Connect tubing bends as illustrated in Figure 3 and Figure 4. Valves with condensation chamber are fitted up according to Figure 3.

CONTROL PIPE

Use 1/4" pipe for this line, shown on Figure 4, which connects the pilot diaphragm chamber to the desired point of pressure control. Take the control at a point of minimum turbulence. Avoid control immediately at the valve outlet or after a turn. When the delivery pipe expands in size, select a spot at least 4 pipe diameters beyond the point of enlargement. Pitch away from pilot to avoid erratic operation and excessive fouling. Eliminate water pockets. Locate delivery pressure gage in control pipe to show pressure actually reaching pilot diaphragm.

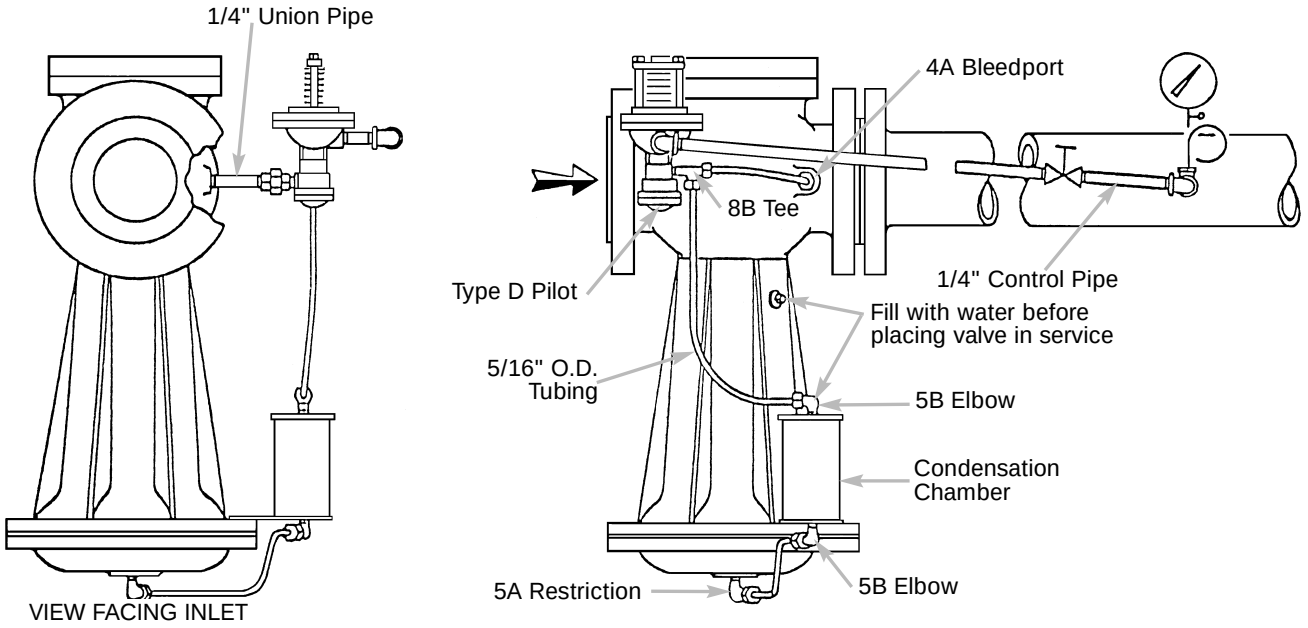


FIGURE 4
TYPICAL INSTALLATION

TROUBLE SHOOTING

FAILURE TO OPEN OR SAGGING DELIVERY PRESSURE

1. Adjusting spring on pilot may have been tampered with.
2. Initial pressure may be down due to partially closed supply valve, clogged strainer or other obstruction.
3. Orifice in No. 5A restriction elbow may be plugged. No. 4A bleedport fitting may have been omitted and an open coupling substituted.
4. Control pipe may be plugged. Most likely points of obstruction are at shutoff valve and entrance to delivery main.
5. Main diaphragm may be broken. Test with air or water before dismantling.

FAILURE TO CLOSE OR OVER-RIDING DELIVERY PRESSURE

1. Adjusting spring on pilot may have been tampered with.
2. Orifice in bleedport No. 4A may be plugged.
3. By-pass valve may be leaking.
4. On pressure regulators like the E5, the main valve or pilot may be held open by foreign matter in seat. To determine which valve leaks, first close stop valve and 1/4" control pipe valve. Then remove bleedport bend so pilot will exhaust to atmosphere. Crack inlet stop valve. Steam will issue from No. 8B tee. Release compression on adjusting spring to see if pilot closes tight. Open and close several times to wash seat. Steam blowing back from bleedport means main valve disc is held open by foreign matter. Steam may wash the obstruction from the seat if the valve is made to open wide. This can be accomplished, even at light loads, if the control point is beyond the outlet stop valve. Reassemble bleedport bend and place regulator in operation. Then, slowly open and close outlet stop valve.

MAINTENANCE

INSPECTION

Under normal conditions, complete dismantling at regular intervals is not recommended. A valve kept relatively free of dirt will function for years with minimum attention.

After the first few days of operation and twice a year, the following should be checked.

1. Inspect for dirt collected at bleedport No. 4A and restriction elbow No. 5A.
2. Inspect all joints for leakage. Keep bolts tight. Never allow a leak to persist.

DISMANTLING MAIN VALVE

Connect a source of air or water pressure which can be adjusted by hand to the No. 5A restriction elbow. See Figure 5. Apply pressure to valve so diaphragm will push on stem preventing it from turning while removing stem nuts. Usually 50 to 60 psi will suffice. Use penetrating oil on the threads. See Figure 5.

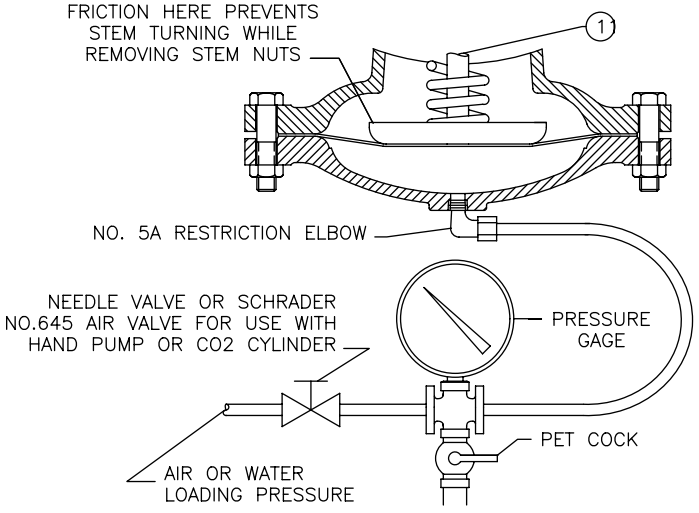


FIGURE 5

MAINTENANCE

VALVE SETTING

Valve setting is gaged at K to establish correct stem length and diaphragm position. Dimension “K” is supplied with each replacement stem. For metal diaphragm valves, “K” is cast on the upper face of pressure plate (15) (Fig. 6).

To install new stem (12), fasten disc (7) (see Fig. 7) firmly on stem with stem nut. Insert stem and disc assembly in valve and screw on pressure plate (15). Omit spring (13) for this operation. Hold disc on seat and adjust position of pressure plate until valve setting “K” is reached. Push pressure plate against stops in base (11). Remove disc, drop out pressure plate and stem, drill and insert dowel pin (14) to lock the joint. Grind off stem projection flush with face of pressure plate.

VALVE SIZE	TRAVEL SETTING		
	TOTAL TRAVEL	GROOVE PIN	DRILL SIZE
3/4	1/4	1/8 X 11/16	1/8
1	5/16	1/8 X 11/16	1/8
1¼	3/8	5/32 X 13/16	5/32
1½	7/16	5/32 X 13/16	5/32
2	9/16	5/32 X 15/16	5/32
2½	1 1/16	3/16 X 15/16	3/16
3	1 3/16	3/16 X 1 3/8	3/16
4	1 1/16	1/4 X 1 3/4	1/4
5	1 5/16	5/16 X 1 3/4	5/16
6	1 9/16	5/16 X 2	5/16
8	2 1/16	3/8 X 2	3/8
10	2 9/16	3/8 X 2½	3/8
12	3 1/16	1/2 X 2 3/4	1/2

REPLACING SEAT RINGS

These joints should be made up with Copaltite, Permatex or equal high temperature gasket compound. Remove old compound from body and seat ring with a wire brush. Apply new compound sparingly to both parts, threads and shoulders. Let stand until tacky before assembling.

GRINDING IN (Lapping)

Seats and discs should never require more than the lightest touch up with very fine (400 grit) grinding compound. Heavy grinding will produce galling, wider seating surface and a groove in the disc, all of which tend to cause leakage. Reface a damaged surface before attempting to grind it in. Grind sparingly.

Main stem (12) shown on Figure 6 is slotted for rotation with a screwdriver, Valve spring (13) is omitted from the assembly during grinding. Slip the stem into its normal position. apply compound to the disc, place it on the stem and tighten with one stem nut.

After grinding, disassemble and clean all parts.

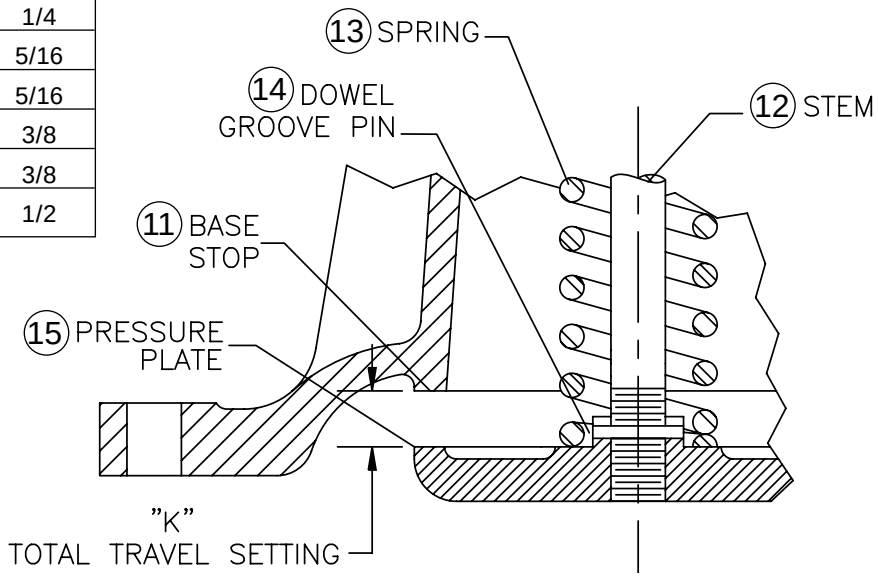


FIGURE 6

PARTS DIAGRAMS

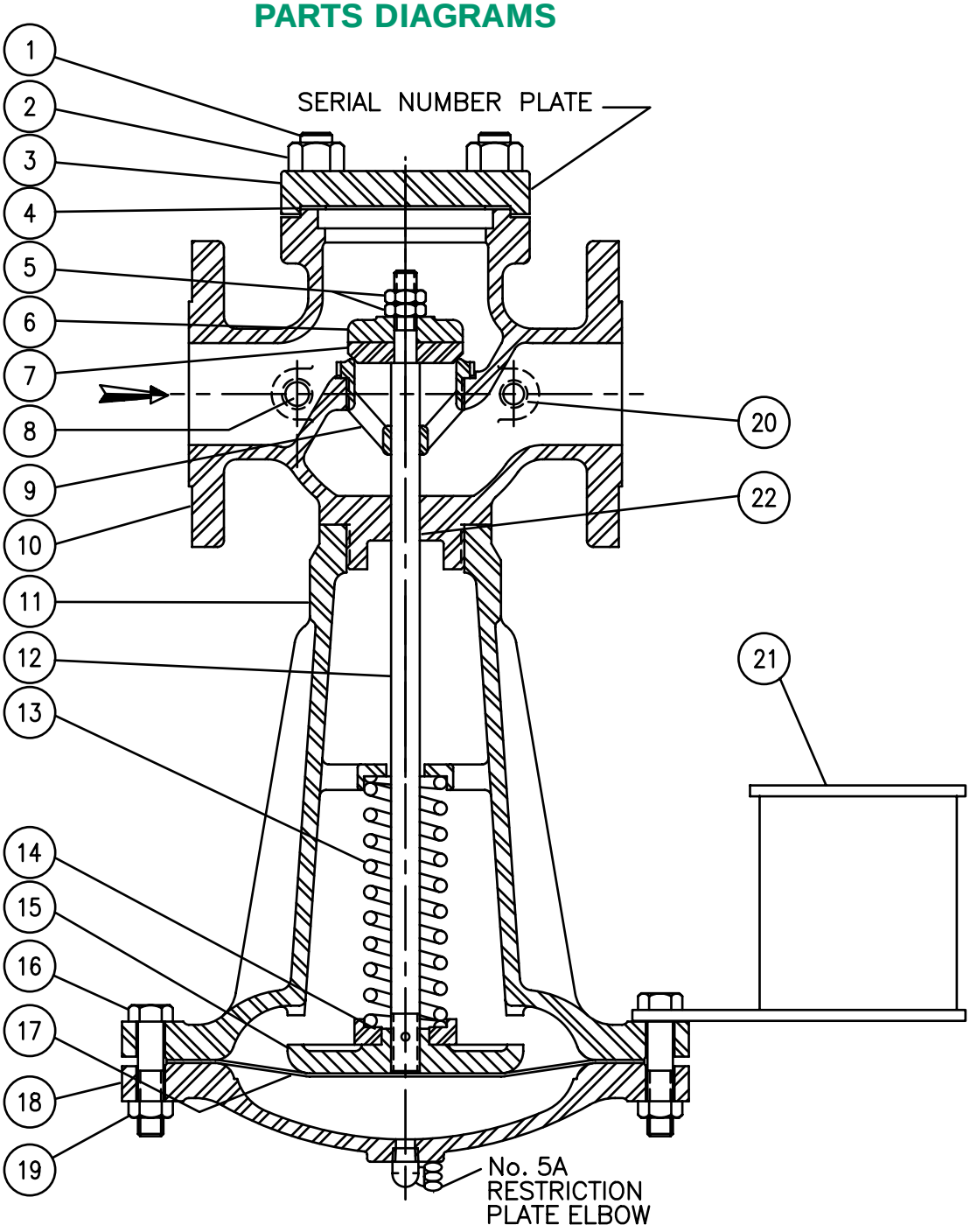
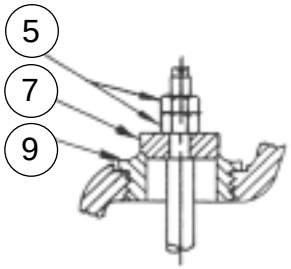
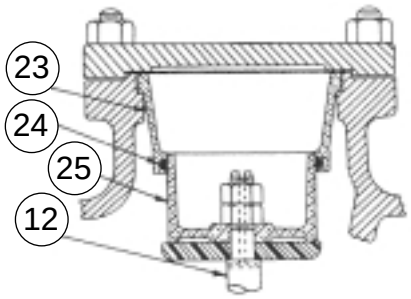


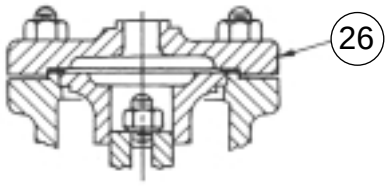
FIGURE 7



Inner Valve Assembly
Sizes 3/8" - 1½" Port Inclusive



Internal Balanced



Integral Mounted Blind Flange

PART NUMBERS

Item No	Part Name	Material	Valve Size						
			3/4	1	1¼	1½	2	2.5	3
1	Blind Flg Stud 125 lb	STEEL	—	04-10118-00	04-05442-00	04-05443-00	04-10119-00	04-10119-00	04-05443-00
	Blind Flg Stud 250 lb	STEEL	04-05516-00	04-10118-00	04-05442-00	04-05443-00	04-10119-00	04-05447-00	04-10119-0
2	Blind Flg Nut 125 lb	STEEL	—	05-02851-00	05-02854-00	05-02856-00	05-02860-00	05-02860-00	05-02856-00
	Blind Flg Nut 250 lb	STEEL	05-02847-00	05-02851-00	05-02854-00	05-02856-00	05-02860-00	05-02862-00	05-02860-00
3	Blind Flg 125 lb	CI	—	04-02173-00	04-02176-00	04-02178-00	04-02180-00	04-02185-00	04-02157-00
	Blind Flg 250 lb	CI	04-02171-00	04-02173-00	04-02176-00	04-02178-00	04-02180-00	04-02183-00	04-02186-00
	Blind Flg 250 lb	Brz	04-02172-00	04-02174-00	04-02177-00	04-02179-00	04-02181-00	—	—
4	Blind Flg Gasket	Grafoil	05-02381-01	05-02362-01	05-02382-01	05-02365-01	05-02366-01	05-02367-01	05-02369-01
5	Stem Nut “F” port	STEEL	05-02969-00	05-02970-00	05-02970-00	05-02971-00	05-02971-00	05-02971-00	05-02973-00
6	Muffling Plate “F” port	CI	—	—	—	—	04-03550-01	04-03515-00	04-03516-00
7	Integral Disc “F” port	SS	04-01813-02	04-01832-02	04-01850-02	04-01870-02	04-01888-02	04-01906-01	04-01918-00
	Integral Disc “F” port	Stellited	04-01814-02	04-01833-02	04-01851-03	04-01871-02	04-01889-02	04-01907-00	04-01919-00
8	Pipe Plug 1/4" NPT	STEEL	04-03772-00	04-03772-00	04-03772-00	04-03772-00	04-03772-00	04-03772-00	04-03772-00
9	Seat Ring “F” port	SS	04-04075-01	04-04084-01	04-04092-01	04-04096-01	07-40405-05	07-40412-00	07-40422-00
	Seat Ring “F” port	Stellited	04-04076-01	04-04085-01	04-04093-01	04-04097-01	07-40404-01	07-40410-00	07-40423-00
10	Body 250 lb Scr	CI	04-00639-00	04-00640-00	04-00643-00	04-00646-00	04-00649-00	—	—
	Body 125 lb Flg	CI	—	04-00641-00	04-00644-00	04-00647-00	04-00650-00	04-00653-00	04-00655-00
	Body 250 lb Flg	CI	—	04-00642-00	04-00645-00	04-00648-00	04-00651-00	04-00652-00	04-00654-00
11	Base 125 lb	CI	—	04-00546-00	04-00518-00	04-00518-00	04-00521-00	04-00548-00	04-00520-00
	Base 250 lb	CI	04-00546-00	04-00546-00	04-00518-00	04-00518-00	04-00521-00	04-00548-00	04-00520-00
12	Stem 125 lb	SS	—	04-05242-01	04-05246-01	04-05383-01	04-05265-01	04-05391-01	04-05382-01
	Stem 250 lb	SS	04-05232-01	04-05242-01	04-05246-01	04-05383-01	04-05265-01	04-05391-01	04-05382-01
	Steam Internal balance	SS	04-05643-00	04-11180-00	04-05645-00	04-03132-00	04-05647-00	04-11182-00	04-07194-00
13	Main spring	STEEL	05-05072-01	05-05072-01	05-05071-01	05-05071-01	05-05073-01	05-05073-01	05-05047-00
14	Groove Pin	STEEL	05-03245-00	05-03245-00	05-03248-00	05-03248-00	05-03249-00	05-03252-00	05-03253-00
15	Pressure Plate	CI	04-03697-00	04-03680-00	04-03698-00	04-03688-00	04-03673-00	04-03633-00	04-03681-00
16	Diaphragm Bolt 125 lb	STEEL	—	05-04774-00	05-04780-00	05-04780-00	05-04780-00	05-04780-00	05-04785-00
	Diaphragm Bolt 250 lb	STEEL	05-04774-00	05-04774-00	05-04780-00	05-04780-00	05-04780-00	05-04780-00	05-04785-00
17	Diaphragm	Hycar	05-01600-00	05-01600-00	05-01601-00	05-01601-00	05-01602-00	05-01602-00	05-01603-00
18	Hood 125 lb	CI	—	04-02630-00	04-02629-00	04-02629-00	04-02638-00	04-02638-00	04-02634-00
	Hood 250 lb	CI	04-02630-00	04-02630-00	04-02629-00	04-02629-00	04-02638-00	04-02638-00	04-02634-00
19	Diaphragm Nut 125 lb	STEEL	—	05-02874-00	05-02877-00	05-02877-00	05-02877-00	05-02877-00	05-02881-00
	Diaphragm Nut 250 lb	STEEL	05-02874-00	05-02874-00	05-02877-00	05-02877-00	05-02877-00	05-02877-00	05-02881-00
20	Pipe Plug 1/8" NPT	STEEL	04-03769-00	04-03769-00	04-03769-00	04-03769-00	04-03769-00	04-03769-00	04-03769-00
21	Cond Chamber 125 lb	STEEL	—	08-02154-00	08-02157-00	08-02157-00	08-02160-00	08-02160-00	08-02165-00
	Cond Chamber 250 lb	STEEL	—	—	08-02157-00	08-02157-00	08-02160-00	08-02160-00	08-02165-00
22	Stem bushing	STEEL	—	—	—	—	—	—	—
23	Bal Cylinder	Brz	04-01569-01	04-01570-01	04-01571-01	04-01572-01	04-01573-01	04-01574-01	04-07500-00
24	Sealing Ring	EPT	05-04020-00	05-04027-00	05-04030-00	05-04036-00	05-04041-00	05-04049-00	05-04596-00
25	Bal Piston	Brz	04-03336-00	04-03337-00	04-03338-00	04-03339-00	04-03340-00	04-03341-00	04-04594-00
26	Top Flange	CI	04-02246-00	04-02248-00	04-02250-00	04-02252-00	04-02233-00	04-02259-00	04-02261-00

Item No.	Part Name	Material	Valve Size					
			4	5	6	8	10	12
1	Blind Flg Stud 125 lb	STEEL	04-10119-00	04-10120-00	04-10120-00	04-10120-00	04-05453-00	04-05451-00
	Blind Flg Stud 250 lb	STEEL	04-05447-00	04-05448-00	04-05449-00	04-05455-00	04-05451-00	04-05451-00
2	Blind Flg Nut 125 lb	STEEL	05-02860-00	05-02860-00	05-02860-00	05-02860-00	05-02860-00	05-02864-00
	Blind Flg Nut 250 lb	STEEL	05-02862-00	05-02862-00	05-02862-00	05-02862-00	05-02864-00	05-02864-00
3	Blind Flg 125 lb	CI	04-02158-00	04-02160-00	04-02165-00	04-02167-00	04-02294-00	04-02168-00
	Blind Flg 250 lb	CI	04-02159-00	04-02161-00	04-02163-00	04-02166-00	04-02164-00	04-02168-00
	Blind Flg 250 lb	Brz	—	—	—	—	—	—
4	Blind Flg Gasket	Grafoil	05-02371-01	05-02372-01	05-02374-01	05-02375-01	05-02376-01	04-02377-01
5	Stem Nut “F” port	STEEL	05-02974-00	05-02975-00	04-02976-00	04-02977-00	04-02977-00	04-02978-00
6	Muffling Plate “F” port	CI	04-03518-00	04-03519-00	04-03520-00	04-03524-00	04-03538-00	04-03539-00
7	Integral Disc “F” port	SS	04-01931-00	04-01938-00	04-01995-00	04-01691-00	04-01953-00	04-01957-00
	Integral Disc “F” port	Stellited	04-01932-00	04-01939-00	04-01996-00	04-07707-00	04-08268-00	04-08269-00
8	Pipe Plug 1/4" NPT	STEEL	04-03772-00	04-03772-00	04-03772-00	04-03772-00	04-03772-00	04-03772-00
9	Seat Ring “F” port	SS	07-40441-00	07-40450-00	07-40470-00	07-40483-00	07-44463-00	07-44465-00
	Seat Ring “F” port	Stellited	07-40449-00	07-40458-00	07-40469-00	07-40482-00	@-04464-00	@-04466-00
10	Body 250 lb Scr	CI	—	—	—	—	—	—
	Body 125 lb Flg	CI	04-00659-01	04-00661-01	04-00662-00	04-00665-00	04-01273-00	04-06618-00
	Body 250 lb Flg	CI	04-00658-01	04-00660-01	04-00663-00	04-00664-00	04-00666-00	04-00667-00
11	Base 125 lb	CI	04-00515-00	04-00515-00	04-00519-01	04-00519-01	04-00516-01	04-00524-02
	Base 250 lb	CI	04-00522-01	04-00522-01	04-00523-00	04-00523-00	04-00517-01	04-00524-02
12	Stem 125 lb	SS	04-05281-00	04-05287-01	04-05374-00	04-05290-00	04-05296-00	04-05398-00
	Stem 250 lb	SS	04-05384-01	04-05386-01	04-05385-01	04-05388-01	04-05277-00	04-05398-00
	Steam Internal balance	SS	04-08233-00	04-05831-00	04-10709-00	04-07564-00	—	—
13	Main spring	STEEL	05-05062-00	05-05062-00	05-05039-00	05-05039-00	05-05040-01	05-05079-00
14	Groove Pin	STEEL	05-03255-00	05-04686-00	05-03258-00	05-03302-00	05-03261-00	05-03263-00
15	Pressure Plate	CI	04-03689-00	04-03683-00	04-03685-00	04-03682-00	04-03611-00	04-03690-00
16	Diaphragm Bolt 125 lb	STEEL	05-04786-00	05-04786-00	05-04787-00	05-04787-00	05-04794-00	05-04798-00
	Diaphragm Bolt 250 lb	STEEL	05-04787-00	05-04787-00	05-04791-00	05-04791-00	05-04796-00	05-04798-00
17	Diaphragm	Hycar	05-01604-00	05-01604-00	05-01605-00	05-01605-00	05-01606-00	05-01607-00
18	Hood 125 lb	CI	04-02626-00	04-02626-00	04-02626-00	04-02627-00	04-02661-00	04-02637-00
	Hood 250 lb	CI	04-02633-00	04-02633-00	04-02632-00	04-02632-00	04-02628-00	04-02637-00
19	Diaphragm Nut 125 lb	STEEL	05-02881-00	05-02881-00	05-02881-00	05-02881-00	05-02883-00	05-02883-00
	Diaphragm Nut 250 lb	STEEL	05-02881-00	05-02881-00	05-02881-00	05-02881-00	05-02883-00	05-02883-00
20	Pipe Plug 1/8" NPT	STEEL	04-03769-00	04-03769-00	04-03769-00	04-03769-00	04-03769-00	04-03769-00
21	Cond Chamber 125 lb	STEEL	08-02165-00	08-02165-00	08-02167-00	08-02175-00	08-02177-00	08-02812-00
	Cond Chamber 250 lb	STEEL	08-02165-00	08-02165-00	08-02168-00	08-02175-00	08-02177-00	08-02812-00
22	Stem bushing	STEEL	—	—	—	—	04-02307-00	04-06528-00
23	Bal Cylinder	Brz	04-07248-00	04-07307-00	04-09568-00	04-07199-00	—	—
24	Sealing Ring	EPT	05-04528-00	05-04528-00	05-04530-00	05-04530-00	—	—
25	Bal Piston	Brz	04-07249-00	04-07301-00	04-09567-00	04-07198-00	—	—
26	Top Flange	CI	04-02263-00	04-02264-00	04-02266-00	—	—	—