INDUSTRIAL PRODUCTS

Bellows Actuated Control Valve With Manual Override Model I-1081-A

GENERAL DESCRIPTION

The I-1081-A Series Control Valves are for pneumatic or hydraulic control systems and are used for mixing or diverting service to control flow of oil, water or other fluids.

These control valves are recommended wherever the manual positioning feature is desirable. Should the Control Valve become inoperative due to damage or loss of pilot control pressure, the valve can be manually opened, closed or positioned by turning the hand crank. A stroke indicator shows the position of the valve poppet.

These control valves may be actuated by signals from any suitable temperature or pressure controller, such as the Robertshaw DT-700 "Fultrol" Pilot Temperature Controller. Air pressure from the controller is applied to the top of the bellows. As this pressure increases within the range of the loading spring, the actuator stem moves down.

ACTUATOR ACTION

Air pressure from the controller is applied to the top of the bellows. As this pressure increases within the range of the loading spring, the actuator stem moves down.

FEATURES

- **Powerful 2-Ply Seamless Metal Bellows**
- **Override Feature for Manually Positioning Valve**
- **Simple, Compact, Rugged**
- **Linear Valve Movement**
- **Quick Opening Valve**
- **Quick-Detach Valve Stem Construction Permits Easy Valve change**
- **Valve Position Indicator**

invensys

DESCRIPTION OF CATALOGED VALVE

NOTE: Due to slight differences in actuator frame construction, the size of the valve determines the full model number of the control valve: 2" = I-1081-A6, 2 ½" = I-1081-A7, 3" = I-1081-A5, 4" = I-1081-A2, 5" = I-1081-A3, & 6" = I-1081-A4. These valves have cast frames and manual valve positioning hand crank. Pinion and adjustment spring are steel. Other parts not listed in the following specifications are made of non-ferrous metals.

ACTUATOR SPECIFICATIONS

ACTION ..... Modulating, opens one line while closing the other

PRESSURE ASSEMBLY ..... All metal, two-ply seamless bellows

PRESSURE RANGE ..... 3-15 psig (0.2-1.0 bar)

MAX. BELLOWS PRESSURE ..... 30 psig (2.07 bar)

PRESSURE CONNECTION ..... 1/4 NPT (female)

ACTION ..... Air-to-push-down

MAX. AMBIENT TEMPERATURE ..... 200° F (93° C)

MAX. STROKE ..... 1.031″ (26.19 mm)

ADJUSTMENT ..... Hand wheel for control pressure, crank for manual operation

FRAME ..... Cast bronze

VALVE SPECIFICATIONS

TYPE ..... Three-way, type WD with balanced sleeve poppet

FLOW CHARACTERISTICS ..... Quick opening

END CONNECTIONS ..... Class 150 ANSI flanges

BODY MATERIAL ..... Brass standard

TRIM MATERIAL

- **STEM** ..... 316 stainless steel
- **PLUG** ..... Brass ASTM B16
- **POPPET** ..... Brass ASTM B62
- **PIPE** ..... Brass ASTM B43
- **SEAT** ..... Same as body
- **OTHER PARTS** ..... Non-ferrous metal

POPPET SEAL ..... Buna-N (Nitrile) o-ring

POPPET SPRING ..... 302 stainless steel

PACKING ..... EPT rubber U-cups

STEM CONNECTION ..... Quick disconnect

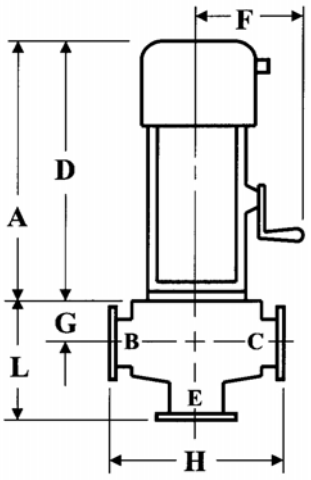
MAX. SUPPLY PRESSURE ..... 100 PSIG (6.9 BAR)

MAX. SUPPLY TEMPERATURE ..... 200° F (93° C)

MAX. PRESSURE DROP

- **2″, 2-1/2″, 3″ sizes** ..... 40 psig (2.8 bar)
- **4″, 5″, 6″ sizes** ..... 25 psig (1.7 bar)

DIMENSIONS	CONTROL VALVE PART NUMBER					
	I-1081-A6 2″	I-1081-A7 2-1/2″	I-1081-A5 3″	I-1081-A2 4″	I-1081-A3 5″	I-1081-A4 6″
A	18 - 9/16	18 - 3/8	18	19 - 1/8	21 - 1/2	21 - 1/2
D	14 - 3/8	14 - 3/8	14 - 3/8	15 - 15/16	15 - 15/16	15 - 15/16
F	6 - 1/2	6 - 1/2	6 - 1/2	6 - 1/2	6 - 1/2	6 - 1/2
G	4 - 3/16	4	3 - 5/8	3 - 3/16	5 - 9/16	5 - 9/16
H	8 - 5/8	10	10 - 1/2	15 - 7/8	19 - 1/4	23 - 1/2
L	5 - 3/16	6 - 1/2	6 - 3/4	8 - 9/16	11 - 5/8	13 - 7/16
STROKE	9/32	13/32	5/8	5/8	23/32	1 - 1/32
E-B Cv	64	81	115	220	344	506
E-C Cv	64	88	106	237	385	563



TYPICAL INSTALLATIONS

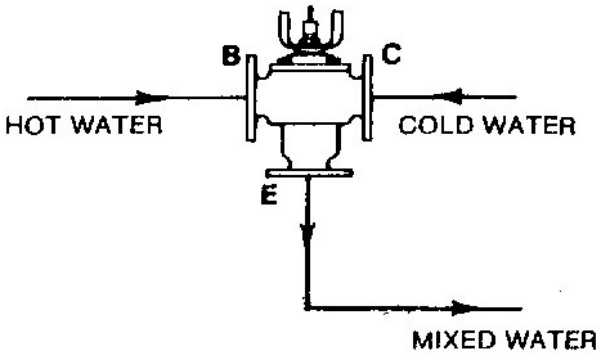


Figure 2 - Mixing

This figure illustrates a simple means for mixing hot and cold water where a rough mixing is suitable.

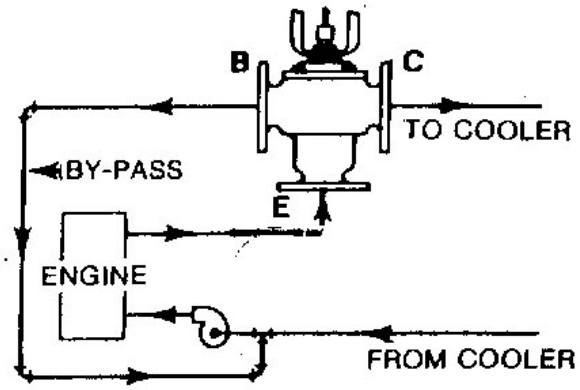


Figure 3 - Diverting

This figure illustrates the most widely used method of cooling water control for internal combustion engines.

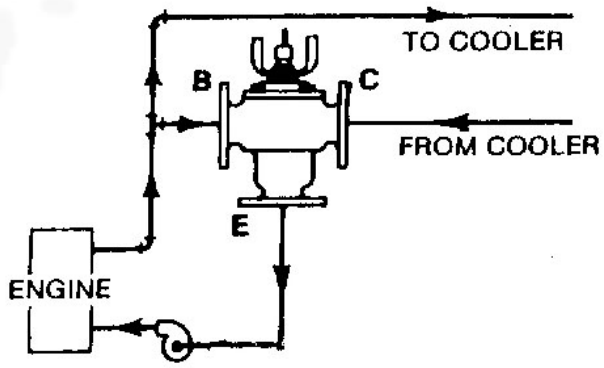


Figure 4 - Diverting

This figure illustrates a method of controlling the cooling of engine lubricating oil.

VALVE SIZING

All Robertshaw valve capacities are stated in terms of Cv.

Use of the flow coefficient Cv offers a standard approach for valve sizing regardless of type. Cv ratings for Robertshaw valves are determined in accordance with procedures recommended by the Fluid Controls Institute.

Valve sizes may be calculated using Cv formulas or Robertshaw's Flo-Rule (valve sizing slide rule) for any set of flow conditions.

When capacity requirements (pounds of steam per hour, gallons of water per minute, cubic feet of gas per hour, etc.), the supply pressures, pressure drops, and nature of the fluid are known, the numerical Cv value can be obtained. This can be compared with the Cv ratings tabulated for the various valve styles in the "Valve Characteristics" tables in this product specification or on the Cv tables furnished with the Flo-Rule.

NOTE 1 – IMPORTANT – If valve seat leakage can cause a problem or hazard, the following should be taken into account. Maximum leakage of new WD valves = 1% of full open capacity. This lealage will usually increase somewhat as the valve seats wear in service.

NOTE 2 – IMPORTANT – Damage or failure of the bellows in the actuator will ordinarily result in the valve going to the "cold" position. The valve stem moves "up" (toward the bellows). Thus E-B ports of the "WD" valve will be open while the E-C ports will be closed.

ORDERING INFORMATION

When ordering specify:

1. **Quantity**
2. **Control Valve model number (See above)**
3. **Range: (3-15 psig standard).**
4. **Valve type, size, and action (See Control Valve Identification)**
5. **Medium through the valve**
6. **Supply pressure to the valve**
7. **Pressure drop**
8. **Any special characteristics of the flowing medium**
9. **Shipping and invoicing instructions**

Robertshaw®
INDUSTRIAL PRODUCTS

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