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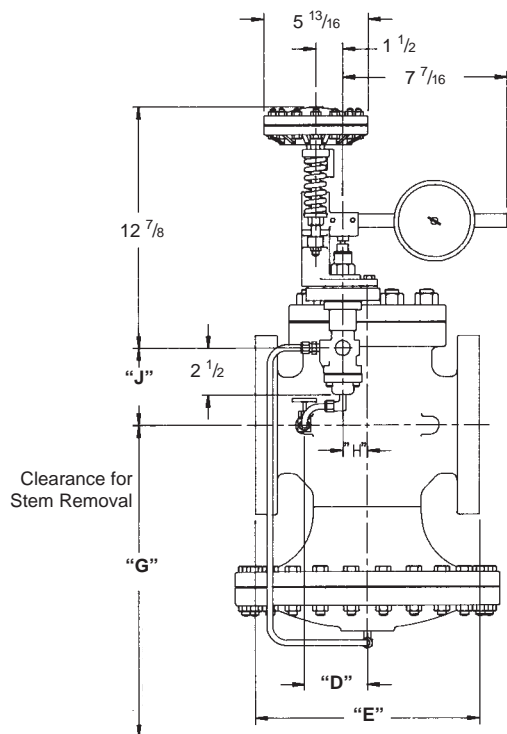
SPENCE ENGINEERING COMPANY, INC. 150 COLDENHAM ROAD, WALDEN, NY 12586-2035


Figure 1

TYPE P125 TRIP STOP PILOT

The Spence Type P125 Trip Stop Pilot is used in conjunction with a Spence Main Valve. This combination is known as a Trip Stop Valve.

The P125 is a manually resettable trip pilot that, once "tripped", will result in the closing of a Spence Main Valve; therefore preventing further overpressurization of the downstream system. The trip pilot is set at a pressure slightly greater than the desired delivery pressure. This setting procedure is completed at the factory before the pilot is shipped. When the delivery pressure rises to the set point of the P125, the pilot "trips" closed which allows the pressure in the hood of the main valve to vent downstream. This, in turn, allows the main valve spring to close the main valve which stops the steam flow downstream.

SPECIFICATIONS (for Type P125 Pilot only)

Pressure Rating	Cast Iron	250 PSIG
	Cast Steel	600 PSIG
Temperature Rating	Cast Iron	450°F
	Cast Steel	750°F
Weight	Cast Iron	26± lbs.
	Cast Steel	28± lbs.

SPRING PRESSURE RANGES

- 5 - 25 PSIG
- 10 - 50 PSIG
- 40 - 150 PSIG
- 150 - 175 PSIG

DIMENSIONS

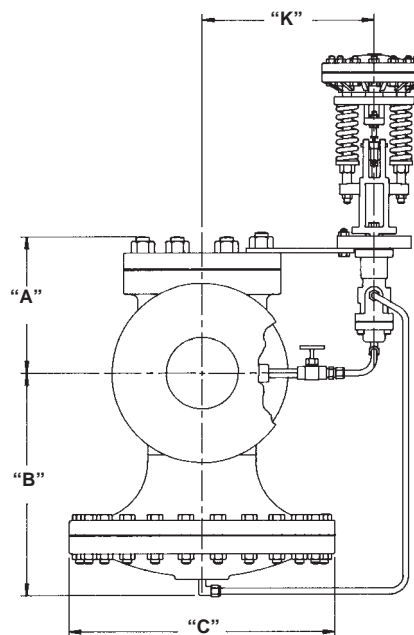


Figure 2

Size	E			A	B	C	D	G	H	J	K
	Scr.	125	250								
3/8	4 3/8			2 3/4	5 1/4	5 7/8	1 1/4	7 3/8	15/16	0	7 3/4
1/2	4 3/8			2 3/4	5 1/4	5 7/8	1 1/4	7 3/8	15/16	0	7 3/4
3/4	4 3/4			2 7/8	5 1/2	6 1/2	1 3/8	7 7/8	1 1/16	1/8	7 7/8
1	5 3/8	5 1/2	6	3 5/8	6 1/4	7	1 1/2	8 7/8	1 1/8	3/4	7 7/8
1 1/4	6 1/2	6 3/4	7 1/4	4 1/8	6 1/2	7 7/8	1 7/8	9 1/8	1 7/16	1 1/16	8 1/4
1 1/2	7 1/4	6 7/8	7 3/8	4 3/8	7 1/8	8 3/4	2	9 3/4	1 1/2	1 3/8	8 3/8
2	7 1/2	8 1/2	9	5 1/4	7 5/8	9 7/8	2 1/8	11 1/4	1 3/4	2 1/16	8 1/2
2 1/2		9 3/8	10	5 3/4	8 1/8	10 7/8	2 3/8	11 7/8	2	2 1/2	8 3/4
3		10	10 3/4	6 5/8	9 1/4	11 3/4	2 3/4	14 5/8	1 1/8	3 1/8	9 1/2
4		11 7/8	12 1/2	7 5/8	11 7/8	14 3/4	3 1/2	18 1/4	1 3/8	3 7/16	10
5		13 5/8	14 1/2	8 1/2	12 1/2	16 7/8	3 1/2	20 1/8	1 5/8	5	10 1/2
6		15 1/8	16	10	14 1/8	19 3/4	4	22 3/8	2 3/4	6 9/16	10 5/8
8		19	20	11 1/2	17 1/4	22 1/2	6 1/4	27 3/4	3 3/8	8 3/16	11 3/4
10		23 5/8	25	13 3/4	23 3/8	28	6	36 1/4	5	10 3/8	11 3/4
12		26 1/2	28	15 7/8	25 1/4	33	8 1/2	41 1/2	4 1/2	12 1/4	13 1/2

SCOPE

This form provides installation, operation and maintenance instructions for all Spence Type P125 pilots. Also included are connection diagrams and parts lists.

RETURN OF EQUIPMENT

If it becomes necessary to return equipment, please contact your local Spence Representative.

INSTALLATION

(See Fig. 3 & 4)

LOCATION

Locate the trip stop valve in a straight run of horizontal pipe, downstream of the reducing valve. Allow headroom above the trip stop main valve for access through the blind flange. Provide clearance for stem withdrawal below. **Allow headroom above the Trip Stop Pilot for installation of 1/4" control pipe.**

SIZE

Piping should be sized in a manner which will limit velocities and minimize noise. Avoid sharp turns and bull-headed tee connections in the downstream piping as they may generate excessive noise. Size piping downstream of the trip stop main valve so that excessive pressure build-up will not occur while the trip stop valve is closing.

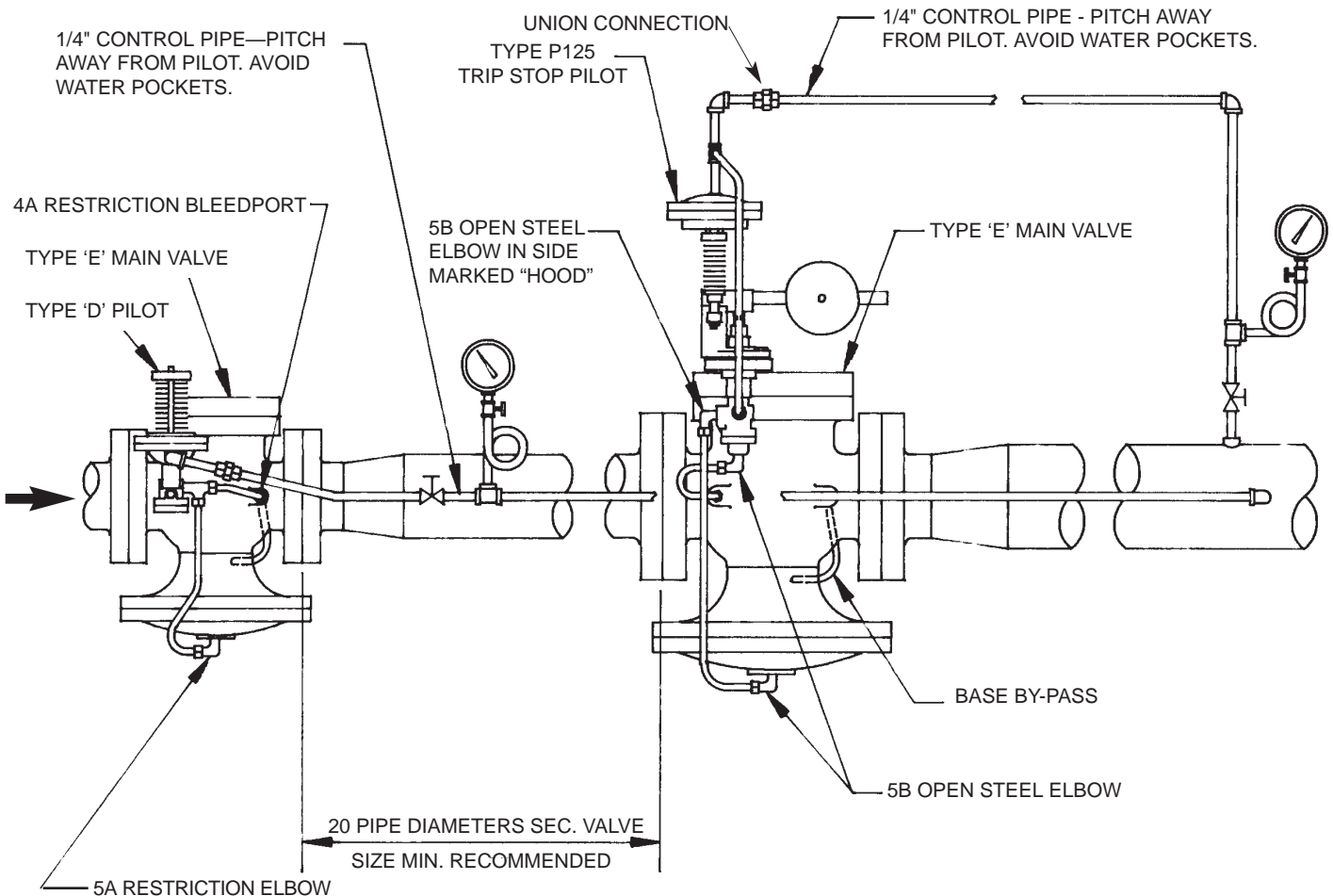
GAUGES and TRAPPING

Install initial and reduced pressure gauges to indicate performance. **Steam is a potentially dangerous fluid and should be treated with respect.** Any steam line being filled and pressurized will form condensate. This condensate can be carried by high velocity steam, causing water hammer and possible failure of system components. The steam system must be adequately trapped to remove the condensate as it forms.

TRIP STOP MAIN VALVE

Flush the piping system thoroughly to clear it of dirt and debris. Mount the trip stop main valve with the diaphragm chamber down and the arrow on the body pointing in the direction of flow. Screwed end valves should be mounted between unions.

Figure 3



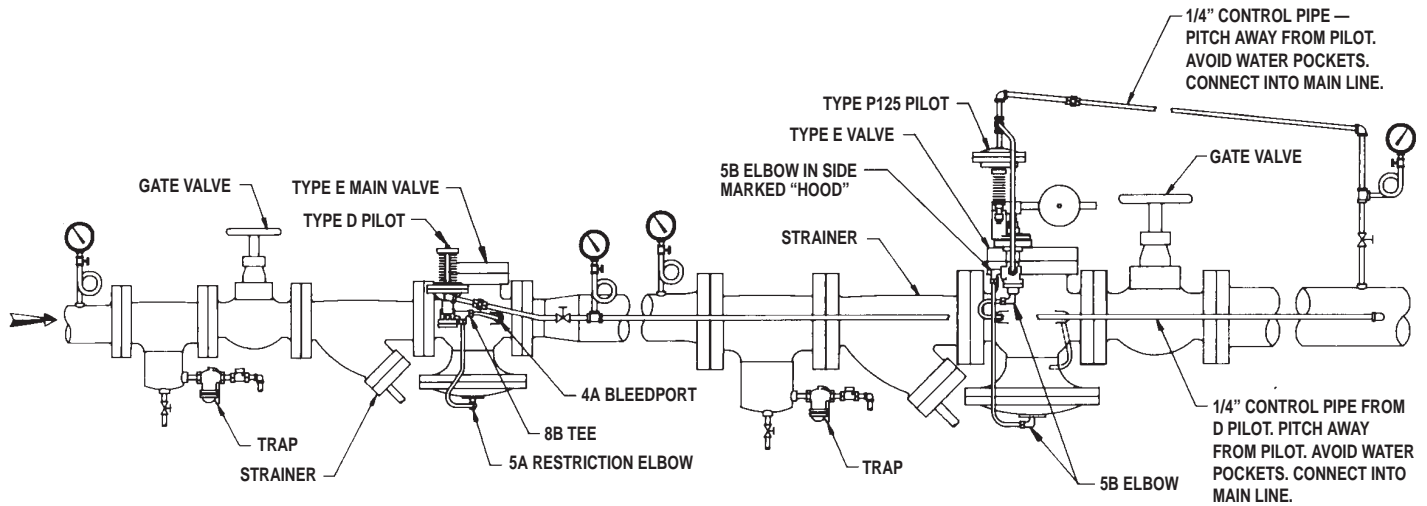


Figure 4

P125 PILOT

The P125 is a bracket mounted pilot. Never mount the P125 by the pipe nipple. Cracking of the nipple and/or pilot body can occur causing steam to blow out. Mount the bracket on the long stud extending above the trip stop main valve top flange. Bracket should be perpendicular to pipe run. Tubing is supplied pre-bent when the P125 pilot and the trip stop main valve are ordered together. No further bending should be needed.

Connect the 1/4" NPT pipe tee installed on top of the trip stop pilot to the reduced pressure control point using 1/4" pipe. This is the P125 sensing line. Pitch sensing line to avoid water pockets. Then connect it to a dedicated connection on the top of the steam pipe. Connect the vent line from the tee installed on top of the pilot to the pilot body. 5B open elbow is used at the body and 4B open straight coupling is used at the tee.

Connect the steam supply line from the upstream connection on the trip stop valve to the inlet connection on the bottom flange of the P125 Trip Stop Pilot. This line must have the needle valve installed with flow direction arrow away from the main valve. A 4B open straight coupling is used at the trip stop main valve and a 5B open elbow is used at the pilot.

Connect the pilot outlet to the trip stop main valve hood. **For Type E Main Valves without Condensation Chamber only:** See Figure 5. Screw 5B open elbow into tapped hole in bottom of diaphragm chamber. Connect

this fitting with provided tubing to the 5B open elbow stamped "HOOD" in the P125 Pilot. Install base bypass by screwing 5B open elbow into tapped hole in upper diaphragm chamber and 5B open elbow into tapped hole on outlet side of trip stop main valve.

For Type E2, E5, 10" E or 12" E Main Valves only: See Figure 6. Install the condensation chamber using the long bolt provided. Install 5B open elbows in bottoms of condensation chamber and diaphragm chamber. Connect these fittings together with tubing provided. Fill condensation chamber with water. Install 5B open elbow in top of condensation chamber and connect to the 5B elbow stamped "HOOD" in the P125 Trip Stop Pilot with tubing provided. Install base bypass by screwing 5B open elbow into tapped hole in upper diaphragm chamber and 5B open elbow into tapped hole on outlet side of trip stop main valve.

INSULATION

Insulation may only be applied to the globe and flanges of the trip stop main valve.

ADJUSTING PILOT TRIP POINT

The P125 Trip Stop Pilot is factory set to trip at the specified pressure. Field adjustment of the trip set pressure should not be necessary and is not recommended. If the P125 Trip Stop Pilot fails to trip at the desired pressure, refer to the section *Troubleshooting* or consult your Spence Representative.

OPERATION

During normal operation, the P125 Trip Stop Pilot is mechanically held open (latched). Steam supply pressure is piped to the diaphragm of the trip stop main valve (Spence E, E2, E5), holding it in the open position. Reduced pressure is then controlled by the pressure reducing valve. If the reduced pressure increases to the set pressure of the P125 Trip Stop Pilot, two things happen. The weighted lever is unlatched, shutting off the

steam supply to the trip stop main valve diaphragm chamber and the actuating steam in the diaphragm chamber of the trip stop main valve is vented downstream. Venting of the actuating steam allows the spring in the trip stop main valve to shut the valve. The P125 Pilot must be manually reset after being tripped. The reduced steam pressure must be less than the P125 Pilot's set pressure for the P125 to remain reset.

Figure 5

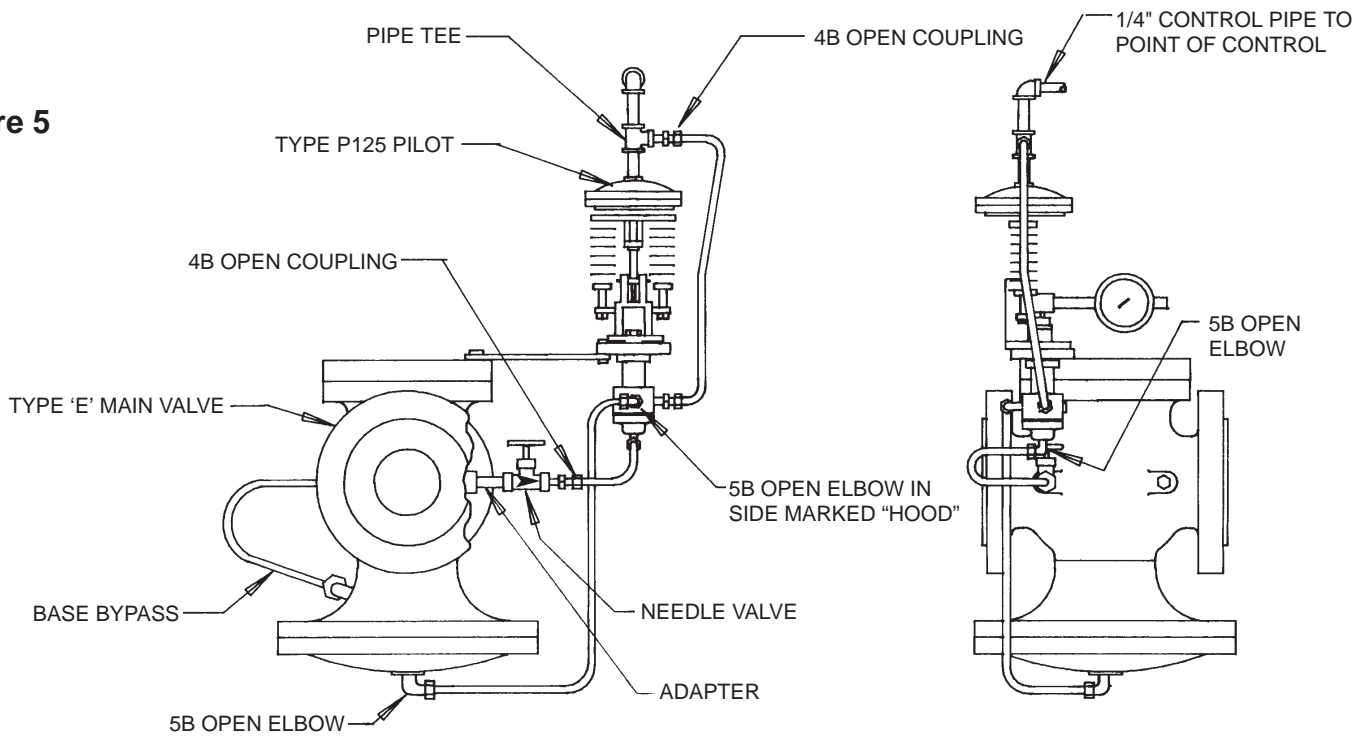
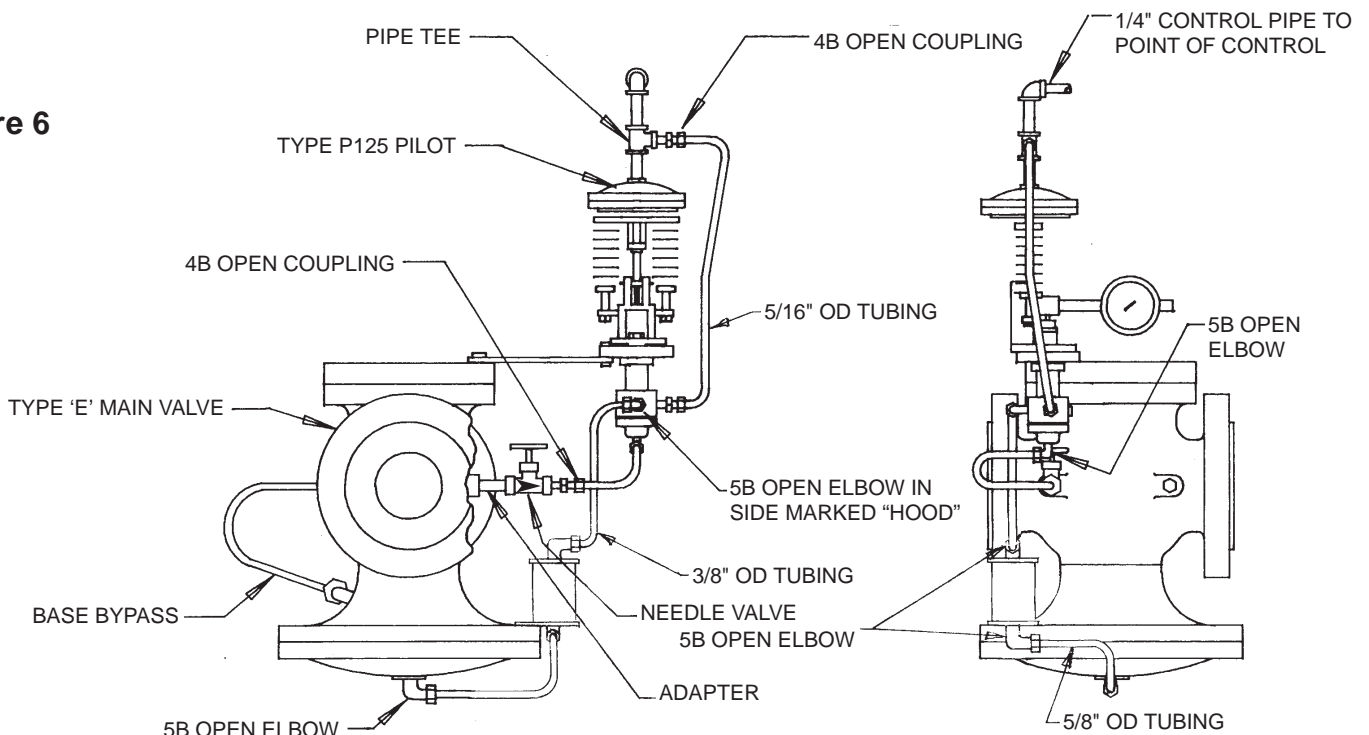


Figure 6



STARTUP

(See Fig. 4)

THE TRIP STOP STATION

CAUTION: For a non-pressurized system, there must be no load! Close *all* stop valves and the needle valve. Remove any compression on the D Pilot spring and latch the P125 Pilot in the open position. Crack open the stop valve and blow down the strainer upstream of the pressure reducing main valve. Open the 1/4" stop valve on the D Pilot sensing line. If the system is pressurized downstream, allow time for the pressure to feed back to the D Pilot and normalize between the pressure reducing main valve and the trip stop main valve. Open blowdown on the strainer between the pressure reducing main valve and the trip stop main valve. If the system is pressurized downstream, note flow through the blowdown. Apply compression to D Pilot spring only until pressure reducing valve opens (audible flow) or an increase in flow is noticed through the strainer blowdown. Allow time to blowdown strainer. Open 1/4" stop valve on P125 Pilot sensing line. Open needle valve on P125 Pilot. Crack open stop valve downstream of trip stop main valve.

For a Non-Pressurized System

With no load on the system, incrementally compress the D Pilot spring until desired downstream pressure is obtained. Alternately and incrementally open the upstream and downstream stop valves. The system is now ready for a load.

For a Pressurized System

Alternately and incrementally open the upstream and downstream stop valves. Make final adjustments on D Pilot spring to obtain desired set pressure.

RESTARTING EP125 AFTER PILOT HAS TRIPPED

After having determined and corrected the cause of the overpressurization, if **any** setting has been changed, repeat startup procedure. Otherwise, Close P125 needle valve. Close shut off valve downstream of the trip stop main valve. Re-latch the P125. Open P125 needle valve. Incrementally open downstream shutoff valve.

TROUBLESHOOTING

FAILURE TO OPEN

Check for positive inlet pressure. Check to see if Pressure Reducing Valve is open by opening blow down valve upstream of the trip stop main valve. If P125 Pilot is not in lever latched position, close needle valve, latch lever and repeat startup procedure. If the P125 Needle Valve is closed, check the needle valve and repeat startup procedure. Loosen 5B open elbow at outlet of P125. If steam comes out, you have assured that steam is going through the pilot.

FAILURE TO TRIP

Check the set pressure to see that it is not higher than desired. If so, consult your Spence Representative. Make certain the weight is not missing from the lever

and replace if necessary. Make sure there are no foreign objects restricting the lever's movement and remove any obstructions. Check the lever pin for corrosion and remove, clean and lubricate if necessary. Correct the cause of the corrosion.

PILOT TRIPS AND MAIN VALVE DOESN'T SHUT

Check P125 Pilot sensing line shut off valve. Open it if it is closed. Carefully remove bend and 5B elbow from lower diaphragm chamber of trip stop main valve. If the trip stop main valve closes, check to see if the vent line is plugged or incorrectly installed. If the trip stop main valve does not close, it is wedged open. In this case, check for foreign object between seat and disc of trip stop main valve. All joints must be inspected periodically for leakage. Keep bolts and fittings tight. Never allow a leak to persist.

MAINTENANCE

Under normal conditions, complete dismantling of Trip Stop Valves is not recommended. If it must be dismantled, contact your local Spence Representative.

The P125 Pilot must be periodically inspected for trip arc

clearance in the lever area. The latch pin, lever pin and associated guides must be inspected for accumulated dirt or corrosion. Lubricate guide/pin surfaces with a light grade machine oil.

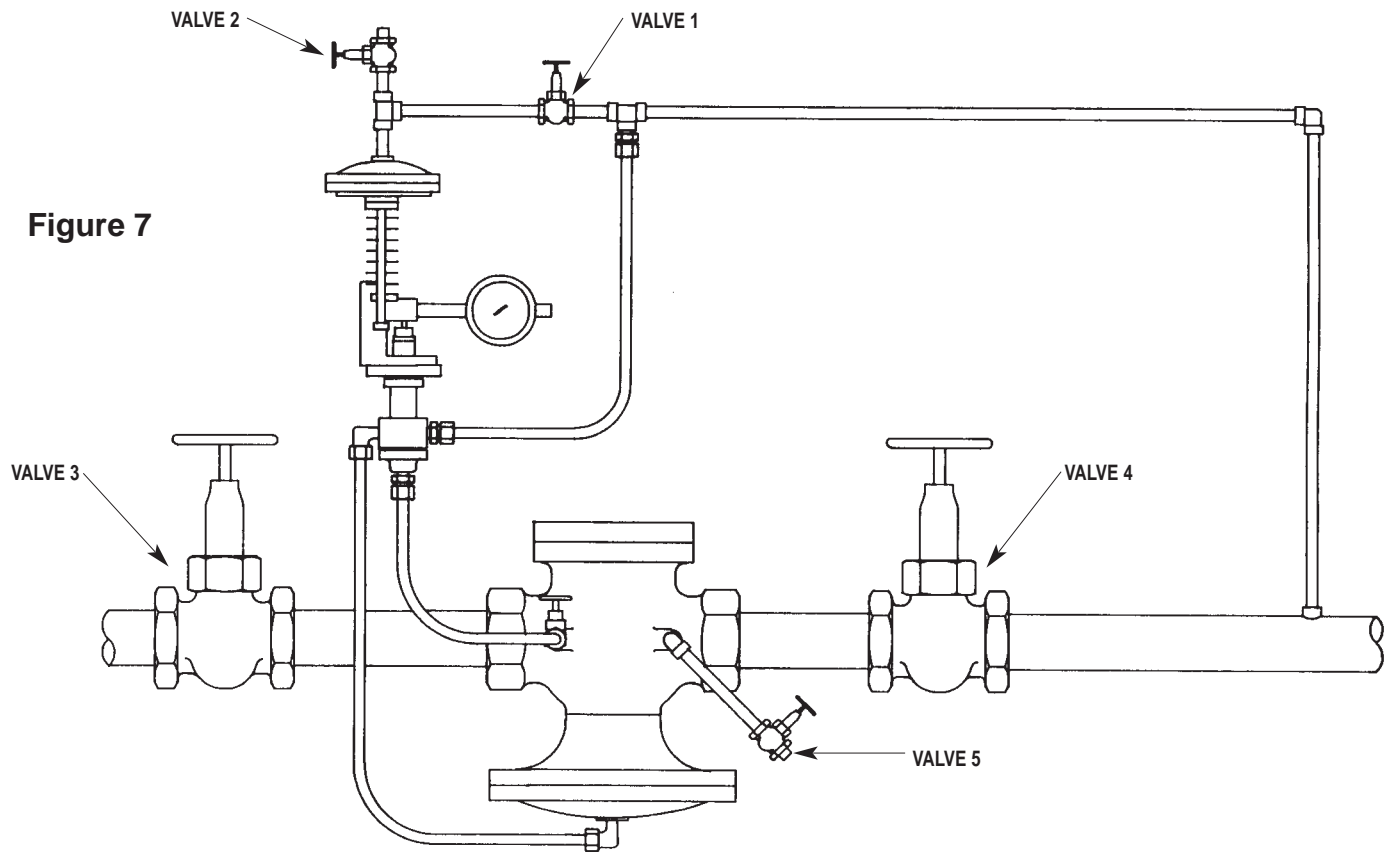


Figure 7

Figure 4

TESTING PROCEDURE

The purpose of the testing procedure is to confirm that:

- The control pipe is obstruction free.
- The pilot delatches.
- The pilot closes and shuts off.
- The trip stop main valve closes and shuts off.

The required installation is shown in Figure 7. The tests are conducted with the system pressurized and in running mode. Observe precautions necessary for safety and personal protection.

To Check Control Pipe for Obstructions:

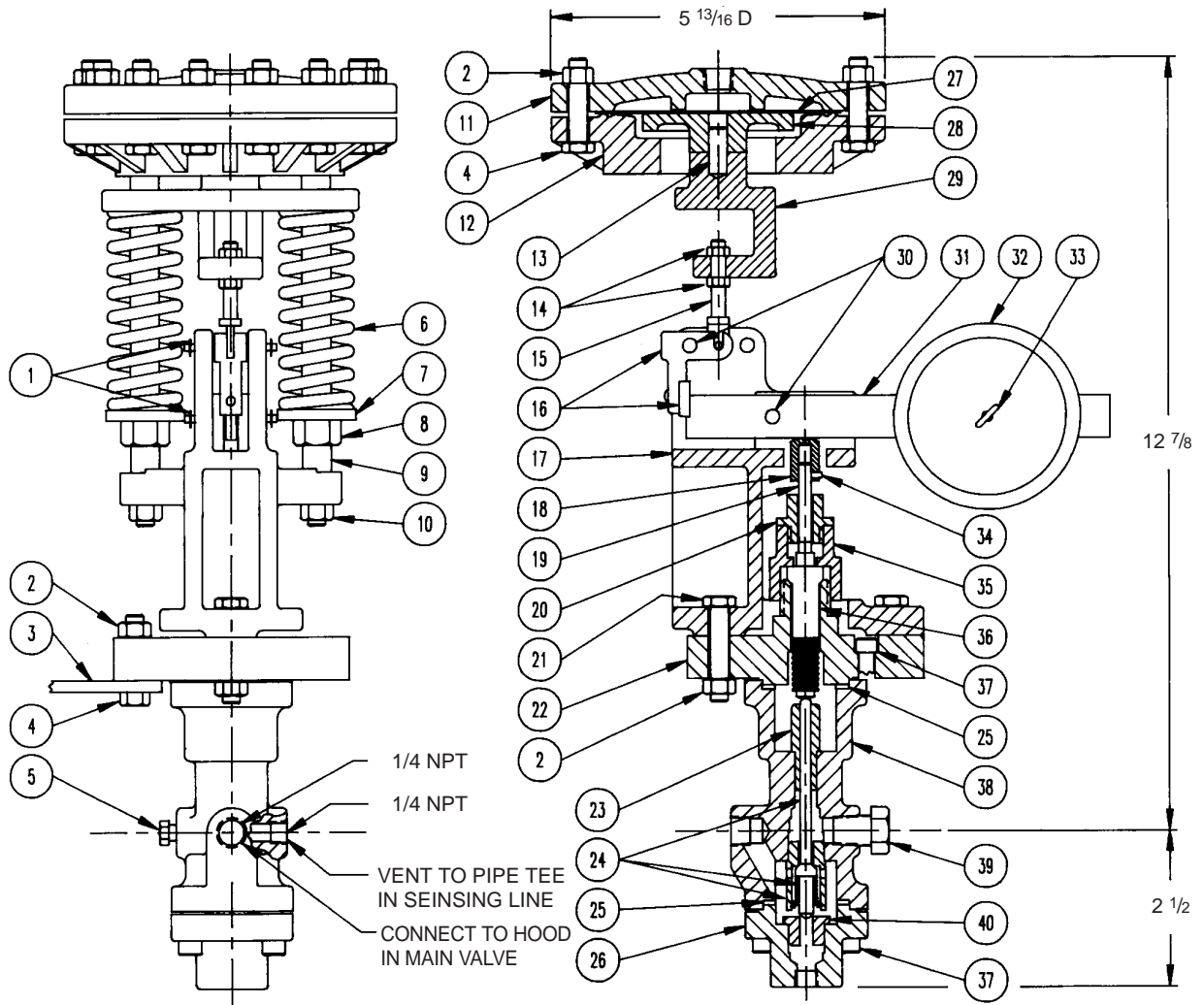
- Crack valve 2. Steam should blow through. If there is no steam flow, close valve 2 and clear the obstructed control pipe.
- Close valve 1. Steam flow through valve 2 should cease.
- Close valve 2 and open valve 1.

To Check Trip Stop Pilot and Main Valves:

- Isolate main valve from downstream pressure by closing valve 4. Valve 3 is open.
- Isolate pilot from downstream pressure by closing valve 1.
- Vent pilot by opening valve 2.

- Pressurize pilot diaphragm by connecting an air pressure source to valve 2.
- Trip pilot valve by gradually increasing the air pressure to the pilot diaphragm. Valve should trip when air pressure reaches set pressure. Do not overpressurize.
- Vent main valve body by cracking valve 5.
- Observe valve 5 discharge. No steam flow should be seen. Wispy flash steam from the base cavity may be present. Blowing steam indicates main valve is not closed or downstream pressure, if present, may be leaking through shutoff valve 4.
- Close valve 5.
- Close valve 2.
- Open valve 1.
- Open needle valve and relatch lever on P125 Pilot.
- Repeat startup procedure for a pressurized system.

Figure 8

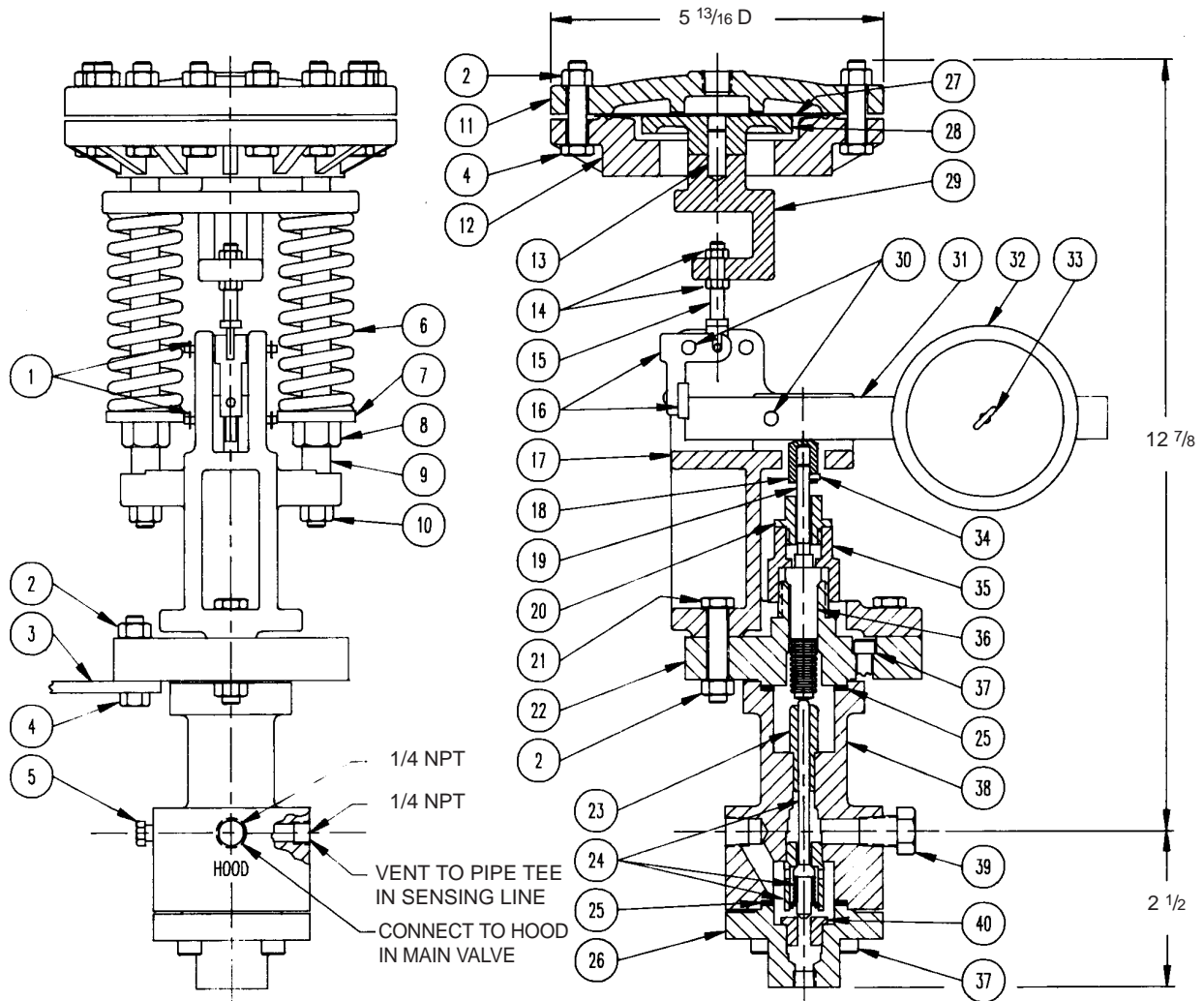


CAST IRON PARTS LIST

#	NAME	DRAWING #	QTY	MATERIAL
1	Cotter Pin	5-03265-0	4	Steel
2	Hex Nut	5-02872-0	16	Steel
3	Mounting Bracket	Varies	1	Steel
4	Cap Screw	5-04771-0	14	Steel
5	Pipe Plug 1/4 NPT	4-03769-0	1	Steel
6	Spring	Varies	2	OTS
7	Spring Button	4-01053-0	2	Ledloy
8	Hex Nut	5-02877-0	2	Steel
9	Standard	4-05201-0	2	Ledfin
10	Hex Nut	5-02874-0	2	Steel
11	Hood	4-02640-0	1	CI
12	Cowl	4-01513-0	1	CI
13	Guide Pin	4-03240-0	1	Ledloy
14	Hex Nut	5-03014-0	2	Steel
15	Trip Latch Stud Asm.	7-42861-0	1	Steel
16	Trip Latch Asm.	7-40549-0	1	Steel
17	Base Bracket	4-01001-0	1	CI
18	Stem Button	4-01064-0	1	BRS
19	Adjusting Stem	4-05402-0	1	Ledloy
20	Stop Nut	4-02980-0	1	BRS

#	NAME	DRAWING #	QTY	MATERIAL
21	Cap Screw	5-04772-0	2	Steel
22	Bonnet	4-13944-0	1	CI
23	Stem Bushing	4-11094-0	1	203PB
24	Disc & Seat Asm.	@-08586-2	1	St. Steel
25	Gasket	5-11718-0	1	
26	Bottom Flange	4-14759-0	1	C1018
27	Diaphragm	4-01629-1	Varies	301 SS
28	Pressure Plate	4-03676-0	1	CI
29	Spring Yoke	4-06178-0	1	CI
30	Pivot Pin	4-03215-0	2	416 SS
31	Trip Lever	4-13945-0	1	17-4 PH
32	Weight	4-06135-0	1	CI
33	Thumb Screw	5-04880-0	1	Steel
34	Set Screw	5-04874-0	1	Steel
35	Bellows Nut	4-02911-0	1	BRS
36	Bellows	4-00022-0	1	Brs
37	Cap Screw	5-04803-0	8	Steel
38	Body	4-11095-1	1	CI
39	Pipe Plug 1/4 NPT	4-03772-0	1	Steel
40	Seat Ring	4-11099-0	1	420 FH

Figure 9



CAST STEEL PARTS LIST

#	NAME	DRAWING #	QTY	MATERIAL
1	Cotter Pin	5-03265-0	4	Steel
2	Hex Nut	5-02872-0	16	Steel
3	Mounting Bracket	Varies	1	Steel
4	Cap Screw	5-04771-0	14	Steel
5	Pipe Plug 1/4 NPT	4-03769-0	1	Steel
6	Spring	Varies	2	OTS
7	Spring Button	4-01053-0	2	Ledloy
8	Hex Nut	5-02877-0	2	Steel
9	Standard	4-05201-0	2	Ledfin
10	Hex Nut	5-02874-0	2	Steel
11	Hood	4-02640-0	1	CI
12	Cowl	4-01513-0	1	CI
13	Guide Pin	4-03240-0	1	Ledloy
14	Hex Nut	5-03014-0	2	Steel
15	Trip Latch Stud Asm.	7-42861-0	1	Steel
16	Trip Latch Asm.	7-40549-0	1	Steel
17	Base Bracket	4-01001-0	1	CI
18	Stem Button	4-01064-0	1	BRS
19	Adjusting Stem	4-05402-0	1	Ledloy
20	Stop Nut	4-02980-0	1	BRS

#	NAME	DRAWING #	QTY	MATERIAL
21	Cap Screw	5-04772-0	2	Steel
22	Bonnet	4-13943-0	1	Steel
23	Stem Bushing	4-11094-0	1	203PB
24	Disc & Seat Asm.	@-08586-2	1	St. Steel
25	Gasket	5-11718-0	1	
26	Bottom Flange	4-14066-0	1	Steel
27	Diaphragm	4-01629-1	Varies	301 SS
28	Pressure Plate	4-03676-0	1	CI
29	Spring Yoke	4-06178-0	1	CI
30	Pivot Pin	4-03215-0	2	416 SS
31	Trip Lever	4-13945-0	1	17-4 PH
32	Weight	4-06135-0	1	CI
33	Thumb Screw	5-04880-0	1	Steel
34	Set Screw	5-04874-0	1	Steel
35	Bellows Nut	4-02911-0	1	BRS
36	Bellows	4-00022-0	1	Brs
37	Cap Screw	5-11719-0	8	Steel
38	Body	4-14027-0	1	Steel
39	Pipe Plug 1/4 NPT	4-03772-0	1	Steel
40	Seat Ring	4-11099-0	1	420 FH