



SPECIFICATION DATA

3-WAY VALVES, 2½" to 4"
V5013B MIXING,
V5013C DIVERTING
with Modutrol* MOTORS

application: For proportional or two-position control of hot or cold water in coils of heating or cooling systems. Used for mixing service (V5013B) to direct one of two inlets to a common outlet, and for diverting (V5013C) flow from a common inlet to one of two outlets.

construction: Three-way mixing (Fig. 2) or diverting (Fig. 3). Constant total flow throughout full plug travel. Spring-loaded, self-adjusting Teflon packing. Single-piece body as cage type inner-valve permitting easy service and repair. Linkage provided with strain-relief mechanism assuring tightest possible close-off without putting excessive strain on the motor. Linkage has easy-to-read, valve-position indicator. Modutrol motor positions valve stem.

assembly: Complete electric motorized valve assembly consists of a V5013B or V5013C 3-Way Valve Body, Q455 Linkage, and Modutrol motor. Select the required components from combinations available in Table 2.

motor: Used to position valve stem. Capacitor type with oil immersed gear train. Select required motor from Table 2.

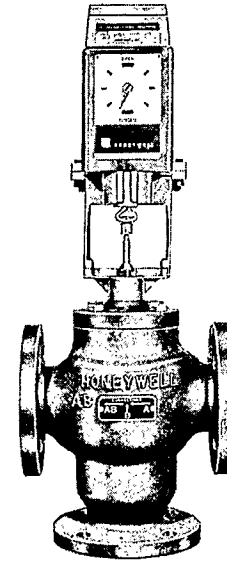
MAXIMUM AMBIENT TEMPERATURE: M7023—hot water chilled water 125 F; other motors listed, 125 F.

MINIMUM AMBIENT TEMPERATURE: minus 20 F. (Note: This applies to motor only. Valve stem or body must not go below 32 F.)

MOUNTING POSITION: Upright preferred. Other positions acceptable.

linkage specifications: Connects motor to valve. Has provision for mounting with set screws to valve bonnet and for mounting motor. Select required linkage from Table 2.

*Trademark
2-69 Rev.
D.E.L.



mounting dimensions:

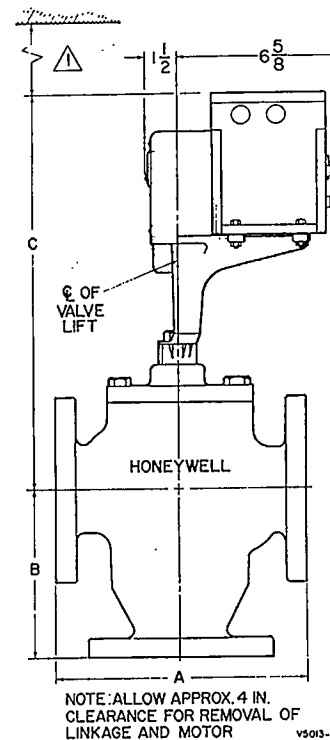


Fig. 1—Dimensions.

Form Number **77-5257**
Commercial Div.

**TABLE 1
DIMENSIONS (IN INCHES)**

Valve Size	A	B	C	
			With M644, M944 Motors	With M7023 Motors
2-1/2	9-1/2	6-7/16	18	9-1/4
3	11	6-5/8	18-5/8	19-7/8
4	13	8-11/16	20-31/32	22-7/32

body:

MODELS: V5013B Mixing; V5013C Diverting.
 SIZES: 2-1/2 through 4 in.
 END CONNECTIONS: Flanges.
 CAPACITY: See Table 3 for Cv's.
 RATINGS: See Table 3 for close-off and Table 4 for body and packing.
 FLOW CHARACTERISTICS: Characterized for proportional linear flow at ports A and B and constant total flow through Port AB.
 LIFT: 2-1/2 and 3 in. sizes, 3/4 in.; 4 in. size, 1-1/2 in.
 BODY: 125 psi cast iron, single-piece body.
 PACKING: Four-section, Teflon-cone, spring-loaded, self-adjusting.
 STEM: Stainless steel.
 SEATS: Replaceable bronze. Both seats held in place by bronze cages and sealed to body by rubber "O" rings.
 PLUG: Bronze skirted, metal-to-metal seating.
 FINISH: Gray paint.

**TABLE 3
CLOSE-OFF RATINGS**

Body Size (In.)	Cv ^a	Maximum Pressure Differential for Close-off ^b (psig)	
		Linkage	
		Q455C	Q455D
2-1/2	63.0	32	X
3	100	22	X
4	160	X	9

xMeans application not recommended.

^aFor determining required Cv, see page J-6 in "Automatic Controls Catalog," Form 77-0300.

^bFor V5013B Mixing, close-off pressure is the maximum pressure difference between the outlet and either of the two inlets.

For V5013C Diverting, close-off pressure is the maximum pressure difference between the inlet and either of the two outlets.

**TABLE 4
VALVE RATINGS**

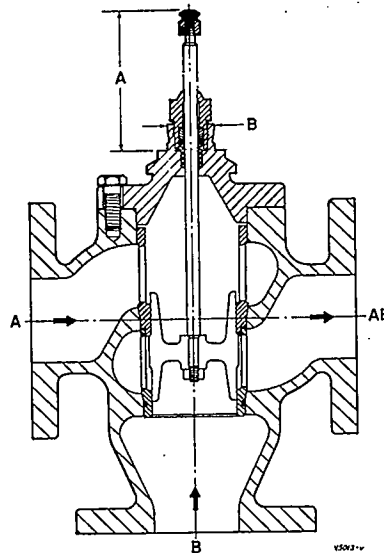
Body	Cast-iron-125 psi max., 353 F max.
Close-off	See Table 3
Capacity	See Table 3
Maximum Pressure-Differential for Quiet Water Service	20 psi
Packing	Hot Water-100 psi max., 240 F max. Alternate Hot and Cold Water-100 psi max., 40 F min., 240 F max.; 140 F max. differential temperature.

TABLE 2

Control Action	Motor ^a	Linkage Number
Two-Position, Reversing, Non-Spring Return, SPDT	M644	Q455C (for 2-1/2 & 3") Q455D (for 4")
Floating, SPDT		
Proportional, Non-Spring Return	M944 M7023A-C	Q455D

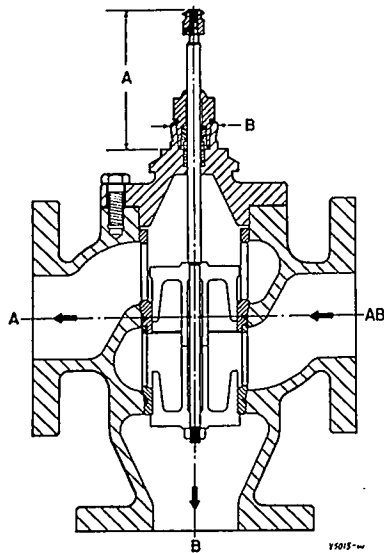
^aMotors recommended have 60 second timing & 160 degree stroke

inner valve construction:



Valve Size (In.)	Dimension A (Stem up)	Dimension B
2 1/2 & 3	4 7/32	1 3/8
4	6 23/32	1 7/8

Fig. 2—V5013B Three-Way Mixing Valve.



Valve Size (In.)	Dimension A (Stem up)	Dimension B
2½ & 3 4	4 ⁷ / ₃₂ 6 ²⁹ / ₃₂	1 ³ / ₈ 1 ¹ / ₈

Fig. 3—V5013C Three-Way Diverting Valve.

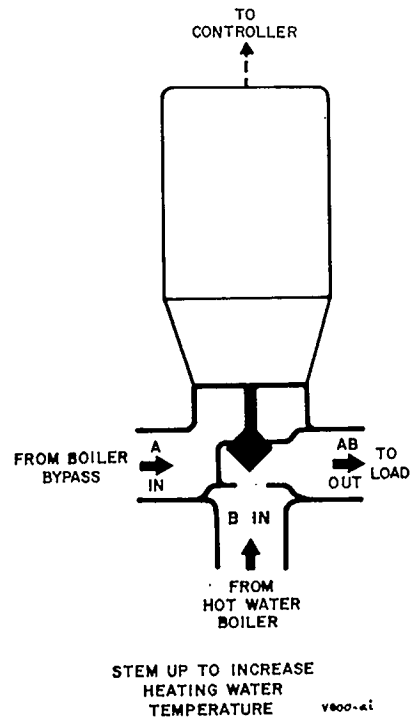


Fig. 4—V5013B Three-Way Mixing Valve Typical Operation.

typical operation: V5013B Mixing (Fig. 4)—When used in a heating application with Port B connected to a hot water boiler, Port A connected to a boiler bypass, and Port AB connected to a load, a fall in temperature at the controller will move the valve stem up opening to Port B and closing to Port A increasing fluid temperature to the load.

V5013C Diverting (Fig. 5)—When used in a heating application with Port A connected to a coil, Port B connected to a coil bypass, and Port AB connected to the supply, a fall in temperature at the controller will move the valve stem up opening to Port A and closing to Port B increasing the flow of hot water through the coil.

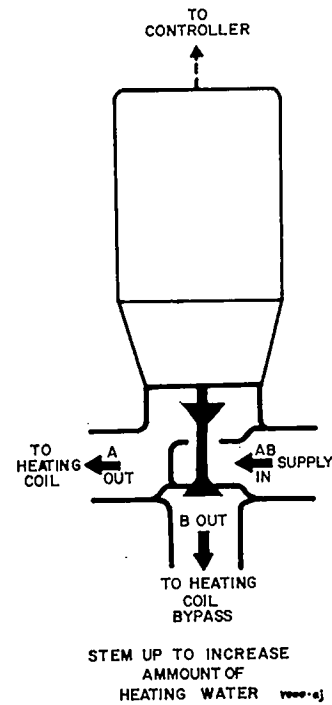


Fig. 5—V5013C Three-Way Diverting Valve Typical Operation.