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) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
1/4	13/64	0.76	0	100		40	100	210	7121KBN2SE00	GP	2
	13/64	0.76	0	40			40	285	7121KBN2SES0	GP	2

DIRECT LIFT BRASS VALVES – NORMALLY CLOSED, EPDM SEALS

Pipe Size NPT	Orifice Size (inch)	Cv Factor	Operating Pressure Differential (PSI) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
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

DIRECT LIFT STAINLESS STEEL VALVES– NORMALLY CLOSED, EPDM SEALS

Pipe Size NPT	Orifice Size (inch)	Cv Factor	Operating Pressure Differential (PSI) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
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) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
3/8”	5/8	3.0	0		125		125	210	72228BN3TE00	GP	102
	5/8	3.0	0	50				297	72228BN3TES0	GP	102
1/2”	5/8	4.0	0		125		125	210	72228BN4UE00	GP	102
	5/8	4.0	0	50				297	72228BN4UES0	GP	102
3/4”	3/4	5.0	0		125		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) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
3/8”	5/8	3.0	0		125		125	210	72228RN3TE00	GP	102
	5/8	3.0	0	50				297	72228RN3TES0	GP	102
1/2”	5/8	4.0	0		125		125	210	72228RN4UE00	GP	102
	5/8	4.0	0	50				297	72228RN4UES0	GP	102
3/4”	3/4	5.0	0		125		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) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
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

PILOT OPERATED BRASS VALVES– NORMALLY OPEN, PTFE SEALS

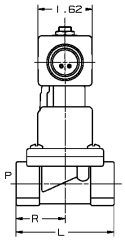
Pipe Size NPT	Orifice Size (inch)	Cv Factor	Operating Pressure Differential (PSI) Min.*	Maximum AC Ratings 10 watt	Maximum AC Ratings 22 watt	Maximum DC Ratings 10 watt	Maximum DC Ratings 22 watt	MAX. Fluid Temp. (F)	Pressure** Vessel Number	UL/CSA*** Approval	Const. Ref.
3/8"	5/8	3.0	5	125				353	73228BN3TTS0	GP	21
1/2"	5/8	4.0	5	125				353	73228BN4UTS0	GP	21
3/4"	3/4	7.5	5	125				353	73228BN52TS0	GP	21
1"	1 1/16	13.5	5	125				353	73228BN64TS0	GP	22
1 1/4"	1 1/8	16.0	5	125				353	73228BN75TS0	GP	22
1 1/2"	1 1/4	22.5	5	125				353	73228BN87TS0	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.*

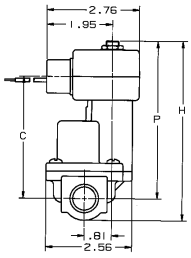
** *Class H coils are required on steam valves with PTFE seals which are identified by the letters 'TSO' in the last three digits of the pressure vessel number. Class F coils can be used on all other steam and hot water valves.*

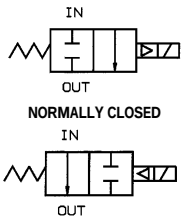
*** *UL/CSA Approval Information: SS=Safety Shutoff GP=General Purpose Blank=Not Approved*
See page 136 for additional agency information.

DRAWINGS



Valve	Dimension H	P	C	L	R
73218BN3TTS0	5.12	4.58	3.55	2.65	1.39
73218BN4UTS0	5.12	4.58	3.55	2.65	1.39
73218BN5VTS0	5.33	4.68	3.65	2.73	1.43
73228BN3TTS0	5.36	4.81	3.75	2.65	1.39
73228BN4UTS0	5.36	4.81	3.75	2.65	1.39
73228BN5VTS0	5.57	4.91	3.85	2.73	1.43





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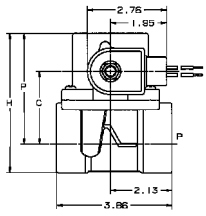
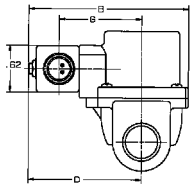
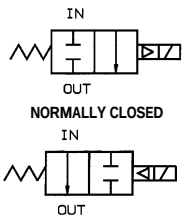


Valve	Dimension H	P	C	L	W	S
73218BN64TS0	4.56	3.70	2.38	5.58	3.96	2.94
73218BN75TS0	4.85	3.85	2.52	5.58	3.96	2.94
73228BN64TS0	4.56	3.70	2.38	5.82	4.20	3.14
73228BN75TS0	4.85	3.85	2.52	5.82	4.20	3.14





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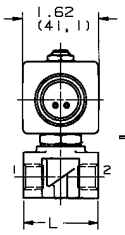
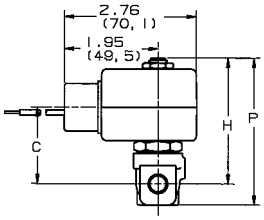
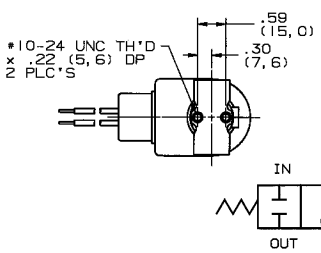




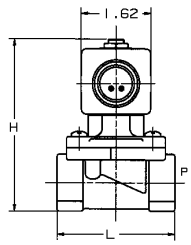
Valve	Dimension H	P	C	L
7121KBN1XXXX	2.63	3.07	1.61	1.57
7121KBN2XXXX	2.63	3.07	1.61	1.57
7121KBN3XXXX	2.57	3.08	1.55	1.97

"X" denotes multiple digit combinations for brevity.



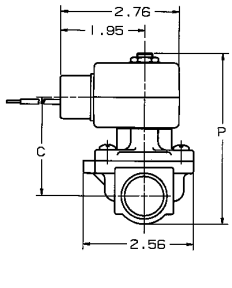
#2

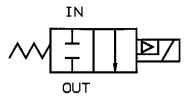
Port Identification: 1-IN/ 2-OUT



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

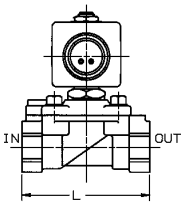
"X" denotes multiple digit combinations for brevity.





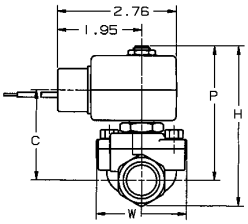
#8

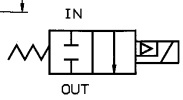
Port Identification: P-IN/ - -OUT



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.

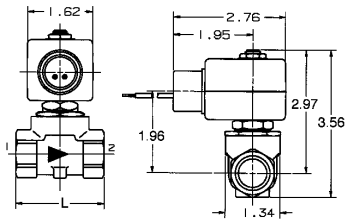




Port Identification: Flow arrow on body indicates flow direction– ports are not marked.

#9

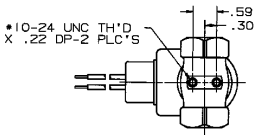
DRAWINGS

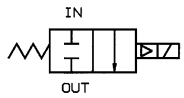


Valve	Dimension H	P	C	L
7321KBN4SXXX	3.56	2.97	1.96	2.17
7321KBN2RXXX	3.56	2.97	1.96	1.97
7321KBN3SXXX	3.56	2.97	1.96	1.97

"X" denotes multiple digit combinations for brevity.

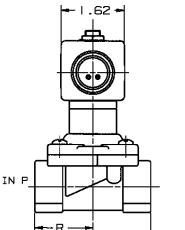
Flow arrow on body indicates flow directio n– ports are not marked.





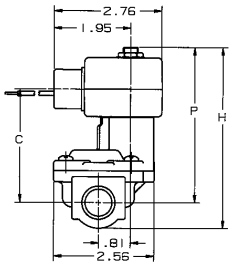
Port Identification: 1-IN/ 2-OUT

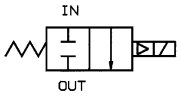
#98



Valve	Dimension H	P	C	L	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

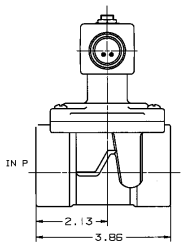
"X" denotes multiple digit combinations for brevity.





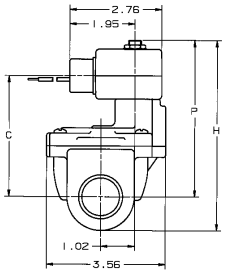
Port Identification: P-IN/ - -OUT

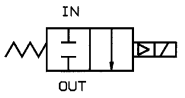
#12



Valve	Dimension H	P	C
73218BN64XXX	5.45	4.59	3.57
73218BN75XXX	5.74	4.73	3.71

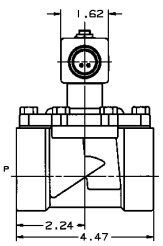
"X" denotes multiple digit combinations for brevity.

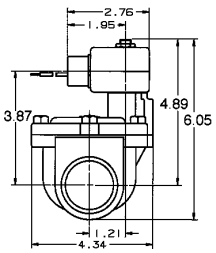


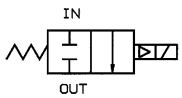


Port Identification: P-IN/ - -OUT

#15

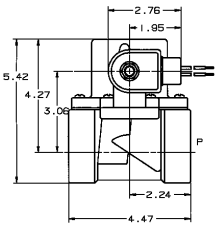




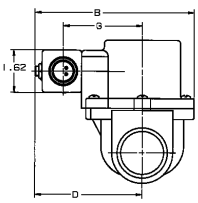


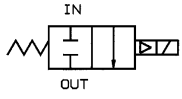
Port Identification: P-IN/ --OUT

#16

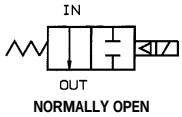


Valve	Dimension B	D	G
73218BN87TS0	6.03	4.08	3.05
73228BN87TS0	6.27	4.32	3.25





NORMALLY CLOSED

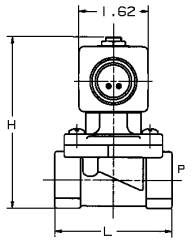


NORMALLY OPEN

Port Identification: P-IN/ - - OUT

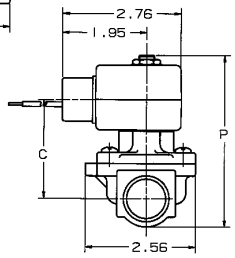
#23

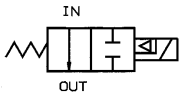
DRAWINGS



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.





#102

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.