January 2016

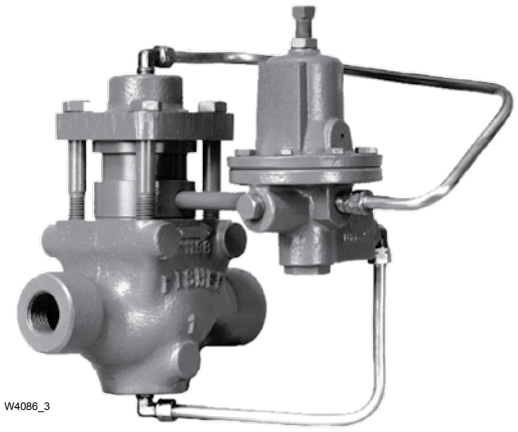
Type 92S Pilot-Operated Steam Regulator

Introduction

The Type 92S steam regulator is piston actuated for high cycle steam service which includes a Type 6492L, 6492H or 6492HT pilot (see Figure 1). These pilots have bellows sealed stems to eliminate stem guide friction. The valve and pilot use lapped seating surfaces that have been proven to minimize seat leakage.

Features

- **Good Shutoff for Low Downstream Build-up—** Type 92S main valve and Types 6492H, 6492L and 6492HT pilots are machine-lapped seating surfaces that have been time-proven to minimize seat leakage when the downstream demand is zero and the regulator is shutoff.
- **Resistance to Piping Stresses—**Steel constructions are available to help resist the piping stresses commonly encountered in steam applications.
- **Ease of Installation—**Compact construction reduces installation space requirements. Supply of pressure to the pilot is supplied from the inlet side of the main valve through factory piped tubing; with a standard pilot, this means no separate pilot supply pressure is required.
- **Increased Sensitivity to Downstream Pressure Changes—**Friction-reducing bellows seal on the pilot stem and large pilot diaphragm areas yield good sensitivity.
- **Ease of Pilot Maintenance—**Pilot valve plug and seat can be removed for inspection of maintenance without disassembling piping connections and without removing the diaphragm. Pilot inlet screen (Figure 2) is easily removed with the seating parts for inspection and cleaning. Diaphragm can be removed without disturbing the seating parts.
- **Noise Reduction Capability Without Decrease in Capacity—**A noise attenuation trim is available for use with NPS 2 / DN 50 and larger main valve sizes to provide an economical yet full-flow means for the reduction of noise from high velocity steam flow. Further noise reduction of the system can be achieved by the use of a heavier piping schedule and/or thermal insulation of the attached piping.



1 NPT STEEL
MAIN VALVE WITH TYPE 6492H OR 6492HT PILOT

NPS 3 / DN 80 FLANGED CAST IRON
MAIN VALVE WITH TYPE 6492L PILOT

Figure 1.*Type 92S Pilot-Operated Steam Regulator*

D100621X012

Specifications

This section lists the specifications for the Type 92S regulator. Factory specifications are stamped on the nameplate fastened on the regulator at the factory.

Main Valve Body Sizes and End Connection Styles

BODY SIZES	END CONNECTION STYLES AND RATINGS	
	Cast Iron Body	Steel or Stainless Steel Body
1, 1-1/2 and 2	NPT	NPT or PN 16/25/40
NPS 1, 1-1/2, 2, 2-1/2, 3 and 4 / DN 25, 40, 50, 65, 80 and 100	CL125 FF or CL250 RF	CL150 RF, CL300 RF, CL600 RF or PN 16/25/40
NPS 6 x 4 / DN 150 x 100(2)	Not available	CL300 RF, CL600 RF or PN 16/25-40/64/100

Maximum Inlet and Pilot Supply Pressure(1)

Cast Iron Main Valve and Pilot: 250 psig / 17.2 bar or body rating limit, whichever is lower
Steel Main Valve and Pilot: 300 psig / 20.7 bar or body rating limit, whichever is lower

Minimum and Maximum Differential Pressures(1)

BODY SIZES, NPS / DN	MINIMUM DIFFERENTIAL PRESSURE	MAXIMUM DIFFERENTIAL PRESSURE
1, 1-1/2 and 2 / 25, 40 and 50	15 psi / 1.0 bar	200 psi / 13.8 bar or body rating limit, whichever is lower
2-1/2, 3, 4 and 6 x 4 / 65, 80,100 and 150 x 100(2)	20 psi / 1.4 bar	175 psi / 12.1 bar or body rating limit, whichever is lower

Outlet (Control) Pressure Ranges

See Table 1

Maximum Outlet Pressures(1)

See Table 2

Maximum Allowable Loading Pressure for Pilot with Tapped Spring Case

Combination of pilot control spring setting and spring case loading pressure cannot exceed 150 psig / 10.3 bar for Type 6492H pilot or 25 psig / 1.7 bar for Type 6492L pilot and 250 psig / 17.2 bar for Type 6492HT

Droop

See Table 5 and Figure 8

Typical Regulating Capacities

See Table 5 and Capacity Information section

Main Valve Orifice Sizes and Flow Coefficients

See Table 3

Noise Information

See Table 6 and Noise Abatement Information section

Construction Materials

Main Valve

Body and Body Flange: Cast iron (NPS 1 through 4 / DN 25 through 100 sizes only), Steel or CF8M Stainless steel (all sizes)
Valve Plug: Heat-treated 17-4PH Stainless steel
Cage: Cast iron or Stainless steel
Spiral Wound Gasket: 316L Stainless steel and graphite
Spring, Lower Stem, Retaining Ring, Bolting and Cylinder Spacer: Steel or Plated steel
Body and Cylinder Gaskets: Copper
Pistons, Seat Ring and Cylinders: Heat-treated 416 Stainless steel
Piston Ring(s): Polytetrafluoroethylene (PTFE)
Piston Ring Retainer(s): 302 Stainless steel
Noise Attenuation Trim (If Used): Stainless steel
Stem Seal: PTFE/glass

Pilot

Body and Spring Case: Cast iron, Steel and Stainless steel
Seat Ring and Stem: Heat-treated 416 Stainless steel
Bellows and Bellows Retainer: Brass
Plug, Plug Guide, Plug Spring, Diaphragms, Bleed Restriction and Inlet Screen: Stainless steel
Diaphragm Gasket: Composition or Flexible Graphite
Control Spring, Upper Spring Seat, Adjusting Screw, Bolting, Pipe Plug, Reducing Bushing and (If Used) Diaphragm Plate: Steel
Fittings: Brass
Tubing: Copper
Pipe Nipple: Steel

1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitations, must not be exceeded.
2. The two-number designation indicates line size by trim size.

- continued -

Specifications (continued)

Maximum Temperature Capabilities(1)

Cast Iron Main Valve and Pilot: 406°F / 208°C
Steel Main Valve and Pilot: 500°F / 260°C
High Temperature Optional Steel and Stainless steel Main Valve and Pilot: 650°F / 343°C

Downstream Control Line Connection

NPS 1, 1-1/2 and 2 / DN 25, 40 and 50 Main Valve Sizes: 1/4 NPT in main valve cylinder spacer
NPS 2-1/2, 3, 4 and 6 x 4 / DN 65, 80, 100 and 150 x 100(2) Main Valve Sizes: 1/4 NPT in pilot body

Pilot Spring Case Vent

Standard: 1/8 in. / 3.18 mm drilled hole
Optional: 1/4 NPT tapping for pressure loading or on-off service

Pressure Registration

External through downstream control line

Approximate Weights

BODY SIZE		END CONNECTION STYLE		APPROXIMATE WEIGHTS	
NPS	DN			lbs	kg
1	25	NPT or flanged		32	15
1-1/2	40	NPT or flanged		44	20
2	50	NPT Flanged		55 67	25 30
2-1/2	65	Flanged		90	41
3	80	Flanged		115	52
4	100	Flanged		165	75
6 x 4(2)	150 x 100(2)	Flanged	CL300	335	152
			CL600	435	197

1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitations, must not be exceeded.
2. The two-number designation indicates line size by trim size.

Table 1. *Outlet (Control) Pressure Ranges*

PILOT TYPE	OUTLET PRESSURE RANGES		PART NUMBER	COLOR CODE	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
	psig	bar			In.	mm	In.	mm
6492L	2 to 6 5 to 15 13 to 25	0.14 to 0.41 0.35 to 1.0 0.90 to 1.7	1E395627022 1D7455T0012 1E395727192	Yellow Green Red	0.207 0.234 0.283	5.26 5.94 7.19	2.50 2.62 2.44	63.5 66.6 62.0
6492H	10 to 30 25 to 75 70 to 150	0.69 to 2.1 1.7 to 5.2 4.8 to 10.3	1E395627022 1D7455T0012 1E395727192	Yellow Green Red	0.207 0.234 0.283	5.26 5.94 7.19	2.50 2.62 2.44	63.5 66.6 62.0
6492HT	15 to 100 80 to 250	1.0 to 6.9 5.5 to 17.2	14B9943X012 14B9942X012	Unpainted	0.282 0.375	7.16 9.53	2.50 2.50	63.5 63.5

Table 2. *Maximum Inlet and Outlet Pressures*

CONSTRUCTION	MAXIMUM ALLOWABLE INLET PRESSURE				MAXIMUM OPERATING OUTLET PRESSURE		MAXIMUM EMERGENCY OUTLET PRESSURE	
	Cast Iron		Steel and Stainless Steel				Cast Iron Main Valve and Pilot Body	Steel or Stainless Steel Main Valve and Pilot Body
	psig	bar	psig	bar	psig	bar		
With Type 6492HT pilot	- - - -		300	20.7	250	17.2	- - - -	300 psig / 20.7 bar or main valve body rating limit, whichever is lower
With Type 6492H pilot	250	17.2			150	10.3	250 psig / 17.2 bar or main valve body rating limit, whichever is lower	300 psig / 20.7 bar or main valve body rating limit, whichever is lower
With Type 6492L pilot					25	1.7	100 psig / 6.9 bar	100 psig / 6.9 bar

Table 3. *Flow and Sizing Coefficients*[1]

BODY SIZE		ORIFICE SIZE		REGULATING C_s	WIDE-OPEN C_s FOR RELIEF SIZING	C_1	K_m	IEC SIZE COEFFICIENTS		
NPS	DN	In.	mm					X_T	F_D	F_L
1	25	7/8	22	16	17.5	34	0.62	0.73	0.51	0.79
1-1/2	40	1-1/8	29	30	33				0.47	
2	50	1-29/64	37	48	52				0.48	
2-1/2	65	1-5/8	41	74	78		0.71		0.48	0.84
3	80	2-1/16	52	100	110				0.47	
4	100	2-3/8	60	140	145				0.46	
6 x 4	150 x 100	2-3/8	60	150	155				0.46	

1. $C_v = C_s \times 20 \div C_1$

- **Lapped Seats for Tight Shutoff—**The valve and pilot use lapped seating surfaces that have been proven to minimize seat leakage.
- **Application Flexibility—**Pilot with optional tapped spring case is available for use either with an air loading regulator for remote adjustment of outlet pressure setting or, when all compression is removed from the pilot control spring, with a solenoid or switching valve for on-off service.

Principle of Operation

Pilot supply pressure is piped from the main valve inlet (Figure 2) to the pilot inlet connection. Downstream pressure registers on the main valve pistons through the downstream control line and then on the pilot diaphragm.

When increased downstream demand lowers the downstream pressure to a value below the setting of the pilot control spring, this forces the pilot valve plug to open increasing the loading pressure on the main valve pistons. At the same time, the increased demand lowers the downstream pressure on the main valve piston(s). This opens the main valve plug, increasing flow to the downstream system to satisfy the increased demand and to restore downstream pressure to the setting of the pilot control spring.

Decreased downstream demand increases the downstream pressure registered on the pilot diaphragm. The increased pressure overcomes the force of the pilot control spring and allows the pilot valve plug spring to close the valve plug. As the pilot valve plug closes, excess loading pressure bleeds to the downstream system through the pilot bleed restriction. At the same time, decreased downstream demand increases the downstream pressure registered on the main valve piston(s). This allows the main valve spring to close the main valve plug, reducing flow to the downstream system in response to the decreased demand.

With a pilot for pressure-loaded service (Figure 7), the operation is the same as for a standard pilot except that the pilot control spring force on the pilot valve plug is aided by pneumatic pressure from the loading device. With a pilot for on-off service, the only force acting on top of the pilot diaphragm is pneumatic pressure provided by the solenoid or switching valve.

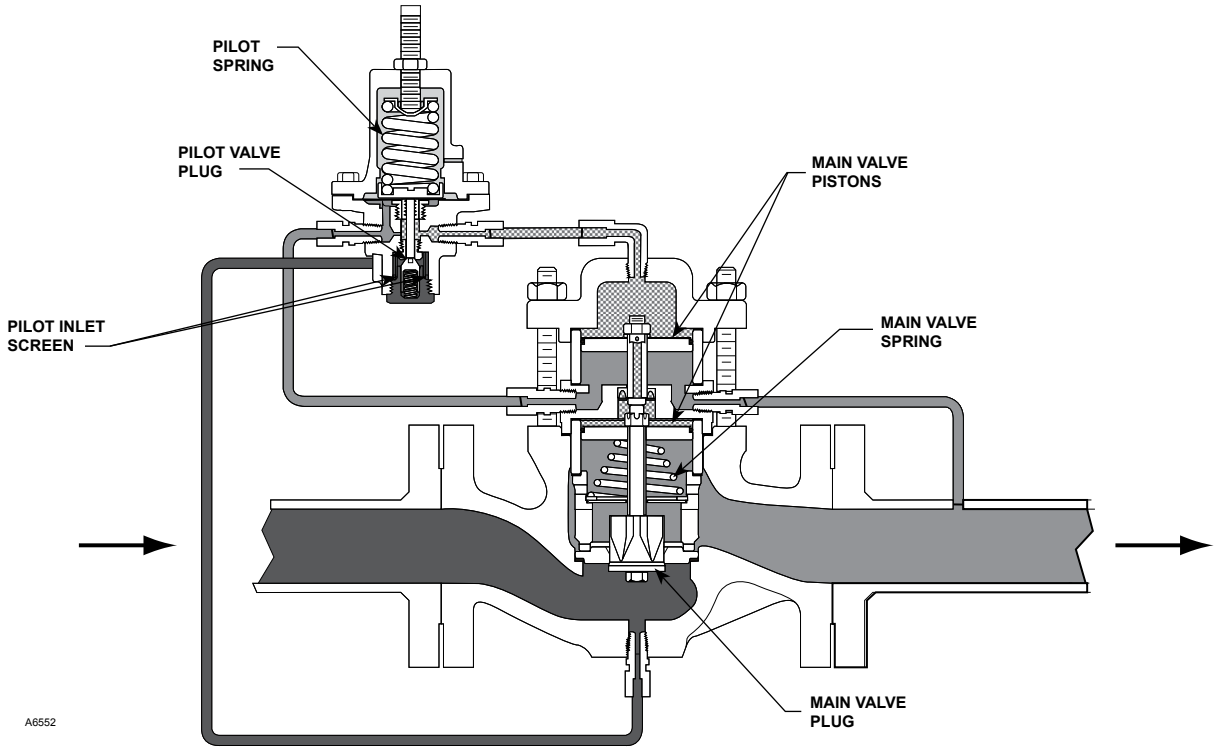
Installation

The Type 92S regulator should be installed and used in accordance with governmental codes and regulations. Although this regulator minimizes leakage under shutoff conditions, downstream overpressure protection must be provided by the user. The pressure and temperature limitations in the Specifications section must be observed and the downstream equipment protected.

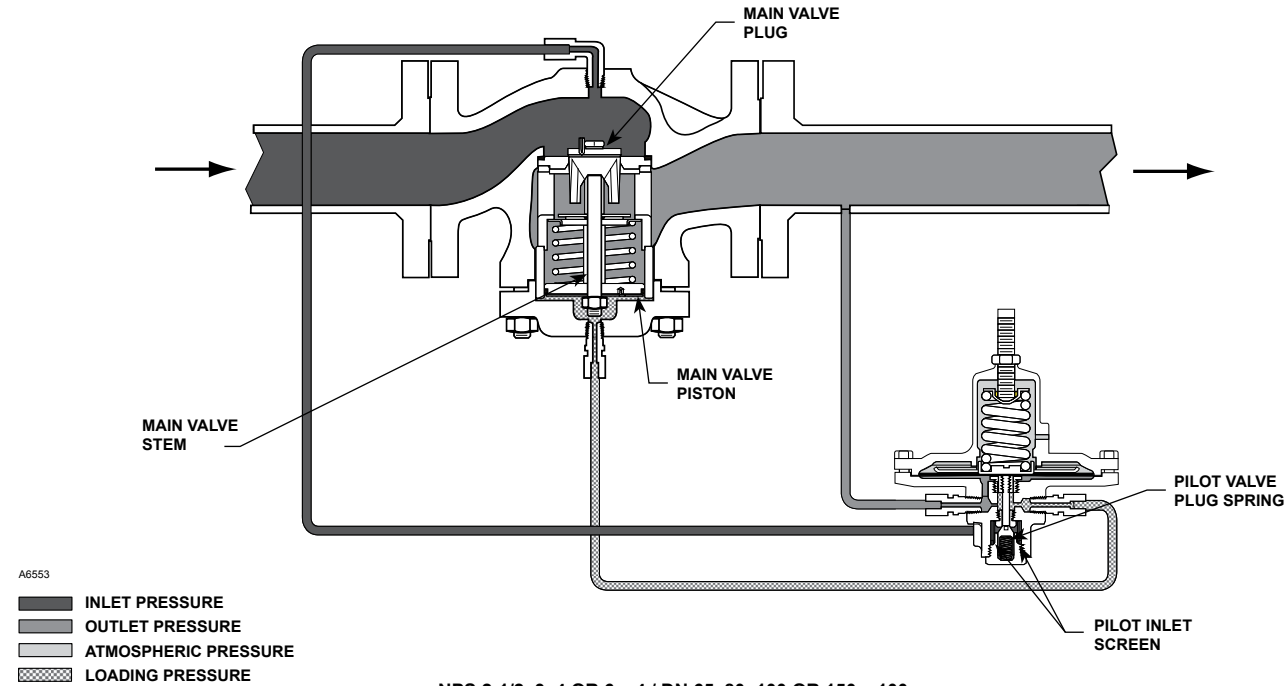
A Type 92S regulator may be installed in any orientation, but should not be installed in a tall vertical pipeline where condensate could collect and create a pressure head affecting regulator performance. To obtain maximum flow capacities in some instances, outlet piping will have to be swaged up above the given body size.

A downstream control line is required but is not furnished with the Type 92S regulator. Additionally, an adjustable loading pressure regulator and loading pressure piping are required for pressure-loading pilot regulators, while an on-off or solenoid valve is required for on-off pilot regulators.

Dimensions are shown in Figure 9.



NPS 1, 1-1/2 OR 2 / DN 25, 40 OR 50
MAIN VALVE BODY AND TYPE 6492H OR 6492HT PILOT



NPS 2-1/2, 3, 4 OR 6 x 4 / DN 65, 80, 100 OR 150 x 100
MAIN VALVE BODY AND TYPE 6492L PILOT

Figure 2. *Type 92S Pressure Reducing Regulator Operational Schematics*

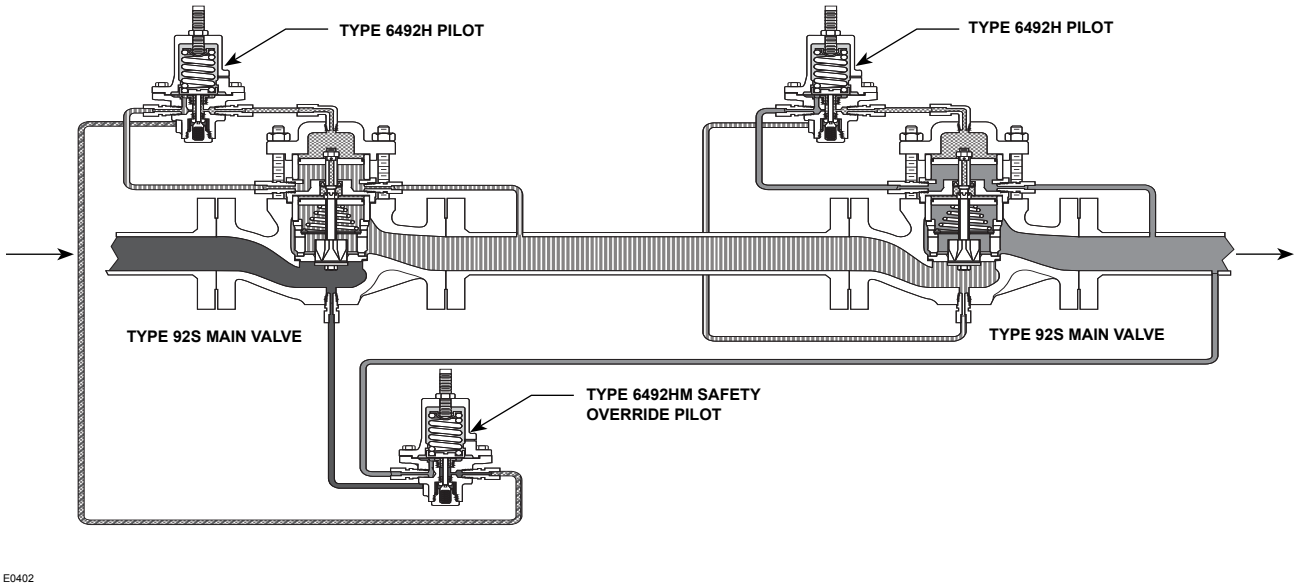


Figure 3. *NPS 1, 1-1/2 and 2 / DN 25, 40 and 50 Type 92S Pilot-Operated Pressure Reducing Regulator with Safety Override Pilot Operational Schematic*

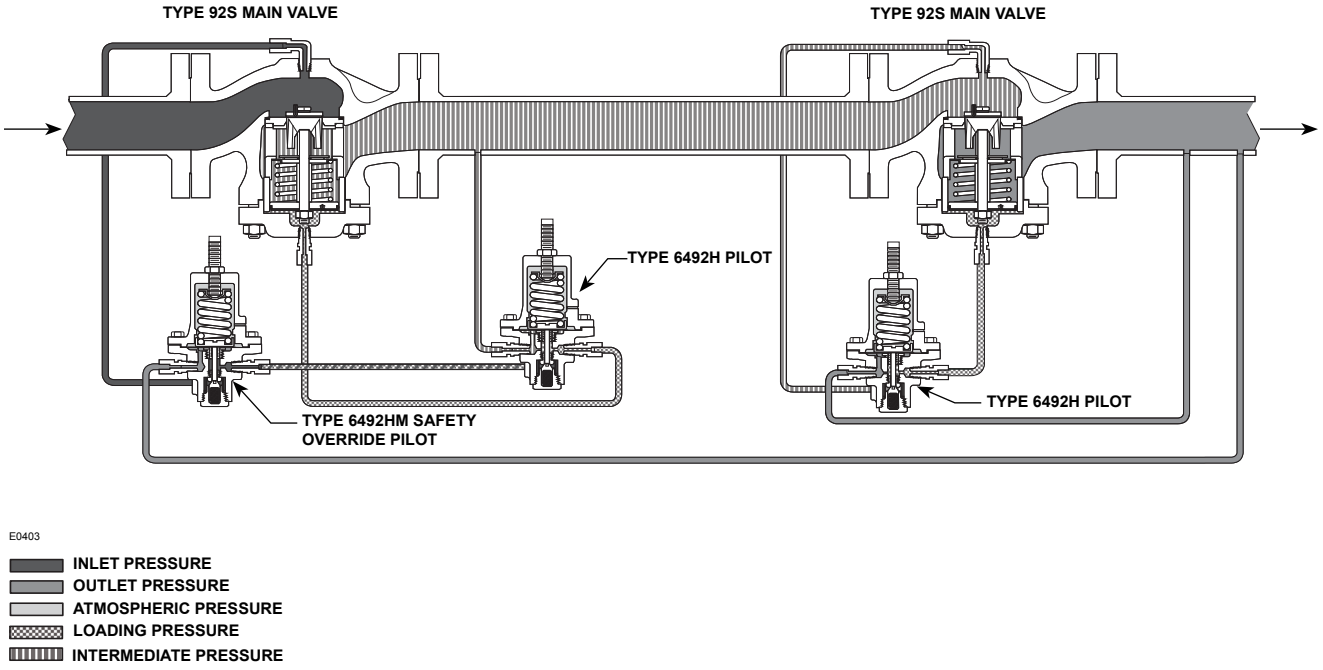


Figure 4. *NPS 2-1/2, 3 and 4 / DN 65, 80 and 100 Type 92S Pilot-Operated Pressure Reducing Valve with Safety Override Pilot Operational Schematic*

Table 4. *Safety Pilot Outlet (Control) Pressure Ranges*

TYPE	SPRING RANGE		SPRING COLOR	PART NUMBER	MINIMUM PRESSURE AT WHICH MONITORING PILOT CAN BE SET
	psig	bar			
6492HM	10 to 30	0.69 to 2.1	Yellow	1E395627022	5 psig / 0.35 bar over normal distribution pressure
	25 to 75	1.7 to 5.2	Green	1D7455T0012	10 psig / 0.69 bar over normal distribution pressure
	70 to 150	4.8 to 10.3	Black	1E395727192	
6492HTM	15 to 100	1.0 to 6.9	Unpainted	14B9943X012	
	80 to 250	5.5 to 17.2		14B9942X012	

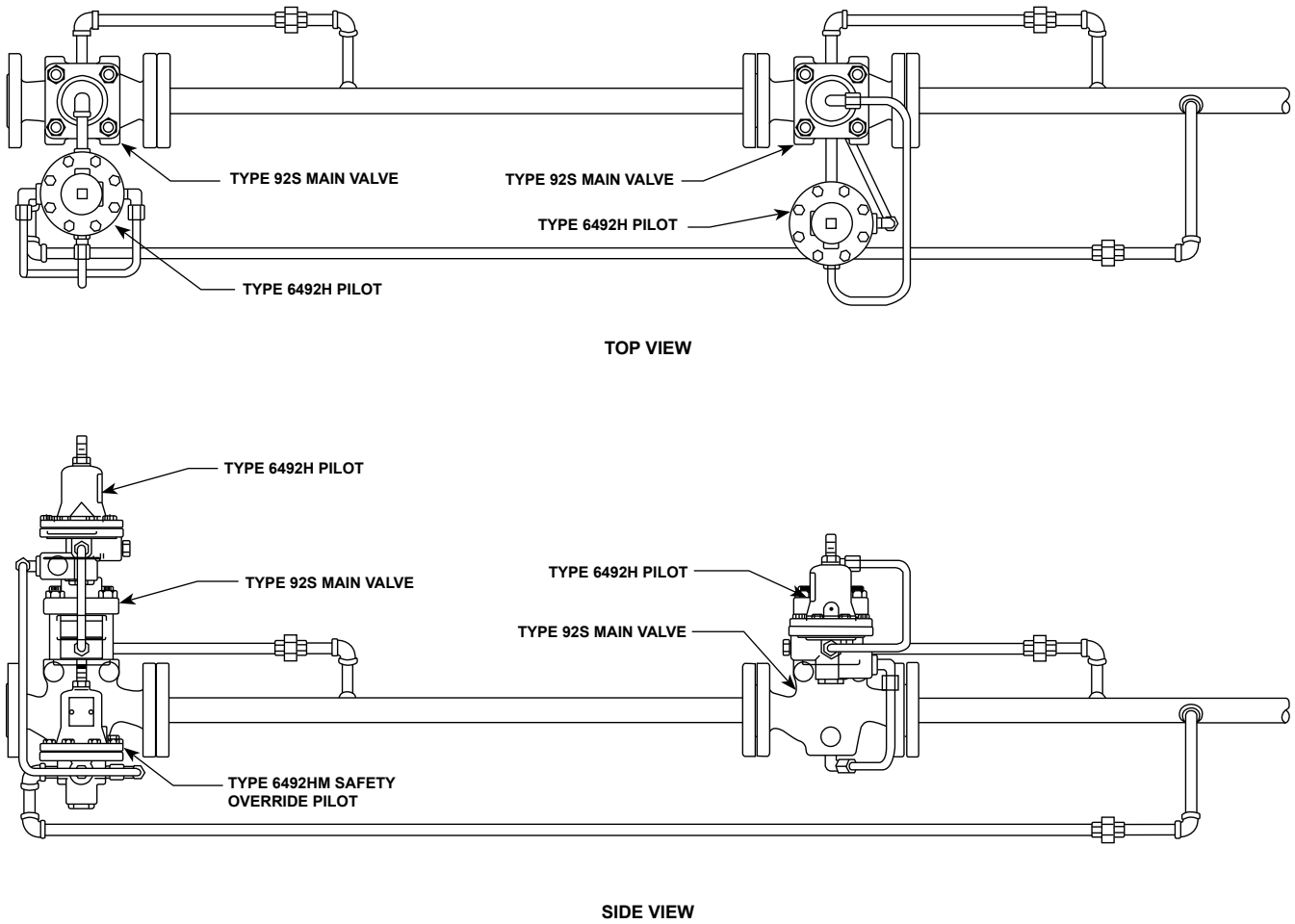


Figure 5. *NPS 1, 1-1/2 and 2 / DN 25, 40 and 50 Piping Schematics*

Type 92S Pilot-Operated Pressure Reducing Regulator with Safety Override Pilot

A Type 6492HM or 6492HTM safety override pilot is available for the Type 92S. The Type 6492H pilot is used in a series installation with the Type 6492HM or 6492HTM safety override pilot installed on the upstream regulator. The Type 6492HM or 6492HTM safety override pilot senses pressure downstream of the second valve and prevents pressure from rising above safe operating pressure in the event the downstream valve fails. This system is approved by ASME B31.1-1989, 122.14.2.A and can replace an ASME safety valve when vent piping is not practical and Type 92S Pilot-Operated, Pressure Reducing Regulator with Safety Override Pilot upstream steam pressure does not exceed 400 psig / 27.6 bar. Local codes and standards may require approval by an appropriate authority prior to installation.

Operation

Once placed in operation, the upstream Type 6492H pilot senses the intermediate pressure between both valves and the Type 6492HM or 6492HTM pilot senses downstream pressure of the second valve. As demand for flow increases, intermediate pressure will fall causing the Type 6492H pilot to open. As the Type 6492H pilot valve opens, loading pressure to the main valve increases, opening the main valve.

The Type 6492HM or 6492HTM safety override pilot remains open because its setpoint is above the setpoint of the downstream valve. In the unlikely event that the downstream valve fails open, downstream pressure will rise above the downstream valve's setpoint. This pressure is sensed by the Type 6492HM or 6492HTM safety override pilot. As downstream pressure increases the safety override pilot closes, reducing loading pressure to the main valve, which positions the main valve to maintain downstream pressure as specified per ASME Boiler and Pressure Vessel Code, Section VIII.

In the event that the upstream valve fails, the downstream regulator will prevent downstream pressure from rising above safe operating levels. It is recommended to install some type of warning system, such as a sentinal relief valve, to warn the operator that a valve has failed in the system. This will prevent prolonged operation with one valve, which could cause valve trim wear and noise associated with operation at high differential pressures.

When operating in most steam systems, valve setpoints should be in strict accordance to ASME Boiler and Pressure Vessel Code, Section VIII. The Type 6492HM or 6492HTM safety override pilot should be set at 10 psig / 0.69 bar or 10% above maximum downstream operating pressure of the second valve, whichever pressure is greater. For example, most HVAC systems operate at 15 psig / 1.0 bar, so the safety override pilot should be set no higher than 25 psig / 1.7 bar.

Capacity Information

Table 5 gives typical regulating capacities in lbs/h / kg/h of saturated steam. Capacities for regulators with noise attenuation trim are the same as for regulators without noise attenuation trim. Figure 8 shows a typical performance curve.

To determine regulating capacities at pressure settings not given in Table 5 or to determine wide-open capacities for relief sizing at any inlet pressure, use the following procedure 1 or 2 as appropriate.

1. If the steam is saturated and the pressure drop across the regulator is critical (absolute outlet pressure is equal to approximately one-half or less than one-half of the absolute inlet pressure), use the equation:

$$Q = (P_{1abs})\ (C_s)$$

where,

Q = Flow capacity in pounds of saturated steam per hour

P_{1abs} = Absolute inlet pressure in psia (P_{1gauge} + 14.7)

C_s = Regulating or wide-open steam sizing coefficient (see Table 3)

2. If the steam is superheated or if the pressure drop across the regulator is lower than critical (absolute outlet pressure is greater than approximately one-half the absolute inlet pressure), use the valve sizing slide rule or the sizing nomographs in Catalog 10.

Noise Abatement Information

A noise attenuation trim is available for use with NPS 2 / DN 50 and larger Type 92S steam regulators to provide an economical means for the reduction of noise from high-velocity steam flow. Capacities for a regulator equipped with a noise attenuation trim are the same as for a regulator without noise attenuation trim and are given in Table 5.

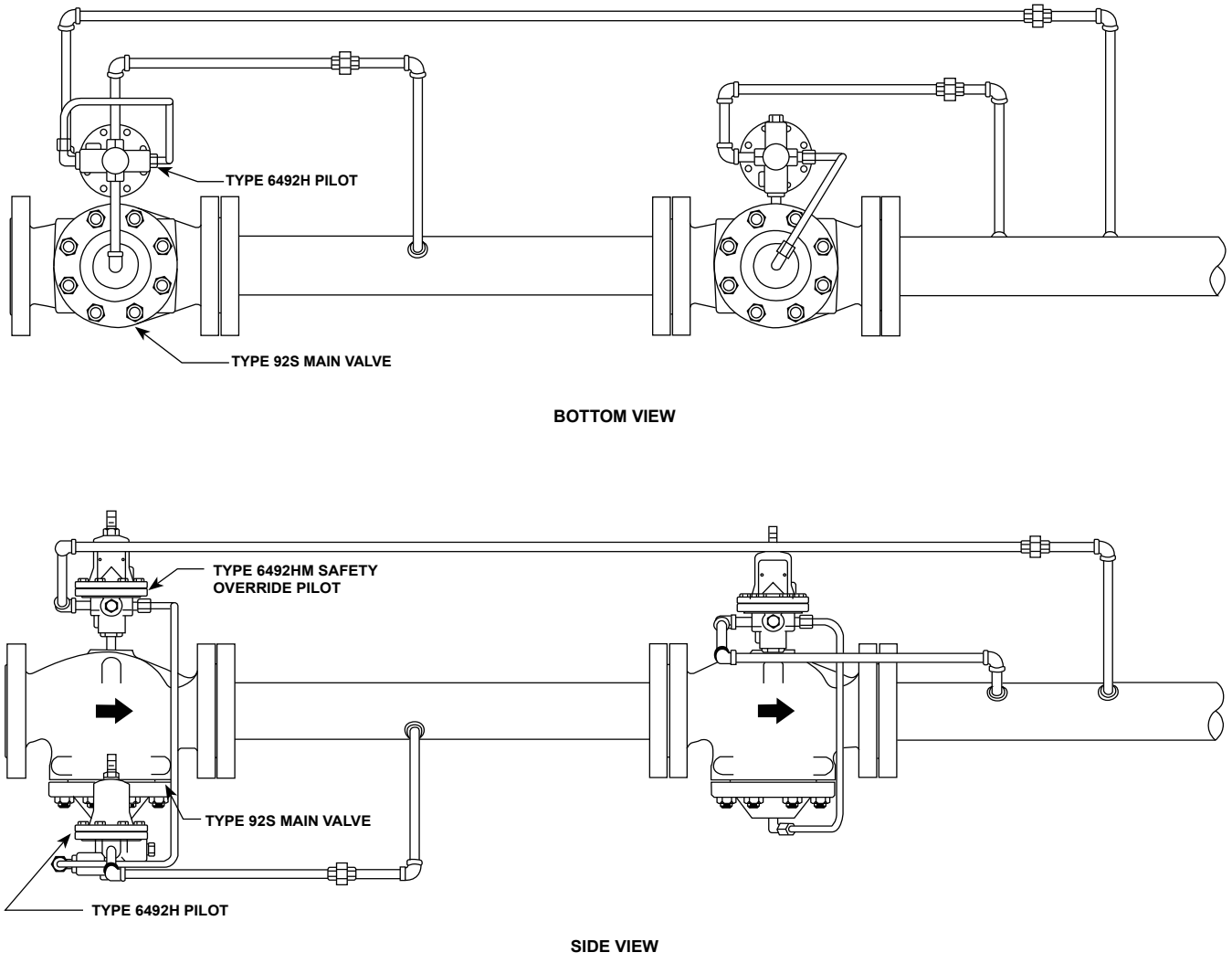


Figure 6. *NPS 2-1/2, 3 and 4 / DN 65, 80 and 100 Piping Schematics*

Noise level values for a regulator equipped either with or without a noise attenuation trim are presented in Table 6. These noise levels are determined at a point 39 in. / 991 mm downstream of the regulator outlet and 39 in. / 991 mm from the piping surface.

For example, consider full-capacity flow of steam through a NPS 2 / DN 50 Type 92S steam regulator connected with uninsulated 2 in. / 51 mm Schedule 40 downstream piping (see Table 6). For an inlet pressure of 250 psig / 17.2 bar and an outlet pressure of 100 psig / 6.9 bar, P/P_{1abs} is 0.6. Under the specified service conditions, the noise level for steam flow through a Type 92S steam regulator without a noise attenuation trim will be 98 decibels, while the same regulator equipped with a noise attenuation trim will have a noise level reduced to 92 decibels.

Noise levels for steam flow through a Type 92S steam regulator can be reduced further with the use of either a heavier schedule of pipe or thermal insulation of the downstream piping. By using thermal insulation, as much as 15 decibels of noise can be additionally reduced from the system. Consult the insulation manufacturer's specifications for the attenuating capability and application procedures of the specific insulation required by your system.

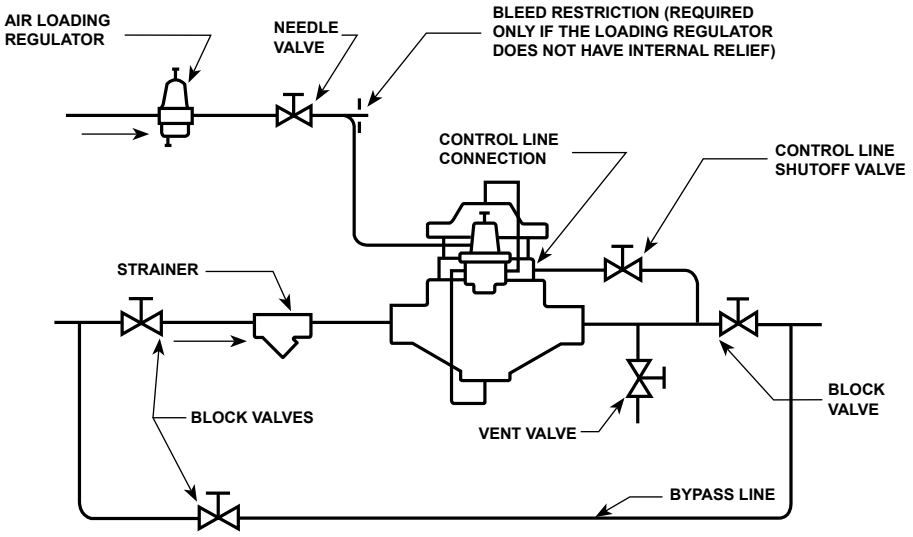


Figure 7. *Typical Pressure-Loaded Pilot Installation*

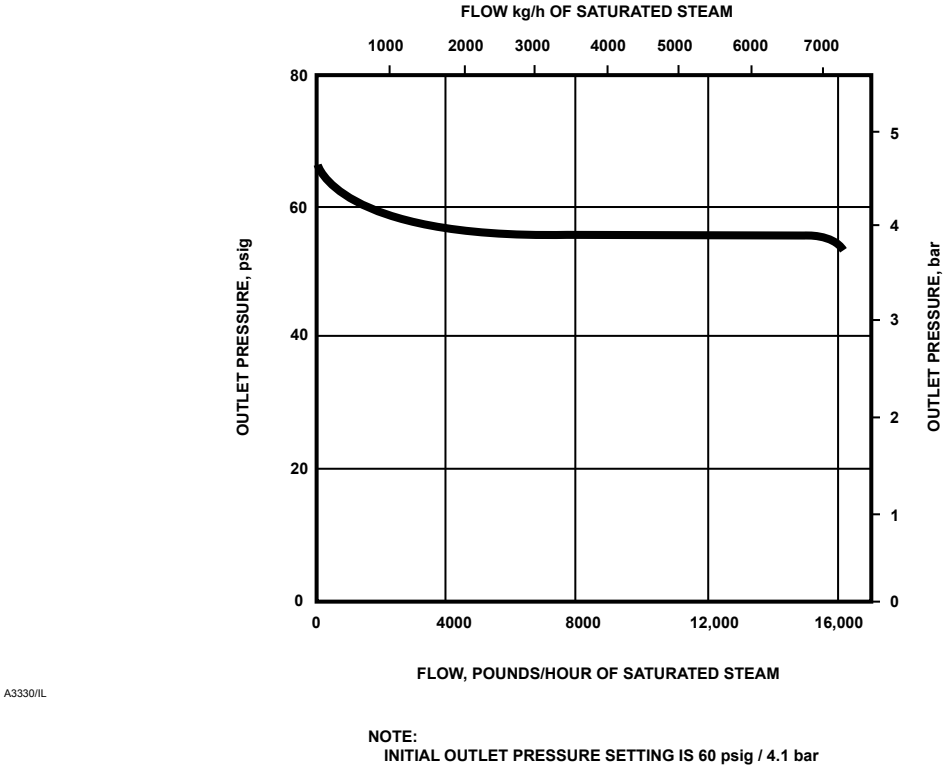


Figure 8. *Typical Performance Curve for NPS 2-1/2 / DN 65 Type 92S Pressure Reducing Regulator with Type 6492H Pilot*

Table 5. *Flow Capacities in Pounds per Hour / kg/h of Saturated Steam*

OUTLET PRESSURE SETTING[1]		PILOT TYPE NUMBER	INLET PRESSURE		MAIN VALVE BODY SIZE, NPS / DN														DROOP
					1 / 25		1-1/2 / 40		2 / 50		2-1/2 / 65		3 / 80		4 / 100		6 x 4 / 150 x 100		
psig	bar		psig	bar	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	
5	0.35	6492L	25 30 50	1.7 2.1 3.5	575 700 950	261 318 431	950 1150 1800	431 522 816	1750 1880 2950	794 853 1338	1000 1500 4180	454 680 1896	1225 2200 6550	556 998 2971	2510 4000 8500	1139 1814 3856	2600 4100 8600	1179 1860 3901	1 psi / 0.07 bar
			75 100 150	5.2 6.9 10.3	1350 1725 1800	612 782 816	2375 3050 4050	1077 1383 1837	4100 5600 6150	1860 2540 2790	6000 8500 11,900	2722 3856 5398	8400 10,300 16,900	3810 4672 7666	12,600 14,300 23,000	5715 6486 10433	12,900 15,100 23,600	5851 6849 10,705	
10	0.69	6492H or 6492L	30 50 75	2.1 3.5 5.2	700 1040 1440	318 472 653	1200 1800 2600	544 816 1179	2050 3100 4400	930 1406 1996	3050 4700 6000	1383 2132 2722	4300 6250 9000	1950 2835 4082	5800 8920 11,000	2631 4046 4990	5800 9200 11,500	2631 4173 5216	
			100 150 200	6.9 10.3 13.8	1800 2350 2150	816 1066 975	3300 4500 5100	1497 2041 2313	5600 8000 9200	2540 3629 4173	8600 12,000	3901 5443	10,700 17,000	4854 7711	16,300 19,600	7394 8891	17,100 20,200	7757 9163	
15	1.0	6492L, 6492H or 6492HT	35 50 75	2.4 3.5 5.2	710 1040 1440	322 472 653	1300 1800 2650	590 816 1202	2100 2950 4300	953 1338 1950	2300 4550 6300	1043 2064 2858	3200 6200 8900	1452 2812 4037	4600 7700 11,900	2087 3493 5398	4600 8100 12,200	2087 3674 5534	
			100 150 200	6.9 10.3 13.8	1820 2600 3400	826 1179 1542	3400 4800 6200	1542 2177 2812	5450 7800 10,200	2472 3538 4627	8100 12,100	3674 5489	11,800 16,900	5352 7666	16,100 23,100	7303 10,478	16,800 23,800	7620 10,796	
20	1.4	6492L, 6492H or 6492HT	50 75 100 150 200	3.5 5.2 6.9 10.3 13.8	1040 1440 1820 2650 3450	472 653 826 1202 1565	1800 2700 3450 4900 6400	816 1225 1565 2223 2903	2950 4300 5450 7950 10,300	1338 1950 2472 3606 4672	4590 6450 8650 12,300	2082 2926 3924 5579	6250 9100 11,900 17,150	2835 4128 5398 7779	7570 11,000 16,200 23,500	3434 4990 7348 10,660	7700 11,800 16,900 24,100	3493 5352 7666 10,932	
30	2.1	6492H, 6492HT	50 75 100 150 200	3.5 5.2 6.9 10.3 13.8	900 1440 1820 2650 3450	408 653 826 1202 1565	1650 2700 3450 4900 6500	748 1225 1565 2223 2948	2700 4300 5450 7950 10,000	1225 1950 2472 3606 4536	4040 6580 8400 12,000 15,700	1833 2985 3810 5443 7122	5350 8800 11,800 17,000 22,100	2427 3992 5352 7711 10,025	7770 12,000 19,000 23,100 30,100	3524 5443 8618 10,478 13,653	8100 12,500 19,600 23,800 30,600	3674 5670 8891 10,796 13,880	10% of outlet pressure setting
40	2.8	6492H, 6492HT	60 75 100 150 200	4.1 5.2 6.9 10.3 13.8	1100 1440 1820 2650 3450	499 653 826 1202 1565	1750 2500 3450 4900 6500	794 1134 1565 2223 2948	3300 4300 5450 7950 10,300	1497 1950 2472 3606 4672	4500 6300 8500 12,600 16,700	2041 2858 3856 5715 7575	6400 8350 11,400 17,000 22,650	2903 3788 5171 7711 10,274	8800 11,300 15,300 23,000 30,600	3992 5126 6940 10,433 13,880	9000 11,900 16,100 24,000 31,400	4082 5398 7303 10,886 14,243	
50	3.5	6492H, 6492HT	75 100 150 200 250	5.2 6.9 10.3 13.8 17.2	1250 1820 2650 3450 4300	567 826 1202 1565 1950	2250 3200 4900 6500 8000	1021 1452 2223 2948 3629	3750 5450 7950 10,300 12,900	1701 2472 3606 4672 5851	4950 8400 12,200 15,695	2245 3810 5534 7119	7950 11,800 17,000 22,100	3606 5352 7711 10,025	10,800 16,100 23,100 30,100	4899 7303 10,478 13,653	11,500 17,000 24,000 31,000	5216 7711 10,886 14,062	
60	4.1	6492H, 6492HT	80 100 150 200 250	5.5 6.9 10.3 13.8 17.2	1365 1780 2650 3450 4300	619 807 1202 1565 1950	2300 3100 4900 6500 8000	1043 1406 2223 2948 3629	4080 5300 7950 10,300 12,900	1851 2404 3606 4672 5851	5500 7880 12,300 16,400	2495 3574 5579 7439	7700 10,600 16,750 22,450	3493 4808 7598 10,183	10,500 14,200 22,700 30,200	4763 6441 10,297 13,699	11,000 15,000 23,000 31,000	4990 6804 10,433 14,062	
80	5.5	6492H, 6492HT	100 150 200 250	6.9 10.3 13.8 17.2	1450 2600 3450 4300	658 1179 1565 1950	2600 4650 6500 8000	1179 2109 2948 3629	4350 7800 10,300 12,900	1973 3538 4672 5851	6270 11,700 15,600 19,300	2844 5307 7076 8754	9250 15,850 21,750 27,750	4196 7190 9866 12,587	11,900 21,400 29,600 38,000	5398 9707 13,427 17,237	12,300 22,000 30,200 39,000	5579 9979 13,699 17,690	
100	6.9	6492H, 6492HT	125 150 200 250 300	8.6 10.3 13.8 17.2 20.7	1900 2490 3450 4300 5050	862 1129 1565 1950 2291	3300 4350 6250 8000 9400	1497 1973 2835 3629 4264	5700 7450 10,300 12,900 15,100	2586 3379 4672 5851 6849	8470 11,000 15,700 20,100	3842 4990 7122 9117	11,400 14,900 21,350 26,800	5171 6759 9684 12,156	14,400 19,900 28,700 35,700	6532 9027 13,018 16,194	15,200 20,500 29,100 36,500	6895 9299 13,200 16,556	

▭ - Shaded areas show where maximum differential pressure is exceeded.

1. Standard pilot or combination of setting plus loading pressure or optional pilot.

- continued -

Table 5. *Flow Capacities in Pounds per Hour / kg/h of Saturated Steam (continued)*

OUTLET PRESSURE SETTING[1]		PILOT TYPE NUMBER	INLET PRESSURE		MAIN VALVE BODY SIZE, NPS / DN														DROOP
					1 / 25		1-1/2 / 40		2 / 50		2-1/2 / 65		3 / 80		4 / 100		6 x 4 / 150 x 100		
psig	bar		psig	bar	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	lbs/h	kg/h	
125	8.6	6492H, 6492HT	140	9.7	1600	726	3100	1406	4800	2177									10% of outlet pressure setting
			150	10.3	1900	862	3650	1656	5700	2586	9200	4173	13,100	5942	16,400	7439	16,900	7666	
			200	13.8	3150	1429	5750	2608	9450	4287	14,600	6623	19,950	9049	27,000	12,247	28,000	12,701	
			250	17.2	4300	1950	8000	3629	12,900	5851	19,500	8845	27,000	12,247	37,500	17,010	38,300	17,373	
			300	20.7	5050	2291	9400	4264	15,100	6849	23,800	10,796	32,500	14,742	44,300	20,094	45,100	20,457	
150	10.3	6492H, 6492HT	175	12.1	2450	1111	4000	1814	7300	3311	10,000	4536	14,000	6350	19,100	8664	20,100	9117	
			200	13.8	3050	1383	5250	2381	9100	4128	13,400	6078	18,200	8256	30,800	13,971	31,000	14,062	
			250	17.2	4150	1882	7400	3357	12,400	5625	18,600	8437	25,750	11,680	34,100	15,468	35,200	15,967	
			300	20.7	5050	2291	9400	4264	15,100	6849	23,400	10,614	31,900	14,470	42,900	19,459	43,300	19,641	

▭ - Shaded areas indicate where minimum differential pressure is not attained.
1. Standard pilot or combination of setting plus loading pressure or optional pilot.

Table 6. *Noise Level Data in Decibels with Schedule 40 Downstream Piping and No Insulation[1]*

P_1		$\frac{\Delta P}{P_{1abs}}$	PERCENTAGE OF MAXIMUM REGULATOR FLOW RATE	NOISE LEVEL, dBA							
				NPS 2 / DN 50 Main Valve Body with 2 in. / 51 mm Downstream Piping		NPS 2-1/2 / DN 65 Main Valve Body with 4 in. / 102 mm Downstream Piping		NPS 3 / DN 80 Main Valve Body with 4 in. / 102 mm Downstream Piping		NPS 4 / DN 100 Main Valve Body with 8 in. / 203 mm Downstream Piping	
psig	bar			Without Attenuator	With Attenuator	Without Attenuator	With Attenuator	Without Attenuator	With Attenuator	Without Attenuator	With Attenuator
50	3.5	0.2	100	73	72	66	64	72	68	78	76
			30	62	61	59	56	63	60	71	68
		0.3	100	79	77	72	68	78	72	83	78
			30	68	66	61	57	65	61	73	70
		0.4	100	82	79	76	69	80	74	86	81
			30	71	68	65	61	69	65	76	73
		0.5	100	84	80	78	72	82	76	88	83
			30	73	69	67	63	73	67	79	75
		0.6	100	87	80	81	75	82	79	90	84
			30	76	70	70	65	74	68	80	76
		0.7	100	88	82	84	79	88	83	92	87
			30	78	71	73	69	80	71	83	79
100	6.9	0.2	100	78	77	71	69	77	73	83	81
			30	67	66	64	61	68	65	76	73
		0.3	100	84	82	77	73	83	77	88	83
			30	73	71	66	62	70	66	78	75
		0.4	100	86	84	81	74	85	79	91	86
			30	76	72	70	66	74	70	80	78
		0.5	100	89	85	83	77	87	81	93	88
			30	78	74	72	68	78	72	84	80
		0.6	100	92	86	86	80	87	84	95	89
			30	81	75	75	70	79	73	85	81
		0.7	100	82	75	78	74	85	76	88	84
			30	93	86	89	84	93	88	97	92

1. Overall noise levels determined at a point 39 in. / 991 mm downstream of the regulator outlet and 39 in. / 991 mm from piping surface.

- continued -

Table 6. *Noise Level Data in Decibels with Schedule 40 Downstream Piping and No Insulation(1)(continued)*

P_1		$\frac{\Delta P}{P_{1abs}}$	PERCENTAGE OF MAXIMUM REGULATOR FLOW RATE	NOISE LEVEL, dBA							
				NPS 2 / DN 50 Main Valve Body with 2 in. / 51 mm Downstream Piping		NPS 2-1/2 / DN 65 Main Valve Body with 4 in. / 102 mm Downstream Piping		NPS 3 / DN 80 Main Valve Body with 4 in. / 102 mm Downstream Piping		NPS 4 / DN 100 Main Valve Body with 8 in. / 203 mm Downstream Piping	
psig	bar			Without Attenuator	With Attenuator	Without Attenuator	With Attenuator	Without Attenuator	With Attenuator	Without Attenuator	With Attenuator
250	17.2	0.2	100 30	84 73	81 71	78 71	76 68	84 75	80 72	90 83	88 80
		0.3	100 30	90 80	85 77	84 73	80 69	90 77	84 73	95 85	90 82
		0.4	100 30	93 82	88 78	88 77	81 73	92 81	86 77	98 88	93 85
		0.5	100 30	95 85	91 80	90 79	84 75	94 85	88 79	100 91	95 87
		0.6	100 30	98 88	92 82	93 82	87 77	94 86	91 80	102 92	96 88
		0.7	100 30	101 89	94 83	96 85	91 81	100 92	95 83	104 95	99 91

1. Overall noise levels determined at a point 39 in. / 991 mm downstream of the regulator outlet and 39 in. / 991 mm from piping surface.

Ordering Information

When ordering, specify:

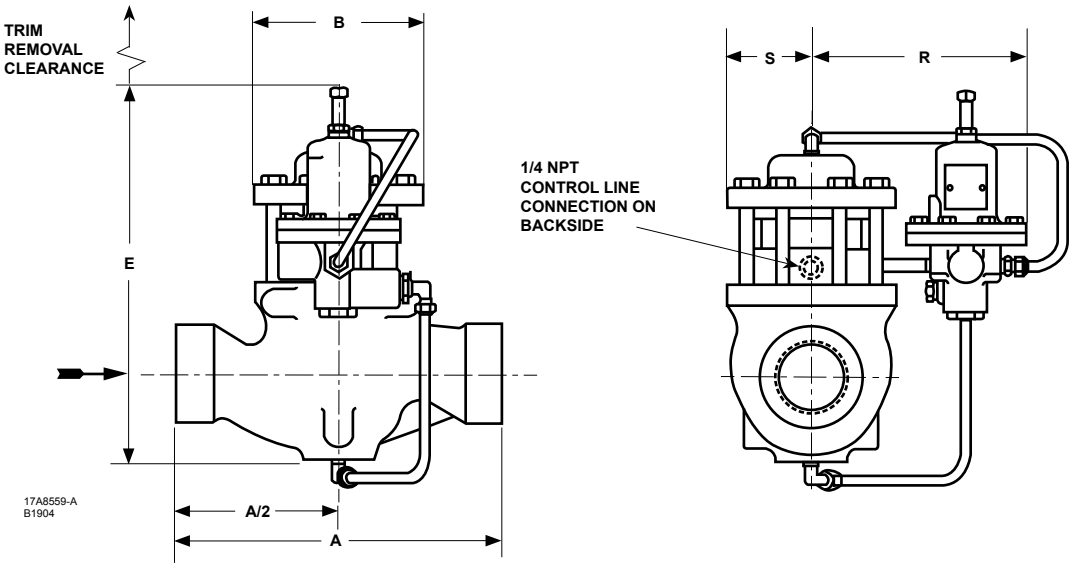
Application

- Range of temperatures
- Range of inlet pressures (maximum, normal, minimum)
- Outlet pressure setting
- Range of flow rates (maximum, normal, minimum, controlled)
- Body size

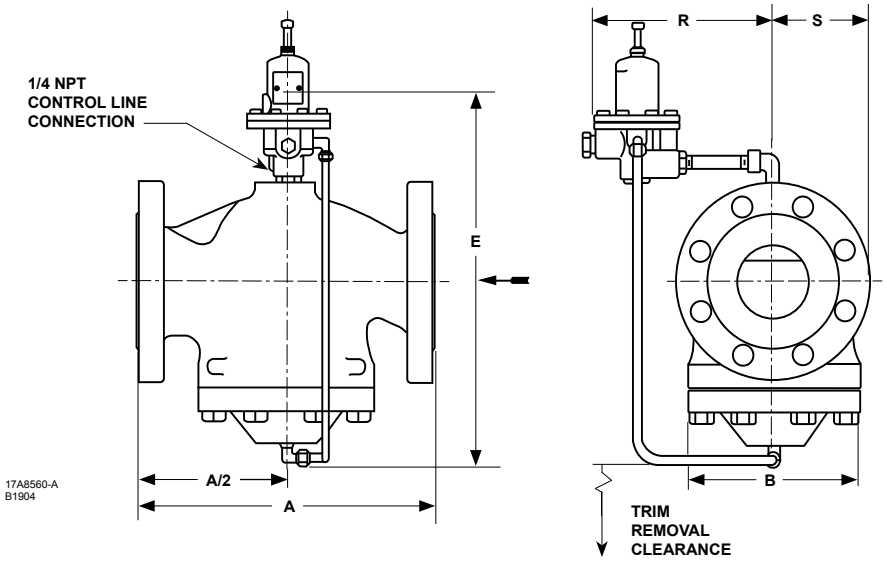
Construction

Refer to the Specifications section on page 2. Review the descriptions to the right of each specification and specify the desired choice wherever there is a selection to be made. If not otherwise specified, the pilot control spring is factory-set at the approximate mid-range.

Be sure to specify the type of regulator desired (standard pilot or pilot with optional tapped spring case). Refer to separate bulletins for information on loading regulators for use with pressure loaded pilots.



NPS 1, 1-1/2 OR 2 / DN 25, 40 OR 50 MAIN VALVE BODY



NPS 2-1/2, 3, 4 OR 6 x 4 / DN 65, 80, 100 OR 150 x 100 MAIN VALVE BODY

Figure 9. *Dimensions*

Table 7. *Dimensions*

MAIN VALVE BODY SIZE		DIMENSION																			
		A								B		E (Maximum)		R				S		Trim Removal Clearance	
		NPT		CL125 FF or CL150 RF Flanged		CL250 RF or CL300 RF Flanged		CL600 RF Flanged						Types 6492H and 6492HT Pilot		Type 6492L PIlot					
NPS	DN	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	25	8.25	210	7.25	184	7.75	197	8.25	210	3.88	99	11.69	297	8.50	216	9.88	251	1.94	49		
1/2	40	9.88	251	8.75	222	9.25	235	9.88	251	5.38	137	12.19	310	8.81	224	10.19	259	2.69	68	2.75	70
2	50	11.25	286	10.00	254	10.50	267	11.25	286	5.88	149	13.00	330	9.06	230	10.44	265	2.94	75		
2-1/2	65	----		10.88	276	11.50	292	12.25	311	6.56	167	17.19	437	8.75	222	10.12	257	3.28	83	3.12	79
3	80	----		11.75	298	12.50	318	13.25	337	7.38	187	18.25	464	8.75	222	10.12	257	3.69	94	3.12	79
4	100	----		13.88	353	14.50	368	15.50	394	8.62	219	20.44	519	10.38	264	11.75	298	4.31	109	5.00	127
6 x 4	150 x 100	----		----	----	18.62	473	20.00	508	8.62	219	22.06	560	11.50	292	12.88	327	4.31	109	7.00	178

Ordering Guide

Body Size (Select One)

- ☐ NPS 1 / DN 25**
- ☐ NPS 1-1/2 / DN 40**
- ☐ NPS 2 / DN 50***
- ☐ NPS 2-1/2 / DN 65*
- ☐ NPS 3 / DN 80**
- ☐ NPS 4 / DN 100**
- ☐ NPS 6 x 4 / DN 150 x 100 (WCC Steel or Stainless steel with CL300 RF and CL600 RF only)*

Body and Body Flange Material and End Connection Style (Select One)

Cast Iron

- ☐ NPT***
- ☐ CL125 FF**
- ☐ CL250 RF**

WCC Steel

- ☐ NPT***
- ☐ CL150 RF**
- ☐ CL300 RF**
- ☐ CL600 RF**
- ☐ PN 16/25/40**

CF8M Stainless Steel

- ☐ NPT**
- ☐ CL150 RF*
- ☐ CL300 RF*
- ☐ CL600 RF*
- ☐ PN 16/25/40*

Tubing and Fittings (Select One)

- ☐ Copper tubing with brass fittings***
- ☐ Stainless steel tubing and fittings**

Pilot Bellows (Select One)

- ☐ Brass **(standard)***
- ☐ 321 Stainless steel**

Outlet Pressure Range (Select One)

Type 6492L Pilot

- ☐ 2 to 6 psig / 0.14 to 0.41 bar, Yellow***
- ☐ 5 to 15 psig / 0.35 to 1.0 bar, Green***
- ☐ 13 to 25 psig / 0.90 to 1.7 bar, Red***

Type 6492H Pilot

- ☐ 10 to 30 psig / 0.69 to 2,1 bar, Yellow***
- ☐ 25 to 75 psig / 1.7 to 5.2 bar, Green***
- ☐ 70 to 150 psig / 4.8 to 10.3 bar, Red***

Type 6492HT Pilot

- ☐ 15 to 100 psig / 1.0 to 6.9 bar, Unpainted***
- ☐ 80 to 250 psig / 5.5 to 17.2 bar, Unpainted***

Noise Attenuation Trim (Optional)

- ☐ Yes**

Replacement Pilot (Optional)

- ☐ Yes, send one replacement pilot to match this order.

Main Valve Replacement Parts Kit (Optional)

- ☐ Yes, send one main valve replacement parts kit to match this order.

Pilot Replacement Parts Kit (Optional)

- ☐ Yes, send one pilot replacement parts kit to match this order.

Regulators Quick Order Guide	
* * *	Readily Available for Shipment
* *	Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult Your local Sales Office for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Steam Specification Worksheet

Application:

Tag Number: _____

Valve Type: ☐ Direct-Operated ☐ Pilot-Operated ☐ Pressure Loaded ☐ Differential

Body Material: ☐ Steel ☐ Iron ☐ Stainless Steel

Inlet/Outlet End Connection Style:
☐ CL150 RF Flange ☐ NPT
☐ CL300 RF Flange ☐ CL250 RF Flange
☐ PN 16/25/40 ☐ CL600 RF Flange

Inlet/Outlet Pipe Size: _____ In. / mm

Steam Conditions:

	Maximum	Normal	Minimum
Inlet Pressure (psig/bar)			
Inlet Temperature (°F/°C)			
Outlet Pressure (psig/bar)			
Flow (lbs/h or kg/hr)			

Performance Required:

Accuracy Requirements: ☐ ≤10% ☐ ≤20% ☐ ≤30% ☐ ≤40%

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