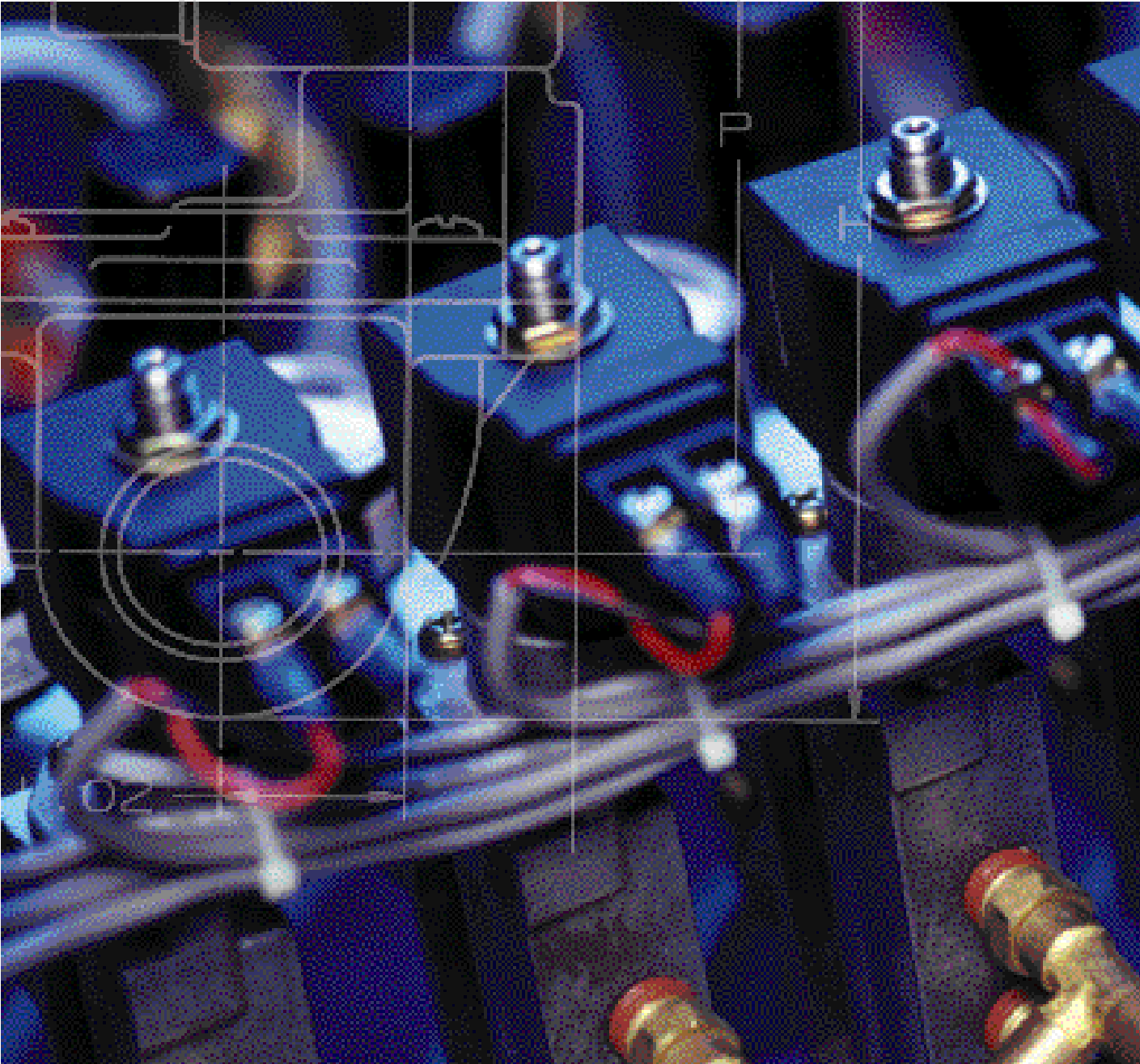


Skinner Valve

*Two-Way, Three-Way and
Four-Way Solenoid Valves*

Catalog CFL00897



Climate & Industrial
Controls

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Skinner Valve Introduction

Skinner Solenoid Valve Division

Skinner has been recognized as a leader in solenoid valve technology since 1949 when they first started manufacturing solenoid valves.

The Skinner and Lucifer facilities are both vertically integrated, manufacturing a large percentage of their component parts complete from the raw material level. This permits a high degree of control over the quality and availability of products. Each facility is equipped with a complete staff of experienced design engineers permitting rapid completion of customized valve designs for specific user requirements. Also, each facility has well equipped evaluation and testing laboratories to ensure proper valve operation, long cycle life, and optimum reliability of the product in the application.

With many affiliates worldwide, an extensive distribution network, and broad product breadth, Parker is in a unique position to service the world's requirements for solenoid valves.

WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The product described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Terms and Conditions of Sale". (See page 145.)

Skinner Product Lines

The Skinner 7000 Series

7000 Series products have been designed to offer customers the ultimate in performance, versatility and quality. Every valve is engineered for optimal operation, is constructed with modern machinery that uses stringent processes, and provides standard features not offered in any competitive line. The 7000 Series is truly a world class product offering.

The Skinner 3000 Series

When reliable performance, economy and a compact design count, depend on Skinner Valve's 3000 Series. Developed with fully interchangeable components, the 3000 Series is user-flexible by design.

The Skinner 3000 Series is available in two- and three-way configurations, and is particularly adaptable to original equipment manufacturers involved in the development of fluid power/fluid control equipment in dispensing, blending, bio-medical and dental applications.

A, B, C, MB and V9 Products

Skinner A, B, C, MB and V9 line of solenoid valves include a wide variety of valve types, sizes and functional variations. They include 2-, 3- and 4-way valves designed specifically for use in hydraulic and pneumatic systems, as well as many varieties of general service products.

Available in a wide array of enclosures, coil types and seal materials, this product portfolio satisfies a wide range of end user application needs.

Skinner Inherently Safe Series

When designed into an inherently safe system, Skinner Valve's Inherently Safe solenoid valves provide a number of significant performance advantages: Low-Power Consumption; Low Temperature Rise; a Wide Range of Sizes; a Variety of Mounting Possibilities; Media Compatibility; a Wide Selection of Options; and Watertight Construction.

Skinner Inherently Safe solenoid valves have approvals for use in the United States and Canada in hazardous classifications for Classes I, II, III, Division 1 and 2, and in the United Kingdom for Division 0, 1 and 2. In Europe our valves are approved according to CENELEC standards.

Skinner K-Series

K-Series solenoid valves include a broad range of three- and four-way models designed to satisfy most pneumatic application requirements. Small in size, each valve includes features and performance capabilities usually found only on larger, more expensive solenoid valves.

The K-Series includes direct-acting and pilot-operated models in body-ported and subbase-mounted configurations. All models are supplied with non-locking manual overrides with lead wire or plug-in connectors. Valves with plug-in connectors include LED status indicators, reverse voltage protection and surge suppression.

Additional Skinner Products and Catalogs

Skinner Valve Actuation Series Catalog

The Valve Actuation Series includes a variety of three- and four-way valves designed with unique features and options enhancing their performance, operational reliability and application versatility.

The Series includes 7700 and 7300 Line, All-Ports-In-Body valves, Inherently Safe valves, Quick Exhaust valves, Direct Mount valves with NAMUR interface, Ultra Low-Power valves, along with a host of accessories and options. In addition, to satisfy the most stringent environmental demands, most valves are available in a choice of body materials including brass, stainless steel, and aluminum, as well as a variety of elastomeric seals.

Technical Reference Manual CTRM12-90

The Skinner Technical Reference Manual provides an overview of solenoid valve technology. Material provided includes a review of the components and functional varieties of solenoid valves available from Skinner Valve. In addition, the manual contains information considered essential in selecting valves for most standard applications.

Skinner Condensed Valve Listing

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------------------------------|---------------------------|-------|---------------------------------------|------------|------------|---------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| Two-Way Hydraulic Valves | | | | | | |
| 1/8" | A126LB13001 | 112 | 0 | - | 3000 | SS |
| 1/8" | A12LB13002 | 112 | 0 | 3000 | - | SS |
| 1/8" | 71211SN1MM00 | 90 | 0 | 1000 | 1000 | SS |
| 1/8" | 71221SN1MM00 | 90 | 0 | 1000 | 1000 | SS |
| 1/8" | A116LB13001 | 112 | 0 | - | 3000 | SS |
| 1/8" | A11LB13002 | 112 | 0 | 3000 | - | SS |
| Two-Way MultiPurpose Valves | | | | | | |
| 1/8" | 71235SN1AN00 | 20 | 0 | 400 | 400 | SS |
| 1/8" | 71235SN1EN00 | 20 | 0 | 180 | 180 | SS |
| 1/8" | 71235SN1GN00 | 20 | 0 | 110 | 110 | SS |
| 1/8" | 71235SN1KN00 | 20 | 0 | 70 | 70 | SS |
| 1/8" | 71235SN1MN00 | 20 | 0 | 45 | 45 | SS |
| 1/4" | 71235SN2AN00 | 20 | 0 | 400 | 400 | SS |
| 1/4" | 71235SN2EN00 | 20 | 0 | 180 | 180 | SS |
| 1/4" | 71235SN2GN00 | 20 | 0 | 110 | 110 | SS |
| 1/4" | 71235SN2KN00 | 20 | 0 | 70 | 70 | SS |
| 1/4" | 71235SN2MN00 | 20 | 0 | 45 | 45 | SS |
| Two-Way Normally Closed Valves | | | | | | |
| Flange | 7121FBF4GF00 | 15 | 0 | 1000 | 435 | BR |
| Flange | 7121FBF4NF00 | 15 | 0 | 365 | 125 | BR |
| 1/8" | 71216SN1BL00 | 34 | 0 | 3000 | 2500 | SS |
| 1/8" | 71216SN1FU00 | 34 | 0 | 1500 | 1000 | SS |
| 1/8" | 71216SN1GL00 | 34 | 0 | 1250 | 500 | SS |
| 1/8" | 7121KBN1GF00 | 15/34 | 0 | 1000 | 435 | BR |
| 1/8" | 71215SN1EF00 | 16/34 | 0 | 1000 | 520 | SS |
| 1/8" | 3121BBN1AN00 | 41 | 0 | 800 | 800 | BR |
| 1/8" | 3121BSN1AN00 | 41 | 0 | 800 | 800 | SS |
| 1/8" | 71215SN1GF00 | 16/34 | 0 | 700 | 350 | SS |
| 1/8" | 7121KBN1LR00 | 34 | 0 | 500 | 175 | BR |
| 1/8" | 71216SN1JT00 | 34 | 0 | 500 | 200 | SS |
| 1/8" | 3121BBN1EN00 | 41 | 0 | 500 | 500 | BR |
| 1/8" | 3121BSN1EN00 | 41 | 0 | 500 | 500 | SS |
| 1/8" | 3121BSA6EN00 | 42 | 0 | 500 | 500 | SS |
| 1/8" | 71215SN1EN00 | 16 | 0 | 450 | 450 | SS |
| 1/8" | B2*1400 | 43 | 0 | 400 | 400 | SS |
| 1/8" | 7121KBN1NF00 | 15 | 0 | 365 | 125 | BR |
| 1/8" | 71215SN1GN00 | 16 | 0 | 350 | 350 | SS |
| 1/8" | 3121BBN1GN00 | 41 | 0 | 300 | 300 | BR |
| 1/8" | 3121BSN1GN00 | 41 | 0 | 300 | 300 | SS |
| 1/8" | 3121BSA6GN00 | 42 | 0 | 300 | 300 | SS |
| 1/8" | 71215SN1KN00 | 16 | 0 | 275 | 275 | SS |
| 1/8" | C2*1277 | 45 | 0 | 275 | - | BR |
| 1/8" | 71215SN1KF00 | 16 | 0 | 260 | 130 | SS |
| 1/8" | B2*1250 | 43 | 0 | 250 | 250 | SS |
| 1/8" | C2*1251 | 45 | 0 | - | 250 | BR |
| 1/8" | 71215SN1MF00 | 16 | 0 | 200 | 100 | SS |
| 1/8" | 71215SN1MN00 | 16 | 0 | 200 | 150 | SS |
| 1/8" | 3121BBN1JN00 | 41 | 0 | 200 | 200 | BR |
| 1/8" | 3121BSN1JN00 | 41 | 0 | 200 | 200 | SS |
| 1/8" | B2*1175 | 43 | 0 | 175 | 175 | SS |
| 1/8" | 3121BBN1LN00 | 41 | 0 | 175 | 175 | BR |
| 1/8" | 3121BSN1LN00 | 41 | 0 | 175 | 175 | SS |
| 1/8" | 3121BSA6LN00 | 42 | 0 | 175 | 175 | SS |
| 1/8" | C2*1132 | 45 | 0 | 130 | - | BR |
| 1/8" | C2D420CF | 45 | 0 | 130 | - | BR |
| 1/8" | 71215SN1QN00 | 16 | 0 | 110 | 60 | SS |
| 1/8" | 3121BBN1NN00 | 41 | 0 | 100 | 100 | BR |
| 1/8" | 3121BSN1NN00 | 41 | 0 | 100 | 100 | SS |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|------------------|---------------------------|-------|---------------------------------------|------------|------------|---------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 1/8" | C2*1092 | 45 | 0 | 90 | - | BR |
| 1/8" | C2*1081 | 45 | 0 | - | 80 | BR |
| 1/8" | 71215SN1SN00 | 16 | 0 | 80 | 25 | SS |
| 1/8" Male | 71214LE1KN00 | 92 | 0 | 70 | 70 | N |
| 1/8" | C2*1062 | 45 | 0 | 60 | - | BR |
| 1/8" Male | 71214LE1MN00 | 92 | 0 | 50 | 50 | N |
| 1/8" | B2*1052 | 43 | 0 | 50 | - | SS |
| 1/8" | C2*1051 | 45 | 0 | - | 50 | BR |
| 1/8" | 3121BBN1QN00 | 41 | 0 | 50 | 50 | BR |
| 1/8" | 3121BSN1QN00 | 41 | 0 | 50 | 50 | SS |
| 1/8" | 3121BSA6QN00 | 42 | 0 | 50 | 50 | SS |
| 1/8" | 71215SN1VN00 | 16 | 0 | 40 | 10 | SS |
| 1/8" Male | 71214LE1QN00 | 92 | 0 | 35 | 35 | N |
| 1/8" | C2*1031 | 45 | 0 | - | 30 | BR |
| 1/8" | B2*1026 | 43 | 0 | - | 25 | SS |
| 1/8" Male | 71214LE1SN00 | 92 | 0 | 20 | 20 | N |
| 1/4" | 71216SN2BL00 | 34 | 0 | 3000 | 2500 | SS |
| 1/4" | 73216BN2MT00 | 35 | 5 | 1500 | 800 | BR |
| 1/4" | 73216SN2MT00 | 35 | 5 | 1500 | 800 | SS |
| 1/4" | 71216SN2FU00 | 34 | 0 | 1500 | 1000 | SS |
| 1/4" | 71216SN2GL00 | 34 | 0 | 1250 | 500 | SS |
| 1/4" | 7121KBN2GR00 | 34 | 0 | 1100 | 435 | BR |
| 1/4" | 7121KBN2GF00 | 15/34 | 0 | 1000 | 435 | BR |
| 1/4" | 71215SN2EF00 | 15/34 | 0 | 1000 | 520 | SS |
| 1/4" | 7121KBN2JR00 | 34 | 0 | 700 | 260 | BR |
| 1/4" | 71215SN2GF00 | 15/34 | 0 | 700 | 350 | SS |
| 1/4" | 7321HBN2SN00 | 35 | 5 | 600 | 435 | BR |
| 1/4" | 7121KBN2LR00 | 34 | 0 | 500 | 175 | B |
| 1/4" | 71216SN2JT00 | 34 | 0 | 500 | 200 | SS |
| 1/4" | 71215SN2EN00 | 16 | 0 | 450 | 450 | SS |
| 1/4" | 7121KBN2NF00 | 15 | 0 | 365 | 125 | BR |
| 1/4" | 7121KBN2NR00 | 34 | 0 | 365 | 125 | BR |
| 1/4" | 71215SN2GN00 | 16 | 0 | 350 | 350 | SS |
| 1/4" | 73212BN2MN00 | 23 | 5 | 300 | 300 | BR |
| 1/4" | 73212SN2MN00 | 23 | 5 | 300 | 300 | SS |
| 1/4" | 7321KBY61640 | 25 | 3 | 300 | 45 | BR |
| 1/4" | 71215SN2KN00 | 16 | 0 | 275 | 275 | SS |
| 1/4" | 71215SN2KF00 | 16 | 0 | 260 | 130 | SS |
| 1/4" | 71215SN2MF00 | 16 | 0 | 200 | 100 | SS |
| 1/4" | 71215SN2MN00 | 16 | 0 | 200 | 150 | SS |
| 1/4" | 7321KBN2RN00 | 23 | 3 | 150 | 60 | BR |
| 1/4" | 7121KBN2NV00 | 15 | 0 | 145 | 125 | BR |
| 1/4" | 7121KBN2QV00 | 15 | 0 | 120 | 60 | BR |
| 1/4" | 71215SN2QN00 | 16 | 0 | 110 | 60 | SS |
| 1/4" | 7121KBN2SV00 | 16 | 0 | 80 | 30 | BR |
| 1/4" | 71215SN2SN00 | 16 | 0 | 80 | 25 | SS |
| 1/4" | 71214VN2KN00 | 92 | 0 | 70 | 70 | SS |
| 1/4" | 71214VN2KT00 | 92 | 0 | 70 | 70 | SS |
| 1/4" | 71214TN2KT00 | 92 | 0 | 70 | 70 | T |
| 1/4" | 71214VN2MN00 | 92 | 0 | 50 | 50 | SS |
| 1/4" | 71214VN2MT00 | 92 | 0 | 50 | 50 | SS |
| 1/4" | 71214TN2MT00 | 92 | 0 | 50 | 50 | T |
| 1/4" | 71215SN2VN00 | 16 | 0 | 40 | 10 | SS |
| 1/4" | 71214VN2QN00 | 92 | 0 | 35 | 35 | SS |
| 1/4" | 71214VN2QT00 | 92 | 0 | 35 | 35 | SS |
| 1/4" | 71214TN2QT00 | 92 | 0 | 35 | 35 | T |
| 1/4" | 71214VN2SN00 | 92 | 0 | 20 | 20 | SS |
| 1/4" | 71214VN2ST00 | 92 | 0 | 20 | 20 | SS |
| 1/4" | 71215SN21N00 | 16 | 0 | 20 | 3 | SS |
| 1/4" | 71214TN2ST00 | 92 | 0 | 20 | 20 | T |
| 3/8" | 7321HBN3TN00 | 35 | 5 | 600 | 435 | BR |
| 3/8" | 73212BN3SN00 | 23 | 5 | 300 | 300 | BR |
| 3/8" | 7321KBY63200 | 25 | 3 | 300 | 45 | BR |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 3/8" | 7221GBN3VN00 | 21 | 0 | 230 | 100 | BR |
| 3/8" | 73218BN3TN00 | 23 | 5 | 150 | 150 | BR |
| 3/8" | 7321KBN3SN00 | 23 | 3 | 150 | 60 | BR |
| 3/8" | 7321KBN3SNW0 | 37 | 3 | 150 | 60 | BR |
| 3/8" | 72218BN3TN00 | 21 | 0 | 100 | 40 | BR |
| 3/8" | 72218RN3TV00 | 21 | 0 | 100 | 40 | SS |
| 3/8" Barb | 71214LT3KN00 | 92 | 0 | 70 | 70 | N |
| 3/8" | 7121KBN3UV00 | 15 | 0 | 55 | 20 | BR |
| 3/8" Barb | 71214LT3MN00 | 92 | 0 | 50 | 50 | N |
| 3/8" Barb | 71214LT3QN00 | 92 | 0 | 35 | 35 | N |
| 3/8" Barb* | 71214LT3SN00 | 92 | 0 | 20 | 20 | N |
| 3/8" | 71215SN33N00 | 16 | 0 | 6 | 5 | SS |
| 3/8" | 71215SN33NHP | 16 | 0 | 5-11 | 0 | SS |
| 1/2" | 7321HBN4UN00 | 35 | 5 | 600 | 435 | BR |
| 1/2" | 73212BN4TN00 | 23 | 5 | 300 | 300 | BR |
| 1/2" | 7321KBY6320A | 25 | 3 | 300 | 45 | BR |
| 1/2" | 7221GBN4VN00 | 21 | 0 | 230 | 100 | BR |
| 1/2" | 73218BN4UN00 | 23 | 5 | 150 | 150 | BR |
| 1/2" | 7321KBN4SN00 | 23 | 3 | 150 | 60 | BR |
| 1/2" | 7321KBN4SNW0 | 37 | 3 | 150 | 60 | BR |
| 1/2" | 72218BN4UN00 | 21 | 0 | 100 | 40 | BR |
| 1/2" | 72218RN4UV00 | 21 | 0 | 100 | 40 | SS |
| 1/2" | 7121KBN44V00 | 15 | 0 | 17.5 | 5 | BR |
| 1/2" | A2LB4017 | 48 | 0 | 15 | - | BR |
| 1/2" | A26LB4006 | 48 | 0 | - | 5 | BR |
| 3/4" | 73212BN52N00 | 23 | 5 | 300 | 300 | BR |
| 3/4" | 7321GBN53N00 | 23 | 5 | 230 | 230 | BR |
| 3/4" | 7321GBN53NMC | 37 | 5 | 230 | 230 | BR |
| 3/4" | 7221GBN51N00 | 21 | 0 | 230 | 100 | BR |
| 3/4" | 7221GBN51NCO | 37 | 0 | 230 | 100 | BR |
| 3/4" | 73218BN5VN00 | 23 | 5 | 150 | 150 | BR |
| 3/4" | 72218BN5V00 | 21 | 0 | 100 | 40 | BR |
| 3/4" | 72218RN5VV00 | 21 | 0 | 100 | 40 | SS |
| 3/4" | XLG2O760 | 95 | 5 | - | 50 | BR |
| 3/4" | XLG2O600 | 95 | 5 | 50 | - | BR |
| 1" | XLG2O1060 | 95 | 5 | - | 50 | BR |
| 1" | 73212BN63N00 | 23 | 5 | 300 | 300 | BR |
| 1" | 7321GBN64N00 | 23 | 5 | 230 | 230 | BR |
| 1" | 7321GBN64NMC | 37 | 5 | 230 | 230 | BR |
| 1" | 7221GBN61N00 | 21 | 0 | 230 | 100 | BR |
| 1" | 7221GBN61NCO | 37 | 0 | 230 | 100 | BR |
| 1" | 7221GBN64N00 | 21 | 0 | 230 | 85 | BR |
| 1" | 7221GBN64NCO | 37 | 0 | 230 | 85 | BR |
| 1" | 73218BN64N00 | 23 | 5 | 125 | 125 | BR |
| 1" | LB27BB6127 | 47 | 0 | 125 | - | BR |
| 1" | LB27B110 | 47 | 0 | 125 | - | BR |
| 1" | XLG2O1030 | 95 | 5 | 50 | - | BR |
| 1 1/4" | 7321GBN76N00 | 23 | 5 | 230 | 230 | BR |
| 1 1/4" | 7321GBN76NMC | 37 | 5 | 230 | 230 | BR |
| 1 1/4" | 73218BN75N00 | 23 | 5 | 125 | 125 | BR |
| 1 1/4" | LB27BB7127 | 47 | 0 | 125 | - | BR |
| 1 1/4" | LB27B120 | 47 | 0 | 125 | - | BR |
| 1 1/2" | 7321GBN88N00 | 23 | 5 | 230 | 200 | BR |
| 1 1/2" | 7321GBN88NMC | 37 | 5 | 230 | 200 | BR |
| 1 1/2" | 73218BN87N00 | 23 | 5 | 125 | 125 | BR |
| 1 1/2" | LB27BB8127 | 47 | 0 | 125 | - | BR |
| 1 1/2" | LB27B130 | 47 | 0 | 125 | - | BR |
| 1 1/2" | XLG2O1530 | 95 | 5 | 50 | - | BR |
| 2" | 7321GBN99N00 | 23 | 5 | 230 | 200 | BR |
| 2" | 7321GBN99NMC | 37 | 5 | 230 | 200 | BR |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|-------------------------------------|------------------------|-------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| Two-Way Normally Open Valves | | | | | | |
| 1/8" | 71225SN1EF00 | 18/35 | 0 | 750 | 750 | SS |
| 1/8" | 7122KBN1GF00 | 18/34 | 0 | 435 | 435 | BR |
| 1/8" | 7122KBN1PR00 | 34 | 0 | 435 | - | BR |
| 1/8" | 71225SN1GF00 | 18/34 | 0 | 400 | 400 | SS |
| 1/8" | 71295SN1ENJ1 | 19 | 0 | 400 | 400 | SS |
| 1/8" | B11*1400 | 43 | 0 | 400 | 400 | SS |
| 1/8" | 71295SN1GNJ1 | 19 | 0 | 325 | 325 | SS |
| 1/8" | 3129BBN1AN00 | 41 | 0 | 300 | 300 | BR |
| 1/8" | 3129BSN1AN00 | 41 | 0 | 300 | 300 | SS |
| 1/8" | 71295SN1KNJ1 | 19 | 0 | 250 | 250 | SS |
| 1/8" | B11*1200 | 43 | 0 | 200 | 200 | SS |
| 1/8" | 3129BBN1EN00 | 41 | 0 | 200 | 200 | BR |
| 1/8" | 3129BSN1EN00 | 41 | 0 | 200 | 200 | SS |
| 1/8" | 7122KBN1LF00 | 18 | 0 | 175 | 175 | BR |
| 1/8" | 71225SN1KF00 | 18 | 0 | 170 | 170 | SS |
| 1/8" | 3129BBN1GN00 | 41 | 0 | 150 | 150 | BR |
| 1/8" | 3129BSN1GN00 | 41 | 0 | 150 | 150 | SS |
| 1/8" | 3129BBN1JN00 | 41 | 0 | 80 | 80 | BR |
| 1/8" | 3129BSN1JN00 | 41 | 0 | 80 | 80 | SS |
| 1/8" | B11*1040 | 43 | 0 | 40 | 40 | SS |
| 1/8" | 3129BBN1LN00 | 41 | 0 | 40 | 40 | BR |
| 1/8" | 3129BSN1LN00 | 41 | 0 | 40 | 40 | SS |
| 1/4" | 71225SN2EF00 | 18/34 | 0 | 750 | 750 | SS |
| 1/4" | 7322HBN2SV00 | 35 | 5 | 600 | 600 | BR |
| 1/4" | 7122KBN2GF00 | 18/34 | 0 | 435 | 435 | BR |
| 1/4" | 71225SN2GF00 | 18/35 | 0 | 400 | 400 | SS |
| 1/4" | 71295SN2ENJ1 | 19 | 0 | 400 | 400 | SS |
| 1/4" | 71295SN2GNJ1 | 19 | 0 | 325 | 325 | SS |
| 1/4" | 71295SN2KNJ1 | 19 | 0 | 250 | 250 | SS |
| 1/4" | 73222BN2MN00 | 26 | 5 | 200 | 200 | BR |
| 1/4" | 73222SN2MN00 | 26 | 5 | 200 | 200 | SS |
| 1/4" | 7122KBN2LF00 | 18 | 0 | 175 | 175 | BR |
| 1/4" | 71225SN2KF00 | 18 | 0 | 170 | 170 | SS |
| 3/8" | 7322HBN3TN00 | 35 | 5 | 600 | 600 | BR |
| 3/8" | 73222BN3SN00 | 26 | 5 | 200 | 200 | BR |
| 3/8" | 73222BN3TN00 | 26 | 5 | 150 | 150 | BR |
| 3/8" | 72228BN3TV00 | 22 | 0 | 125 | 125 | BR |
| 3/8" | 72228RN3TV00 | 22 | 0 | 125 | 125 | SS |
| 1/2" | 7322HBN4UN00 | 35 | 5 | 600 | 600 | BR |
| 1/2" | 73222BN4TN00 | 26 | 5 | 200 | 200 | BR |
| 1/2" | 73222BN4UN00 | 26 | 5 | 150 | 150 | BR |
| 1/2" | 72228BN4UV00 | 22 | 0 | 125 | 125 | BR |
| 1/2" | 72228RN4UV00 | 22 | 0 | 125 | 125 | SS |
| 3/4" | 7322GBN53N00 | 26 | 5 | 230 | 230 | BR |
| 3/4" | 7322GBN53NCO | 37 | 5 | 230 | 230 | BR |
| 3/4" | 73222BN52N00 | 26 | 5 | 200 | 200 | BR |
| 3/4" | 73222BN5VN00 | 26 | 5 | 150 | 150 | BR |
| 3/4" | 72228BN5VV00 | 22 | 0 | 125 | 125 | BR |
| 3/4" | 72228RN5VV00 | 22 | 0 | 125 | 125 | SS |
| 1" | 7322GBN64N00 | 26 | 5 | 230 | 230 | BR |
| 1" | 7322GBN64NCO | 37 | 5 | 230 | 230 | BR |
| 1" | 73222BN63N00 | 26 | 5 | 200 | 200 | BR |
| 1" | 73222BN64N00 | 26 | 5 | 125 | 125 | BR |
| 1 1/4" | 7322GBN76N00 | 26 | 5 | 230 | 230 | BR |
| 1 1/4" | 7322GBN76NCO | 37 | 5 | 230 | 230 | BR |
| 1 1/4" | 73228BN75N00 | 26 | 5 | 125 | 125 | BR |
| 1 1/2" | 7322GBN88N00 | 26 | 5 | 170 | 170 | BR |
| 1 1/2" | 7322GBN88NCO | 37 | 5 | 170 | 170 | BR |
| 1 1/2" | 73228BN87N00 | 26 | 5 | 125 | 125 | BR |
| 2" | 7322GBN99N00 | 26 | 5 | 170 | 170 | BR |
| 2" | 7322GBN99NCO | 37 | 5 | 170 | 170 | BR |

Skinner Condensed Valve Listing continued

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| Two-Way External and Remote Pilot Valves | | | | | | |
| 3/8" | 75232BN3SN00 | 40 | 0 | 190 | - | BR |
| 3/8" | 74232BN3SNJ1 | 28 | 0 | 150 | 150 | BR |
| 1/2" | 75232BN4TN00 | 40 | 0 | 190 | - | BR |
| 1/2" | 74232BN4TNJ1 | 28 | 0 | 150 | 150 | BR |
| 3/4" | 75232BN52N00 | 40 | 0 | 190 | - | BR |
| 3/4" | 74232BN52NJ1 | 28 | 0 | 150 | 150 | BR |
| 1" | 75232BN63N00 | 40 | 0 | 190 | - | BR |
| 1" | 74232BN63NJ1 | 28 | 0 | 150 | 150 | BR |
| Hot Water and Steam Valves | | | | | | |
| Two-Way Normally Closed Valves | | | | | | |
| 1/4" | 7321KBN2RE00 | 30 | 3 | 150 | 60 | BR |
| 1/4" | 7121KBN2SE00 | 29 | 0 | 100 | 40 | BR |
| 1/4" | 7321KBN2RES0 | 30 | 3 | 45 | 45 | BR |
| 1/4" | 7121KBN2SESO | 29 | 0 | 40 | 40 | BR |
| 3/8" | 73218BN3TE00 | 30 | 5 | 150 | 150 | BR |
| 3/8" | 7321KBN3SE00 | 30 | 3 | 150 | 60 | BR |
| 3/8" | 7221GBN3VE00 | 29 | 0 | 150 | 100 | BR |
| 3/8" | 73218BN3TTS0 | 30 | 3 | 125 | - | BR |
| 3/8" | 72218BN3TE00 | 29 | 0 | 100 | 40 | BR |
| 3/8" | 72218RN3TE00 | 30 | 0 | 100 | 40 | SS |
| 3/8" | 73218BN3TES0 | 30 | 5 | 50 | 50 | BR |
| 3/8" | 72218BN3TES0 | 29 | 0 | 50 | - | BR |
| 3/8" | 72218RN3TES0 | 30 | 0 | 50 | - | SS |
| 3/8" | 7321KBN3SESO | 30 | 3 | 45 | 45 | BR |
| 3/8" | 7221GBN3VES0 | 29 | 0 | 45 | 45 | BR |
| 1/2" | 73218BN4UE00 | 30 | 5 | 150 | 150 | BR |
| 1/2" | 7321KBN4SE00 | 30 | 3 | 150 | 60 | BR |
| 1/2" | 7221GBN4VE00 | 29 | 0 | 150 | 100 | BR |
| 1/2" | 73218BN4UTS0 | 30 | 3 | 125 | - | BR |
| 1/2" | 72218BN4UE00 | 29 | 0 | 100 | 40 | BR |
| 1/2" | 72218RN4UE00 | 30 | 0 | 100 | 40 | SS |
| 1/2" | 73218BN4UES0 | 30 | 5 | 50 | 50 | BR |
| 1/2" | 72218BN4UES0 | 29 | 0 | 50 | - | BR |
| 1/2" | 72218RN4UES0 | 30 | 0 | 50 | - | SS |
| 1/2" | 7321KBN4SESO | 30 | 3 | 45 | 45 | BR |
| 1/2" | 7221GBN4VES0 | 29 | 0 | 45 | 45 | BR |
| 3/4" | 73218BN5VE00 | 30 | 5 | 150 | 150 | BR |
| 3/4" | 7221GBN5IE00 | 29 | 0 | 150 | 100 | BR |
| 3/4" | 73218BN5VTS0 | 30 | 3 | 125 | - | BR |
| 3/4" | 72218BN5VE00 | 29 | 0 | 100 | 40 | BR |
| 3/4" | 72218RN5VE00 | 30 | 0 | 100 | 40 | SS |
| 3/4" | 73218BN5VES0 | 30 | 5 | 50 | 50 | BR |
| 3/4" | 72218BN5VES0 | 29 | 0 | 50 | - | BR |
| 3/4" | 72218RN5VES0 | 30 | 0 | 50 | - | SS |
| 3/4" | 7221GBN5IES0 | 29 | 0 | 45 | 45 | BR |
| 1" | 7221GBN61E00 | 29 | 0 | 150 | 100 | BR |
| 1" | 7221GBN64E00 | 29 | 0 | 150 | 100 | BR |
| 1" | 73218BN64E00 | 30 | 5 | 125 | 125 | BR |
| 1" | 73218BN64TTS0 | 30 | 5 | 125 | - | BR |
| 1" | 73218BN64ES0 | 30 | 5 | 50 | 50 | BR |
| 1" | 7221GBN61ES0 | 29 | 0 | 45 | 45 | BR |
| 1" | 7221GBN64ES0 | 29 | 0 | 45 | 45 | BR |
| 1 1/4" | 73218BN75E00 | 30 | 5 | 125 | 125 | BR |
| 1 1/4" | 73218BN75TTS0 | 30 | 5 | 125 | - | BR |
| 1 1/4" | 73218BN75ES0 | 30 | 5 | 50 | 50 | BR |
| 1 1/2" | 73218BN87E00 | 30 | 5 | 125 | 125 | BR |
| 1 1/2" | 73218BN87TTS0 | 30 | 5 | 125 | - | BR |
| 1 1/2" | 73218BN87ES0 | 30 | 5 | 50 | 50 | BR |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|-------------------------------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| Two-Way Normally Open Valves | | | | | | |
| 3/8" | 73228BN3TTS0 | 31 | 5 | 125 | - | BR |
| 3/8" | 72228BN3TE00 | 30 | 0 | 125 | 125 | BR |
| 3/8" | 72228RN3TE00 | 30 | 0 | 125 | 125 | SS |
| 3/8" | 72228BN3TES0 | 30 | 0 | 50 | - | BR |
| 3/8" | 72228RN3TES0 | 30 | 0 | 50 | - | SS |
| 1/2" | 73228BN4UTS0 | 31 | 5 | 125 | - | BR |
| 1/2" | 72228BN4UE00 | 30 | 0 | 125 | 125 | BR |
| 1/2" | 72228RN4UE00 | 30 | 0 | 125 | 125 | SS |
| 1/2" | 72228BN4UES0 | 30 | 0 | 50 | - | BR |
| 1/2" | 72228RN4UES0 | 30 | 0 | 50 | - | SS |
| 3/4" | 73228BN52TS0 | 31 | 5 | 125 | - | BR |
| 3/4" | 72228BN5VE00 | 30 | 0 | 125 | 125 | BR |
| 3/4" | 72228RN5VE00 | 30 | 0 | 125 | 125 | SS |
| 3/4" | 72228BN5VES0 | 30 | 0 | 50 | - | BR |
| 3/4" | 72228RN5VES0 | 30 | 0 | 50 | - | SS |
| 1" | 73228BN64TTS0 | 31 | 5 | 125 | - | BR |
| 1 1/4" | 73228BN75TTS0 | 31 | 5 | 125 | - | BR |
| 1 1/2" | 73228BN87TTS0 | 31 | 5 | 125 | - | BR |

+ Pressure ratings apply to typical coil wattage ratings. See appropriate catalog page for specific power ratings.

* Denotes various coil and enclosure options. Refer to appropriate catalog page.

^ These valves are remote pressure operated, not solenoid operated. Refer to catalog listings for additional information.

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| Three-Way Hydraulic Valves | | | | | | |
| 1/8" | 71381SN1MM00 | 94 | 0 | 1000 | 1000 | SS |
| 1/8" | A16LB13002 | 113 | 0 | 3000 | - | SS |
| 1/8" | A166LB13001 | 113 | 0 | - | 3000 | SS |
| 1/8" | 71331SN1MM00 | 94 | 0 | 1000 | 1000 | SS |
| 1/8" | 71311SN1MM00 | 94 | 0 | 1000 | 1000 | SS |
| 1/8" | A13LB13002 | 113 | 0 | 3000 | - | SS |
| 1/8" | A136LB13001 | 113 | 0 | - | 3000 | SS |
| 1/8" | 71321SN1MM00 | 94 | 0 | 1000 | 1000 | SS |
| 1/8" | A15LB13002 | 113 | 0 | 3000 | - | SS |
| 1/8" | A156LB13001 | 113 | 0 | - | 3000 | SS |
| Three-Way Directional Control Valves | | | | | | |
| 1/8" | B16*1250 | 72 | 0 | 250 | 250 | SS |
| 1/8" | 71385SN1GNJ1 | 56 | 0 | 235 | 235 | SS |
| 1/8" | 3138BBN1AN00 | 70 | 0 | 230 | 230 | BR |
| 1/8" | 3138BSN1AN00 | 70 | 0 | 230 | 230 | SS |
| 1/8" | B16*1200 | 72 | 0 | 200 | 200 | SS |
| 1/8" | B16*1175 | 72 | 0 | 175 | 175 | SS |
| 1/8" | 3138BBN1EN00 | 70 | 0 | 160 | 160 | BR |
| 1/8" | 3138BSN1EN00 | 70 | 0 | 160 | 160 | SS |
| 1/8" | 3138BSA6EN00 | 70 | 0 | 160 | 160 | SS |
| 1/8" | 71385SN1KNJ1 | 56 | 0 | 140 | 140 | SS |
| 1/8" | 71385SN1MNJ1 | 56 | 0 | 125 | 125 | SS |
| 1/8" | 3138BBN1GN00 | 70 | 0 | 120 | 120 | BR |
| 1/8" | 3138BSN1GN00 | 70 | 0 | 120 | 120 | SS |
| 1/8" | 3138BSA6GN00 | 70 | 0 | 120 | 120 | SS |
| 1/8" | 3138BBN1JN00 | 70 | 0 | 80 | 80 | BR |
| 1/8" | 3138BSN1JN00 | 70 | 0 | 80 | 80 | SS |
| 1/8" | 3138BBN1LN00 | 70 | 0 | 60 | 60 | BR |
| 1/8" | 3138BSN1LN00 | 70 | 0 | 60 | 60 | SS |
| 1/8" | B16*1050 | 72 | 0 | 50 | 50 | SS |
| 1/8" | 3138BBN1NN00 | 70 | 0 | 35 | 35 | BR |
| 1/8" | 3138BSN1NN00 | 70 | 0 | 35 | 35 | SS |
| 1/8" | 3138BSA6NN00 | 70 | 0 | 35 | 35 | SS |
| 1/8" | 3138BBN1QN00 | 70 | 0 | 20 | 20 | BR |
| 1/8" | 3138BSN1QN00 | 70 | 0 | 20 | 20 | SS |
| 1/8" | 3138BSA6QN00 | 70 | 0 | 20 | 20 | SS |
| 1/4" | A66LB2251 | 77 | 0 | - | 250 | zinc |
| 1/4" | A66LB2176 | 77 | 0 | - | 175 | zinc |
| 1/4" | A66LB2126 | 77 | 0 | - | 125 | zinc |
| 1/4" | A6LB2252 | 77 | 0 | 250 | - | zinc |
| 1/4" | 71385SN2GNJ1 | 56 | 0 | 235 | 235 | SS |
| 1/4" | A6LB2177 | 77 | 0 | 175 | - | zinc |
| 1/4" | 71385SN2KNJ1 | 56 | 0 | 140 | 140 | SS |
| 1/4" | 71385SN2MNJ1 | 56 | 0 | 125 | 125 | SS |
| 1/4" | A6LB2127 | 77 | 0 | 125 | - | zinc |
| 3/8" | 73382BN3RNJ1 | 60 | 10 | 180 | 180 | BR |
| 1/2" | 73382BN4UNJ1 | 60 | 10 | 180 | 180 | BR |
| 3/4" | 73382BN52NJ1 | 60 | 10 | 180 | 180 | BR |
| Three-Way MultiPurpose Valves | | | | | | |
| #10-32 | MBD002 | 114 | 0 | 150 | 150 | P |
| Flange | 7133FBF4LVJ1 | 54 | 0 | 60 | 60 | BR |
| 1/8" | 71335SN1ANJ1 | 56 | 0 | 400 | 400 | SS |
| 1/8" | 71335SN1ENJ1 | 56 | 0 | 180 | 180 | SS |
| 1/8" | 7133KBN1GVJ1 | 54 | 0 | 150 | 150 | BR |
| 1/8" | C4*1150 | 74 | 0 | 150 | 150 | BR |
| 1/8" | 3133BBN1AN00 | 69 | 0 | 150 | 150 | BR |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 1/8" | 3133BSN1AN00 | 69 | 0 | 150 | 150 | SS |
| 1/8" | B14*1150 | 72 | 0 | 150 | 150 | SS |
| 1/8" | 71335SN1GNJ1 | 56 | 0 | 115 | 115 | SS |
| 1/8" | 7133KBN1JVJ1 | 54 | 0 | 100 | 100 | BR |
| 1/8" | 3133BBN1EN00 | 69 | 0 | 100 | 100 | BR |
| 1/8" | 3133BSN1EN00 | 69 | 0 | 100 | 100 | SS |
| 1/8" | 3133BSA6EN00 | 70 | 0 | 100 | 100 | SS |
| 1/8" | B14*1100 | 72 | 0 | 100 | 100 | SS |
| 1/8" | 71335SN1KNJ1 | 56 | 0 | 80 | 80 | SS |
| 1/8" | 3133BBN1GN00 | 69 | 0 | 80 | 80 | BR |
| 1/8" | 3133BSN1GN00 | 69 | 0 | 80 | 80 | SS |
| 1/8" | 3133BSA6GN00 | 70 | 0 | 80 | 80 | SS |
| 1/8" | C4*1075 | 74 | 0 | 75 | 75 | BR |
| 1/8" | B14*1075 | 72 | 0 | 75 | 75 | SS |
| 1/8" | 7133KBN1LVJ1 | 54 | 0 | 60 | 60 | BR |
| 1/8" | 3133BBN1JN00 | 69 | 0 | 60 | 60 | BR |
| 1/8" | 3133BSN1JN00 | 69 | 0 | 60 | 60 | SS |
| 1/8" | C4*1052 | 74 | 0 | 50 | - | BR |
| 1/8" | 3133BBN1LN00 | 69 | 0 | 35 | 35 | BR |
| 1/8" | 3133BSN1LN00 | 69 | 0 | 35 | 35 | SS |
| 1/8" | B14*1030 | 72 | 0 | 30 | 30 | SS |
| 1/8" | C4*1031 | 74 | 0 | - | 30 | BR |
| 1/8" | 3133BBN1NN00 | 69 | 0 | 20 | 20 | BR |
| 1/8" | 3133BSN1NN00 | 69 | 0 | 20 | 20 | SS |
| 1/8" | 3133BSA6NN00 | 70 | 0 | 20 | 20 | SS |
| 1/8" | 3133BBN1QN00 | 69 | 0 | 10 | 10 | BR |
| 1/8" | 3133BSN1QN00 | 69 | 0 | 10 | 10 | SS |
| 1/8" | 3133BSA6QN00 | 70 | 0 | 10 | 10 | SS |
| 1/4" | 7133KBN2BVJ1 | 54 | 0 | 435 | 435 | BR |
| 1/4" | 71335SN2ANJ1 | 56 | 0 | 400 | 400 | SS |
| 1/4" | 71335SN2ENJ1 | 56 | 0 | 180 | 180 | SS |
| 1/4" | 7133KBN2GVJ1 | 54 | 0 | 150 | 150 | BR |
| 1/4" | 7133TVN2GV00 | 56 | 0 | 150 | 150 | SS |
| 1/4" | A4LB2152 | 76 | 0 | 150 | - | zinc |
| 1/4" | A46LB2151 | 76 | 0 | - | 150 | zinc |
| 1/4" | 71335SN2GNJ1 | 56 | 0 | 115 | 115 | SS |
| 1/4" | 7133KBN2JVJ1 | 54 | 0 | 100 | 100 | BR |
| 1/4" | 7133TBN2JV00 | 54 | 0 | 100 | 100 | BR |
| 1/4" | 7133TVN2JV00 | 56 | 0 | 100 | 100 | SS |
| 1/4" | A4LB2102 | 76 | 0 | 100 | - | zinc |
| 1/4" | A46LB2101 | 76 | 0 | - | 100 | zinc |
| 1/4" | 71335SN2KNJ1 | 56 | 0 | 80 | 80 | SS |
| 1/4" | A4LB2077 | 76 | 0 | 75 | - | zinc |
| 1/4" | A46LB2076 | 76 | 0 | - | 75 | zinc |
| 1/4" | 7133KBN2LVJ1 | 54 | 0 | 60 | 60 | BR |
| 1/4" | 7133TBN2LV00 | 54 | 0 | 60 | 60 | BR |
| 1/4" | 7133TVN2LV00 | 56 | 0 | 60 | 60 | SS |
| 1/4" | 7133TBN2NV00 | 54 | 0 | 30 | 30 | BR |
| 1/4" | 7133TVN2NV00 | 56 | 0 | 30 | 30 | SS |
| Three-Way Normally Closed Valves | | | | | | |
| Flange | 7131FBF4LV00 | 50 | 0 | 100 | 100 | BR |
| 1/8" | 71313SN1EN00 | 62 | 0 | 250 | 250 | SS |
| 1/8" | 71313SN1ENJ1 | 62 | 0 | 250 | 250 | SS |
| 1/8" | 71315SN1EN00 | 50 | 0 | 250 | 250 | SS |
| 1/8" | 71315SN1ENJ1 | 50 | 0 | 250 | 250 | SS |
| 1/8" | 7131KBN1GV00 | 50 | 0 | 215 | 215 | BR |
| 1/8" | 71313SN1GN00 | 62 | 0 | 200 | 200 | SS |
| 1/8" | 71313SN1GNJ1 | 62 | 0 | 200 | 200 | SS |
| 1/8" | 71315SN1GN00 | 50 | 0 | 200 | 200 | SS |
| 1/8" | 71315SN1GNJ1 | 50 | 0 | 200 | 200 | SS |
| 1/8" | 3131BBN1AN00 | 69 | 0 | 200 | 200 | BR |

Skinner Condensed Valve Listing continued

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 1/8" | 3131BSN1AN00 | 69 | 0 | 200 | 200 | SS |
| 1/8" | B13*1200 | 72 | 0 | 200 | 200 | SS |
| 1/8" | B13A*1200 | 72 | 0 | 200 | 200 | SS |
| 1/8" | C3*1175 | 74 | 0 | 175 | 175 | BR |
| 1/8" | C3A*1175 | 74 | 0 | 175 | 175 | BR |
| 1/8" | 3131BBN1EN00 | 69 | 0 | 150 | 150 | BR |
| 1/8" | 3131BSN1EN00 | 69 | 0 | 150 | 150 | SS |
| 1/8" | 3131BSA6EN00 | 70 | 0 | 150 | 150 | SS |
| 1/8" | B13*1150 | 72 | 0 | 150 | 150 | SS |
| 1/8" | B13A*1150 | 72 | 0 | 150 | 150 | SS |
| 1/8" | 71313SN1KN00 | 62 | 0 | 125 | 125 | SS |
| 1/8" | 71313SN1KNJ1 | 62 | 0 | 125 | 125 | SS |
| 1/8" | 71315SN1KN00 | 50 | 0 | 125 | 125 | SS |
| 1/8" | 71315SN1KNJ1 | 50 | 0 | 125 | 125 | SS |
| 1/8" | C3*1125 | 74 | 0 | 125 | 125 | BR |
| 1/8" | C3A*1125 | 74 | 0 | 125 | 125 | BR |
| 1/8" | 7131KBN1LV00 | 50 | 0 | 100 | 100 | BR |
| 1/8" | 3131BBN1GN00 | 69 | 0 | 100 | 100 | BR |
| 1/8" | 3131BSN1GN00 | 69 | 0 | 100 | 100 | SS |
| 1/8" | 3131BSA6GN00 | 70 | 0 | 100 | 100 | SS |
| 1/8" | B13*1100 | 72 | 0 | 100 | 100 | SS |
| 1/8" | B13A*1100 | 72 | 0 | 100 | 100 | SS |
| 1/8" | 71313SN1MN00 | 62 | 0 | 90 | 90 | SS |
| 1/8" | 71313SN1MNMJ1 | 62 | 0 | 90 | 90 | SS |
| 1/8" | 71315SN1MN00 | 50 | 0 | 90 | 90 | SS |
| 1/8" | 71315SN1MNMJ1 | 50 | 0 | 90 | 90 | SS |
| 1/8" | 3131BBN1JN00 | 69 | 0 | 80 | 80 | BR |
| 1/8" | 3131BSN1JN00 | 69 | 0 | 80 | 80 | SS |
| 1/8" | C3*1075 | 74 | 0 | 75 | 75 | BR |
| 1/8" | C3A*1075 | 74 | 0 | 75 | 75 | BR |
| 1/8" | 3131BBN1LN00 | 69 | 0 | 60 | 60 | BR |
| 1/8" | 3131BSN1LN00 | 69 | 0 | 60 | 60 | SS |
| 1/8" | C3*1050 | 74 | 0 | 50 | 50 | BR |
| 1/8" | C3A*1050 | 74 | 0 | 50 | 50 | BR |
| 1/8" | 3131BBN1NN00 | 69 | 0 | 40 | 40 | BR |
| 1/8" | 3131BSN1NN00 | 69 | 0 | 40 | 40 | SS |
| 1/8" | 3131BSA6NN00 | 70 | 0 | 40 | 40 | SS |
| 1/8" | B13*1040 | 72 | 0 | 40 | 40 | SS |
| 1/8" | B13A*1040 | 72 | 0 | 40 | 40 | SS |
| 1/8" | 71315SN1SN00 | 50 | 0 | 25 | 25 | SS |
| 1/8" | 71315SN1SNJ1 | 50 | 0 | 25 | 25 | SS |
| 1/8" | 3131BBN1QN00 | 69 | 0 | 10 | 10 | BR |
| 1/8" | 3131BSN1QN00 | 69 | 0 | 10 | 10 | SS |
| 1/8" | 3131BSA6QN00 | 70 | 0 | 10 | 10 | SS |
| 1/8" | 71315SN1VNJ1 | 50 | 0 | VAC | VAC | SS |
| 1/4" | 7131KBN2BR00 | 64 | 0 | 1100 | 1100 | BR |
| 1/4" | 7131KBN2BF00 | 64 | 0 | 580 | 580 | BR |
| 1/4" | 7131KBN2ER00 | 64 | 0 | 435 | 435 | BR |
| 1/4" | 71313SN2EN00 | 62 | 0 | 250 | 250 | SS |
| 1/4" | 71313SN2ENJ1 | 62 | 0 | 250 | 250 | SS |
| 1/4" | 71315SN2EN00 | 50 | 0 | 250 | 250 | SS |
| 1/4" | 71315SN2ENJ1 | 50 | 0 | 250 | 250 | SS |
| 1/4" | A3LB2252 | 76 | 0 | 250 | - | zinc |
| 1/4" | A3LB2251 | 76 | 0 | - | 250 | zinc |
| 1/4" | 7131KBN2GV00 | 50 | 0 | 215 | 215 | BR |
| 1/4" | 71313SN2GN00 | 62 | 0 | 200 | 200 | S |
| 1/4" | 71313SN2GNJ1 | 62 | 0 | 200 | 200 | SS |
| 1/4" | 71315SN2GN00 | 50 | 0 | 200 | 200 | SS |
| 1/4" | 71315SN2GNJ1 | 50 | 0 | 200 | 200 | SS |
| 1/4" | 7131TVN2GV00 | 50 | 0 | 200 | 200 | SS |
| 1/4" | A3LB2177 | 76 | 0 | 175 | - | zinc |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 1/4" | A36LB2176 | 76 | 0 | - | 175 | zinc |
| 1/4" | 7131KBN2JV00 | 50 | 0 | 150 | 150 | BR |
| 1/4" | 7131TBN2JV00 | 50 | 0 | 150 | 150 | BR |
| 1/4" | 7131TVN2JV00 | 50 | 0 | 150 | 150 | SS |
| 1/4" | 71313SN2KN00 | 62 | 0 | 125 | 125 | SS |
| 1/4" | 71313SN2KNJ1 | 62 | 0 | 125 | 125 | SS |
| 1/4" | 71315SN2KN00 | 50 | 0 | 125 | 125 | SS |
| 1/4" | 71315SN2KNJ1 | 50 | 0 | 125 | 125 | SS |
| 1/4" | A3LB2127 | 76 | 0 | 125 | - | zinc |
| 1/4" | A36LB2126 | 76 | 0 | - | 125 | zinc |
| 1/4" | 7131TBN2LV00 | 50 | 0 | 110 | 110 | BR |
| 1/4" | 7131TVN2LV00 | 50 | 0 | 110 | 110 | SS |
| 1/4" | 7131EBN2LN00 | 62 | 0 | 100 | 100 | BR |
| 1/4" | 7131KBN2LV00 | 50 | 0 | 100 | 100 | BR |
| 1/4" | 71313SN2MN00 | 62 | 0 | 90 | 90 | SS |
| 1/4" | 71313SN2MNMJ1 | 62 | 0 | 90 | 90 | SS |
| 1/4" | 71315SN2MN00 | 50 | 0 | 90 | 90 | SS |
| 1/4" | 71315SN2MNMJ1 | 50 | 0 | 90 | 90 | SS |
| 1/4" | 7131TVN2NV00 | 50 | 0 | 70 | 70 | SS |
| 1/4" | 7131TBN2RV00 | 50 | 0 | 30 | 30 | BR |
| 1/4" | 71315SN2SN00 | 50 | 0 | 25 | 25 | SS |
| 1/4" | 71315SN2SNJ1 | 50 | 0 | 25 | 25 | SS |
| 1/4" | 71315SN2VNJ1 | 50 | 0 | VAC | VAC | SS |
| 3/8" | 73312BN3RNJ0 | 57 | 10 | 180 | 180 | BR |
| 3/8" | 73312BN3RNJ1 | 57 | 10 | 180 | 180 | BR |
| 1/2" | 73312BN4UNJ0 | 57 | 10 | 180 | 180 | BR |
| 1/2" | 73312BN4UNJ1 | 57 | 10 | 180 | 180 | BR |
| 3/4" | 73312BN52NJ0 | 57 | 10 | 180 | 180 | BR |
| 3/4" | 73312BN52NJ1 | 57 | 10 | 180 | 180 | BR |

Three-Way Normally Open Valves

| | | | | | | |
|------|--------------|----|---|-----|-----|----|
| 1/8" | 71395SN1ENJ1 | 53 | 0 | 250 | 250 | SS |
| 1/8" | B15*1200 | 72 | 0 | 200 | 200 | SS |
| 1/8" | C5*1175 | 74 | 0 | 175 | 175 | BR |
| 1/8" | 3139BBN1AN00 | 69 | 0 | 160 | 160 | BR |
| 1/8" | 3139BSN1AN00 | 69 | 0 | 160 | 160 | SS |
| 1/8" | 71395SN1GNJ1 | 53 | 0 | 150 | 150 | SS |
| 1/8" | B15*1150 | 72 | 0 | 150 | 150 | SS |
| 1/8" | 71395SN1KNJ1 | 53 | 0 | 125 | 125 | SS |
| 1/8" | 3139BBN1EN00 | 69 | 0 | 125 | 125 | BR |
| 1/8" | 3139BSN1EN00 | 69 | 0 | 125 | 125 | SS |
| 1/8" | 3139BSA6EN00 | 70 | 0 | 125 | 125 | SS |
| 1/8" | B15*1125 | 72 | 0 | 125 | 125 | SS |
| 1/8" | C5*1100 | 74 | 0 | 100 | 100 | BR |
| 1/8" | 3139BBN1GN00 | 69 | 0 | 100 | 100 | BR |
| 1/8" | 3139BSN1GN00 | 69 | 0 | 100 | 100 | SS |
| 1/8" | 3139BSA6GN00 | 70 | 0 | 100 | 100 | SS |
| 1/8" | 3139BBN1JN00 | 69 | 0 | 80 | 80 | BR |
| 1/8" | 3139BSN1JN00 | 69 | 0 | 80 | 80 | SS |
| 1/8" | C5*1060 | 74 | 0 | 60 | 60 | BR |
| 1/8" | 3139BBN1LN00 | 69 | 0 | 60 | 60 | BR |
| 1/8" | 3139BSN1LN00 | 69 | 0 | 60 | 60 | SS |
| 1/8" | 3139BBN1NN00 | 69 | 0 | 40 | 40 | BR |
| 1/8" | 3139BSN1NN00 | 69 | 0 | 40 | 40 | SS |
| 1/8" | 3139BSA6NN00 | 70 | 0 | 40 | 40 | SS |
| 1/8" | B15*1040 | 72 | 0 | 40 | 40 | SS |
| 1/8" | 3139BBN1QN00 | 69 | 0 | 10 | 10 | BR |
| 1/8" | 3139BSN1QN00 | 69 | 0 | 10 | 10 | SS |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 1/8" | 3139BBN1NN00 | 69 | 0 | 40 | 40 | BR |
| 1/8" | 3139BSN1NN00 | 69 | 0 | 40 | 40 | SS |
| 1/8" | 3139BSA6NN00 | 70 | 0 | 40 | 40 | SS |
| 1/8" | B15*1040 | 72 | 0 | 40 | 40 | SS |
| 1/8" | 3139BBN1QN00 | 69 | 0 | 10 | 10 | BR |
| 1/8" | 3139BSN1QN00 | 69 | 0 | 10 | 10 | SS |
| 1/8" | 3139BSA6QN00 | 70 | 0 | 10 | 10 | SS |
| 1/4" | 71395SN2ENJ1 | 53 | 0 | 250 | 250 | SS |
| 1/4" | A5LB2252 | 76 | 0 | 250 | - | zinc |
| 1/4" | A56LB2251 | 76 | 0 | - | 250 | zinc |
| 1/4" | A5LB2177 | 76 | 0 | 175 | - | zinc |
| 1/4" | A56LB2176 | 76 | 0 | - | 175 | zinc |
| 1/4" | 7132TBN2NV00 | 53 | 0 | 150 | - | BR |
| 1/4" | 71395SN2GNJ1 | 53 | 0 | 150 | 150 | SS |
| 1/4" | 71395SN2KNJ1 | 53 | 0 | 125 | 125 | SS |
| 1/4" | A5LB2127 | 76 | 0 | 125 | - | zinc |
| 1/4" | A56LB2126 | 76 | 0 | - | 125 | zinc |
| 3/8" | 73322BN3RNJ0 | 59 | 10 | 180 | 180 | BR |
| 3/8" | 73322BN3RNJ1 | 59 | 10 | 180 | 180 | BR |
| 1/2" | 73322BN4UNJ0 | 59 | 10 | 180 | 180 | BR |
| 1/2" | 73322BN4UNJ1 | 59 | 10 | 180 | 180 | BR |
| 3/4" | 73322BN52NJ0 | 59 | 10 | 180 | 180 | BR |
| 3/4" | 73322BN52NJ1 | 59 | 10 | 180 | 180 | BR |

Three-Way External and Remote Pilot Valves

| | | | | | | |
|------|--------------|----|---|-----|-----|----|
| 3/8" | 75332BN3RN00 | 68 | 0 | 180 | - | BR |
| 3/8" | 74332BN3RNJ1 | 61 | 0 | 170 | 170 | BR |
| 1/2" | 75332BN4UN00 | 68 | 0 | 180 | - | BR |
| 1/2" | 74332BN4UNJ1 | 61 | 0 | 170 | 170 | BR |
| 3/4" | 75332BN52N00 | 68 | 0 | 180 | - | BR |
| 3/4" | 74332BN52NJ1 | 61 | 0 | 170 | 170 | BR |

+ Pressure ratings apply to typical coil wattage ratings.

See appropriate catalog pages for specific power ratings.

* Denotes various coil and enclosure options. Refer to appropriate catalog page.

^ These valves are remote pressure operated, not solenoid operated.

Refer to catalog listing for additional information.

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |

Four-Way Hydraulic Valves

| | | | | | | |
|------|-------------|-----|---|------|------|----|
| 1/8" | A35LB12002 | 116 | 0 | 2000 | - | SS |
| 1/8" | A356LB12001 | 116 | 0 | - | 2000 | SS |

Four-Way Valves

| | | | | | | |
|------|--------------|----|----|-----|-----|------|
| 1/8" | 7341LAN1HNMO | 79 | 15 | 150 | 150 | ALUM |
| 1/4" | 76419AN2NNCA | 81 | 0 | 150 | 150 | ALUM |
| 1/4" | 76419AN2NNCB | 81 | 0 | 150 | 150 | ALUM |
| 1/4" | 76429AN2NN00 | 81 | 0 | 150 | 150 | ALUM |
| 1/4" | 76469AN2NN00 | 81 | 0 | 150 | 150 | ALUM |
| 1/4" | 73419AN2NN00 | 80 | 15 | 150 | 150 | ALUM |
| 1/4" | 73419AN2NNMO | 80 | 15 | 150 | 150 | ALUM |
| 1/4" | 7341LMN2NNMO | 79 | 15 | 150 | 150 | ZINC |
| 1/4" | 73417BN2KN00 | 82 | 30 | 150 | 150 | BR |
| 1/4" | 73477BN2KN00 | 82 | 30 | 150 | 150 | BR |
| 1/4" | 73417BN2PN00 | 82 | 30 | 150 | 150 | BR |
| 1/4" | 73477BN2PN00 | 82 | 30 | 150 | 150 | BR |
| 1/4" | 73417VN2KN00 | 82 | 30 | 150 | 150 | SS |
| 1/4" | 73417VN2PN00 | 82 | 30 | 150 | 150 | SS |
| 1/4" | 73477VN2KN00 | 82 | 30 | 150 | 150 | SS |
| 1/4" | 73477VN2PN00 | 82 | 30 | 150 | 150 | SS |
| 1/4" | 75419AN2NN00 | 80 | ^ | 150 | 150 | ALUM |
| 1/4" | V933L**2150 | 87 | 0 | 150 | 150 | ZINC |
| 1/4" | V935L**2150 | 87 | 0 | 150 | 150 | ZINC |
| 1/4" | V955L**2150 | 87 | 0 | 150 | 150 | ZINC |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |
| 1/4" | V933L**2100 | 87 | 0 | 100 | 100 | ZINC |
| 1/4" | V935L**2100 | 87 | 0 | 100 | 100 | ZINC |
| 1/4" | V955L**2100 | 87 | 0 | 100 | 100 | ZINC |
| 1/4" | V933L**2075 | 87 | 0 | 75 | 75 | ZINC |
| 1/4" | V933L**2050 | 87 | 0 | 50 | 50 | ZINC |
| 1/4" | V935L**2050 | 87 | 0 | 50 | 50 | ZINC |
| 1/2" | 73417BN4UN00 | 82 | 30 | 150 | 150 | BR |
| 1/2" | 73477BN4UN00 | 82 | 30 | 150 | 150 | BR |

+ Pressure ratings apply to typical coil wattage ratings. See appropriate catalog page for specific power ratings.

* Denotes various coil and enclosure options. Refer to appropriate catalog page.

^ These valves are remote pressure operated, not solenoid operated. Refer to catalog listings for additional information.

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |

Intrinsically Safe Valves

Two-Way Normally Closed Valves

| | | | | | | |
|--------|--------------|----|---|---|-----|----|
| 1/4" | 7121KBN2CV90 | 99 | 0 | - | 150 | BR |
| 1/4" | 7121KBN2EV90 | 99 | 0 | - | 100 | BR |
| 1/4" | 7121KBN2GV90 | 99 | 0 | - | 75 | BR |
| 1/2" | 7321HBN4UN90 | 99 | 5 | - | 150 | BR |
| 3/4" | 7321GBN53N90 | 99 | 5 | - | 150 | BR |
| 1" | 7321GBN64N90 | 99 | 5 | - | 150 | BR |
| 1 1/4" | 7321GBN76N90 | 99 | 5 | - | 150 | BR |
| 1 1/2" | 7321GBN88N90 | 99 | 5 | - | 150 | BR |
| 2" | 7321GBN99N90 | 99 | 5 | - | 150 | BR |

Three-Way Normally Closed Valves

| | | | | | | |
|--------|--------------|-----|-----|---|-----|------|
| Flange | 7131FBF4CV90 | 101 | 0 | - | 150 | BR |
| Flange | 7131FBNFEV90 | 101 | 0 | - | 100 | BR |
| Flange | 7131FBNFGV90 | 101 | 0 | - | 75 | BR |
| 1/4" | 7131KBN2CV90 | 101 | 0 | - | 150 | BR |
| 1/4" | 7131KBN2EV90 | 101 | 0 | - | 100 | BR |
| 1/4" | 7131KBN2GV90 | 101 | 0 | - | 75 | BR |
| 1/4" | 7131VVN2CV90 | 101 | 0 | - | 150 | SS |
| 1/4" | 7131VVN2EV90 | 101 | 0 | - | 100 | SS |
| 1/4" | 7131VVN2GV90 | 101 | 0 | - | 75 | SS |
| 1/4" | 7331BAN2KN90 | 101 | 15 | - | 150 | Alum |
| 1/4" | U131E0391 | 103 | 1.5 | - | 105 | BR |
| 1/4" | U133X5196 | 101 | 0 | - | 150 | SS |
| 1/4" | U033X5156 | 103 | 0 | - | 150 | SS |
| 1/2" | 7331LAV4TN90 | 101 | 7 | - | 150 | Alum |

Three-Way Universal Valves

| | | | | | | |
|------|-----------|-----|---|---|-----|----|
| 1/4" | U133X5196 | 101 | 0 | - | 150 | SS |
| 1/4" | U033X5156 | 103 | 0 | - | 150 | SS |

Four-Way Valves

| | | | | | | |
|------|--------------|-----|----|---|-----|------|
| 1/4" | 7341BAN2JN90 | 104 | 15 | - | 150 | Alum |
| 1/4" | 7347LMN2NN90 | 104 | 15 | - | 150 | Zinc |
| 1/2" | 7341LAV4TN90 | 104 | 7 | - | 150 | Alum |
| 1" | 7341LAV62N90 | 104 | 15 | - | 150 | Alum |

Skinner Condensed Valve Listing continued

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |

Manual Reset Valves

Two-Way Normally Closed Valves

| | | | | | | |
|--------|--------------|----|---|-----|-----|----|
| 1/4" | 70215SN2KVVR | 39 | 0 | 150 | 150 | SS |
| 1/4" | 70215SN2KVET | 39 | 0 | 150 | 150 | SS |
| 1/2" | 70218BN4UNVR | 39 | 5 | 150 | 150 | BR |
| 1/2" | 70218BN4UNET | 39 | 5 | 150 | 150 | BR |
| 3/4" | 70212BN52NVR | 39 | 5 | 300 | 300 | BR |
| 3/4" | 70212BN52NET | 39 | 5 | 300 | 300 | BR |
| 1" | 70218BN64NVR | 39 | 5 | 125 | 125 | BR |
| 1" | 70218BN64NET | 39 | 5 | 125 | 125 | BR |
| 1 1/4" | 70218BN75NVR | 39 | 5 | 125 | 125 | BR |
| 1 1/4" | 70218BN75NET | 39 | 5 | 125 | 125 | BR |
| 1 1/2" | 70218BN87NVR | 39 | 5 | 125 | 125 | BR |
| 1 1/2" | 70218BN87NET | 39 | 5 | 125 | 125 | BR |

Two-Way Normally Open Valves

| | | | | | | |
|--------|--------------|----|---|-----|-----|----|
| 3/4" | 70222BN52NVR | 39 | 5 | 300 | 300 | BR |
| 3/4" | 70222BN52NET | 39 | 5 | 300 | 300 | BR |
| 1" | 70228BN64NVR | 39 | 5 | 125 | 125 | BR |
| 1" | 70228BN64NET | 39 | 5 | 125 | 125 | BR |
| 1 1/4" | 70228BN75NVR | 39 | 5 | 125 | 125 | BR |
| 1 1/4" | 70228BN75NET | 39 | 5 | 125 | 125 | BR |
| 1 1/2" | 70228BN87NVR | 39 | 5 | 125 | 125 | BR |
| 1 1/2" | 70228BN87NET | 39 | 5 | 125 | 125 | BR |

Three-Way Normally Closed Valves

| | | | | | | |
|------|---------------|----|----|-----|-----|----|
| 1/4" | 70315SN2ENVR | 66 | 0 | 200 | 200 | SS |
| 1/4" | 70315SN2ENET | 66 | 0 | 200 | 200 | SS |
| 1/4" | 70315SN2GVVR | 66 | 0 | 150 | 150 | SS |
| 1/4" | 70315SN2GVET | 66 | 0 | 150 | 150 | SS |
| 1/4" | 70315SN2KVVR | 66 | 0 | 90 | 90 | SS |
| 1/4" | 70315SN2KVET | 66 | 0 | 90 | 90 | SS |
| 1/4" | 70315SN2MNVVR | 66 | 0 | 60 | 60 | SS |
| 1/4" | 70315SN2MNET | 66 | 0 | 60 | 60 | SS |
| 3/8" | 70312BN3RNVVR | 66 | 10 | 180 | 180 | BR |
| 3/8" | 70312BN3RNET | 66 | 10 | 180 | 180 | BR |
| 1/2" | 70312BN4UNVR | 66 | 10 | 180 | 180 | BR |
| 1/2" | 70312BN4UNET | 66 | 10 | 180 | 180 | BR |
| 3/4" | 70312BN52NVR | 66 | 10 | 180 | 180 | BR |
| 3/4" | 70312BN52NET | 66 | 10 | 180 | 180 | BR |

Three-Way Normally Open Valves

| | | | | | | |
|------|---------------|----|----|-----|-----|----|
| 1/4" | 70325SN2GNVR | 66 | 0 | 150 | 150 | SS |
| 1/4" | 70325SN2GNET | 66 | 0 | 150 | 150 | SS |
| 3/8" | 70322BN3RNVVR | 66 | 10 | 180 | 180 | BR |
| 3/8" | 70322BN3RNET | 66 | 10 | 180 | 180 | BR |
| 1/2" | 70322BN4UNVR | 66 | 10 | 180 | 180 | BR |
| 1/2" | 70322BN4UNET | 66 | 10 | 180 | 180 | BR |
| 3/4" | 70322BN52NVR | 66 | 10 | 180 | 180 | BR |
| 3/4" | 70322BN52NET | 66 | 10 | 180 | 180 | BR |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |

Three-Way Universal Valves

| | | | | | | |
|------|--------------|----|---|-----|-----|----|
| 1/4" | 7033TVN2GVVR | 67 | 0 | 150 | 150 | SS |
| 1/4" | 7033TVN2GVET | 67 | 0 | 150 | 150 | SS |
| 1/4" | U033X5156 | 67 | 0 | 145 | 145 | SS |
| 1/4" | 7033TBN2JVVR | 66 | 0 | 100 | 100 | BR |
| 1/4" | 7033TBN2JVET | 66 | 0 | 100 | 100 | BR |
| 1/4" | 7033TVN2JVVR | 67 | 0 | 100 | 100 | SS |
| 1/4" | 7033TVN2JVET | 67 | 0 | 100 | 100 | SS |
| 1/4" | 7033TBN2NVVR | 66 | 0 | 50 | 50 | BR |
| 1/4" | 7033TBN2NVET | 66 | 0 | 50 | 50 | BR |
| 1/4" | 7033TVN2NVVR | 67 | 0 | 50 | 50 | SS |
| 1/4" | 7033TVN2NVET | 67 | 0 | 50 | 50 | SS |

Four-Way Valves

| | | | | | | |
|------|--------------|----|----|-----|-----|------|
| 1/4" | 70419AN2NNVR | 84 | 15 | 150 | 150 | Alum |
| 1/4" | 70419AN2NNET | 84 | 15 | 150 | 150 | Alum |

| Pipe Size NPT | Pressure Vessel Number | Page | Operating Pressure Differential (PSI) | | | |
|---------------|------------------------|------|---------------------------------------|---------|---------|------------|
| | | | Min. | AC+ psi | DC+ psi | Body Mat'l |

K-Series

Three-Way Valves

| | | | | | |
|-------|-----|----|-----|-----|------|
| K3P01 | 117 | 0 | 100 | - | Alum |
| K3P02 | 117 | 0 | 100 | - | Alum |
| K3P03 | 117 | 0 | 114 | - | Alum |
| K3P04 | 117 | 0 | 114 | - | Alum |
| K3H01 | 117 | 28 | - | 100 | Alum |
| K3H02 | 117 | 28 | - | 100 | Alum |
| K3H03 | 117 | 28 | - | 100 | Alum |
| K3H04 | 117 | 28 | - | 100 | Alum |
| K3F01 | 117 | 0 | - | 100 | Alum |
| K3F02 | 117 | 0 | - | 100 | Alum |

Four-Way Valves

| | | | | | |
|--------|-----|----|-----|-----|------|
| K4H01 | 119 | 28 | - | 100 | Alum |
| K4H02 | 119 | 28 | - | 100 | Alum |
| K4H03 | 119 | 28 | - | 100 | Alum |
| K4H04 | 119 | 28 | - | 100 | Alum |
| K4H05 | 119 | 28 | - | 100 | Alum |
| K4H06 | 119 | 28 | - | 100 | Alum |
| K4H07 | 119 | 28 | - | 100 | Alum |
| K4H08 | 119 | 28 | - | 100 | Alum |
| K4H09 | 119 | 28 | - | 100 | Alum |
| K4H10 | 119 | 28 | - | 100 | Alum |
| K4M01 | 121 | 0 | - | 120 | Alum |
| K4M02 | 121 | 0 | - | 120 | Alum |
| K4M03 | 121 | 0 | - | 120 | Alum |
| K4M04 | 121 | 0 | - | 120 | Alum |
| K4M05 | 121 | 0 | - | 120 | Alum |
| K4M06 | 121 | 0 | - | 120 | Alum |
| K4M07 | 121 | 0 | - | 120 | Alum |
| K4M08 | 121 | 0 | - | 120 | Alum |
| K4P01 | 122 | 21 | 100 | 100 | Alum |
| K4P02 | 122 | 21 | 100 | 100 | Alum |
| K4P03 | 122 | 21 | 114 | 114 | Alum |
| K4P04 | 122 | 21 | 114 | 114 | Alum |
| K4R01 | 123 | 28 | 100 | 100 | Alum |
| K4R02 | 123 | 28 | 100 | 100 | Alum |
| K4R03 | 123 | 28 | 100 | 100 | Alum |
| K4R04 | 123 | 28 | 100 | 100 | Alum |
| K4R05 | 123 | 28 | 100 | 100 | Alum |
| K4R06 | 123 | 28 | 100 | 100 | Alum |
| K4R07 | 123 | 28 | 100 | 100 | Alum |
| K4RL01 | 123 | 28 | 100 | 100 | Alum |
| K4RL02 | 123 | 28 | 100 | 100 | Alum |
| K5R01 | 123 | 28 | 100 | 100 | Alum |
| K5R02 | 123 | 28 | 100 | 100 | Alum |
| K5R03 | 123 | 28 | 100 | 100 | Alum |
| K5R04 | 123 | 28 | 100 | 100 | Alum |
| K5R05 | 123 | 28 | 100 | 100 | Alum |
| K5R06 | 123 | 28 | 100 | 100 | Alum |

Ordering Information

7000 SERIES

The 7000 Series product line uses a significant numbering system that allows every user an easy method to select, identify and understand the product being purchased. Each of the 20 characters denote a specific feature. The

complete number provides a description of the valve configuration.

There are 6 different product categories that can be ordered. These product categories are:

| Item | Description |
|------|---|
| 1 | Fully assembled valves with integrated coils |
| 2 | Fully assembled valves with conventional coils and enclosures |
| 3 | Pressure Vessels only |
| 4 | Integrated Coils only |
| 5 | Coil/Enclosure Assemblies |
| 6 | Accessories |

Ordering Items 1 and 2, Fully Assembled Valves

Step 1: Select the Pressure Vessel catalog number based on the application requirements. The catalog number is specified in the individual catalog sections.

Step 2: Use the Mechanical Options Table, if required, to write the option code in place of the last two pressure vessel digits "00". See page 135.

Step 3: Select the appropriate integrated coil, and enter (N0 = nut and washer) in the 13th and 14th digit, or enclosure and conventional coil. See page 134 and 135.

Step 4: Use the Electrical Options Table, if required, to write the option code in place of the last two digits. See page 135.

Step 5: Use the Voltage Code to specify the correct voltage for the valve.

| Pressure Vessel | Enclosure | Coil | Voltage Code |
|----------------------|-----------|--------|--------------|
| 7121KBN2NV00 | + N0 | + C111 | + P3 |
| 7121KBN2NV00N0C111P3 | | | |
| 71215SN2VV00 | + N0 | + H222 | + C2 |
| 71215SN2VV00N0H222P3 | | | |

Ordering Items 3 and 4, Pressure Vessels, Integrated Coils

Pressure Vessels can be ordered as separate items. Simply select the catalog number and submit the order. If a mechanical option is desired, make sure that it is included in place of the last two "00" digits in the pressure vessel number.

Integrated Coils can also be ordered as separate items. Simply select the coil number and add the correct voltage code. If an electrical option is desired, make sure that it is included in place of the last two digits in the coil number, then specify the voltage by its code.

Example: Select integrated coil "C111" for a 120/60 - 110/50 voltage, the number to order this coil then becomes "C111P3".

Ordering Item 5, Coil/Enclosure Assemblies

Step 1: Select the appropriate enclosure

Step 2: Select the appropriate coil.

Step 3: Determine the correct voltage code.

| Enclosure | Coil | Voltage Code |
|---|--------|--------------|
| A0 | + J111 | + C2 |
| A0J111C2 = Standard enclosure, molded Class F coil, 24VDC | | |

Ordering Item 6, Accessories

Accessories can be purchased by simply specifying the part number with the accessories on page 137. If an enclosure or electrical option is being purchased as a separate item (as an accessory on pages 134 and 135) select the option number and place the order.

Example: To buy a 1/2" conduit DIN plug (electrical option code D2) as a separate accessory simply order "ELECD2".

Ordering Products Not Listed in the Catalog

When an application demands a combination of features not listed in the catalog, use the significant numbering system to specify the exact valve needed. Skinner Valve personnel will then assist in determining the applicability, availability and price of the new product.

Example: A 71215SN2GN00 with BSP porting can be requested by asking for a 71215SR2GN00. In this example the N (for NPT) was substituted with an R (for BSP) in the valve number.

If an application requires a combination of options not listed in the catalog, contact the Skinner Valve Customer Response Center at 860-827-2300 for a valve number and pricing.

3000 SERIES

The 3000 Series product line uses a significant numbering system to specify a particular valve. Each of the 20 characters or combination of characters denotes a specific feature or valve configuration. To order a 3000 Series valve, specify the full 20 digit number using the codes in the chart on page 140.

The first 12 digits designate the

configuration of the Pressure Vessel, the next two digits (13th and 14th) designate the Enclosure, and the last 6 digits (15th through 20th) designate the Coil. Please note that the voltage is indicated by the last two digits of the coil and valve number.

The 12 digit pressure vessel number is selected based on the application requirements

located in the 3000 Series catalog section.

Also note that not all combinations of materials or constructions are possible. If an application requires combinations of options not listed in the catalog, contact the Skinner Valve Customer Response Center at 860 827-2300 for a valve number and pricing.

A, B, C, MB AND V9 SERIES VALVES

Ordering Modified Valves for Exact Requirements:

Skinner valves can be easily modified to meet many special application requirements. Contact the Skinner Valve Customer Response Center at 860 827-2300 for a valve number and pricing.

A new valve number will be assigned after entry of the order. It will include any options specified at time of order entry.

Ordering MB Series Multiple Station Valve Manifolds:

MB Series valves may be manifolded to create any number of valve stations desired. Accessory kits and manifold bases for their assembly are described in the catalog section, MB Series Air Service Valves. See page 114 for detailed instructions on ordering manifold configurations.

Ordering Standard Catalog Valves:

Example:

- 1) Specify the valve catalog number-B2DA1250
- 2) Specify the required voltage-120V, 60Hz

Ordering Catalog Valves with Optional Features and/or Accessories:

Example:

- 1) Specify the valve catalog number-C2DA1251
- 2) Specify the option code-RM (Main Stream Metering)
- 3) Specify the required voltage-120V, 60Hz
- 4) Specify the accessory part number-VO-233 (Wrench Nut)

INTRINSICALLY SAFE VALVE ORDERING INFORMATION

Skinner Valve's Intrinsically Safe solenoid valves are available with a variety of coils and enclosures. Valve part numbers ending with 90 accept the following FM-approved coil numbers:

490885
490890
490895
490880
490860

Those valve part numbers ending with 91 and 96 only accept coil numbers:

490860
482660
483330.01

To Order a Complete Valve

Step 1: Select the base valve which meets the application requirements from pages 99 through 105. For special valve requirements or modifications consult Skinner Valve.

Step 2: Select the desired coil/enclosure combination from pages 106 through 110.

Step 3: Delete the first two digits of the coil part number (either 48 or 49) as these numbers are used for indicating a spare part.

Step 4: Add the remaining four digits of the coil part number to the end of the base valve number.

Step 5: All the I.S. coils are designed for 24VDC (nominal) service. Add the voltage code N7.

Example: An application requires a 1/4" NPTF, 3-way normally closed valve for instrument air flow at 1 SCFM. Brass is a suitable body material. The customer would like a splice box style coil enclosure.

- 1) Select the base valve. In this case: U131K0490.
- 2) Select the desired coil/enclosure combination. In this case: 490885

- 3) Delete the first two digits 49 to create the coil/enclosure suffix 0885.
- 4) Add coil number as a suffix to base valve number: U131K04900885.
- 5) Finally, add the voltage code N7 (24VDC nominal only): U131K04900885N7.

IS Coil Designs

Skinner's Intrinsically Safe valve offering contains a variety of coil designs. The five different coil styles allow the project engineer to select the optimum coil configuration for the application.

The Splice Box Coil contains a small compartment in which to make the electrical terminations, eliminating the need for a separate junction box. Our Potted Lead Wire Coil has a metal enclosure for maximum environmental protection and integral strain relief on the two meter cable.

Two coils with DIN-style spade terminations are also available. The Potted Coil with DIN connection has a metal enclosure for added protection, while the 32mm DIN Coil is our

most compact coil style. The 32mm DIN is ideal for installations with space limitations or for use on our multi-station manifold assemblies.

Finally, the Booster Circuit Coil is used on many of our special purpose valve designs. By generating a brief burst of power, the Booster Circuit Coil can operate our Quick Exhaust valve and high-flow direct operated models.

All five intrinsically safe coil designs are built to meet NEMA 4 Watertight construction, and are approved for T6 temperature classification to address the most demanding applications. If the use of electrical conduit is preferred, 1/2" NPT conduit hub adaptors may be ordered for field installation.

Sleeve Exhaust Adaptor

To facilitate pipe connections to the I.S. valve operator (3-way), a sleeve exhaust adaptor may be ordered separately for field installation. The adaptor, U21-004, contains G 1/8 female (BSP) and 1/4" NPT female threads.

K SERIES ORDERING INFORMATION

To order Skinner K-Series valves follow the three easy steps listed. Remember to use all three charts for each valve type.

Step 1: Choose the valve number from the first chart in the applicable section. (Example: For a K4P valve, the first chart is labeled K-Series Four-Way, Pilot-Operated Valves. Example: K4P01)

Step 2: Specify the desired voltage from the second chart in the applicable section. (Example: For a K4P valve, the second chart is labeled K-Series Four-Way K4P Voltages. Example choice is 24VDC. The number is now K4P01-24VDC.)







Step 3: Select the subbase or manifold

from the third chart in the applicable section. (Example: For a K4P valve, the third chart is labeled K-Series Four-Way K4P Manifolds. Example choice is a 2-station manifold. The order number specified now should read K4P01-24VDC with subbase K01-026.)


Coil Information

7000 SERIES COILS



Integrated Coil Offering (These coils utilize enclosure code "N0". For coil dimensions, see page 139.)

| Coil Code | Type of Termination | Wattage | Description |
|---|------------------------|---------|--|
|  L111 | Leads | 10 | Class F Molded with 18" leads |
| L222 | Leads | 10 | Class H Molded with 18" leads |
| L322 | Leads | 22 | Class H Molded with 18" leads |
|  C111 | 1/2" Conduit | 10 | Class F Molded, NEMA 1, 2, 3, 3s, 4, 4x, 18" leads |
| C222 | 1/2" Conduit | 10 | Class H Molded, NEMA 1, 2, 3, 3s, 4, 4x, 18" leads |
| C322 | 1/2" Conduit | 22 | Class H Molded, NEMA 1, 2, 3, 3s, 4, 4x, 18" leads |
|  H111 | 1/2" Conduit | 10 | Class F Molded, NEMA 3, 3s, 4, 4x, 7, 9 18" leads |
| H222 | 1/2" Conduit | 10 | Class H Molded, NEMA 3, 3s, 4, 4x, 7, 9 18" leads |
| H322 | 1/2" Conduit | 22 | Class H Molded, NEMA 3, 3s, 4, 4x, 7, 9 18" leads |
| H1S1 | 1/2" Conduit Stainless | 10 | Class F Molded, NEMA 3, 3s, 4, 4x, 7, 9 18" leads, stainless steel |
| H2S1 | 1/2" Conduit Stainless | 10 | Class H Molded, NEMA 3, 3s, 4, 4x, 7, 9 18" leads, stainless steel |
| H3S1 | 1/2" Conduit Stainless | 22 | Class H Molded, NEMA 3, 3s, 4, 4x, 7, 9 18" leads, stainless steel |
|  D100 | DIN | 10 | Class F Molded |
| D200 | DIN | 10 | Class H Molded |
| D300 | DIN | 22 | Class H Molded |
|  S100 | Screw | 10 | Class F Molded |
| S200 | Screw | 10 | Class H Molded |
| S300 | Screw | 22 | Class H Molded |
|  T100 | 1/4" Tab | 10 | Class F Molded |

Conventional Coil Offering (These coils require conventional coil enclosures - see page 134.)

| | | | |
|---|-------|----|-------------------------------|
|  J111 | Leads | 10 | Class F Molded with 18" leads |
| J222 | Leads | 10 | Class H Molded with 18" leads |
| J322 | Leads | 22 | Class H Molded with 18" leads |

Specialty Coils (These coils require conventional coil enclosures - see page 134.)

| | | | |
|---|-----------|-----|--|
|  J611 | 18" Leads | 1.3 | Fluxtron 2 wire, low power, low temperature |
| F611 | 18" Leads | 1.1 | Fluxtron 4 wire, low power, low temperature (TTL logic level compatible) |
|  J011 | 18" Leads | 0 | Magnetlatch 2 wire, DC only |
| G011 | 18" Leads | 0 | Magnetlatch 3 wire, AC or DC (pulse) |

- Notes:
- * For coil temperature information, refer to Technical Information section beginning on page 128.
 - * Refer to 7000 Series numbering system description beginning on page 133 for voltage code designations.
 - * Ordinary Location Agency: Underwriter's Laboratories Inc. (UL), Ordinary Location File Number MH 15507/ Canadian Standards Association (CSA), Ordinary Location File Number LR 10716
 - * Hazardous location coils certified for Class I, Division 1 and 2, Groups A,B,C,D; Class II, Division 1 and 2, Groups E,F,G. Agency File Numbers: Underwriter's Laboratories Inc. (UL), Hazardous Location File Number E 23267/ Canadian Standards Association (CSA), Hazardous Location File Number LR 16286
 - * DIN terminations per DIN 43650/ ISO 4400 requirements.
 - * Valves with AC Fluxtron coils receive a 10 watt pressure rating. Valves with a DC Fluxtron coil receive a DC pressure rating.
 - * Fluxtron coils are not available for direct lift valves (code 2 in position 2) or for steam service valves (code S0 in position 11,12 of the pressure vessel)
 - * Magnetlatch coils are equipped with permanent magnets to retain plunger position after power is removed.
 - * Magnetlatch coils receive the same pressure ratings as a valve with a 10 watt coil.
 - * Magnetlatch coils are not available for steam service valves (S0 in position 11,12 of the pressure vessel)
 - * Magnetlatch coils use minimal average power and have no appreciable temperature rise.

Available Voltages

Standard available voltages are listed here. Additional voltages can be satisfied with a new coil of a specific voltage. Consult Skinner.

Note: Valves encoded with 4th digit = 2

(i.e. 7122, 7222, 7322, except for 71221 and 73222) do not meet UL temperature approval requirements on 50Hz voltages when supplied with 10 watt or 22 watt dual frequency coils listed here. Consult Skinner if UL approval is required. However, the following voltages and

codes can be specified for operating these valves on 60Hz:

| | |
|--------|----|
| 120/60 | B6 |
| 240/60 | B8 |
| 480/60 | 1B |

Integrated, Conventional and Magnetlatch Coil Voltages






| DC Voltage | Voltage Code | Agency Approval |
|----------------|--------------|-----------------|
| 12 VDC | C1 | Yes |
| 24 VDC | C2 | Yes |
| 48 VDC | C4 | Yes |
| 120 VDC | C6 | Yes |
| AC Voltage | Voltage Code | Agency Approval |
| 24/60 | B2 | Yes |
| 110/50, 120/60 | P3 | Yes |
| 208/60 | 2K | Yes |
| 220/50, 240/60 | Q3 | Yes |
| 440/50, 480/60 | Q8 | Yes |

Fluxtron Coil Voltages

| Voltage | Voltage Code | Agency Approval |
|-------------------|--------------|-----------------|
| 12 VDC | C1 | Yes |
| 24 VDC | C2 | Yes |
| 48 VDC | C4 | Yes |
| 120 VDC | C6 | Yes |
| 24-50/60 AC | P0 | Yes |
| 110/50, 120/60 AC | 2W | Yes |
| 220/50, 240/60 AC | 3W | Yes |

Note: Not available in coil types H111, H222, H322

GENELEC Approved Coils









| Coil Code | Type of Termination | Wattage | Protection/ Temperature Class | Description | Certificate of Conformity |
|---|---------------------|---------|-------------------------------|--|---------------------------|
|  HZ09 | 3-wire cable gland | 10 | EEx d II C T4 (IP 65) | Molded Class F, internal and external grounding Cable length: 1500 mm | LCIE 96.D6196X |
|  HZ10 | 3-wire cable gland | 10 | EEx m II T6 (IP 65) | Molded Class H, internal and external grounding Cable length: 1500 mm | LCIE 97.D6126X |
|  HZ11 | 3-wire cable gland | 22 | EEx m II T6 (IP 65) | Molded Class H, internal and external grounding Cable length: 1500 mm | LCIE 97.D6126X |
|  VZ03 | cable connection | | EEx me II T3/T4 (IP 65) | Reinforced plastic housing, rectification diodes and varistor protection are encapsulated, screw termination in terminal box | LCIE 92.6036X |
|  VZ06 | cable connection | | EEx e II T4 (IP 67) | Metal housing with encapsulated screw terminal coil, internal and external ground screws | LCIE 86.6161X |

Notes:

* See page 128 for operating temperature classification codes and maximum allowable surface temperatures.

* IP65 and IP67 according to DIN 40050 and IEC 529 standards. Equivalent to NEMA 4 watertight. See page 136 for statement of Degree of Protection of electrical parts.

3000 SERIES COILS

| Coil Code | Type of Termination | Wattage | Description | Coil Code | Type of Termination | Wattage | Description |
|---|---------------------|---------|----------------|--|---------------------|---------|--|
|  M1S1 | 1/4" Tab | 6 | Class B Molded |  MC11 | 1/2" Conduit | 6 | Class F Integrated NEMA 4X, 18" leads |
|  M4S1 | 1/4" Tab | 3 | Class B Molded |  MH11 | 1/2" Conduit | 6 | Class F Integrated NEMA 4X, 7,9, 18" leads |
|  M3J5 | 12" leads | 6 | Class B Molded |  T1J1 | 12" leads | 6 | Class B taped |
|  M6J5 | 12" leads | 3 | Class B Molded |  T3J1 | 12" leads | 3 | Class B taped |

Notes:

* For all 6 watt coils, actual wattage for 24/60 volt is 7.5.

* Hazardous location coils meet requirements for Class I, Division 1 and 2, Groups A,B,C,D; Class II, Division 1 and 2, Groups E,F,G

* Taped leaded coils contain 24 gauge AWG leads.

* Molded leaded coils contain 22 gauge AWG leads.

* AC coils contain full wave bridge rectifier.

* Molded coils are one piece construction.

Two-Way Valve Contents

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SKINNER 7000 Series

General Purpose Two-Way Direct Acting Valves

IN THIS SECTION :
7121, 7122, 7123, 7129

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body – Brass or Stainless Steel (430F)
- Seals – NBR, FKM, PCTFE as listed, EPDM as listed
- Sleeve Tube – Stainless Steel (303 or 304)
- Plunger – Stainless Steel (430FR)
- Stop – Stainless Steel (430FR)
- Springs – Stainless Steel (18-8)
- Shading Rings – Copper
- Pilot Orifice – Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Hydraulic Fluids, Petroleum Products and additional fluids compatible with materials of construction. Use of non-lubricated gaseous media will substantially limit valve life.

Electrical Characteristics

Voltages

- DC – 12, 24
- AC – 24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Power Consumption

- 10, 22 watts
- Fluxtron Electronic Coils and Magnelatch (refer to page 137 for current draw charts)

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC – 150°F
- 22 watt AC/DC – 77°F
- Fluxtron/Magnelatch – 122°F

7121 DIRECT ACTING BRASS VALVES – NORMALLY CLOSED, PCTFE OR FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.* Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|---------|---------|---------|-----------------------------|---------------------------|----------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | 10 watt | 22 watt | | | | | | |
| FLG [^] | 1/16 | 0.11 | 0 | 1000 | 435 | 165 | 7121FBF4GF00 | GP | 1 | | |
| | 1/8 | 0.31 | 0 | 365 | 125 | 165 | 7121FBF4NF00 | GP | 1 | | |
| 1/8 | 1/16 | 0.11 | 0 | 1000 | 435 | 700 | 7121KBN1GF00 | GP | 2 | | |
| | 1/8 | 0.31 | 0 | 365 | 125 | 205 | 7121KBN1NF00 | GP | 2 | | |
| 1/4 | 1/16 | 0.11 | 0 | 1000 | 435 | 700 | 7121KBN2GF00 | GP | 2 | | |
| | 1/8 | 0.31 | 0 | 365 | 125 | 205 | 7121KBN2NF00 | GP | 2 | | |
| | 1/8 | 0.31 | 0 | 145 | 125 | 125 | 7121KBN2NV00 | SS | 2 | | |
| | 5/32 | 0.52 | 0 | 120 | 60 | 75 | 7121KBN2QV00 | SS | 2 | | |
| | 13/64 | 0.76 | 0 | 80 | 30 | 40 | 7121KBN2SV00 | SS | 2 | | |
| 3/8 | 1/4 | 0.83 | 0 | 55 | 20 | 20 | 7121KBN3UV00 | SS | 2 | | |
| 1/2 | 7/16 | 2.5 | 0 | 17.5 | 35 | 5 | 10 | 7121KBN44V00 | SS | 3 | |

[^] 2, 3 and 5 station subbases with 1/4" BSP common inlet port and 1/8" BSP outlet port are available for use with D400 and D500 32mm DIN coils only. For details consult factory.

7000 Series General Purpose Two-Way Direct Acting Valves

7121 DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY CLOSED, PCTFE OR NBR SEALS

*5' Family valves listed below containing NBR seals are also available with FKM seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | Fluid Temp. (F) | MAX.* Pressure Vessel Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|-----------------------|---------------------------------------|----------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | | |
| 1/8 | 3/64 | 0.06 | 0 | 1000 | | 520 | 1000 | 165 | 71215SN1EF00 | GP | 4 |
| | 3/64 | 0.06 | 0 | 450 | | 450 | | 185 | 71215SN1EN00 | SS | 4 |
| | 1/16 | 0.1 | 0 | 700 | | 350 | 700 | 165 | 71215SN1GF00 | GP | 4 |
| | 1/16 | 0.1 | 0 | 350 | | 350 | | 185 | 71215SN1GN00 | SS | 4 |
| | 3/32 | 0.18 | 0 | 260 | 650 | 130 | 300 | 165 | 71215SN1KF00 | GP | 4 |
| | 3/32 | 0.18 | 0 | 275 | | 275 | | 185 | 71215SN1KN00 | SS | 4 |
| | 1/8 | 0.28 | 0 | 200 | 520 | 100 | 200 | 165 | 71215SN1MF00 | GP | 4 |
| | 1/8 | 0.28 | 0 | 200 | | 150 | 200 | 185 | 71215SN1MN00 | SS | 4 |
| | 5/32 | 0.4 | 0 | 110 | 150 | 60 | 130 | 185 | 71215SN1QN00 | SS | 4 |
| | 3/16 | 0.5 | 0 | 80 | 90 | 25 | 70 | 185 | 71215SN1SN00 | SS | 4 |
| | 1/4 | 0.75 | 0 | 40 | 70 | 10 | 30 | 185 | 71215SN1VN00 | SS | 4 |
| | 1/4 | 3/64 | 0.06 | 0 | 1000 | | 520 | 1000 | 165 | 71215SN2EF00 | GP |
| 3/64 | | 0.06 | 0 | 450 | | 450 | | 185 | 71215SN2EN00 | SS | 4 |
| 1/16 | | 0.1 | 0 | 700 | | 350 | 700 | 165 | 71215SN2GF00 | GP | 4 |
| 1/16 | | 0.1 | 0 | 350 | | 350 | | 185 | 71215SN2GN00 | SS | 4 |
| 3/32 | | 0.18 | 0 | 260 | 650 | 130 | 300 | 165 | 71215SN2KF00 | GP | 4 |
| 3/32 | | 0.18 | 0 | 275 | | 275 | | 185 | 71215SN2KN00 | SS | 4 |
| 1/8 | | 0.28 | 0 | 200 | 520 | 100 | 200 | 165 | 71215SN2MF00 | GP | 4 |
| 1/8 | | 0.28 | 0 | 200 | | 150 | 200 | 185 | 71215SN2MN00 | SS | 4 |
| 5/32 | | 0.4 | 0 | 110 | 150 | 60 | 130 | 185 | 71215SN2QN00 | SS | 4 |
| 3/16 | | 0.5 | 0 | 80 | 90 | 25 | 70 | 185 | 71215SN2SN00 | SS | 4 |
| 1/4 | | 0.75 | 0 | 40 | 70 | 10 | 30 | 185 | 71215SN2VN00 | SS | 4 |
| 5/16 | | 1.1 | 0 | 20 | 55 | 3 | 10 | 185 | 71215SN21N00 | SS | 5 |
| 3/8 | 3/8 | 2 | 0 | 6 | 25 | | 5 | 185 | 71215SN33N00 | SS | 6 |
| | 3/8 | 2 | 0 | 5-11 | | | | 185 | 71215SN33NHP+ | SS | 6 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.

** UL/CSA Approval Information: SS=Safety Shutoff GP=General Purpose Blank=Not Approved

See page 136 for additional agency approval information.

+ 5-11PSI is the operating pressure range for bubblelight sealing. Valves may leak if the pressure differential falls below 5 PSI. Fluxtron coils not suitable for use with these valves.

DRAWINGS

#4

Port Identification: 2-IN/ 1-OUT

#5

Port Identification: 2-IN/ 1-OUT

7000 Series General Purpose Two-Way Direct Acting Valves

#6

Port Identification: 2-IN/ 1-OUT

#1

Port Identification: 1-IN/ 2-OUT

| Valve | H | P | C | L |
|--------------|------|------|------|------|
| 7121KBN1XXXX | 2.63 | 3.07 | 1.61 | 1.57 |
| 7121KBN2XXXX | 2.63 | 3.07 | 1.61 | 1.57 |
| 7121KBN3XXXX | 2.57 | 3.08 | 1.55 | 1.97 |

X denotes multiple digit combinations for brevity.

#2

Port Identification: 1-IN/ 2-OUT

#3

Port Identification: Flow arrow on body indicates flow direction- ports are not marked.

7000 Series General Purpose Two-Way Direct Acting Valves

7122 DIRECT ACTING BRASS VALVES – NORMALLY OPEN, PCTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.* Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|--------------------------------|------------------------------|----------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | | |
| 1/8 | 1/16 | 0.11 | 0 | 435 | 435 | 165 | 7122KBN1GF00 | GP | 96 | | |
| | 3/32 | 0.21 | 0 | 175 | 175 | 165 | 7122KBN1LF00 | GP | 96 | | |
| 1/4 | 1/16 | 0.11 | 0 | 435 | 435 | 165 | 7122KBN2GF00 | GP | 96 | | |
| | 3/32 | 0.21 | 0 | 175 | 175 | 165 | 7122KBN2LF00 | GP | 96 | | |

7122 DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY OPEN, PCTFE SEALS

5' Family valves listed below containing NBR seals are also available with FKM seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.* Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|--------------------------------|------------------------------|----------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | | |
| 1/8" | 3/64 | 0.05 | 0 | 750 | 750 | 165 | 71225SN1EF00 | GP | 99 | | |
| | 1/16 | 0.11 | 0 | 400 | 400 | 165 | 71225SN1GF00 | GP | 99 | | |
| | 3/32 | 0.15 | 0 | 170 | 170 | 165 | 71225SN1KF00 | GP | 99 | | |
| 1/4 | 3/64 | 0.05 | 0 | 750 | 750 | 165 | 71225SN2EF00 | GP | 99 | | |
| | 1/16 | 0.11 | 0 | 400 | 400 | 165 | 71225SN2GF00 | GP | 99 | | |
| | 3/32 | 0.15 | 0 | 170 | 170 | 165 | 71225SN2KF00 | GP | 99 | | |

DRAWINGS

#99
Port Identification: 2-IN/ 1-OUT

#96
Port Identification: 1-IN/ 2-OUT

7000 Series General Purpose Two-Way Direct Acting Valves

7129 DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY OPEN, NBR SEALS

*5' Family valves listed below containing NBR seals are also available with FKM seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.* Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|--|------------|--------------------------------|------------------------------|----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min. | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/8" | 3/64 | 0.05 | 0 | 400 | | 400 | 185 | 71295SN1ENJ1 | GP | 7 |
| | 1/16 | 0.11 | 0 | 325 | | 325 | 185 | 71295SN1GNJ1 | GP | 7 |
| | 3/32 | 0.15 | 0 | 250 | | 250 | 185 | 71295SN1KNJ1 | GP | 7 |
| 1/4" | 3/64 | 0.05 | 0 | 400 | | 400 | 185 | 71295SN2ENJ1 | GP | 7 |
| | 1/16 | 0.11 | 0 | 325 | | 325 | 185 | 71295SN2GNJ1 | GP | 7 |
| | 3/32 | 0.15 | 0 | 250 | | 250 | 185 | 71295SN2KNJ1 | GP | 7 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.

**UL/CSA Approval Information: SS= Safety Shutoff GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

DRAWINGS

Technical drawings of the 7129 valve showing front, side, and detail views with dimensions. Dimensions include: 1.62 (width), 1.95 (coil length), 2.76 (total length), 3.82 (1/4" height), 3.65 (1/8" height), 1.82 (coil offset), 1.62 DIA (port diameter), .34 (coil offset), .44 (coil offset), .88 (coil offset).

Thread specification: #10-32 NF TH'D x .25 DP - 2 PLC'S

Port Identification: 2-IN/ 3-OUT

#7

7000 Series **General Purpose Two-Way Direct Acting Valves**

7123 DIRECT ACTING STAINLESS STEEL VALVES – DUAL PURPOSE, NBR SEALS

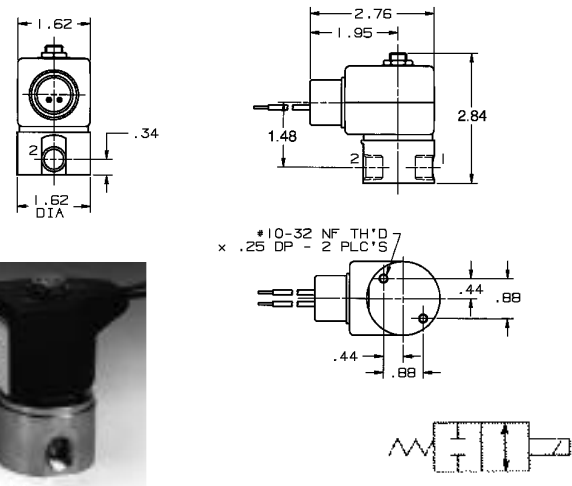
*5' Family valves listed below containing NBR seals are also available with FKM seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.* Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|--|------------|--------------------------------|------------------------------|----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min. | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/8 | 1/32 | 0.02 | 0 | 400 | | 400 | 185 | 71235SN1AN00 | SS | 100 |
| | 3/64 | 0.06 | 0 | 180 | | 180 | 185 | 71235SN1EN00 | SS | 100 |
| | 1/16 | 0.1 | 0 | 110 | | 110 | 185 | 71235SN1GN00 | SS | 100 |
| | 3/32 | 0.17 | 0 | 70 | | 70 | 185 | 71235SN1KN00 | SS | 100 |
| | 1/8 | 0.28 | 0 | 45 | | 45 | 185 | 71235SN1MN00 | SS | 100 |
| 1/4 | 1/32 | 0.02 | 0 | 400 | | 400 | 185 | 71235SN2AN00 | SS | 100 |
| | 3/64 | 0.06 | 0 | 180 | | 180 | 185 | 71235SN2EN00 | SS | 100 |
| | 1/16 | 0.1 | 0 | 110 | | 110 | 185 | 71235SN2GN00 | SS | 100 |
| | 3/32 | 0.17 | 0 | 70 | | 70 | 185 | 71235SN2KN00 | SS | 100 |
| | 1/8 | 0.28 | 0 | 45 | | 45 | 185 | 71235SN2MN00 | SS | 100 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.

** UL/CSA Approval Information: SS= Safety Shutoff GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

DRAWINGS



#100

SKINNER 7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

IN THIS SECTION :
7221, 7222, 7321, 7322, 7423

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or Stainless Steel (316 or 430F)
- Seals—NBR, FKM as listed
- Sleeve Tube—Stainless Steel (303 or 304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Hydraulic Fluids, Petroleum Products and additional fluids compatible with materials of construction. Use of non-lubricated gaseous media will substantially limit valve life.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10, 22 watts
- Fluxtron* Electronic Coils and Magnelatch

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron*/Magnelatch—122°F

* Fluxtron coils not for use on direct lift valves.

7221 DIRECT LIFT BRASS VALVES— NORMALLY CLOSED, NBR SEALS

'8' and 'G' Family valves listed below are also available in FKM Seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---------------------------------|------------------------------|-----------------------|----------------|
| | | | Min.* | Maximum | | | | | | |
| | | | | AC Ratings | DC Ratings | | | | | |
| | | | 10 watt | 22 watt | 10 watt | 22 watt | | | | |
| 3/8" | 5/8 | 3.0 | 0 | 100 | | 40 | 185 | 72218BN3TN00 | SS | 8 |
| | 19/32 | 4.4 | 0 | 230 | | 100 | 185 | 7221GBN3VN00 | SS | 9 |
| 1/2" | 5/8 | 4.0 | 0 | 100 | | 40 | 185 | 72218BN4UN00 | SS | 8 |
| | 19/32 | 4.4 | 0 | 230 | | 100 | 185 | 7221GBN4VN00 | SS | 9 |
| 3/4" | 3/4 | 5.0 | 0 | 100 | | 40 | 185 | 72218BN5VN00 | SS | 8 |
| | 19/32 | 5.5 | 0 | 230 | | 100 | 185 | 7221GBN51N00 | SS | 9 |
| 1" | 19/32 | 5.5 | 0 | 230 | | 100 | 185 | 7221GBN61N00 | SS | 9 |
| | 1 | 11.7 | 0 | 230 | | 85 | 185 | 7221GBN64N00 | SS | 9 |

7221 DIRECT LIFT STAINLESS STEEL VALVES— NORMALLY CLOSED, FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---------------------------------|------------------------------|----------------------|----------------|
| | | | Min.* | Maximum | | | | | | |
| | | | | AC Ratings | DC Ratings | | | | | |
| | | | 10 watt | 22 watt | 10 watt | 22 watt | | | | |
| 3/8" | 5/8 | 3.0 | 0 | 100 | | 40 | 185 | 72218RN3TV00 | SS | 8 |
| 1/2" | 5/8 | 4.0 | 0 | 100 | | 40 | 185 | 72218RN4UV00 | SS | 8 |
| 3/4" | 3/4 | 5.0 | 0 | 100 | | 40 | 185 | 72218RN5VV00 | SS | 8 |

* Direct lift valves will open at zero differential pressure, however full flow through the valve will not be safely achieved. If full flow is required at zero differential pressure, consult Skinner.

** Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC

and 250°F on AC provided a Class H coil is used.

*** UL/CSA Approval Information: SS= Safety Shutoff GP= General Purpose Blank= Not Approved See page 136 for additional agency approval information.

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

DRAWINGS

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|--|
| | H | P | C | L | |
| 72218BN3TXXX | 3.78 | 3.23 | 2.21 | 2.64 | |
| 72218BN4UXXX | 3.78 | 3.23 | 2.21 | 2.64 | |
| 72218BN5VXXX | 3.99 | 3.33 | 2.31 | 2.72 | |
| 72218RN3TXXX | 3.99 | 3.33 | 2.31 | 2.72 | |
| 72218RN4UXXX | 3.99 | 3.33 | 2.31 | 2.72 | |
| 72218RN5VXXX | 3.99 | 3.33 | 2.31 | 2.72 | |

X denotes multiple digit combinations for brevity.

#8
Port Identification: P-IN/ - -OUT

| Valve | Dimension | | | | | |
|--------------|-----------|------|------|------|------|--|
| | H | P | C | L | W | |
| 7221GBN3VXXX | 3.66 | 3.07 | 2.06 | 2.95 | 2.09 | |
| 7221GBN4VXXX | 3.66 | 3.07 | 2.06 | 2.95 | 2.09 | |
| 7221GBN51XXX | 3.75 | 3.07 | 2.06 | 3.15 | 2.09 | |
| 7221GBN61XXX | 4.03 | 3.15 | 2.12 | 3.35 | 2.09 | |
| 7221GBN64XXX | 4.25 | 3.35 | 2.34 | 3.94 | 2.75 | |

X denotes multiple digit combinations for brevity.

#9
Port Identification: Flow arrow on body indicates flow direction—ports are not marked.

7222 DIRECT LIFT BRASS VALVES – NORMALLY OPEN, FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|---------|------------|---------|------------------------|------------------------|--------------------|-------------|
| | | | Min.* | Maximum | | 22 watt | | | | |
| | | | | 10 watt | DC Ratings | | | | | |
| 3/8" | 5/8 | 3.0 | 0 | 125+ | 125 | 185 | 72228BN3TV00 | GP | 102 | |
| 1/2" | 5/8 | 4.0 | 0 | 125+ | 125 | 185 | 72228BN4UV00 | GP | 102 | |
| 3/4" | 3/4 | 5.0 | 0 | 125+ | 125 | 185 | 72228BN5VV00 | GP | 102 | |

- * Direct lift valves will open at zero differential pressure, however full flow through the valve will not be safely achieved. If full flow is required at zero differential pressure, consult Skinner.
- ** Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.
- *** UL/CSA Approval Information: SS=Safety Shutoff GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.
- + Rating suitable for all 22 watt integrated coils except D300 DIN coil. Consult Skinner Valve for application review.

DRAWINGS

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|--|
| | H | P | C | L | |
| 72228BN3TXXX | 4.04 | 3.49 | 2.43 | 2.64 | |
| 72228BN4UXXX | 4.04 | 3.49 | 2.43 | 2.64 | |
| 72228BN5VXXX | 4.24 | 3.58 | 2.52 | 2.72 | |
| 72228RN3TXXX | 4.04 | 3.49 | 2.43 | 2.64 | |
| 72228RN4UXXX | 4.04 | 3.49 | 2.43 | 2.64 | |
| 72228RN5VXXX | 4.24 | 3.58 | 2.52 | 2.72 | |

X denotes multiple digit combinations for brevity.

#102
Port Identification: P-IN/ - -OUT

7222 DIRECT LIFT STAINLESS STEEL VALVES – NORMALLY OPEN, FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|---------|------------|---------|------------------------|------------------------|--------------------|-------------|
| | | | Min.* | Maximum | | 22 watt | | | | |
| | | | | 10 watt | DC Ratings | | | | | |
| 3/8" | 5/8 | 3.0 | 0 | 125+ | 125 | 185 | 72228RN3TV00 | SS | 102 | |
| 1/2" | 5/8 | 4.0 | 0 | 125+ | 125 | 185 | 72228RN4UV00 | SS | 102 | |
| 3/4" | 3/4 | 5.0 | 0 | 125+ | 125 | 185 | 72228RN5VV00 | SS | 102 | |

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

7321 PILOT OPERATED BRASS VALVES – NORMALLY CLOSED, NBR SEALS

'K', '8' and 1/4" '2' Family valves also available with FKM seals

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|-----|------------|---------------------------------|------------------------------|-----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 1/4 | 0.76 | 5 | 300 | 300 | 300 | 185 | 73212BN2MN00 | SS | 10 |
| | 7/16 | 2.0 | 3 | 150 | 60 | 150 | 185 | 7321KBN2RN00 | SS | 98 |
| 3/8" | 1/2 | 2.4 | 5 | 300 | 300 | 300 | 185 | 73212BN3SN00 | SS | 11 |
| | 5/8 | 3.0 | 5 | 150 | 150 | 150 | 185 | 73218BN3TN00 | SS | 12 |
| | 7/16 | 2.5 | 3 | 150 | 60 | 150 | 185 | 7321KBN3SN00 | SS | 98 |
| 1/2" | 1/2 | 2.8 | 5 | 300 | 300 | 300 | 185 | 73212BN4TN00 | SS | 11 |
| | 5/8 | 4.0 | 5 | 150 | 150 | 150 | 185 | 73218BN4UN00 | SS | 12 |
| | 7/16 | 2.5 | 3 | 150 | 60 | 150 | 185 | 7321KBN4SN00 | SS | 98 |
| 3/4" | 3/4 | 7.3 | 5 | 300 | 300 | 300 | 185 | 73212BN52N00 | SS | 13 |
| | 3/4 | 5.0 | 5 | 150 | 150 | 150 | 185 | 73218BN5VN00 | SS | 12 |
| | 25/32 | 9.6 | 5 | 230 | 230 | 230 | 185 | 7321GBN53N00 | SS | 14 |
| 1" | 1 | 11.0 | 5 | 300 | 300 | 300 | 185 | 73212BN63N00 | SS | 13 |
| | 1 1/16 | 13.5 | 5 | 125 | 125 | 125 | 185 | 73218BN64N00 | SS | 15 |
| | 1 | 12.5 | 5 | 230 | 230 | 230 | 185 | 7321GBN64N00 | SS | 14 |
| 1 1/4" | 1 1/8 | 15.0 | 5 | 125 | 125 | 125 | 185 | 73218BN75N00 | SS | 15 |
| | 1 1/8 | 19.3 | 5 | 230 | 230 | 230 | 185 | 7321GBN76N00 | SS | 14 |
| 1 1/2" | 1 1/4 | 22.5 | 5 | 125 | 125 | 125 | 185 | 73218BN87N00 | SS | 16 |
| | 1 9/16 | 29.0 | 5 | 230 | 200 | 230 | 185 | 7321GBN88N00 | SS | 14 |
| 2" | 1 9/16 | 38.6 | 5 | 230 | 200 | 230 | 185 | 7321GBN99N00 | SS | 14 |

7321 PILOT OPERATED STAINLESS STEEL VALVES – NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|-----|------------|---------------------------------|------------------------------|-----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 1/4 | 0.76 | 5 | 300 | 300 | 300 | 185 | 73212SN2MN00 | SS | 17 |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.

** Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC

and 250°F on AC provided a Class H coil is used.

*** UL/CSA Approval Information: SS= Safety Shutoff GP= General Purpose Blank= Not Approved See page 136 for additional agency approval information. 1/4"-2" Family SS valve also available with FKM seals.

DRAWINGS

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|---|
| | H | P | C | L | R |
| 7321KBN4SXXX | 3.56 | 2.97 | 1.96 | 2.17 | |
| 7321KBN2RXXX | 3.56 | 2.97 | 1.96 | 1.97 | |
| 7321KBN3SXXX | 3.56 | 2.97 | 1.96 | 1.97 | |

X denotes multiple digit combinations for brevity.
Flow arrow on body indicates flow direction – ports are not marked.

•10-24 UNC TH'D
X .22" DP-2 PLC'S

Port Identification: 1-IN/ 2-OUT

#98


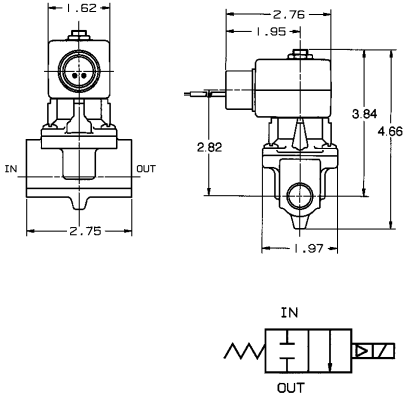
| Valve | Dimension | | | | | |
|--------------|-----------|------|------|------|------|---|
| | H | P | C | L | R | R |
| 73218BN3TXXX | 4.38 | 3.84 | 2.81 | 2.64 | 1.39 | |
| 73218BN4UXXX | 4.38 | 3.84 | 2.81 | 2.64 | 1.39 | |
| 73218BN5VXXX | 4.59 | 3.94 | 2.91 | 2.72 | 1.43 | |

X denotes multiple digit combinations for brevity.

Port Identification: P-IN/ - -OUT


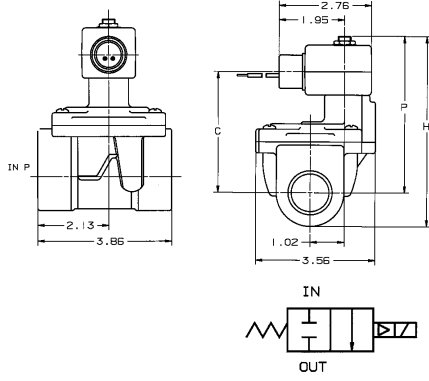
#12

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

#11

Port Identification: IN-IN/ OUT-OUT


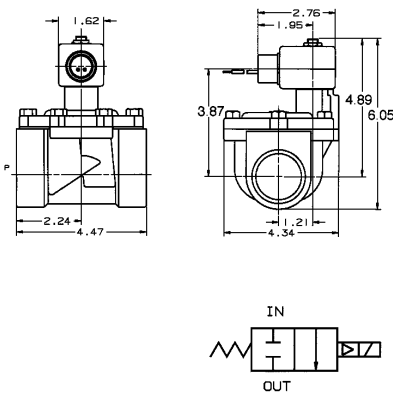



| Valve | Dimension | | |
|--------------|-----------|------|------|
| | H | P | C |
| 73218BN64XXX | 5.45 | 4.59 | 3.57 |
| 73218BN75XXX | 5.74 | 2.97 | 1.96 |

X denotes multiple digit combinations for brevity.


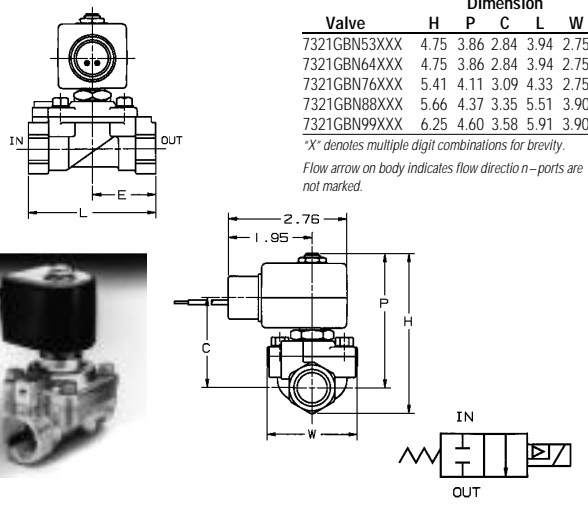
#15

Port Identification: P-IN/ - -OUT

#16

Port Identification: P-IN/ - -OUT


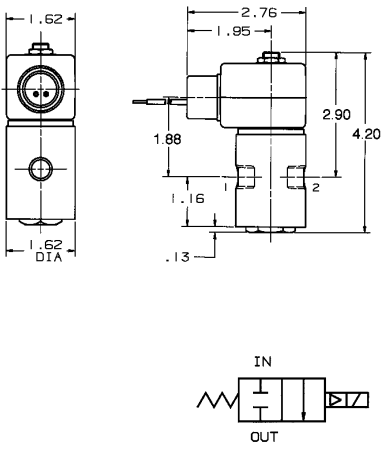



| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | W |
| 7321GBN53XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7321GBN64XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7321GBN76XXX | 5.41 | 4.11 | 3.09 | 4.33 | 2.75 |
| 7321GBN88XXX | 5.66 | 4.37 | 3.35 | 5.51 | 3.90 |
| 7321GBN99XXX | 6.25 | 4.60 | 3.58 | 5.91 | 3.90 |

X denotes multiple digit combinations for brevity.
Flow arrow on body indicates flow direction - ports are not marked.


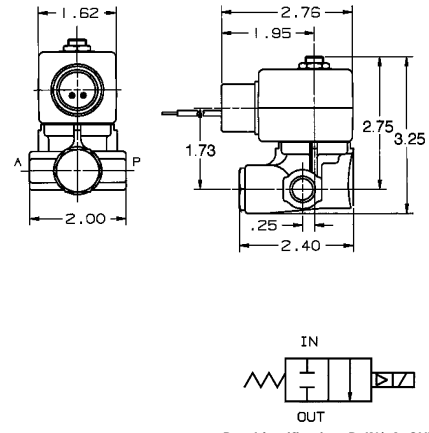
#14

Port Identification: P-IN/ - -OUT

#17

Port Identification: 2-IN/ 1-OUT


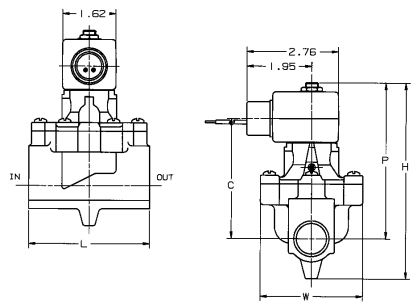
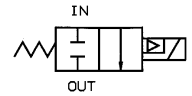



#10

Port Identification: P-IN/ A-OUT

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

| Valve | Dimension | | | | | Port Identification | |
|--------------|-----------|------|------|------|------|---------------------|-----|
| | H | P | C | L | W | IN | OUT |
| 73212BN52N00 | 5.81 | 4.62 | 3.59 | 3.62 | 3.09 | IN | OUT |
| 73212BN63N00 | 6.22 | 4.89 | 3.87 | 4.31 | 3.45 | P | A |

#13


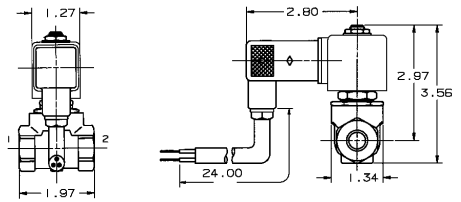
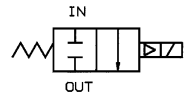
7321 PILOT OPERATED BRASS TIMER DRAIN VALVES—NORMALLY CLOSED, FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|---------|---------|----|----------------------|------------------------|-------------------|-------------|
| | | | Min.* | Maximum | | | | | | |
| | | | | 10 watt | 22 watt | | | | | |
| 1/4" | 7/16 | 1.75 | 3 | 300 | | 45 | 7321KBY61640 | SS | 18 | |
| 3/8" | 7/16 | 2.5 | 3 | 300 | | 45 | 7321KBY63200 | SS | 18 | |
| 1/2" | 7/16 | 2.7 | 3 | 300 | | 45 | 7321KBY6320A | SS | 18 | |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.
 ** UL/CSA Approval Information: SS=Safety Shutoff GP=General Purpose Blank=Not Approved

See page 136 for additional agency approval information.
 NOTE: See Electrical options section on page 135 for timers available for these valves. These valves are rated for intermittent duty cycle applications only.

DRAWINGS

#18

Port Identification: Flow arrow on body indicates flow direction—ports are not marked.

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

7322 PILOT OPERATED BRASS VALVES— NORMALLY OPEN, NBR SEALS

'8' and 1/4" '2' Family valves listed below are also available in FKM Seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|-----------|---------------------------------------|------------|-----|------------|------------------------------|------------------------|-----------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 1/4 | 0.76 | 5 | 200 | 200 | 185 | 73222BN2MN00 | GP | 104 | |
| 3/8" | 1/2 | 2.4 | 5 | 200 | 200 | 185 | 73222BN3SN00 | GP | 105 | |
| | 5/8 | 3.0 | 5 | 150 | 150 | 185 | 73228BN3TN00 | GP | 106 | |
| 1/2" | 1/2 | 2.8 | 5 | 200 | 200 | 185 | 73222BN4TN00 | GP | 105 | |
| | 5/8 | 4.0 | 5 | 150 | 150 | 185 | 73228BN4UN00 | GP | 106 | |
| 3/4" | 3/4 | 7.3 | 5 | 200 | 200 | 185 | 73222BN52N00 | GP | 107 | |
| | 3/4 | 5.0 | 5 | 150 | 150 | 185 | 73228BN5VN00 | GP | 106 | |
| | 25/32 | 9.6 | 5 | 230 | 230 | 185 | 7322GBN53N00 | GP | 108 | |
| 1" | 1 | 11.0 | 5 | 200 | 200 | 185 | 73222BN63N00 | GP | 107 | |
| | 1 1/16 | 13.5 | 5 | 125 | 125 | 185 | 73228BN64N00 | GP | 110 | |
| | 1 | 12.5 | 5 | 230 | 230 | 185 | 7322GBN64N00 | GP | 108 | |
| 1 1/4" | 1 1/8 | 15.0 | 5 | 125 | 125 | 185 | 73228BN75N00 | GP | 110 | |
| | 1 1/8 | 19.3 | 5 | 230 | 230 | 185 | 7322GBN76N00 | GP | 108 | |
| 1 1/2" | 1 1/4 | 22.5 | 5 | 125 | 125 | 185 | 73228BN87N00 | GP | 111 | |
| | 1 9/16 | 29.0 | 5 | 170 | 170 | 185 | 7322GBN88N00 | GP | 108 | |
| 2" | 1 9/16 | 38.6 | 5 | 170 | 170 | 185 | 7322GBN99N00 | GP | 108 | |

7322 PILOT OPERATED STAINLESS STEEL VALVES— NORMALLY OPEN, NBR SEAL

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|-----------|---------------------------------------|------------|-----|------------|------------------------------|------------------------|-----------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 1/4 | 0.76 | 5 | 200 | 200 | 185 | 73222SN2MN00 | SS | 112 | |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.

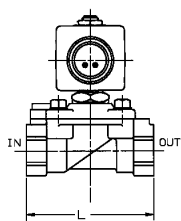
** Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter "V" in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC

and 250°F on AC provided a Class H coil is used.

*** UL/CSA Approval Information: SS= Safety Shutoff GP= General Purpose Blank= Not Approved See page 136 for additional agency approval information.

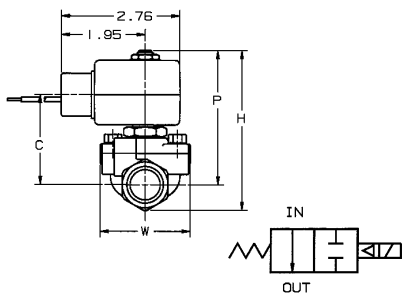
1/4" - 2" Family valves listed are also available with FKM seals.

DRAWINGS



| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | W |
| 7322GBN53XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7322GBN64XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7322GBN76XXX | 5.41 | 4.11 | 3.09 | 4.33 | 2.75 |
| 7322GBN88XXX | 5.66 | 4.37 | 3.35 | 5.51 | 3.90 |
| 7322GBN99XXX | 6.25 | 4.60 | 3.58 | 5.91 | 3.90 |

X denotes multiple digit combinations for brevity.



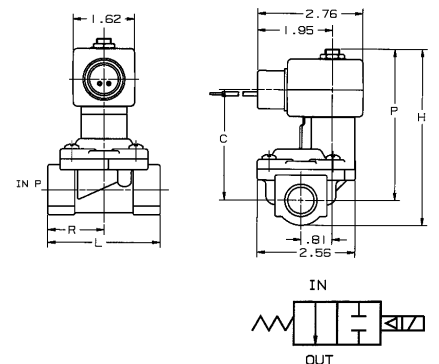
Port Identification: Flow arrow on body indicates flow direction—ports are not marked.

#108



| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | R |
| 73228BN3TXXX | 4.62 | 4.07 | 3.01 | 2.64 | 1.39 |
| 73228BN4UXXX | 4.62 | 4.07 | 3.01 | 2.64 | 1.39 |
| 73228BN5VXXX | 4.83 | 4.17 | 3.11 | 2.72 | 1.43 |

X denotes multiple digit combinations for brevity.



Port Identification: P-IN/ - - OUT


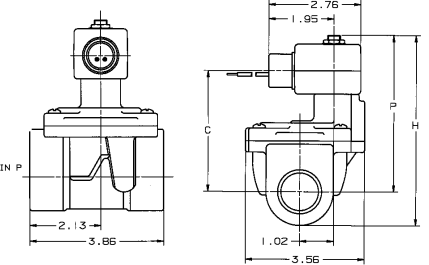
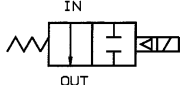


#106

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves


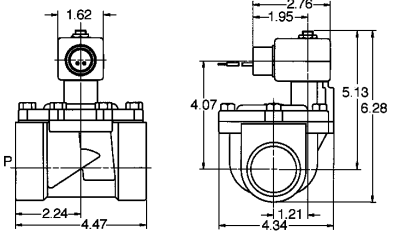
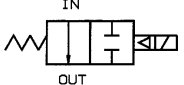
| Valve | Dimension | | |
|--------------|-----------|------|------|
| | H | P | C |
| 73228BN64XXX | 5.69 | 4.83 | 3.77 |
| 73228BN75XXX | 5.97 | 4.97 | 3.91 |

**X* denotes multiple digit combinations for brevity.*


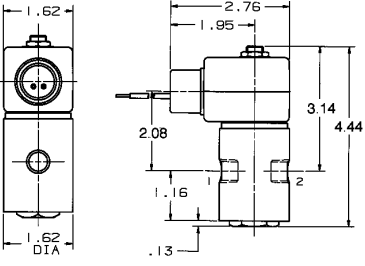
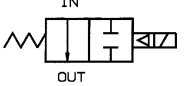
#110

Port Identification: P-IN/ - -OUT


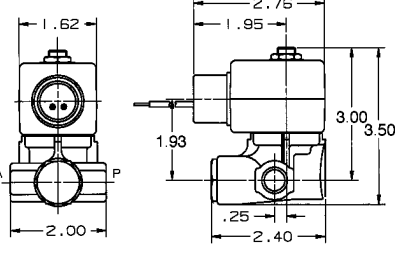
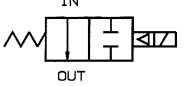
#111

Port Identification: P-IN/ - -OUT

#112


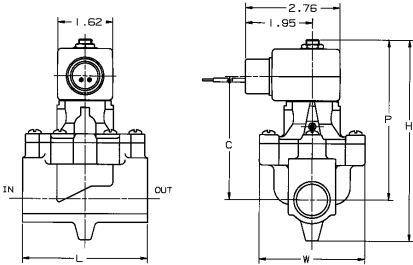
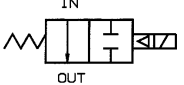
Port Identification: 2-IN/ 1-OUT


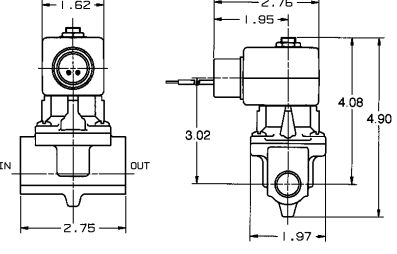
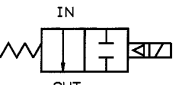
#104

Port Identification: P-IN/ A-OUT

| Valve | Dimension | | | | | Port Identification | |
|--------------|-----------|------|------|------|------|---------------------|-----|
| | H | P | C | L | W | IN | OUT |
| 73222BN52N00 | 6.04 | 4.85 | 3.79 | 3.62 | 3.09 | IN | OUT |
| 73222BN63N00 | 6.46 | 5.13 | 4.07 | 4.31 | 3.45 | P | A |

#107

#105

Port Identification: IN-IN/ OUT-OUT

7000 Series General Purpose Two-Way Direct Lift and Pilot Operated Valves

7423 PILOT OPERATED BRASS VALVES – DUAL PURPOSE, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.* Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|-----|------------|--------------------------------|------------------------------|----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 3/8" | 1/2 | 2.4 | 0 | 150 | 150 | | 185 | 74232BN3SNJ1 | GP | 19 |
| 1/2" | 1/2 | 2.8 | 0 | 150 | 150 | | 185 | 74232BN4TNJ1 | GP | 19 |
| 3/4" | 3/4 | 7.3 | 0 | 150 | 150 | | 185 | 74232BN52NJ1 | GP | 20 |
| 1" | 1 | 11.0 | 0 | 150 | 150 | | 185 | 74232BN63NJ1 | GP | 20 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.
 Note: External Pilot Pressure valves require a minimum external pilot pressure equal to the main line pressure plus 10 PSI. Maximum external pilot pressure is 145 PSI for vacuum applications, and 160

PSI for pressure applications.
 Pressure ratings may be reduced, however. Consult factory for details.
 **UL/CSA Approval information: SS= Safety Shutoff GP= General Purpose
 BLANK = Not Approved
 See page 136 for additional agency approval information.

DRAWINGS

#19

NORMALLY CLOSED

NORMALLY OPEN

Port Identification: IN-IN/ OUT-OUT
 Note: Valve may be normally closed or normally open, depending on piping of external pilot.

| Valve | Dimension | | | | | | Port Identification | |
|--------------|-----------|------|------|------|------|------|---------------------|-----|
| | H | P | C | L | W | S | IN | OUT |
| 74232BN52NJ1 | 6.78 | 5.59 | 3.59 | 3.62 | 3.09 | 2.28 | IN | OUT |
| 74232BN63NJ1 | 7.19 | 5.86 | 3.87 | 4.31 | 3.45 | 2.56 | P | A |

Valve can be normally closed or normally open, depending on piping of external pilot.

#20

NORMALLY CLOSED

NORMALLY OPEN

SKINNER 7000 Series Hot Water and Steam Two-Way, Direct Acting, Direct Lift and Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body– Brass or Stainless Steel (316 or 430F)
- Seals– PTFE, EPDM as listed
- Sleeve Tube– Stainless Steel (303 or 304)
- Plunger– Stainless Steel (430FR)
- Piston– Brass
- Piston Seal– PTFE Composite
- Piston Guide– Teflon Composite
- Stop– Stainless Steel (430FR)
- Springs– Stainless Steel (18-8 or 17-7PH)
- Shading Ring– Copper

Compatible Fluids

- Steam to 353°F, Hot Water to 210°F

Electrical Characteristics

Voltages

- DC– 12, 24
- AC– 24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10, 22 watts
- Fluxtron* Electronic Coils and Magnelatch

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC – 150°F (-E00 valves), 122°F (-ES0 valves), 77°F (-TS0 valves)
- 22 watt AC/DC – 77°F
- Fluxtron*/Magnelatch – 122°F

Fluxtron coils not suitable for use on direct lift valves. Fluxtron and Magnelatch coils not suitable for use on valves rated for steam service (S0).

Valves with 'S0' in last two digits of pressure vessel number are rated for steam applications.

DIRECT ACTING BRASS VALVES – NORMALLY CLOSED, EPDM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|----|---------|-------------------------------|--------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 1/4 | 13/64 | 0.76 | 0 | 100 | 40 | 100 | 210 | 7121KBN2SE00 | GP | 2 | |
| | 13/64 | 0.76 | 0 | 40 | | 40 | 285 | 7121KBN2SE50 | GP | 2 | |

DIRECT LIFT BRASS VALVES – NORMALLY CLOSED, EPDM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|--|---------|-------------------------------|--------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 3/8" | 5/8 | 3.0 | 0 | 100 | | 40 | 210 | 72218BN3TE00 | GP | 8 | |
| | 5/8 | 3.0 | 0 | 50 | | | 297 | 72218BN3TES0 | GP | 8 | |
| | 19/32 | 4.4 | 0 | 150 | | 100 | 210 | 7221GBN3VE00 | GP | 9 | |
| | 19/32 | 4.4 | 0 | 45 | | 45 | 293 | 7221GBN3VES0 | GP | 9 | |
| 1/2" | 5/8 | 4.0 | 0 | 100 | | 40 | 210 | 72218BN4UE00 | GP | 8 | |
| | 5/8 | 4.0 | 0 | 50 | | | 297 | 72218BN4UES0 | GP | 8 | |
| | 19/32 | 4.4 | 0 | 150 | | 100 | 210 | 7221GBN4VE00 | GP | 9 | |
| | 19/32 | 4.4 | 0 | 45 | | 45 | 293 | 7221GBN4VES0 | GP | 9 | |
| 3/4" | 3/4 | 5.0 | 0 | 100 | | 40 | 210 | 72218BN5VE00 | GP | 8 | |
| | 3/4 | 5.0 | 0 | 50 | | | 297 | 72218BN5VES0 | GP | 8 | |
| | 19/32 | 5.5 | 0 | 150 | | 100 | 210 | 7221GBN51E00 | GP | 9 | |
| | 19/32 | 5.5 | 0 | 45 | | 45 | 293 | 7221GBN51ES0 | GP | 9 | |
| 1" | 19/32 | 5.5 | 0 | 150 | | 100 | 210 | 7221GBN61E00 | GP | 9 | |
| | 19/32 | 5.5 | 0 | 45 | | 45 | 293 | 7221GBN61ES0 | GP | 9 | |
| | 1 | 11.7 | 0 | 150 | | 100 | 210 | 7221GBN64E00 | GP | 9 | |
| | 1 | 11.7 | 0 | 45 | | 45 | 293 | 7221GBN64ES0 | GP | 9 | |

7000 Series Hot Water and Steam Two-Way, Direct Acting, Direct Lift and Pilot Operated Valves

DIRECT LIFT STAINLESS STEEL VALVES– NORMALLY CLOSED, EPDM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|---------|---------|------------|-------------------------------|--------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | DC Ratings | | | | | |
| | | | | 10 watt | 22 watt | 10 watt | | | | | 22 watt |
| 3/8" | 5/8 | 3.0 | 0 | 100 | | 40 | 210 | 72218RN3TE00 | GP | 8 | |
| | 5/8 | 3.0 | 0 | 50 | | | 297 | 72218RN3TES0 | GP | 8 | |
| 1/2" | 5/8 | 4.0 | 0 | 100 | | 40 | 210 | 72218RN4UE00 | GP | 8 | |
| | 5/8 | 4.0 | 0 | 50 | | | 297 | 72218RN4UES0 | GP | 8 | |
| 3/4" | 3/4 | 5.0 | 0 | 100 | | 40 | 210 | 72218RN5VE00 | GP | 8 | |
| | 3/4 | 5.0 | 0 | 50 | | | 297 | 72218RN5VES0 | GP | 8 | |

DIRECT LIFT BRASS VALVES– NORMALLY OPEN, EPDM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|---------|---------|------------|-------------------------------|--------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | DC Ratings | | | | | |
| | | | | 10 watt | 22 watt | 10 watt | | | | | 22 watt |
| 3/8" | 5/8 | 3.0 | 0 | | 125 | | 210 | 72228BN3TE00 | GP | 102 | |
| | 5/8 | 3.0 | 0 | 50 | | | 297 | 72228BN3TES0 | GP | 102 | |
| 1/2" | 5/8 | 4.0 | 0 | | 125 | | 210 | 72228BN4UE00 | GP | 102 | |
| | 5/8 | 4.0 | 0 | 50 | | | 297 | 72228BN4UES0 | GP | 102 | |
| 3/4" | 3/4 | 5.0 | 0 | | 125 | | 210 | 72228BN5VE00 | GP | 102 | |
| | 3/4 | 5.0 | 0 | 50 | | | 297 | 72228BN5VES0 | GP | 102 | |

DIRECT LIFT STAINLESS STEEL VALVES– NORMALLY OPEN, EPDM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|---------|---------|------------|-------------------------------|--------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | DC Ratings | | | | | |
| | | | | 10 watt | 22 watt | 10 watt | | | | | 22 watt |
| 3/8" | 5/8 | 3.0 | 0 | | 125 | | 210 | 72228RN3TE00 | GP | 102 | |
| | 5/8 | 3.0 | 0 | 50 | | | 297 | 72228RN3TES0 | GP | 102 | |
| 1/2" | 5/8 | 4.0 | 0 | | 125 | | 210 | 72228RN4UE00 | GP | 102 | |
| | 5/8 | 4.0 | 0 | 50 | | | 297 | 72228RN4UES0 | GP | 102 | |
| 3/4" | 3/4 | 5.0 | 0 | | 125 | | 210 | 72228RN5VE00 | GP | 102 | |
| | 3/4 | 5.0 | 0 | 50 | | | 297 | 72228RN5VES0 | GP | 102 | |

PILOT OPERATED BRASS VALVES– NORMALLY CLOSED, EPDM OR PTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|---------|---------|------------|-------------------------------|--------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | DC Ratings | | | | | |
| | | | | 10 watt | 22 watt | 10 watt | | | | | 22 watt |
| 1/4" | 7/16 | 2.0 | 3 | 150 | | 60 | 150 | 210 | 7321KBN2RE00 | GP | 98 |
| | 7/16 | 2.0 | 3 | 45 | | | 45 | 293 | 7321KBN2RES0 | GP | 98 |
| 3/8" | 5/8 | 3.0 | 5 | 150 | | 150 | | 210 | 73218BN3TE00 | GP | 12 |
| | 5/8 | 3.0 | 5 | 50 | | 50 | | 297 | 73218BN3TES0 | GP | 12 |
| | 5/8 | 3.0 | 3 | 125 | | | | 353 | 73218BN3TTS0 | GP | 21 |
| | 7/16 | 2.5 | 3 | 150 | | 60 | 150 | 210 | 7321KBN3SE00 | GP | 98 |
| | 7/16 | 2.5 | 3 | 45 | | | 45 | 293 | 7321KBN3SES0 | GP | 98 |
| 1/2" | 5/8 | 4.0 | 5 | 150 | | 150 | | 210 | 73218BN4UE00 | GP | 12 |
| | 5/8 | 4.0 | 5 | 50 | | 50 | | 297 | 73218BN4UES0 | GP | 12 |
| | 5/8 | 4.0 | 3 | 125 | | | | 353 | 73218BN4UTS0 | GP | 21 |
| | 7/16 | 2.5 | 3 | 150 | | 60 | 150 | 210 | 7321KBN4SE00 | GP | 98 |
| | 7/16 | 2.5 | 3 | 45 | | | 45 | 293 | 7321KBN4SES0 | GP | 98 |
| 3/4" | 3/4 | 5.0 | 5 | 150 | | 150 | | 210 | 73218BN5VE00 | GP | 12 |
| | 3/4 | 5.0 | 5 | 50 | | 50 | | 297 | 73218BN5VES0 | GP | 12 |
| | 5/8 | 4.5 | 3 | 125 | | | | 353 | 73218BN5VTS0 | GP | 21 |
| 1" | 1 1/16 | 13.5 | 5 | 125 | | 125 | | 210 | 73218BN64E00 | GP | 15 |
| | 1 1/16 | 13.5 | 5 | 50 | | 50 | | 297 | 73218BN64ES0 | GP | 15 |
| | 1 1/16 | 13.5 | 5 | 125 | | | | 353 | 73218BN64TS0 | GP | 22 |
| 1 1/4" | 1 1/8 | 15.0 | 5 | 125 | | 125 | | 210 | 73218BN75E00 | GP | 15 |
| | 1 1/8 | 15.0 | 5 | 50 | | 50 | | 297 | 73218BN75ES0 | GP | 15 |
| | 1 1/8 | 16.0 | 5 | 125 | | | | 353 | 73218BN75TS0 | GP | 22 |
| 1 1/2" | 1 1/4 | 22.5 | 5 | 125 | | 125 | | 210 | 73218BN87E00 | GP | 16 |
| | 1 1/4 | 22.5 | 5 | 50 | | 50 | | 297 | 73218BN87ES0 | GP | 16 |
| | 1 1/4 | 22.5 | 5 | 125 | | | | 353 | 73218BN87TS0 | GP | 23 |

7000 Series Hot Water and Steam Two-Way, Direct Acting, Direct Lift and Pilot Operated Valves

PILOT OPERATED BRASS VALVES – NORMALLY OPEN, PTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure** Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|-----------|---------------------------------------|------------|--|------------|----------------------|-----------------------------|-----------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 3/8" | 5/8 | 3.0 | 5 | 125 | | | 73228BN3TTSO | GP | 21 | |
| 1/2" | 5/8 | 4.0 | 5 | 125 | | | 73228BN4UTSO | GP | 21 | |
| 3/4" | 3/4 | 7.5 | 5 | 125 | | | 73228BN52TSO | GP | 21 | |
| 1" | 1 1/16 | 13.5 | 5 | 125 | | | 73228BN64TSO | GP | 22 | |
| 1 1/4" | 1 1/8 | 16.0 | 5 | 125 | | | 73228BN75TSO | GP | 22 | |
| 1 1/2" | 1 1/4 | 22.5 | 5 | 125 | | | 73228BN87TSO | GP | 23 | |

* Direct lift valves will open at zero differential pressure, however, full flow through the valve will not be safely achieved. If full flow is required at near zero differential pressure, consult Skinner. Pilot operated valves require the minimum pressure differential specified for proper valve operation.
 ** Class H coils are required on steam valves with PTFE seals which are identified by the letters 'TSO'

in the last three digits of the pressure vessel number. Class F coils can be used on all other steam and hot water valves.
 ***UL/CSA Approval Information: SS= Safety Shutoff GP=General Purpose Blank=Not Approved See page 136 for additional agency information.

DRAWINGS

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | R |
| 73218BN3TTSO | 5.12 | 4.58 | 3.55 | 2.65 | 1.39 |
| 73218BN4UTSO | 5.12 | 4.58 | 3.55 | 2.65 | 1.39 |
| 73218BN5VTSO | 5.33 | 4.68 | 3.65 | 2.73 | 1.43 |
| 73228BN3TTSO | 5.36 | 4.81 | 3.75 | 2.65 | 1.39 |
| 73228BN4UTSO | 5.36 | 4.81 | 3.75 | 2.65 | 1.39 |
| 73228BN5VTSO | 5.57 | 4.91 | 3.85 | 2.73 | 1.43 |

| Valve | Dimension | | | | | |
|---------------|-----------|------|------|------|------|------|
| | H | P | C | L | W | S |
| 73218BN64TTSO | 4.56 | 3.70 | 2.38 | 5.58 | 3.96 | 2.94 |
| 73218BN75TTSO | 4.85 | 3.85 | 2.52 | 5.58 | 3.96 | 2.94 |
| 73228BN64TTSO | 4.56 | 3.70 | 2.38 | 5.82 | 4.20 | 3.14 |
| 73228BN75TTSO | 4.85 | 3.85 | 2.52 | 5.82 | 4.20 | 3.14 |

| Valve | Dimension | | | |
|--------------|-----------|------|------|------|
| | H | P | C | L |
| 7121KBN1XXXX | 2.63 | 3.07 | 1.61 | 1.57 |
| 7121KBN2XXXX | 2.63 | 3.07 | 1.61 | 1.57 |
| 7121KBN3XXXX | 2.57 | 3.08 | 1.55 | 1.97 |

*X denotes multiple digit combinations for brevity.

| Valve | Dimension | | | |
|--------------|-----------|------|------|------|
| | H | P | C | L |
| 72218BN3TXXX | 3.78 | 3.23 | 2.21 | 2.64 |
| 72218BN4UXXX | 3.78 | 3.23 | 2.21 | 2.64 |
| 72218BN5VXXX | 3.99 | 3.33 | 2.31 | 2.72 |
| 72218RN3TXXX | 3.99 | 3.33 | 2.31 | 2.72 |
| 72218RN4UXXX | 3.99 | 3.33 | 2.31 | 2.72 |
| 72218RN5VXXX | 3.99 | 3.33 | 2.31 | 2.72 |

*X denotes multiple digit combinations for brevity.

7000 Series Hot Water and Steam Two-Way, Direct Acting, Direct Lift and Pilot Operated Valves

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | W |
| 7221GBN3VXXX | 3.66 | 3.07 | 2.06 | 2.95 | 2.09 |
| 7221GBN4VXXX | 3.66 | 3.07 | 2.06 | 2.95 | 2.09 |
| 7221GBN51XXX | 3.75 | 3.07 | 2.06 | 3.15 | 2.09 |
| 7221GBN61XXX | 4.03 | 3.15 | 2.12 | 3.35 | 2.09 |
| 7221GBN64XXX | 4.25 | 3.35 | 2.34 | 3.94 | 2.75 |

X denotes multiple digit combinations for brevity.

#9

Port Identification: Flow arrow on body indicates flow direction - ports are not marked.

DRAWINGS

| Valve | Dimension | | | |
|--------------|-----------|------|------|------|
| | H | P | C | L |
| 7321KBN4SXXX | 3.56 | 2.97 | 1.96 | 2.17 |
| 7321KBN2RXXX | 3.56 | 2.97 | 1.96 | 1.97 |
| 7321KBN3SXXX | 3.56 | 2.97 | 1.96 | 1.97 |

X denotes multiple digit combinations for brevity.
Flow arrow on body indicates flow direction - ports are not marked.

#98

Port Identification: 1- IN/ 2- OUT

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | R |
| 7321BBN3TXXX | 4.38 | 3.84 | 2.81 | 2.64 | 1.39 |
| 7321BBN4UXXX | 4.38 | 3.84 | 2.81 | 2.64 | 1.39 |
| 7321BBN5VXXX | 4.59 | 3.94 | 2.91 | 2.72 | 1.43 |

X denotes multiple digit combinations for brevity.

#12

Port Identification: P- IN/ - - OUT

| Valve | Dimension | | |
|--------------|-----------|------|------|
| | H | P | C |
| 7321BBN64XXX | 5.45 | 4.59 | 3.57 |
| 7321BBN75XXX | 5.74 | 4.73 | 3.71 |

X denotes multiple digit combinations for brevity.

#15

Port Identification: P- IN/ - - OUT

#16

Port Identification: P- IN/ - - OUT

| Valve | Dimension | | |
|--------------|-----------|------|------|
| | B | D | G |
| 7321BBN87TSO | 6.03 | 4.08 | 3.05 |
| 7322BBN87TSO | 6.27 | 4.32 | 3.25 |

#23

Port Identification: P- IN/ - - OUT

NORMALLY CLOSED

NORMALLY OPEN

7000 Series Hot Water and Steam Two-Way, Direct Acting, Direct Lift and Pilot Operated Valves

DRAWINGS

| Valve | Dimension | | | |
|--------------|-----------|------|------|------|
| | H | P | C | L |
| 72228BN3TXXX | 4.04 | 3.49 | 2.43 | 2.64 |
| 72228BN4UXXX | 4.04 | 3.49 | 2.43 | 2.64 |
| 72228BN5VXXX | 4.24 | 3.58 | 2.52 | 2.72 |
| 72228RN3TXXX | 4.04 | 3.49 | 2.43 | 2.64 |
| 72228RN4UXXX | 4.04 | 3.49 | 2.43 | 2.64 |
| 72228RN5VXXX | 4.04 | 3.58 | 2.52 | 2.72 |

**X* denotes multiple digit combinations for brevity.*

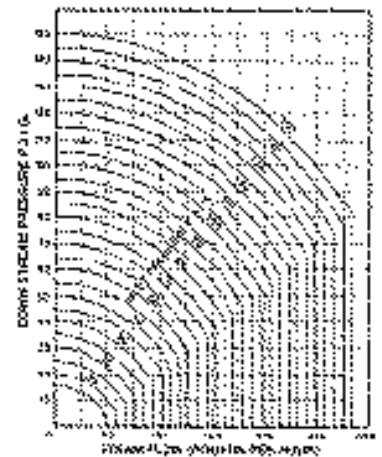
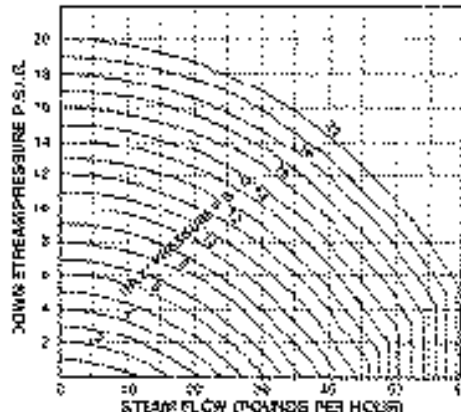
Port Identification: P-IN/ - -OUT

Steam Valve Sizing

The following flow charts for saturated steam are based on a valve with a Cv factor = 1. To size valves for steam service ("SO" at end of catalog number), follow these steps:

- 1) Locate the known downstream pressure on the appropriate steam flow chart. From this point draw a horizontal line to intersect the known inlet pressure.
- 2) At this point draw a vertical line down to determine the corresponding steam flow (pounds per hour) for a valve with a Cv = 1.
- 3) Multiply this figure by the Cv factor listed in the catalog for a particular steam valve to determine the actual steam flow through the valve.

For hot water valves refer to page 129, Valve Sizing for Liquid Service.



SKINNER 7000 Series High Pressure Two-Way Direct Acting and Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body– Brass or Stainless Steel (430F)
- Seals– FKM, PCTFE, PTFE, NBR, Nylon, Ruby as listed
- Sleeve Tube– Stainless Steel (303 or 304)
- Pilot Guide – Stainless Steel (303)
- Pilot Orifice– Stainless Steel (303)
- Piston– Stainless Steel (303)
- Plunger– Stainless Steel (430FR)
- Shading Ring– Copper
- Stop– Stainless Steel (430FR)
- Springs– Stainless Steel (18-8)

Compatible Fluids

- All common media including air, inert gases, hydraulic fluids, petroleum products, freons, water, steam and corrosive media. Use of non-lubricated gaseous media will substantially limit valve life.

Electrical Characteristics

Voltages

- DC– 12, 24
- AC– 24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10, 22 watts
- Fluxtron* Electronic Coils and Magnelatch

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC – 150°F
- 22 watt AC/DC – 77°F
- Fluxtron*/Magnelatch – 122°F

DIRECT ACTING BRASS VALVES – NORMALLY CLOSED, PCTFE OR RUBY SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|------|------------|---------------------------------|------------------------------|-----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/8" | 1/16 | 0.11 | 0 | 1000 | | 435 | | 7121KBN1GF00 | GP | 97 |
| | 3/32 | 0.24 | 0 | 500 | 725 | 175 | 320 | 7121KBN1LR00 | GP | 97 |
| 1/4" | 1/16 | 0.11 | 0 | 1000 | | 435 | | 7121KBN2GF00 | GP | 97 |
| | 1/16 | 0.11 | 0 | 1100 | 1450 | 435 | 800 | 7121KBN2GR00 | GP | 97 |
| | 5/64 | 0.17 | 0 | 700 | 1030 | 260 | 460 | 7121KBN2JR00 | GP | 97 |
| | 3/32 | 0.24 | 0 | 500 | 725 | 175 | 320 | 7121KBN2LR00 | GP | 97 |
| | 1/8 | 0.31 | 0 | 365 | 525 | 125 | 220 | 7121KBN2NR00 | GP | 97 |

DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY CLOSED, PCTFE, NYLON OR PTFE SEALS (Flange Seal-NBR)

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|--|------------|---------------------------------|------------------------------|-----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/8" | 3/64 | 0.062 | 0 | 1000 | | 520 | 1000 | 71215SN1EF00 | GP | 101 |
| | 1/16 | 0.095 | 0 | 700 | | 350 | 700 | 71215SN1GF00 | GP | 101 |
| | 1/32 | 0.021 | 0 | 3000 | | 2500 | 3000 | 71216SN1BL00 | - | 101 |
| | 3/64 | 0.037 | 0 | 1500 | | 1000 | 1500 | 71216SN1FU00 | GP | 101 |
| | 1/16 | 0.070 | 0 | 1250 | | 500 | 1000 | 71216SN1GL00 | GP | 101 |
| | 5/64 | 0.090 | 0 | 500 | | 200 | 400 | 71216SN1JT00 | GP | 101 |
| 1/4" | 3/64 | 0.062 | 0 | 1000 | | 520 | 1000 | 71215SN2EF00 | GP | 101 |
| | 1/16 | 0.095 | 0 | 700 | | 350 | 700 | 71215SN2GF00 | GP | 101 |
| | 1/32 | 0.021 | 0 | 3000 | | 2500 | 3000 | 71216SN2BL00 | - | 101 |
| | 3/64 | 0.037 | 0 | 1500 | | 1000 | 1500 | 71216SN2FU00 | GP | 101 |
| | 1/16 | 0.070 | 0 | 1250 | | 500 | 1000 | 71216SN2GL00 | GP | 101 |
| | 5/64 | 0.090 | 0 | 500 | | 200 | 400 | 71216SN2JT00 | GP | 101 |

DIRECT ACTING BRASS VALVES – NORMALLY OPEN, PCTFE OR RUBY SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------------|------|------------|---------------------------------|------------------------------|-----------------------|----------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/8" | 1/16 | 0.11 | 0 | 435 | | 435 | | 7122KBN1GF00 | GP | 97 |
| | 1/8 | 0.28 | 0 | | 435^ | | | 7122KBN1PR00 | GP | 97 |
| 1/4" | 1/16 | 0.11 | 0 | 435 | | 435 | | 7122KBN2GF00 | GP | 97 |

7000 Series High Pressure Two-Way Direct Acting and Pilot Operated Valves

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY OPEN, PCTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|------------|-----|------------|------------------------|------------------------|--------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/8" | 3/64 | 0.054 | 0 | 750 | 750 | | 165 | 71225SN1EF00 | GP | 101 |
| | 1/16 | 0.11 | 0 | 400 | 400 | | 165 | 71225SN1GF00 | GP | 101 |
| 1/4" | 3/64 | 0.054 | 0 | 750 | 750 | | 165 | 71225SN2EF00 | GP | 101 |
| | 1/16 | 0.11 | 0 | 400 | 400 | | 165 | 71225SN2GF00 | GP | 101 |

PILOT OPERATED BRASS VALVES—NORMALLY CLOSED, NBR, PTFE SEALS

'H' Family valves listed are also available in FKM. 'H' Family valves contain ruby plunger seal.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|------------|-----|------------|------------------------|------------------------|--------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 1/4 | 0.76 | 5 | 1500 | 800 | 1500 | 210 | 73216BN2MT00 | GP | 10 |
| | 5/16 | 2.5 | 5 | 600 | 435 | 600 | 185 | 7321HBN2SN00 | GP | 24 |
| 3/8" | 7/16 | 3.5 | 5 | 600 | 435 | 600 | 185 | 7321HBN3TN00 | GP | 24 |
| 1/2" | 9/16 | 4.1 | 5 | 600 | 435 | 600 | 185 | 7321HBN4UN00 | GP | 24 |

PILOT OPERATED STAINLESS STEEL VALVES—NORMALLY CLOSED, PTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|------------|-----|------------|------------------------|------------------------|--------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 1/4 | 0.76 | 5 | 1500 | 800 | 1500 | 210 | 73216SN2MT00 | GP | 17 |

PILOT OPERATED BRASS VALVES—NORMALLY OPEN, NBR SEALS

Valves are also available in FKM. 'H' Family valves contain Ruby plunger seals.

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|------------|-----|------------|------------------------|------------------------|--------------------|-------------|
| | | | Maximum | | | | | | | |
| | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | | 22 watt | | | | | | |
| 1/4" | 5/16 | 2.5 | 5 | 600 | 600 | | 185 | 7322HBN2SV00 | GP | 24 |
| 3/8" | 7/16 | 3.5 | 5 | 600 | 600 | | 185 | 7322HBN3TN00 | GP | 24 |
| 1/2" | 9/16 | 4.1 | 5 | 600 | 600 | | 185 | 7322HBN4UN00 | GP | 24 |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.
 ** Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in 10th position of pressure vessel number) can be used at fluid temperatures up to 250°F on DC and 250°F on AC provided a Class H coil is used. Pressure ratings may be reduced, however. Consult factory for details.

***UL/CSA Approval information: SS = Safety Shutoff GP = General Purpose Blank = Not Approved See page 136 for additional agency approval information.
 ^ Rating suitable for all 22 watt integrated coils except DIN 300 coil. Consult Skinner Valve for application review. See page 134 for additional seal material combinations.

DRAWINGS

| Valve | Dimension | |
|--------------|-----------|------|
| | H | C |
| 71215SN1XXXX | 2.84 | 1.48 |
| 71215SN2XXXX | 2.84 | 1.48 |
| 71216SN1XXXX | 2.84 | 1.48 |
| 71216SN2XXXX | 2.84 | 1.48 |
| 71225SN1XXXX | 3.08 | 1.68 |
| 71225SN2XXXX | 3.08 | 1.68 |

* denotes multiple digit combinations for brevity.

#101

IN IN
OUT OUT
NORMALLY CLOSED NORMALLY OPEN


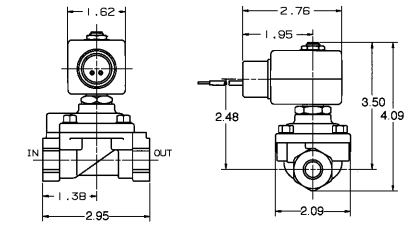
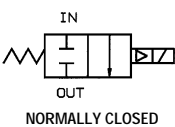
Port Identification: 1-OUT/ 2-IN

#97

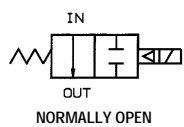
IN IN
OUT OUT
NORMALLY CLOSED NORMALLY OPEN

Port Identification: 1-IN/ 2-OUT

7000 Series High Pressure Two-Way Direct Acting and Pilot Operated Valves


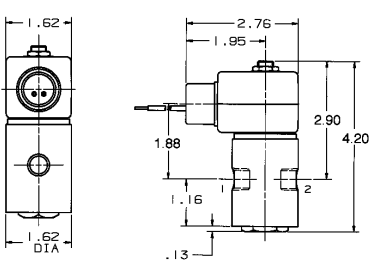
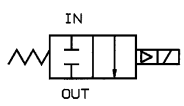
NORMALLY CLOSED



NORMALLY OPEN


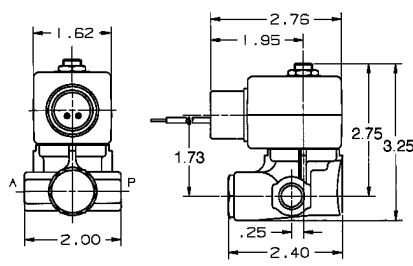
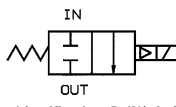
Port Identification: Flow arrow on body indicates flow direction - ports are not marked.

#24

Port Identification: 2-IN/ 1-OUT

#17

Port Identification: P-IN/ A-OUT

#10



SKINNER 7000 Series Anti-Water Hammer Two-Way Direct Lift and Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass
- Seals—NBR
- Sleeve Tube—Stainless Steel (303 or 304)
- Plunger—Stainless Steel (430FR)
- Shading Ring—Copper
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Water up to 185°F

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10, 22 watts
- Fluxtron* Electronic Coils and Magnelatch

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron*/Magnelatch—122°F

* Fluxtron coils not suitable for use on direct lift valves.

DIRECT LIFT BRASS VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---------------------------------|------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | | |
| 3/4" | 19/32 | 5.5 | 0 | 230 | 100 | 185 | 7221GBN51NCO | SS | 103 | | |
| 1" | 19/32 | 5.5 | 0 | 230 | 100 | 185 | 7221GBN61NCO | SS | 103 | | |
| | 1 | 11.7 | 0 | 230 | 85 | 185 | 7221GBN64NCO | SS | 103 | | |

PILOT OPERATED BRASS VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---------------------------------|------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | | |
| 3/8" | 7/16 | 2.5 | 3 | 150 | 60 | 150 | 185 | 7321KBN3SNW0 | SS | 98 | |
| 1/2" | 7/16 | 2.5 | 3 | 150 | 60 | 150 | 185 | 7321KBN4SNW0 | SS | 98 | |
| | 3/4" | 3/4 | 9.6 | 5 | 230 | 230 | 185 | 7321GBN53NMC | GP | 109 | |
| 1" | 1 | 12.5 | 5 | 230 | 230 | 185 | 7321GBN64NMC | GP | 109 | | |
| 1 1/4" | 1 1/8 | 19.3 | 5 | 230 | 230 | 185 | 7321GBN76NMC | GP | 109 | | |
| 1 1/2" | 1 9/16 | 29.0 | 5 | 230 | 200 | 230 | 185 | 7321GBN88NMC | GP | 109 | |
| 2" | 1 9/16 | 38.6 | 5 | 230 | 200 | 230 | 185 | 7321GBN99NMC | GP | 109 | |

PILOT OPERATED BRASS VALVES—NORMALLY OPEN, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX.** Fluid Temp. (F) | Pressure Vessel Number | UL/CSA*** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---------------------------------|------------------------------|-----------------------|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | | |
| 3/4" | 3/4 | 9.6 | 5 | 230 | 230 | 185 | 7322GBN53NCO | GP | 109 | | |
| 1" | 1 | 12.5 | 5 | 230 | 230 | 185 | 7322GBN64NCO | GP | 109 | | |
| 1 1/4" | 1 1/8 | 19.3 | 5 | 230 | 230 | 185 | 7322GBN76NCO | GP | 109 | | |
| 1 1/2" | 1 9/16 | 29.0 | 5 | 170 | 170 | 185 | 7322GBN88NCO | GP | 109 | | |
| 2" | 1 9/16 | 38.6 | 5 | 170 | 170 | 185 | 7322GBN99NCO | GP | 109 | | |

7000 Series Anti-Water Hammer Two-Way Direct Lift and Pilot Operated Valves

| Response Time | Valve Type | Opening Time Range (seconds) | Closing Time Range (seconds) |
|---------------|--------------|------------------------------|------------------------------|
| | | 7221GBN51NCO | 0.03 |
| | 7221GBN61NCO | 0.04-0.05 | 0.2-1.7 |
| | 7221GBN64NCO | 0.07-0.17 | 0.5-4.0 |
| | 7321KBN3SNW0 | 0.015 | 0.85 |
| | 7321KBN4SNW0 | 0.015 | 0.85 |
| | 7321GBN53NMC | 0.25-0.1 | 0.6-4.5 |
| | 7321GBN64NMC | 0.25-0.1 | 0.6-4.5 |
| | 7321GBN76NMC | 0.5-0.2 | 0.8-5.8 |
| | 7321GBN88NMC | 0.4-0.2 | 1.5-9.0 |
| | 7321GBN99NMC | 0.45-0.25 | 1.5-9.5 |
| | 7322GBN53NCO | 0.25-0.1 | 0.6-4.5 |
| | 7322GBN64NCO | 0.25-0.1 | 0.6-4.5 |
| | 7322GBN76NCO | 0.5-0.2 | 0.8-5.8 |
| | 7322GBN88NCO | 0.4-0.2 | 1.5-9.0 |
| | 7322GBN99NCO | 0.45-0.25 | 1.5-9.5 |

DRAWINGS

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | W |
| 7321GBN53XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7322GBN53XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7321GBN64XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7322GBN64XXX | 4.75 | 3.86 | 2.84 | 3.94 | 2.75 |
| 7321GBN76XXX | 5.41 | 4.11 | 3.09 | 4.33 | 2.75 |
| 7322GBN76XXX | 5.41 | 4.11 | 3.09 | 4.33 | 2.75 |
| 7321GBN88XXX | 5.66 | 4.37 | 3.35 | 5.51 | 3.90 |
| 7322GBN88XXX | 5.66 | 4.37 | 3.35 | 5.51 | 3.90 |
| 7321GBN99XXX | 6.25 | 4.60 | 3.58 | 5.91 | 3.90 |
| 7322GBN99XXX | 6.25 | 4.60 | 3.58 | 5.91 | 3.90 |

X denotes multiple digit combinations for brevity.

NORMALLY CLOSED

NORMALLY OPEN

Port Identification: Flow arrow on body indicates flow direction—ports are not marked.

#109

DRAWINGS

| Valve | Dimension | | | | |
|--------------|-----------|------|------|------|------|
| | H | P | C | L | W |
| 7221GBN51XXX | 3.75 | 3.07 | 2.06 | 3.15 | 2.09 |
| 7221GBN61XXX | 4.03 | 3.15 | 2.12 | 3.35 | 2.09 |
| 7221GBN64XXX | 4.25 | 3.35 | 2.34 | 3.94 | 2.75 |

X denotes multiple digit combinations for brevity.

NORMALLY CLOSED

NORMALLY OPEN

Port Identification: Flow arrow on body indicates flow direction—ports are not marked.

#103

DRAWINGS

| Valve | Dimension | | | |
|--------------|-----------|------|------|------|
| | H | P | L | |
| 7321KBN4SXXX | 3.56 | 2.97 | 1.96 | 2.17 |
| 7321KBN2RXXX | 3.56 | 2.97 | 1.96 | 1.97 |
| 7321KBN3SXXX | 3.56 | 2.97 | 1.96 | 1.97 |

X denotes multiple digit combinations for brevity.

Port Identification: Flow arrow on body indicates flow direction—ports are not marked.

#98

* Direct Lift valves will open at zero differential pressure, however, full flow through the valve will not be safely achieved. If full flow is required at near zero differential pressure, consult Skinner. Pilot operated valves require the minimum pressure differential specified for proper valve operation.

**Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in 10th position of pressure vessel number) can be used at fluid temperatures up to 250°F on DC and 250°F on AC provided a Class H coil is used. Pressure ratings may be reduced, however. Consult factory for details.

***UL/CSA Approval Information: SS= Safety Shutoff GP=General Purpose Blank = Not Approved See page 136 for additional agency information.

NOTE: Mechanical Options indicated in pressure vessel catalog number (eleventh and twelfth digits) are as follows: C0=four-step adjustable closing, MC=manual override with four-step adjustable closing, W0=non-adjustable control.

SKINNER 7000 Series Manual Reset Two-Way Direct Acting and Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or Stainless Steel (430)
- Seals—NBR or FKM seals as listed
- Sleeve Tube—Stainless Steel (303 or 304)
- Plunger—Stainless Steel (430FR)
- Shading Ring—Copper
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Depending on the valve used, most common media including air, inert gases or petroleum products.

Power Consumption

- 10, 22 watts

Agency Approvals

- cUL approval.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—110/50-120/60, 220/50-240/60

Miscellaneous

Maximum Ambient Temperature

- 131°F

DIRECT ACTING STAINLESS STEEL MANUAL RESET VALVES—NORMALLY CLOSED, FKM SEALS*

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Min.* | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | No-Voltage Release Pressure Vessel | Electrically Tripped Pressure Vessel | Const. Ref. |
|---------------|---------------------|-----------|---------|---------------------------------------|--|------------|-----|----------------------|------------------------------------|--------------------------------------|-------------|
| | | | | Maximum | | | | | | | |
| | | | | AC Ratings | | DC Ratings | | | | | |
| 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | |
| 1/4" | 3/32 | 0.18 | 0 | 150 | | 150 | 185 | 70215SN2KVVR | 70215SN2KVET | 25 | |

* All wetted parts are stainless steel, FKM and plastic.

PILOT OPERATED BRASS MANUAL RESET VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Min.* | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | No-Voltage Release Pressure Vessel | Electrically Tripped Pressure Vessel | Const. Ref. |
|---------------|---------------------|-----------|---------|---------------------------------------|--|------------|-----|----------------------|------------------------------------|--------------------------------------|-------------|
| | | | | Maximum | | | | | | | |
| | | | | AC Ratings | | DC Ratings | | | | | |
| 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | |
| 1/2" | 5/8 | 4.0 | 5 | 150 | | 150 | 185 | 70218BN4UNVR | 70218BN4UNET | 25 | |
| 3/4" | 3/4 | 7.3 | 5 | 300 | | 300 | 185 | 70212BN52NVR | 70212BN52NET | 25 | |
| 1" | 1 1/16 | 13.5 | 5 | 125 | | 125 | 185 | 70218BN64NVR | 70218BN64NET | 25 | |
| 1 1/4" | 1 1/8 | 15.0 | 5 | 125 | | 125 | 185 | 70218BN75NVR | 70218BN75NET | 25 | |
| 1 1/2" | 1 1/4 | 22.5 | 5 | 125 | | 125 | 185 | 70218BN87NVR | 70218BN87NET | 25 | |

PILOT OPERATED BRASS MANUAL RESET VALVES—NORMALLY OPEN, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Min.* | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | No-Voltage Release Pressure Vessel | Electrically Tripped Pressure Vessel | Const. Ref. |
|---------------|---------------------|-----------|---------|---------------------------------------|--|------------|-----|----------------------|------------------------------------|--------------------------------------|-------------|
| | | | | Maximum | | | | | | | |
| | | | | AC Ratings | | DC Ratings | | | | | |
| 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | |
| 3/4" | 3/4 | 7.3 | 5 | 300 | | 300 | 185 | 70222BN52NVR | 70222BN52NET | 25 | |
| 1" | 1 1/16 | 13.5 | 5 | 125 | | 125 | 185 | 70228BN64NVR | 70228BN64NET | 25 | |
| 1 1/4" | 1 1/8 | 15.0 | 5 | 125 | | 125 | 185 | 70228BN75NVR | 70228BN75NET | 25 | |
| 1 1/2" | 1 1/4 | 22.5 | 5 | 125 | | 125 | 185 | 70228BN87NVR | 70228BN87NET | 25 | |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.

DRAWINGS

| Dimension | No-Voltage Release | Electrically Tripped |
|-----------|--------------------|----------------------|
| A | 4.64 | 4.40 |
| B | 4.31 | 4.07 |
| C | 1.79 | 1.59 |
| D | 3.26 | 3.06 |

#25

SKINNER 7000 Series Remote Pressure Operated Two-Way Remote Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass
- Seals—NBR
- Springs—Stainless Steel (18-8)
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Hydraulic Fluids, Petroleum Products and additional fluids compatible with materials of construction.

Maximum Operating Pressure Differential

- 190 PSI

Cv Factor

- 2.4 to 11.0

Pipe Sizes

- 3/8" TO 1" NPT

REMOTE PRESSURE OPERATED VALVES—DUAL PURPOSE

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Pressure Vessel Catalog Number | Const. Ref. |
|---------------|---------------------|-----------|--------------------------------|-------------|
| 3/8" | 1/2 | 2.4 | 75232BN3SN00 | 26 |
| 1/2" | 1/2 | 2.8 | 75232BN4TN00 | 26 |
| 3/4" | 3/4 | 7.3 | 75232BN52N00 | 26 |
| 1" | 1 | 11.0 | 75232BN63N00 | 26 |

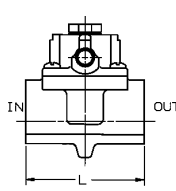
TWO-WAY REMOTE OPERATED VALVE PORT CONNECTIONS

| Valve Type | Main Line Supply | Remote Control Valve Hookup | | | 3-Way Pilot Valve Hookup | | |
|-----------------|------------------|-----------------------------|-----------------|----------------------------------|-------------------------------------|-------------------------------------|--|
| | | IN Port | Out Port | Pilot Inlet Port* 1/8" NPT | Normally Closed Port | Normally Open Port | Common Port |
| Normally Open | 0-190 PSIG | IN | Out | Common Port of 3-Way Pilot Valve | Main Line Pressure + 10 PSI Minimum | Pilot Exhaust | Pilot IN Port (1/8" NPT) of Remote Control Valve |
| Normally Open | Vacuum | Non-Vacuum Pump | Vacuum Pump | | Main Line Pressure + 10 PSI Minimum | Vacuum | |
| Normally Closed | 0-190 PSIG | IN | Out | | Pilot Exhaust | Main Line Pressure + 10 PSI Minimum | |
| Normally Closed | Vacuum | Non-Vacuum Pump | Non-Vacuum Pump | | Vacuum | Main Line Pressure + 10 PSI Minimum | |

* To assure long, trouble free life, the Pilot IN to main pressure differential should not exceed 200 PSIG.


NOTE: In de-energized state, valve in normally open position.

DRAWINGS

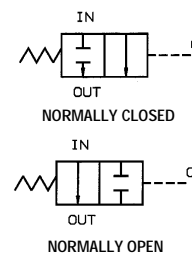


| Valve | Dimension | | | | | Port Identification | |
|--------------|-----------|------|------|------|------|---------------------|-----|
| | H | P | C | L | W | IN | OUT |
| 75232BN3SN00 | 3.17 | 2.35 | 1.51 | 2.75 | 1.97 | IN | OUT |
| 75232BN4TN00 | 3.17 | 2.35 | 1.51 | 2.75 | 1.97 | IN | OUT |
| 75232BN52N00 | 4.31 | 3.12 | 2.28 | 3.62 | 3.09 | IN | OUT |
| 75232BN63N00 | 4.73 | 3.40 | 2.56 | 4.31 | 3.45 | P | A |

Valve can be normally closed or normally open, depending on piping of external pilot.



#26



NORMALLY CLOSED

NORMALLY OPEN

SKINNER 3000 Series Two-Way Direct Acting Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or Stainless Steel (303)
- Seals—NBR, FKM, Ethylene Propylene, CR
- Sleeve Assembly—305 Stainless Steel (tube-flange), 430F Stainless Steel (stop)
- Plunger—430F Stainless Steel
- Manifold Body—Aluminum
- Flux Plate—Plated Steel
- Housing—Plated Steel
- Integrated Coil Encapsulant—Nylon

Compatible Fluids

- Air, inert gas, water, oil

Vacuum

- Up to 5 microns depending on application

Electrical Characteristics

Voltages

- DC—6, 12, 24
- AC—24, 50/60, 110/50-120/60, 220/50-240/60

Power Consumption

- 6 watts, 7.5 for 24/60
- 3 watts

Agency Approvals

- UL and CSA component recognition.

Miscellaneous

Maximum Ambient Temperature

- 68°F for continuous duty cycle.

Response Time

- 8 to 16 milliseconds to open or close.

Duty Cycle/Cycle Time

- Continuous duty, 600 cycles per minute.

Weight

- 8 oz.

Mounting

- Two 8-32 tapped holes in bottom of valve body supplied standard. A universal mounting bracket B19-006 is also available.

DIRECT ACTING BRASS AND STAINLESS STEEL VALVES—NORMALLY CLOSED

| Pipe Size NPT | Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Brass Pressure Vessel Catalog Number | Stainless Steel Pressure Vessel Catalog Number |
|------------------|-----------------------------|-------------------|-------------------------------|---------------------|---|---------|---|---|
| | | | | | 6 watt | 3 watt* | | |
| 1/8" | 1/32 | 0.03 | - | - | 800 | 775 | 3121BBN1AN00 | 3121BSN1AN00 |
| | 3/64 | 0.05 | - | - | 500 | 300 | 3121BBN1EN00 | 3121BSN1EN00 |
| | 1/16 | 0.09 | - | - | 300 | 95 | 3121BBN1GN00 | 3121BSN1GN00 |
| | 5/64 | 0.13 | - | - | 200 | 65 | 3121BBN1JN00 | 3121BSN1JN00 |
| | 3/32 | 0.18 | - | - | 175 | 40 | 3121BBN1LN00 | 3121BSN1LN00 |
| | 1/8 | 0.24 | - | - | 100 | 4 | 3121BBN1NN00 | 3121BSN1NN00 |
| | 5/32 | 0.30 | - | - | 50 | - | 3121BBN1QN00 | 3121BSN1QN00 |

DIRECT ACTING BRASS AND STAINLESS STEEL VALVES—NORMALLY OPEN

| Pipe Size NPT | Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Brass Pressure Vessel Catalog Number | Stainless Steel Pressure Vessel Catalog Number |
|------------------|-----------------------------|-------------------|-------------------------------|---------------------|---|---------|---|---|
| | | | | | 6 watt | 3 watt* | | |
| 1/8" | - | - | 1/32 | 0.03 | 300 | - | 3129BBN1AN00 | 3129BSN1AN00 |
| | - | - | 3/64 | 0.05 | 200 | - | 3129BBN1EN00 | 3129BSN1EN00 |
| | - | - | 1/16 | 0.09 | 150 | - | 3129BBN1GN00 | 3129BSN1GN00 |
| | - | - | 5/64 | 0.13 | 80 | - | 3129BBN1JN00 | 3129BSN1JN00 |
| | - | - | 3/32 | 0.18 | 40 | - | 3129BBN1LN00 | 3129BSN1LN00 |

Performance Ratings Apply to All Voltages, Coil Constructions, Seal and Body Materials.

* When ordering a pressure vessel with a 3 watt coil the second digit must be a 9. Example: 3921BBN1AN00 is a 2-way normally closed pressure vessel for use with 3 watt coils.

3000 Series Two-Way Direct Acting Valves

MANIFOLD ASSEMBLED VALVES – NORMALLY CLOSED, COMMON INLET PRESSURE OVER SEAT

| Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Cavity Manifold Assembly Catalog Number | Screw-In Manifold Assembly** Catalog Number |
|--------------------------|----------------|----------------------------|------------------|---|---------|---|---|
| | | | | 6 watt | 3 watt* | | |
| 3/64 | 0.05 | - | - | 500 | 300 | 3121BJA7ENC# | 3121BSA6EN00 |
| 1/16 | 0.09 | - | - | 300 | 95 | 3121BJA7GNC# | 3121BSA6GN00 |
| 1/8 | 0.24 | - | - | 100 | 4 | - | 3121BSA6NN00 |
| 5/32 | 0.30 | - | - | 50 | - | - | 3121BSA6QN00 |

MANIFOLD ASSEMBLED VALVES – NORMALLY OPEN, COMMON INLET PRESSURE OVER SEAT

| Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Cavity Manifold Assembly Catalog Number | Screw-In Manifold Assembly** Catalog Number |
|--------------------------|----------------|----------------------------|------------------|---|---------|---|---|
| | | | | 6 watt | 3 watt* | | |
| - | - | 3/64 | 0.05 | 200 | - | 3129BJA7ENC# | 3129BSA6EN00 |
| - | - | 1/16 | 0.09 | 150 | - | 3129BJA7GNC# | 3129BSA6GN00 |
| - | - | 3/32 | 0.09 | 40 | - | 3129BJA7LNC# | 3129BSA6LN00 |

* When ordering a pressure vessel with a 3 watt coil the second digit must be a 9. Example: 3921BSA6EN00 is a 2-way normally closed pressure vessel for use with 3 watt coils. Performance Ratings Apply to All Voltages, Coil Constructions, Seal and Body Materials. Screw-in body available in stainless steel only.

Denotes the number of valves in the manifold, from 2 to 4.

**Screw-in manifolds and valves sold separately.

Kit #V1-22-028 available to join manifolds when more than 4 stations required.

| Screw-In Manifolds | Common Port | Pressure Direction | Number of Stations | | |
|--------------------|-------------|--------------------|--------------------|------------|------------|
| | | | 2 | 3 | 4 |
| 2WNC (3121) | Inlet | Over Seat | 300-40-015 | 300-40-016 | 300-40-017 |

DRAWINGS

#27

#28

SKINNER B-Series **General Purpose Two-Way Direct Acting Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (303)
- Seals—NBR, FKM
- Sleeve—304 Stainless Steel
- Plunger—430F Stainless Steel
- Stop—430 FR Stainless Steel
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Orifice 303 Stainless Steel

Compatible Fluids

- Lubricated Air, non-Lubricated Air, Inert Gases, Water, Steam, Hydraulic Fluids, Petroleum Products, Freons, and additional fluids compatible with materials of construction.

Note: Use with Steam and some Petroleum Products normally requires a plunger seal material modification. Consult Skinner Valve to specify a suitable material.

Minimum Operating Pressure Differential

- 0 PSI

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 7 watts

Agency Approvals

- UL and CSA approvals are generally available on valves with applicable coil/enclosure combinations. For details consult Skinner Valve.

Miscellaneous

Vacuum

- Down to 5 microns (0.005 torr, 2x10⁻⁴ in Hg)

Operating Speed

- Up to 800 cycles per minute

Response Time

- AC—Approximately 4-8 milliseconds to open or close.
- DC—Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size | Orifice Diameter | Cv Factor | Max. Operating Pressure Differential (PSI) | | Class A Taped Coil | | Const. Ref. | Class B Taped 1/2" NPT Conduit* | Const. Ref. |
|-----------|------------------|-----------|--|-----|--------------------|------------------|-------------|---------------------------------|-------------|
| | | | AC | DC | Grommet Enclosure | 1/4" NPT Conduit | | | |
| 1/8" NPT* | 1/32 | 0.019 | 400 | 400 | B2DA1400 | B2DB1400 | 113 | B2TBE1400 | 29 |
| | 3/64 | 0.045 | 250 | 250 | B2DA1250 | B2DB1250 | 113 | B2TBE1250 | 29 |
| | 1/16 | 0.065 | 175 | 175 | B2DA1175 | B2DB1175 | 113 | B2TBE1175 | 29 |
| | 1/8 | 0.24 | 50 | - | B2DA1052 | B2DB1052 | 113 | B2TBE1052 | 29 |
| | 1/8 | 0.24 | - | 25 | B2DA1026 | B2DB1026 | 113 | B2TBE1026 | 29 |

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY OPEN, FKM SEALS

| Pipe Size | Orifice Diameter | Cv Factor | Max. Operating Pressure Differential (PSI) | | Class A Taped Coil | | Const. Ref. | Class B Taped 1/2" NPT Conduit* | Const. Ref. |
|-----------|------------------|-----------|--|-----|--------------------|------------------|-------------|---------------------------------|-------------|
| | | | AC | DC | Grommet Enclosure | 1/4" NPT Conduit | | | |
| 1/8" NPT | 1/32 | 0.019 | 400 | 400 | B11DK1400 | B11DM1400 | 114 | B11TME1400 | 30 |
| | 3/64 | 0.054 | 200 | 200 | B11DK1200 | B11DM1200 | 114 | B11TME1200 | 30 |
| | 3/32 | 0.13 | 40 | 40 | B11DK1040 | B11DM1040 | 114 | B11TME1040 | 30 |

* Note: B Series valves with Class B taped coils and 1/2" NPT conduit are UL approved.

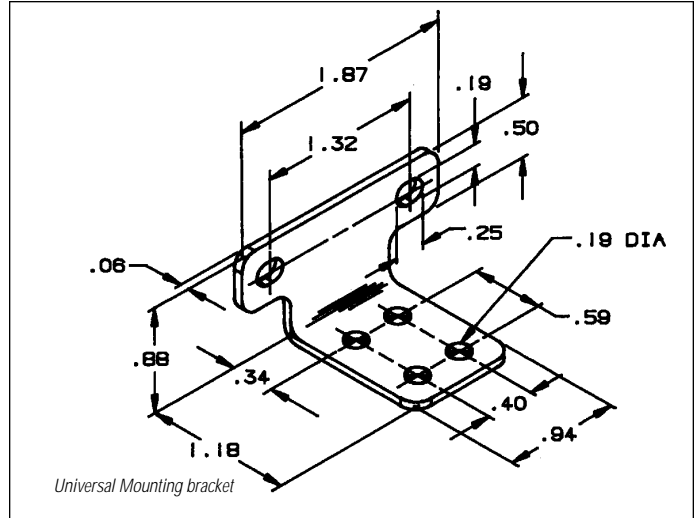
B-Series General Purpose Two-Way Direct Acting Valves

Valve Options & Accessories

| Optional Features | Option Code |
|------------------------------------|-------------|
| Molded Class B leaded coil | LB |
| Molded Class B tab coil | TB |
| Molded Class H leaded coil | LH |
| Yoke | ET |
| Slotted enclosure for molded coils | EB |

| Accessories | Part No. |
|----------------------------|----------|
| Universal mounting bracket | B19-006 |
| Wrench nut | B99-007 |

For ordering instructions see Ordering Information section on page 10.



DRAWINGS

#29

Port Identification: 2-IN/ 1-OUT

#30

Port Identification: 2-IN/ 3*-OUT (*not marked)

#113

Port Identification: 2-IN/ 1-OUT

#114

Port Identification: 2-IN/ 3*-OUT (*not marked)

Two-Way Solenoid Valves

SKINNER C-Series **General Purpose Two-Way Direct Acting Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass (Stainless Steel available)
- Seals—NBR, EPDM available
- Sleeve—304 Stainless Steel
- Plunger—430FR Stainless Steel
- Stop—430 FR Stainless Steel
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Orifice—Brass, Stainless Steel

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Steam, Hydraulic Fluids, Petroleum Products, Freons, and additional fluids compatible with materials of construction. Note: Use with Steam may require plunger seal material modification. Consult Skinner Valve to specify a suitable material.

Minimum Operating Pressure Differential

- 0 PSI

Pipe Sizes

- 1/8" NPT dry seal. 1/8" BSP also available.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 8 watts

Agency Approvals

- UL and CSA approvals are generally available on valves with applicable coil/enclosure combinations. For details consult Skinner Valve.

Miscellaneous

Vacuum

- Down to 5 microns (0.005 torr, 2x10⁻⁴ in Hg)

Operating Speed

- Up to 600 cycles per minute

Response Time

- AC—Approximately 4-8 milliseconds to open or close.
- DC—Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

DIRECT ACTING BRASS VALVES—NORMALLY CLOSED, NBR SEALS

| NPT Pipe Size | Orifice Diameter | Cv Factor | Max. Operating Pressure Differential (PSI) | | Class A Taped Coil Brass Body | | Const. Ref. |
|---------------|------------------|-----------|--|-----|-------------------------------|------------------|-------------|
| | | | AC | DC | Grommet Enclosure | 1/2" NPT Conduit | |
| | | | | | | | |
| | 1/16 | 0.10 | - | 250 | C2DA1251 | C2DB1251 | 31 |
| | 7/64 | 0.25 | 130 | - | C2DA1132 | C2DB1132 | 31 |
| | 7/64 | 0.25 | - | 80 | C2DA1081 | C2DB1081 | 31 |
| | 1/8 | 0.31 | 90 | - | C2DA1092 | C2DB1092 | 31 |
| | 1/8 | 0.31 | - | 50 | C2DA1051 | C2DB1051 | 31 |
| | 5/32 | 0.39 | 60 | - | C2DA1062 | C2DB1062 | 31 |
| | 5/32 | 0.39 | - | 30 | C2DA1031 | C2DB1031 | 31 |

DIRECT ACTING BRASS STRAINER VALVE—NORMALLY CLOSED

Designed to control water in commercial and industrial applications. Widely used in humidifying equipment, this valve offers the combination of filtering and fluid control in just one component for the protection of downstream instruments or machinery.

| NPT Pipe Size | Orifice Diameter | Cv Factor | Maximum Operating Pressure Differential (PSI) | Part No. | Const. Ref. |
|---------------|------------------|-----------|---|----------|-------------|
| 1/8" | 1/16 | 0.09 | 130 | C2D420CF | 32 |

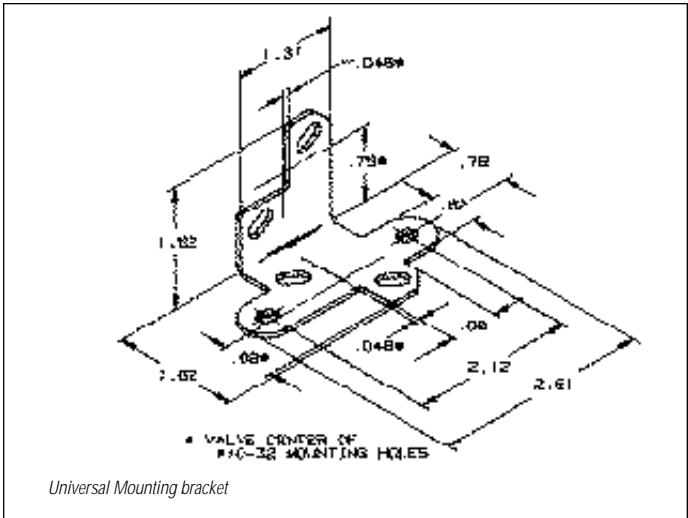
C-Series General Purpose Two-Way Direct Acting Valves

Valve Options & Accessories

| Optional Features | Option Code |
|----------------------------|-------------|
| Molded Class F leaded coil | LF |
| Molded Class F tab coil | TF |
| Molded Class H leaded coil | LH |
| Yoke | ET |
| Single automotive terminal | EH |
| Double automotive terminal | EV |
| Strain relief connector | EJ |
| Enclosure w/ bracket | GD |
| Main stream metering | RM |

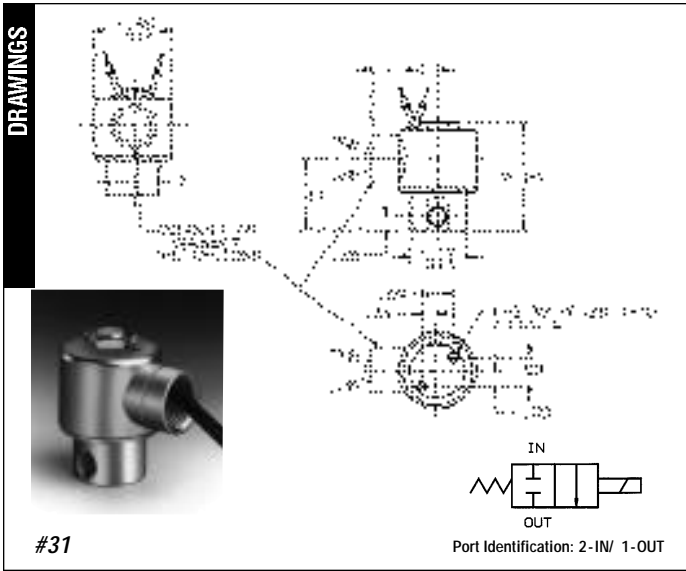
| Accessories | Part No. |
|----------------------------|----------|
| Universal mounting bracket | V5-2158M |
| Wrench nut | V0-233 |

For ordering instructions see Ordering Information section on page 10.

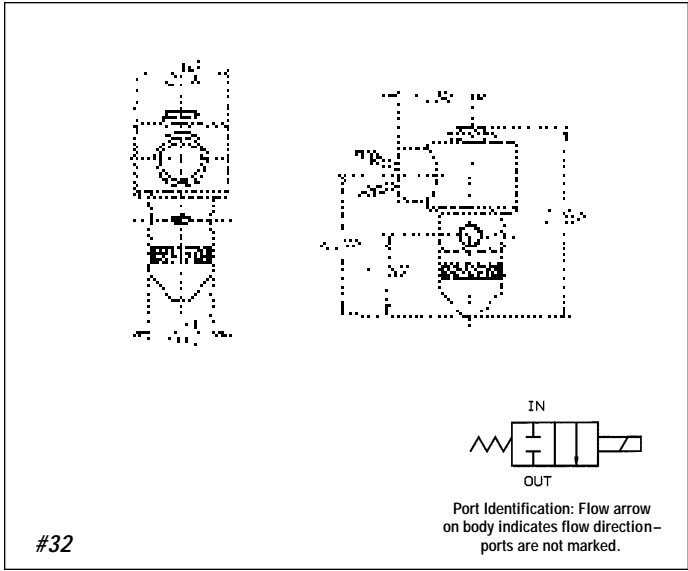


Universal Mounting bracket

DRAWINGS



#31



#32



SKINNER LB27 Series Zero Delta P Two-Way Direct Lift Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass
- Seals—NBR, FKM as listed
- Sleeve—Stainless Steel
- Plunger—Stainless Steel
- Stop—Stainless Steel
- Springs—Stainless Steel
- Shading Ring—Copper

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases,

Water, Hydraulic Fluids, Petroleum Products, and additional fluids compatible with materials of construction.

Electrical Characteristics

Voltages

- AC—24/60, 110/50-120/60, 220/50-240/60 (other voltages available upon request)

Power Consumption

- 20 watts (Normal location)
- 22 watts (Explosion-proof)

Agency Approvals

- Valves are UL listed and CSA certified general purpose for normal location. Explosion-proof valves are UL listed and CSA certified for hazardous locations Class I groups C and D, Class II groups E, F, and G.

Miscellaneous

Maximum Ambient Temperature

- 77°F

BRASS VALVES—NORMALLY CLOSED FOR NORMAL LOCATIONS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | Max. Fluid Temp. (F) | Catalog Number | Seal Mat'l | Constr. Ref. |
|---------------|---------------------|-----------|---------------------------------------|---------|----------------------|----------------|------------|--------------|
| | | | Minimum* | Maximum | | | | |
| 1" | 1 1/16 | 13.5 | 0 | 125 | 180 | LB27BB6127 | NBR | 33 |
| 1 1/4" | 1 1/8 | 15.0 | 0 | 125 | 180 | LB27BB7127 | NBR | 33 |
| 1 1/2" | 1 1/4 | 22.5 | 0 | 125 | 180 | LB27BB8127 | NBR | 33 |
| 1" | 1 1/16 | 13.5 | 0 | 125 | 180 | LB27B110 | FKM | 33 |
| 1 1/4" | 1 1/8 | 15.0 | 0 | 125 | 180 | LB27B120 | FKM | 33 |
| 1 1/2" | 1 1/4 | 22.5 | 0 | 125 | 180 | LB27B130 | FKM | 33 |

BRASS VALVES—NORMALLY CLOSED FOR HAZARDOUS LOCATIONS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | Max. Fluid Temp. (F) | Catalog Number | Seal Mat'l | Constr. Ref. |
|---------------|---------------------|-----------|---------------------------------------|---------|----------------------|----------------|------------|--------------|
| | | | Minimum* | Maximum | | | | |
| 1" | 1 1/16 | 13.5 | 0 | 125 | 180 | XLB27BB6127 | NBR | 34 |
| 1 1/4" | 1 1/8 | 15.0 | 0 | 125 | 180 | XLB27BB7127 | NBR | 34 |
| 1 1/2" | 1 1/4 | 22.5 | 0 | 125 | 180 | XLB27BB8127 | NBR | 34 |
| 1" | 1 1/16 | 13.5 | 0 | 125 | 180 | XLB27B110 | FKM | 34 |
| 1 1/4" | 1 1/8 | 15.0 | 0 | 125 | 180 | XLB27B120 | FKM | 34 |
| 1 1/2" | 1 1/4 | 22.5 | 0 | 125 | 180 | XLB27B130 | FKM | 34 |

* Valves will open at zero differential pressure, however full flow through the valve will not be achieved. If full flow is required at near zero differential, consult factory.

DRAWINGS

| Pipe Size | Dimension | | | | | | | |
|-----------|-----------|------|------|------|------|------|------|------|
| | A | B | C | D | E | F | G | H |
| 1" | 5.87 | 5.00 | 3.61 | 1.86 | 1.73 | 2.13 | 1.96 | 3.24 |
| 1 1/4" | 6.15 | 5.12 | 3.75 | 1.86 | 1.73 | 2.13 | 1.96 | 3.24 |
| 1 1/2" | 6.46 | 5.29 | 3.92 | 1.86 | 2.24 | 2.24 | 2.15 | 3.94 |

#33

| Pipe Size | Dimension | | | | | | | |
|-----------|-----------|------|------|------|------|------|------|------|
| | A | B | C | D | E | F | G | H |
| 1" | 5.95 | 5.07 | 4.35 | 1.70 | 1.73 | 2.13 | 1.96 | 3.24 |
| 1 1/4" | 6.24 | 5.21 | 4.49 | 1.70 | 1.73 | 2.13 | 1.96 | 3.24 |
| 1 1/2" | 6.55 | 5.37 | 4.66 | 1.70 | 2.24 | 2.24 | 2.15 | 3.94 |

#34

SKINNER A2 Series Low Pressure and Vacuum Two-Way Direct Acting Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass
- Seals—NBR, FKM
- Sleeve—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper
- Orifice—Brass

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Oils and additional fluids compatible with materials of construction.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 18 watts

Miscellaneous

Vacuum

- Down to 5 microns (0.005 torr, 2x10⁻⁴ in Hg)

Operating Speed

- Up to 300 cycles per minute.

Response Time

- Approximately 7 to 12 milliseconds to open, 15 to 26 milliseconds to close (air only).

Standard Valve Construction

Coil Type

- Class B molded leaded

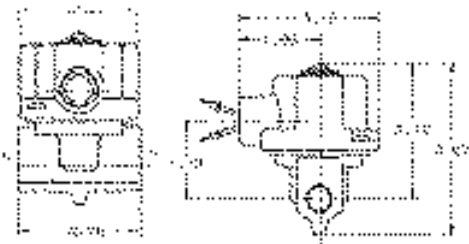
Enclosure Type


- Die-cast zinc coil enclosure with 1/2" NPT conduit connection.

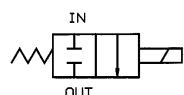
BRASS VALVE – NORMALLY CLOSED

| NPT Pipe Size | Orifice Diameter | Cv Factor | Maximum Operating Pressure Differential (PSI) | | Class B Molded 1/2" NPT Conduit | Const. Ref. |
|---------------|------------------|-----------|---|----|---------------------------------|-------------|
| | | | AC | DC | | |
| 1/2" | 1/2 | 2.7 | 15 | 5 | A2LB4017 A26LB4006 | 35 35 |
| | 1/2 | 2.7 | | | | |

DRAWINGS







Port Identification: P-IN/ A-OUT

#35

Three-Way Valve Contents

| | |
|---|--------------|
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SKINNER 7000 Series General Purpose Three-Way Direct Acting Valves

IN THIS SECTION :
7131, 7132, 7133, 7138

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or Stainless Steel (303 or 430F)
- Seals—NBR, FKM, PCTFE as listed
- Sleeve Tube—Stainless Steel (303 or 304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Hydraulic Fluids, Petroleum Products and additional fluids compatible with materials of construction. Use of non-lubricated gaseous media will substantially limit valve life.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

7131 DIRECT ACTING BRASS VALVES—NORMALLY CLOSED, PCTFE OR FKM SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|----------------------------------|--------------------|--------------------|---------------------------------------|---------|---------|-----|--------------------------------|-----------------------------------|----------------------|----------------|---------|
| | | | | | | Min. | Maximum | | 100 | | | | | |
| | | | | | | | 10 watt | 22 watt | | | | | | 10 watt |
| FLG [^] | 3/32 | | 3/32 | 0.24 | 0.24 | 0 | 100 | | 100 | 185 | 7131FBF4LV00 | GP | 36 | |
| 1/8" | 1/16 | | 1/16 | 0.11 | 0.11 | 0 | 215 | | 215 | 185 | 7131KBN1GV00 | GP | 37 | |
| | 3/32 | | 3/32 | 0.24 | 0.24 | 0 | 100 | | 100 | 185 | 7131KBN1LV00 | GP | 37 | |
| 1/4" | 1/32 | | 1/32 | 0.02 | 0.02 | 0 | 580 | | 580 | 165 | 7131KBN2BF00 | GP | 37 | |
| | 1/16 | | 1/16 | 0.11 | 0.11 | 0 | 215 | | 215 | 185 | 7131KBN2GV00 | GP | 37 | |
| | 5/64 | | 3/32 | 0.17 | 0.24 | 0 | 150 | | 150 | 185 | 7131KBN2JV00 | GP | 37 | |
| | 3/32 | | 3/32 | 0.24 | 0.24 | 0 | 100 | | 100 | 185 | 7131KBN2LV00 | GP | 37 | |
| | 5/64 | 1/8 | | | 0.17 | 0.31 | 0 | 150 | | 150 | 185 | 7131TBN2JV00 | GP | 38 |
| | 3/32 | 9/64 | | | 0.24 | 0.38 | 0 | 110 | | 110 | 185 | 7131TBN2LV00 | GP | 38 |
| | 3/16 | 1/4 | | | 0.49 | 0.63 | 0 | 30 | | 30 | 185 | 7131TBN2RV00 | GP | 38 |

[^] 2, 3 and 5 station subbases with 1/4" BSP common inlet port and 1/8" BSP outlet ports are available for use with D400 and D500 32mm DIN coils only. For details consult factory.

Three-Way Solenoid Valves

7000 Series General Purpose Three-Way Direct Acting Valves

7131 DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY CLOSED, NBR OR FKM SEALS

'5' Family valves also available with FKM seals.

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|---------------|------------------------|------------------------|----------------------------|--------------|--------------|---------------------------------------|---------|------------|---------|-----------------------|--------------------------------|-------------------|-------------|
| | | | | | | Maximum | | | | | | | |
| | | | | | | AC Ratings | | DC Ratings | | | | | |
| | | | | | | 10 watt | 22 watt | 10 watt | 22 watt | | | | |
| 1/8" | 3/64 | | 1/16 | 0.062 | 0.095 | 0 | 250 | | 250 | 185 | 71315SN1EN00 | GP | 39 |
| | 3/64 | | 1/16 | 0.062 | 0.095 | 0 | 250 | | 250 | 185 | 71315SN1ENJ1 | GP | 39 |
| | 1/16 | | 1/16 | 0.11 | 0.095 | 0 | 200 | | 200 | 185 | 71315SN1GN00 | GP | 39 |
| | 1/16 | | 1/16 | 0.11 | 0.095 | 0 | 200 | | 200 | 185 | 71315SN1GNJ1 | GP | 39 |
| | 3/32 | | 3/32 | 0.17 | 0.17 | 0 | 125 | | 125 | 185 | 71315SN1KN00 | GP | 39 |
| | 3/32 | | 3/32 | 0.17 | 0.17 | 0 | 125 | | 125 | 185 | 71315SN1KNJ1 | GP | 39 |
| | 1/8 | | 3/32 | 0.23 | 0.17 | 0 | 90 | | 90 | 185 | 71315SN1MN00 | GP | 39 |
| | 1/8 | | 3/32 | 0.23 | 0.17 | 0 | 90 | | 90 | 185 | 71315SN1MNJ1 | GP | 39 |
| | 3/16 | | 3/32 | 0.38 | 0.17 | 0 | 25 | | 25 | 185 | 71315SN1SN00 | GP | 39 |
| | 3/16 | | 3/32 | 0.38 | 0.17 | 0 | 25 | | 25 | 185 | 71315SN1SNJ1 | GP | 39 |
| | 1/4 | | 3/32 | 0.67 | 0.17 | 0 | vac | | vac | 185 | 71315SN1VNJ1 | GP | 39 |
| | 1/4" | 3/64 | | 1/16 | 0.062 | 0.095 | 0 | 250 | | 250 | 185 | 71315SN2EN00 | GP |
| 3/64 | | | 1/16 | 0.062 | 0.095 | 0 | 250 | | 250 | 185 | 71315SN2ENJ1 | GP | 39 |
| 1/16 | | | 1/16 | 0.11 | 0.095 | 0 | 200 | | 200 | 185 | 71315SN2GN00 | GP | 39 |
| 1/16 | | | 1/16 | 0.11 | 0.095 | 0 | 200 | | 200 | 185 | 71315SN2GNJ1 | GP | 39 |
| 3/32 | | | 3/32 | 0.17 | 0.17 | 0 | 125 | | 125 | 185 | 71315SN2KN00 | GP | 39 |
| 3/32 | | | 3/32 | 0.17 | 0.17 | 0 | 125 | | 125 | 185 | 71315SN2KNJ1 | GP | 39 |
| 1/8 | | | 3/32 | 0.23 | 0.17 | 0 | 90 | | 90 | 185 | 71315SN2MN00 | GP | 39 |
| 1/8 | | | 3/32 | 0.23 | 0.17 | 0 | 90 | | 90 | 185 | 71315SN2MNJ1 | GP | 39 |
| 3/16 | | | 3/32 | 0.38 | 0.17 | 0 | 25 | | 25 | 185 | 71315SN2SN00 | GP | 39 |
| 3/16 | | | 3/32 | 0.38 | 0.17 | 0 | 25 | | 25 | 185 | 71315SN2SNJ1 | GP | 39 |
| 1/4 | | | 3/32 | 0.67 | 0.17 | 0 | vac | | vac | 185 | 71315SN2VNJ1 | GP | 39 |
| 1/16 | | 1/16 | | 0.095 | 0.095 | 0 | 200 | | 200 | 185 | 7131TVN2GV00 | GP | 40 |
| 5/64 | | 5/64 | | 0.18 | 0.18 | 0 | 150 | | 150 | 185 | 7131TVN2JV00 | GP | 40 |
| 3/32 | | 3/32 | | 0.19 | 0.19 | 0 | 110 | | 110 | 185 | 7131TVN2LV00 | GP | 40 |
| 1/8 | | 1/8 | | 0.32 | 0.32 | 0 | 70 | | 70 | 185 | 7131TVN2NV00 | GP | 40 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in the 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.

**UL/CSA Approval Information: GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

DRAWINGS

#39

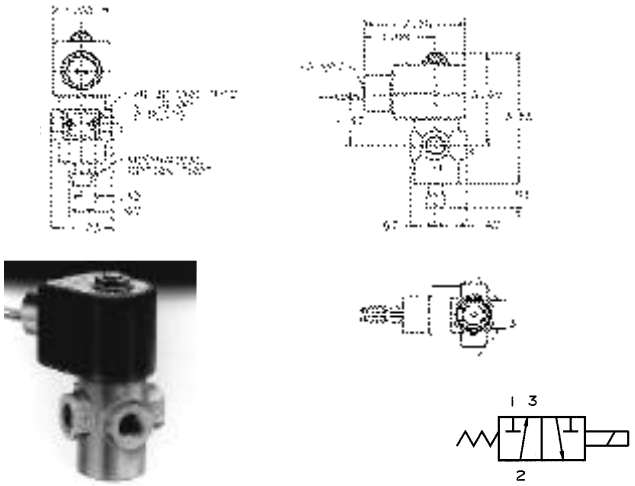
Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust

#36

Port Identification:
1-Cylinder/ 2-Pressure/ 0-Exhaust

Three-Way Solenoid Valves

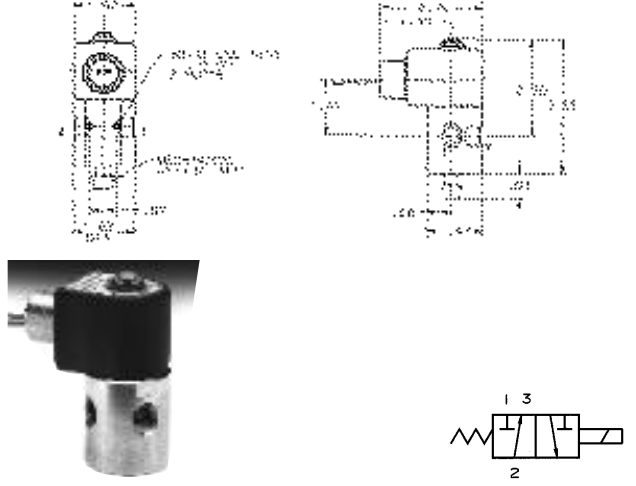
7000 Series General Purpose Three-Way Direct Acting Valves



Technical drawings for valve #38 include a front view, a side view, and a cross-sectional view. A photograph shows the physical valve with a black solenoid and a brass body. A schematic symbol shows a spring return valve with three ports labeled 1, 2, and 3.

#38

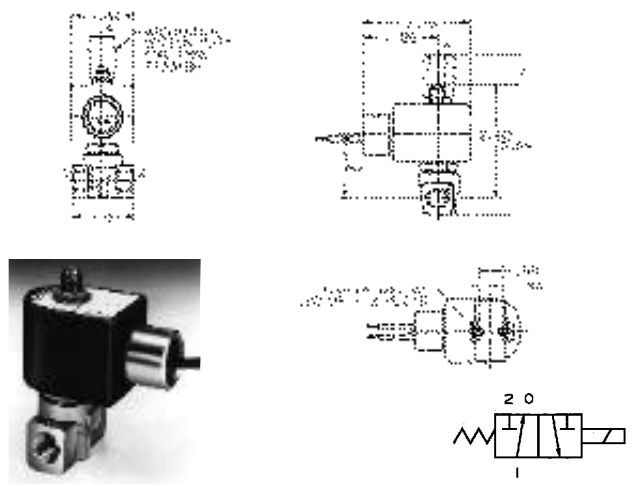
Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust



Technical drawings for valve #40 include a front view, a side view, and a cross-sectional view. A photograph shows the physical valve with a black solenoid and a brass body. A schematic symbol shows a spring return valve with three ports labeled 1, 2, and 3.

#40

Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust



Technical drawings for valve #37 include a front view, a side view, and a cross-sectional view. A photograph shows the physical valve with a black solenoid and a brass body. A schematic symbol shows a spring return valve with three ports labeled 1, 2, and 0.

#37

Port Identification:
1-Cylinder/ 2-Pressure/ 0-Exhaust

Three-Way Solenoid Valves

7000 Series General Purpose Three-Way Direct Acting Valves

7132 DIRECT ACTING BRASS VALVES – NORMALLY OPEN, FKM SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|---------------------------|---------------------------|-------------------------------|--------------|--------------|---------------------------------------|------------|--|---------|-----------------------|--------------------------------|-------------------|-------------|------------|
| | | | | | | Min. | Maximum | | 22 watt | | | | | |
| | | | | | | | AC Ratings | | | | | | | DC Ratings |
| | | 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | | |
| 1/4" | 5/32 | 1/8 | | 0.31 | 0.41 | 0 | 150 | | | | 185 | 7132TBN2NV00 | GP | 118 |

7139 DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY OPEN, NBR SEALS


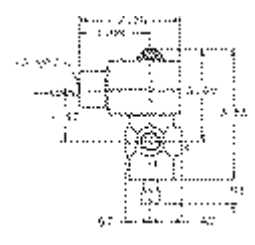
*5' family valves also available with FKM seals.


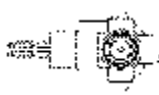
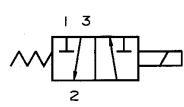
| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|---------------------------|---------------------------|-------------------------------|--------------|--------------|---------------------------------------|------------|--|---------|-----------------------|--------------------------------|-------------------|-------------|------------|
| | | | | | | Min. | Maximum | | 22 watt | | | | | |
| | | | | | | | AC Ratings | | | | | | | DC Ratings |
| | | 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | | |
| 1/8" | 1/16 | | 3/64 | 0.10 | 0.052 | 0 | 250 | | 250 | | 185 | 71395SN1ENJ1 | GP | 120 |
| | 1/8 | | 1/16 | 0.28 | 0.10 | 0 | 150 | | 150 | | 185 | 71395SN1GNJ1 | GP | 120 |
| | 1/8 | | 3/32 | 0.28 | 0.17 | 0 | 125 | | 125 | | 185 | 71395SN1KNJ1 | GP | 120 |
| 1/4" | 1/16 | | 3/64 | 0.10 | 0.052 | 0 | 250 | | 250 | | 185 | 71395SN2ENJ1 | GP | 120 |
| | 1/8 | | 1/16 | 0.28 | 0.10 | 0 | 150 | | 150 | | 185 | 71395SN2GNJ1 | GP | 120 |
| | 1/8 | | 3/32 | 0.28 | 0.17 | 0 | 125 | | 125 | | 185 | 71395SN2KNJ1 | GP | 120 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in the 10th position of pressure vessel number) can be used at fluid temperatures up to 250°F on DC and 250°F on AC provided a Class H coil is used. Pressure ratings may be reduced, however. Consult

factory for details.
 **UL/CSA Approval Information: SS= Safety Shutoff SGP= General Purpose Blank=Not Approved
 See page 136 for additional agency approval information.

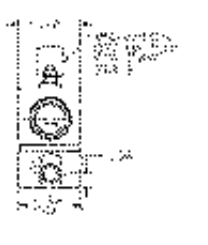
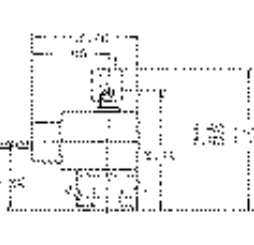
DRAWINGS


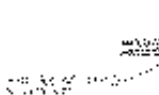
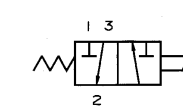



Port Identification:
1-Exhaust/ 2-Cylinder/ 3-Pressure

#118

Port Identification:
1-Exhaust/ 2-Cylinder/ 3-Pressure

#120

Three-Way Solenoid Valves

7000 Series General Purpose Three-Way Direct Acting Valves

7133 DIRECT ACTING BRASS VALVES—MULTIPURPOSE, FKM SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|---------------|------------------------|------------------------|----------------------------|--------------|--------------|---------------------------------------|-----|------------|-----|-----------------------|--------------------------------|-------------------|-------------|
| | | | | | | Maximum | | | | | | | |
| | | | | | | AC Ratings | | DC Ratings | | | | | |
| Min. | 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | | |
| FLG^ | 3/32 | | 3/32 | 0.24 | 0.24 | 0 | 60 | | 60 | 185 | 7133FBF4LVJ1 | GP | 114 |
| 1/8" | 1/16 | | 1/16 | 0.11 | 0.11 | 0 | 150 | | 150 | 185 | 7133KBN1GVJ1 | GP | 116 |
| | 5/64 | | 5/64 | 0.15 | 0.15 | 0 | 100 | | 100 | 185 | 7133KBN1JVJ1 | GP | 116 |
| | 3/32 | | 3/32 | 0.24 | 0.24 | 0 | 60 | | 60 | 185 | 7133KBN1LVJ1 | GP | 116 |
| 1/4" | 1/32 | | 1/32 | 0.02 | 0.02 | 0 | 435 | | 435 | 185 | 7133KBN2BVJ1 | GP | 116 |
| | 1/16 | | 1/16 | 0.10 | 0.10 | 0 | 150 | | 150 | 185 | 7133KBN2GVJ1 | GP | 116 |
| | 5/64 | | 5/64 | 0.15 | 0.15 | 0 | 100 | | 100 | 185 | 7133KBN2JVJ1 | GP | 116 |
| | 3/32 | | 3/32 | 0.24 | 0.24 | 0 | 60 | | 60 | 185 | 7133KBN2LVJ1 | GP | 116 |
| | 5/64 | 5/64 | | 0.17 | 0.17 | 0 | 100 | | 100 | 185 | 7133TBN2JV00 | GP | 119 |
| | 3/32 | 3/32 | | 0.19 | 0.19 | 0 | 60 | | 60 | 185 | 7133TBN2LV00 | GP | 119 |
| | 1/8 | 1/8 | | 0.31 | 0.31 | 0 | 30 | | 30 | 185 | 7133TBN2NV00 | GP | 119 |

* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in the 10th position of pressure vessel number) can be used at fluid temperatures up to 250°F on DC and 250°F on AC provided a Class H coil is used. Pressure ratings may be reduced, however. Consult factory for details.

**UL/CSA Approval Information: SS=Safety Shutoff GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

^ 2, 3 and 5 station subbases with 1/4" BSP outlet ports and 1/8" BSP outlet ports are available for use with D400 and D500 32mm DIN coils only. For details consult factory.

#114

Port Identification:
Pressure can be applied at either port.

#116

Port Identification:
Pressure can be applied at either port.

DRAWINGS

#119

Port Identification:
Pressure can be applied at either port.

7000 Series General Purpose Three-Way Direct Acting Valves

7133 DIRECT ACTING STAINLESS STEEL VALVES – MULTIPURPOSE, NBR OR FKM SEALS

'5' family valves also available with FKM seals.

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|----------------------------------|-----------------|-----------------|---------------------------------------|------------|---------|------------|--------------------------------|-----------------------------------|----------------------|----------------|---------|
| | | | | | | Min. | Maximum | | | | | | | |
| | | | | | | | AC Ratings | | DC Ratings | | | | | |
| | | | | | | | 10 watt | 22 watt | 10 watt | | | | | 22 watt |
| 1/8" | 1/32 | | 1/32 | 0.024 | 0.024 | 0 | 400 | | 400 | 185 | 71335SN1ANJ1 | GP | 121 | |
| | 3/64 | | 3/64 | 0.052 | 0.052 | 0 | 180 | | 180 | 185 | 71335SN1ENJ1 | GP | 121 | |
| | 1/16 | | 1/16 | 0.095 | 0.095 | 0 | 115 | | 115 | 185 | 71335SN1GNJ1 | GP | 121 | |
| | 3/32 | | 3/32 | 0.17 | 0.17 | 0 | 80 | | 80 | 185 | 71335SN1KNJ1 | GP | 121 | |
| 1/4" | 1/32 | | 1/32 | 0.024 | 0.024 | 0 | 400 | | 400 | 185 | 71335SN2ANJ1 | GP | 121 | |
| | 3/64 | | 3/64 | 0.052 | 0.052 | 0 | 180 | | 180 | 185 | 71335SN2ENJ1 | GP | 121 | |
| | 1/16 | | 1/16 | 0.095 | 0.095 | 0 | 115 | | 115 | 185 | 71335SN2GNJ1 | GP | 121 | |
| | 3/32 | | 3/32 | 0.17 | 0.17 | 0 | 80 | | 80 | 185 | 71335SN2KNJ1 | GP | 121 | |
| | 1/16 | 1/16 | | 0.095 | 0.095 | 0 | 150 | | 150 | 185 | 7133TVN2GV00 | GP | 123 | |
| | 5/64 | 5/64 | | 0.18 | 0.18 | 0 | 100 | | 100 | 185 | 7133TVN2JV00 | GP | 123 | |
| | 3/32 | 3/32 | | 0.19 | 0.19 | 0 | 60 | | 60 | 185 | 7133TVN2LV00 | GP | 123 | |
| | 1/8 | 1/8 | | 0.32 | 0.32 | 0 | 30 | | 30 | 185 | 7133TVN2NV00 | GP | 123 | |

DRAWINGS

#121

Port Identification:
Pressure can be applied at either port.

#123

Port Identification:
Pressure can be applied at either port.

Three-Way Solenoid Valves

7000 Series **General Purpose Three-Way Direct Acting Valves**

7138 DIRECT ACTING STAINLESS STEEL VALVES – DIVERTING, NBR SEALS

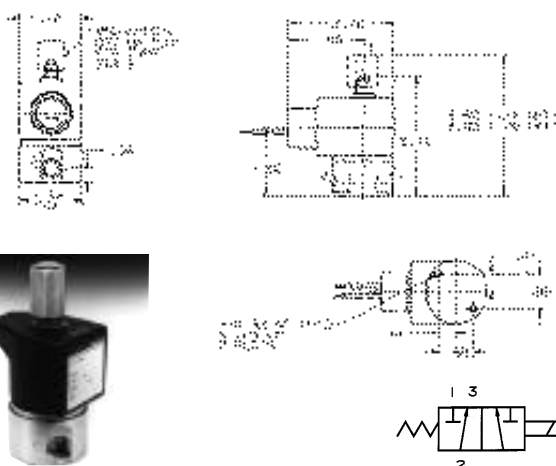
'5' family valves also available with FKM seals.

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|---------------|------------------------|------------------------|----------------------------|--------------|--------------|---------------------------------------|------------|--|---------|-----------------------|--------------------------------|-------------------|-------------|
| | | | | | | Min. | Maximum | | 22 watt | | | | |
| | | | | | | | AC Ratings | | | | | | |
| | | | | 10 watt | 22 watt | 10 watt | 22 watt | | | | | | |
| 1/8" | 1/16 | | 1/16 | 0.095 | 0.095 | 0 | 235 | | 235 | 185 | 71385SN1GNJ1 | GP | 122 |
| | 3/32 | | 3/32 | 0.17 | 0.17 | 0 | 140 | | 140 | 185 | 71385SN1KNJ1 | GP | 122 |
| | 1/8 | | 3/32 | 0.23 | 0.17 | 0 | 125 | | 125 | 185 | 71385SN1MNJ1 | GP | 122 |
| 1/4" | 1/16 | | 1/16 | 0.095 | 0.095 | 0 | 235 | | 235 | 185 | 71385SN2GNJ1 | GP | 122 |
| | 3/32 | | 3/32 | 0.17 | 0.17 | 0 | 140 | | 140 | 185 | 71385SN2KNJ1 | GP | 122 |
| | 1/8 | | 3/32 | 0.23 | 0.17 | 0 | 125 | | 125 | 185 | 71385SN2MNJ1 | GP | 122 |


* Maximum fluid temperatures are provided for Class F coils. Valves with FKM seals (letter 'V' in the 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.

**UL/CSA Approval Information: GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

DRAWINGS



Port Identification:
1-NC/ 2-INV/ 3-NO



#122

Three-Way Solenoid Valves

SKINNER 7000 Series General Purpose Three-Way Pilot Operated Valves

IN THIS SECTION :
7331, 7332, 7338, 7433

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass
- Seals—NBR
- Diaphragm Seal—NBR/PTFE
- Sleeve Tube—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Hydraulic Fluids, Petroleum Products and additional fluids compatible with materials of construction. Use of non-lubricated gaseous media will substantially limit valve life.

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

7331 PILOT OPERATED BRASS VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|------------------|---------------------------|---------------------------|--------------|--------------|---------------------------------------|-----|------------|-----|----------------------|--------------------------------|-------------------|-------------|
| | | | | | Maximum | | | | | | | |
| | | | | | AC Ratings | | DC Ratings | | | | | |
| 3/8" | 3/8 | 3/8 | 2.1 | 2.1 | 10 | 180 | 180 | 180 | 185 | 73312BN3RNJ0 | GP | 41 |
| | 3/8 | 3/8 | 2.1 | 2.1 | 10 | 180 | 180 | 180 | 185 | 73312BN3RNJ1 | GP | 42 |
| 1/2" | 1/2 | 1/2 | 3.6 | 3.6 | 10 | 180 | 180 | 180 | 185 | 73312BN4UNJ0 | GP | 41 |
| | 1/2 | 1/2 | 3.6 | 3.6 | 10 | 180 | 180 | 180 | 185 | 73312BN4UNJ1 | GP | 42 |
| 3/4" | 3/4 | 3/4 | 7.3 | 7.3 | 10 | 180 | 180 | 180 | 185 | 73312BN52NJ0 | GP | 43 |
| | 3/4 | 3/4 | 7.3 | 7.3 | 10 | 180 | 180 | 180 | 185 | 73312BN52NJ1 | GP | 44 |

DRAWINGS

| Valve | Dimension | | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|------|--|
| | H | P | C | L | W | S | T | R | J | K | |
| 73312BN3RNJ1 | 4.89 | 3.98 | 1.96 | 2.97 | 2.62 | 0.65 | 0.59 | 1.44 | 1.22 | 0.91 | |
| 73312BN4UNJ1 | 5.10 | 4.08 | 2.08 | 3.38 | 3.09 | 0.78 | 0.69 | 1.66 | 1.44 | 1.06 | |

Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust

Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust

Three-Way Solenoid Valves

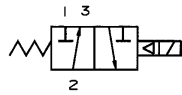
7000 Series General Purpose Three-Way Pilot Operated Valves

DRAWINGS

| Valve | Dimension | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|--|
| | H | P | C | L | W | T | R | J | K | |
| 73312BN3RNJO | 5.34 | 4.41 | 1.96 | 2.97 | 2.62 | 0.59 | 1.44 | 1.22 | 0.91 | |
| 73312BN4UNJO | 5.62 | 4.56 | 2.08 | 3.38 | 3.09 | 0.69 | 1.66 | 1.41 | 1.06 | |



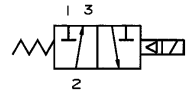
#41



Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust



#43



Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust

Three-Way Solenoid Valves


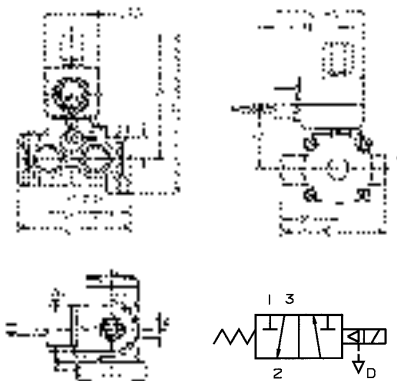
7000 Series General Purpose Three-Way Pilot Operated Valves

7332 PILOT OPERATED BRASS VALVES – NORMALLY OPEN, NBR SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|------------------|---------------------------------|---------------------------------|--------------------|--------------------|---------------------------------------|------------|-----|------------|-------------------------------|-----------------------------------|----------------------|----------------|
| | | | | | Maximum | | | | | | | |
| | | | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 3/8" | 3/8 | 3/8 | 2.1 | 2.1 | | 10 | 180 | 180 | 180 | 185 | 73322BN3RNJ0 | GP |
| | 3/8 | 3/8 | 2.1 | 2.1 | 10 | 180 | 180 | 180 | 185 | 73322BN3RNJ1 | GP | 125 |
| 1/2" | 1/2 | 1/2 | 3.6 | 3.6 | 10 | 180 | 180 | 180 | 185 | 73322BN4UNJ0 | GP | 124 |
| | 1/2 | 1/2 | 3.6 | 3.6 | 10 | 180 | 180 | 180 | 185 | 73322BN4UNJ1 | GP | 125 |
| 3/4" | 3/4 | 3/4 | 7.3 | 7.3 | 10 | 180 | 180 | 180 | 185 | 73322BN52NJ0 | GP | 128 |
| | 3/4 | 3/4 | 7.3 | 7.3 | 10 | 180 | 180 | 180 | 185 | 73322BN52NJ1 | GP | 129 |


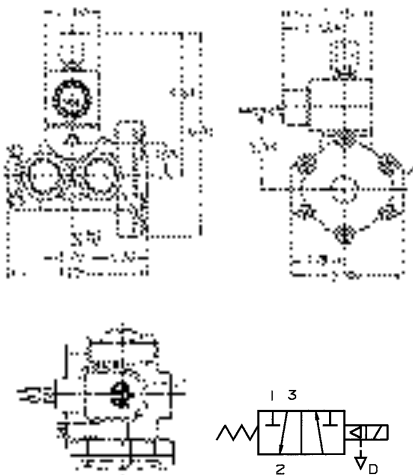
DRAWINGS

| Valve | Dimension | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|------|
| | H | P | C | L | W | S | T | R | J | K |
| 73322BN3RNJ1 | 4.89 | 3.98 | 1.96 | 2.97 | 2.62 | 0.65 | 0.59 | 1.44 | 1.22 | 0.91 |
| 73322BN4UNJ1 | 5.10 | 4.08 | 2.08 | 3.38 | 3.09 | 0.78 | 0.69 | 1.66 | 1.44 | 1.06 |

Port Identification:
1-Exhaust/ 2-Cylinder/ 3-Pressure


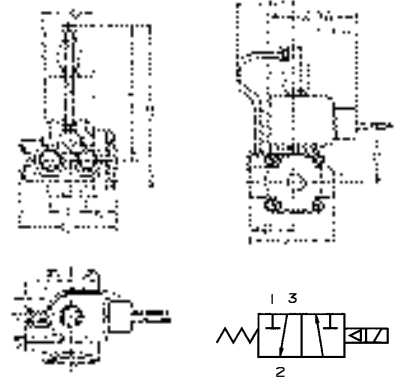
#125

Port Identification:
1-Exhaust/ 2-Cylinder/ 3-Pressure


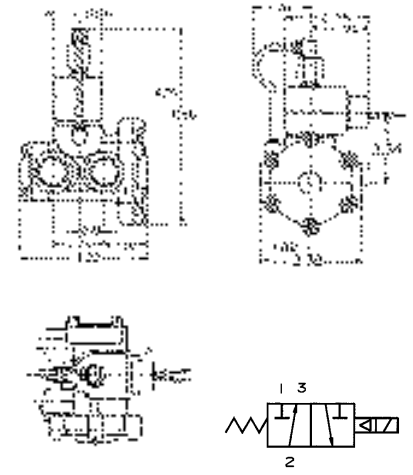
#129

| Valve | Dimension | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|--|
| | H | P | C | L | W | T | R | J | K | |
| 73322BN3RNJ0 | 5.34 | 4.41 | 1.96 | 2.97 | 2.62 | 0.59 | 1.44 | 1.22 | 0.91 | |
| 73322BN3UNJ0 | 5.62 | 4.56 | 2.08 | 3.38 | 3.09 | 0.69 | 1.66 | 1.41 | 1.06 | |

Port Identification:
1-Exhaust/ 2-Cylinder/ 3-Pressure

#124

Port Identification:
1-Exhaust/ 2-Cylinder/ 3-Pressure

#128

Three-Way Solenoid Valves

7000 Series General Purpose Three-Way Pilot Operated Valves

7338 PILOT OPERATED BRASS VALVES – DIVERTING, NBR SEALS


| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|------------------|------------------------------|------------------------------|--------------------|--------------------|---------------------------------------|------------|--|------------|-------------------------------|-----------------------------------|----------------------|----------------|
| | | | | | Maximum | | | | | | | |
| | | | | | Min.* | AC Ratings | | DC Ratings | | | | |
| 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | | |
| 3/8" | 3/8 | 3/8 | 2.1 | 2.1 | 10 | 180 | | 180 | 185 | 73382BN3RNJ1 | GP | 126 |
| 1/2" | 1/2 | 1/2 | 3.6 | 3.6 | 10 | 180 | | 180 | 185 | 73382BN4UNJ1 | GP | 126 |
| 3/4" | 3/4 | 3/4 | 7.3 | 7.3 | 10 | 180 | | 180 | 185 | 73382BN52NJ1 | GP | 130 |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.
**UL/CSA Approval Information: GP=General Purpose Blank=Not Approved

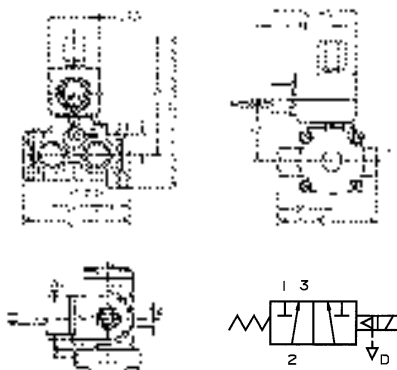
See page 136 for additional agency approval information.

DRAWINGS


| Valve | Dimension | | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|------|--|
| | H | P | C | L | W | S | T | R | J | K | |
| 73382BN3RNJ1 | 4.89 | 3.98 | 1.96 | 2.97 | 2.62 | 0.65 | 0.59 | 1.44 | 1.22 | 0.91 | |
| 73382BN4UNJ1 | 5.10 | 4.08 | 2.08 | 3.38 | 3.09 | 0.78 | 0.69 | 1.66 | 1.44 | 1.06 | |



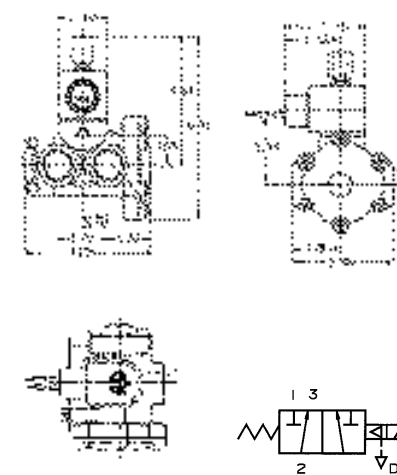
#126



Port Identification:
1-NC/ 2-IN/ 3-NO



#130



Port Identification:
1-NC/ 2-IN/ 3-NO

7000 Series **General Purpose Three-Way Pilot Operated Valves**

External Pilot Pressure Valves

When an application requires the separation of the fluid in the main line from the pilot operator, it is necessary to control the pilot externally. Examples include:

- Controlling contaminated fluids up to 170 PSI.
- Controlling pressures below the minimum

- operating pressure of 10 PSI.
- Operating valves on vacuum.

For such applications, the following 3-way multipurpose valves are provided with connections for external pressure to operate the pilot. The minimum external pilot pressure required is the main line pressure plus 10 PSI. The maximum

external pilot pressure is 180 PSI for pressure applications, and 165 PSI for vacuum applications.

For vacuum service the vacuum line must be connected to the normally open port, and pilot pressure must be connected to the normally closed pilot port.

7433 PILOT OPERATED BRASS VALVES (EXTERNAL PILOT PRESSURE) – MULTIPURPOSE, NBR SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA* Approval | Const. Ref. |
|---------------|------------------------|------------------------|--------------|--------------|---------------------------------------|-----|------------|-----|----------------------|--------------------------------|------------------|-------------|
| | | | | | Maximum | | | | | | | |
| | | | | | AC Ratings | | DC Ratings | | | | | |
| Min. | 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | |
| 3/8" | 3/8 | 3/8 | 2.1 | 2.1 | 0 | 170 | | 170 | 185 | 74332BN3RNJ1 | GP | 127 |
| 1/2" | 1/2 | 1/2 | 3.6 | 3.6 | 0 | 170 | | 170 | 185 | 74332BN4UNJ1 | GP | 127 |
| 3/4" | 3/4 | 3/4 | 7.3 | 7.3 | 0 | 170 | | 170 | 185 | 74332BN52NJ1 | GP | 131 |

* UL/CSA Approval Information: GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

DRAWINGS

| Valve | Dimension | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|------|
| | H | P | C | L | W | S | T | R | J | K |
| 74332BN3RNJ1 | 4.72 | 3.79 | 1.96 | 2.97 | 2.62 | 0.65 | 0.59 | 1.44 | 1.22 | 0.91 |
| 74332BN4UNJ1 | 4.93 | 3.91 | 2.08 | 3.38 | 3.09 | 0.78 | 0.69 | 1.66 | 1.44 | 1.06 |

Port Identification:
Pressure can be applied at either port.

Port Identification:
Pressure can be applied at either port.

SKINNER 7000 Series Quick Exhaust Three-Way Direct Acting Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (430F), Brass
- Seals—NBR
- Sleeve Tube—Stainless Steel (303 or 304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8 or 17-7PH)
- Shading Ring—Copper
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases.
- Use of non-lubricated gaseous media will substantially limit valve life.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

DIRECT ACTING BRASS VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|----------------------------------|-----------------|-----------------|---------------------------------------|------------|-----|---------|----------------------------|-----------------------------------|----------------------|----------------|---------|
| | | | | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | | | | AC Ratings | | | | | | | |
| 1/4" | 3/32 | 1/4 | 3/32 | 0.2 | 1.1 | 0 | 100 | 100 | 185 | 7131EBN2LN00 | GP | 45 | | |

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Orifice Sleeve Size (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|----------------------------------|-----------------|-----------------|---------------------------------------|------------|-----|---------|----------------------------|-----------------------------------|----------------------|----------------|---------|
| | | | | | | Min.* | Maximum | | 10 watt | | | | | 22 watt |
| | | | | | | | AC Ratings | | | | | | | |
| 1/8" | 3/64 | 1/8 | 3/32 | 0.052 | 0.35 | 0 | 250 | 250 | 185 | 71313SN1EN00 | GP | 46 | | |
| | 3/64 | 1/8 | 3/32 | 0.052 | 0.35 | 0 | 250 | 250 | 185 | 71313SN1ENJ1 | GP | 46 | | |
| | 1/16 | 1/8 | 3/32 | 0.09 | 0.35 | 0 | 200 | 200 | 185 | 71313SN1GN00 | GP | 46 | | |
| | 1/16 | 1/8 | 3/32 | 0.09 | 0.35 | 0 | 200 | 200 | 185 | 71313SN1GNJ1 | GP | 46 | | |
| | 3/32 | 1/8 | 3/32 | 0.11 | 0.35 | 0 | 125 | 125 | 185 | 71313SN1KN00 | GP | 46 | | |
| | 3/32 | 1/8 | 3/32 | 0.11 | 0.35 | 0 | 125 | 125 | 185 | 71313SN1KNJ1 | GP | 46 | | |
| | 1/8 | 1/8 | 3/32 | 0.13 | 0.35 | 0 | 90 | 90 | 185 | 71313SN1MN00 | GP | 46 | | |
| | 1/8 | 1/8 | 3/32 | 0.13 | 0.35 | 0 | 90 | 90 | 185 | 71313SN1MNJ1 | GP | 46 | | |
| 1/4" | 3/64 | 1/8 | 3/32 | 0.052 | 0.35 | 0 | 250 | 250 | 185 | 71313SN2EN00 | GP | 46 | | |
| | 3/64 | 1/8 | 3/32 | 0.052 | 0.35 | 0 | 250 | 250 | 185 | 71313SN2ENJ1 | GP | 46 | | |
| | 1/16 | 1/8 | 3/32 | 0.09 | 0.35 | 0 | 200 | 200 | 185 | 71313SN2GN00 | GP | 46 | | |
| | 1/16 | 1/8 | 3/32 | 0.09 | 0.35 | 0 | 200 | 200 | 185 | 71313SN2GNJ1 | GP | 46 | | |
| | 3/32 | 1/8 | 3/32 | 0.11 | 0.35 | 0 | 125 | 125 | 185 | 71313SN2KN00 | GP | 46 | | |
| | 3/32 | 1/8 | 3/32 | 0.11 | 0.35 | 0 | 125 | 125 | 185 | 71313SN2KNJ1 | GP | 46 | | |
| | 1/8 | 1/8 | 3/32 | 0.13 | 0.35 | 0 | 90 | 90 | 185 | 71313SN2MN00 | GP | 46 | | |
| | 1/8 | 1/8 | 3/32 | 0.13 | 0.35 | 0 | 90 | 90 | 185 | 71313SN2MNJ1 | GP | 46 | | |

* The valves operate at 0 PSI, however a 2 PSI minimum pressure differential is required to actuate the pressure operated quick exhaust poppet.

**UL/CSA Approval Information: GP=General Purpose Blank=Not Approved
See page 136 for additional agency approval information.

7000 Series Quick Exhaust Three-Way Direct Acting Valves

DRAWINGS

#46

Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust

#45

Port Identification:
1-Pressure/ 2-Cylinder/ 3-Exhaust

Three-Way Solenoid Valves

SKINNER 7000 Series High Pressure Three-Way Direct Acting Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass, Stainless Steel (430F)
- Seals FKM, PCTFE, NBR, Ruby as listed
- Sleeve Tube—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- All common media including air, inert gases, hydraulic fluids, petroleum products, freons, water, steam and corrosive media. Use of non-

lubricated gaseous media will substantially limit valve life.

Note: Use with steam, water, and some petroleum products normally requires plunger assembly insert modification. Refer to Technical Information section for fluid compatibility.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

DIRECT ACTING BRASS VALVES—NORMALLY CLOSED, PCTFE OR RUBY SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|--------------------|--------------------|---------------------------------------|------------|------------|------|--------------------------------|-----------------------------------|----------------------|----------------|------|
| | | | | | Min. | Maximum | | Min. | | | | | Max. |
| | | | | | | AC Ratings | DC Ratings | | | | | | |
| 1/4" | 1/32 | 1/32 | 0.02 | 0.02 | 0 | 580 | 22 watt | 580 | 22 watt | 165 | 7131KBN2BF00 | GP | 117 |
| | 1/32 | 1/32 | 0.02 | 0.02 | 0 | 1100 | 22 watt | 1100 | 22 watt | 210 | 7131KBN2BR00 | GP | 117 |
| | 3/64 | 1/16 | 0.055 | 0.11 | 0 | 435 | 22 watt | 435 | 22 watt | 210 | 7131KBN2ER00 | GP | 117 |

DIRECT ACTING BRASS VALVES—MULTIPURPOSE, FKM SEALS

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|--------------------|--------------------|---------------------------------------|------------|------------|------|--------------------------------|-----------------------------------|----------------------|----------------|------|
| | | | | | Min. | Maximum | | Min. | | | | | Max. |
| | | | | | | AC Ratings | DC Ratings | | | | | | |
| 1/4" | 1/32 | 1/32 | 0.02 | 0.02 | 0 | 435 | 22 watt | 435 | 22 watt | 185 | 7133KBN2BVJ1 | GP | 117 |

DIRECT ACTING STAINLESS STEEL VALVES—MULTIPURPOSE, NBR SEALS

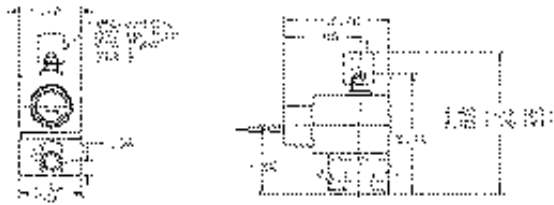
| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Operating Pressure Differential (PSI) | | | | Max.* Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------------|------------------------------|--------------------|--------------------|---------------------------------------|------------|------------|------|--------------------------------|-----------------------------------|----------------------|----------------|------|
| | | | | | Min. | Maximum | | Min. | | | | | Max. |
| | | | | | | AC Ratings | DC Ratings | | | | | | |
| 1/8" | 1/32 | 1/32 | 0.024 | 0.024 | 0 | 400 | 22 watt | 400 | 22 watt | 185 | 71335SN1ANJ1 | GP | 121 |
| 1/4" | 1/32 | 1/32 | 0.024 | 0.024 | 0 | 400 | 22 watt | 400 | 22 watt | 185 | 71335SN2ANJ1 | GP | 121 |

* Maximum fluid temperatures are provided for Class F coils. Valves with Ruby or FKM seals (letter 'R' or 'V' in 10th position of pressure vessel number) can be used at fluid temperatures up to 240°F on DC and 250°F on AC provided a Class H coil is used.

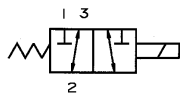
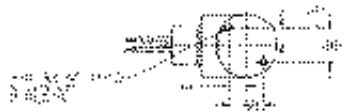
**UL/CSA Approval Information: GP=General Purpose Blank=Not Approved See page 136 for additional agency approval information.

7000 Series High Pressure Three-Way Direct Acting Valves

DRAWINGS



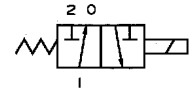
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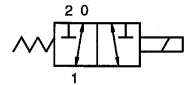
Port Identification:
Pressure can be applied at either port.



#117



NORMALLY CLOSED
Port Identification:
1-Cylinder/ 2-Pressure/ 0-Exhaust



MULTIPURPOSE
Port Identification:
Pressure can be applied at either port.

Three-Way Solenoid Valves

SKINNER 7000 Series **Manual Reset Three-Way Direct Acting and Pilot Operated Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body – Brass or Stainless Steel (430)
- Seals – NBR or FKM seals as listed
- Sleeve Tube – Stainless Steel (303 or 304)
- Plunger – Stainless Steel (430FR)
- Shading Ring – Copper
- Stop – Stainless Steel (430FR)
- Springs – Stainless Steel (18-8)
- Pilot Orifice – Stainless Steel (303)

Compatible Fluids

- Depending on the valve used, most common media including air, inert gases or petroleum products.

Electrical Characteristics

Voltages

- DC – 12, 24
- AC – 110/50-120/60, 220/50-240/60

Power Consumption

- 10, 22 watts

Agency Approvals

- cUL approval.

Miscellaneous

Maximum Ambient Temperature

- 131°F

DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY CLOSED, NBR OR FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | |
| 1/4" | 3/64 x 3/32 | 0.062 x 0.17 | 0 | 10 watt | 22 watt | 200 | 200 | 70315SN2ENVR | 70315SN2ENET | 25 |
| | 1/16 x 3/32 | 0.11 x 0.17 | 0 | 150 | 150 | 150 | 150 | 70315SN2GVVR | 70315SN2GVET | 25 |
| | 3/32 x 3/32 | 0.17 x 0.17 | 0 | 90 | 90 | 90 | 90 | 70315SN2KVVR | 70315SN2KVET | 25 |
| | 1/8 x 3/32 | 0.23 x 0.17 | 0 | 60 | 60 | 60 | 60 | 70315SN2MNVVR | 70315SN2MNET | 25 |

PILOT OPERATED BRASS VALVES – NORMALLY CLOSED, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | |
| 3/8" | 3/8 | 2.1 | 10 | 180 | 180 | 180 | 180 | 70312BN3RNVR | 70312BN3RNET | 25 |
| 1/2" | 1/2 | 3.6 | 10 | 180 | 180 | 180 | 180 | 70312BN4UNVR | 70312BN4UNET | 25 |
| 3/4" | 3/4 | 7.3 | 10 | 180 | 180 | 180 | 180 | 70312BN52NVR | 70312BN52NET | 25 |

DIRECT ACTING STAINLESS STEEL VALVES – NORMALLY OPEN, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | |
| 1/4" | 1/16 x 3/32 | 0.095 x 0.17 | 0 | 150 | 150 | 150 | 150 | 70325SN2GNVR | 70325SN2GNET | 25 |

PILOT OPERATED BRASS VALVES – NORMALLY OPEN, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | |
| 3/8" | 5/8 | 2.1 | 10 | 180 | 180 | 180 | 180 | 70322BN3RNVR | 70322BN3RNET | 25 |
| 1/2" | 1/2 | 3.6 | 10 | 180 | 180 | 180 | 180 | 70322BN4UNVR | 70322BN4UNET | 25 |
| 3/4" | 3/4 | 7.3 | 10 | 180 | 180 | 180 | 180 | 70322BN52NVR | 70322BN52NET | 25 |

DIRECT ACTING BRASS VALVES – UNIVERSAL ALL-PORTS-IN-BODY, FKM SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|------------|---------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | DC Ratings | | | | | |
| 1/4" | 5/64 x 5/64 | 0.14 x 0.14 | 0 | 100 | 100 | 100 | 100 | 7033TBN2JVVR | 7033TBN2JVET | 25 |
| 1/4" | 1/8 x 1/8 | 0.23 x 0.23 | 0 | 50 | 50 | 50 | 50 | 7033TBN2NVVR | 7033TBN2NVET | 25 |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.

7000 Series Manual Reset Three-Way Direct Acting and Pilot Operated Valves

DIRECT ACTING 303 STAINLESS STEEL VALVES – UNIVERSAL ALL-PORTS-IN-BODY, FKM SEALS**

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|---------------|---------------------------------------|------------|-----|--------------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | | | | | | |
| 1/4" | 1/16 x 1/16 | 0.095 x 0.095 | 0 | 150 | 150 | 7033TVN2GVVR | 7033TVN2GVET | 25 | | |
| 1/4" | 5/64 x 5/64 | 0.14 x 0.14 | 0 | 100 | 100 | 7033TVN3JVVR | 7033TVN2JVET | 25 | | |
| 1/4" | 1/8 x 1/8 | 0.23 x 0.23 | 0 | 50 | 50 | 7033TVN2NVVR | 7033TVN2NVET | 25 | | |

* All wetted parts are stainless steel, FKM and plastic.

DIRECT ACTING 316L STAINLESS STEEL VALVES – INTRINSICALLY SAFE, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|-----|------------------|---|---|----------------|---------|
| | | | Min.* | Maximum | | 10 watt | | | | 22 watt |
| | | | | AC Ratings | | | | | | |
| 1/4" | 3/16 | 0.53 | 0 | 145 | 145 | U033X51560860N7+ | | 25 | | |

+ Includes coil

DRAWINGS

| Dimension | No-Voltage Release | Electrically Tripped |
|-----------|--------------------|----------------------|
| A | 4.64 | 4.40 |
| B | 4.31 | 4.07 |
| C | 1.79 | 1.59 |
| D | 3.26 | 3.06 |

#25

SKINNER 7000 Series Remote Pressure Operated Three-Way Remote Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass
- Diaphragm Seal—NBR/PTFE
- Seals—NBR
- Springs—Stainless Steel (18-8)
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Hydraulic Fluids, Petroleum Products and additional fluids compatible with materials of construction.

REMOTE PRESSURE OPERATED VALVES—DUAL PURPOSE

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Pressure Vessel Catalog Number | Const. Ref. |
|---------------|------------------------|------------------------|--------------|--------------|--------------------------------|-------------|
| 3/8" | 3/8 | 3/8 | 2.1 | 2.1 | 75332BN3RN00 | 47 |
| 1/2" | 1/2 | 1/2 | 3.6 | 3.6 | 75332BN4UN00 | 47 |
| 3/4" | 3/4 | 3/4 | 7.3 | 7.3 | 75332BN52N00 | 48 |

Note that these valves do not feature an electrical operator, therefore no enclosure and coil selection is necessary.

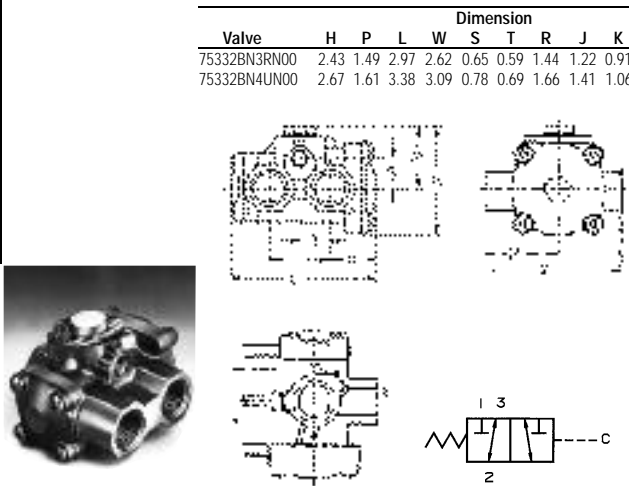
REMOTE OPERATED VALVE PORT CONNECTIONS

| Valve Type | Main Line Supply | Connections For Remote Valve | | | Pilot Inlet Port* 1/8" NPT | 3-Way Pilot Valve Hookup | | |
|---------------------|------------------|------------------------------|--------------------|-------------|---------------------------------------|------------------------------------|--------------------|--|
| | | Normally Closed Port | Normally Open Port | Common Port | | Normally Closed Port | Normally Open Port | Common Port |
| Normally Open | 0-180 PSIG | Media Exhaust | Media Inlet | Cylinder | Connect to Common Port of 3-Way Pilot | Main Line Pressure +10 PSI Minimum | Pilot Exhaust | 1/8" NPT Pilot of Remote Control Valve |
| | Vacuum | Atmosphere | Vacuum | Cylinder | | 10 PSI Minimum | Vacuum | |
| Normally Closed | 0-180 PSIG | Media Inlet | Media Exhaust | Cylinder | | Main Line Pressure +10 PSI Minimum | Pilot Exhaust | |
| | Vacuum | Vacuum | Atmosphere | Cylinder | | 10 PSI Minimum | Vacuum | |
| Directional Control | 0-180 PSIG | Media Outlet | Media Outlet | Media Inlet | | Main Line Pressure +10 PSI Minimum | Pilot Exhaust | |
| | Vacuum | Inlet | Inlet | Vacuum | | 10 PSIG Minimum | Vacuum | |


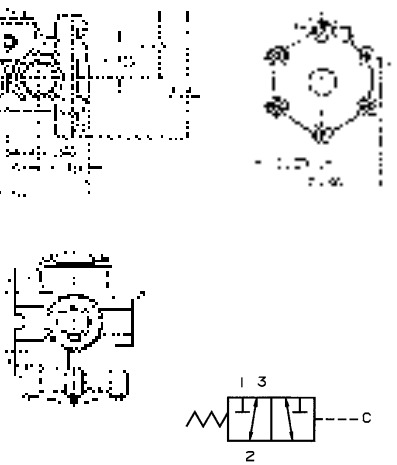
* To assure long, trouble free life, the Pilot IN to main pressure should not exceed 200 PSIG.

DRAWINGS

| Valve | Dimension | | | | | | | | | |
|--------------|-----------|------|------|------|------|------|------|------|------|--|
| | H | P | L | W | S | T | R | J | K | |
| 75332BN3RN00 | 2.43 | 1.49 | 2.97 | 2.62 | 0.65 | 0.59 | 1.44 | 1.22 | 0.91 | |
| 75332BN4UN00 | 2.67 | 1.61 | 3.38 | 3.09 | 0.78 | 0.69 | 1.66 | 1.41 | 1.06 | |



Port Identification:
Pressure can be applied at either port.

Port Identification:
Pressure can be applied at either port.

Three-Way Solenoid Valves

SKINNER 3000 Series Three-Way Direct Acting Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or Stainless Steel (303)
- Seals—NBR, FKM, Ethylene Propylene, CR
- Sleeve Assembly—305 Stainless Steel (tube-flange), 430F Stainless Steel (stop)
- Plunger—430F Stainless Steel
- Manifold Body—Aluminum
- Flux Plate—Plated Steel
- Housing—Plated Steel
- Integrated Coil Encapsulant—Nylon

Compatible Fluids

- Air, inert gas, water, oil

Vacuum

- Up to 5 microns depending on application

Electrical Characteristics

Voltages

- DC—6, 12, 24
- AC—24, 50/60, 110/50-120/60, 220/50-240/60

Power Consumption

- 6 watts, 7.5 for 24/60
- 3 watts

Agency Approvals

- UL and CSA component recognition.

Miscellaneous

Maximum Ambient Temperature

- 68°F for continuous duty cycle.

Response Time

- 8 to 16 milliseconds to open or close.

Duty Cycle

- Continuous duty, 600 cycles per minute.

Weight

- 8 oz.

Mounting

- Two 8-32 tapped holes in bottom of valve body supplied standard. A universal mounting bracket B19-006 is also available.

DIRECT ACTING BRASS AND STAINLESS STEEL VALVES—NORMALLY CLOSED

| Pipe Size NPT | Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Brass Pressure Vessel Catalog Number | Stainless Steel Pressure Vessel Catalog Number |
|------------------|-----------------------------|----------------|-------------------------------|------------------|---|---------|--------------------------------------|--|
| | | | | | 6 watt | 3 watt* | | |
| 1/8" | 1/32 | 0.03 | 1/32 | 0.03 | 200 | - | 3131BBN1AN00 | 3131BSN1AN00 |
| | 3/64 | 0.05 | 3/64 | 0.05 | 150 | - | 3131BBN1EN00 | 3131BSN1EN00 |
| | 1/16 | 0.09 | 1/16 | 0.09 | 100 | - | 3131BBN1GN00 | 3131BSN1GN00 |
| | 5/64 | 0.13 | 1/16 | 0.09 | 80 | 50 | 3131BBN1JN00 | 3131BSN1JN00 |
| | 3/32 | 0.18 | 1/16 | 0.09 | 60 | 35 | 3131BBN1LN00 | 3131BSN1LN00 |
| | 1/8 | 0.24 | 1/16 | 0.09 | 40 | 20 | 3131BBN1NN00 | 3131BSN1NN00 |
| | 5/32 | 0.30 | 1/16 | 0.09 | 10 | 10 | 3131BBN1QN00 | 3131BSN1QN00 |

DIRECT ACTING BRASS AND STAINLESS STEEL VALVES—NORMALLY OPEN

| Pipe Size NPT | Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Brass Pressure Vessel Catalog Number | Stainless Steel Pressure Vessel Catalog Number |
|------------------|-----------------------------|----------------|-------------------------------|------------------|---|---------|--------------------------------------|--|
| | | | | | 6 watt | 3 watt* | | |
| 1/8" | 1/32 | 0.03 | 1/32 | 0.03 | 160 | - | 3139BBN1AN00 | 3139BSN1AN00 |
| | 3/64 | 0.05 | 3/64 | 0.05 | 125 | - | 3139BBN1EN00 | 3139BSN1EN00 |
| | 1/16 | 0.09 | 1/16 | 0.09 | 100 | - | 3139BBN1GN00 | 3139BSN1GN00 |
| | 5/64 | 0.13 | 1/16 | 0.09 | 80 | - | 3139BBN1JN00 | 3139BSN1JN00 |
| | 3/32 | 0.18 | 1/16 | 0.09 | 60 | - | 3139BBN1LN00 | 3139BSN1LN00 |
| | 1/8 | 0.24 | 1/16 | 0.09 | 40 | - | 3139BBN1NN00 | 3139BSN1NN00 |
| | 5/32 | 0.30 | 1/16 | 0.09 | 10 | - | 3139BBN1QN00 | 3139BSN1QN00 |

DIRECT ACTING BRASS AND STAINLESS STEEL VALVES—MULTIPURPOSE

| Pipe Size NPT | Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Brass Pressure Vessel Catalog Number | Stainless Steel Pressure Vessel Catalog Number |
|------------------|-----------------------------|----------------|-------------------------------|------------------|---|---------|--------------------------------------|--|
| | | | | | 6 watt | 3 watt* | | |
| 1/8" | 1/32 | 0.03 | 1/32 | 0.03 | 150 | 95 | 3133BBN1AN00 | 3133BSN1AN00 |
| | 3/64 | 0.05 | 3/64 | 0.05 | 100 | 60 | 3133BBN1EN00 | 3133BSN1EN00 |
| | 1/16 | 0.09 | 1/16 | 0.09 | 80 | 20 | 3133BBN1GN00 | 3133BSN1GN00 |
| | 5/64 | 0.13 | 1/16 | 0.09 | 60 | 8 | 3133BBN1JN00 | 3133BSN1JN00 |
| | 3/32 | 0.18 | 1/16 | 0.09 | 35 | - | 3133BBN1LN00 | 3133BSN1LN00 |
| | 1/8 | 0.24 | 1/16 | 0.09 | 20 | - | 3133BBN1NN00 | 3133BSN1NN00 |
| | 5/32 | 0.30 | 1/16 | 0.09 | 10 | - | 3133BBN1QN00 | 3133BSN1QN00 |

3000 Series Three-Way Direct Acting Valves

DIRECT ACTING BRASS AND STAINLESS STEEL VALVES – DIRECTIONAL CONTROL

| Pipe Size NPT | Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Brass Pressure Vessel Catalog Number | Stainless Steel Pressure Vessel Catalog Number |
|------------------|-----------------------------|----------------|-------------------------------|------------------|---|---------|--------------------------------------|--|
| | | | | | 6 watt | 3 watt* | | |
| 1/8" | 1/32 | 0.03 | 1/32 | 0.03 | 230 | - | 3138BBN1AN00 | 3138BSN1AN00 |
| | 3/64 | 0.05 | 3/64 | 0.05 | 160 | - | 3138BBN1EN00 | 3138BSN1EN00 |
| | 1/16 | 0.09 | 1/16 | 0.09 | 120 | - | 3138BBN1GN00 | 3138BSN1GN00 |
| | 5/64 | 0.13 | 1/16 | 0.09 | 80 | - | 3138BBN1JN00 | 3138BSN1GN00 |
| | 3/32 | 0.18 | 1/16 | 0.09 | 60 | - | 3138BBN1LN00 | 3138BSN1LN00 |
| | 1/8 | 0.24 | 1/16 | 0.09 | 35 | - | 3138BBN1NN00 | 3138BSN1NN00 |
| | 5/32 | 0.30 | 1/16 | 0.09 | 20 | - | 3138BBN1QN00 | 3138BSN1QN00 |

Performance Ratings Apply to All Voltages, Coil Constructions, Seal and Body Materials.

* When ordering a pressure vessel with a 3 watt coil the second digit must be a 9. Example: 3931BBN1JN00 is a 3-way normally closed pressure vessel for use with 3 watt coils.

MANIFOLD ASSEMBLED VALVES – NORMALLY CLOSED, COMMON INLET PRESSURE UNDER SEAT

| Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Cavity Manifold Assembly Catalog Number | Screw-In Manifold Assembly Catalog Number |
|-----------------------------|----------------|-------------------------------|------------------|---|---------|---|---|
| | | | | 6 watt | 3 watt* | | |
| 3/64 | 0.05 | 3/64 | 0.05 | 150 | - | 3131BJA7ENC# | 3131BSA6EN00 |
| 1/16 | 0.09 | 1/16 | 0.09 | 100 | - | 3131BJA7GNC# | 3131BSA6GN00 |
| 1/8 | 0.24 | 1/16 | 0.09 | 40 | 20 | - | 3131BSA6NN00 |
| 5/32 | 0.30 | 1/16 | 0.09 | 10 | 10 | - | 3131BSA6QN00 |

MANIFOLD ASSEMBLED VALVES – NORMALLY OPEN, COMMON INLET PRESSURE UNDER SEAT

| Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Cavity Manifold Assembly Catalog Number | Screw-In Manifold Assembly Catalog Number |
|-----------------------------|----------------|-------------------------------|------------------|---|---------|---|---|
| | | | | 6 watt | 3 watt* | | |
| 3/64 | 0.05 | 3/64 | 0.05 | 125 | - | 3139BJA7ENC# | 3139BSA6EN00 |
| 1/16 | 0.09 | 1/16 | 0.09 | 100 | - | 3139BJA7GNC# | 3139BSA6GN00 |
| 1/8 | 0.24 | 1/16 | 0.09 | 40 | - | - | 3139BSA6NN00 |
| 5/32 | 0.30 | 1/16 | 0.09 | 10 | - | - | 3139BSA6QN00 |

MANIFOLD ASSEMBLED VALVES – MULTIPURPOSE, COMMON INLET PRESSURE UNDER SEAT

| Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Cavity Manifold Assembly Catalog Number | Screw-In Manifold Assembly Catalog Number |
|-----------------------------|----------------|-------------------------------|------------------|---|---------|---|---|
| | | | | 6 watt | 3 watt* | | |
| 3/64 | 0.05 | 3/64 | 0.05 | 100 | 60 | 3133BJA7ENC# | 3133BSA6EN00 |
| 1/16 | 0.09 | 1/16 | 0.09 | 80 | 20 | 3133BJA7GNC# | 3133BSA6GN00 |
| 1/8 | 0.24 | 1/16 | 0.09 | 20 | - | - | 3133BSA6NN00 |
| 5/32 | 0.30 | 1/16 | 0.09 | 10 | - | - | 3133BSA6QN00 |

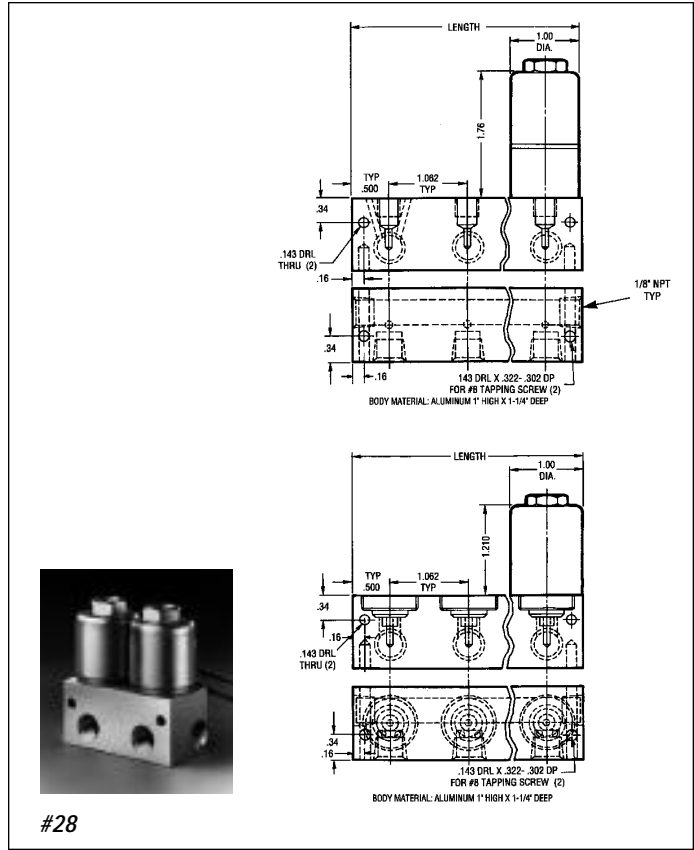
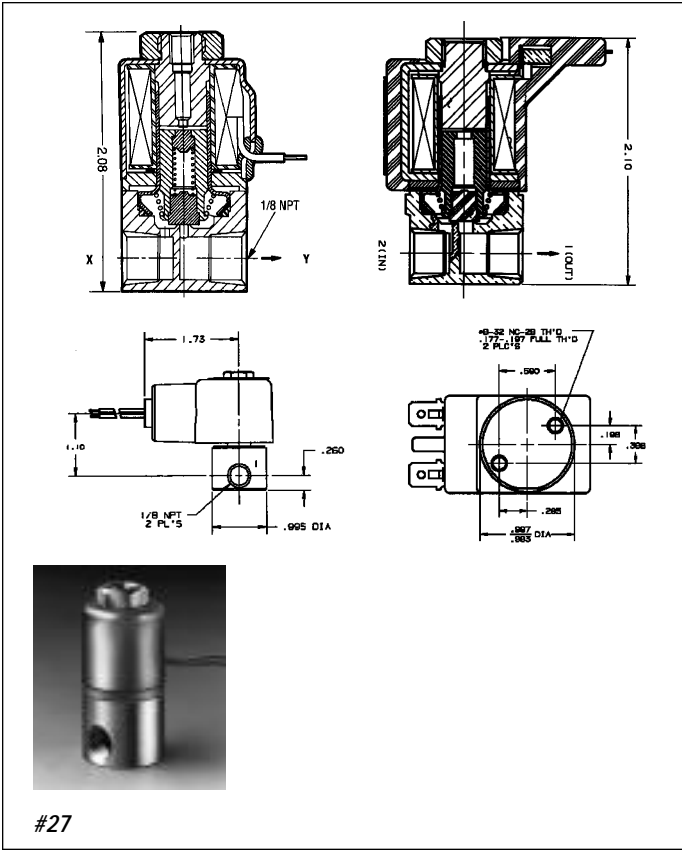
MANIFOLD ASSEMBLED VALVES – DIRECTIONAL CONTROL, COMMON INLET PRESSURE OVER SEAT

| Body Orifice Size (inch) | Body Cv Factor | Sleeve Orifice Size (inch) | Sleeve Cv Factor | Maximum Operating Pressure Differential (PSI) | | Cavity Manifold Assembly Catalog Number | Screw-In Manifold Assembly Catalog Number |
|-----------------------------|----------------|-------------------------------|------------------|---|---------|---|---|
| | | | | 6 watt | 3 watt* | | |
| 3/64 | 0.05 | 3/64 | 0.05 | 160 | - | 3138BJA7ENC# | 3138BSA6EN00 |
| 1/16 | 0.09 | 1/16 | 0.09 | 120 | - | 3138BJA7GNC# | 3138BSA6GN00 |
| 1/8 | 0.24 | 1/16 | 0.09 | 35 | - | - | 3138BSA6NN00 |
| 5/32 | 0.30 | 1/16 | 0.09 | 20 | - | - | 3138BSA6QN00 |

* When ordering a pressure vessel with a 3 watt coil the second digit must be a 9. Example: 3931BSA6NN00 is a 3-way normally closed pressure vessel for use with 3 watt coils.
Performance Ratings Apply to All Voltages, Coil Constructions, Seal and Body Materials.
Screw-in body available in stainless steel only.

Denotes the number of valves in the manifold, from 2 to 4.
Screw-in manifolds and valves sold separately.
Kit #V1-22-028 available to join manifolds when more than 4 stations required.

3000 Series Three-Way Direct Acting Valves



| Screw-In Manifolds | Common Port | Pressure Direction | Number of Stations | | |
|--------------------|-------------|--------------------|--------------------|------------|------------|
| | | | 2 | 3 | 4 |
| 3WNC (3131) | Inlet | Under Seat | 300-40-022 | 300-40-023 | 300-40-024 |
| 3WDIR (3138) | Common | Over Seat | 300-40-015 | 300-40-016 | 300-40-017 |

Three-Way Solenoid Valves

SKINNER B-Series General Purpose Three-Way Direct Acting Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (303)
- Seals—FKM
- Sleeve—304 Stainless Steel
- Plunger—430F Stainless Steel
- Stop—430 FR Stainless Steel
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Orifice 303 Stainless Steel

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Steam, Hydraulic Fluids, Petroleum Products, Freons, and additional fluids compatible with materials of construction.

Minimum Operating Pressure Differential

- 0 PSI

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 7 watts

Agency Approvals

- UL and CSA approvals are generally available on valves with applicable coil/enclosure combinations. For details consult Skinner Valve.

Miscellaneous

Vacuum

- Down to 5 microns (0.005 torr, 2x10⁻⁴ in Hg)

Operating Speed

- Up to 800 cycles per minute

Response Time

- AC—Approximately 4-8 milliseconds to open or close.
- DC—Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

B13 DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED, FKM SEALS

| Pipe Size | Orifice Diameter | | Cv Factor | | Maximum Operating Pressure Differential (PSI) (AC & DC) | Class A Taped Coil | | Const. Ref. | Class B Taped 1/2" NPT Conduit* | Const. Ref. |
|-----------|------------------|-----------|------------|-----------|---|--------------------|------------------|-------------|---------------------------------|-------------|
| | Inlet Port | Exh. Port | Inlet Port | Exh. Port | | Grommet Enclosure | 1/4" NPT Conduit | | | |
| 1/8" NPT | 1/32 | 1/32 | 0.019 | 0.019 | 200 | B13DK1200 | B13DM1200 | 132 | B13TME1200 | 49 |
| | 3/64 | 3/64 | 0.048 | 0.052 | 150 | B13DK1150 | B13DM1150 | 132 | B13TME1150 | 49 |
| | 1/16 | 3/64 | 0.085 | 0.052 | 100 | B13DK1100 | B13DM1100 | 132 | B13TME1100 | 49 |
| | 3/32 | 3/32 | 0.16 | 0.13 | 40 | B13DK1040 | B13DM1040 | 132 | B13TME1040 | 49 |

B13A DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED EXHAUST TO ATMOSPHERE, FKM SEALS

| | | | | | | | | | | |
|----------|------|------|-------|-------|-----|------------|------------|-----|-------------|----|
| 1/8" NPT | 1/32 | 1/32 | 0.019 | 0.019 | 200 | B13ADK1200 | B13ADM1200 | 133 | B13ATME1200 | 50 |
| | 3/64 | 3/64 | 0.048 | 0.052 | 150 | B13ADK1150 | B13ADM1150 | 133 | B13ATME1150 | 50 |
| | 1/16 | 3/64 | 0.085 | 0.052 | 100 | B13ADK1100 | B13ADM1100 | 133 | B13ATME1100 | 50 |
| | 3/32 | 3/32 | 0.16 | 0.13 | 40 | B13ADK1040 | B13ADM1040 | 133 | B13ATME1040 | 50 |

B14 DIRECT ACTING STAINLESS STEEL VALVES—MULTIPURPOSE, FKM SEALS

| | | | | | | | | | | |
|------|------|------|-------|-------|-----|-----------|-----------|-----|------------|----|
| 1/8" | 1/32 | 1/32 | 0.019 | 0.019 | 150 | B14DK1150 | B14DM1150 | 132 | B14TME1150 | 49 |
| | 3/64 | 3/64 | 0.048 | 0.052 | 100 | B14DK1100 | B14DM1100 | 132 | B14TME1100 | 49 |
| | 1/16 | 3/64 | 0.085 | 0.052 | 75 | B14DK1075 | B14DM1075 | 132 | B14TME1075 | 49 |
| | 3/32 | 3/32 | 0.16 | 0.13 | 30 | B14DK1030 | B14DM1030 | 132 | B14TME1030 | 49 |

B15 DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY OPEN, FKM SEALS

| | | | | | | | | | | |
|------|------|------|-------|-------|-----|-----------|-----------|-----|------------|----|
| 1/8" | 1/32 | 1/32 | 0.019 | 0.019 | 200 | B15DK1200 | B15DM1200 | 132 | B15TME1200 | 49 |
| | 3/64 | 3/64 | 0.052 | 0.048 | 150 | B15DK1150 | B15DM1150 | 132 | B15TME1150 | 49 |
| | 3/64 | 1/16 | 0.052 | 0.085 | 125 | B15DK1125 | B15DM1125 | 132 | B15TME1125 | 49 |
| | 3/32 | 3/32 | 0.16 | 0.13 | 40 | B15DK1040 | B15DM1040 | 132 | B15TME1040 | 49 |

B16 DIRECT ACTING STAINLESS STEEL VALVES—DIRECTIONAL CONTROL, FKM SEALS

| | | | | | | | | | | |
|----------|------|------|-------|-------|-----|-----------|-----------|-----|------------|----|
| 1/8" NPT | 1/32 | 1/32 | 0.019 | 0.019 | 250 | B16DK1250 | B16DM1250 | 132 | B16TME1250 | 49 |
| | 3/64 | 3/64 | 0.048 | 0.052 | 200 | B16DK1200 | B16DM1200 | 132 | B16TME1200 | 49 |
| | 1/16 | 3/64 | 0.085 | 0.052 | 175 | B16DK1175 | B16DM1175 | 132 | B16TME1175 | 49 |
| | 3/32 | 3/32 | 0.16 | 0.13 | 50 | B16DK1050 | B16DM1050 | 132 | B16TME1050 | 49 |

* Note: B Series valves with Class B taped coils and 1/2" NPT conduit are UL approved.

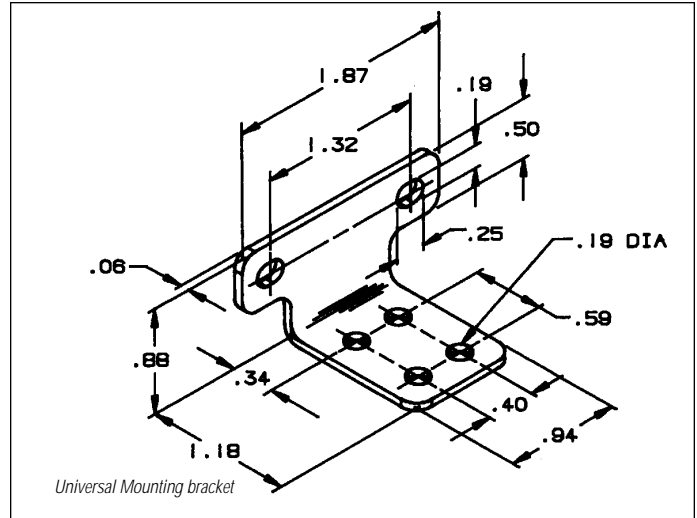
B-Series General Purpose Three-Way Direct Acting Valves

Valve Options & Accessories

| Optional Features | Option Code |
|------------------------------------|-------------|
| Molded Class B leaded coil | LB |
| Molded Class B tab coil | TB |
| Molded Class H leaded coil | LH |
| Yoke | ET |
| Slotted enclosure for molded coils | EB |

| Accessories | Part No. |
|----------------------------|----------|
| Universal mounting bracket | B19-006 |
| Wrench nut | B99-007 |

For ordering instructions see Ordering Information section on page 10.



DRAWINGS

#49

| B13 | B14 | B15 | B16 |
|------------|--------|----------|-----|
| 1-IN | NC | Exhaust | NC |
| 2-Cylinder | Common | Cylinder | IN |
| 3-Exhaust | NO | IN | NO |

Port Identification:
 B13: 1-IN, 2-Cylinder, 3-Exhaust
 B14: NC, Common, NO
 B15: Exhaust, Cylinder, IN
 B16: NC, IN, NO

#50

| Port Identification: |
|---|
| 1-IN/ 2-Cylinder/ 3*-Exhaust (* not marked) |

#132

| B13 | B14 | B15 | B16 |
|------------|--------|----------|-----|
| 1-IN | NC | Exhaust | NC |
| 2-Cylinder | Common | Cylinder | IN |
| 3-Exhaust | NO | IN | NO |

Port Identification:
 B13: 1-IN, 2-Cylinder, 3-Exhaust
 B14: NC, Common, NO
 B15: Exhaust, Cylinder, IN
 B16: NC, IN, NO

#133

| Port Identification: |
|---|
| 1-IN/ 2-Cylinder/ 3*-Exhaust (* not marked) |

Three-Way Solenoid Valves

SKINNER C-Series **General Purpose Three-Way Direct Acting Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass (Stainless Steel available)
- Seals—FKM, EPDM available
- Sleeve—304 Stainless Steel
- Plunger—430FR Stainless Steel
- Stop—430 FR Stainless Steel
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Orifice—Brass, Stainless Steel

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Water, Steam, Hydraulic Fluids, Petroleum Products, Freons, and additional fluids compatible with materials of construction. Note: Use with Steam and some Petroleum Products may require plunger seal material.

modification. Consult Skinner Valve to specify a suitable material.

Minimum Operating Pressure Differential

- 0 PSI

Pipe Sizes

- 1/8" NPT dry seal. 1/8" BSP also available.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 8 watts

Agency Approvals

- UL and CSA approvals are generally available on valves with applicable coil/enclosure combinations. For details consult Skinner Valve.

Miscellaneous

Vacuum

- Down to 5 microns (0.005 torr, 2x10⁻⁴ in Hg)

Operating Speed

- Up to 600 cycles per minute

Response Time

- AC—Approximately 4-8 milliseconds to open or close.
- DC—Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

C3 DIRECT ACTING BRASS VALVES—NORMALLY CLOSED, FKM SEALS

| NPT Pipe Size | Orifice Diameter | | Cv Factor | | Maximum Operating Pressure Differential (PSI) | | Class A Taped Coil | | Const. Ref. |
|---------------|------------------|-----------|------------|-----------|---|-----|--------------------|------------------|-------------|
| | Inlet Port | Exh. Port | Inlet Port | Exh. Port | AC | DC | Grommet Enclosure | 1/2" NPT Conduit | |
| | | | | | | | C3DK1175 | C3DM1175 | |
| 1/8" | 3/64 | 1/16 | 0.05 | 0.09 | 175 | 175 | C3DK1175 | C3DM1175 | 51 |
| | 1/16 | 1/16 | 0.09 | 0.09 | 125 | 125 | C3DK1125 | C3DM1125 | 51 |
| | 3/32 | 3/32" | 0.18 | 0.18 | 75 | 75 | C3DK1075 | C3DM1075 | 51 |
| | 1/8 | 3/32 | 0.26 | 0.18 | 50 | 50 | C3DK1050 | C3DM1050 | 51 |

C3A DIRECT ACTING BRASS VALVES—NORMALLY CLOSED EXHAUST TO ATMOSPHERE, FKM SEALS

| NPT Pipe Size | Orifice Diameter | | Cv Factor | | Maximum Operating Pressure Differential (PSI) | | Class A Taped Coil | | Const. Ref. |
|---------------|------------------|-----------|------------|-----------|---|-----|--------------------|------------------|-------------|
| | Inlet Port | Exh. Port | Inlet Port | Exh. Port | AC | DC | Grommet Enclosure | 1/2" NPT Conduit | |
| | | | | | | | C3ADK1175 | C3ADM1175 | |
| 1/8" | 3/64 | 1/16 | 0.05 | 0.09 | 175 | 175 | C3ADK1175 | C3ADM1175 | 52 |
| | 1/16 | 1/16 | 0.09 | 0.09 | 125 | 125 | C3ADK1125 | C3ADM1125 | 52 |
| | 3/32 | 3/32 | 0.18 | 0.18 | 75 | 75 | C3ADK1075 | C3ADM1075 | 52 |
| | 1/8" | 3/32 | 0.26 | 0.18 | 50 | 50 | C3ADK1050 | C3ADM1050 | 52 |

C4 DIRECT ACTING BRASS VALVES—MULTIPURPOSE, FKM SEALS

| NPT Pipe Size | Orifice Diameter | | Cv Factor | | Maximum Operating Pressure Differential (PSI) | | Class A Taped Coil | | Const. Ref. |
|---------------|------------------|-----------|------------|-----------|---|-----|--------------------|------------------|-------------|
| | Inlet Port | Exh. Port | Inlet Port | Exh. Port | AC | DC | Grommet Enclosure | 1/2" NPT Conduit | |
| | | | | | | | C4DK1150 | C4DM1150 | |
| 1/8" | 3/64 | 3/64 | 0.05 | 0.05 | 150 | 150 | C4DK1150 | C4DM1150 | 51 |
| | 1/16 | 1/16 | 0.09 | 0.09 | 75 | 75 | C4DK1075 | C4DM1075 | 51 |
| | 3/32 | 3/32 | 0.18 | 0.18 | 50 | - | C4DK1052 | C4DM1052 | 51 |
| | 3/32 | 3/32 | 0.18 | 0.18 | - | 30 | C4DK1031 | C4DM1031 | 51 |

C5 DIRECT ACTING BRASS VALVES—NORMALLY OPEN, FKM SEALS

| NPT Pipe Size | Orifice Diameter | | Cv Factor | | Maximum Operating Pressure Differential (PSI) | | Class A Taped Coil | | Const. Ref. |
|---------------|------------------|-----------|------------|-----------|---|-----|--------------------|------------------|-------------|
| | Inlet Port | Exh. Port | Inlet Port | Exh. Port | AC | DC | Grommet Enclosure | 1/2" NPT Conduit | |
| | | | | | | | C5DK1175 | C5DM1175 | |
| 1/8" | 3/64 | 1/16 | 0.05 | 0.09 | 175 | 175 | C5DK1175 | C5DM1175 | 51 |
| | 1/16 | 3/32 | 0.09 | 0.15 | 100 | 100 | C5DK1100 | C5DM1100 | 51 |
| | 3/32 | 1/8 | 0.18 | 0.26 | 60 | 60 | C5DK1060 | C5DM1060 | 51 |

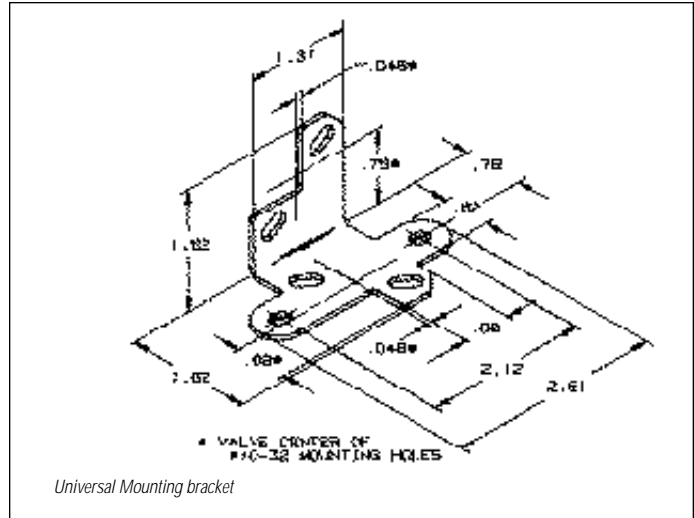
C-Series General Purpose Three-Way Direct Acting Valves

Valve Options & Accessories

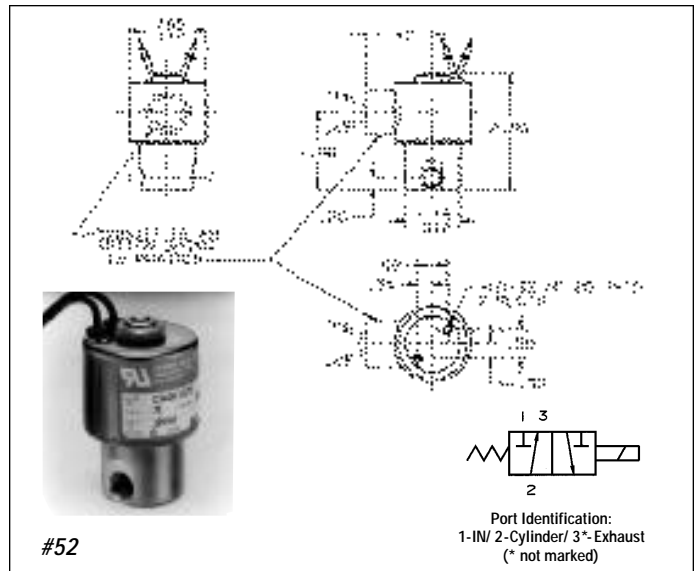
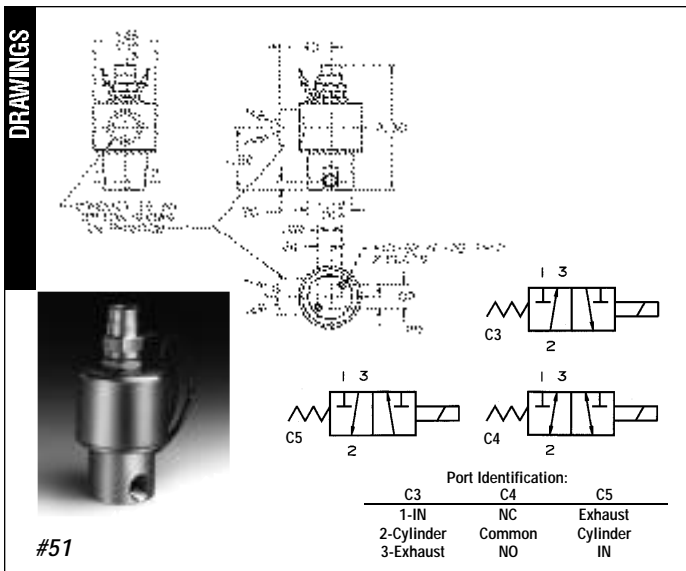
| Optional Features | Option Code |
|----------------------------|-------------|
| Molded Class F leaded coil | LF |
| Molded Class F tab coil | TF |
| Molded Class H leaded coil | LH |
| Yoke | ET |
| Single automotive terminal | EH |
| Double automotive terminal | EV |
| Strain relief connector | EJ |
| Enclosure w/ bracket | GD |
| Main stream metering | RM |

| Accessories | Part No. |
|---|----------|
| Universal mounting bracket | V5-2158M |
| Wrench nut | V0-233 |
| Metered exhaust adapter (air only-type C3 valves) | V5-1024 |

For ordering instructions see Ordering Information section on page 10.



DRAWINGS



Three-Way Solenoid Valves

SKINNER A-Series **General Purpose Three-Way Direct Acting Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Zinc
- Seals—NBR
- Sleeve—304 Stainless Steel
- Plunger—430FR Stainless Steel
- Stop—430 FR Stainless Steel
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Oils, Inert Gases, and additional fluids compatible with materials of construction.

Minimum Operating Pressure Differential

- 0 PSI

Pipe Sizes

- 1/8" NPT dry seal. 1/8" BSP also available.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 16 watts AC, 14 watts DC

Miscellaneous

Vacuum

- Down to 5 microns (0.005 torr, 2x10-4 in Hg)

Operating Speed

- Up to 300 cycles per minute

Response Time

- AC—Approximately 4-8 milliseconds to open or close.
- DC—Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

A3 DIRECT ACTING VALVES—NORMALLY CLOSED, NBR SEALS

| Pipe Size | | Orifice Diameter | | Cv Factor | Maximum Operating Pressure Differential (PSI) | | Class B Molded 1/2" NPT Conduit | Const. Ref. |
|-----------|------------|------------------|-------------|-----------|---|-----|---------------------------------|-------------|
| Body NPT | Sleeve NPT | Inlet Port | Outlet Port | | AC | DC | | |
| 1/4" | 1/8 | 3/32 | 3/32 | 0.21 | 250 | - | A3LB2252 | 53 |
| | | 3/32 | 3/32 | 0.21 | - | 250 | A36LB2251 | 53 |
| | | 1/8 | 1/8 | 0.35 | 175 | - | A3LB2177 | 53 |
| | | 1/8 | 1/8 | 0.35 | - | 175 | A36LB2176 | 53 |
| | | 5/32 | 5/32 | 0.45 | 125 | - | A3LB2127 | 53 |
| | | 5/32 | 5/32 | 0.45 | - | 125 | A36LB2126 | 53 |

A4 DIRECT ACTING VALVES—MULTIPURPOSE, NBR SEALS

| Pipe Size | | Orifice Diameter | | Cv Factor | Maximum Operating Pressure Differential (PSI) | | Class B Molded 1/2" NPT Conduit | Const. Ref. |
|-----------|------------|------------------|-------------|-----------|---|-----|---------------------------------|-------------|
| Body NPT | Sleeve NPT | Inlet Port | Outlet Port | | AC | DC | | |
| 1/4" | 1/8 | 3/32 | 3/32 | 0.21 | 150 | - | A4LB2152 | 53 |
| | | 3/32 | 3/32 | 0.21 | - | 150 | A46LB2151 | 53 |
| | | 1/8 | 1/8 | 0.35 | 100 | - | A4LB2102 | 53 |
| | | 1/8 | 1/8 | 0.35 | - | 100 | A46LB2101 | 53 |
| | | 5/32 | 5/32 | 0.45 | 75 | - | A4LB2077 | 53 |
| | | 5/32 | 5/32 | 0.45 | - | 75 | A46LB2076 | 53 |

A5 DIRECT ACTING VALVES—NORMALLY OPEN, NBR SEALS

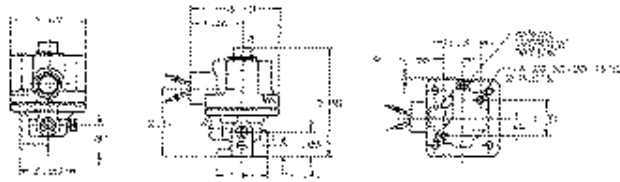

| Pipe Size | | Orifice Diameter | | Cv Factor | Maximum Operating Pressure Differential (PSI) | | Class B Molded 1/2" NPT Conduit | Const. Ref. |
|-----------|------------|------------------|-------------|-----------|---|-----|---------------------------------|-------------|
| Body NPT | Sleeve NPT | Inlet Port | Outlet Port | | AC | DC | | |
| 1/4" | 1/8 | 3/32 | 3/32 | 0.21 | 250 | - | A5LB2252 | 53 |
| | | 3/32 | 3/32 | 0.21 | - | 250 | A56LB2251 | 53 |
| | | 1/8 | 1/8 | 0.35 | 175 | - | A5LB2177 | 53 |
| | | 1/8 | 1/8 | 0.35 | - | 175 | A56LB2176 | 53 |
| | | 5/32 | 5/32 | 0.45 | 125 | - | A5LB2127 | 53 |
| | | 5/32 | 5/32 | 0.45 | - | 125 | A56LB2126 | 53 |

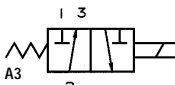
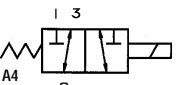
A-Series General Purpose Three-Way Direct Acting Valves

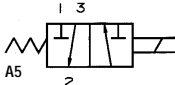
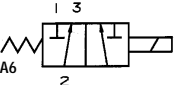
A6 DIRECT ACTING VALVES – DIRECTIONAL CONTROL, NBR SEALS

| Pipe Size | | Orifice Diameter | | Cv Factor | Maximum Operating Pressure Differential (PSI) | | Class B Molded 1/2" NPT Conduit | Const. Ref. |
|-----------|------------|------------------|-------------|-----------|---|-----|---------------------------------|-------------|
| Body NPT | Sleeve NPT | Inlet Port | Outlet Port | | AC | DC | | |
| 1/4" | 1/8 | 3/32 | 3/32 | 0.21 | 250 | - | A6LB2252 | 53 |
| | | 3/32 | 3/32 | 0.21 | - | 250 | A66LB2251 | 53 |
| | | 1/8 | 1/8 | 0.35 | 175 | - | A6LB2177 | 53 |
| | | 1/8 | 1/8 | 0.35 | - | 175 | A66LB2176 | 53 |
| | | 5/32 | 5/32 | 0.45 | 125 | - | A6LB2127 | 53 |
| | | 5/32 | 5/32 | 0.45 | - | 125 | A66LB2126 | 53 |

DRAWINGS

| Port Identification: | | | |
|----------------------|--------|----------|----|
| A3 | A4 | A5 | A6 |
| 1-IN | NC | Exhaust | NC |
| 2-Cylinder | Common | Cylinder | IN |
| 3-Exhaust | NO | IN | NO |

#53

Valve Options & Accessories

| Optional Features | Option Code |
|-------------------|-------------|
| Manual Override | RZ |

For ordering instructions see Ordering Information section on page 10.

Four-Way Valve Contents

Skinner Four-Way Valve Specifications..... 79-88

Skinner 7000 Series Valves..... 79-84

General Purpose Valves 79-83

Manual Reset Valves..... 84

Skinner V-9 Series Valves 85-88



SKINNER 7000 Series General Purpose Four-Way Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Aluminum Alloy, Zinc Alloy (epoxy coated)
- Seals—NBR
- Sleeve Tube—Stainless Steel (303)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Rings—Copper
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases.
Use of non-lubricated gaseous media will substantially limit valve life.

Agency Approval

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Miscellaneous

Maximum Ambient Temperature

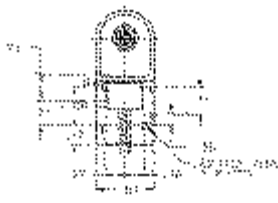

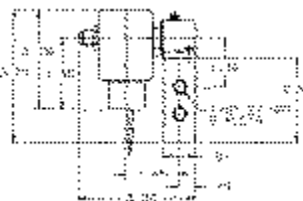
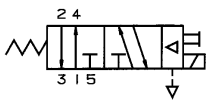
- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

7341 PILOT OPERATED VALVES—NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. |
|------------------|------------------------|-----------|---------------------------------------|---------|---------|-----|-------------------------|------------------------|------------------|-------------|
| | | | Min. | Maximum | | 150 | | | | |
| | | | | 10 watt | 22 watt | | | | | |
| 1/8" | 5/32 | 0.35 | 15 | 150 | 150 | 165 | 7341LAN1HNMO | GP | 54 | |
| 1/4" | 5/16 | 1.4 | 15 | 150 | 150 | 165 | 7341LMN2NNMO | GP | 55 | |

* GP—General Purpose Valves. See page 136 for additional agency approval information.

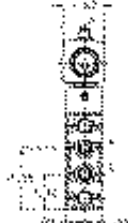

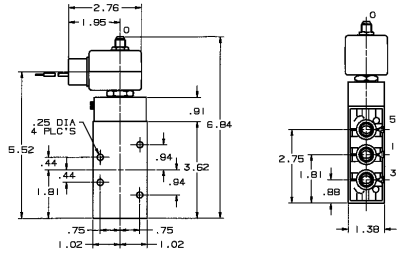
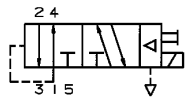
DRAWINGS

Port Identification:

| | | | | |
|----------|--------|--------|--------|--------|
| Pressure | Cyl. A | Exh. A | Cyl. B | Exh. B |
| 1 | 2 | 3 | 4 | 5 |

#54

Port Identification:

| | | | | |
|----------|--------|--------|--------|--------|
| Pressure | Cyl. A | Exh. A | Cyl. B | Exh. B |
| 1 | 2 | 3 | 4 | 5 |

#55

Four-Way Solenoid Valves

SKINNER 7000 Series General Purpose Four-Way Pilot and Manually Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Aluminum
- Seals—NBR
- Spool—Aluminum
- Sleeve Tube—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Rings—Copper

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases.
- Use of non-lubricated gaseous media will substantially limit valve life.

Agency Approval

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

7341 PILOT OPERATED ALUMINUM SOLENOID OPERATED VALVES—NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA** Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|---------|------------|---------|-------------------------------|------------------------------|----------------------|----------------|----|
| | | | Maximum | | | | | | | | |
| | | | AC Ratings | | DC Ratings | | | | | | |
| | | | Min.* | 10 watt | 22 watt | 10 watt | 22 watt | | | | |
| 1/4" | 1/4 | 1 | 15 | 150 | | | 150 | 165 | 73419AN2NN00 | GP | 56 |
| | 1/4 | 1 | 15 | 150 | | | 150 | 165 | 73419AN2NNM0 | GP | 56 |

* When valves have not been cycled for a period of time or when they are first used the minimum operating pressure will range from 15 to 30 PSI. This is caused by displacement of the lubricant at the point of contact between the spool and O-ring seals which increase friction. After the spool has

been cycled a few times the system will become completely lubricated, thus reducing friction so that operation at the rated minimum pressure differential is possible.

** GP=General Purpose Valves. See page 136 for additional agency approval information.

7541 REMOTE AIR PILOT OPERATED ALUMINUM VALVE—NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | Pressure Vessel Number | Const. Ref. |
|------------------|------------------------|--------------|---------------------------------------|------|------------------------------|----------------|
| | | | Min. | Max. | | |
| 1/4" | 1/4 | 1 | * | 150 | 75419AN2NN00 | 57 |

* Remote pilot pressure to operate the valve = 20 PSI + 1/3 (main line pressure)

DRAWINGS

Port Identification:
Pressure Cyl. A Exh. A Cyl. B Exh. B
P A EA B EB

#56

Port Identification:
Pressure Cyl. A Exh. A Cyl. B Exh. B
P A EA B EB

#57

7000 Series General Purpose Sealed Four-Way Pilot and Manually Operated Valves

Hand Lever Operated Valves

Two-position spool valves are available with no spring return, spring return with cylinder B port open, or spring return with cylinder B port open. Spring return models require the operator to move the handle in one direction and hold it to provide the function. The no-

spring model will remain in either position without holding.

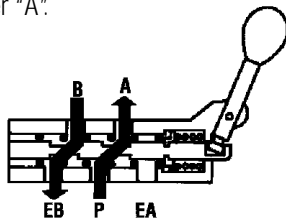
A three-position spool valve is available with all ports closed in its normal position. The handle is moved and held in one

direction to open one cylinder port and to the opposite direction to open the other cylinder port. The spool is spring centered and the handle is normally in the center or upright position.

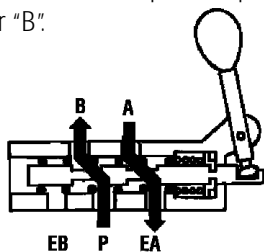
| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | Catalog Number | Const. Ref. |
|---------------|---------------------|-----------|---------------------------------------|---------|----------------|-------------|
| | | | Minimum | Maximum | | |
| 1/4" | 1/4 | 1 | 0 | 150 | 76419AN2NNCA | 58 |
| | 1/4 | 1 | 0 | 150 | 76419AN2NNCB | 58 |
| | 1/4 | 1 | 0 | 150 | 76429AN2NN00 | 58 |
| | 1/4 | 1 | 0 | 150 | 76469AN2NN00 | 58 |

Types of Operation

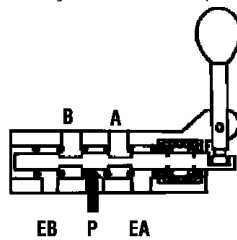
Valve 76419AN2NNCA: Two-position, Spring Return, cylinder "A" Open. On this valve cylinder "A" is open to the pressure inlet. To open cylinder "B" to pressure, the lever must be moved toward the valve and held in this position. Once released, the spring will return the spool to open cylinder "A".



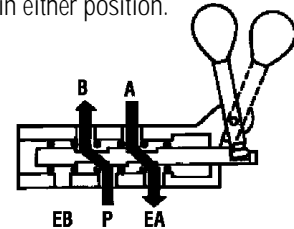
Valve 76419AN2NNCB: Two-position, Spring Return, cylinder "B" Open. On this valve, cylinder "B" is open to the pressure inlet. To open cylinder "A" to pressure, the lever must be moved away from the valve and held in this position. Once released, the spring will return the spool to open cylinder "B".



Valve 76429AN2NN00: Three-Position, Spring Centered, All Ports Closed. On this model the spring and retainers are designed so that the spool is centered, all ports are closed, and the hand lever is in the center position. When the lever is moved toward the valve and held, cylinder "B" is open to pressure and cylinder "A" is open to exhaust. When the lever is moved away from the valve and held, cylinder "A" is open to pressure and cylinder "B" is open to exhaust.



Valve 76469AN2NN00: Two-position No Spring Return. Permits the operator to open cylinder "B" to pressure and cylinder "A" to exhaust when the lever is moved forward, and to reverse the process when the lever is moved in the opposite direction. Since there is no spring, the spool can be left in either position.



DRAWINGS

#58

SKINNER 7000 Series General Purpose Four-Way Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or 303 Stainless Steel
- Seals—NBR
- Spool—Thermoplastic
- Cages—Thermoplastic
- Sleeve Tube—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8 or 17-4)
- Filter—Polyethylene

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases and other gases compatible with materials of construction.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 220/50-240/60 (other voltages available upon request)

Agency Approval

- UL approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Minimum Ambient Temperature

- -40°F(-40°C)
Dew point must be more than 7°F below ambient.

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

7341, 7347 PILOT OPERATED BRASS OR STAINLESS STEEL VALVES NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Flow Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Brass Pressure Vessel Catalog Number | Stainless Pressure Vessel Catalog Number | UL/CSA** Approval | Const. Ref. |
|------------------------|------------------------|-------------------|---------------------------------------|------------|---------|---------|-------------------------------|--|--|----------------------|----------------|
| | | | Min.* | Maximum | | | | | | | |
| | | | | AC Ratings | | | | | | | |
| | | | | 10 watt | 22 watt | 10 watt | 22 watt | | | | |
| Single Solenoid | | | | | | | | | | | |
| 1/4" | 11/64 | 0.55 | 30 | 150 | 150 | 167 | 73417BN2KN00 | 73417VN2KN00 | GP | 135 | |
| | 1/4 | 1.2 | 30 | 150 | 150 | 167 | 73417BN2PN00 | 73417VN2PN00 | GP | 135 | |
| 1/2" | 5/8 | 4.0 | 30 | 150 | 150 | 167 | 73417BN4UN00 | - | GP | 137 | |
| Double Solenoid | | | | | | | | | | | |
| 1/4" | 11/64 | 0.55 | 30 | 150 | 150 | 167 | 73477BN2KN00 | 73477VN2KN00 | GP | 136 | |
| | 1/4 | 1.2 | 30 | 150 | 150 | 167 | 73477BN2PN00 | 73477VN2PN00 | GP | 136 | |
| 1/2" | 5/8 | 4.0 | 30 | 150 | 150 | 167 | 73477BN4UN00 | - | GP | 137 | |

* Pilot operated valves require the minimum pressure differential specified for proper valve operation.

** GP=General Purpose Valves. See page 136 for additional agency approval information.

7000 Series General Purpose Four-Way Pilot Operated Valves

DRAWINGS

#135

#136

#137

Four-Way Solenoid Valves

SKINNER 7000 Series Manual Reset Four-Way Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass or Stainless Steel (430)
- Seals—NBR seals
- Sleeve Tube—Stainless Steel (303 or 304)
- Plunger—Stainless Steel (430FR)
- Shading Ring—Copper
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Pilot Orifice—Stainless Steel (303)

Compatible Fluids

- Depending on the valve used, most common media including air, inert gases or petroleum products.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—110/50-120/60, 220/50-240/60

Power Consumption

- 10 watts

Agency Approvals

- cUL approval.

Miscellaneous

Maximum Ambient Temperature

- 131°F

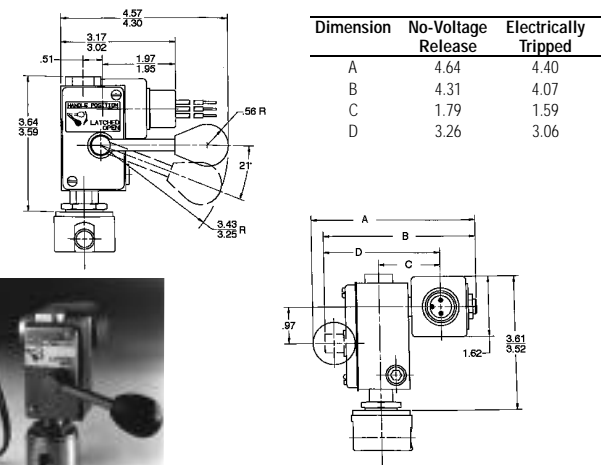
PILOT OPERATED ALUMINUM VALVES—NBR SEALS

| Pipe Size NPT | Orifice (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | Max. Fluid Temp. (F) | No-Voltage Release Pressure Vessel Number | Electrically Tripped Pressure Vessel Number | Const. Ref. |
|------------------|-------------------|--------------|---------------------------------------|------------|------------|-----|-------------------------------|---|---|----------------|
| | | | (PSI) Min.* | Maximum | | 150 | | | | |
| | | | | AC Ratings | DC Ratings | | | | | |
| 1/4" | 1/4 | 1 | 15 | 10 watt | 22 watt | 150 | 165 | 70419AN2NNVR | 70419AN2NNET | 25 |


* Pilot operated valves require the minimum pressure differential specified for proper valve operation.

** GP=General Purpose Valves. See page 136 for additional agency approval information.

DRAWINGS



| Dimension | No-Voltage Release | Electrically Tripped |
|-----------|--------------------|----------------------|
| A | 4.64 | 4.40 |
| B | 4.31 | 4.07 |
| C | 1.79 | 1.59 |
| D | 3.26 | 3.06 |



#25

SKINNER V-9 Series **Four-Way Pilot Operated Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body–Zinc
- Seals–NBR
- Sleeve–Stainless Steel (304)
- Plunger–Stainless Steel (430FR)
- Shading Ring–Copper (AC & DC only)
- Stop–Stainless Steel (430FR)
- Springs–Stainless Steel (18-8)
- Orifice–Stainless Steel (303)

Compatible Fluids

- Lubricated Air, Non-Lubricated Air, Inert Gases, Hydraulic Fluids, and additional fluids compatible with materials of construction.

Electrical Characteristics

Voltages

- DC–12, 24, 120
- AC–24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 10 watts per coil (2 coils)

Agency Approvals

- UL and CSA approvals are generally available on valves with applicable coil/enclosure combinations. For details, please consult Skinner Valve.

Miscellaneous

Operating Speed

- Up to 600 cycles per minute.

Response Time

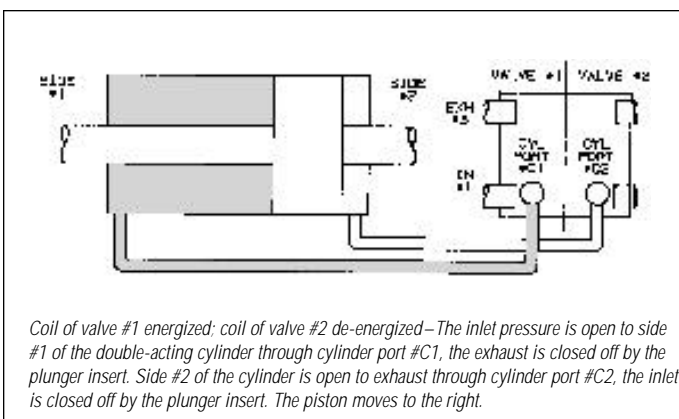
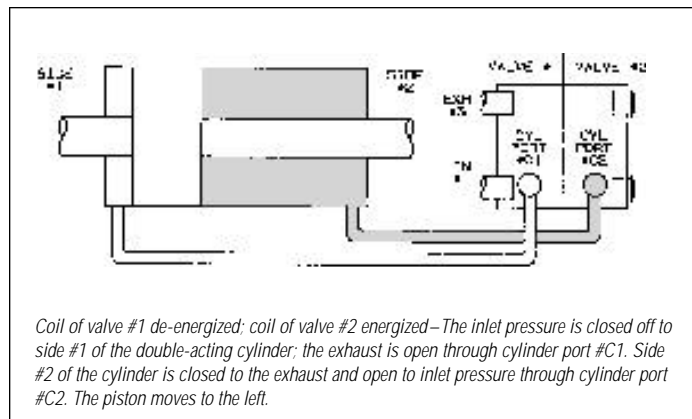
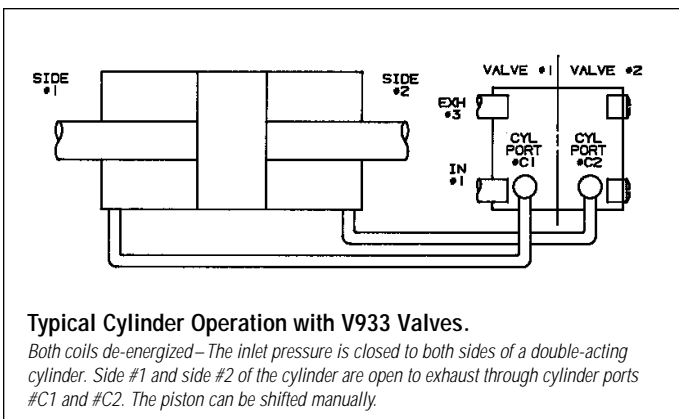
- AC–Approximately 4-8 milliseconds to open or close.
- DC–Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

V933 Four-Way Normally Closed–Normally Closed Valves

When de-energized, both inlet ports are closed by the two plungers preventing flow from the common inlet through both of the valves. The cylinder port in each valve is

open to the common exhaust, permitting flow from the cylinders to the exhaust. When the coils are energized, both valve plungers rise, opening the inlet orifices, and at the

same time closing the orifices in the sleeves. This stops flow from the cylinder ports to the exhaust, and permits flow from the inlet to the cylinder ports.



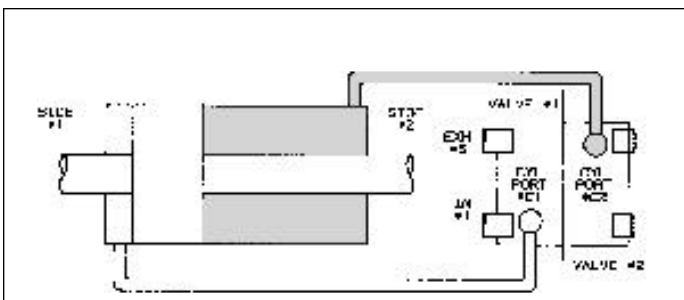
V-9 Series **Four-Way Pilot Operated Valves**

V935 Four-Way Normally Closed-Normally Open Valves

The plungers of the two valves are at opposite positions in both the energized and de-energized conditions - one normally open while the other is normally closed. When de-energized, fluid flows from the inlet of the valve through the inlet port of the normally

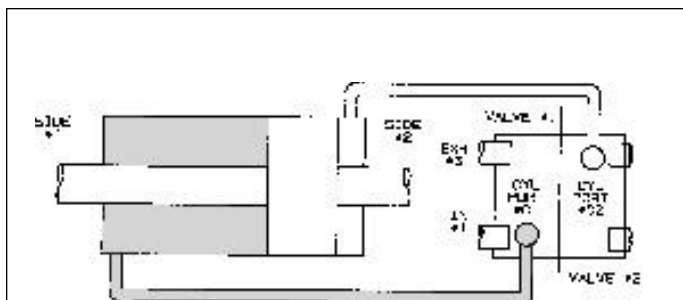
open valve, through the sleeve, and out the cylinder port of the valve. At the same time, the normally closed valve inlet orifice is closed, but the orifice in the sleeve is opened, permitting flow from its cylinder port to the common exhaust. Therefore, fluid

flows from the inlet of the valve to the cylinder port of the normally open valve and from the cylinder port of the normally closed valve to the exhaust. When energized, the two valves reverse in position.



Typical Cylinder Operation with V935 Valves.

Both coils de-energize – The inlet pressure is open to side #2 of the double-acting cylinder through cylinder port #C2 and the plunger insert closes off the exhaust. Side #1 of the cylinder is open to exhaust through cylinder port #C1 and the inlet pressure is closed off. This causes the piston in the cylinder to move to the left.



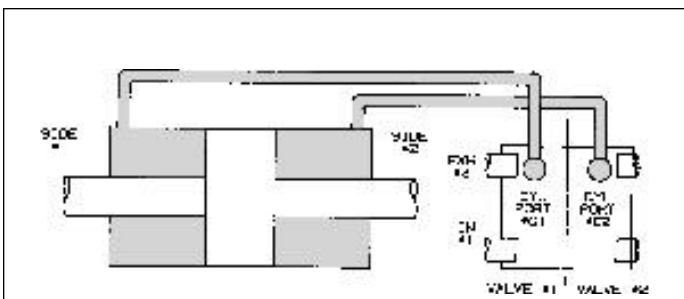
Both coils energized – The inlet pressure is open to side #1 of the cylinder through cylinder port #C1 and the exhaust is closed off. Side #2 of the cylinder is open to exhaust through cylinder port #C2 and the inlet pressure is closed off by the plunger insert. The piston moves to the right.

V955 Four-Way Normally Open-Normally Open Valves

Both plungers are in the same position when the coils are de-energized. In this condition, fluid flows through the common inlet of the body, up through the sleeves of both valves, and out the cylinder ports of the valves. Both

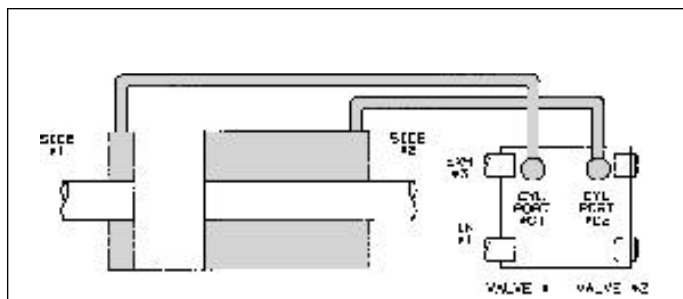
orifices in the sleeve stops are closed to the exhaust ports by the plunger. In the energized position, both valve plungers operate together to close the inlet ports, stopping flow into the valve. At the same

time, the orifices in the sleeves are opened, permitting flow from the cylinder ports to the common exhaust port in the body.



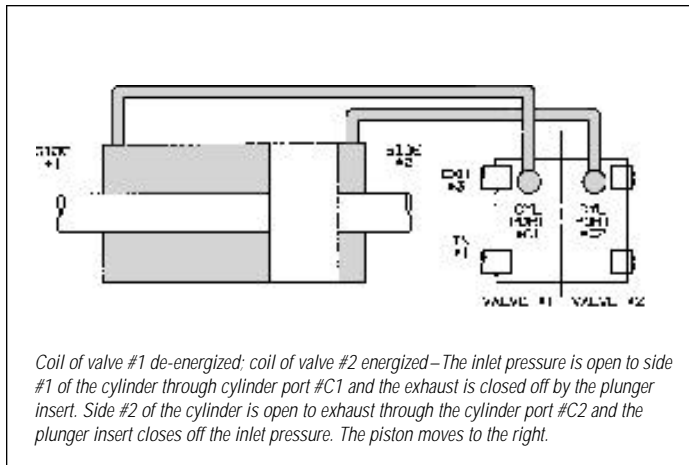
Typical Cylinder Operation with V955 Valves.

Both coils de-energized – The inlet pressure is open to both sides of the double-acting cylinder through cylinder ports #C1 and #C2. Both sides of the cylinder are closed to exhaust by the plunger insert.



Coil of valve #1 energized; coil of valve #2 de-energized – The inlet pressure is closed to side #1 of the double-acting cylinder and open to exhaust through cylinder port #C1. Side #2 of the cylinder is open to the inlet pressure, through cylinder port #C2 - the exhaust is closed off by the plunger insert. The piston moves to the left.

V-9 Series Four-Way Pilot Operated Valves



V933 PILOT OPERATED ZINC VALVES—NORMALLY CLOSED-NORMALLY CLOSED NEUTRAL POSITION, NBR SEALS

| NPT Pipe Size | Orifice Diameters | | | | | | | | *Maximum Operating Pressure Diff. (PSI) | Class B Molded Leaded Coil | Const. Ref. |
|---------------|-------------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|---|----------------------------|-------------|
| | Valve #1 (NC) | | | | Valve #2 (NC) | | | | | | |
| | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | | | |
| 1/4" | 3/64 | 0.052 | 1/16 | 0.095 | 3/64 | 0.052 | 1/16 | 0.095 | 150 (200) | V933LB2150 | 59 |
| | 1/16 | 0.095 | 3/32 | 0.14 | 1/16 | 0.095 | 3/32 | 0.14 | 100 (125) | V933LB2100 | 59 |
| | 3/32 | 0.16 | 3/32 | 0.14 | 3/32 | 0.16 | 3/32 | 0.14 | 75 (90) | V933LB2075 | 59 |
| | 1/8 | 0.21 | 3/32 | 0.14 | 1/8 | 0.21 | 3/32 | 0.14 | 50 (65) | V933LB2050 | 59 |

V935 PILOT OPERATED ZINC VALVES—NORMALLY CLOSED-NORMALLY OPEN NON-NEUTRAL POSITION, NBR SEALS

| NPT Pipe Size | Orifice Diameters | | | | | | | | *Maximum Operating Pressure Diff. (PSI) | Class B Molded Leaded Coil | Const. Ref. |
|---------------|-------------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|---|----------------------------|-------------|
| | Valve #1 (NC) | | | | Valve #2 (NO) | | | | | | |
| | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | | | |
| 1/4" | 3/64 | 0.052 | 1/16 | 0.095 | 3/64 | 0.052 | 1/16 | 0.095 | 150 (200) | V935LB2150 | 59 |
| | 1/16 | 0.095 | 3/32 | 0.14 | 1/16 | 0.08 | 1/8 | 0.18 | 100 (125) | V935LB2100 | 59 |
| | 3/32 | 0.16 | 3/32 | 0.14 | 3/32 | 0.14 | 1/8 | 0.21 | 75 (90) | V935LB2075 | 59 |
| | 1/8 | 0.21 | 3/32 | 0.14 | 3/32 | 0.14 | 1/8 | 0.21 | 50 (65) | V935LB2050 | 59 |

V955 PILOT OPERATED ZINC VALVES—NORMALLY OPEN-NORMALLY OPEN NEUTRAL POSITION, NBR SEALS

| NPT Pipe Size | Orifice Diameters | | | | | | | | *Maximum Operating Pressure Diff. (PSI) | Class B Molded Leaded Coil | Const. Ref. |
|---------------|-------------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|---|----------------------------|-------------|
| | Valve #1 (NO) | | | | Valve #2 (NO) | | | | | | |
| | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | | | |
| 1/4" | 3/64 | 0.052 | 1/16 | 0.095 | 3/64 | 0.052 | 1/16 | 0.095 | 150 (225) | V955LB2150 | 59 |
| | 1/16 | 0.08 | 1/8 | 0.18 | 1/16 | 0.08 | 1/8 | 0.18 | 100 (150) | V955LB2100 | 59 |
| | 3/32 | 0.14 | 1/8 | 0.18 | 3/32 | 0.14 | 1/8 | 0.21 | 75 (100) | V955LB2075 | 59 |

V933 PILOT OPERATED ZINC VALVES—NORMALLY CLOSED-NORMALLY CLOSED NEUTRAL POSITION—WITH ADJUSTABLE FLOW OPTION, NBR SEALS

| NPT Pipe Size | Orifice Diameters | | | | | | | | *Maximum Operating Pressure Diff. (PSI) | Class B Molded Leaded Coil | | | Const. Ref. |
|---------------|-------------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|---|----------------------------------|--------------------------------|--|-------------|
| | Valve #1 (NC) | | | | Valve #2 (NC) | | | | | Adjustable Flow At Both Exhausts | Adjustable Flow At Both Inlets | Full Adjustable Flow At Both Exhausts & Inlets | |
| | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | | | | | |
| 1/4" | 3/64 | 0.052 | 1/16 | 0.095 | 3/64 | 0.052 | 1/16 | 0.095 | 150 (200) | V933LEH2150 | V933LEP2150 | V933LEF2150 | 59 |
| | 1/16 | 0.105 | 3/32 | 0.13 | 1/16 | 0.105 | 3/32 | 0.13 | 100 (125) | V933LEH2100 | V933LEP2100 | V933LEF2100 | 59 |
| | 3/32 | 0.13 | 3/32 | 0.13 | 3/32 | 0.13 | 3/32 | 0.13 | 75 (90) | V933LEH2075 | V933LEP2075 | V933LEF2075 | 59 |
| | 1/8 | 0.16 | 3/32 | 0.13 | 1/8 | 0.16 | 3/32 | 0.13 | 50 (65) | V933LEH2050 | V933LEP2050 | V933LEF2050 | 59 |

* Figures in parentheses indicate higher than standard pressure ratings available with slight modifications.

Four-Way Solenoid Valves

V-9 Series **Four-Way Pilot Operated Valves**

V935 PILOT OPERATED ZINC VALVES—NORMALLY CLOSED—NORMALLY OPEN NON-NEUTRAL POSITION—WITH ADJUSTABLE FLOW OPTION, NBR SEALS

| NPT Pipe Size | Orifice Diameters | | | | | | | | *Maximum Operating Pressure Diff. (PSI) | Class B Molded Leaded Coil | | | Const. Ref. |
|---------------|-------------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|---|----------------------------------|--------------------------------|--|-------------|
| | Valve #1 (NC) | | | | Valve #2 (NO) | | | | | Adjustable Flow At Both Exhausts | Adjustable Flow At Both Inlets | Full Adjustable Flow At Both Exhausts & Inlets | |
| | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | | | | | |
| 1/4" | 3/64 | 0.052 | 1/16 | 0.095 | 3/64 | 0.052 | 1/16 | 0.095 | 150 (200) | V935LEH2150 | V935LEP2150 | V935LEF2150 | 59 |
| | 1/16 | 0.105 | 3/32 | 0.13 | 1/16 | 0.08 | 1/8 | 0.16 | 100 (125) | V935LEH2100 | V935LEP2100 | V935LEF2100 | 59 |
| | 3/32 | 0.13 | 3/32 | 0.13 | 3/32 | 0.13 | 1/8 | 0.16 | 75 (90) | V935LEH2075 | V935LEP2075 | V935LEF2075 | 59 |
| | 1/8 | 0.16 | 3/32 | 0.13 | 3/32 | 0.13 | 1/8 | 0.16 | 50 (65) | V935LEH2050 | V935LEP2050 | V935LEF2050 | 59 |

V955 PILOT OPERATED ZINC VALVES—NORMALLY OPEN-NORMALLY OPEN NEUTRAL POSITION—WITH ADJUSTABLE FLOW OPTION, NBR SEALS

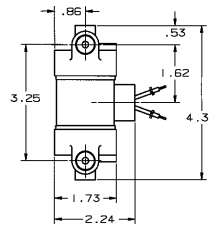
| NPT Pipe Size | Orifice Diameters | | | | | | | | *Maximum Operating Pressure Diff. (PSI) | Class B Molded Leaded Coil | | | Const. Ref. |
|---------------|-------------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|---|----------------------------------|--------------------------------|--|-------------|
| | Valve #1 (NO) | | | | Valve #2 (NO) | | | | | Adjustable Flow At Both Exhausts | Adjustable Flow At Both Inlets | Full Adjustable Flow At Both Exhausts & Inlets | |
| | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | Inlet Port | Cv Factor | Exhaust Port | Cv Factor | | | | | |
| 1/4" | 3/64 | 0.052 | 1/16 | 0.095 | 3/64 | 0.052 | 1/16 | 0.095 | 150 (225) | V955LEH2150 | V955LEP2150 | V955LEF2150 | 59 |
| | 1/16 | 0.08 | 1/8 | 0.16 | 1/16 | 0.08 | 1/8 | 0.16 | 100 (150) | V955LEH2100 | V955LEP2100 | V955LEF2100 | 59 |
| | 3/32 | 0.13 | 1/8 | 0.16 | 3/32 | 0.13 | 1/8 | 0.16 | 75 (100) | V955LEH2075 | V955LEP2075 | V955LEF2075 | 59 |

* Figures in parentheses indicate higher than standard pressure ratings available with slight modifications.

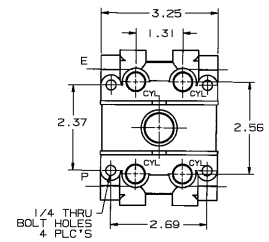
| Optional Features | Option Code |
|----------------------------|-------------|
| Class H molded leaded coil | LH |

For ordering instructions see Ordering Information section on page 10.

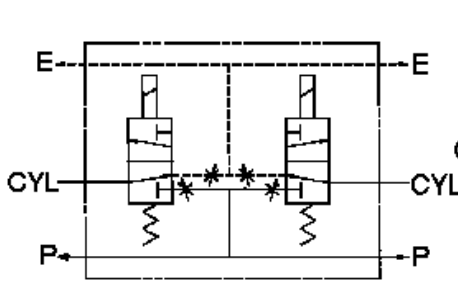
DRAWINGS



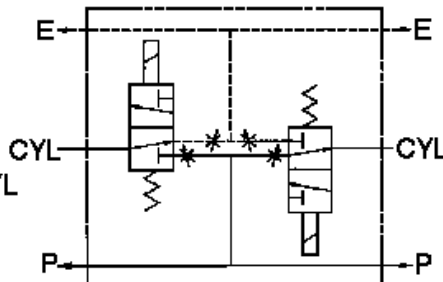
Note: Enclosure and adjustable flow designators (B, EH, EPOR EF) have been omitted for brevity.



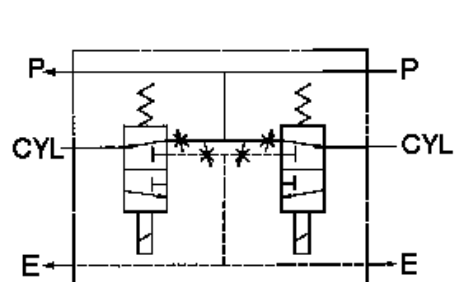
#59



Four-Way Normally Closed-Normally Closed




Four-Way Normally Closed-Normally Open



Four-Way Normally Open-Normally Open

Specialty Valve Contents



| | |
|---|---------------|
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SKINNER 7000 Series Hydraulic Two-Way Direct Acting Valves

SPECIFICATIONS

Product Description

Skinner Hydraulic valves are specifically designed for use in hydraulic systems. The valves are spool type valves that can withstand a static pressure up to 1000 PSI. All internal parts are compatible with most hydraulic fluids.

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (430F)
- Seals—Metal (spool type)
- Sleeve Tube—Stainless Steel (304)
- Armature—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Rings—Copper
- Spool—Stainless Steel (17-4PH)
- Flange Seal—NBR

Compatible Fluids

- Hydraulic Fluids.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10 watts
- Fluxtron Electronic Coils and Magnelatch (refer to page 137 for current draw charts)

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Valve Construction Alternatives

Mounting

- Manifold, flange and cage types available. Consult factory for details.

Miscellaneous

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- Fluxtron/Magnelatch—122°F

Leakage

- Internal—At 70°F with MIL-H-5606A oil, maximum allowable leakage is 80cc/min. at 1000 PSI.
- External—None

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Static Pressure (PSI) | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. |
|------------------|------------------------|--------------|-----------------------|----------------------|----------------------|-------------------------------|------------------------------|---------------------|----------------|
| | | | Min. | Maximum | | | | | |
| | | | | AC Rating 10 watt | DC Rating 10 watt | | | | |
| 1/8" | 7/64 | 0.21 | 0 | 1000 | 1000 | 185 | 71211SN1MM00 | GP | 60 |

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY OPEN

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Static Pressure (PSI) | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. |
|------------------|------------------------|--------------|-----------------------|----------------------|----------------------|-------------------------------|------------------------------|---------------------|----------------|
| | | | Min. | Maximum | | | | | |
| | | | | AC Rating 10 watt | DC Rating 10 watt | | | | |
| 1/8" | 7/64 | 0.21 | 0 | 1000 | 1000 | 185 | 71221SN1MM00 | GP | 60 |

* UL/CSA Approval Information: SS=safety Shutoff GP=General Purpose Blank=Not Approved
See page 136 for additional agency approval information.

DRAWINGS

#60

NORMALLY CLOSED
NORMALLY OPEN

| Port Identification: | |
|----------------------|--------|
| 71211 | 71221 |
| 1-IN | 1-Plug |
| 2-OUT | 2-OUT |
| 3-Plug | 3-IN |

SKINNER 7000 Series Dry Operator Two-Way Direct Acting Valves

SPECIFICATIONS

Product Description

The 7000 Series Dry Operator valve line is specially designed for non-contaminating and corrosive applications. The valves assure absolute purity and inertness to corrosion when used with a broad range of fluids.

Dry Operator valves feature two basic construction innovations. The operator is physically isolated from the fluid by a diaphragm so only the seal and valve body come in contact with the fluid. And, valve bodies of Noryl and Teflon provide the purity from contamination and resistance to corrosion many industries demand.

Mechanical Characteristics

Standard Materials of Construction

- Body—Noryl, Teflon, Stainless Steel (303)
- Seals—NBR, PTFE as listed. EPDM and FKM also available.

- Sleeve Tube—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper

Compatible Fluids

- Fluids compatible with diaphragm and body materials. See Fluid Compatibility Chart.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10, 22 watts
- Fluxtron Electronic Coils and Magnelatch (refer to page 137 for current draw charts)

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Maximum Ambient Temperature

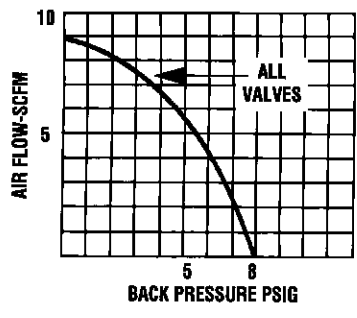
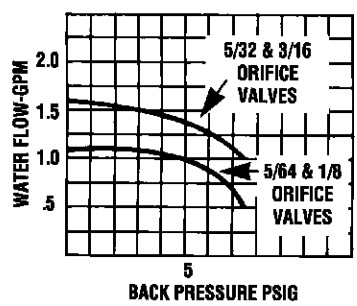
- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/Magnelatch—122°F

Important Application Information Back Pressure Data

Dry operator valves require consideration of back pressure since the back pressure acts on a large area of the diaphragm. Excessive back pressure can keep the valves open on de-energization. The back pressure a standard valve can operate against depends on the orifice size, pressure differential and whether the media is a gas or liquid.

The following two charts provide a method to verify that the valve selected can meet the application back pressure requirements.

For applications involving back pressure that cannot be handled by catalog valves, please consult Skinner Valve.



Helpful Application Suggestions:

To keep the back pressure to a minimum, the downstream line should be as short as possible and be of the largest practical size. All restricting or flow controlling elements should be installed upstream.

Use of Back Pressure Charts:

To use the charts, it is necessary to know the flow and back pressure.

- 1) First calculate the flow in GPM for liquids or SCFM for gases from the flow charts in the Technical Information Section.
- 2) The back pressure is the downstream pressure in the system. A catalog valve may be used if the intersection of flow and back pressure is below the curve for its orifice size.

7000 Series Dry Operator Two-Way Direct Acting Valves

DIRECT ACTING NORYL VALVES—NORMALLY CLOSED, 1/8" NPT MALE, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|----|---------|-------------------------------|------------------------------|---------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 1/8 Male | 5/64 | 0.16 | 0 | 70 | 70 | 70 | 140 | 71214LE1KN00 | GP | 61 | |
| | 1/8 | 0.23 | 0 | 50 | 50 | 50 | 140 | 71214LE1MN00 | GP | 61 | |
| | 5/32 | 0.35 | 0 | 35 | 35 | 35 | 140 | 71214LE1QN00 | GP | 61 | |
| | 3/16 | 0.47 | 0 | 20 | 20 | 20 | 140 | 71214LE1SN00 | GP | 61 | |

DIRECT ACTING NORYL VALVES—NORMALLY CLOSED, 3/8" BARB, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|----|---------|-------------------------------|------------------------------|---------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 3/8" BARB | 5/64 | 0.16 | 0 | 70 | 70 | 70 | 140 | 71214LT3KN00 | GP | 62 | |
| | 1/8 | 0.23 | 0 | 50 | 50 | 50 | 140 | 71214LT3MN00 | GP | 62 | |
| | 5/32 | 0.35 | 0 | 35 | 35 | 35 | 140 | 71214LT3QN00 | GP | 62 | |
| | 3/16 | 0.47 | 0 | 20 | 20 | 20 | 140 | 71214LT3SN00 | GP | 62 | |

DIRECT ACTING TEFLON VALVES—NORMALLY CLOSED, 1/4" NPT, PTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|----|---------|-------------------------------|------------------------------|---------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 1/4" NPT | 5/64 | 0.16 | 0 | 70 | 70 | 70 | 140 | 71214TN2KT00 | GP | 63 | |
| | 1/8 | 0.23 | 0 | 50 | 50 | 50 | 140 | 71214TN2MT00 | GP | 63 | |
| | 5/32 | 0.35 | 0 | 35 | 35 | 35 | 140 | 71214TN2QT00 | GP | 63 | |
| | 3/16 | 0.47 | 0 | 20 | 20 | 20 | 140 | 71214TN2ST00 | GP | 63 | |

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED, 1/4" NPT, NBR SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|----|---------|-------------------------------|------------------------------|---------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 1/4" NPT | 5/64 | 0.16 | 0 | 70 | 70 | 70 | 140 | 71214VN2KN00 | GP | 4 | |
| | 1/8 | 0.23 | 0 | 50 | 50 | 50 | 140 | 71214VN2MN00 | GP | 4 | |
| | 5/32 | 0.35 | 0 | 35 | 35 | 35 | 140 | 71214VN2QN00 | GP | 4 | |
| | 3/16 | 0.47 | 0 | 20 | 20 | 20 | 140 | 71214VN2SN00 | GP | 4 | |

DIRECT ACTING STAINLESS STEEL VALVES—NORMALLY CLOSED, 1/4" NPT, PTFE SEALS

| Pipe Size NPT | Orifice Size (inch) | Cv Factor | Operating Pressure Differential (PSI) | | | | MAX. Fluid Temp. (F) | Pressure Vessel Number | UL/CSA* Approval | Const. Ref. | |
|------------------|------------------------|--------------|---------------------------------------|------------|----|---------|-------------------------------|------------------------------|---------------------|----------------|---------|
| | | | Min. | Maximum | | 10 watt | | | | | 22 watt |
| | | | | AC Ratings | | | | | | | |
| 1/4" NPT | 5/64 | 0.16 | 0 | 70 | 70 | 70 | 140 | 71214VN2KT00 | GP | 4 | |
| | 1/8 | 0.23 | 0 | 50 | 50 | 50 | 140 | 71214VN3MT00 | GP | 4 | |
| | 5/32 | 0.35 | 0 | 35 | 35 | 35 | 140 | 71214VN2QT00 | GP | 4 | |
| | 3/16 | 0.47 | 0 | 20 | 20 | 20 | 140 | 71214VN2ST00 | GP | 4 | |

* UL/CSA Approval Information: SS= Safety Shutoff GP=General Purpose Blank=Not Approved

See page 136 for additional agency approval information.

7000 Series Dry Operator Two-Way Direct Acting Valves

DRAWINGS

#4

Port Identification: 1-OUT/ 2-IN

#61

Port Identification:
Flow area on body indicates flow direction—ports are not marked.

#62

Port Identification:
Flow area on body indicates flow direction—ports are not marked.

#63

Port Identification:
1-OUT/ 2-IN

SKINNER Hydraulic 7000 Series Three-Way Direct Acting Valves

SPECIFICATIONS

Product Description

Specifically designed for use in hydraulic systems, these valves are spool type valves that can withstand a static pressure up to 1000 PSI. All internal parts are compatible with most hydraulic fluids. A range of custom mounting types are available including manifold, flange and cage designs.

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (430F)
- Seals—Metal
- Flange Seal—NBR
- Sleeve Tube—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper
- Spool—Stainless Steel (17-4PH)
- Flange Seal—NBR

Compatible Fluids

- Hydraulic Fluids.

Electrical Characteristics

Voltages

- DC—12, 24
- AC—24/60, 110/50-120/60, 208/60, 220/50-240/60, 440/50-480/60 (other AC/DC voltages available upon request)

Power Consumption

- 10, 16 watts
- Fluxtron Electronic Coils and Magnelatch

Agency Approvals

- UL and CSA approvals are available on valves with applicable coil/enclosure combinations. For additional information see page 136.

Miscellaneous

Leakage

- Internal—At 70°F with MIL-H-5606A oil, maximum allowable leakage is 80cc/min. at 1000PSI.
- External—None.

Maximum Ambient Temperature

- 10 watt AC/DC—150°F
- 22 watt AC/DC—77°F
- Fluxtron/ Magnelatch—122°F

Valve Construction Alternatives

Mounting

- Manifold, flange and cage types available. Consult factory for details.

HYDRAULIC VALVES

| Pipe Size NPT | Orifice Body NC (inch) | Orifice Body NO (inch) | Cv Factor NC | Cv Factor NO | Min. | Static Pressure (PSI) | | | | Max. Fluid Temp. (F) | Pressure Vessel Catalog Number | UL/CSA* Approval | Const. Ref. |
|------------------------|------------------------------|------------------------------|--------------------|--------------------|------|-----------------------|--|------------|--|-------------------------------|-----------------------------------|---------------------|----------------|
| | | | | | | Maximum | | | | | | | |
| | | | | | | AC Ratings | | DC Ratings | | | | | |
| 10 watt | 22 watt | 10 watt | 22 watt | | | | | | | | | | |
| Normally Closed | | | | | | | | | | | | | |
| 1/8" | 7/64 | 7/64 | 0.21 | 0.21 | 0 | 1000 | | 1000 | | 185 | 71311SN1MM00 | GP | 91 |
| Normally Open | | | | | | | | | | | | | |
| 1/8" | 7/64 | 7/64 | 0.21 | 0.21 | 0 | 1000 | | 1000 | | 185 | 71321SN1MM00 | GP | 91 |
| Multipurpose | | | | | | | | | | | | | |
| 1/8" | 7/64 | 7/64 | 0.21 | 0.21 | 0 | 1000 | | 1000 | | 185 | 71331SN1MM00 | GP | 91 |
| Diverting | | | | | | | | | | | | | |
| 1/8" | 7/64 | 7/64 | 0.21 | 0.21 | 0 | 1000 | | 1000 | | 185 | 71381SN1MM00 | GP | 91 |

* UL/CSA Approval Information: GP=General Purpose Blank=Not Approved

See page 136 for additional agency approval information.

MAXIMUM PERMISSIBLE FLOW AND PRESSURE DIFFERENTIALS

| Pressure Vessel Catalog Number | Flow Path | Maximum Flow (GPM) | Maximum Pressure Differential (PSI) |
|--------------------------------|---|--------------------|-------------------------------------|
| 71311SN1MM00 | 1 to 2 2 to 3 | 5.70 5.70 | 700 700 |
| 71321SN1MM00 | 3 to 2 2 to 1 | 6.50 3.50 | 900 450 |
| 71331SN1MM00 | Consult specific functions for flow and pressure limits | | |
| 71381SN1MM00 | 2 to 3 2 to 1 | 2.50 2.50 | 150 150 |

DRAWINGS

#10-.32 NF TH'D
x .25 DP - 2 PLCS

#91

Port Identification:

| 71311 | 71321 | 71331 | 71831 |
|------------|----------|----------|-------|
| 1-Pressure | Exhaust | NC | NC |
| 2-Cylinder | Cylinder | Cylinder | IN |
| 3-Exhaust | Pressure | NO | NO |

SKINNER Dual-Flow Series Dispensing Two-Way Diaphragm Valves

SPECIFICATIONS

Product Description

Skinner Dual-Flow solenoid valves are designed to control two flow rates on command. The valves are actually two valves in one compact assembly using a single dual-wound coil. The valves accurately dispense a predetermined amount of liquid by providing a high-flow (full-flow) for delivery of the bulk amount, and then switch to the low-flow mode to dispense the final amount required.

Skinner Dual-Flow valves can be ordered with a variety of optional features to best adapt to specific installation requirements.

Mechanical Characteristics

Flow Sequence

- Off-Low-High-Low-Off

Standard Materials of Construction

- Body—Brass
- Seals—Fluorocarbon (FKM)

- Diaphragm—NBR
- Sleeve—Stainless Steel
- Plunger—Stainless Steel
- Springs—Stainless Steel
- Shading Ring—Copper

Maximum Ambient and Fluid Temperature

- 104°F (40°C)

Electrical Characteristics

Voltages

- DC—24 VDC
- AC—24/60, 120/60, 208/60, 240/60, 42/50, 110/50, 220/50, 240/50 (other AC/DC voltages available upon request)

Power Consumption

- High—15 watts
- Low Flow—8 watts

Agency Approvals

- UL listed and CSA Certified (CENELEC available upon request)

Coil

- Class F taped with 3 gasoline vapor resistant lead wires, 48" long (other constructions and lead wire lengths available upon request)

Miscellaneous

Applications

- Fuel Dispensing
- Process Industries (Blending/Mixing/Batching)
 - Petrochemical
 - Refining
 - Food
 - Pharmaceutical

XLG2 TYPE DUAL FLOW BRASS VALVES—NORMALLY CLOSED

| Pipe Size Body NPT | Orifice Diameter | | Cv Factor | | Operating Pressure Differential (PSI) | | | 1/2" NPT Conduit Explosion Proof | Const. Ref. |
|--------------------------|------------------|-------------|--------------|-------------|---------------------------------------|---------|----|-------------------------------------|----------------|
| | Full Flow | Low Flow | Full Flow | Low Flow | Min. | Maximum | | | |
| | | | | | | AC | DC | | |
| 3/4" | 3/4 | 3/32 | 5.5 | 0.17 | 5 | 50 | | XLG20600 | 64 |
| 3/4" | 3/4 | 3/32 | 5.5 | 0.17 | 5 | | 50 | XLG20760 | 64 |
| 1" | 1 | 1/16 | 13 | 0.12 | 5 | 50 | | XLG201030 | 64 |
| 1" | 1 | 1/16 | 13 | 0.12 | 5 | | 50 | XLG201060 | 64 |
| 1 1/2" | 1 1/4 | 1/16 | 21 | 0.12 | 5 | 50 | | XLG201530 | 65 |

DRAWINGS

#65

#64

| Valve | Dimension | | | | | | |
|-----------|-----------|------|------|------|------|------|------|
| | A | B | C | D | E | F | G |
| XLG20600 | 1.83 | 0.81 | 1.15 | 5.25 | 0.66 | 1.30 | 1.43 |
| XLG20760 | 1.83 | 0.81 | 1.15 | 5.25 | 0.66 | 1.30 | 1.43 |
| XLG201030 | 2.04 | 1.02 | 1.62 | 5.86 | 0.86 | 1.72 | 2.13 |
| XLG201060 | 2.04 | 1.02 | 1.62 | 5.86 | 0.86 | 1.72 | 2.13 |

SKINNER BP Proportional Series **Two-Way Valves**

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel
- Seals—NBR, Fluorocarbon (FKM)
- Sleeve Tube—Stainless Steel
- Plunger—Stainless Steel
- Stop—Stainless Steel
- Springs—Stainless Steel
- Orifice—Stainless Steel

Compatible Media

- All gases compatible with valve materials. For more detail consult the Fluid Compatibility Chart in our Technical Reference Manual #CTRM12-90.

Electrical Characteristics

Voltages

- 12-24 VDC compatibility

Power Consumption

- 7 watts maximum

Miscellaneous

Temperature

- Ambient—14°F to 122°F (-10°C to 50°C)
- Media—0°F to 180°F (-18°C to 82°C)

Hysteresis

- 10% of full flow (in open loop applications)

Repeatability of a Valve

- 5% when operating within Linear Control Range

Response Time

For complete cycle, Off-Full Open-Off

- 40 msec at zero pressure
- 100 msec at max. pressure

Coil Type

- Class A

Enclosure

- General Purpose, NEMA 1

Operating Principle

The Skinner BP valve is an analog proportional device. The current supplied to the coil of the BP valve is digitally modulated by the electronic package. The mechanism which opens and closes the valve's flow orifice moves in a linear manner in response to the varying coil current. The amount that the orifice is opened is a function of the user's input signal to the valve.

Traditional proportional control solenoid valves are operated by pulse width modulation which entails proportionally controlling flow by modulating the "open time" in a fully closed-fully open-fully closed cycle. The BP does not operate in this manner.

Benefits of analog control technology used in the BP valve include longer valve life, linear flow control, no pressure or flow spikes, faster response time, simplified control systems and less power consumption.

Control Systems

Proportional solenoid valves, whether analog controlled or pulse width modulated, can be used in open or closed-loop control systems. In open-loop control, the input signal to the valve is not coupled to feedback from the system. In closed-loop control, sensors provide system information (pressure, flow, temperature) to the controller, which then adjusts the input signal to the valve until the desired condition is reached.

BP Valves in Open-Loop Systems

Non-critical applications can be controlled in an open-loop fashion. Under steady state conditions an input signal to the valve will open the orifice and produce a certain amount of flow. However, when system conditions change, such as pressure, the output of the valve will also change.

BP Valves in Closed-Loop Systems

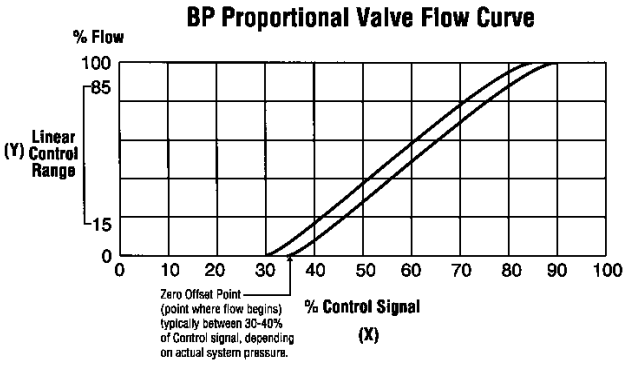
For applications requiring more precise control, closed-loop control systems are recommended. In such systems, measurements of process parameters (provided by pressure, temperature and/or flow sensors) are compared to a desired set-point by a controller. If a discrepancy exists, the controller will change the input signal to the BP valve until the desired setpoint is achieved.

BP Proportional Series Two-Way Valves

BP VALVES – NORMALLY CLOSED

| Pipe Size (NPT) | Orifice Size (inches) | Cv | Maximum Operating Pressure (PSI) | Flow Ranges | | Catalog Number | | | | Const. Ref. |
|-----------------|-----------------------|-----------------|----------------------------------|--------------------------------------|-----------------------|----------------------|-----------|-----------|-----------|-------------|
| | | | | At Maximum Operating Pressure (SCCM) | 10 PSI Example (SCCM) | Control Input Signal | | | | |
| | | | | | | 0-2V | 0-5V | 0-10V | 4-20mA | |
| 1/8" | 1/64 | Consult Factory | | | | | | | | |
| 1/8" | 1/32 | 0.02 | 200 | 0-50,000 | 0-8,000 | BP2EV0001 | BP2EV0012 | BP2EV0013 | BP2EV0029 | 66 |
| 1/8" | 3/64 | 0.045 | 100 | 0-65,000 | 0-17,000 | BP2EV0002 | BP2EV0010 | BP2EV0011 | BP2EV0024 | 66 |
| 1/8" | 1/16 | 0.08 | 60 | 0-75,000 | 0-30,000 | BP2EV0003 | BP2EV0005 | BP2EV0009 | BP2EV0020 | 66 |
| 1/8" | 5/64 | 0.12 | 40 | 0-80,000 | 0-45,000 | BP2EV0004 | BP2EV0006 | BP2EV0008 | BP2EV0014 | 66 |
| 1/8" | 3/32 | Consult Factory | | | | | | | | |

Note: Custom configurations and calibrations are available to suit your exact flow requirements. For information consult the factory.



DRAWINGS

RED POSITIVE

BLACK COMMON

GRAY CONTROL

1.38±.015

1.79±.020

3.31±.04

3.01±.02

.53

1.280

2.00±.020

1.06 DIA

1/8 NPT 2 PLC'S

.590

.295

.398

.198

#8-32 NC-2B THD 2 PLC'S

#66

SKINNER Intrinsically Safe Series

SKINNER INTRINSICALLY SAFE SOLENOID VALVES

For hazardous and low-power applications

Today, intrinsically safe systems and products are recommended, or in some cases compulsory, where the highest level of protection from explosion is required. They are also employed in applications that require low power.

A hazardous (classified) location is where fire or explosion hazards exist due to the presence of flammable gases or vapors, flammable liquids, combustible dust, or easily ignitable fibers or flyings.

Skinner Valve has long served industry with innovative and safety related products. Our Intrinsically Safe solenoid valves have approvals for use in the United States and Canada in hazardous classifications for Classes I, II, III, Division 1 and 2, and in the United Kingdom for Division 0, 1 and 2. In Europe our valves are approved according to CENELEC standards. All countries in Western Europe now follow common (CENELEC) standards. All CENELEC member countries should recognize apparatus which have been tested and certified by any CENELEC member country.

What is an intrinsically safe system?

An intrinsically safe system is most often an assembly of approved intrinsically safe apparatus, associated apparatus, and interconnecting cables. Approved I.S. apparatus are devices that are incapable, during normal operation or under fault conditions, of causing explosive atmospheres to ignite by spark or thermal effect. Explosive atmospheres are mixtures of flammable or combustible material in air in their most easily ignitable concentrations.

Solenoid valves are examples of I.S. apparatus and must be approved for use in specific hazardous (classified) locations. Associated apparatus, such as safety barriers, are devices which are not necessarily intrinsically safe themselves, but which are not necessarily intrinsically safe themselves, but which affect the energy in the I.S. circuit and are relied upon to maintain intrinsic safety.

How does intrinsic safety apply to solenoid valves?

When related to solenoid valves, intrinsic safety means that the coil's current draw and resulting temperature is held to such a low level (by an approved safety barrier) that the valve no longer has the capability of igniting a mixture of flammable or combustible material, either during normal operation or under fault conditions.

When designed into an intrinsically safe system, Skinner's Intrinsically Safe solenoid valves provide a number of significant performance advantages.

Low Power Consumption

Skinner's Intrinsically Safe valves are rated at 24 VDC nominal, and are calibrated to operate at a minimum current draw as low as 29 milliamps (0.029 amps).

Low Temperature Rise

Skinner Intrinsically Safe valve enclosures are designed to maintain a maximum outside surface temperature less than 85°C. This meets the T6 classification assigned by Underwriters Laboratories Inc.

Variety of Mounting Possibilities

Skinner Intrinsically Safe valves can be mounted in any position and still operate normally.

Media Compatibility

Intrinsically Safe Skinner valves in 2-way constructions are suitable for use with oil, air, water, and inert gases. Our 3- and 4-way valves are suitable for use with air and inert gases only.

Wide Selection of Options

A selection of coil enclosures including splice box, cable, 1/2" NPT conduit, and DIN coils are available for use with Skinner Intrinsically Safe valves. Additionally, some models are offered in manifold mounted configurations.

Watertight Construction

All Intrinsically Safe Skinner coil enclosures are equivalent to NEMA 4 Watertight construction.

SKINNER Intrinsically Safe Series Two-Way Direct Acting and Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

- Standard Materials of Construction*
- Body—Brass
 - Seals—FKM, NBR. Other diaphragm materials available upon request.

Compatible Media

- Air, water and light oil.

Miscellaneous

For applications below freezing temperatures, valves must be degreased. Consult Skinner prior to ordering.

Electrical Characteristics

Based on coil selected. See catalog pages 106-110 for detailed electrical information.

INTRINSICALLY SAFE SOLENOID VALVES—TWO-POSITION

| Global Part Number | Part Number | Valve Type | Port Size NPTF | Orifice Size | Valve Materials Seal/Body | Operating Pressure Differential (PSI) | Flow Rate Cv/SCFM* | Minimum Ambient Temp. °F/°C | Maximum Fluid Temp. °F/°C | Valve Weight lbs. | Const. Ref. |
|--------------------|-------------|------------|----------------|--------------|---------------------------|---------------------------------------|--------------------|-----------------------------|---------------------------|-------------------|-------------|
| 7121KBN2CV90 | U121K0490 | 2W,NC | 1/4" | 3/64" | FKM/Brass | 0-150 | 0.04/1.2 | +14/-10 | 165/75 | 0.44 | 72 |
| 7121KBN2EV90 | U121K0890 | 2W,NC | 1/4" | 1.2mm | FKM/Brass | 0-100 | 0.06/1.75 | +14/-10 | 165/75 | 0.44 | 72 |
| 7121KBN2GV90 | U121K0690 | 2W,NC | 1/4" | 1.5mm | FKM/Brass | 0-75 | 0.11/2.8 | +14/-10 | 165/75 | 0.44 | 72 |
| 7321HBN4UV90 | U321H1590 | 2W,NC | 1/2" | 5/8" | FKM, NBR/Brass# | 5-150 | 4.4/110 | +14/-10 | 165/75 | 1.38 | 73 |
| 7321GBN53V90 | U321G3690 | 2W,NC | 3/4" | 3/4" | FKM, NBR/Brass# | 5-150 | 9.8/330 | +14/-10 | 165/75 | 2.86 | 74 |
| 7321GBN64V90 | U321G3790 | 2W,NC | 1" | 1" | FKM, NBR/Brass# | 5-150 | 12.6/490 | +14/-10 | 165/75 | 2.42 | 74 |
| 7321GBN76V90 | U321G3890 | 2W,NC | 1 1/4" | 1 1/4" | FKM, NBR/Brass# | 5-150 | 19.6/630 | +14/-10 | 165/75 | 3.75 | 74 |
| 7321GBN88V90 | U321G3990 | 2W,NC | 1 1/2" | 1 9/16" | FKM, NBR/Brass# | 5-150 | 29.5/1100 | +14/-10 | 165/75 | 5.30 | 74 |
| 7321GBN99V90 | U321G4090 | 2W,NC | 2" | 1 9/16" | FKM, NBR/Brass# | 5-150 | 39.2/1400 | +14/-10 | 165/75 | 6.17 | 74 |

* Measured at 90 PSI with a 15 PSI differential.
Other diaphragm material available upon request.

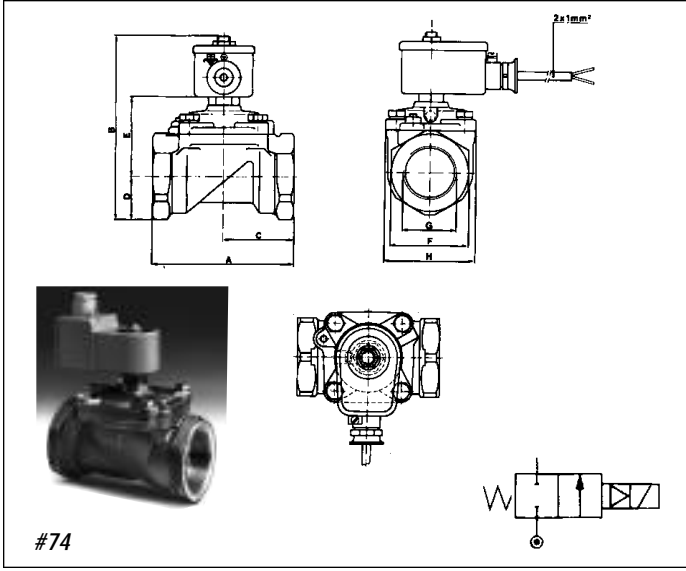
DRAWINGS

#72

Note: Coil for illustrative purposes.

#73

Intrinsically Safe Series Two-Way Direct Acting and Pilot Operated Valves



| Valve | A | | B | | C | | D | | E | | F | | G | H | |
|-----------|----------|-----|----------|-------|---------|----|----------|------|----------|----|--------|----|--------|---------|----|
| | IN | MM | IN | MM | IN | MM | IN | MM | IN | MM | IN | MM | NPT | IN | MM |
| U321G3690 | 3-15/16" | 100 | 5-5/16" | 135 | 2" | 50 | 7/8" | 23 | 2-23/64" | 60 | 1-5/8" | 41 | 3/4" | 2-3/4" | 70 |
| U321G3790 | 3-15/16" | 100 | 5-5/16" | 135 | 2" | 50 | 7/8" | 23 | 2-23/64" | 60 | 1-5/8" | 41 | 1" | 2-3/4" | 70 |
| U321G3890 | 4-11/32" | 110 | 6-7/32" | 158 | 2-5/32" | 55 | 1-9/32" | 33 | 2-7/8" | 73 | 2-3/8" | 60 | 1-1/4" | 2-3/4" | 70 |
| U321G3990 | 5-17/32" | 140 | 6-7/32" | 158 | 3" | 75 | 1-9/32" | 33 | 2-7/8" | 73 | 2-3/8" | 60 | 1-1/2" | 3-1/16" | 99 |
| U321G4090 | 5-29/32" | 150 | 6-25/32" | 172.5 | 3-5/32" | 80 | 1-21/32" | 41.5 | 3-7/64" | 79 | 3" | 75 | 2" | 3-1/16" | 99 |

SKINNER Intrinsically Safe Series Three-Way Direct Acting and Pilot Operated Valves

SPECIFICATIONS

Mechanical Characteristics

- Standard Materials of Construction*
- Body—Brass, Stainless Steel or Aluminum
 - Seals—FKM, NBR. Other diaphragm materials available upon request.
- Compatible Fluids*
- Air and inert gases.

Electrical Characteristics

- Based on coil selected. Valve U133X5196 functions with coil part numbers 490860, 482660, and 48333.01 only. See catalog pages 106-110 for detailed electrical information.

Miscellaneous

- Sleeve Exhaust Adaptor*
- U21-004 must be ordered separately.
- For applications below 32°F, valves must be degreased. Consult Skinner prior to ordering.

INTRINSICALLY SAFE SOLENOID VALVES—TWO-POSITION

| Global Part Number | Part Number | Valve Type | Port Size NPTF | Orifice Size | Valve Materials Seal/Body | Operating Pressure Differential (PSI) | Flow Rate Cv/SCFM* | Minimum Ambient Temp. °F/°C | Maximum Fluid Temp. °F/°C | Valve Weight lbs. | Const. Ref. |
|--------------------|-------------|------------|----------------|--------------|---------------------------|---------------------------------------|--------------------|-----------------------------|---------------------------|-------------------|-------------|
| 7131KBN2CV90 | U131K0490 | 3W, NC | 1/4" | 3/64" | FKM/Brass | 0-150 | 0.04/1.25 | +14/-10 | 165/75 | 0.44 | 75 |
| 7131KBN2EV90 | U131K0890 | 3W, NC | 1/4" | 1.2mm | FKM/Brass | 0-100 | 0.06/1.75 | +14/-10 | 165/75 | 0.44 | 75 |
| 7131KBN2GV90 | U131K0690 | 3W, NC | 1/4" | 1.5mm | FKM/Brass | 0-75 | 0.11/2.8 | +14/-10 | 165/75 | 0.40 | 75 |
| 7131VVN2CV90 | U131V5490 | 3W, NC | 1/4" | 3/64" | FKM/S.Steel(303) | 0-150 | 0.04/1.25 | +14/-10 | 165/75 | 0.50 | 76 |
| 7131VVN2EV90 | U131V5890 | 3W, NC | 1/4" | 1.2mm | FKM/S.Steel(303) | 0-100 | 0.06/1.75 | +14/-10 | 165/75 | 0.53 | 76 |
| 7131VVN2GV90 | U131V5690 | 3W, NC | 1/4" | 1.5mm | FKM/S.Steel(303) | 0-75 | 0.11/2.8 | +14/-10 | 165/75 | 0.53 | 76 |
| - | U133X5196 | 3W,U | 1/4" | 5mm | NBR/S.Steel(316) | 0-150 | .63/24.5 | +14/-10 | 165/75 | 1.81 | 77 |
| 7131FBF4CV90 | U131F4490 | 3W, NC | Subbase | 3/64" | FKM/Brass | 0-150 | 0.04/1.25 | +14/-10 | 165/75 | 0.30 | 78 |
| 7131FBNFGV90 | U131F4890 | 3W, NC | Subbase | 1.2mm | FKM/Brass | 0-100 | 0.06/1.75 | +14/-10 | 165/75 | 0.33 | 78 |
| 7131FBNFEV90 | U131F4690 | 3W, NC | Subbase | 1.5mm | FKM/Brass | 0-75 | 0.11/2.8 | +14/-10 | 165/75 | 0.33 | 78 |
| 7331BAN2KV90 | U331B7490 | 3W, NC | 1/4" | 9/32" | FKM, NBR/Aluminum# | 15-150 | 0.70/26 | +14/-10 | 165/75 | 0.88 | 79 |
| 7331LAV4TV90 | U331L2190 | 3W, NC | 1/2" | 5/8" | FKM, NBR/Aluminum# | 7-150 | 4/175 | +14/-10 | 165/75 | 2.90 | 80 |

* Measured at 90 PSI with a 15 PSI differential.
Other diaphragm material available upon request.

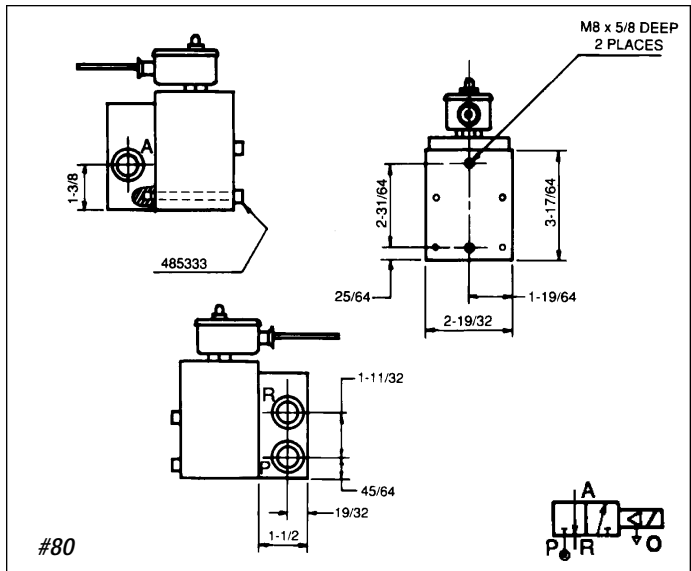
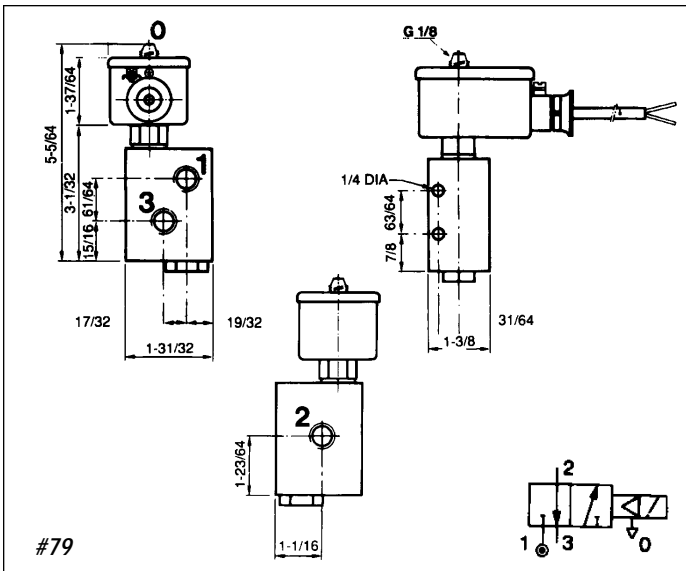
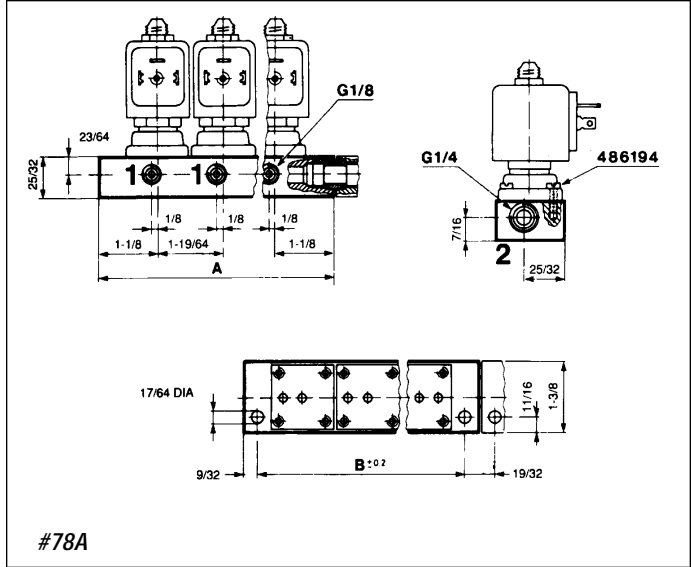
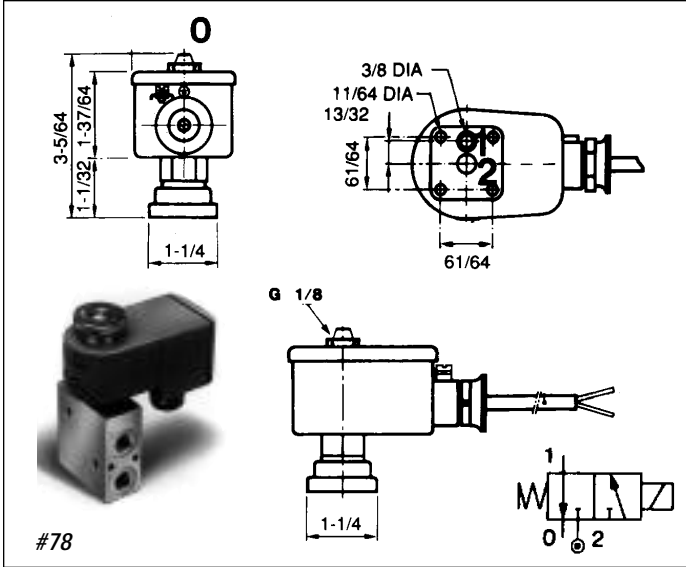
Note: U133X5196 valves function with coils 490860, 482660 or 483330.01 only.

DRAWINGS

#75

#76

Intrinsically Safe Series Three-Way Direct Acting and Pilot Operated Valves



Manifold Components

| Description | Part No. |
|--------------------------------|----------|
| Manifold Subbases for 2 valves | 486162 |
| Manifold Subbases for 3 valves | 486163 |
| Manifold Subbases for 5 valves | 486164 |
| Connection Nipples | 485725 |
| O-Ring | 485730 |
| Screw-M4X12 | 486194 |

Note: Only coils 490880, 483580 and 483960 can be used with manifolds. Manifold subbases are anodized Al-Mg-Si alloy.

| Quantity of Valves | Required Components | | | |
|--------------------|---------------------|--------------------|----------|-----------|
| | Subbases | Connection Nipples | O-Rings | Screws |
| 2 | 1-486162 | NR | NR | 8-486194 |
| 3 | 1-486163 | NR | NR | 12-486194 |
| 4 | 2-486162 | 1-485725 | 2-485730 | 16-486194 |
| 5 | 1-486164 | NR | NR | 20-486194 |
| 6 | 2-486163 | 1-485725 | 2-485730 | 24-486194 |
| 7 | 1-486162 | 1-485725 | 2-485730 | 28-486194 |
| 8 | 1-486163 | 1-485725 | 2-485730 | 32-486194 |
| 9 | 1-486162 | 2-485725 | 4-485730 | 36-486194 |
| 10 | 2-486164 | 1-485725 | 2-485730 | 40-486194 |

SKINNER Intrinsically Safe Series Special Purpose Three-Way Quick Exhaust and Manual Reset Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Brass, Stainless Steel
- Seals—NBR, FKM

Compatible Fluids

- Air and inert gases.

Electrical Characteristics

- Based on coil selected. the Quick Exhaust valve functions with coil numbers 490860, 482660 and 483330.01 only. See catalog pages 106-110 for detailed electrical information.

Miscellaneous

Safe body working pressure is 1500 PSI (Quick Exhaust) and 725 PSI (Manual Reset).

INTRINSICALLY SAFE SOLENOID VALVES—THREE-WAY, TWO-POSITION, UNIVERSAL, MANUAL RESET

| Global Part Number | Part Number | Valve Type | Port Size NPTF | Orifice Size | Valve Materials Seal/Body | Operating Pressure Differential (PSI) | Flow Rate Cv/SCFM* | Minimum Ambient Temp. °F/°C | Maximum Fluid Temp. °F/°C | Valve Weight lbs. | Const. Ref. |
|--------------------|-------------|------------|----------------|--------------|---------------------------|---------------------------------------|--------------------|-----------------------------|---------------------------|-------------------|-------------|
| - | U033X5156 | 3W,U | 1/4" | 5mm | FKM/S.Steel | 0-150 | .63/24.5 | -13/-25 | 165/75 | 1.81 | 81 |

* Measured at 90 PSI with a 15 PSI differential. Safe body working pressure 725 PSI.

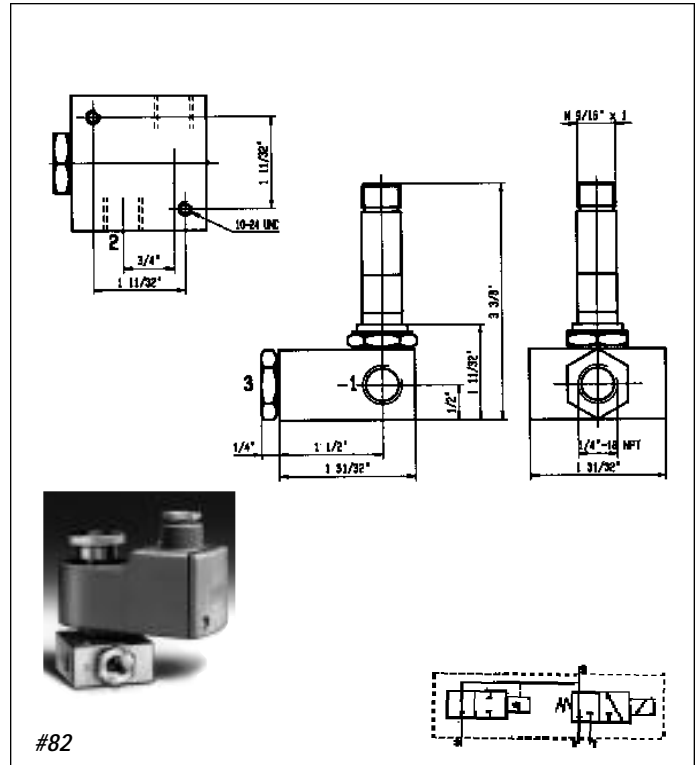
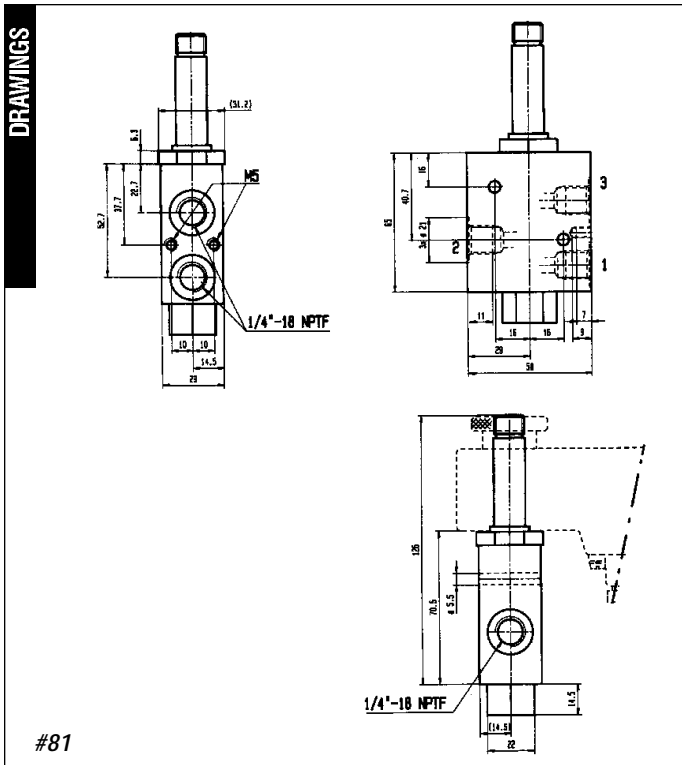
Note: This valve must be used with unique I.S. coils not illustrated in this catalog. For specific application requirements consult Skinner.

INTRINSICALLY SAFE SOLENOID VALVES—THREE-WAY, TWO-POSITION, QUICK EXHAUST

| Global Part Number | Part Number | Valve Type | Port Size NPTF | Orifice Size | | Valve Materials Seal/Body | Operating Pressure Differential | Flow Rate | | | | Minimum Ambient Temp. °F/°C | Maximum Fluid Temp. °F/°C | Valve Weight lbs. | Const. Ref. |
|--------------------|-------------|------------|----------------|--------------|-----|---------------------------|---------------------------------|-----------|-----|-------|----|-----------------------------|---------------------------|-------------------|-------------|
| | | | | P | E | | | Cv | | SCFM* | | | | | |
| - | U131E0391 | 3W, NC | 1/4" | 3/32 | 1/4 | FKM, NBR/Brass | 1.5-105 | 0.29 | 1.1 | 8 | 39 | +14/-10 | 165/75 | 1.32 | 82 |

* Measured at 90 PSI with a 15 PSI differential. Safe body working pressure 1500 PSI.

Note: This valve functions with coils 490860, 482660 or 483330.01 only.



SKINNER Intrinsically Safe Series **Four-Way Two-Position Valves**

SPECIFICATIONS

Mechanical Characteristics

Compatible Fluids

- Air and inert gases.

Standard Materials of Construction

- Body—Aluminum
- Seals—FKM, NBR. Other diaphragm materials available upon request.

Electrical Characteristics

- Based on coil selected. See catalog pages 106-110 for detailed electrical information.

INTRINSICALLY SAFE SOLENOID VALVES – TWO-POSITION

| Global Part Number | Part Number | Valve Type | Port Size NPTF | Orifice Size | Valve Materials Seal/Body | Operating Pressure Differential (PSI) | Flow Rate Cv/SCFM* | Minimum Ambient Temp. °F/°C | Maximum Fluid Temp. °F/°C | Valve Weight lbs. | Const. Ref. |
|--------------------|-------------|---------------------------|----------------|--------------|---------------------------|---------------------------------------|--------------------|-----------------------------|---------------------------|-------------------|-------------|
| 7341BAN2JV90 | U341B3490 | 4-way 4-ported | 1/4" | 1/4" | FKM, NBR/ Aluminum | 15-150 | 0.7/24 | +14/-10 | 165/75 | 1.28 | 83 |
| 7341LAV4TV90 | U341L2190 | 4-way 5-ported | 1/2" | 9/16" | FKM, NBR/ Aluminum | 7-150 | 4/175 | +14/-10 | 165/75 | 3.75 | 84 |
| 7341LAV62V90 | U341L4190 | 4-way 5 ported | 1" BSP | 1" | FKM, NBR/ Aluminum | 15-150 | 10.5/390 | +14/-10 | 165/75 | 9.03 | 85 |
| 7347LMN2NV90 | U347L1190 | 4-way 5-ported 2-solenoid | 1/4" | 5/16" | NBR/ Zamak (Zinc alloy) | 15-150 | 1.4/54 | +14/-10 | 165/75 | 2.04 | 86 |

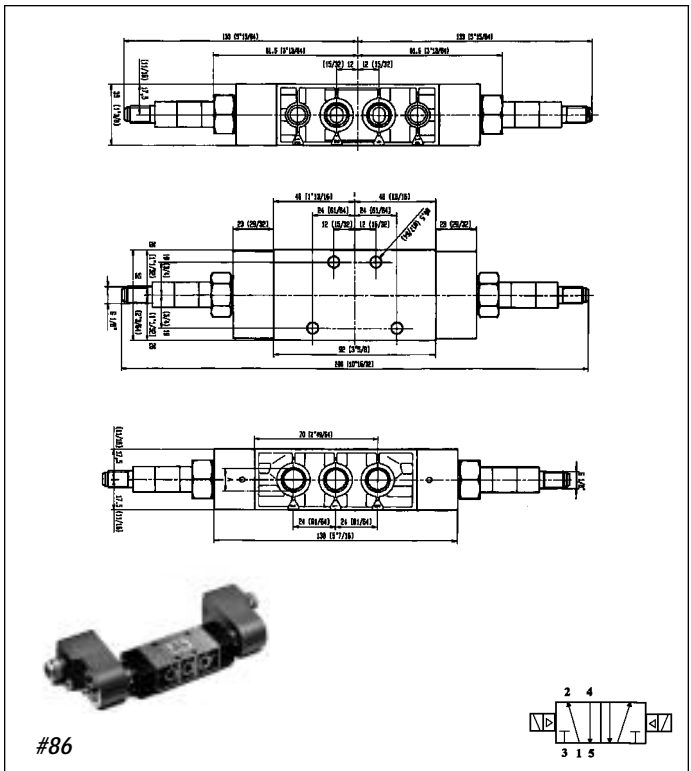
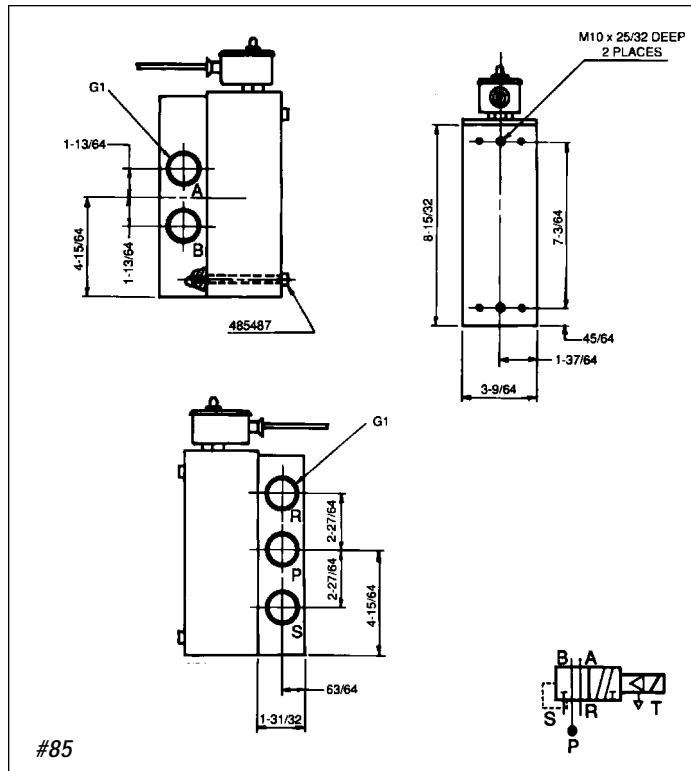
* Measured at 90 PSI with a 15 PSI differential. # Other diaphragm material available upon request.

DRAWINGS

#83

#84

SKINNER Intrinsicly Safe Series Four-Way Two-Position Valves



Intrinsically Safe Series

INTRINSICALLY SAFE COIL AND ENCLOSURE INFORMATION

IMPORTANT: The intrinsically safe supply circuit should have enough capacity in all environmental and system conditions to insure delivery of at least the minimum specified operating current of the coil. Be sure to include the internal coil resistance and the bridge rectifier resistance (where applicable) when calculating circuit parameters.

Splice Box Enclosure with Strain Relief Egress Specifications

Protection Class

- IP 65 according to DIN 40050 and IEC 529 standards. Equivalent to NEMA 4 Watertight.

Construction

- Polyamid with fiberglass enclosure and cover.

Electrical Entry and Connections

- Cable entry through a blue cable gland pg 13.5 (20.4mm) (DIN 46320). Screw terminals for leads 3 x 1.5mm². Additional ground connection possible with external screw terminal.

Enclosure

- Coil, printed circuit and other parts for I.S. specifications are completely encapsulated within the enclosure using epoxy material.

Dielectric Strength

- Greater than 500 V rms

Bridge Rectifier Resistance

- Less than 50 ohms at 29mA

Coil Internal Resistance

- 295 ohms at 20°C

Voltage

- 24 VDC nominal

Minimum Operating Current

- 29 milliamps

Coil Temperature Rise

- Less than 5°C

Maximum Enclosure Temperature

- <85°C (corresponding to T6 class) according to CENELEC-EN 50014.

Ambient Temperature

- 13°F to + 149°F (-25°C to +65°C)

F.M. Entity Parameters

- V_{max} = 30 volts
- I_{max} = 100 mA
- C_i = 0
- L_i = 0 mH

Options

- 1/2" NPT Conduit Hub Adaptor. Order part number U22-002.

| Reference Number | Approvals | Classification |
|------------------|-----------------|--|
| 490885 | FM, CSA | Class I, Div. 1, Grps A,B,C,D, Class II, Div. 1, Grps E,F,G, Class III, Div. 1 |
| 488650 | PTB* | EEx ib IIC T6 |
| 488650.01 | CERCHAR/CESI* | EEx ia IIC T6 |
| 488650.01 | BASEEFA | Ex ia IIC T6 |
| 488650.03 | SAA (Australia) | Ex ia IIC T6 |

* Note: According to CENELEC

DRAWINGS

The drawings include a side view of the enclosure with a strain relief fitting, showing dimensions of 1-9/16 inches for the main body height and 2 inches for the bottom section. A front view shows a diameter of 1-61/64 inches and a width of 3-5/32 inches. A photograph of the physical unit is shown below the drawings.

#67

Intrinsically Safe Series

Potted Lead Wire Coil with Strain Relief Egress Specifications

Protection Class

- IP 67 according to DIN 40050 and IEC 529 standards. Equivalent to NEMA 4 Watertight.

Construction

- Epoxy coated metal enclosure and cover.

Electrical Entry and Connections

- Fixed and potted two core (2 x 1mm²) blue connection cable of 2m length. Other cable lengths on request. Entry cable gland pg 11 (18.6mm) (DIN 46320). Additional ground connection possible with external screw terminal.

Enclosure

- Coil, welded lead connections, printed circuit and other parts for I.S. specifications are completely encapsulated within the enclosure using epoxy material.

Dielectric Strength

- Greater than 500 V rms

Bridge Rectifier Resistance

- Less than 50 ohms at 29mA

Coil Internal Resistance

- 295 ohms at 20°C

Voltage

- 24 VDC nominal

Minimum Operating Current

- 29 milliamps

Coil Temperature Rise

- Less than 5°C

Maximum Enclosure Temperature

- <85°C (corresponding to T6 class) according to CENELEC-EN 50014.

Ambient Temperature

- -40°F to +149°F (-40°C to +65°C)

F.M. Entity Parameters

- V_{max} = 30 volts
- I_{max} = 100 mA
- C_i = 0
- L_i = 0 mH

Options

- 1/2" NPT Conduit Hub Adaptor. Order part number U22-003.

| Electrical Parts | Reference Number | Approvals | Classification |
|------------------|--------------------|-----------------|--|
| | 490890 (VZ1300) | FM, CSA | Class I, Div. 1, Grps A,B,C,D Class II, Div. 1, Grps E,F,G Class III, Div. 1 |
| | 488660 | PTB* | EEx ib IIC T6 |
| | 488660.01 | CERCHAR/CESI* | EEx ia IIC T6 |
| | 488660.01 | BASEEFA | Ex ia IIC T6 |
| | 488660.03 | SAA (Australia) | Ex ia IIC T6 |

* Note: According to CENELEC

DRAWINGS

#68

Intrinsically Safe Series

Potted Coil with DIN Connection and DIN Plug Adaptor Specifications

Protection Class

- IP 65 according to DIN 40050 and IEC 529 standards (with DIN plug). Equivalent to NEMA 4 Watertight.

Construction

- Epoxy coated metal enclosure and cover.

Electrical Entry and Connections

- Blue "DIN" standard plug interface and 3-pin AMP plug (DIN 43650 type A) with blue pg 9 gland (15.2mm)

Enclosure

- Coil, printed circuit and other parts for I.S. specifications are completely encapsulated within the enclosure using epoxy material.

Dielectric Strength

- Greater than 500 V rms

Bridge Rectifier Resistance

- Less than 50 ohms at 29mA

Coil Internal Resistance

- 295 ohms at 20°C

Voltage

- 24 VDC nominal

Minimum Operating Current

- 29 milliamps

Coil Temperature Rise

- Less than 5°C

Maximum Enclosure Temperature

- <85°C (corresponding to T6 class) according to CENELEC-EN 50014.

Ambient Temperature

- 13°F to + 149°F (-25°C to +65°C)

F.M. Entity Parameters

- $V_{max} = 30$ volts
- $I_{max} = 100$ mA
- $C_i = 0$
- $L_i = 0$ mH

Options

- 1/2" NPT DIN Plug Adaptor. Order part number U27-001.

| Reference Number | Approvals | Classification |
|--------------------|-----------------|-------------------------------|
| 490895 (VZ2000) | FM, CSA | Class I, Div. 1, Grps A,B,C,D |
| | | Class II, Div. 1, Grps E,F,G |
| | | Class III, Div. 1 |
| 488670 | PTB* | EEx ib IIC T6 |
| 488670.01 | CERCHAR/CESI* | EEx ia IIC T6 |
| 488670.01 | BASEEFA | Ex ia IIC T6 |
| 488670.03 | SAA (Australia) | Ex ia IIC T6 |

* Note: According to CENELEC

DRAWINGS

#69

Intrinsically Safe Series

32mm DIN Coil and Plug Adaptor Specifications

Protection Class

- IP 65 according to DIN 40050 and IEC 529 standards (with DIN plug). Equivalent to NEMA 4 Watertight.

Construction

- Fully encapsulated assembly comprising a coil, integral magnetic iron path, three diodes circuit and DIN plug connection. The encapsulation provides an effective compact enclosure offering full protection against dust, oil, water etc.

Electrical Entry and Connections

- The coil is connected with a 3-pin plug pg 9 gland (part number 486586) according to DIN 43650 type A.

Dielectric Strength

- Greater than 500 V rms

Coil Internal Resistance

- 340 ohms at 20°C

Voltage

- 24 VDC nominal

Minimum Operating Current

- 35 milliamps

Coil Temperature Rise

- Less than 5°C

Maximum Enclosure Temperature

- <85°C (corresponding to T6 class) according to CENELEC-EN 50014.

Ambient Temperature

- 13°F to + 131°F (-25°C to +55°C)

F.M. Entity Parameters

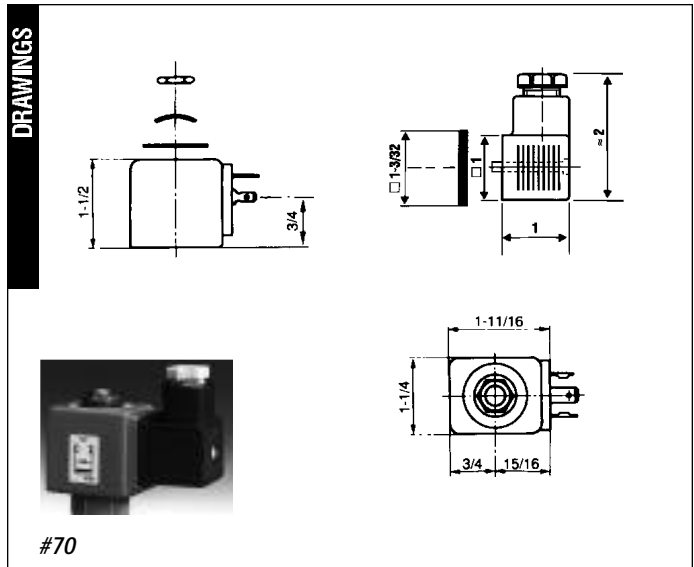
- $V_{max} = 30$ volts
- $I_{max} = 100$ mA
- $C_i = 0$
- $L_i = 0$ mH

Options

- 1/2" NPT DIN Plug Adaptor. Order part number U27-001.

| Reference Number | Approvals | Classification |
|------------------|------------------------|--|
| 490880 | With Din Plug, FM | Class I, Div. 1, Grps C,D Class II, Div. 1, Grps E,F,G Class III, Div. 1 |
| 483580 | Without DIN Plug, PTB* | EEx ib IIC T6 |
| 483960 | With DIN plug, PTB* | EEx ia IIC T6 |

* Note: According to CENELEC



Intrinsically Safe Series

Splice Box Enclosure with Booster Circuit and Strain Relief Egress Specifications

Protection Class

- IP 65 according to DIN 40050 and IEC 529 standards. Equivalent to NEMA 4 Watertight.

Construction

- Polyamid with fiberglass enclosure and cover.

Electrical Entry and Connections

- Screw terminals within terminal box. Cable connection through M20x1.5 cable gland. Additional ground connection possible with external ground terminal.

Enclosure

- Coil, printed circuit and other parts for I.S. specifications are completely encapsulated within the enclosure using epoxy material.

Booster Circuits

- The electronic booster circuit consists of capacitor, diodes, thyristor and Zener diode.

Voltage

- Nominal: 24 VDC nominal
- Maximum: 28 VDC
- Minimum at Attraction: 21.6 VDC*
- * *Circuit design must ensure that at least 21.6 VDC is available at the solenoid for proper operation.*

Minimum Holding Current

- 60 mA

Coil Temperature Rise

- Less than 5°C

Maximum Enclosure Temperature

- <85°C (corresponding to T6 class) according to CENELEC-EN 50014.

Ambient Temperature

- 13°F to +140°F (-25°C to +60°C)

Required Time Delay for Renewed Valve Actuation after Booster Discharge

- Approximately 1 second at nominal voltage

Duty Cycle

- 100% solenoid duty

Options

- 1/2" NPT Conduit Hub Adaptor. Order part number U22-001.

| Electrical Parts | Reference Number | Approvals | Classification |
|------------------|------------------|-----------|--|
| | 490860 | FM CSA | Class I, Div. 1, Grps C,D Class II, Div. 1, Grps E,F,G Class III, Div. 1 |
| | 482660 | PTB* | EEx ib IIB T6 |
| | 483330.01 | PTB* | EEx ia IIC T6 |

* Note: According to CENELEC

Acceptable Barriers Include:

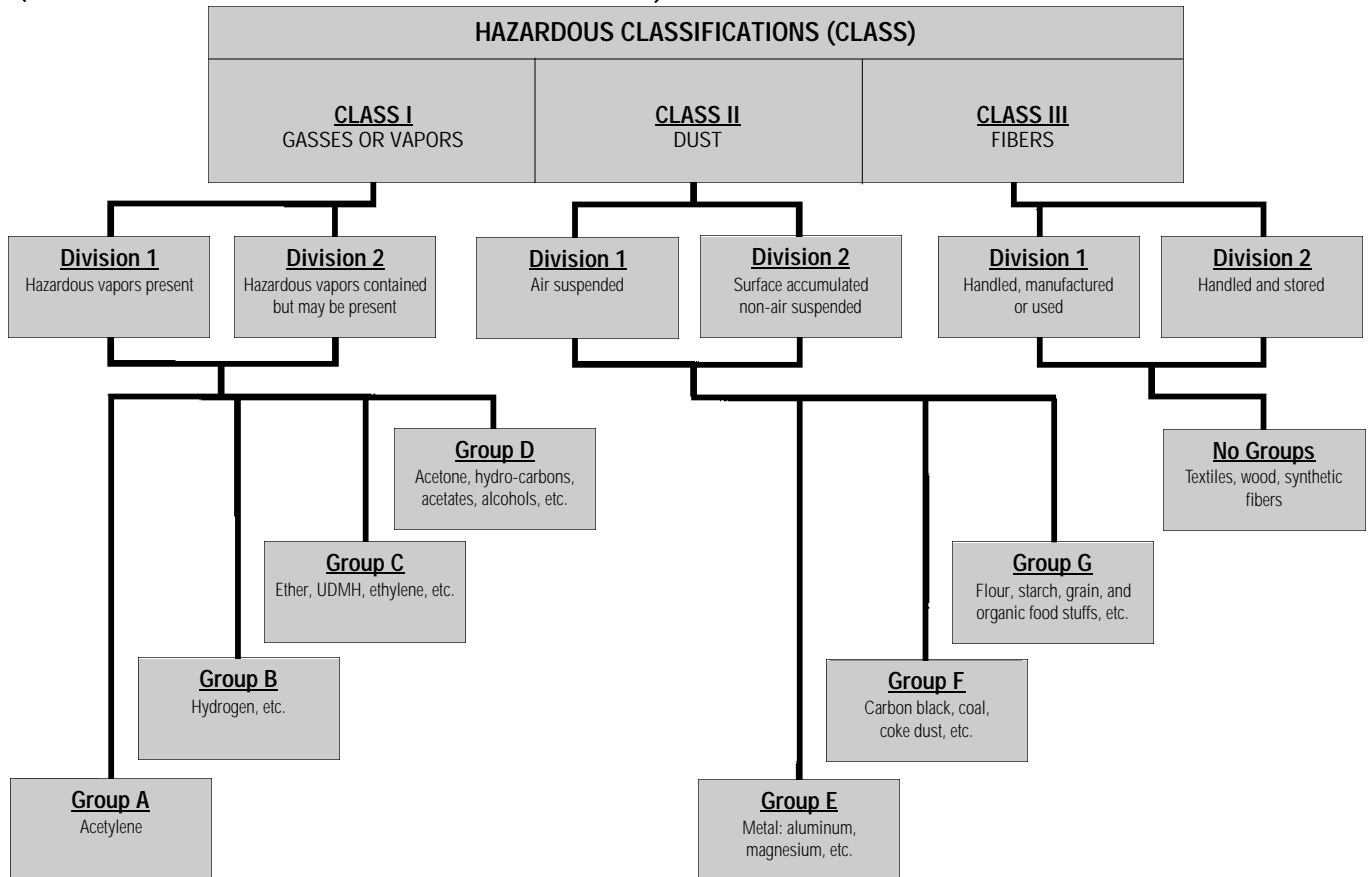
| | |
|-------|--------------------|
| MTL | 3022 |
| MTL | 779 |
| STAHL | 9001/01-280/110/10 |
| STAHL | 9001/01-280/100/10 |
| STAHL | 9001/01-280/165/10 |
| STAHL | 9001/03-280/000/00 |
| STAHL | 9002/13-280/100/04 |
| STAHL | 9002/13-280/110/00 |

DRAWINGS

#71

SKINNER Intrinsically Safe Series Four-Way Two-Position Valves

Hazardous (Classified) Locations (In accordance with Article 500, National Electrical Code-1984)



Hazardous Atmosphere Classifications

| Typical Gases in Atmosphere Class I | UK and CENELEC (BS5501: Part 1 EN 50 014) | US National Electrical Code Group |
|--|---|-----------------------------------|
| Ethane, propane, butan, pentane, hexane, heptane, octaine, nonane, decane, acetic acid, acetone, methanol, toluene, ethylacetate | IIA | Group D |
| Ethylene, Coke, oven gas, dimethyl ether, diehylether, ethylene oxide | IIB | C |
| Hydrogen | IIC | B |
| Carbon Disulphide | | No Classification |
| Acetylene | | A |
| Ethyl Nitrate | | No Classification |
| Typical Dusts in Atmosphere Class I | UK and CENELEC (BS5501: Part 1 EN 50 014) | US National Electrical Code Group |
| Metal | No Classification | E |
| Carbon/Coal | | F |
| Grain | | G |

Surface Temperature/Agency Code Cross Reference

| Maximum Surface Temperature | US Standard (U.L.) | CENELEC |
|-----------------------------|--|---------|
| 450°C | T1 | T1 |
| 300°C | T2 T2a - 280°C T2b - 260°C T2c - 230°C T2d - 215°C | T2 |
| 200°C | T3 T3a - 180°C T3b - 165°C T3c - 160°C | T3 |
| 135°C | T4 T4a - 120°C | T4 |
| 100°C | T5 | T5 |
| 85°C | T6 | T6 |

Hazardous Area Classifications

| Description | US | CENELEC |
|--|-------------|---------|
| An explosive atmosphere is continuously present | Division I | Zone 0 |
| An explosive atmosphere is intermittently present during normal operations | Division I | Zone 1 |
| An explosive atmosphere is present during abnormal conditions | Division II | Zone 2 |

NOTE: These charts are provided for reference only. Consult the U.S. National Electrical Code or rating agencies such as Factory Mutual or Underwriter's Laboratories for specific details.

SKINNER A-10 Series High Pressure Two- and Three-Way Direct Acting Hydraulic Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (430F)
- Seals—Metal
- Flange Seal—NBR
- Sleeve—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Spool—Stainless Steel (17-4PH)

Compatible Fluids

- Hydraulic Fluids. For other media consult Skinner Valve.

Product Description

Skinner 3-way A-10 Series valves are designed for use in high-pressure systems applications up to 3000 PSI. In addition to being available in pipe mounting configurations, A-10 valves are available in several custom mounting configurations including manifold, flange, and cage or cartridge mounted products.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other voltages available upon request)

Power Consumption

- 14 watts DC
- 16 watts AC

Miscellaneous

Operating Speed

- Up to 300 cycles per minute.

Response Time

- AC—Approximately 4-8 milliseconds to open.
- DC—Approximately 15-30 milliseconds to open, 15-25 milliseconds to close.

Leakage

- Internal—Maximum of 295cc/min. at 3000 PSI and 70°F with Mil-H-5606A oil.
- External—None.

Valve Construction Alternatives

Coil Type

- Class B molded leaded

Enclosure Type

- 1/2" NPT conduit enclosure

Flow Limits

- The spool in A10 Series valves will fail to shift when flow exceeds the maximum rated value. Each catalog listing indicates the flow and pressure drop for which these valves will operate without malfunction. The static pressure listed for each valve will not adversely affect valve operation as long as the rated flows and pressure differentials are not exceeded. The maximum flows (GPM) and pressure differentials (PSI) are based on Mil-H-5606A hydraulic oil at 80°F.

Mounting

- Manifold, flange and cage types available. Consult factory for details.

DIRECT ACTING TYPE A12 AND A126 STAINLESS STEEL VALVES—NORMALLY OPEN

| NPT Pipe Size | Effective Orifice Diameter | Average Cv Factor | Static Pressure Rating (PSI) | | Max. Pressure Differential (PSI) | Maximum Flow (GPM) | Inlet Port | Outlet Port | Class B Molded Coil 1/2" NPT Conduit Enclosure | Const. Ref. |
|---------------|----------------------------|-------------------|------------------------------|------|----------------------------------|--------------------|------------|-------------|--|-------------|
| | | | AC | DC | | | | | | |
| 1/8" | 3/32 | 0.15 | 3000 | | 3000 | 8.5 | 1 | 2 | A12LB13002 | 134 |
| | 3/32 | 0.15 | | 3000 | 3000 | 8.5 | 1 | 2 | A126LB13001 | 134 |

DIRECT ACTING TYPE A11 AND A116 STAINLESS STEEL VALVES—DIRECTIONAL CONTROL

| NPT Pipe Size | Effective Orifice Diameter | Average Cv Factor | Static Pressure Rating (PSI) | | Max. Pressure Differential (PSI) | Maximum Flow (GPM) | Inlet Port | Outlet Port | Class B Molded Coil 1/2" NPT Conduit Enclosure | Const. Ref. |
|---------------|----------------------------|-------------------|------------------------------|------|----------------------------------|--------------------|------------|-------------|--|-------------|
| | | | AC | DC | | | | | | |
| 1/8" | 3/32 | 0.15 | 3000 | | 3000 | 9 | 3 | 2 | A11LB13002 | 134 |
| | 3/32 | 0.15 | | 3000 | 3000 | 9 | 3 | 2 | A116LB13001 | 134 |

A-10 Series High Pressure Three-Way Direct Acting Hydraulic Valves

DIRECT ACTING TYPE A13, A136 STAINLESS STEEL VALVES – NORMALLY CLOSED

| NPT Pipe Size | Effective Orifice Diameter | Average Cv Factor | Static Pressure Rating (PSI) | | Max. Pressure Differential (PSI) | Maximum Flow (GPM) | Inlet Port | Outlet Port | Class B Molded Coil 1/2" NPT Conduit Enclosure | Const. Ref. |
|---------------|----------------------------|-------------------|------------------------------|------|----------------------------------|--------------------|------------|-------------|--|-------------|
| | | | AC | DC | | | | | | |
| 1/8" | 3/32 | 0.15 | 3000 | | 1000 | 5.7 | 1 | 2 | A13LB13002 | 87 |
| | 3/32 | 0.15 | 3000 | | 2000 | 7 | 2 | 3 | A13LB13002 | 87 |
| | 3/32 | 0.15 | | 3000 | 1000 | 5.7 | 1 | 2 | A136LB13001 | 87 |
| | 3/32 | 0.15 | | 3000 | 2000 | 7 | 2 | 3 | A136LB13001 | 87 |

DIRECT ACTING TYPE A15 AND A156 STAINLESS STEEL VALVES – NORMALLY OPEN

| NPT Pipe Size | Effective Orifice Diameter | Average Cv Factor | Static Pressure Rating (PSI) | | Max. Pressure Differential (PSI) | Maximum Flow (GPM) | Inlet Port | Outlet Port | Class B Molded Coil 1/2" NPT Conduit Enclosure | Const. Ref. |
|---------------|----------------------------|-------------------|------------------------------|------|----------------------------------|--------------------|------------|-------------|--|-------------|
| | | | AC | DC | | | | | | |
| 1/8" | 3/32 | 0.15 | 3000 | | 3000 | 9 | 3 | 2 | A15LB13002 | 87 |
| | 3/32 | 0.15 | 3000 | | 3000 | 8.5 | 2 | 1 | A15LB13002 | 87 |
| | 3/32 | 0.15 | | 3000 | 3000 | 9 | 3 | 2 | A156LB13001 | 87 |
| | 3/32 | 0.15 | | 3000 | 3000 | 8.5 | 2 | 1 | A156LB13001 | 87 |

DIRECT ACTING TYPE A16 AND A166 STAINLESS STEEL VALVES – DIRECTIONAL CONTROL

| NPT Pipe Size | Effective Orifice Diameter | Average Cv Factor | Static Pressure Rating (PSI) | | Max. Pressure Differential (PSI) | Maximum Flow (GPM) | Inlet Port | Outlet Port | Class B Molded Coil 1/2" NPT Conduit Enclosure | Const. Ref. |
|---------------|----------------------------|-------------------|------------------------------|------|----------------------------------|--------------------|------------|-------------|--|-------------|
| | | | AC | DC | | | | | | |
| 1/8" | 3/32 | 0.15 | 3000 | | 2000 | 7 | 2 | 3 | A16LB13002 | 87 |
| | 3/32 | 0.15 | 3000 | | 2000 | 7 | 2 | 1 | A16LB13002 | 87 |
| | 3/32 | 0.15 | | 3000 | 2000 | 7 | 2 | 3 | A166LB13001 | 87 |
| | 3/32 | 0.15 | | 3000 | 2000 | 7 | 2 | 1 | A166LB13001 | 87 |

Technical drawings for valve #87 showing front, side, and top views with dimensions: 2.67, 3.19, 1.86, 3.82, 2.49, 1.81, 1, 2, .80, .75, .47, 1.62 DIA, .65, 1.31, and a note: *10-32 NF-2B TH'D 2 PLC'S.

Port Identification:

| | A13 | A15 | A16 |
|------------|-----|----------|-----|
| 1-IN | | Exhaust | NC |
| 2-Cylinder | | Cylinder | IN |
| 3-Exhaust | | IN | NO |

#87

Technical drawings for valve #134 showing front, side, and top views with dimensions: 2.67, 3.19, 1.86, 3.82, 2.49, 1.81, 1, 2, .80, .75, .47, 1.62 DIA, .65, 1.31, and a note: *10-32 NF-2B TH'D 2 PLC'S.

Port Identification:

| | A11 | A12 |
|-----------|-----|-----------|
| 1-Plugged | | 1-IN |
| 2-OUT | | 2-OUT |
| 3-IN | | 3-Plugged |

#134

SKINNER MB Series **Three-Way Direct Acting Valves**

SPECIFICATIONS

Product Description

MB Series valves are designed for the actuation of small air cylinders and clamps, and are suited for applications requiring low air flow.

The valves are direct acting, multipurpose valves with all ports in the body. The valve body is molded from plastic, while the internal parts are nylon, polyester and stainless steel. The valves will operate at up to 150 PSI, consuming only 4 watts per coil on AC operation, 5 watts per coil on DC.

Functional design flexibility is assured given the wide variety of available valve configurations. The listed accessories enable the user to customize MB Series valves as 2-way normally open or normally closed by plugging one port; 3-way normally open, normally closed or directional control; and 4-way normally closed-normally open, normally open-normally open, and normally closed-normally closed.

Mechanical Characteristics

Standard Materials of Construction

- Body—Plastic
- Seals—NBR
- Sleeve—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (17-7PH)
- Shading Ring—Copper (AC valves only)
- Manifold Bases—Zinc

Compatible Media

- Lubricated Air, Non-Lubricated Air, and Inert Gases compatible with materials of construction.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60

Power Consumption

- 4 watts AC per coil
- 5 watts DC per coil

Miscellaneous

Operating Speed

- Up to 1000 cycles per minute.

Response Time

- AC—Approximately 3-12 milliseconds to open, 5-16 milliseconds to close.
- DC—Approximately 8-14 milliseconds to open, 5-15 milliseconds to close.

Leakage

- Internal—Maximum 3 SCCM at 150 PSI.
- External—None.

Standard Valve Construction

Coil Type

- Class A taped with lead

Enclosure Type

- Slotted enclosure for leaded coils.

DIRECT ACTING THREE-AND FOUR-WAY MB VALVES

| Pipe Size | Orifice Diameter | | Cv Factor | | Operating Pressure (PSI) | | Wattage | | Class A Taped Leaded Coil | Const. Ref. |
|-------------------|------------------|---------|-----------|---------|--------------------------|---------|---------|----|---------------------------|-------------|
| | NC Port | NO Port | NC Port | NO Port | Minimum | Maximum | AC | DC | | |
| #10-32 UNF 2B | 3/64 | 3/64 | 0.032 | 0.028 | 0 | 150 | 4 | 5 | MBD002 | 88 |
| Subbase Ported | 3/64 | 3/64 | 0.032 | 0.028 | 0 | 150 | 4 | 5 | MBD005 | 88 |
| 1/8" NPT Manifold | 3/64 | 3/64 | 0.032 | 0.028 | 0 | 150 | 8 | 10 | MBD009 | 89 |

Ordering Instructions for Multiple Station Manifolds

Step 1: Determine the number of valve stations required. This will equal the number of subbase valves to order (MBD005).

Step 2: Select the combination of two- and three-station manifolds that sum to equal the number of valve stations required (i.e. five stations total = one three-station and one two-station manifold).

Step 3: Choose the accessory kits required to complete the system and determine if you want the valves assembled to the manifolds at the factory.

Step 4: Specify the required voltage.

Example:

- 1) You have selected a valve which is to be manifolded.
- 2) Your system requires a five-station manifold (i.e. one three-station manifold attached to one two-station manifold).
- 3) You require the manifold bases and an interface kit. You decide to assemble the valves and manifolds. If they were to be assembled by the factory, there would be a price-add.

4) Your system is 120/60 watts AC. Your order should read:

5-MBD005, 120/60
1-MB-60-S001
1-MB-60-S002
1-MB-60-S003
1-MB-60-S005
1-MB-60-S006

MB Series Three-Way Direct Acting Valves

| Accessories | Contents | Part Number |
|---|--|-------------|
| 2-Station Manifold Base Kit (for mounting 2 valves) | 4 Pipe plugs | MB-60-S001 |
| | 4 No. 5 self tapping screws | |
| 3-Station Manifold Base Kit (for mounting 3 valves) | 5 Pipe plugs | MB-60-S002 |
| | 6 No. 5 self tapping screws | |
| Manifold Interface Kit (connects 2 manifold bases) | 1 No. 8 screw 2 "O" rings | MB-60-S003 |
| Manifold Blank Station Kit (for sealing an unused station) | 1 Plate 2 "O" rings 2 Screws | MB-60-S004 |
| 2-Station Manifold Base const. ref. 90 | 1 MB-01-003 manifold block 2 V1-31-254 nuts assembled | MB-60-S005 |
| 3-Station Manifold Base const. ref. 90 | 1 MB-01-004 manifold block 2 V1-31-254 nuts assembled | MB-60-S006 |

Valve Accessories

For ordering instructions see Ordering Information section on page 10 and 114.

DRAWINGS

#88

Port Identification:
1-NC/ 2-Common/ 3-NO

#89

Port Identification:
1-IN/ 2-Cylinder/ 3-Exhaust

#90

Port Identification:
1-NC/ 2-Common/ 3-NO

SKINNER High Pressure Hydraulic A-35 Series **Four-Way Direct Acting Valves**

SPECIFICATIONS

Product Description

The A35 Series 4-way spool valve is designed for high pressure hydraulic applications up to 2000 PSI. The valves are also available for cage mounting without pipe connections. In this type of mounting, the valve spool is encased in a cartridge or cage which is inserted into a machined cavity in the customer's matching part. O-rings are supplied with the valve.

Mechanical Characteristics

Standard Materials of Construction

- Body—Stainless Steel (430F)
- Flange Seals—NBR
- Sleeve—Stainless Steel (304)
- Plunger—Stainless Steel (430FR)
- Stop—Stainless Steel (430FR)
- Springs—Stainless Steel (18-8)
- Shading Ring—Copper (AC only)
- Spool—Stainless Steel (17-4PH)

Compatible Fluids

- Hydraulic Fluids. For other media consult Skinner Valve.

Electrical Characteristics

Voltages

- DC—12, 24, 120
- AC—24/60, 120/60, 240/60 (other AC/DC voltages available upon request)

Power Consumption

- 16 watts AC
- 14 watts DC

Miscellaneous

Operating Speed

- Up to 300 cycles per minute.

Response Time

- AC—Approximately 4-8 milliseconds to open or close.
- DC—Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

Leakage

- Internal—80 cc/min. maximum at 1000 PSI.
- External—None.

Valve Construction Alternatives

Coil Types

- Class B molded leaded
- Class F molded leaded.

Enclosure Type

- Die-cast zinc coil enclosure with 1/2" NPT conduit.

Mounting

- Cage mounting without pipe connection available. Consult factory for details.

A-35 SERIES HIGH PRESSURE HYDRAULIC VALVES

| NPT Pipe Size | Effective Orifice Diameter | Average Cv Factor | Static Pressure Rating (PSI) | | Max. Pressure Differential (PSI) | Maximum Flow (GPM) | Inlet Port | Outlet Port | Class B Molded 1/2" NPT Conduit Enclosure | Const. Ref. |
|---------------|----------------------------|-------------------|------------------------------|----|----------------------------------|--------------------|------------|-------------|---|-------------|
| | | | AC | DC | | | | | | |
| 1/8" | 0.086 | 0.13 | 2000 | | 2000 | 6.3 | 1 | 2 | A35LB12002 | 92 |
| | 0.086 | 0.13 | | | | | | | | |
| | 0.082 | 0.12 | | | | | | | | |
| | 0.082 | 0.12 | | | | | | | | |
| 1/8" | 0.086 | 0.13 | 2000 | | 2000 | 6.3 | 1 | 2 | A356LB12001 | 92 |
| | 0.086 | 0.13 | | | | | | | | |
| | 0.082 | 0.12 | | | | | | | | |
| | 0.082 | 0.12 | | | | | | | | |

Note: Cv factor and maximum flow varies according to the flow path.

A-35 SERIES VALVE OPTIONS

| Optional Feature | Option Code |
|----------------------------|-------------|
| Molded class F leaded coil | LF |

DRAWINGS

#92

Port Identification:
1-IN/ 2-NC/ 3-Exhaust/ 4-NO

SKINNER K Series **Three-Way Poppet Valves**

SPECIFICATIONS

Product Description

K-Series solenoid valves include a broad range of 3- and 4-way models designed to satisfy most pneumatic application requirements. Although small in size, each valve includes features and performance capabilities usually found only on larger, more expensive solenoid valves.

All models are supplied with non-locking manual overrides with either lead wire or plug-in connectors. The valves with plug-in connectors include LED status indicators, reverse voltage protection and surge suppression.

Mechanical Characteristics

Standard Materials of Construction

- Body and Components—Plastic (Acetal and Polyphenylene Sulfide)
- Brass and Stainless Steel
- Seals—NBR
- Subbase and Manifold Body—Aluminum

Compatible Fluids

- Non-lubricated or lubricated air and inert gases.

Pipe Sizes

- All subbases and manifolds—M3 or M5 cylinder ports.

Electrical Characteristics

Voltages

- 5VDC, 6VDC, 12VDC, 24VDC, 48VDC, 24V/60HZ, 120V/60HZ (depending on model).

Allowable Voltage Variation

- AC: +10%–10 rated voltage.
- DC: +10%–15 rated voltage.

Electrical Connections

- 11- inch leaded, 22 gauge as standard. Optional plug-in connector with 19-inch leads.

Current Drain

- 0.5 watt -6 milliamps, 1.8 watts -22 milliamps.

Miscellaneous

Filtration

- Down to 40 microns recommended.

Lubrication

- None required, valves are prelubricated.

Ambient Temperature Rating

- +40 to 120°F

K SERIES K3P, K3H, K3F VALVES—THREE-WAY, POPPET

| Pressure Range (PSI) | | Cv | | Watts | | Valve Function | Electrical* Connections | Response Time (seconds) | | Model Number | Const. Ref. |
|----------------------|------|-----------|-----------|-------|-----|----------------|-------------------------|-------------------------|-------|--------------|-------------|
| Min. | Max. | P to Cyl. | Cyl. to R | DC | AC | | | On | Off | | |
| 0 | 100 | 0.01 | 0.02 | 0.5 | 0.5 | NC | Lead Wire | 0.005 | 0.005 | K3P01 | 94 |
| 0 | 100 | 0.01 | 0.02 | 0.5 | 0.5 | NC | Plug-in | 0.005 | 0.005 | K3P02 | 94 |
| 0 | 114 | 0.02 | 0.02 | 1.8 | 1.8 | NC | Lead Wire | 0.005 | 0.005 | K3P03 | 94 |
| 0 | 114 | 0.02 | 0.02 | 1.8 | 1.8 | NC | Plug-in | 0.005 | 0.005 | K3P04 | 94 |
| 28 | 100 | 0.1 | 0.1 | 0.5 | NA | NO | Lead Wire | 0.010 | 0.020 | K3H01 | 93 |
| 28 | 100 | 0.1 | 0.1 | 0.5 | NA | NO | Plug-in | 0.010 | 0.020 | K3H02 | 93 |
| 28 | 100 | 0.1 | 0.1 | 0.5 | NA | NC | Lead Wire | 0.010 | 0.020 | K3H03 | 93 |
| 28 | 100 | 0.1 | 0.1 | 0.5 | NA | NC | Plug-in | 0.010 | 0.020 | K3H04 | 93 |
| 0 | 100 | 0.005 | 0.005 | 0.5 | NA | NC | Lead Wire | 0.005 | 0.005 | K3F01 | 95 |
| 0 | 100 | 0.005 | 0.005 | 0.5 | NA | NC | Plug-in | 0.005 | 0.005 | K3F02 | 95 |

* Lead wire: 11" lead wire. Plug-in: Connector with 19" leads, indicator light and surge suppressor. NC = Normally Closed, NO = Normally Open

K SERIES VALVE VOLTAGES

| Voltage | K3P 0.5 Watt | 1.8 Watts | K3H 0.5 Watt | K3F 0.5 Watt |
|-------------|-----------------|-----------|-----------------|-----------------|
| 5VDC | * | NA | * | * |
| 6VDC | NA | * | * | * |
| 12VDC | * | * | * | * |
| 24VDC | * | * | * | * |
| 48VDC | NA | NA | * | * |
| 24VAC/60Hz | NA | * | NA | NA |
| 120VAC/60Hz | * | * | NA | NA |

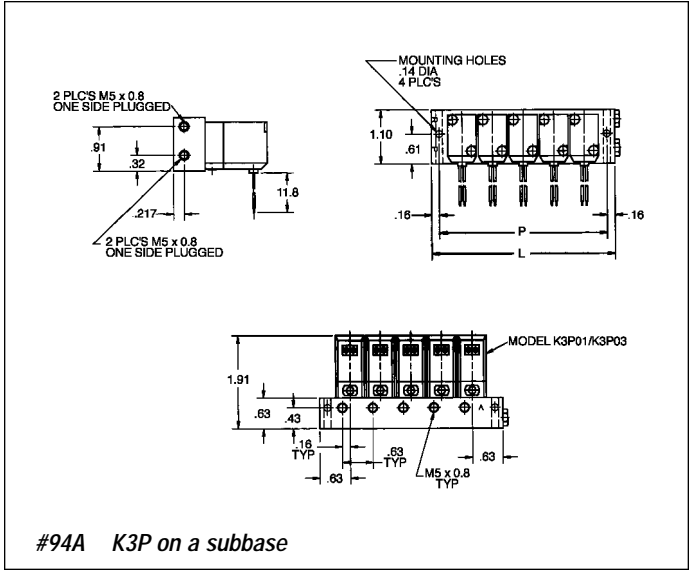
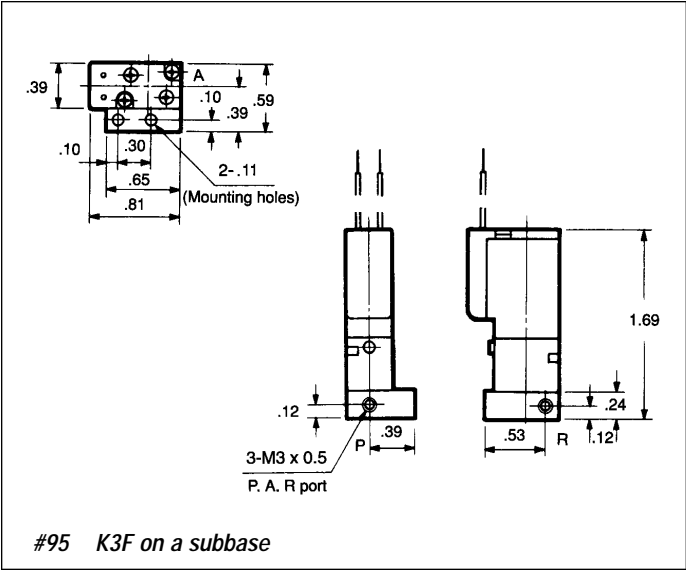
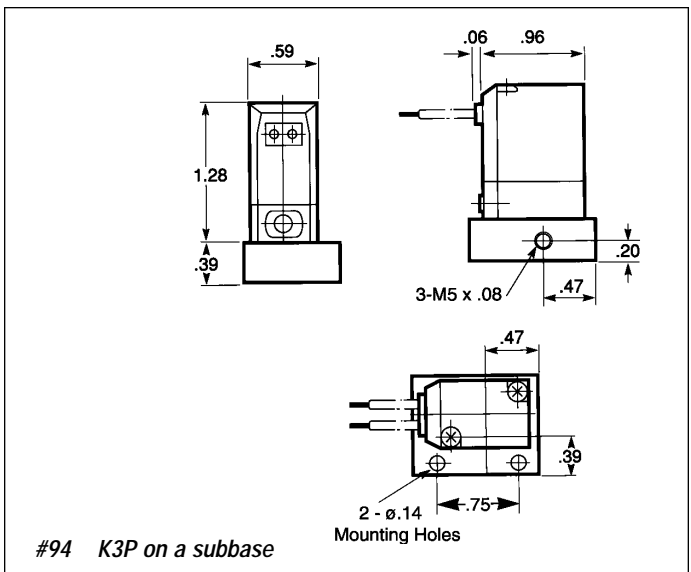
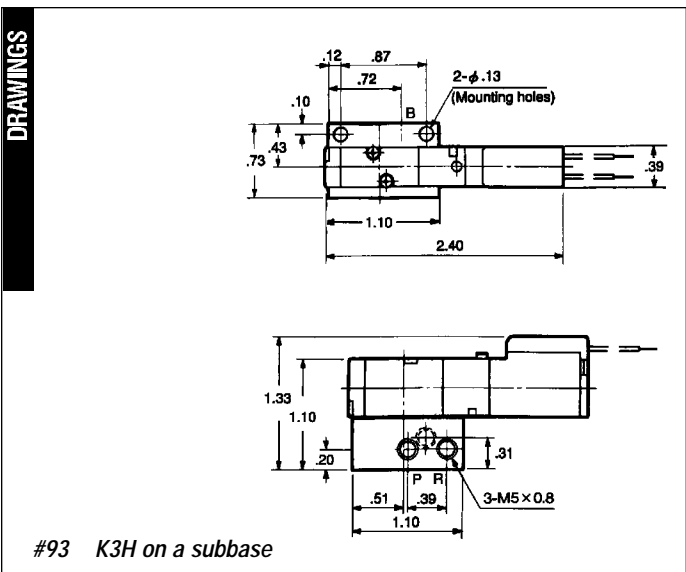
* Valves may be ordered for use with these specific voltages.

K Series Three-Way Poppet Valves

K SERIES VALVE MANIFOLDS

| Type | K3P Model Number | K3P Manifold Dimensions | | K3H Number | K3H Manifold Dimensions | | K3F Model Number | K3F Manifold Dimensions | |
|------------------------|------------------|-------------------------|------------|------------|-------------------------|------------|------------------|-------------------------|------------|
| | | P (inches) | L (inches) | | P (inches) | L (inches) | | P (inches) | L (inches) |
| Subbase | K01-001 | | | KH-01-001 | 0.87 | 1.10 | KF-01-001 | 0.30 | 0.65 |
| 2-Station | K01-021 | 1.61 | 1.89 | KH-01-002 | 1.28 | 1.67 | KF-01-002 | 1.08 | 1.28 |
| 3-Station | K01-022 | 2.24 | 2.52 | KH-01-003 | 1.69 | 2.09 | KF-01-003 | 1.50 | 1.69 |
| 4-Station | K01-002 | 2.87 | 3.15 | KH-01-004 | 2.11 | 2.50 | KF-01-004 | 1.91 | 2.11 |
| 5-Station | K01-023 | 3.50 | 3.78 | KH-01-005 | 2.52 | 2.91 | KF-01-005 | 2.32 | 2.52 |
| 6-Station | K01-003 | 4.13 | 4.41 | KH-01-006 | 2.93 | 3.33 | KF-01-006 | 2.74 | 2.93 |
| 7-Station | K01-024 | 4.76 | 5.04 | KH-01-007 | 3.35 | 3.74 | KF-01-007 | 3.15 | 3.35 |
| 8-Station | K01-004 | 5.39 | 5.67 | KH-01-008 | 3.76 | 4.15 | KF-01-008 | 3.56 | 3.76 |
| 9-Station | K01-025 | 6.02 | 6.30 | KH-01-009 | 4.17 | 4.57 | KF-01-009 | 3.98 | 4.17 |
| 10-Station | K01-005 | 6.65 | 6.93 | KH-01-010 | 4.59 | 4.98 | KF-01-010 | 4.39 | 4.59 |
| Station Blanking Plate | K16-001 | - | - | KH-16-001 | - | - | KF-16-001 | - | - |
| Valve Mounting Kit | - | - | - | KH-60-S001 | - | - | KF-60-S001 | - | - |

See dimensional diagrams for inlet and exhaust port sizes.



SKINNER K Series Four-Way Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body and Components—Plastic (Acetal and Polyphenylene Sulfide)
- Brass and Stainless Steel
- Seals—NBR
- Subbase and Manifold Body—Aluminum

Compatible Fluids

- Non-lubricated or lubricated air and inert gases.

Pipe Sizes

- All subbases and manifolds have M5x0.8, 1/8" NPT or 1/4" NPT ports depending on model.

Electrical Characteristics

Voltages

- 5VDC, 6VDC, 12VDC, 24VDC, 48VDC, 24V/60HZ, 120V/60HZ (depending on model).

Allowable Voltage Variation

- AC: +10–10 percent rated voltage.
- DC: +10–15 percent rated voltage.

Electrical Connections

- 11- inch leaded, 22 gauge as standard. Optional plug-in connector with 19-inch leads.

Current Drain

- 0.5 watt - 6 milliamps, 1.8 watts - 22 milliamps.

Miscellaneous

Filtration

- Down to 40 microns recommended.(5 micron for K4M valves).

Lubrication

- None required, valves are prelubricated.

Ambient Temperature Rating

- +40 to 120°F

K SERIES K4H VALVES—FOUR-WAY, PILOT OPERATED, SINGLE AND DOUBLE SOLENOID

| Pressure (PSI) | | Cv | Watts | Porting | Solenoid Model | Electrical Connection # | Response Time (seconds) | | Model Number |
|----------------|-----|------|-------|--------------|----------------|-------------------------|-------------------------|------|--------------|
| Min | Max | | | | | | On | Off | |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Single | Lead wire | 0.01 | 0.02 | K4H01 |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Single | Plug-in | 0.01 | 0.02 | K4H02 |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Single | PCB | 0.01 | 0.02 | K4H03 |
| 28 | 100 | 0.1 | 0.5 | Body ported | Single | Lead wire | 0.01 | 0.02 | K4H04 |
| 28 | 100 | 0.1 | 0.5 | Body ported | Single | Plug-in | 0.01 | 0.02 | K4H05 |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Double | Lead wire | 0.01 | 0.02 | K4H06 |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Double | Plug-in | 0.01 | 0.02 | K4H07 |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Double | PCB | 0.01 | 0.02 | K4H08 |
| 28 | 100 | 0.1 | 0.5 | Base mounted | Single | PCB | 0.01 | 0.02 | K4H09* |
| 28 | 100 | 0.04 | 0.5 | Base mounted | Double | Plug-in | 0.01 | 0.02 | K4H10** |

Lead wire: 11" lead wire. Plug-in: Connector with 19" leads, indicator light and surge suppressor. PCB: connector with studs.

* K4H09 PCB connector is pointing vertically upwards.

* K4H10 is a double solenoid. 3-position model with all ports blocked in center position. Models with cylinder ports open to exhaust or open to pressure are available upon request. All models contain captured exhaust porting.

K4H VALVE VOLTAGES

| Voltage | K4H 0.5 Watt |
|-------------|--------------|
| 5VDC | * |
| 6VDC | * |
| 12VDC | * |
| 24VDC | * |
| 48VDC | * |
| 24VAC/60Hz | NA |
| 120VAC/60Hz | NA |

* Valves may be ordered for use with these specific voltages.

K4H VALVE MANIFOLDS

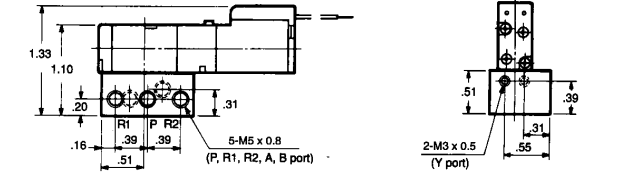
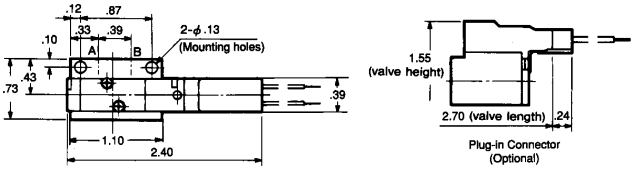
| Manifolds | | K4H Manifold Dimensions | |
|--------------------------|------------|-------------------------|------------|
| Type | K4H Style | P (inches) | L (inches) |
| Subbase | KH-01-001 | 0.87 | 1-1 |
| 2-Station | KH-01-002 | 1.28 | 1.67 |
| 3-Station | KH-01-003 | 1.69 | 2.09 |
| 4-Station | KH-01-004 | 2.11 | 2.5 |
| 5-Station | KH-01-005 | 2.52 | 2.91 |
| 6-Station | KH-01-006 | 2.93 | 3.33 |
| 7-Station | KH-01-007 | 3.35 | 3.74 |
| 8-Station | KH-01-008 | 3.76 | 4.15 |
| 9-Station | KH-01-009 | 4.17 | 4.57 |
| 10-Station | KH-01-010 | 4.59 | 4.98 |
| Station Blanking Plate** | KH-16-001 | - | - |
| Valve Mounting Kit* | KH-60-S001 | - | - |

* Mounting kits consist of 10 gaskets and 20 mounting screws. See dimensional diagrams for inlet and exhaust port sizes.

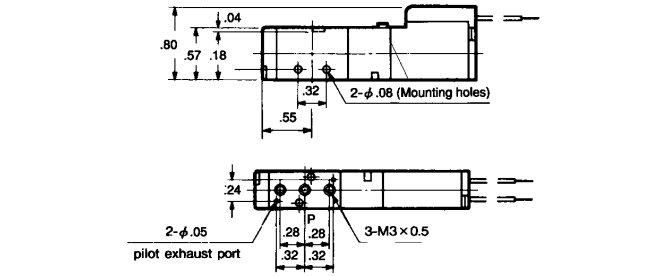
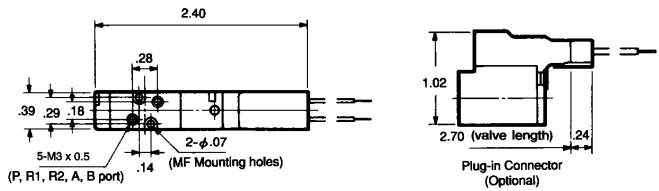
**Includes plate, gasket, 2 screws.

K Series Four-Way Valves

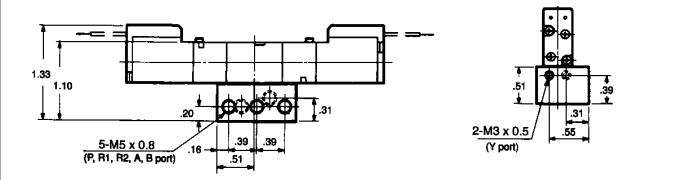
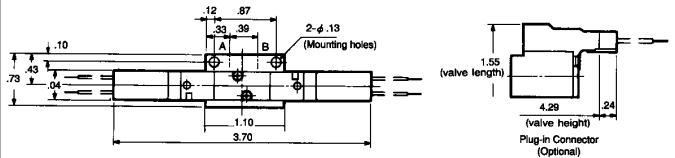
DRAWINGS



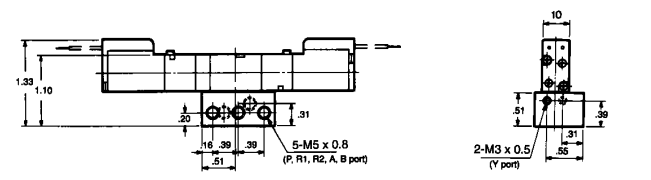
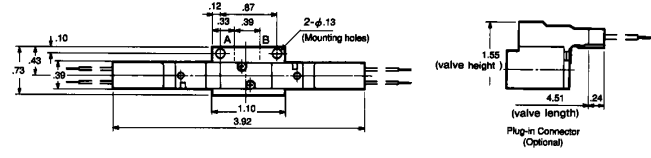
K4H01 on a subbase



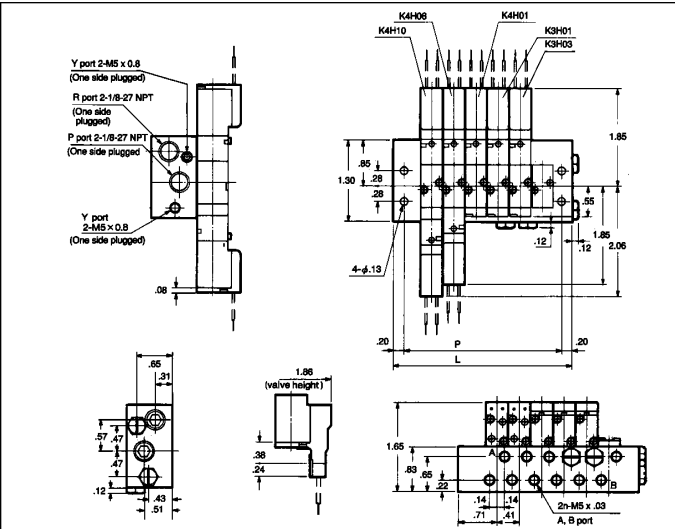
K4H01 on a subbase



K4H06 on a subbase



K4H10 on a subbase



K4H on a manifold

K Series Four-Way Valves

K SERIES K4M VALVES – FOUR-WAY, DIRECT ACTING, SINGLE AND DOUBLE SOLENOID

| Pressure (PSI) | | Cv | Watts | Porting | Solenoid Model | Electrical Connection # | Response Time (seconds) | | Model Number |
|----------------|-----|------|-------|--------------|----------------|-------------------------|-------------------------|-------|--------------|
| Min | Max | | | | | | On | Off | |
| 0 | 120 | 0.04 | 2 | Base Mounted | Single | Lead wire | 0.005 | 0.005 | K4M01 |
| 0 | 120 | 0.04 | 2 | Base Mounted | Single | Plug-in | 0.005 | 0.005 | K4M02 |
| 0 | 120 | 0.04 | 2 | Base Mounted | Single | PCB | 0.005 | 0.005 | K4M03 |
| 0 | 120 | 0.04 | 2 | Body Ported | Single | Lead wire | 0.005 | 0.005 | K4M04 |
| 0 | 120 | 0.04 | 2 | Body Ported | Single | Plug-in | 0.005 | 0.005 | K4M05 |
| 0 | 120 | 0.04 | 2 | Base Mounted | Double | Lead wire | 0.005 | 0.005 | K4M06 |
| 0 | 120 | 0.04 | 2 | Base Mounted | Double | Plug-in | 0.005 | 0.005 | K4M07 |
| 0 | 120 | 0.04 | 2 | Base Mounted | Double | PCB | 0.005 | 0.005 | K4M08 |

* Lead wire: 11" lead wire. Plug-in: Connector with 19" leads, indicator light and surge suppressor.
PCB: connector with studs.

K4M VALVE VOLTAGES

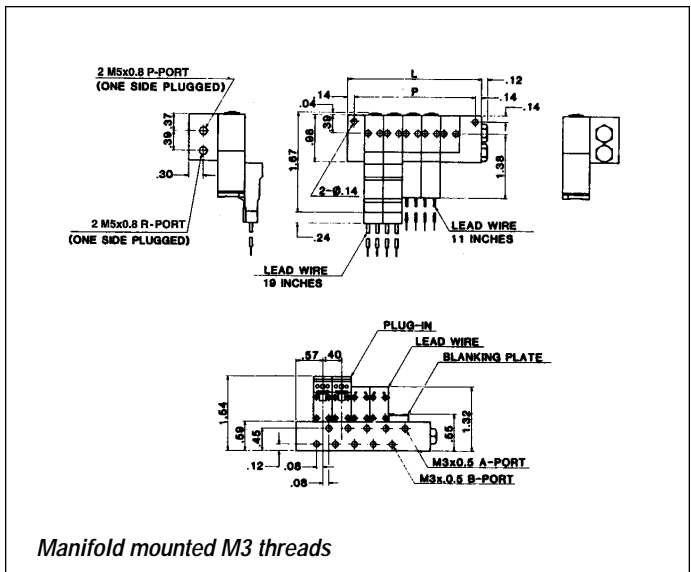
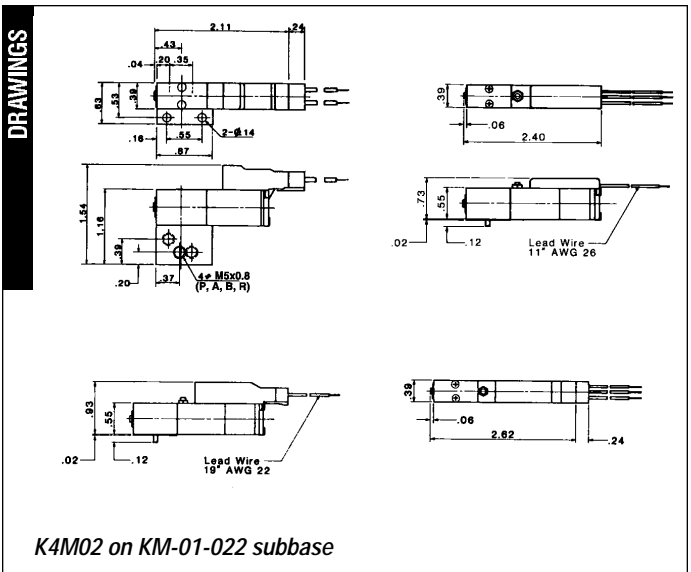
| Voltage | K4M 2.0 Watt |
|-------------|--------------|
| 5VDC | NA |
| 6VDC | NA |
| 12VDC | * |
| 24VDC | * |
| 48VDC | NA |
| 24VAC/60Hz | NA |
| 120VAC/60Hz | NA |

* Valves may be ordered for use with these specific voltages.

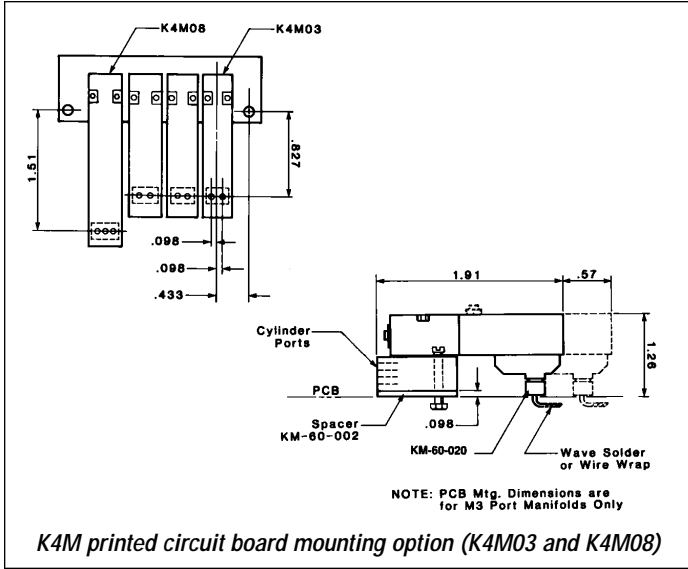
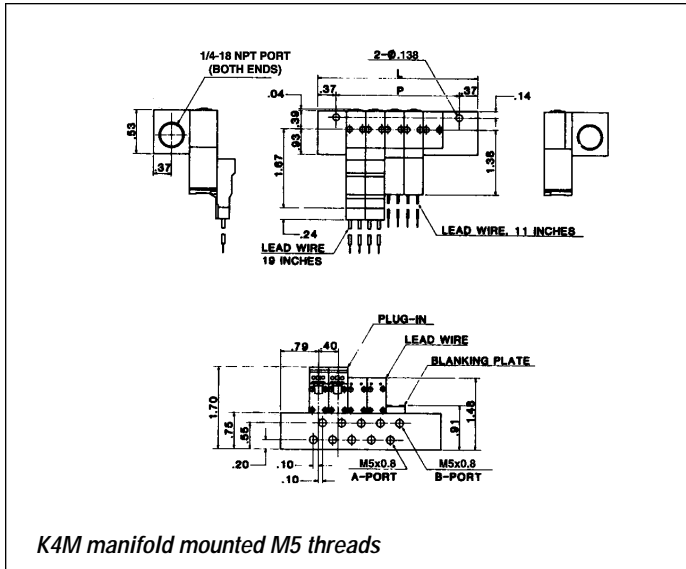
K4M VALVE MANIFOLDS

| Manifold Type | Cylinder Port Size* | | Manifold Assem. Dim. M3 Threads | | Manifold Assem. Dim. M5 UNF Threads | |
|----------------------------------|---------------------|-----------|---------------------------------|------------|-------------------------------------|------------|
| | M3 | M5 | M3 Threads | | M5 UNF Threads | |
| | | | L (inches) | P (inches) | L (inches) | P (inches) |
| Subbase | KM-01-001 | KM-01-002 | - | - | - | - |
| 2-Station | KM-01-003 | KM-01-004 | 1.61 | 1.34 | 2.09 | 1.34 |
| 3-Station | KM-01-005 | KM-01-006 | 2.01 | 1.73 | 2.48 | 1.73 |
| 4-Station | KM-01-007 | KM-01-008 | 2.40 | 2.13 | 2.87 | 2.13 |
| 5-Station | KM-01-009 | KM-01-010 | 2.80 | 2.52 | 3.27 | 2.52 |
| 6-Station | KM-01-011 | KM-01-012 | 3.19 | 2.91 | 3.66 | 2.91 |
| 7-Station | KM-01-013 | KM-01-014 | 3.58 | 3.31 | 4.06 | 3.31 |
| 8-Station | KM-01-015 | KM-01-016 | 3.98 | 3.70 | 4.45 | 3.70 |
| 9-Station | KM-01-017 | KM-01-018 | 4.37 | 4.09 | 4.84 | 4.09 |
| 10-Station | KM-01-019 | KM-01-020 | 4.76 | 4.49 | 5.24 | 4.49 |
| Station Blanking Plate | KM-16-001 | KM-16-001 | | | | |
| Mounting Bracket** | KM-19-001 | KM-19-001 | | | | |
| Mounting Spacer for PCB Mounting | See Accessories | | | | | |
| Valve Mounting kit | KM-60-023 | | | | | |

* See dimensional diagrams for inlet and exhaust port sizes.
**Supplied on all body ported valves.



K Series Four-Way Valves



K SERIES K4P VALVES – FOUR-WAY, PILOT OPERATED

| Pressure Range (PSI) | | Cv | | Watts | | Electrical* Connections | Response Time (seconds) | | Model Number |
|----------------------|-----|----------|----------|-------|-----|-------------------------|-------------------------|-------|--------------|
| Min | Max | P to Cyl | Cyl to R | DC | AC | | On | Off | |
| 21 | 100 | 0.02 | 0.02 | 0.5 | 0.5 | Lead Wire | 0.007 | 0.008 | K4P01 |
| 21 | 100 | 0.02 | 0.02 | 0.5 | 0.5 | Plug-in | 0.007 | 0.008 | K4P02 |
| 21 | 114 | 0.02 | 0.02 | 1.8 | 1.8 | Plug-in | 0.006 | 0.008 | K4P03 |
| 21 | 114 | 0.02 | 0.02 | 1.8 | 1.8 | Lead Wire | 0.006 | 0.008 | K4P04 |

* Lead wire: 11" lead wire. Plug-in: Connector with 19" leads, indicator light and surge suppressor.

K4P VALVE VOLTAGES

| Voltage | K4P .5 Watt | 1.8 Watts |
|-------------|-------------|-----------|
| 5VDC | * | NA |
| 6VDC | NA | * |
| 12VDC | * | * |
| 24VDC | * | * |
| 48VDC | NA | NA |
| 24VAC/60Hz | NA | * |
| 120VAC/60Hz | * | * |

* Valves may be ordered for use with these specific voltages.

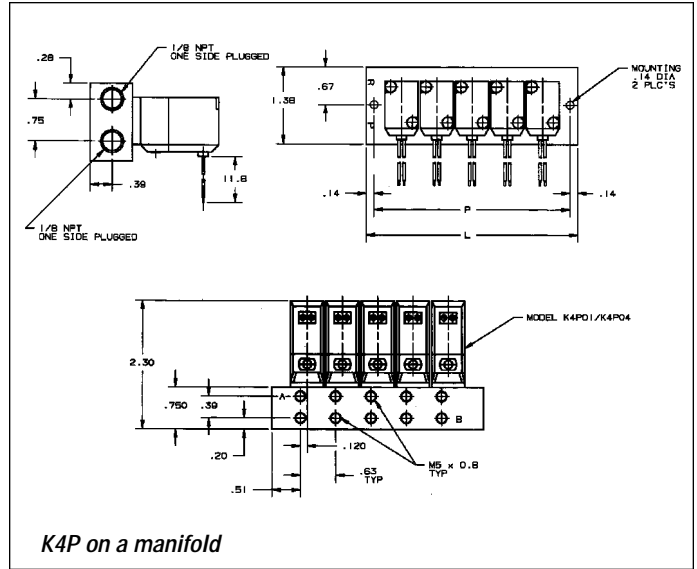
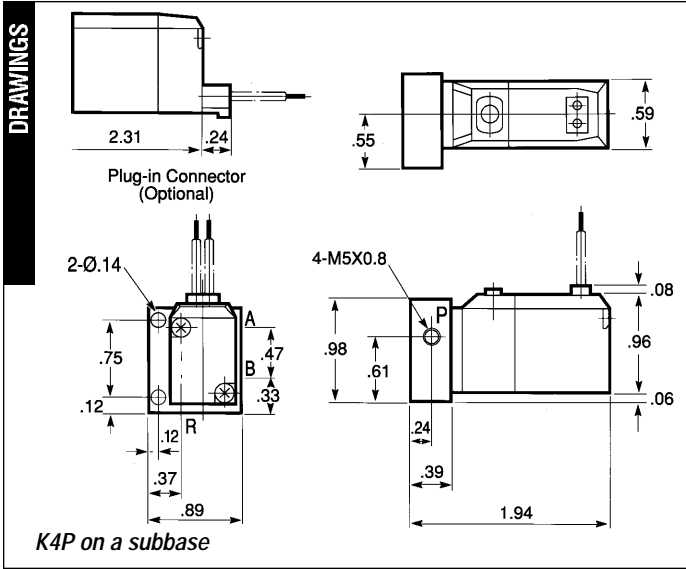
K4P VALVE MANIFOLDS

| Type | K4PCatalog Number | K4PManifold Dimensions | |
|------------------------|-------------------|------------------------|-----------|
| | | P(inches) | L(inches) |
| Subbase | K01-006 | - | - |
| 2-Station | K01-026 | 1.61 | 1.89 |
| 3-Station | K01-027 | 2.24 | 2.52 |
| 4-Station | K01-007 | 2.87 | 3.15 |
| 5-Station | K01-028 | 3.50 | 3.78 |
| 6-Station | K01-008 | 4.13 | 4.41 |
| 7-Station | K01-029 | 4.76 | 5.04 |
| 8-Station | K01-009 | 5.39 | 5.67 |
| 9-Station | K01-030 | 6.00 | 6.30 |
| 10-Station | K01-010 | 6.65 | 6.93 |
| Station Blanking Plate | K16-001 | | |

Subbases contain all M5 ports. Multi-station manifolds have common pressure and exhaust ports with 1/8" NPT threads; cylinder ports are M5.

K Series Four-Way Valves

DRAWINGS



K SERIES K4R, K4RL VALVES

| Pressure (PSI) | | Cv | Watts | Exhaust Porting* | Electrical Connection# | Response Time (seconds) | | Model Number |
|---------------------------------------|-----|-----|-------|------------------|------------------------|-------------------------|-------|--------------|
| Min | Max | | | | | On | Off | |
| Single Solenoid, 2-position | | | | | | | | |
| 28 | 100 | 0.2 | 0.5 | STD | Lead wire | 0.02 | 0.02 | K4R01 |
| 28 | 100 | 0.2 | 0.5 | STD | Plug-in | 0.02 | 0.04 | K4R02 |
| 28 | 100 | 0.2 | 0.5 | I | Lead wire | 0.02 | 0.02 | K4R03 |
| 28 | 100 | 0.2 | 0.5 | I | Plug-in | 0.02 | 0.04 | K4R04 |
| Double Solenoid, 2-Position | | | | | | | | |
| 28 | 100 | 0.2 | 0.5 | STD | Lead wire | 0.015 | 0.015 | K4R05 |
| 28 | 100 | 0.2 | 0.5 | STD | Plug-in | 0.015 | 0.015 | K4R06 |
| 28 | 100 | 0.2 | 0.5 | I | Lead wire | 0.015 | 0.015 | K4R07 |
| 28 | 100 | 0.2 | 0.5 | I | plug-in | 0.015 | 0.015 | K4R08 |
| Latching, Single Solenoid, 2-position | | | | | | | | |
| 28 | 100 | 0.2 | 1.8 | STD | Lead wire | 0.02** | 0.02 | K4RL01## |
| 28 | 100 | 0.2 | 1.8 | STD | Plug-in | 0.02 | 0.02 | K4RL02## |

* I = individual tapped exhaust in valve body. STD = Standard exhaust through base.
 # Lead wire: 11" lead wire. Plug-in: Connector with 19" leads, indicator light and surge suppressor.

**Minimum energization time for K4RL valves is 0.05 seconds.
 ##K4RL valves suitable for 5V, 12V and 24VDC service only.

K SERIES K5R VALVES

| Pressure (PSI) | | Cv | Watts | Exhaust Porting* | Electrical Connection# | Response Time (seconds) | | Model Number |
|---|-----|------|-------|------------------|------------------------|-------------------------|------|--------------|
| Min | Max | | | | | On | Off | |
| Double Solenoid, 3-position, all ports blocked in center position | | | | | | | | |
| 28 | 100 | 0.14 | 0.5 | STD | Lead wire | 0.02 | 0.03 | K5R01 |
| 28 | 100 | 0.14 | 0.5 | STD | Plug-in | 0.02 | 0.04 | K5R02 |
| Double Solenoid, 3-Position, cylinder ports open to exhaust in center position | | | | | | | | |
| 28 | 100 | 0.14 | 0.5 | STD | Lead wire | 0.02 | 0.03 | K5R03 |
| 28 | 100 | 0.14 | 0.5 | STD | Plug-in | 0.02 | 0.04 | K5R04 |
| Double Solenoid, 3-Position, cylinder ports open to pressure in center position | | | | | | | | |
| 28 | 100 | 0.14 | 0.5 | STD | Lead wire | 0.02 | 0.03 | K5R05 |
| 28 | 100 | 0.14 | 0.5 | STD | Plug-in | 0.02 | 0.04 | K5R06 |

* = individual tapped exhaust in valve body. STD = Standard exhaust through base.
 # Lead wire: 11" lead wire. Plug-in: Connector with 19" leads, indicator light and surge suppressor.

K Series **Four-Way** Valves

K4R, K4RL, K5R VALVE VOLTAGES

| Voltage | K4R | K4RL | K5R |
|-------------|---------|-----------|----------|
| | .5 Watt | 1.8 Watts | 0.5 Watt |
| 5VDC | * | * | * |
| 6VDC | NA | NA | NA |
| 12VDC | * | * | * |
| 24VDC | * | * | * |
| 48VDC | NA | NA | NA |
| 24VAC/60Hz | * | NA | * |
| 120VAC/60Hz | * | NA | * |

* Valves may be ordered for use with these specific voltages.

K4R, K4RL, K5R VALVE MANIFOLDS

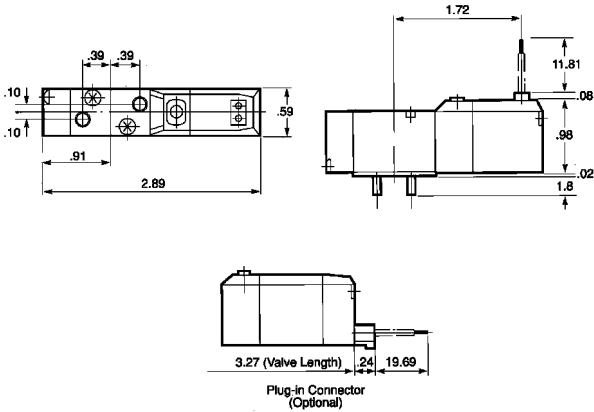
| Type | K4R/K5R Manifolds | | Manifold Dimensions | |
|------------------------|-------------------|--------------------|---------------------|-----------|
| | Standard Porting | Individual Porting | P(inches) | L(inches) |
| Subbase | KR-01-001 | Not Available | 0.94 | 1.42 |
| 2-Station | KR-01-002 | KR-01-011 | 1.61 | 1.89 |
| 3-Station | KR-01-003 | KR-01-012 | 2.24 | 2.52 |
| 4-Station | KR-01-004 | KR-01-013 | 2.87 | 3.15 |
| 5-Station | KR-01-005 | KR-01-014 | 3.50 | 3.78 |
| 6-Station | KR-01-006 | KR-01-015 | 4.13 | 4.41 |
| 7-Station | KR-01-007 | KR-01-016 | 4.76 | 5.04 |
| 8-Station | KR-01-008 | KR-01-017 | 5.39 | 5.66 |
| 9-Station | KR-01-009 | KR-01-018 | 6.02 | 6.30 |
| 10-Station | KR-01-010 | KR-01-019 | 6.65 | 6.93 |
| Station Blanking Plate | KR-16-001 | KR-16-001 | - | - |
| Valve Mounting Kit* | KR-60-S001 | KR-60-S001 | - | - |

* Mounting kits consist of 10 gaskets and 20 mounting screws.

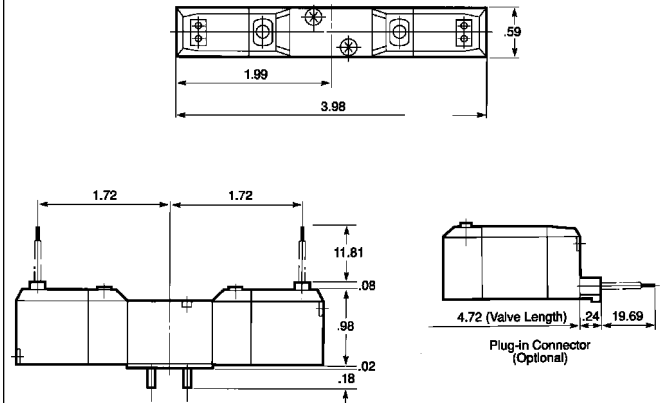
Subbases contain all M5 ports. Multi-station manifolds have common pressure and exhaust ports with 1/8" NPT threads; cylinder ports are M5 x 0.8.

K Series Four-Way Valves

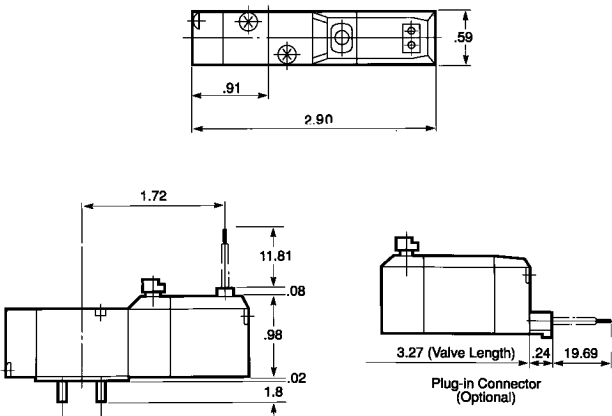
DRAWINGS



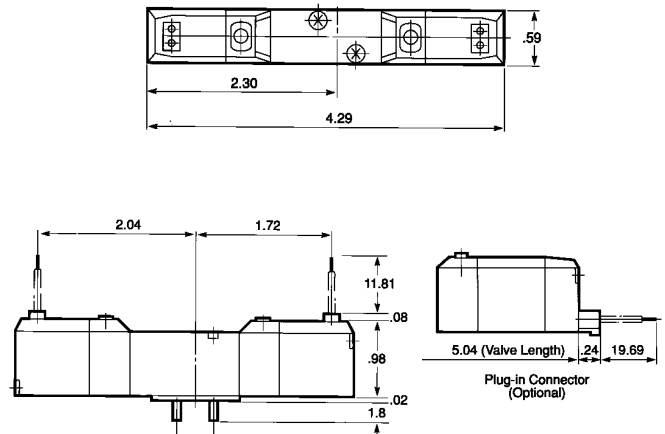
Single solenoid K4R valve



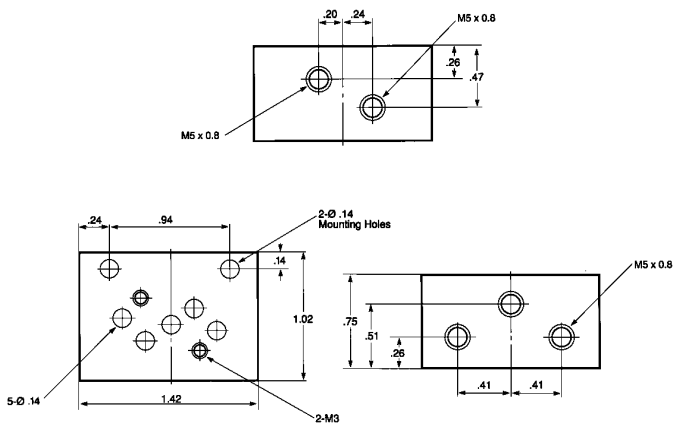
Double solenoid K4R valve



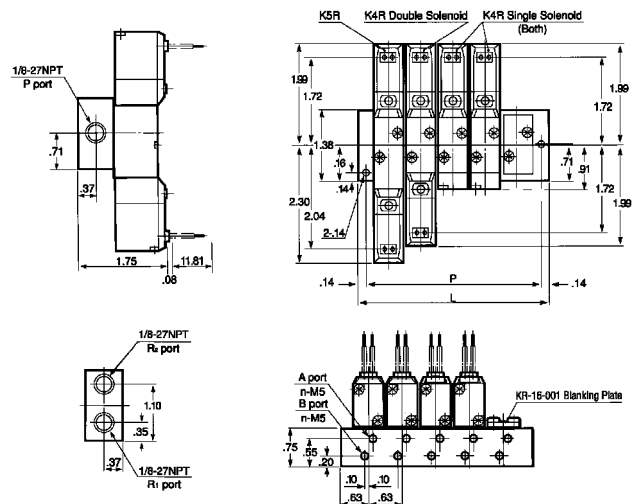
K4RL valve



K5R valve



KR-01-001 subbase



K5R and K4R valves on a manifold

EPP3 Electropneumatic Pressure Regulator

SPECIFICATIONS

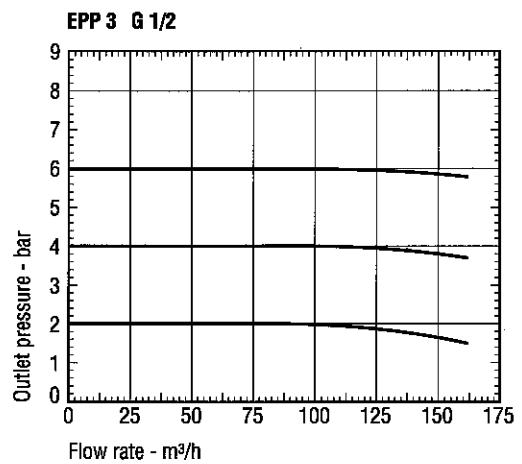
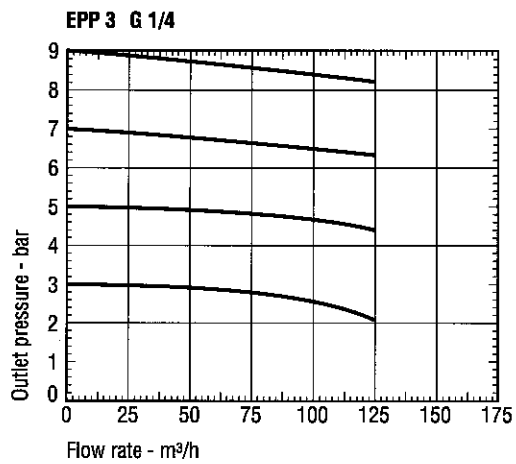
- Fluid**
- Lubricated or non-lubricated air and neutral gases recommended filtration: 25-50u
- Temperature Range**
- Ambient – 10°F (0 to 50°C)
 - Fluid – 10°F (0 to 50°C)
- Inlet Pressure Range**
- 15 to 175 PSI (1 to 12 bar). The inlet pressure must always be at least 15 PSI above the regulated pressure value.
- Outlet Pressure Range**
- 3 to 150 PSI (0.2 to 10 bar)
- Hysteresis**
- 1.5 PSI (-100 mbar). Factory set up.
- Linearity**
- 1% f.s.o.
- Air Consumption at Constant Control Signal**
- 0
- Voltage**
- 24 VDC + 15% (Max. ripple 1 V)
- Power Consumption**
- Max. 6 W with 24 VDC and constant changes of the control signal; <1W without change of control signal.
- Control Signal**
- U=Analog 0-10V Impedance:10k
 - I=Analog 4-20 mA Impedance:0.5k
- Outlet Sensor Signal**
- A)** Proportional pressure outlet signal 0-10 V from integrated sensor (recommended load resistance 0.5k)
 - B)** Proportional pressure outlet signal 4020 mA from integrated sensor (recommended load resistance 0.5 k)
 - C)** "Alarm" output signal 0/24 V with adjustable triggering level. (Difference between control signal and sensor pressure signal). (Imax = 40 mA)
 - Factory set-up: Diff. signal = + 0.8 V to + 1 V
 - Possible set-up: Diff. signal = + 0.1 V to + 5 V
 To neutralize the alarm output signal during the control signal changes, the use of a synchronized time lag relay is required.
- Indicative Response Time**
- With a volume of 330 cm3 at the outlet of the regulator.
 - Filling: 29 to 72 PSI (2 to 4 bar) 29 to 116 PSI (2 to 8 bar)
 - Step Response: ~60 ms ~120 ms
 - Emptying: 72 to 29 PSI (4 to 2 bar) 116 to 29 PSI (8 to 2 bar)
 - Step Response: ~70 ms ~130 ms
- Safety Position**
- In case of control failure or if it is less than 1% of its full scale value, the regulated pressure drops automatically to 0 bar (atmospheric pressure). In case of voltage supply failure, the regulated pressure will be kept constant (with eventual discrepancy due to loss of pressure in the servo-chamber).
- Electrical Connection**
- 4 Screw terminals under the protection cover with Pg 13.5 cable gland or through DIN 43651 connector (6 P+E).
- Life Expectancy**
- >50 Million changes of control signal steps. NOTE: It is compulsory to set the control signal at 0 V or 4 mA each time the air pressure supply is turned off (during the night or weekend). When the air pressure supply cannot be fully exhausted, it is necessary to assure that the deviation between the control value and the inlet pressure remains smaller than 15 PSI (1 bar).
- Mounting position**
- Indifferent (recommended position: upright; electronic part on top).
- Resistance to Vibration**
- 30 g in all directions
- Degree of Protection**
- IP 65 (Equivalent to NEMA 4).
- External Sensors**
- All pressure sensors with the following characteristics are compatible with the EP-transducer.
 - Sensitivity: 15 PSI (0.5 V/bar) up to 15 PSI (10 V/bar)
 - Zero Offset: 15 PSI (-3 V/bar) to 15 PSI (10 V/bar)
- Assembly**
- Silicone free
- Electromagnetic Compatibility**
- In accordance with IEC 801-4 part 4 standards.
- Typical Applications**
- Paint spraying equipment
 - Robotic welding
 - Brake and clutch control

SUMMARY OF TYPES

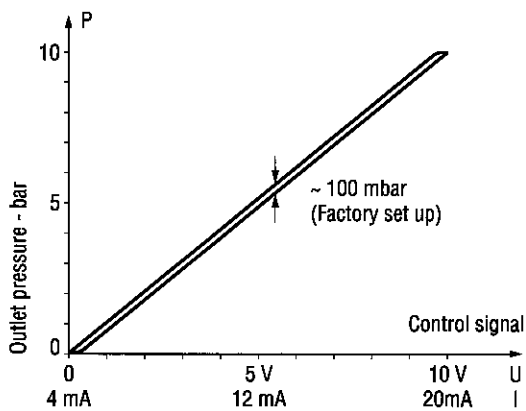
| | Pressure Range (PSI) | Connection NPT | With Integrated Pressure Sensor | Entry option for External Sensor Signal | | Outlet Signal Option | | | Electrical Connection | |
|--------|----------------------|----------------|---------------------------------|---|---------|----------------------|-------------------|----------------------|------------------------|------------------------|
| | | | | Feedback Signal | | Without | 0-10 V 4-20 mA | 0-10 V 0/24 Alarm | DIN 43651 Connector | Cable Gland Pg 13.5 |
| | | | | 0-10 V | 4-20 mA | | | | | |
| EPP3J0 | 21 U/1 100 10 | 150 | 1/4 | x | | | | | | |
| | 21 U/1 600 10 | 150 | 1/4 | x | | | x | | x | |
| | 21 U/1 700 10 | 150 | 1/4 | x | | | | x | x | |
| EPP3J0 | 23 U/1 130 10 | 150 | 1/4 | | x | | | | | x |
| | 24 U/1 130 10 | 150 | 1/4 | | | x | | | | x |
| EPP3J0 | 41 U/1 100 10 | 150 | 1/2 | x | | | | | | x |
| | 41 U/1 600 10 | 150 | 1/2 | x | | | x | | x | |
| | 41 U/1 700 10 | 150 | 1/2 | x | | | | x | x | |
| EPP3J0 | 43 U/1 130 10 | 150 | 1/2 | | x | | | | | x |
| | 44 U/1 130 10 | 150 | 1/2 | | | x | | | | x |

FLOW DATA

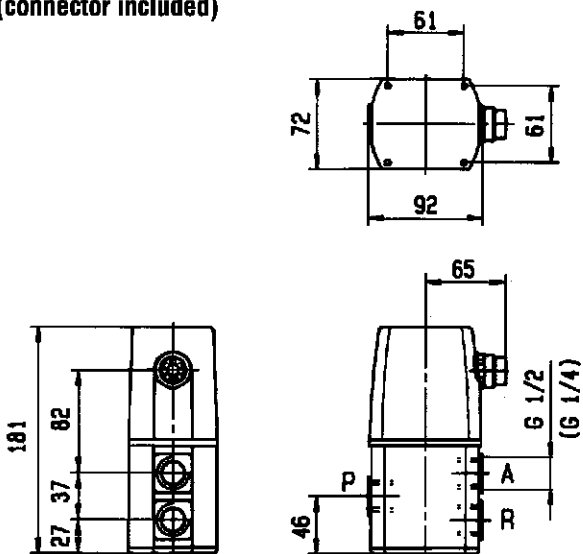
Outlet Pressure In Function of Flow at Constant Control Signal (P1 = 10 bar)



HYSTERESIS DIAGRAM



**EPP3JC...130/600/700... with
DIN circular plug-in connection
6 P + E (connector included)**



Technical Information

Introduction

Solenoid valves are highly engineered products which can be utilized in many diverse and unique fluid system applications. In addition to operational functionality, selecting the best product for a given application must also consider safety, reliability, media compatibility and suitability for the operating environment. This section provides a brief overview of the components and functional varieties of solenoid valves available from Skinner Valve. A more detailed and complete discussion on solenoid valve technology is provided in the Skinner Valve Technical Reference Manual.

General Information

Valve Construction and Basic Operation

A solenoid valve is operated by opening or closing an orifice in the valve body which permits or prevents flow through the valve. The orifice is opened or closed through the use of a plunger that is raised and lowered within a sleeve tube by energizing a solenoid. The bottom and /or top of the plunger contain soft elastomeric seals, which close off the orifice in the body or the stop respectively.

The solenoid assembly consists of a coil, plunger and sleeve assembly. In a normally closed valve a plunger return spring holds the plunger against the orifice, preventing flow through the valve. When current flows through the coil, a magnetic field is produced which turns the stop into an electromagnet that attracts the magnetic plunger. This action compresses the return spring, allows the body orifice to open and permits fluid to flow through the valve.

Effective operation of a solenoid valve is

dependent upon the efficiency of the magnetic circuit through which the flux travels. If the flux path is designed with a high level of magnetic efficiency, (i.e., with low resistance), the level of available magnetic force is improved. This is accomplished by the use of magnetically, highly conductive materials throughout the circuit.

Pressure Vessel

The combination of a body, sleeve assembly and plunger make a pressure vessel. The pressure vessel is the device that contains the process fluid. It can be completely enclosed, permitting removal of the enclosure and coil without intruding on the process stream.

The body of a valve contains the inlet and outlet ports and is the part through which flow passes when a valve is open. For most valves the fluid passes through an orifice, which is opened and closed as a result of plunger actuation. Solenoid valves are available in a wide variety of body materials. Brass, stainless steel, aluminum and plastic are some of the materials from which most valve bodies are made. The material for any given application is generally dictated by the operating environment, the process fluid and economics.

The sleeve assembly consists of three parts- the flange, tube, and stop. The flange and stop are made of magnetic material to contain and direct magnetic flux through the plunger. The tube is made of non-magnetic material to make certain that the flux is directed through the plunger rather than around it.

Since the inside surface of the sleeve assembly contacts the process fluid, it is subjected to the same line pressure as the valve body. To provide the required strength and integrity, Skinner utilizes a welded sleeve assembly. In addition to withstanding high pressures without harm, the welded construction allows the flux gap to be minimized. This

increases the efficiency of the magnetic circuit and also allows for high cycle life.

The plunger is always the element that opens and closes a valve. Several different plunger configurations have been developed to support the wide variety of solenoid valve designs required to fill the needs of our customers.

Plunger seals may also be made from a variety of materials. Seal material selection depends on the particular process fluid, fluid temperature, operating pressure differential, leakage rate and cycle life requirements. Typical seal materials are NBR, FKM, Ethylene Propylene (EPDM), Neoprene and PTFE. Skinner Valve also uses a special synthetic gem material (RUBY) in applications of high temperature and/or pressure conditions.

Skinner Valve plunger assemblies, when appropriate, use floating top and bottom seals to enhance valve performance. Floating seals permit the plunger to generate a larger actuation force to open against the pressure differential in the valve. This enables the valve to operate at higher pressure ratings.

Coils and Enclosures

Solenoid valve coils are the heart of the operating mechanism of a valve. A coil is the component of an electromagnet which, when supplied with an electric current (AC or DC), produces a magnetic field. This generates a magnetic force that attracts the plunger.

Solenoid valve coil enclosures perform three important functions. The enclosure is necessary to complete the electromagnetic flux path of the solenoid, provide protection from contact with the coil, and protect the coil against environmental conditions. The coil enclosure may also provide a means for accommodating a variety of electrical connections. Skinner Valve offers enclosures of various types to suit most applications.

Coils are rated by insulation classes that correspond to a maximum allowable coil temperature. The maximum allowable coil temperature is the temperature to which the coil can be exposed without experiencing thermal degradation of the magnet wire insulation. These classes and corresponding maximum temperature levels are:

| Class | Nominal Class Temperature | Permissible Temp. by Change of Resistance Method (UL) | Temp. Rise Above 25°C (77°F) Ambient Temp. |
|-------|---------------------------|---|--|
| A | 105°C (221°F) | 110°C (230°F) | 85°C (153°F) |
| B | 130°C (266°F) | 120°C (248°F) | 95°C (171°F) |
| F | 155°C (311°F) | 140°C (284°F) | 115°C (207°F) |
| H | 180°C (356°F) | 160°C (320°F) | 135°C (243°F) |

Coils meeting Classes F and H are sometimes referred to as "High Temperature Coils". These ratings are summarized graphically in Figure 1.

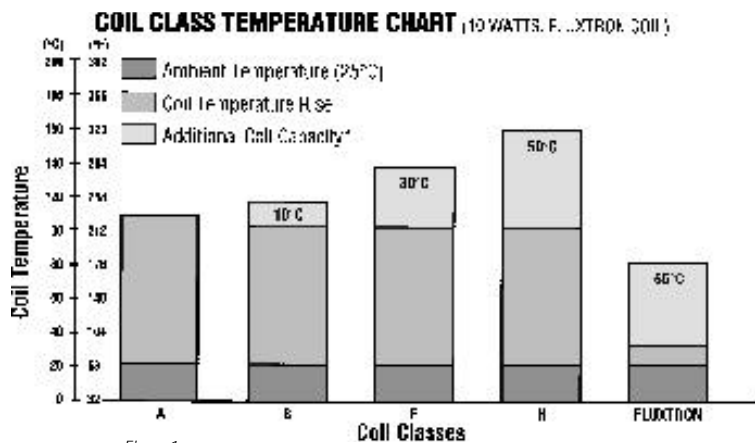


Figure 1

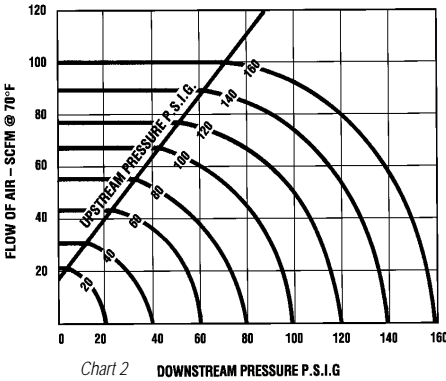
Valve Sizing— Determining the Flow Rate of a Valve*

Air and Gas Service

To properly size a valve for air or gas service, four specific parameters must be known:

- Upstream pressure (inlet pressure to the valve)
- Pressure differential (or downstream pressure, the outlet pressure of the valve)
- Actual flow through the valve in SCFM, or Cv required to yield the desired flow
- The gas that will be flowing through the valve, and its specific gravity

With these parameters known, refer to chart (1) or (2). These charts provide flow (in SCFM) for a valve operating on air with a Cv Factor of 1. The charts contain identical information, but chart (2) should be used for valves with lower pressure and flow.



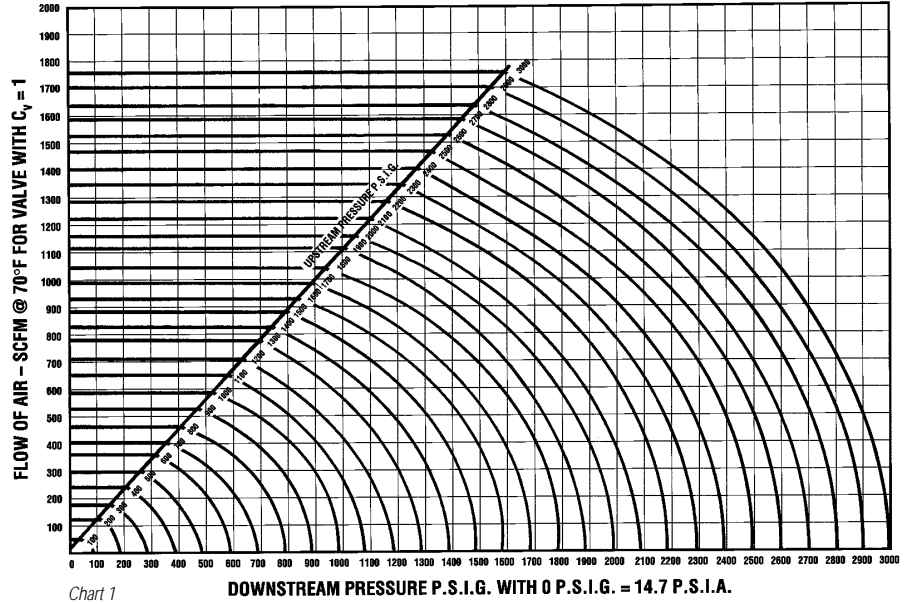
Steps to Determine Flow:

1) Locate the downstream pressure (outlet pressure, or upstream pressure minus the pressure differential) on the bottom scale of the chart.

2) Read vertically up the chart until the downstream pressure intersects the upstream pressure (represented by a family of curved lines.)

3) Read horizontally across the graph to the intersection with the left scale, "Flow in SCFM @ 70°F". The value indicated at this point on the scale is the flow of air through a valve with a Cv of 1.

4a) To determine the flow of a gas other than air at 70°F, use the correction factors listed below, (Air Flow x Correction Factor = Gas Flow). If the correction factor is not known it can be calculated by using the specific gravity of the gas in the following equation:



Correction Factor = the square root of (1/specific gravity)

| | |
|-----------|------|
| Acetylene | 1.05 |
| Ammonia | 1.30 |
| Argon | 0.85 |
| Hydrogen | 3.79 |
| Methane | 1.34 |
| Neon | 1.20 |
| Nitrogen | 1.02 |
| Oxygen | 0.95 |

4b) For selection of a valve with a different flow, simply divide the desired flow rate by the flow rate calculated from the graph to determine the correct Cv. For example, if an air flow of 150 SCFM was found from the graph and the application needs 450 SCFM, choose a valve with a Cv equal to 450/150, or 3.

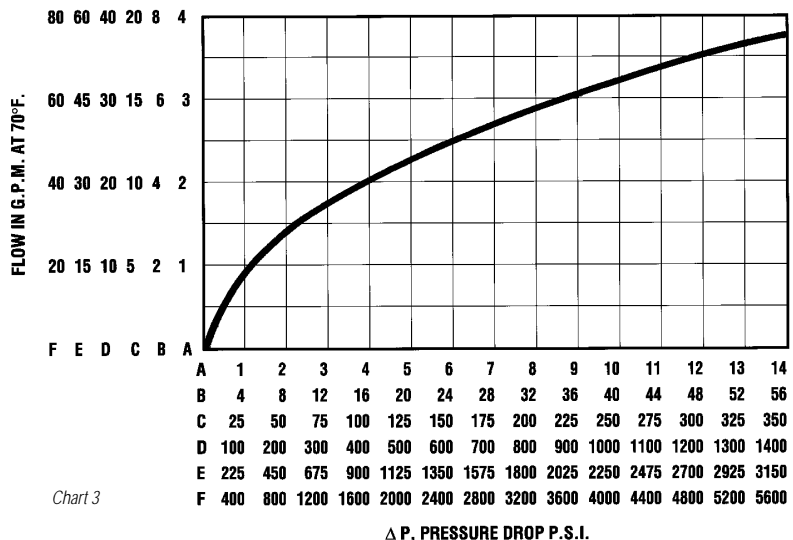
Liquid Service

Sizing a valve for liquid service is similar to that for gas service, including the required information:

- Upstream pressure (inlet pressure to the valve)
- Pressure differential (or downstream pressure, the outlet pressure of the valve)
- Actual flow through the valve in GPM, or Cv required to yield the desired flow
- The liquid that will be flowing through the valve, and its specific gravity

With these parameters known, refer to chart (3). This chart provides flow (in GPM) for a valve operating on water with a Cv factor of 1.

WATER FLOW CHART FOR VALVE WITH Cv FACTOR = 1



Δ P, PRESSURE DROP P.S.I.

Steps to Determine Flow:

1) Locate the pressure drop through the valve (upstream pressure minus downstream pressure) on one of the bottom scales of the chart. Note the letter of the scale that indicates the pressure drop (A, B, C, D, or E).

2) Read vertically up the chart until it intersects the curve on the chart.

3) Read horizontally from this point until the left scale is reached. This point on the corresponding scale (once again, A, B, C, D, or E) indicates the flow in GPM. The value indicated is the flow of water through a valve with a Cv of 1.

4a) To determine the flow of a different liquid, use the correction factors listed below. (Water Flow x Correction Factor = Fluid Flow). If the correction

factor is not known it can be calculated by using the specific gravity of the fluid in the following equation:

Correction Factor = the square root of (1/specific gravity)

| | |
|---------------|-------|
| Alcohol | 1.123 |
| Benzene | 1.052 |
| Gasoline | 1.204 |
| Kerosene | 1.111 |
| Hydraulic Oil | 1.087 |

4b) For selection of a valve with a different flow, simply divide the desired flow rate by the flow rate calculated from the graph to determine the correct Cv. For example, if a water flow of 150 GPM was found from the graph and the application needs 450 GPM, choose a valve with a Cv equal to 450/150 or 3.

Fluid Compatibility Chart

The fluid compatibility chart here and on the next page is presented merely as a guide. Skinner Valve has compiled this chart from available information obtained from laboratory tests. Actual valve applications may be more severe than the laboratory conditions, so the information presented here should be used as a guideline in choosing materials that are compatible with the fluid to be controlled and the ambient conditions of the installation. This information should by no means be used alone in determining the proper materials of construction of a valve. In order to ensure that the best valve is chosen for a particular application, Form PAC 011-89 application data sheet should be completed and submitted to Skinner for correct determination of the optimum valve.

FLUID COMPATIBILITY

| Fluids | Metals | | | | | | | | Elastomers and Plastics+ | | | | | | | | | | |
|--|----------|-------|--------|--------|--------------------------|-----|------|------|--------------------------|-----|-------|-------|--------------------|------|------|----|------|-------|--|
| | Aluminum | Brass | Copper | Silver | Stainless Steel | | | EPDM | FKM | NBR | Nylon | PCTFE | PSF Polysulfone | Ruby | PFPM | CR | PTFE | Noryl | |
| | | | | | 18-8, 302, 303, 304, 305 | 316 | 430F | | | | | | | | | | | | |
| Acetic Acid 8% | S | NR | NR | S | S | S | S | S | NR | NR | S | S | S | S | S | S | S | S | |
| Acetone | S | S | S | S | S | S | S | S | NR | NR | S | S | NR | S | S | NR | S | NR | |
| Acetylene, Dry | S | S | NR | S | S | S | S | S | S | S | S | S | NR | U | S | NR | S | U | |
| Air, Lubricated 120°C (248°F) | S | S | S | S | S | S | S | NR | S | NR | NR | S | NR | S | S | NR | S | S | |
| Air, Lubricated 82°C (180°F) | S | S | S | S | S | S | S | NR | S | S | S | S | S | S | S | NR | S | S | |
| Air, Unlubricated 120°C (248°F) | S | S | S | S | S | S | S | NR | S | NR | NR | S | NR | S | S | NR | S | S | |
| Air, Unlubricated 82°C (180°F) | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| Alcohol, Ethyl (Ethanol) | T | F | F | S | S | S | S | S | S | NR | S | S | U | S | S | S | S | F | |
| Alcohol, Methyl (Methanol) | T | F | F | S | S | S | NR | NR | NR | S | S | S | U | S | S | S | S | F | |
| Ammonia Gas, Anhydrous 20 | NR | NR | F | S | S | S | S | S | NR | S | S | S | S | S | S | S | S | S | |
| Argon | S | S | S | S | S | S | S | U | S | S | U | S | U | U | S | S | S | U | |
| Beer | S | U | F | S | S | S | S | U | S | S | U | S | U | S | U | U | S | S | |
| Benzene | S | S | S | S | S | S | S | NR | S | NR | S | S | NR | S | S | NR | S | NR | |
| Boric Acid | NR | NR | F | S | S | S | S | NR | S | NR | S | S | T | S | S | S | S | S | |
| Citric Acid 10% | NR | NR | NR | S | S | S | S | S | S | S | S | S | T | S | S | S | S | S | |
| Cod Liver Oil | S | S | U | S | S | S | S | S | S | S | S | S | S | S | U | NR | S | U | |
| Coffee | S | S | U | S | S | S | S | S | S | S | S | S | S | S | U | S | S | U | |
| Diesel Fuel | S | S | S | S | S | S | S | NR | S | T | S | S | S | S | S | NR | S | NR | |
| Ethylene Glycol (Antifreeze) | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| Freon 12 | S | S | S | S | S | S | S | NR | U | S | S | S | S | S | NR | S | S | NR | |
| Freon 22 | S | S | S | S | S | S | S | U | NR | NR | S | S | S | S | S | S | S | NR | |
| Fuel Oil | S | S | F | S | S | S | S | NR | S | T | S | S | S | S | S | NR | S | S | |
| Gasoline, Leaded | S | S | S | S | S | S | S | NR | S | S | S | S | U | S | S | NR | S | NR | |
| Gasoline, Unleaded | S | S | S | S | S | S | S | NR | S | NR | S | S | U | S | S | NR | S | NR | |
| Helium | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| Hydraulic Fluids - Fire Resistant Cellulose, Phosphate Ester | S | S | S | S | S | S | S | S | NR | NR | S | S | S | S | U | U | S | U | |
| Pydraul | S | S | S | S | S | S | S | NR | S | NR | S | S | S | S | U | NR | S | U | |
| Skydrol | S | S | S | S | S | S | S | S | NR | NR | S | S | S | S | U | U | S | NR | |
| Petroleum | S | S | S | S | S | S | S | NR | S | S | S | S | S | U | NR | S | NR | | |
| Jet Fuel | S | S | S | S | S | S | S | NR | S | T | S | U | U | S | S | NR | S | NR | |
| Kerosene | S | S | S | S | S | S | S | NR | S | S | S | S | S | S | S | NR | S | NR | |
| Ketones | T | T | U | U | T | S | T | S | NR | NR | S | T | NR | U | S | NR | S | NR | |
| Lard (Animal Fat) | S | S | T | S | S | S | S | F | S | S | S | U | U | U | S | NR | S | U | |
| Lead Acetate | NR | NR | NR | F | NR | NR | NR | S | T | NR | S | S | U | U | S | NR | S | F | |
| Linseed Oil | T | NR | NR | S | S | S | S | NR | S | S | S | U | S | U | S | NR | S | S | |
| Lime & Water | NR | NR | NR | U | NR | NR | NR | S | S | S | S | S | U | U | S | S | S | U | |
| Lubricating Oil | S | S | S | S | S | S | S | NR | S | S | S | S | S | S | S | NR | S | T | |
| Methane | S | S | S | S | S | S | S | NR | S | S | S | S | S | S | S | NR | S | U | |
| Methanol Alcohol-Methyl | S | S | NR | U | S | S | NR | S | NR | S | NR | S | S | S | S | T | S | T | |
| Methyl Ethyl Ketone (MEK) | S | S | S | S | F | S | F | S | NR | NR | S | S | S | S | S | NR | S | NR | |
| Mineral Spirits | S | S | S | S | S | S | S | NR | S | S | U | U | U | NR | NR | S | T | | |
| Motor Oil | S | S | S | S | S | S | S | NR | S | S | T | S | U | U | NR | T | S | S | |
| Naphtha | S | S | S | S | S | S | S | NR | S | S | S | S | S | S | S | NR | S | NR | |
| Natural Gas | S | S | S | S | S | S | S | NR | S | S | T | U | U | U | S | S | S | U | |
| Nickle Nitrate | NR | NR | NR | U | T | NR | NR | S | S | T | S | U | U | U | S | T | S | S | |

| Fluids | Metals | | | | | | | | Elastomers and Plastics+ | | | | | | | | | | |
|-----------------------------|----------|-------|--------|--------|-----------------------------|-----|------|------|--------------------------|-----|-------|-------|--------------------|------|------|----|------|-------|---|
| | Aluminum | Brass | Copper | Silver | Stainless Steel | | | EPDM | FKM | NBR | Nylon | PCTFE | PSF Polysulfone | Ruby | PFPM | CR | PTFE | Noryl | |
| | | | | | 18-8, 302, 303, 304, 305 | 316 | 430F | | | | | | | | | | | | |
| Nitrobenzene | T | NR | T | U | NR | S | NR | T | NR | NR | NR | T | U | U | S | NR | S | NR | |
| Nitrogen | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | T | S | U |
| Nitrous Oxide | NR | NR | S | U | T | T | T | T | T | S | NR | S | U | U | S | T | S | U | |
| n-Octyl Alcohol | U | U | U | U | U | U | U | S | T | T | U | U | U | U | S | T | S | U | |
| Olive Oil | S | S | U | U | S | S | NR | NR | S | S | T | U | U | U | S | NR | S | S | |
| Oxygen | S | S | S | S | S | S | S | S | S | NR | NR | S | NR | U | S | S | S | S | |
| Ozone | T | U | U | U | T | S | T | T | T | NR | NR | S | U | U | S | NR | S | U | |
| Perchloroethylene | S | F | F | S | F | S | F | NR | S | NR | S | S | NR | U | NR | NR | S | NR | |
| n-Propyl Acetone | U | U | U | U | U | U | U | S | NR | NR | U | U | U | U | S | NR | S | U | |
| Propyl Alcohol | S | S | NR | U | S | T | S | T | S | T | NR | U | U | U | S | T | S | U | |
| Pyridine | NR | NR | NR | U | S | S | NR | NR | NR | NR | NR | S | U | U | S | NR | S | T | |
| Pyrolyse | U | U | U | U | U | U | U | NR | S | NR | U | U | U | U | U | NR | U | U | |
| Quick Silver | U | U | U | U | U | U | U | S | S | S | T | U | U | U | U | S | S | U | |
| Red Oil | U | U | U | U | U | U | U | NR | T | S | T | U | U | U | S | NR | S | U | |
| Rust Inhibitors | U | U | U | U | U | U | U | U | S | S | U | U | U | U | U | NR | U | U | |
| Shellac | S | S | S | U | S | S | S | S | S | S | S | U | U | U | S | NR | S | U | |
| Silicone Oil | S | S | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | |
| Sodium Phosphates | NR | T | S | S | T | T | NR | T | T | S | NR | S | U | U | S | T | S | S | |
| Steam 148°C (298°F) | U | S | S | S | S | S | S | S | NR | NR | NR | S | NR | U | U | NR | S | S | |
| Steam 180°C (356°F) | NR | S | S | S | S | S | S | NR | NR | NR | NR | NR | NR | U | U | NR | S | T | |
| Stoddard Solvent | S | S | S | U | S | S | S | NR | S | S | T | S | U | U | S | NR | S | NR | |
| Sucrose Solution | U | U | NR | U | S | S | S | S | S | S | T | U | U | U | S | T | S | S | |
| Sulfur | S | NR | NR | U | T | T | T | S | S | NR | T | S | U | U | S | U | S | S | |
| Sulfur Hexafluoride | S | S | S | S | S | S | S | S | NR | NR | T | U | U | U | T | S | S | U | |
| Toluene | S | S | S | S | S | S | S | NR | S | NR | S | S | NR | U | S | NR | S | NR | |
| Trichloroethylene | T | NR | T | U | T | T | T | NR | T | NR | NR | NR | U | S | S | NR | S | NR | |
| Trimethylpentane | U | U | U | U | U | U | U | NR | S | S | T | U | U | U | S | NR | S | U | |
| Trisodium Phosphate | NR | NR | NR | F | T | T | T | S | S | F | T | S | U | U | S | F | S | S | |
| Turpentine | S | S | S | S | S | S | S | NR | F | S | S | S | U | U | S | NR | S | S | |
| Urea | T | U | U | S | S | F | U | T | T | T | T | U | U | U | U | T | S | S | |
| Varnish | S | T | S | U | S | S | S | NR | S | T | T | S | U | U | S | NR | S | U | |
| Vegetable Oil | S | S | S | U | S | S | S | NR | S | S | S | S | U | U | U | NR | S | U | |
| Vinegar | T | NR | NR | S | T | S | T | T | NR | T | NR | S | U | U | U | T | S | S | |
| Water, Boiler Feed | S | T | T | S | S | S | S | U | T | S | T | S | U | S | S | NR | S | U | |
| Water, Deionized, Distilled | S | T | T | S | S | S | S/T | S | S | T | S | S | S | S | S | NR | S | S | |
| Water, Fresh <82°C (180°F) | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | NR | S | S | |
| Water, Fresh <100°C (212°F) | T | S | S | S | S | S | S | S | S | NR | S | S | S | S | S | NR | S | U | |
| Water, Return Condensate | S | T | T | S | S | S | S | S | T | S | T | S | U | S | S | NR | S | U | |
| Water, Sea/Salt | NR | NR | F | S | T | S | NR | S | S | S | S | S | S | S | S | NR | S | S | |
| Whiskey | NR | T | NR | U | S | S | NR | S | S | S | S | S | U | U | S | S | S | S | |
| Wine | NR | NR | NR | U | S | S | T | S | S | S | S | S | U | U | S | S | S | S | |
| Xylene | S | S | S | S | S | S | S | NR | S | NR | S | S | NR | S | S | NR | S | NR | |
| Zinc Chloride | NR | NR | NR | F | NR | NR | NR | S | S | S | T | S | U | U | S | S | S | S | |
| Zinc Sulfate | NR | NR | NR | S | T | T | NR | S | S | T | U | T | U | U | S | T | S | S | |

NOTE: Please read the introduction section before using this chart. The following data should be used as a guide, and not as a final recommendation. When flammable gas applications are being considered, consult Skinner Valve at (860) 827-2300.

S=Satisfactory; T=Test to Verify; F=Fair; U=No Data Available, Unknown Compatibility; NR=Not Recommended Unless Otherwise Stated, Media are at 100% concentration and at Room Temperature.

SEAL MATERIAL DESIGNATIONS

| ASTM Designation | Commercial Designations and/or Trade Names | Seal Designation |
|------------------|--|------------------|
| NBR | Buna-N, Nitrile | N |
| EPDM | Ethylene Propylene | E |
| FKM | Fluorinated Hydrocarbon, Viton® | V |
| PCTFE | Kel-F | F |
| PTFE | Teflon®, Rulon® AR | T |
| PFPM | Kalrez | K |
| CR | Neoprene | C |

Viton® and Teflon® are Dupont Co. trademarks. Rulon® AR is a Furon-Advanced Polymers Division trademark.

Unit Conversion Charts

| Fractional Conversions | | |
|------------------------|--------|----------------|
| mm | inches | decimal inches |
| 0.79 | 1/32 | 0.031 |
| 1.59 | 1/16 | 0.063 |
| 2.38 | 3/32 | 0.094 |
| 3.18 | 1/8 | 0.125 |
| 3.97 | 5/32 | 0.156 |
| 4.76 | 3/16 | 0.188 |
| 5.56 | 7/32 | 0.219 |
| 6.35 | 1/4 | 0.250 |
| 7.14 | 9/32 | 0.281 |
| 7.94 | 5/16 | 0.313 |
| 8.73 | 11/32 | 0.344 |
| 9.53 | 3/8 | 0.375 |
| 10.3 | 13/32 | 0.406 |
| 11.1 | 7/16 | 0.438 |
| 11.9 | 15/32 | 0.469 |
| 12.7 | 1/2 | 0.500 |
| 13.5 | 17/32 | 0.531 |
| 14.3 | 9/16 | 0.563 |
| 15.1 | 19/32 | 0.594 |
| 15.9 | 5/8 | 0.625 |
| 16.7 | 21/32 | 0.656 |
| 17.5 | 11/16 | 0.688 |
| 18.3 | 23/32 | 0.719 |
| 19.1 | 3/4 | 0.750 |
| 19.8 | 25/32 | 0.781 |
| 20.6 | 13/16 | 0.813 |
| 21.4 | 27/32 | 0.844 |
| 22.2 | 7/8 | 0.875 |
| 23.0 | 29/32 | 0.906 |
| 23.8 | 15/16 | 0.938 |
| 24.6 | 31/32 | 0.969 |
| 25.4 | 1 | 1.000 |

Measures

1 inch = 25.4mm
 1 inch = 2.54cm
 1 U.S. gal = 3.785 liters
 1 Imperial gallon = 4.546 liters

Pressure

1 psi = 0.0703 Kg/square cm
 1 psi = 27.73 inches water (@60/F)
 1 psi = 2.036 inches of mercury (@32/F)
 1 psi = 51.7 mm of mercury (@32/F)
 1 psi = 0.0689 bar

Vacuum

1 torr = 1 mm mercury
 1 micron = 0.001 torr

Volumetric Flow Rate

1 Cv = 14.28 Kv
 1 gpm = 3.785 liters/min (U.S. gallon)
 1 cfm = 28.317 liters/min
 1 liter/min = 0.0353 cfm

Temperature

Degrees C = (Degrees F - 32) (5/9)
 Degrees F = (Degrees C) (9/5) + 32

Torque

1 in lb. = 0.113 Nm
 1 in lb. = 1.15 cm Kg

7000 SERIES TECHNICAL INFORMATION

The Skinner 7000 Series Numbering System

The Skinner 7000 Series numbering system was designed with our customers in mind. It is a significant numbering system that allows every user an easy method to select, identify and understand the product being purchased. In its significance, this numbering system provides a complete description of every valve, and makes specification, cross referencing, and substitution work a simple task.

Provided below is a complete set of numbering

system codes. The codes apply to three major valve components: the pressure vessel, enclosure and coil.

A complete valve number, including all available options will always be 20 digits in length.

7000 Series Numbering System—Digit Assignments

- Pressure Vessel 1-12
- Enclosure 13-14
- Coil and Voltage 15-20

A COMPLETE VALVE ASSEMBLY EXAMPLE

| Pressure Vessel | Enclosure | Coil | Voltage Code |
|-----------------|-----------|------|--------------|
| 71215SN1VN00 | N0 | C111 | P3 |

DESCRIPTION OF SIGNIFICANT DIGITS

| Digit | Title of Code | Description of Code |
|-------|--------------------|--|
| 1 | 7 | 7000 Series designation |
| 2 | Actuation | Type of operator design used to open/close the valve |
| 3 | Functional Type | Conventional description of flow capabilities (number of ways) |
| 4 | Flow Pattern | De-energized flow position/condition, e.g. normally closed |
| 5 | Family | A Honeywell designation associated with body geometry |
| 6 | Body Material | Material from which the body is constructed |
| 7 | Process Connection | The type of threading or connection to user media |
| 8 | Port Size | Size of the process connection |
| 9 | Orifice Size | Size or Cv factor of main fluid passage |
| 10 | Seal Material | Material of main orifice seal |
| 11,12 | Mechanical Options | Options to the pressure vessel |
| 13 | Enclosure | Type of housing surrounding the coil |
| 14 | Enclosure Options | Options to the housing and /or label |
| 15 | Coil Termination | Type of electrical connection |
| 16 | Coil Wattage/Class | Power level and temperature rating of coil |
| 17,18 | Electrical Options | Optional coil and/or termination configuration |
| 19,20 | Voltage Code | A two digit code denoting voltage and frequency |

PRESSURE VESSEL NUMBERING 2-WAY VALVES

For reference only. Consult catalog listings for available combinations.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 & 12 | |
|---|---|-----------------|---|--------------|---------------|----------------------------------|-----------------|---------------|--------------------|---------------|-----------------------------------|
| | Actuation | Functional Type | Flow Pattern | Family* | Body Material | Threading/ Process Connection | Pipe Size (NPT) | Orifice Code# | Seals/+ Elastomers | Mech. Options | |
| 7 | 1 Direct Acting 2 Direct Lift | 2 Two-Way | 1 Normally Closed 2 Normally Open pressure in/out of body | 1 A Aluminum | A | SAE | 1 1/8" | A | C CR | 00 | No Option |
| | | | | 2 B Brass | E | Male NPT | 2 1/4" | B | E EPDM | A2 | Silver Shading Ring |
| | 3 Pilot Operated Internal Pilot Supply | | 3 Multi/Dual purpose | 4 L Noryl | F | Flange | 3 3/8" | C | F PCTFE | C0 | 4-Step Variable Closing |
| | | | | 5 R 316 SS | G | BSP-Parallel | 4 1/2" | D | K PFFM | J1 | Exhaust Adaptor Nut |
| | 4 Pilot Operated External Pilot Supply | | 9 Normally Open pressure in the body, pressure out the sleeve | 6 S 430F SS | R | BSP-Taper | 5 3/4" | E | L Nylon | M0 | Manual Override |
| | | | | 8 T Teflon | J | Bib Fitting | 6 1" | F | M Metal | MC | Manual Override w/Var. Closing |
| | 5 Remote Pressure Operated | | 6 Manual/Mech. Operated | 9 V 303 SS | N | NPT(Female Nat'l Pipe thread) | 7 1 1/4" | G | N NBR | M5 | Manual Override w/Exhaust Adaptor |
| | | | | F | T | Barbed Fitting | 8 1 1/2" | H | R Ruby | R0 | Sleeve Exhaust Metering |
| | | | | G | | | 9 2" | J | T PTFE | R1 | Mainstream Metering |
| | | | | H | | | | K | U PTFE | R2 | Adjustable Bypass |
| | | | | K | | | | L | V FKM | S0 | Steam Service Rated |
| | | | | V | | | | M | | W0 | Anti-Water Hammer (fixed) |
| | | | | | | | | N | | NO | Cleaned for oxygen service |
| | | | | | | | | P | | | |
| | | | | | | Q | | | | | |
| | | | | | | R | | | | | |
| | | | | | | S | | | | | |
| | | | | | | T | | | | | |
| | | | | | | U | | | | | |
| | | | | | | V | | | | | |
| | | | | | | 0 thru 9 | | | | | |

Note: These tables are provided to interpret product specifications. It should not be used to create a valve number without reference to the catalog listings or consultation with Skinner Valve personnel.

* The family designator is assigned to organize products by physical similarity.

Orifice codes relate to a range of Cv factors and sizes. They are listed in ascending order.

+ Reference Seal Material Designations, page 131.

PRESSURE VESSEL NUMBERING 3- AND 4-WAY VALVES

For reference only. Consult catalog listings for available combinations.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 & 12 | | |
|---|---|---------------------------|---|--|---------------|---|-----------------|---------------|--------------------|----------------------------|--|--|
| | Actuation | Functional Type | Flow Pattern | Family* | Body Material | Threading/ Process Connection | Pipe Size (NPT) | Orifice Code# | Seals/+ Elastomers | Mech. Options | | |
| 7 | 1 Direct Acting 2 Direct Lift | 3 Three-Way 4 Four-Way | 1 3-Way Valves Normally Closed | 1 A Aluminum | A | SAE | 1 1/8" | A | C CR | 00 | No Option | |
| | | | | 2 B Brass | E | Male NPT | 2 1/4" | B | E EPDM | A2 | Silver Shading Ring | |
| | 3 Pilot Operated Int. Pilot Supply | | 2 Normally Open pressure in/out of body | 3 L Noryl | F | Flange | 3 3/8" | C | F PCTFE | CA | Cylinder "A" normally open to pressure inlet | |
| | | | | 4 M Zinc Die Cast | G | BSP-Parallel | 4 1/2" | D | K PFFM | CB | Cylinder "B" normally open to pressure inlet | |
| | 4 Pilot Operated Ext. Pilot Supply | | 8 Diverting | 5 R 316 SS | R | BSP-Taper | 5 3/4" | E | L Nylon | C0 | 4-Step Variable Closing | |
| | | | | 6 S 430F SS | J | Bib Fitting | 6 1" | F | M Metal | J0 | Pilot Exhaust Return Pipe | |
| | 5 Remote Pressure operated 6 Manual/Mech. Operated | | 9 Normally Open pressure in the sleeve, pressure out the body | 8 T Teflon | N | NPT (Female National Pipe Thread) | 7 1 1/4" | G | N NBR | J1 | Exhaust Adaptor Nut | |
| | | | | 9 V 303 SS | S | Subbase Mounted | 8 1 1/2" | H | R Ruby | M0 | Manual Override | |
| | | | | 1 2-position, single operator | E | T | Barbed Fitting | 9 2" | J | T PTFE | MC | Manual Override w/Var. Closing |
| | | | | 2 3-position, dual operator center closed | F | | | | K | U PTFE | MJ | Manual Override w/Exhaust Return Pipe |
| | | | | 3 3-position, dual operator center open | G | | | | L | V FKM | MR | Manual Override w/Main Stream Metering |
| | | | | 4 3-position, dual operator center open | H | | | | M | | M5 | Manual Override w/Exhaust Adaptor |
| | | | | 6 2-position, dual operator bi-stable | K | | | | N | | R0 | Sleeve Exhaust Metering |
| | | | | 7 2-position, dual operator bi-stable, with latching | L | | | | P | | R1 | Mainstream Metering |
| | | | T | | | | Q | | R2 | Adjustable Bypass | | |
| | | | V | | | | R | | S0 | Steam Service Rated | | |
| | | | | | | | S | | W0 | Anti-Water Hammer (fixed) | | |
| | | | | | | | T | | NO | Cleaned for oxygen service | | |
| | | | | | | | U | | | | | |
| | | | | | | | V | | | | | |
| | | | | | | | 0 thru 9 | | | | | |

ENCLOSURE, COIL AND VOLTAGE NUMBERING 2-, 3- AND 4-WAY VALVES

| 13 & 14 Enclosure Type | | 15 & 16 Coil Construction and Type | | 17 & 18 Terminations and Option Codes | | 19 & 20 Voltage | |
|------------------------|-----------------------|------------------------------------|--|---------------------------------------|---|-----------------|---------------|
| A0 | 7/8" Knockout | | Integrated Coils | 00 | Standard DIN, Screw, Tab Coils (no leads) | B2 | 24/60 |
| B0 | 1/2" Conduit | C1 | 1/2" NPT Conduit, 10 Watt Class F, NEMA 4X | 11 | Class F Coils with 18" leads | C1 | 12VDC |
| F0 | Yoke | C2 | 1/2" NPT Conduit, 10 Watt Class H, NEMA 4X | 22 | Class H Coils with 18" leads | C2 | 24VDC |
| G0 | Water Tight | C3 | 1/2" NPT Conduit, 22 Watt Class H, NEMA 4X | GL | C1,C2,C3 & H1,H2, H3 Coils with Ground lead | C4 | 48VDC |
| J0 | Junction Box | D1 | DIN, 10 Watt Class F | D1 | All DIN Coils with Cable Gland Connector | C6 | 120VDC |
| M1 | Magnelatch | D2 | DIN, 10 Watt Class H | D2 | All DIN Coils with 1/2" Conduit Connector | P0* | 24,50/60 |
| M2 | Magnelatch Grommet | D3 | DIN, 22 Watt Class H | D4 | D1,D2,D4 coils for timer assembly with fixed-off and adjustable on-time | P3 | 110/50-120/60 |
| N0 | Nut and Washer | H1 | 1/2" NPT Conduit, 10 Watt Class F, NEMA 7, 9 | DB | All DIN Coils with Terminal Box | Q3 | 220/50-240/60 |
| | | H2 | 1/2" NPT Conduit, 10 Watt Class H, NEMA 7, 9 | TB | S1,S2,S3 Coils with Terminal Box | Q8 | 440/50-480/6 |
| | | H3 | 1/2" NPT Conduit, 22 Watt Class H, NEMA 7, 9 | S1 | Hazardous stainless steel yoke with 18" leads and ground lead | 2K | 208/60 |
| | | L1 | 18" leads, 10 Watt Class F | | | 2W* | 110-120,50/60 |
| | | L2 | 18" leads, 10 Watt Class H | | | 3W* | 220-240,50/60 |
| | | L3 | 18" leads, 22 Watt Class H | | | | |
| | | S1 | Screw Terminal, 10 Watt Class F | | | | |
| | | S2 | Screw Terminal, 10 Watt Class H | | | | |
| | | S3 | Screw Terminal, 22 Watt Class H | | | | |
| | | T1 | 1/4" Tab Terminal, 10 Watt Class F | | | | |
| | | | Conventional Coils | | | | |
| | | J1 | 18" leads, 10 Watt Class F | | | | |
| | | J2 | 18" leads, 10 Watt Class H | | | | |
| | | J3 | 18" leads, 22 Watt Class H | | | | |
| | | | Specialty Coils | | | | |
| | | F6 | Fluxtron 4-wire, 1 Watt molded | | | | |
| | | J6 | Fluxtron 2-wire, 1 Watt molded | | | | |
| | | J0 | Magnelatch 2-wire DC only | | | | |
| | | G0 | Magnelatch 3-wire AC/DC (DC pulse) | | | | |

+ See Note on page 133.









* Fluxtron only

ELECTRICAL ENCLOSURE OPTIONS

A coil enclosure is needed to complete the magnetic flux path of conventional molded coils and specialty coils. The enclosure can also serve to protect the coil and provide a means to accommodate the electrical connection. This section describes the most common electrical enclosure options available.

7000 Series Enclosure Options

7000 Series integrated coils incorporate these features into a one-piece assembly which requires only a nut and washer (enclosure code N0) to fasten to the pressure vessel. The 7000 Series conventional enclosure selection is provided to complement the integrated coil offering providing flexibility in product type and installation.

| Coil Picture | Enclosure Code | Description | Applicable Coils |
|---|----------------|--|------------------------------|
|  | A0 | Standard Connection, 7/8" exit to accommodate strain relief, adapter or fittings for lead wires, NEMA Type 2 | J111, J222, J322, F611, J611 |
|  | B0 | 1/2" Conduit Connection for attachment of conduit, 1/2" NPT fittings or BX cable, NEMA Type 2 | F611, J611 |
|  | F0 | Yoke for use where open enclosure is suitable | F611, J611 |
|  | G0 | Watertight, 1/2" conduit hub accommodating 1/2" NPT fittings or BX cable, NEMA Type 4X | F611, J611 |
|  | J0 | Splice box, 7/8" exit allowing for internal splice, NEMA Type 2 | J111, J222, J322, F611, J611 |
|  | M1 | Magnelatch, 1/2" conduit hub for attachment of conduit, 1/2" NPT fittings or BX cable, NEMA Type 2 | G011, J011 |
|  | M2 | Magnelatch, leaded with grommet connection, NEMA Type 2 | G011, J011 |
|  | N0 | Nut and Washer | All Integrated Coils |

7000 Series Electrical Options

Various electrical options are available with 7000 Series integrated coils. To order a coil with an option, write the electrical option code in place of the last two digits of the coil code. The electrical options (with exception of the ground lead) are also available for sales as individual pieces (accessories). For an accessory, simply order the code.

7000 Series Mechanical Options

Solenoid valves at times requires a variety of different mechanical options to meet the specific needs of a given application. Many of these options have become common over time, others are specified infrequently.

Skinner has the ability to produce wide varieties and combinations of mechanical options. Listed are only a few of the common options we provide. If the option (or set of options) you need is not listed, please contact a company representative for assistance.

Available options are denoted by the valve family to which they pertain. The 7000 Series family designator is position 5 of the pressure vessel number. Codes that are suffixed by an asterisk (*) are already covered in the product listing in the catalog. To order the other listed mechanical options:

- 1) Select the base pressure vessel number. It must have "00" in the last two digits.
- 2) Confirm compatibility of the option with the Mechanical Options Table.
- 3) Write the mechanical option code in place of the last two digits of the pressure vessel number. For example, a 71215SN1MN00 with a manual override (M0) becomes 71215SN1MNM0.

| Coil Option Picture | Coil Option Code | Description | Coil Types | Coil Codes |
|---------------------|------------------|-------------------------------------|--------------------|--------------------------------------|
| | GL | Ground Lead 18" | Conduit Terminated | C1GL, C2GL, C3GL H1GL, H2GL, H3GL |
| | D1* | Cable Gland DIN Plug | DIN | D1D1, D2D1, D3D1 |
| | D2* | 1/2" Conduit DIN Plug | DIN | D1D2, D2D2, D3D2 |
| | D4# | Timer, 12-48VDC 24-120, 50/60 Hz | DIN, AC & DC | D1D4, D2D4, D3D4 |
| | DB^ | Terminal Box | DIN | D1DB, D2DB, D3DB |
| | TB^ | Terminal Box | Screw Terminal | S1TB, S2TB, S3TB |

* The plug comes complete with gasket to meets NEMA specification Type 4

The timer has a fixed "off" time of 12 minutes and an adjustable "on" time which ranges from 1 second to 2 minutes. The timer complete with 24" 3-wire cable. Also available on Timer Drain

Valves 7321KBY61640, 7321KBY63200, and 7321KBY6320A on page 25.

^ Meets NEMA 4, 4X when connected to a Screw Terminal or DIN Coil, as applicable. It is provided with a 1/2" NPT conduit thread and ground screw.

| Code | Mechanical Options Descriptions | 7000 Series Valve Families (pressure vessel 5th digit) | | | | | | | | | | | | |
|------|---|--|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | E | F | G | K | T |
| A2 | Silver Shading Ring | X | X | | X | X | X | | | | | | | |
| C0* | Anti-Water Hammer, 4 step adjustment | | | | | | | | | | | X | | |
| J0 | Pilot Exhaust Return Pipe | X | | | | | | | | | | | | |
| J1 | Exhaust Adapter Nut | X | X | | X | | | X | X | X | | | X | |
| M0# | Manual Override | X | | | X | | | | | | | | | X |
| M5 | M0 w/ Exhaust Adapter Nut | | | | X | | | X | | | | | | |
| MC* | Manual Override w/ Anti-Water Hammer, 4 step Adjustment | | | | | | | | | | | X | | |
| MJ | M0 w/ Pilot Exhaust Return Pipe | X | | | | | | | | | | | | |
| R0 | Exhaust Metering | | X | | X | | | | | | | | | |
| R1** | Main Stream Metering | | X | | X | | | | | | | | | |
| R2** | Adjustable Bypass | | | | X | | | | | | | | | |
| S0* | Steam Service Rated | | | | | | | X | | | X | X | | |
| W0* | Anti-Water Hammer, Fixed | | | | | | | | | | | | X | |

Note: Not all options designated in this table are applicable to every valve within the valve family. Some exceptions are noted below. For details on specific valve option compatibility, consult the factory.

Not available on the following valve series: 71225, 71295, 7122K, 72218, 72228, 7221G, 7322G, and 73222. Not

available on 3/8" NPT or 1/2" NPT *5" and *K" family valves. **Not available on 3/8" NPT valves.

Agency Approval Note: Valves listed as Safety Shutoff Valves (SS in catalog listings) are not permitted with Manual Override and/or Bypass Options (M0, MC, M5, R1, R2 above). Valves with these options are considered General Purpose Valves.

Agency Approvals

Most Skinner solenoid valves are approved by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA). The table below summarizes the specific approvals obtained, which are dependent upon the combination of approved pressure vessels, coils and enclosures for both ordinary and hazardous locations.

Agency Approved Solenoid Valve Combinations

| Enclosure Code | Coil* Type/Option | Metallic Bodied Pressure Vessels (Aluminum, Brass, Stainless Steel, Zinc) | | | Plastic Bodied Pressure Vessels** (Noryl, Teflon) All Porting Types |
|----------------|-------------------|---|------------|-------------|---|
| | | NPT ported | BSP ported | FLG mounted | |
| NO | C111, C222, C322 | ULListed | | | ULComponent Recognized |
| NO | C1GL, C2GL, C3GL | | | | |
| NO | D1DB, D2DB, D3DB | | | | |
| A0,B0,G0,J0 | F611, J611 | | | | |
| A0,J0 | J111, J222, J322 | | | | |
| NO | H111, H222, H322 | | | | |
| NO | H1GL, H2GL, H3GL | | | | |
| NO | S1TB, S2TB, S3TB | | | | |
| NO | D100, D1D1, D1D2 | | | | |
| NO | D200, D2D1, D2D2 | | | | |
| NO | D300, D3D1, D3D2 | | | | |
| FO | F611, J611 | | | | |
| NO | L111, L222, L322 | | | | |
| NO | S100, S200, S300 | | | | |
| NO | T100 | | | | |

UL approved valves are also CSA certified. NOTE: Agency approval is contingent upon factory assembly of solenoid valves.

* Coil voltage must also be approved. See pages 12 and 13.
**Pressure vessels must be approved as Safety Shutoff (SS) or General Purpose (GP) valves. See catalog sections.

Types of Protection of Solenoids for Hazardous Environments

Standards are established by the European Committee for Electro-Technical Standards (CENELEC). Degrees of Protection of electrical parts and operating temperatures are defined by various European standards.

The following charts show the Degree of Protection for the selected coils along with the maximum surface temperatures for each temperature code classification.

| Protection Class | Degree of Protection |
|------------------|---|
| IP-65 | Protection against ingress of dust (dust proof) Protection against contact with internal parts Protection against a water jet from a nozzle from all directions |
| IP-67 | Protection against ingress of dust (dust proof) Protection against contact with internal parts Protection against water when the equipment is immersed in water under specific pressure and time conditions |

| Temperature Classification | Maximum Allowable Surface Temperature | |
|----------------------------|---------------------------------------|-----|
| | °C | °F |
| T1 | 450 | 842 |
| T2 | 300 | 572 |
| T3 | 200 | 392 |
| T4 | 135 | 257 |
| T5 | 100 | 212 |
| T6 | 85 | 185 |

Response Time

The response time of a solenoid valve depends on many factors such as voltage, frequency, pressure, media, temperature (including coil) and the type of valve. Variations in these factors can have a significant effect on the response time. The following tabulation lists the approximate response times for several different types of valves. The times given are for the valves to go from closed position to open or from open position to closed.

| Valve Type | Response Time (milliseconds) |
|---------------------------------------|------------------------------|
| Direct Acting Valves | 4-15 |
| Small Pilot Operated Piston Valves | 30-90 |
| Large Pilot Operated Piston Valves | 100-150 |
| Small Pilot Operated Diaphragm Valves | 30-60 |
| Large Pilot Operated Diaphragm Valves | 60-160 |
| Direct Lift Diaphragm Valves | 30-60 |

Operating Speed (Cycle Rates)

Operating speed is defined as the maximum number of cycles (On/Off) per minute that a solenoid valve is capable of completing. It is dependent upon the response time characteristics of the valve. Many of our small, short stroke, direct acting valves are capable of operating at rates over 2,000 cycles per minute. However, for normal operation lower cycle rates as shown are usually recommended.

| Valve Type | Up To (cycles/min) |
|---------------------------------------|--------------------|
| Direct Acting Valves | 600 |
| Small Pilot Operated Piston Valves | 400 |
| Large Pilot Operated Piston Valves | 150 |
| Small Pilot Operated Diaphragm Valves | 300 |
| Large Pilot Operated Diaphragm Valves | 200 |
| Direct Lift Diaphragm Valves | 200 |

Vacuum

While many of our solenoid valves with elastomeric seals listed in this catalog can be used on vacuum, the standard 100% production leakage test does not ascertain that the valves are sufficiently tight for severe vacuum applications. We do, however, design, produce, and test many vacuum valves to meet specific customer requirements. Therefore, we invite you to consult us for your vacuum valve applications.

Fluid Temperature Limitations

32°F Minimum Fluid Temperature if moisture is present. Otherwise minus 40°F for direct acting valves with NBR seals, minus 10°F with FKM seals (minus 10°F for "4" family valves). For exceptions, consult Skinner.

7000 Series Coils

To determine the approximate Holding or Inrush Current for AC voltages including 24/60, 120/60, 240/60 and 480/60 volts in amperes, divide the voltage into the VA rating indicated in the AC Power

Consumption tables. DC valves have no inrush current. The current rating in amperes for DC valves are shown in the DC Table. Figures are based on nominal values and will vary slightly depending on operating voltage and coil tolerances.

Current (Amperes)

| 7000 Series DC Current Consumption Ratings | | | |
|--|--------------|---------|---------|
| Coil Type | | 12 Volt | 24 Volt |
| 10 Watt | Integrated | 0.81 | 0.41 |
| | Conventional | 0.81 | 0.41 |
| 22 Watt | Integrated | 1.64 | 0.83 |
| | Conventional | 1.64 | 0.83 |

| Valve Type | 7000 Series AC Power Consumption Ratings | | | | | | | |
|---|--|-----------|----------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | 10 watt Integrated Coils | | 10 watt Conventional Coils | | 22 watt Integrated Coils | | 22 watt Conventional Coils | |
| | VA Holding | VA Inrush | VA Holding | VA Inrush | VA Holding | VA Inrush | VA Holding | VA Inrush |
| 71211, 71311, 71321, 71331, 71381 | 16 | 32 | 13 | 30 | - | - | - | - |
| 71214 | 16 | 29 | 14 | 27 | - | - | - | - |
| 71215 (3/64"-1/8" orifice) | 16 | 31 | 14 | 28 | 35 | 54 | 35 | 54 |
| 71215 (5/32"-5/16" orifice) | 17 | 35 | 14 | 33 | 34 | 61 | 34 | 61 |
| 71215 (3/8" orifice) | 16 | 36 | 14 | 34 | 34 | 63 | 34 | 63 |
| 71216 | 17 | 32 | 15 | 31 | - | - | - | - |
| 7121F | 18 | 32 | 16 | 30 | 35 | 56 | 35 | 56 |
| 7121K (EPDM seals) | 19 | 36 | 18 | 34 | - | - | - | - |
| 7121K (NBR, FKM seals, 1/16"-1/8" orifice) | 18 | 32 | 16 | 30 | 35 | 56 | 35 | 56 |
| 7121K (NBR, FKM seals, 5/32"-1/4" orifice) | 18 | 36 | 16 | 34 | - | - | - | - |
| 7121K (NBR, FKM seals, 7/16" orifice) | 18 | 37 | 16 | 35 | 35 | 65 | 35 | 65 |
| 7121V | 19 | 36 | 19 | 36 | 39 | 66 | 39 | 66 |
| 71221 | 16 | 32 | 13 | 30 | - | - | - | - |
| 71225 | 20 | 32 | 18 | 30 | - | - | - | - |
| 7122K | 20 | 32 | 17 | 30 | - | - | - | - |
| 71235, 71313, 71335, 71385, 71395, 73312 | 17 | 27 | 16 | 26 | - | - | - | - |
| 71295, 71315 (0.19"-0.25" orifice) | 16 | 30 | 15 | 29 | - | - | - | - |
| 72218 | 17 | 41 | 15 | 38 | - | - | - | - |
| 7221G (NBR, FKM seals) | 17 | 41 | 16 | 39 | - | - | - | - |
| 7221G (EPDM seals) | 19 | 41 | 18 | 39 | - | - | - | - |
| 72228 | 20 | 46 | 18 | 43 | 47 | 80 | 47 | 80 |
| 73212 (1/4" orifice) | 16 | 31 | 14 | 28 | 35 | 54 | 35 | 54 |
| 73212 (1/2"-1" orifice), 71315 (0.05"-0.11" orifice) | 17 | 27 | 16 | 26 | - | - | - | - |
| 73216 | 17 | 32 | 15 | 31 | - | - | - | - |
| 73218 | 16 | 31 | 14 | 28 | 35 | 54 | 35 | 54 |
| 7321G, 7321H | 18 | 32 | 16 | 30 | 35 | 56 | 35 | 56 |
| 7321K (EPDM seals) | 19 | 41 | 18 | 39 | - | - | - | - |
| 7321K (NBR, FKM seals) | 17 | 39 | 15 | 36 | - | - | - | - |
| 73222, 73228 | 20 | 32 | 18 | 30 | - | - | - | - |
| 7322G, 7322H | 20 | 32 | 17 | 30 | - | - | - | - |
| 74232, 73322, 73382, 73419, 74332 | 17 | 27 | 16 | 26 | - | - | - | - |
| 7131E, 7131F, 7131K, 7133F, 7133K, 7341L, 7131T, 7132T, 7133T | 17 | 31 | 15 | 29 | - | - | - | - |
| | 17 | 35 | 16 | 33 | - | - | - | - |

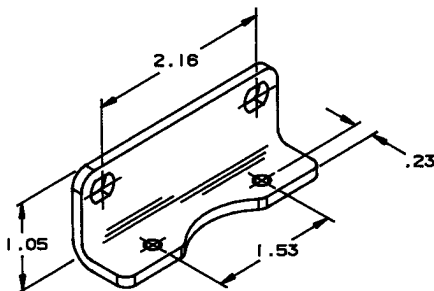
7000 SERIES ACCESSORIES

Mounting Brackets

Body mounting options are available on specific valve families. A listing is provided below:

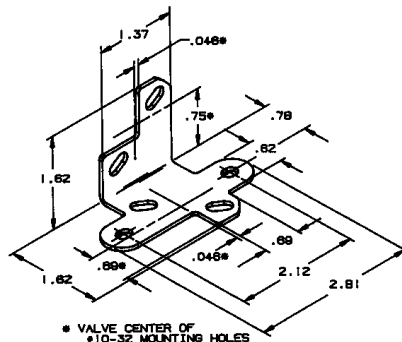
MECHB2:

For 2-way "2" family valves with 3/8-inch or 1/2-inch NPT connections. 2-way valves only.



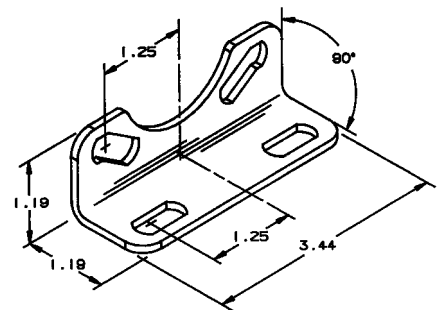
MECHB5:

For the "4", "5"(except 3/8" NPT) and direct operated "6" family valves(i.e. 71216), this bracket allows two different body mounting configurations.



MECHB8:

For the "8" family, this bracket provides a flexible side mounting alternative.



7000 Series Solenoid Valve Seal Materials

7000 Series solenoid valves are constructed with the finest elastomeric and plastic seal materials available to ensure dependable bubbletight operation and long life. Most of the valves in the catalog utilize a single seal material whether a plunger seal or a flange seal. However, many valve designs require a variety of different sealing materials.

The 7000 Series numbering system delineates the tenth digit for description of the main orifice seal—the seal that actually prevents flow through the valve. For direct acting valves this represents the

plunger seal and for pilot operated valves this represents the diaphragm. Since every seat material cannot be specified in the significant valve number, the following table can be used to determine the additional seat materials used.

Example: Valve No. 71215SN1EF00

Tenth digit F = Kel F seal material. Since this is a direct acting valve, the plunger seal is PCTFE.

From the table at left, we see that when a plunger seal is PCTFE, the flange seal is FKM. (this valve has no diaphragm)

Example: Valve No. 73218BN3TE00

Tenth digit E = EPDM seal material. Since this is

a pilot operated valve, the diaphragm is EPDM. From the table above, we see that when the diaphragm is EPDM, the plunger and flange seal is EPDM.

Standard Seal Material Combinations

| Flange Seal | Diaphragm Seal | Piston Seal |
|-------------|----------------|-------------|
| NBR | NBR | NBR |
| FKM | FKM | FKM |
| Ruby | FKM | FKM |
| PCTFE | FKM | FKM |
| PFFPM | PTFE | PTFE |
| EPDM | EPDM | EPDM |
| PTFE | PTFE | PTFE |
| CR | CR | CR |

Note: See Seal Material Designation Chart page 131.

Non-Standard Seal Material Combinations

There are some exceptions to the above standard. The following valve types do not conform to the table of standard seal material combinations and are therefore specified in this table. Non-metallic orifice materials are specified where applicable.

2-Way Valves

| Catalog Number | Orifice (if non-metallic) | Plunger Seal | Flange Seal | Diaphragm Seal | Piston Seal | Other Seal |
|----------------|---------------------------|--------------|-------------|----------------|-------------|------------|
| 71216SN1BL00 | Nylon | - | NBR | - | - | - |
| 71216SN2BL00 | | | | | | |
| 71216SN1GL00 | | | | | | |
| 71216SN2GL00 | | | | | | |
| 71216SN1FU00 | Rulon | - | NBR | - | - | - |
| 71216SN2FU00 | | | | | | |
| 71216SN1JT00 | PTFE | - | NBR | - | - | - |
| 71216SN2JT00 | | | | | | |
| 72228BN3TES0 | - | FKM | EPDM | EPDM | - | EPDM, FKM |
| 72228BN4UES0 | | | | | | |
| 72228BN5VES0 | | | | | | |
| 73216BN2MT00 | Nylon | - | NBR | - | PTFE | NBR |
| 73216SN2MT00 | Polysulfone | - | NBR | - | PTFE | NBR |
| 73222BN2MN00 | - | FKM | NBR | - | NBR | NBR |
| 73222SN2MN00 | | | | | | |

NOTE: There may exist especially exacting application requirements which would necessitate a more detailed description of the various components and materials employed in the construction of Skinner solenoid valves. In such cases, contact the factory so that we may provide you with more detailed information.

Seal Material Designations

| ASTM Designation | Commercial Designations and/or Trade Names | 7000 Series Seal Designation |
|------------------|--|------------------------------|
| NBR | Buna-N, Nitrile | N |
| EPDM | Ethylene Propylene | E |
| FKM | Fluorinated Hydrocarbon, Viton® | V |
| PCTFE | Kel-F | F |
| PTFE | Teflon®, Rulon®AR | T |
| PFFPM | Kalrez | K |
| CR | Neoprene | C |

*Viton® and Teflon® are Dupont Co. trademarks.
Rulon® AR is a Furon – Advanced Polymers Division trademark*

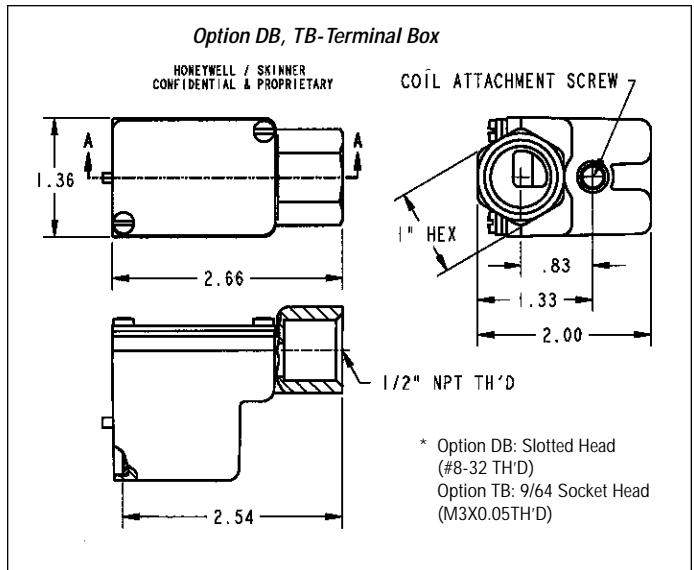
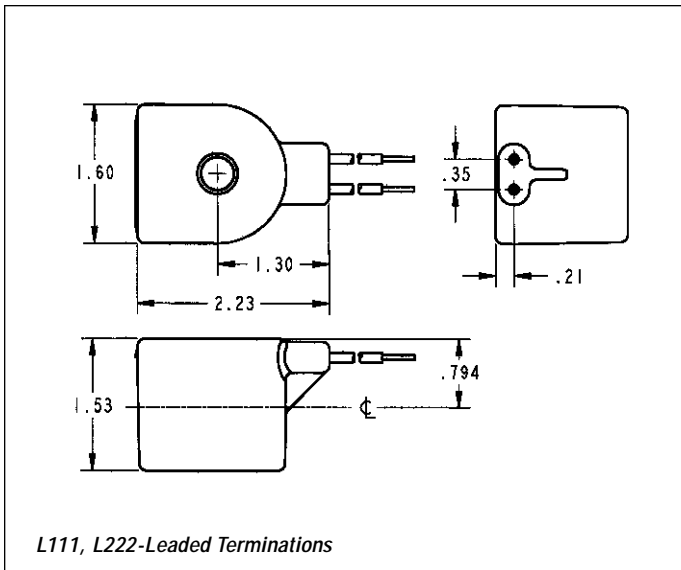
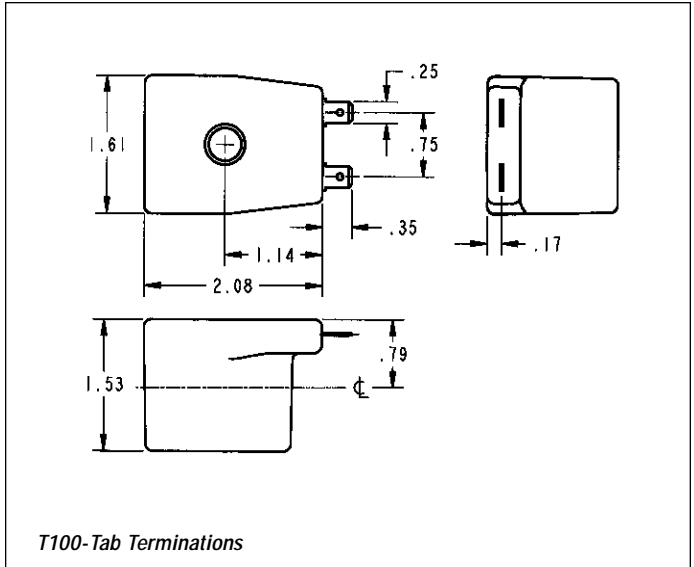
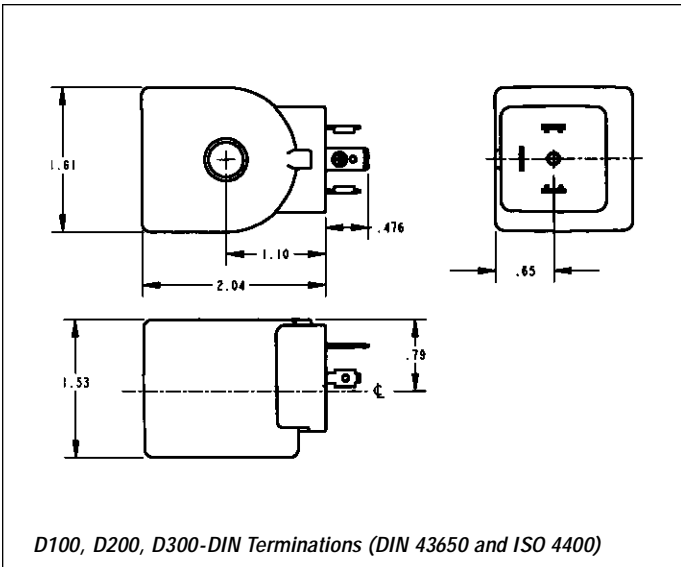
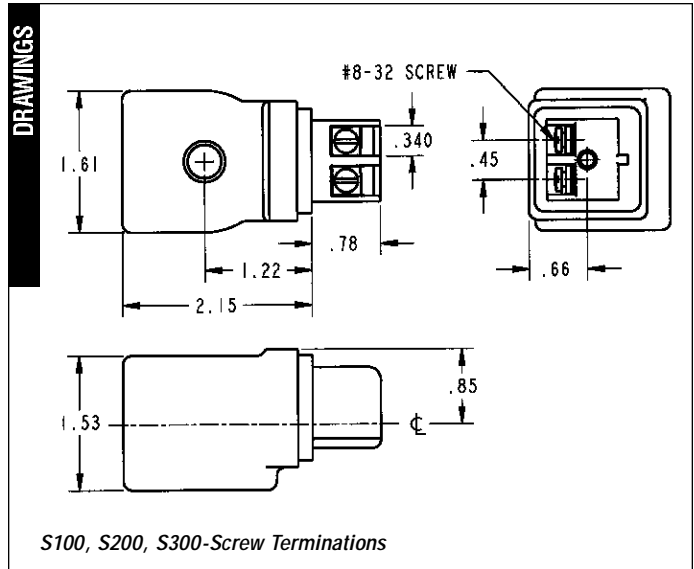
3- and 4-Way Valves

| Catalog Number | Orifice (if non-metallic) | Plunger Seal | Flange Seal | Diaphragm Seal | Piston Seal | Other Seal |
|----------------|---------------------------|--------------|-------------|----------------|-------------|------------|
| 7131EBN2LN00 | FKM | - | - | - | NBR | NBR |
| 7131FBF4LV00 | FKM | - | - | - | - | FKM |
| 7133FBF4LV00 | | | | | | |
| 7341LAN1HN00 | FKM | - | - | - | NBR | NBR |
| 7341LMN2NN00 | FKM | - | - | - | NBR | NBR |

NOTE: There may exist especially exacting application requirements which would necessitate a more detailed description of the various components and materials employed in the construction of Skinner solenoid valves. In such cases, contact the factory so that we may provide you with more detailed information.

Integrated Coils and Terminal Box Dimensions

The valve construction reference drawings provide outline dimensions for all pressure vessels contained in this catalog. They are shown with the 1/2" conduit style integrated coil as standard. The individual coil drawings on this page provide dimensions for the other 7000 Series integrated coils. To apply these coil dimensions to any of the standard valve construction references, a datum line (cL) has been included which corresponds to the conduit hub centerline dimension of the 1/2" conduit style integrated coil.



All dimensions in inches.

3000 SERIES TECHNICAL INFORMATION

3000 Series Numbering System Designators

| | | | | |
|----------|----------|---------------------------|------|---|
| Pressure | 1 | Series Designation | 3 | 3000 Series |
| Vessel | 2 | Operations | 1 | Direct Acting, 6 Watt |
| | | | 9 | Direct Acting, 3 Watt |
| | 3 | Ways (Functional Type) | 2 | Two-Way |
| | | | 3 | Three-Way |
| | 4 | Flow Pattern | 1 | Normally Closed |
| | | | 3 | Multipurpose |
| | | | 8 | Directional |
| | | | 9 | Normally Open, Ported Sleeve |
| | 5 | Family | B | B |
| | 6 | Body Material | B | Brass |
| | | | J | Operator (No Body) |
| | | | S | 303 Stainless Steel |
| | 7 | Process Connection | A | Male Straight Thread |
| | | | N | Female National Pipe Thread |
| | | | R | BSP Taper |
| | 8 | Pipe Size | 1 | 1/8" |
| | | | 6 | 5/16-24 UNF |
| | | | 7 | 3/4-32 UNF |
| | 9 | Orifice | A | 1/32" |
| | | | E | 3/64" |
| | | | G | 1/16" |
| | | | J | 5/64" |
| | | | L | 3/32" |
| | | | N | 1/8" |
| | | | Q | 5/32" |
| | 10 | Seal Material | C | CR |
| | | | E | EPDM |
| | | | N | NBR |
| | | | V | FKM |
| | 11 12 | Mechanical Option | 00 | None |
| | | | AD | 1/8" NPT Sleeve Adapter |
| | | | C# | Aluminum, Female 1/8" NPT, 2, 3, or 4 Station Cavity Manifold Block |
| | | | HT | Helium Leak Tested |
| | | | N0 | Cleaned for Oxygen Service |
| | | | R1 | Bottom Metering |
| Housing | 13 14 | Housing | BB | 1/2" Conduit |
| | | | N0 | No Housing (Integrated Coil) |
| | | | RR | Grommet |
| | | | YY | Yoke |
| Coil | 15 | Coil Designation | M1S1 | Integrated Molded, 1/4" Tab, 6W*, Class B |
| | | | MC11 | Integrated Class F, 1/2" Conduit 18" Leads, 6W, NEMA 4X |
| | | | MH11 | Integrated Class F, 1/2" Conduit 18" Leads, 6W, NEMA 4X, 7, 9 |
| | | | M3J5 | Integrated Molded, 12" Leads, 6W, Class B |
| | | | M4S1 | Integrated Molded, 1/4" Tab, 3W, Class B |
| | | | M6J5 | Integrated Molded, 12" Leads, 3W, Class B |
| | | | T1J1 | Taped 12" Leads, 6W, Class B |
| | | | T3J1 | Taped 12" Leads, 3W, Class B |
| | 19 20 | Voltage Code | P0 | 24/50-60 Hz AC |
| | | | P3 | 110/50 Hz, 120/60 Hz AC |
| | | | Q3 | 220/50 Hz, 240/60 Hz AC |
| | | | C0 | 6 VDC |
| | | | C1 | 12 VDC |
| | | | C2 | 24 VDC |






* For all 6 watt Coils, actual wattage for 24/60 Volts is 7.5.

Electrical Enclosure Options

A coil enclosure is needed to complete the magnetic flux path of conventional molded coils and specialty coils. The enclosure can also serve to protect the coil and provide a means to accommodate the electrical connection. This section describes the most common electrical enclosure options available.

3000 Series Enclosure Options

3000 Series integrated coils are a one-piece assembly which requires only a nut and washer (enclosure code NO) to fasten to the pressure vessel. The 3000 Series conventional enclosure selection complements the integrated coil offering providing flexibility in product type and installation.

| Coil Picture | Enclosure Code | Description | Applicable Coils |
|---|----------------|--|--------------------------|
|  | RR | Grommet Enclosure | T1J1, T3J1 |
|  | BB | 1/2" Conduit Connection | T1J1, T3J1 |
|  | YY | Yoke. For use where open enclosure is suitable | T1J1, T3J1 |
|  | NO | Nut and Washer for Integrated Molded coils | M1S1, M4S1 M3J5, M6J5 |
|  | NO | Nut and Washer for 1/2" Conduit NEMA coils | MC11, HC11 |

3000 Series Repair Kits/ Accessories

Repair kits are available for all Skinner 3000 Series valves. These kits include a new plunger assembly and plunger return spring. Specify the kit you need by the part number listed, which corresponds to the type of valve and seal material to be rebuilt.

| Flow Pattern | NBR | Neoprene | EPDM | FKM |
|---------------------------|---------|----------|---------|---------|
| 2-Way Normally Closed | 3K3121N | 3K3121C | 3K3121E | 3K3121V |
| 2-Way Normally Open | 3K3129N | 3K3129C | 3K3129E | 3K3129V |
| 3-Way Normally Closed | 3K3131N | 3K3131C | 3K3131E | 3K3131V |
| 3-Way Normally Open | 3K3139N | 3K3139C | 3K3139E | 3K3139V |
| 3-Way Multipurpose | 3K3133N | 3K3133C | 3K3133E | 3K3133V |
| 3-Way Directional Control | 3K3138N | 3K3138C | 3K3138E | 3K3138V |

Universal Mounting Bracket – B19-006 Brass Adaptor with Gasket = 300-22-003 SS Adaptor with Gasket = 300-22-004

A, B, C, MB AND V9 SERIES INFORMATION

Coils

To determine the approximate Holding or Inrush Current for AC voltages including 24/60, 120/60, 240/60 and 480/60 volts in amperes, divide the voltage into the VA rating indicated in the AC Power

Consumption tables. DC valves have no inrush current. The current rating in amperes for DC valves are shown in the DC Table. Figures are based on nominal values and will vary slightly depending on operating voltage and coil tolerances.

A, B, C, MB and V9 Series

| Valve Series | AC Power Consumption Ratings | |
|--------------|------------------------------|-----------|
| | VA Holding | VA Inrush |
| Two-way B | 17 | 9.7 |
| Three-way B | 19 | 12 |
| Two-way C | 25 | 16 |
| Three-way C | 25 | 16 |
| Two-way A | 122 | 49 |
| Three-way A | 82 | 40 |
| Three-way MB | 12 | 6.5 |
| Four-way MB | 12 | 6.5 |
| Four-way V9* | 32.5 | 17.5 |

* Per coil

| Valve Series | DC Current Consumption Ratings | | | |
|--------------|--------------------------------|-----------|---------|----------|
| | 6 Volt | Coil Type | | |
| | | 12 Volt | 24 Volt | 120 Volt |
| Two-way B | 1.05 | 0.53 | 0.26 | 0.05 |
| Three-way B | 1.05 | 0.53 | 0.26 | 0.05 |
| Two-way C | 1.17 | 0.58 | 0.29 | 0.06 |
| Three-way C | 1.17 | 0.58 | 0.29 | 0.06 |
| Two-way A | - | - | - | - |
| Three-way A | 2.33 | 1.17 | 0.58 | 0.12 |
| Three-way MB | 0.83 | 0.42 | 0.21 | 0.04 |
| Four-way MB | 0.83 | 0.42 | 0.21 | 0.04 |
| Four-way V9* | 1.42 | 0.71 | 0.35 | 0.07 |

* Per coil

Solenoid Valve Operators

Skinner Valve manufactures a line of 2-and 3-way operators in normally open, normally closed, dual purpose, multipurpose, and directional control configurations. These valve operators are similar to those used in Skinner valves and are manufactured to the

same high quality standards.

The operator typically consists of a coil and enclosure, a stainless steel sleeve, spring and plunger assembly, and a flange seal. A wide selection of optional features is available and provides the basis for custom design. Both standard and explosion-proof enclosures are available.

The operators may be mounted on magnetic structures, or non-magnetic structures with the addition of a flux plate. Prints detailing mating dimensions are available for all the operators listed. For a complete part number to suit your particular application consult Skinner Valve.

| Operator Type | Orifice Range | Flow Range (Cv) | Pressure Range (PSI) | Operator Prefix | Power (watts) | Notes |
|---------------|---------------|-----------------|----------------------|-----------------|---------------|-------------------------------|
| 2W NC | 1/2" | 2.66 | 0-15 | PA2 | 16 | Zinc enclosure, nitrile seal |
| | 1/32"-1/8" | 0.019-0.24 | vac-400 | PB2* | 7 | Steel enclosure, nitrile seal |
| | 1/16"-5/32" | 0.10-0.39 | vac-275 | PC2 | 8 | Steel enclosure, nitrile seal |
| 2W NO | 1/32"-3/32" | 0.019-0.13 | vac-400 | PB11* | 7 | Steel enclosure, viton seal |
| 3W NC | 3/32"-5/32" | 0.20-0.47 | 0-250 | PA3 | 16 | Zinc enclosure, nitrile seal |
| | 1/32"-3/32" | 0.019-0.16 | 0-200 | PB13* | 7 | Steel enclosure, viton seal |
| | 3/64"-1/8" | 0.05-0.24 | 0-175 | PC3 | 7.5 | Steel enclosure, viton seal |
| 3W NO | 3/32"-5/32" | 0.21-0.45 | 0-250 | PA5 | 16 | Zinc enclosure, nitrile seal |
| | 1/32"-3/32" | 0.019-0.16 | 0-200 | PB15* | 7 | Steel enclosure, viton seal |
| | 3/64"-1/8" | 0.05-0.26 | 0-175 | PC5 | 7.5 | Steel enclosure, viton seal |
| 3W MP | 3/32"-5/32" | 0.21-0.45 | 0-150 | PA4 | 16 | Zinc enclosure, nitrile seal |
| | 1/32"-3/32" | 0.019-0.16 | 0-150 | PB14* | 7 | Steel enclosure, viton seal |
| | 3/64"-1/8" | 0.05-0.16 | 0-150 | PC4 | 7.5 | Steel enclosure, viton seal |
| 3W DC | 3/32"-5/32" | 0.21-0.45 | 0-250 | PA6 | 16 | Zinc enclosure, nitrile seal |
| | 1/32"-3/32" | 0.019-0.16 | 0-250 | PB16* | 7 | Steel enclosure, viton seal |

* These operators may need to have flux plates added depending upon the magnetic properties of the body to which they are mounted.

2W = Two Way NC = Normally Closed MP = Multipurpose
 3W = Three Way NO = Normally Open DC = Directional Control

K-Series Accessories

Skinner Valve offers a wide selection of accessories available for use on all K- Series microminiature solenoid valves. Accessories must be ordered separately from the valve.

K-SERIES THREE-WAY AND FOUR-WAY VALVE VOLTAGE SUMMARY

The following chart lists all available accessories, a brief description and the appropriate part number.

| Voltage | K3F 0.5 Watt | K3H 0.5 Watt | K3P | | K4H 0.5 Watt | K4M 2.0 Watt | K4P | | K4R 0.5 Watt | K4RL 1.8 Watt | K5R 0.5 Watt |
|-------------|-----------------|-----------------|----------|----------|-----------------|-----------------|----------|----------|-----------------|------------------|-----------------|
| | | | 0.5 Watt | 1.8 Watt | | | 0.5 Watt | 1.8 Watt | | | |
| 5VDC | * | * | * | | * | | * | | * | * | * |
| 6VDC | * | * | | * | * | | * | * | * | | * |
| 12VDC | * | * | * | * | * | * | * | * | * | * | * |
| 24VDC | * | * | * | * | * | * | * | * | * | * | * |
| 48VDC | * | * | | | * | | | | | | |
| 24VAC/60Hz | | | | * | | | | * | | | * |
| 120VAC/60Hz | | | * | * | | | * | * | * | | * |

* Valves may be ordered for use on these specific voltages.

K-SERIES ACCESSORIES

| Description | Model Number |
|---|--------------|
| Hose Fitting for use with .087" ID tubing M3 Thread | KM-60-009 |
| M5 Thread | KM-60-012 |
| Hose coupling for use with .087" ID tubing | KM-60-010 |
| Hose fitting for use with 1/16" ID tubing M3 Thread | KM-60-015 |
| #10-32 Thread | KM-60-018 |
| Hose fitting for use with 1/8" ID tubing M3 Thread | KM-60-014 |
| Adapter M3 to #10-32 female | KM-60-016 |
| "L" fitting assembly for use with .087" ID tubing M3 Thread | KM-60-011 |
| "T" fitting for use with .087" ID tubing | KM-60-007 |
| Adapter M3 to M5 male thread | KM-60-006 |
| #10-32 to 1/4" NPT male thread | KM-60-004 |
| 1/8 NPT th'd to 1/4" NPT male thread | KM-60-005 |
| Screw plug M3 (requires gasket) | KM-60-008 |
| M5 | KM-60-013 |
| Gasket M3 | KM-60-001 |
| M5 | KM-60-003 |
| Spacer for PCB mounting with 2 screws | KM-60-002 |
| Nylon tubing .087" ID, 65 foot roll | KM-22-018 |
| Exhaust muffler M5 | KM-60-017 |
| Exhaust restrictor M5 | K08-001 |
| Adapter M5 male to M3 male thread | KM-60-021 |
| Adapter #10-32 female to 1/8" NPT male thread | KM-60-022 |

FLOW CONTROL VALVES

| | Part Number KM-22-014 M3 | Part Number KM-22-015 M5 |
|-----------------------|-----------------------------|-----------------------------|
| Port Thread Size | M3 | M5 |
| Cv | 0.02 | 0.05 |
| Pressure Rating | 115 PSI | 115 PSI |
| Operating Temperature | 40-140°F | 40-140°F |

OPPORTUNITY DATA SHEET

TARGET ACCOUNT _____ DATE _____

ADDRESS _____

DISTRIBUTOR (if applicable) _____ TELEPHONE NO. _____

CONTACT _____ TITLE _____ TELEPHONE NO. _____

APPLICATION _____

NEW APPLICATION EXISTING APPLICATION TARGET PRICE \$ _____

CRITICAL DATES:

FEASIBILITY _____ SAMPLE DELIVERY _____ QUOTATION _____ PRODUCTION _____

INITIAL ORDER YEAR 1 YEAR 2

VOLUME (UNITS) _____

TOTAL QUANTITY OF SOLENOID VALVES USED BY THIS COMPANY _____

PARKER'S SHARE _____% COMPETITOR'S SHARE _____%

VALVE CURRENTLY USED: MANUFACTURER _____ MODEL _____

COMPANY'S MOTIVATION TO BUY PARKER VALVES (CHECK ONLY ONE)

- QUALITY COST REDUCTION DISTRIBUTOR SERVICE SECOND SOURCE
- PROBLEM WITH CURRENT SUPPLIER _____
- OTHER _____

VALVE TYPE 2-WAY 3-WAY 4-WAY

DE-ENERGIZED POSITION

- Normally Open Normally Closed Directional Control Multipurpose

PORT SIZE FLUID CONNECTION

_____ Inch NPT _____ Other

ORIFICE DIAMETER

Inlet _____ or CV _____
 Exhaust _____ or CV _____

FLOW RATE

Gasses _____ SCFM when inlet pressure is _____ PSIG
 and outlet pressure is _____ PSIG
 Liquids _____ GPM when inlet pressure is _____ PSIG
 and outlet pressure is _____ PSIG

VOLTAGE

Min _____ Max _____ Nom. _____
 AC HZ DC

ELECTRICAL ENCLOSURES

- Standard Connection Conduit Explosion Proof
 Junction Box Grommet Watertight
 Other _____

DUTY CYCLE

Continuous duty: energized more than 1 hour
 Energized _____ hrs. De-energized _____ hrs.
 Intermittent duty: energized less than 1 hour
 Maximum energized _____ minutes
 Minimum de-energized _____ minutes

CYCLING DATA

Operating speed _____ CPM

VIBRATION AND SHOCK

- Not a factor
 Vibration _____ CPS at _____ G's
 Shock _____ G's duration for _____ M. Sec.
 Mounted in Vertical plane Horizontal plane

PRESSURE OR VACUUM

Maximum Static Pressure _____ PSI
 Maximum Pressure Differential _____ PSI
 Minimum Pressure Differential _____ PSI
 Maximum Vacuum _____ PSI inches HG

FLUID BEING HANDLED

Description _____
 If gas Lubricated Non-lubricated
 Temperature min. _____ F/ max. _____ F
 Viscosity _____
 (if over no. 10 SAE or 100 SSU at 100F)

ALLOWABLE INTERNAL LEAKAGE

None _____ cc/min at _____ PSID

CURRENT DRAW LIMITATIONS

Max. amps _____ max. watts _____

COIL TYPE

- Lead wire _____ inch long _____ AWG
 Spade terminal DIN
 Other _____

AMBIENT CONDITIONS

- Temperature max. _____ F/ min. _____ F
 Spade terminal DIN
 Other _____

LIFE EXPECTANCY

Total cycles per year _____ Number of years _____

APPROVAL REQUIRED

- None UL listed CSA CE Cenelec
 UL component recognition
 Other _____

Additional features desired _____

Completed by _____
 Name _____
 Company _____
 Telephone _____

TERMS AND CONDITIONS OF SALE

- 1. TERMS AND CONDITIONS OF SALE** The order shall be subject to the terms and conditions set forth herein, notwithstanding any terms and conditions that may be contained in any order, acknowledgment or other form of Buyer. Such terms and conditions of Buyer shall not bind Seller unless accepted by it in writing, whether or not they manually alter this order. This order shall be governed in all respects by the law of the State of Ohio.
- 2.** Stenographical and clerical errors are subject to correction. Until order is accepted, prices are subject to change without notice. All quotations, unless otherwise stated, are for immediate acceptance. All orders and contracts subject to approval if accepted by a salesman or selling agent. Prices do not include special taxes now in effect or later put in effect.
- 3. PAYMENT** Payment shall not prejudice claims on account of omissions or shortages but no such claim will be allowed unless made within 30 days after receipt by Buyer.
- 4.** Accounts are opened only with firms or individuals on approved credit. The Seller reserves the privilege of declining to make deliveries except for cash whenever, for any reason, doubt as to the Buyer's financial responsibility develops and shall not, in such event, be held liable for non-performance of contract in whole or in part.
- 5.** Terms are Net 30 days. F.O.B. New Britain, Connecticut, where credit rating has been established. In all other cases C.O.D. or cash with order.
- 6.** There is a minimum order of \$100.00 net for manufacturer's terms unless specific minimum quantities are noted on the quotation.
- 7.** All Shipments are made F.O.B. point of shipment. After delivery to the carrier, the risk of loss shall be on the Buyer and any claims for loss or damage in transit must be filed by the Buyer.
- 8. DELIVERY** Seller shall not be liable for any delays in or failure of delivery due to acts of God or public authority, labor disturbances, accidents, fires, floods, extreme weather conditions, failure of and delays by carriers, shortages of material, delays of a supplier or any other cause beyond Seller's control. Buyer's requested delivery date or schedule shall be approximate and subject to Seller's acceptance.
- 9. PREMIUM FREIGHT** Shipments are made via common carrier. Any premium freight must be requested and paid for by the Buyer.
- 10.** In making of materials to customer specifications, it is impossible to produce exactly the quantity ordered and it is, therefore, agreed all orders are subject to over or under shipment of 5% on orders over 500 pieces, 10% on orders less than 500 pieces.
- 11. WARRANTIES** Seller warrants the goods sold hereunder to be free from defects in material and workmanship under normal use and service for a period of two (2) years from date of shipment from Skinner Valve's facility. THE ABOVE WARRANTIES COMPRISE SELLER'S SOLE AND ENTIRE WARRANTY OBLIGATIONS AND LIABILITY TO BUYER, ITS CUSTOMERS OR ASSIGNS IN CONNECTION WITH GOODS SOLD HEREUNDER SELLER EXTENDS NO WARRANTY TO THE ULTIMATE CONSUMERS OR USERS. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS, ARE EXPRESSLY EXCLUDED. Seller's sole obligation under these warranties shall be to repair or replace any item or part thereof which is proved to be other than as warranted. When claiming a breach of the above warranties, Buyer must notify Seller promptly whereupon Seller will either examine the goods at their site or issue shipping instructions for return to Seller (transportation cost prepaid by Buyer). The above warranties shall terminate unless Buyer in writing claims for breach thereof within 90 days from Seller's plant where damage is not directly due to a defect in material or workmanship, nor do they apply to goods altered or repaired except when performed under Seller's specific authority, nor to articles furnished by Buyer or acquired at Buyer's request and or to Buyer's specifications.
- 12. CONSEQUENTIAL DAMAGES** In no event shall Seller be liable for consequential or special damages arising out of a delay in or failure of delivery, defects in material or workmanship, or arising out of breach by Seller of any other term or obligation of Seller under this contract.
- 13. CHANGES IN SPECIFICATIONS OR DESIGN** If Buyer requests changes in specifications or designs related to any goods, delivery schedules shall be revised, if necessary, and an equitable adjustment, upward or downward, shall be made in price if warranted.
- 14. CANCELLATIONS AND RESCHEDULES** Cancellations and reschedules are subject to acceptance by Seller, and are also subject to cancellation charges and price increases.
- 15. RETURNED GOODS** No material shall be returned without our consent. When material is returned, with our consent, credit will be allowed only for that which is in good condition and can be resold. Freight must be prepaid on such shipments. The amount of freight paid by us on the original shipment to consignee is not subject to credit. Credit for approved returns is provided at a discount of 58% off list price at the time of purchase.
- 16. SPECIAL TOOLS** Any special tools, jigs, patterns, etc. which Seller makes or acquires for Buyer, notwithstanding any change therefore, shall be and remain Seller's property subject to its possession and control: In no event shall Buyer have any tooling belonging to Seller which is utilized in the production of goods for Buyer, or which has been converted or adapted by Seller for such use, notwithstanding any charge for any such utilization, conversion or adaptation Seller shall have the right to alter discard or otherwise dispose of any tooling without liability to Buyer when for two (2) consecutive years no orders have been received from Buyer requiring the use of such tooling.
- 17. BUYER'S PROPERTY** Any design, tools, patterns, drawings, information or equipment furnished by Buyer, or any special tools made or acquired for the Buyer by the Seller which becomes Buyer's property, shall be used only in the production of goods ordered by Buyer and not otherwise, unless by Buyer's written consent, provided that such property may be considered obsolete and destroyed by Seller when for two (2) consecutive years no orders are received from Buyer for products to be made with such property. Seller agrees to exercise reasonable care with respect to such property and equipment while in its possession and control, but shall not be responsible for loss or damage occurring without its fault or negligence or for ordinary wear and tear.
- 18. PATENT INDEMNITY** Seller shall have no liability for patent infringement unless the goods furnished hereunder in and of themselves constitute the infringement. If they do, and Seller is notified of the claim of infringement within ten days after such claim is received by the Buyer and is permitted to settle or defend such claim. Seller will indemnify the Buyer against the reasonable expense of defending suit and against any judgment or settlement to which Seller agrees. However, such indemnity will be limited to an amount not exceeding the price paid by Buyer to Seller for infringing goods. If an injunction is issued against the further use of the goods, Seller will have the option of either procuring for the Buyer the right to use the goods, replacing them with non-infringing goods, modifying them so that they become non-infringing, or refunding the purchase price. The forgoing constitutes Seller's entire warranty and liability as to patents. If the goods furnished hereunder are in accordance with a design furnished by the Buyer, the Buyer will defend and save harmless Seller from all costs, expenses and judgments on account of any claim of infringement of any patent.
- 19. TAXES** Any sales, use, excise or similar tax payable by Seller which is or may be imposed by any taxing authority upon the manufacture, sale or delivery of goods covered by this order, or any increase in rate of any such tax now in force, shall be added to the sales price, if not collected at the time of payment of sales price, Buyer will hold Seller harmless.
- 20. ADDITIONAL CONDITIONS APPLICABLE TO ORDERS PLACED UNDER GOVERNMENT CONTRACTS OR SUBCONTRACTS THEREUNDER** If Buyer notifies Seller that goods ordered hereunder are for use under a prime contract with an agency of the United States Government, the following terms and conditions of the Armed Services Procurement Regulations shall be incorporated into Seller's terms of sale insofar as Buyer may be required to incorporate such provision in its subcontracts or insofar as applicable to the goods hereunder. WALSH-HEALEY PUBLIC CONTRACTS ACT (12-605), RENEGOTIATION (7-103-13), BUY AMERICAN ACT (6-104,5), EXAMINATION OF RECORDS (7-104 15), AUDIT AND RECORDS (7-104,41), PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA (7-104,29), CONVICT LABOR (12-203), NOTICE OF THE GOVERNMENT OF LABOR DISPUTES (7-104,4), WORK HOURS ACT (12-303,1), EXCESS PROFITS (7-104,11) MILITARY SECURITY REQUIREMENT (7-104,12), TERMINATION (8-706), EQUAL OPPORTUNITY (12-802).
- 21. PRICES SHOWN HEREON ARE STATED AT CURRENT RAW MATERIAL COSTS AND ARE SUBJECT TO CHANGE AS FLUCTUATIONS IN THE MARKET SO DICTATES.**
- 22. OTHER SERVICES** The prices issued in this schedule are for standard packaged products only. Any additional or supplemental services, material, or product marking or identification are subject to additional charges at the discretion of Parker.
- 23.** Where the Buyer requires tests for inspection not regularly provided, Parker reserves the right to charge an additional reasonable amount.
- 24. COMPLIANCE WITH LAW** Seller warrants that products sold or services furnished will be produced or furnished in full and complete compliance with all applicable federal, state, or local statutes, rules, regulations and orders, including those pertaining to labor, hours and conditions of employment, and in particular the Fair Labor Standards Act, as amended, and Executive Order No. 11248 (Equal Employment Opportunity) effective October 24, 1965, with all amendments thereto or as it may be superseded. Seller agrees that all the provisions of said Executive Order, as it may be amended or superseded, are hereby made a part hereof by reference and are binding upon Seller. Seller further agrees and confirms that Seller as a subcontractor or vendor has complied with and will comply with the provisions of said Executive Order and the rules and regulations promulgated under the authority thereof, including among others, reporting requirements.



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