

## Three-Way Bypass Valves

- **Two-position valves designed to divert flow from one pipeline to another**

### INTRODUCTION

Schutte & Koerting Three-Way Bypass Valves provide a convenient, economical means of diverting flow from one pipeline to another. They are often used in bypass arrangements in steam generating plants and process applications in steam generating plants and process applications where they can save users thousands of dollars by eliminating conventional gate valves, bypass accessories and custom fabrications. Basic offset body construction is illustrated in Figure 3 on page 2. The valve disc is raised or lowered to direct flow from one outlet to the other, as illustrated in Figure 2A and Figure 2B on page 2.

These offset body valves are available in connection sizes ranging from 8" up to 20". Welding ends are normally supplied with these valves which are available from 300 lb. to 1,500 lb. and 2,500 lb. pressure service (see specifications on page 4).

### DESIGN FEATURES

(As illustrated in Figure 4)

#### Flat Seating Surfaces

Combined with flexibility between the disc and stem provides a self aligning tight seal.

#### Extended Welding Connections

Welding end connections are extended well away (at least one pipe diameter) from the valve body to minimize the possibility of distortion during field welding.

#### Reliable Service

Large Three-Way Valves are designed to handle high pressure applications such as boiler feedwater service in steam power plants. S&K inspection techniques and facilities provide for comprehensive in-plant testing of valves prior to shipment. All valves can be serviced in the field without removing them from the pipeline.

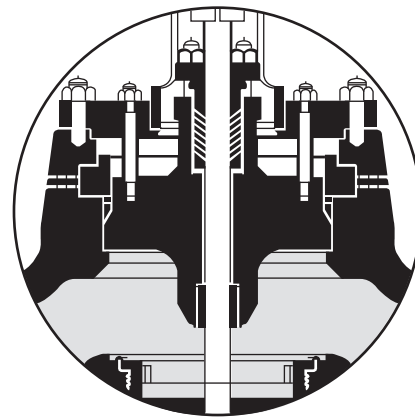
#### Special High Pressure Construction

When valve size and pressure ratings require, this pressure seal bonnet construction is used. Motor-operated valves with this type of construction have been in service, operating reliably, for as long as 10 years with water pressures as high as 4700 psig and temperatures up to 700°F.

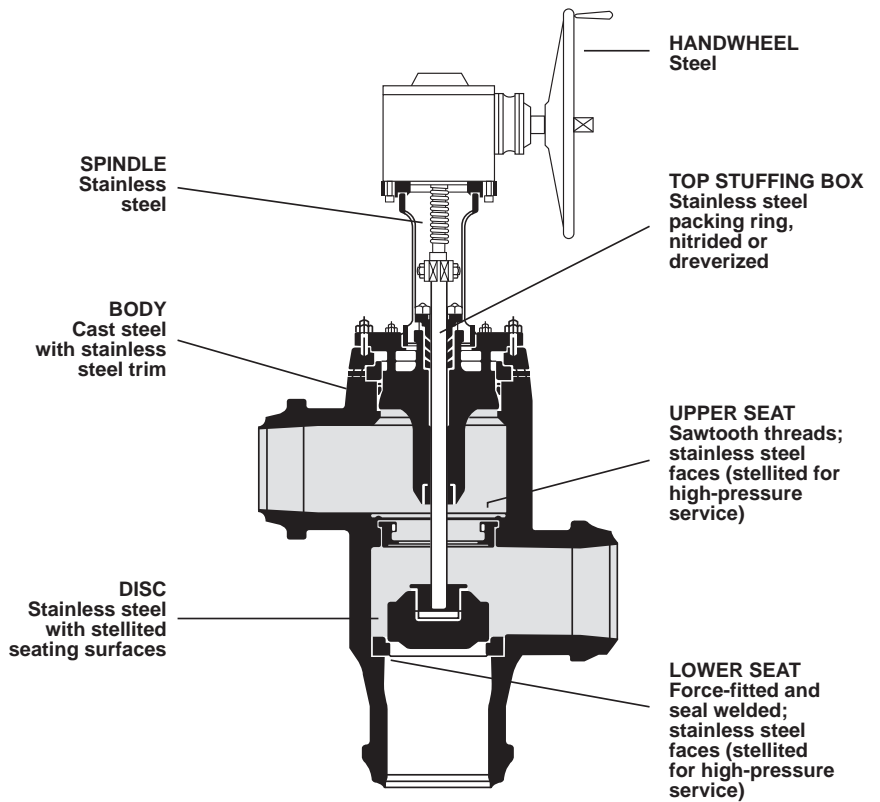
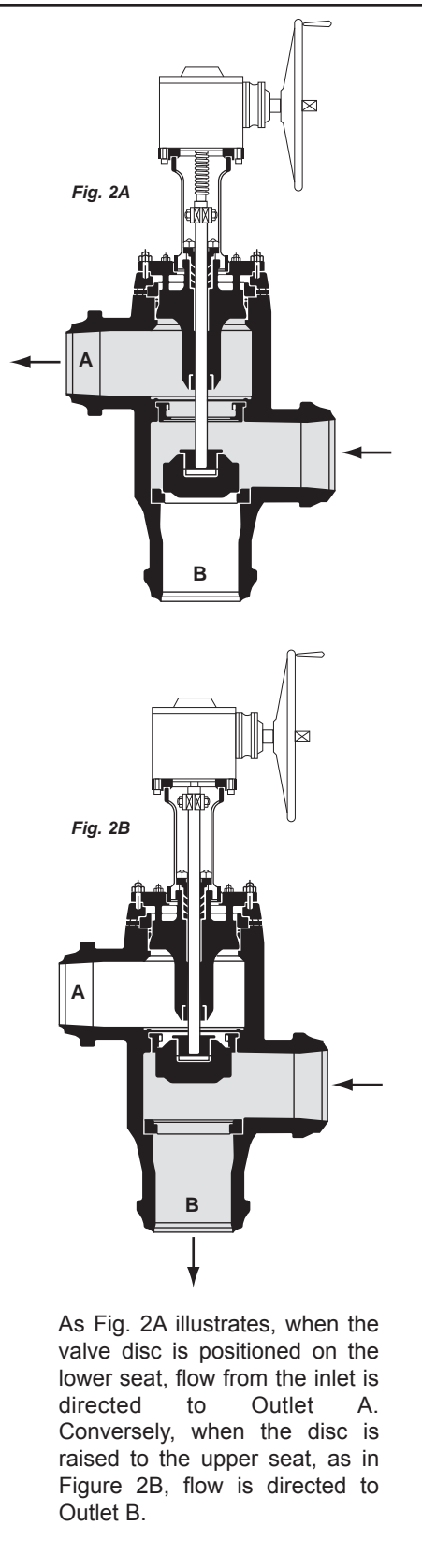
*Offset Body Design*



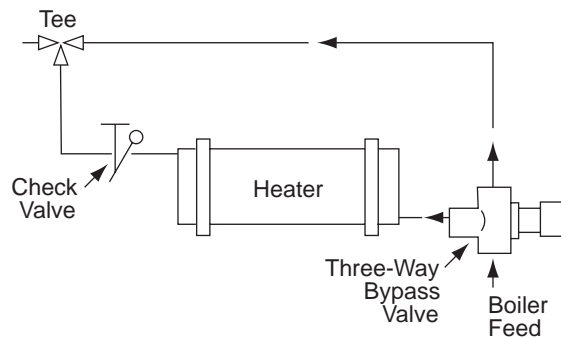
*Globe Body Design*



*Fig. 4*



**Fig. 3**  
S&K Three-Way Valves conform to ANSI Rating B16.34



**Fig. 57-H-3**  
In feedwater heater bypass, a Three-Way Valve replaces two gate valves, one tee fitting, and eliminates four welded connections.

## DESIGN DETAILS AND MODIFICATIONS

### Alternate In-Line Body Construction

In addition to the offset body style illustrated in Figure 3 on page 2, the globe body construction shown in Figure 5 is available for users requiring an in-line connection between two pipelines. This body style is available in valve sizes from 8" through 18". The offset construction is generally used for larger sizes (10" through 20"). Materials of construction are similar in both body types. When conditions allow, manual operator gearing can be replaced with a simple hand-wheel and spindle to reduce costs.

### Pressure Equalizing Line

In Figure 6A, the globe body, and Figure 6B, the offset body, valves are equipped with an equalizing line between inlet and right angle outlet ports. The equalizing valve is opened in order to balance the pressure across the disc in closed position. This feature reduces the size of the valve operator.

### Motor Operator

Fig. 8508-MO Motor-Operated Valve shown in Figure 7 can be supplied for automatic operation. The arrangement shown includes limit and torque switches at both ends of the spindle stroke to provide positive seating of the valve disc and to automatically compensate for wear which may cause play in the system.

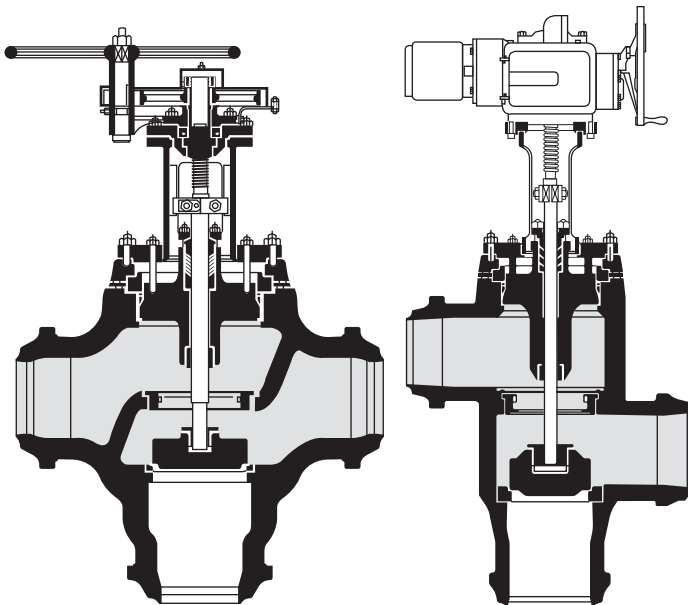


Fig. 5

Fig. 7



Fig. 6A - Globe Body Three-Way Valve with Pressure Equalizing Line



Fig. 6B - Offset Body Three-Way Valve with Pressure Equalizing Line

Table 1. Fig. 8508-MO with Offset Body (1500 & 2500 lbs. Pressure)<sup>1</sup>

Size No.	Dimensions, in inches <sup>2</sup>										K Factor <sup>3</sup>	
	A	B	C	D	E	F	G	H	J	K	Flow, Inlet Thru 1	Flow, Inlet Thru 2
<b>1500 Lbs. Pressure</b>												
10	15	15	18 5/16	11 3/8	10 3/8	14 3/4	29 11/16	18 5/8	12 5/8	24 1/2	1.9	2.8
12	18	18	21	12 7/8	12 7/8	17 1/4	33 7/8	18 5/8	12 5/8	24 1/2	1.85	2.75
14	19 3/4	19 3/4	21 1/2	14 1/2	15	17 1/2	36	25 9/16	14 5/8	26 1/8	1.80	2.65
16	23 3/4	23 3/4	24 1/2	16 7/8	16 1/4	18 3/8	41 3/8	25 9/16	14 5/8	26 1/8	1.7	2.5
18	28	28	28	16 7/8	17 5/8	19	44 7/8	25 9/16	14 5/8	26 1/8	1.7	2.5
20	28	28	28	16 7/8	17 5/8	24 7/8	44 7/8	25 9/16	14 5/8	26 1/8	1.7	2.5
<b>2500 Lbs. Pressure</b>												
10	17	17	18 5/16	11 3/8	10 3/8	20 1/4	29 11/16	27 1/4	19 1/8	31 5/8	1.9	2.8
12	18	18	21	12 7/8	12 7/8	17 1/4	33 7/8	27 1/4	19 1/8	31 5/8	1.85	2.75
14	23	23	24	14 1/2	15	17 1/2	38 1/2	27 1/4	19 1/8	31 5/8	1.8	2.65
16	28	28	28	16 7/8	16 1/4	19	44 7/8	27 1/4	19 1/8	31 5/8	1.75	2.55
18	28	28	28	16 7/8	17 5/8	19	44 7/8	27 1/4	19 1/8	31 5/8	1.75	2.55
20	28	28	28	16 7/8	17 5/8	24 7/8	44 7/8	27 1/4	19 1/8	31 5/8	1.75	2.55

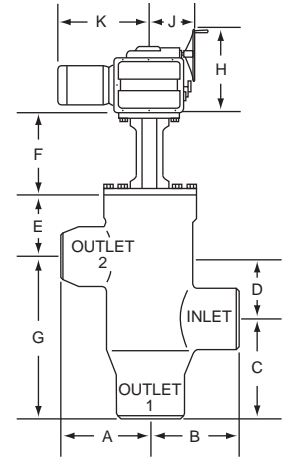
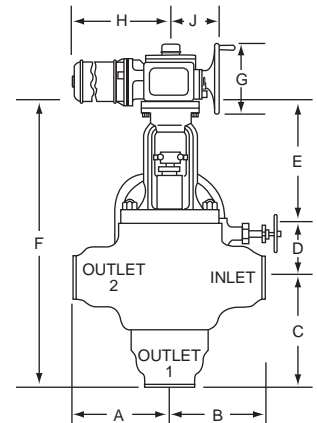


Table 2. Fig. 8508-MO with Globe Body (1500 lbs. Pressure)<sup>1</sup>

Size No.	Dimensions, in inches <sup>2</sup>									K Factor <sup>3</sup>	
	A	B	C	D	E	F	G	H	J	Flow, Inlet Thru 1	Flow, Inlet Thru 2
8	15	15	18	12 3/4	11 1/4	42	12	23	13 1/8	2.0	4.0
10	18	18	22	13	11 5/8	46 5/8	12	23	13 1/8	1.9	3.8
12	19	19	23 1/2	15 3/4	13	52 1/4	12	24 1/2	12 5/8	1.85	3.7
14	23	23	26 1/2	19 1/8	15 5/8	61 1/4	12	24 1/2	12 5/8	1.81	3.6



1. S&K Three-Way Valves conform to ANSI Rating B16.34.
2. Above dimensions are approximate. Certified dimension prints will be submitted for approval upon receipt of order.
3. Refer to technical data for instructions on how to calculate pressure drop.

