



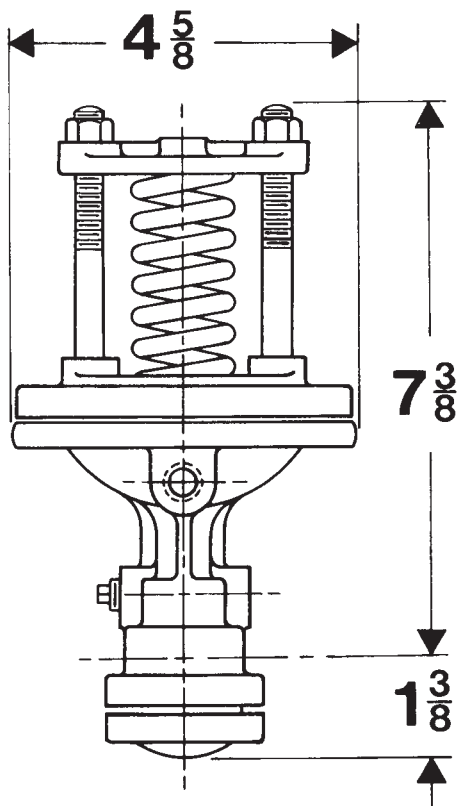
A division of CIRCOR International, Inc.

Technical Data

SD 4111A

SPENCE ENGINEERING COMPANY, INC. 150 COLDENHAM ROAD, WALDEN, NY 12586-2035

DIMENSIONS: Inches



STANDARD D PILOT
7 LBS.

TYPE D PRESSURE REDUCING PILOT

The combination of a Type D pilot and a Spence Type E or Type C main valve produces a Spence Pressure Regulator. This regulator will reduce a steady or varying initial pressure to a constant, adjustable delivery pressure.

The Type D pilot is spring loaded. Normal accuracy of regulation is ± 1 psi. The adjustable range of delivery pressure is governed by the choice of adjusting spring as shown in Table 1.

PRESSURE RANGE (PSIG)	ADJUSTING SPRING - Item 4		
	PART NO.	WIRE DIA. (Inch)	COLOR
3 - 20*	05-05007-00	3/16	Aluminum
5 - 50*	05-05003-00	1/4	Orange
10 - 100	05-05005-00	5/16	Green
20 - 150	05-05012-00	11/32	Black

*With Vacuum Spring Assembly, minimum range is 30 inches Hg; maximum is reduced by 15 PSIG.

TABLE 1

RATINGS (Maximum Inlet Conditions)

Construction Pressure (Temperature)

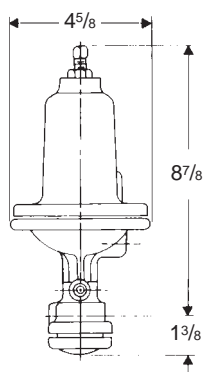
- Cast Iron250 PSIG(450°F)
- Cast Bronze300 PSIG(500°F)
- Cast Steel600 PSIG(750°F)

SD 4111A/9601

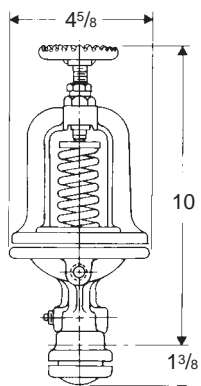
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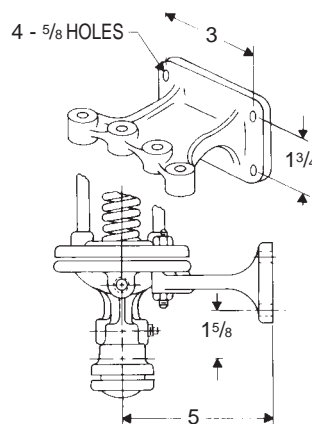
- Spring Chamber
- Adjusting Handwheel
- Wall Bracket
- Locking Device
- Composition Disc
- Integral Mount Body
- Vacuum Spring Assembly



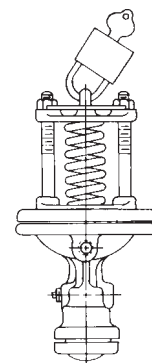
SPRING CHAMBER
8 1/2 LBS.



ADJUSTING HANDWHEEL
8 LBS.



WALL BRACKET
9 LBS.

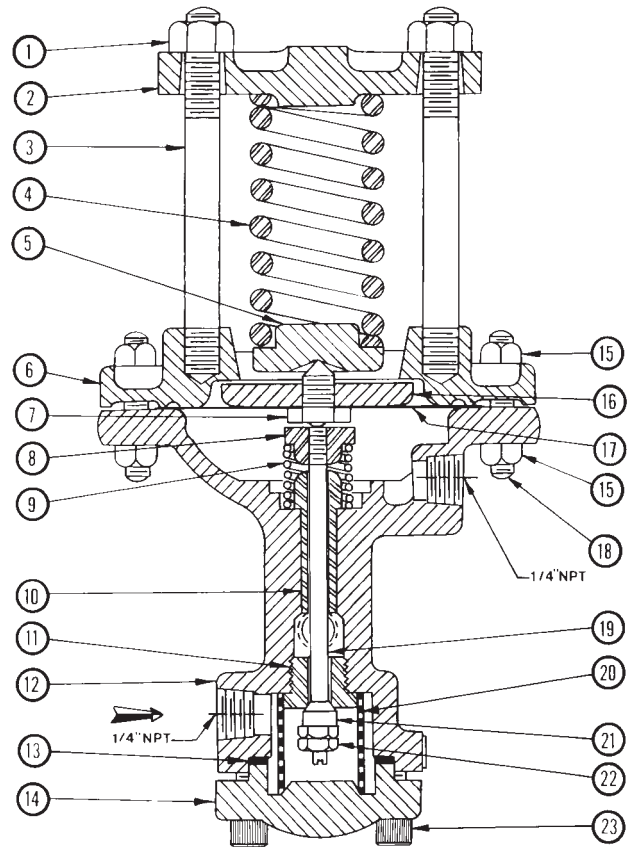


LOCKING DEVICE
7 1/2 LBS.

When ordering parts, it is essential that the pilot type, service and serial number be stated.

Part numbers listed apply to pilots with serial numbers later than AA 001. For earlier models, part numbers will be furnished on request.

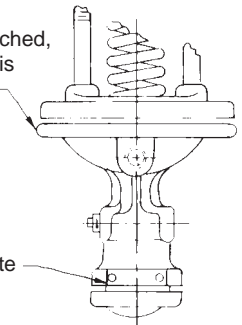
Select part by item number, but order by part number. Specify complete part number when ordering.



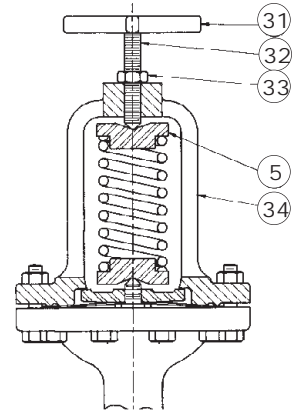
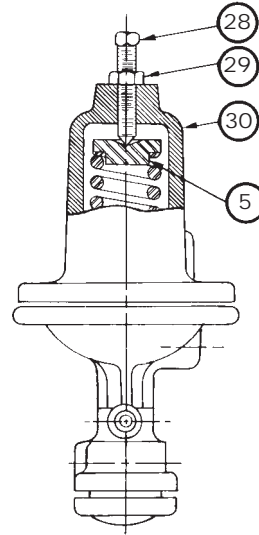
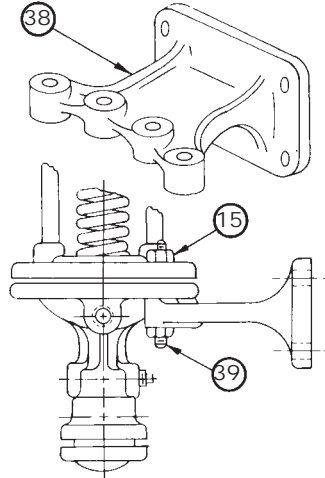
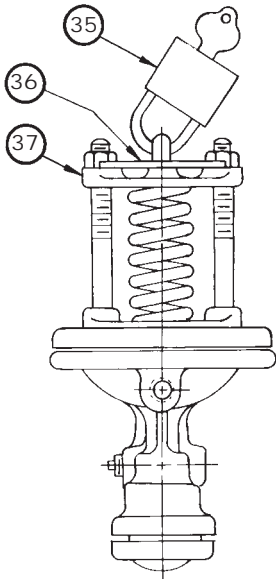
ITEM NO.	PART NAME	MATERIAL	PART NO.	REMARKS
1	Adjusting Nut	Steel	05-02874-00	
2	Spring Yoke	Iron	05-06183-00	
3	Standard	Steel	04-05219-00	
4	Adjusting Spring	Steel	See Table	
5	Spring Button	Steel	04-01040-00	
6	Cowl	Cast Iron	04-01508-00	Iron & Bronze Body
	Cowl	Steel	04-01592-00	Steel Body
7	*Diaphragm Screw	Steel	04-04822-00	
8	*Pusher Plate	Steel	04-03718-00	
9	*Valve Spring	Inconel	05-04985-00	
10	Bushing	St. Steel	04-01080-00	
11	*Seat Ring	Seco Metal	04-04057-90	
12	Body, Bushing, Plug	Cast Iron	07-03514-00	
	Body, Bushing, Plug	Bronze	08-04265-00	
	Body, Bushing, Plug	Steel	07-04267-02	
13	*Gasket	Blugard	05-02378-00	Iron & Bronze Body, Non-Asbestos
	*Gasket	Flexitalic	05-11718-00	Steel Body, Non-Asbestos
14	Blind Flange	Cast Iron	04-02151-00	
	Blind Flange	Bronze	04-02153-00	
	Blind Flange	Steel	04-11678-00	
15	Diaphragm Nut	Steel	05-02871-00	Iron & Bronze Body
	Diaphragm Nut	Steel	05-02845-00	Steel Body
16	*Pressure Plate	Steel	04-03679-00	
17	*Diaphragm	St. Steel	04-01623-00	
18	Diaphragm Bolt	Steel	05-04764-00	Iron & Bronze Body
	Diaphragm Stud	Steel	05-05490-00	Steel Body
19	*Stem	St. Steel	04-05229-00	
20	*Screen	St. Steel	04-04700-00	Steam Service
	*Screen	St. Steel	04-04701-00	Water Service
21	*Disc	Seco Metal	04-01772-90	
22	*Stem Nut	Steel	05-02888-00	Steam Service
	*Stem Nut	Brass	05-02886-00	Water Service
23	Blind Flange Bolt	Steel	05-04803-00	Iron & Bronze Body
	Blind Flange Bolt	Steel	05-11719-00	Steel Body
	Repair Kit	Cast Iron Pilot	07-04164-00	
	Repair Kit	Steel Pilot	08-10375-00	

If no plate attached, serial number is stamped here

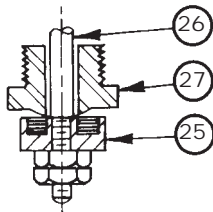
Serial Number Plate



*These parts furnished in Repair Kit



OPTIONS



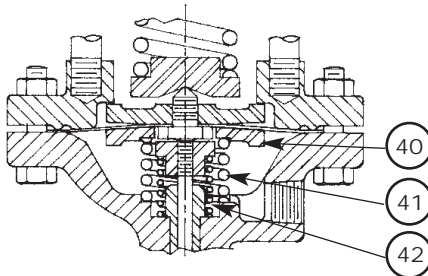
ITEM NO.	PART NAME	MATERIAL	PART NO.	REMARKS
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LOCKING DEVICE

35	Padlock	Brass	05-03204-00	
36	Lock Bar	Steel	04-00436-00	
37	Spring Yoke Ass'y	Iron	07-43507-00	

WALL BRACKET

38	Wall Bracket	Cast Iron	04-01029-00	
39	Diaphragm Bolt	Steel	05-04766-00	Iron & Bronze Body
	Diaphragm Stud	Steel	05-05462-00	Steel Body
15	Diaphragm Nut	Steel	05-02871-00	Iron & Bronze Body
	Diaphragm Nut	Steel	05-02845-00	Steel Body



COMPOSITION DISC

27	*Seat Ring	St. Steel	04-04060-00	
26	*Stem	St. Steel	04-05381-00	
25	*Disc Assembly	Brass	07-53512-00	

ENCLOSED SPRING CHAMBER

28	Adjusting Screw	Steel	05-04860-00	
29	Locknut	Steel	05-02942-00	
30	Spring Chamber	Iron	04-01393-00	
	Spring Chamber	Bronze	04-01395-00	
	Spring Chamber	Steel	04-01394-00	

ADJUSTING HANDWHEEL

31	Handwheel	Aluminum	04-12985-01	
32	Adjusting Screw	Steel	04-04752-02	
33	Locknut	Steel	05-02942-00	
34	Yoke	Cast Iron	04-06170-00	Iron & Bronze Body
	Yoke	Ductile Iron	04-06167-02	Steel Body

VACUUM SPRING ASSEMBLY

40	Floating Plate	Iron	04-03710-00	
41	Vacuum Spring	302 St. Steel	05-05055-00	
42	Valve Spring	Inconel	05-09353-00	

*These parts furnished in Repair Kit

MAINTENANCE

(Brackets refer to item number)

DISMANTLING

- 1 - Release adjusting spring (4) compression.
- 2 - Remove diaphragm nuts (15) and lift off cowl (6). Lift out diaphragm assembly (7, 16 & 17).
- 3 - Disassemble diaphragm assembly by removing diaphragm screw (7) from pressure plate (16).
- 4 - Remove blind flange bolts (23) and take off blind flange (14). Remove screen (20) and gasket (13).
- 5 - Hold the pusher plate (8) and remove stem nuts (22). Lift out stem assembly (8 & 19) and valve spring (9). The disc (21) will drop off.
- 6 - If the seat ring (11) requires replacement, remove it from pilot body with a socket wrench.

ASSEMBLY

- 1 - Reassemble the pilot in the reverse of the procedure described above.
- 2 - When replacing diaphragms, apply sealing compound (Copaltite or equal) sparingly to the shoulder of the diaphragm screw (7). For steel pilots only, apply sealing compound to the diaphragm flange of the pilot body.
- 3 - When replacing gaskets, be sure that any serrated sealing surfaces are cleaned of old gasket material.

INSPECTION

- 1 - Examine the seat and disc sealing surfaces for nicks or other signs of damage by pipeline debris. Slight imperfections may be removed by lapping the surfaces together. Otherwise, the seat and disc must be replaced.
- 2 - Examine the stem for a build-up of pipeline contaminants or erosion. Remove any build-up with a wire brush and polish with very fine crocus cloth. Work carefully to avoid bending the stem.

LAPPING OPERATIONS

Lap sparingly using 500 grit lapping compound and light pressure. Heavy grinding may cause galling, wide sealing surfaces and a grooved disc. all of which tend to produce leakage.

After the sealing surfaces are lapped in, disassemble and clean all parts.

SEAT, DISC AND STEM REPLACEMENT

- 1 - Clean the body threads of old sealing compound using a wire brush. Apply new sealing compound (Copaltite or equal) to the shoulder of seat ring. Let stand until tacky before installing in pilot body.
- 2 - Lap in stem to disc joint with lapping compound.

- 3 - Secure disc (21) to stem (19) with a stem nut (22). Insert this assembly into pilot body (omit valve spring).
- 4 - Apply lapping compound to the disc and lap in the seat to disc joint. The stem is slotted for rotation with a screwdriver.
- 5 - Screw pusher plate (8) on stem (19). Holding disc against its seat, adjust the pusher plate so that dimension C = 11/64" (See Figure 1). A gage (part number 05-02416-00) is supplied with each repair kit.
- 6 - Remove stem nut, being careful not to disturb the pusher plate adjustment, and lift stem out the top of the pilot. Grind off stem Projection B flush with upper surface of the pusher plate.

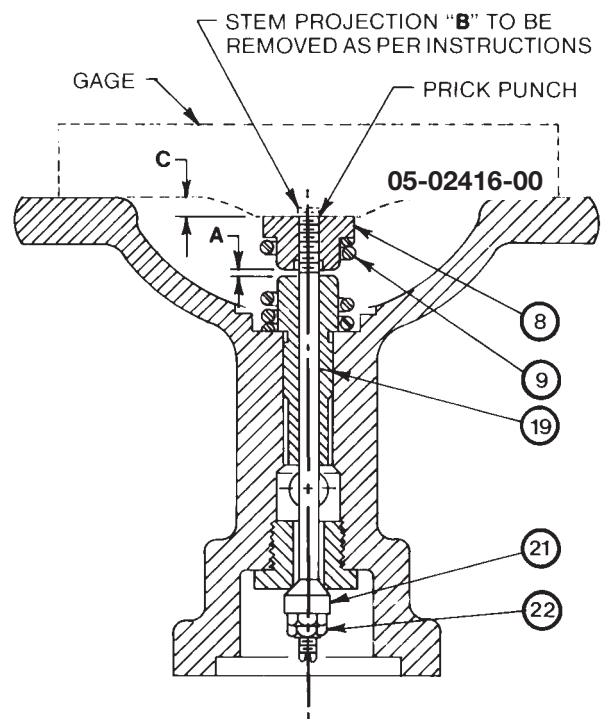


FIGURE 1 - TRAVEL SETTING

- 7 - Reinsert stem into pilot body. Install disc and stem nut. Check dimension C and, if correct, lock the adjustment by prick punching the thread at several points. Work carefully to avoid bending the stem.
- 8 - Scrape away burrs raised by prick punching. Upper surface of pusher plate must be smooth and flat.
- 9 - Check that valve travel A = 3/64". This need not be exact. Stem should move smoothly. Binding indicates a bent stem.
- 10 - Remove stem nut and disc; withdraw stem. Install stem with valve spring disc and both stem nuts in place.