SKINNER Intrinsically Safe Series

Four-Way
Two-Position Valves

SPECIFICATIONS

Mechanical Characteristics

Standard Materials of Construction

- Body–Aluminum
- Seals–FKM, NBR. Other diaphragm materials available upon request.

Compatible Fluids

- Air and inert gases.

Electrical Characteristics

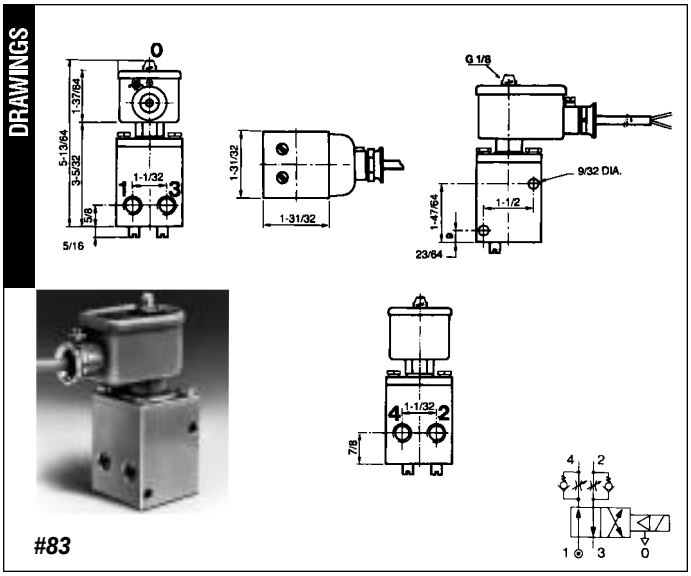
- Based on coil selected. See catalog pages 106-110 for detailed electrical information.

INTRINSICALLY SAFE SOLENOID VALVES–TWO-POSITION

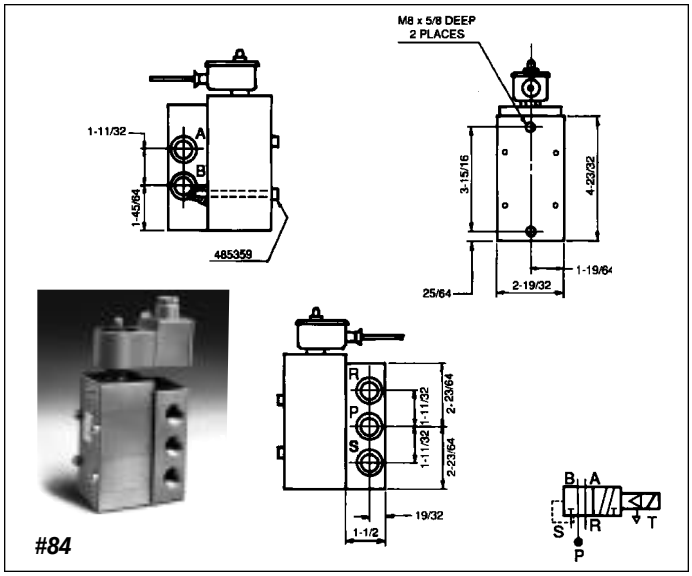
Global Part Number	Part Number	Valve Type	Port Size NPTF	Orifice Size	Valve Materials Seal/Body	Operating Pressure Differential (PSI)	Flow Rate Cv/SCFM*	Minimum Ambient Temp. °F/°C	Maximum Fluid Temp. °F/°C	Valve Weight lbs.	Const. Ref.
7341BAN2JV90	U341B3490	4-way 4-ported	1/4"	1/4"	FKM, NBR/ Aluminum	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



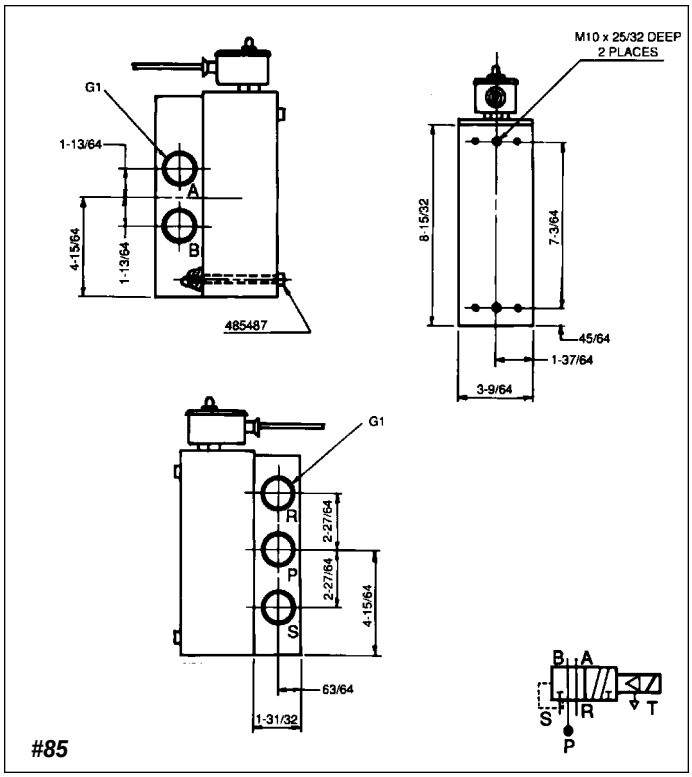
#83



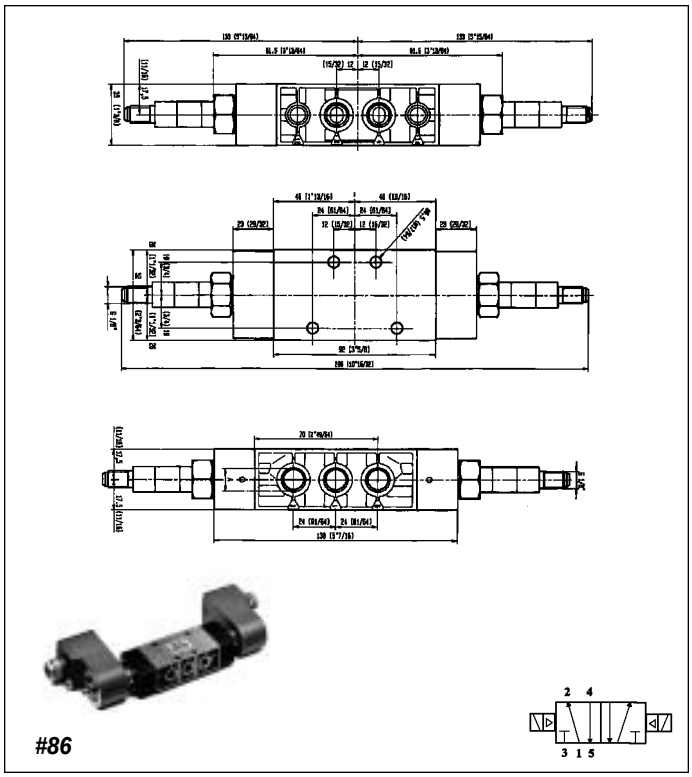
#84

SKINNER Intrinsically Safe Series

Four-Way
Two-Position Valves



#85



#86

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 1.5mm^2. 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 = O
- L_i = 0 mH

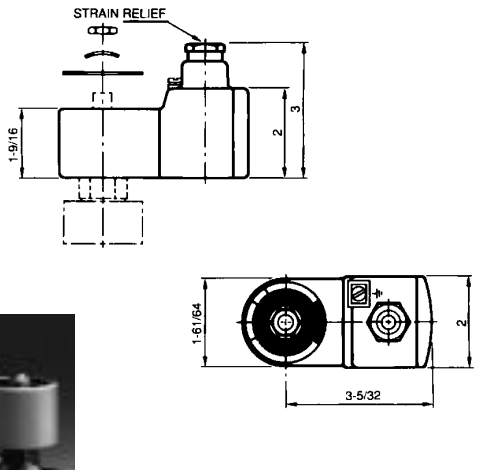
Options
- 1/2" NPT Conduit Hub Adaptor. Order part number U22-002.

Electrical Parts

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



#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 1mm^2) 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 = O
- L_i = 0 mH

Options

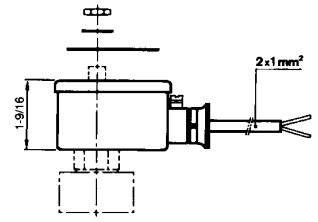
- 1/2" NPT Conduit Hub Adaptor. Order part number U22-003.

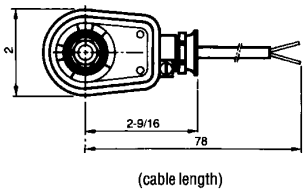
Electrical Parts

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 = O
- L_i = 0 mH

Options

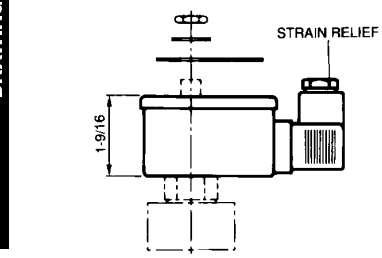
- 1/2" NPT DIN Plug Adaptor. Order part number U27-001.

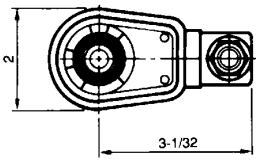
Electrical Parts

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 = O
- L_i = 0 mH

Options

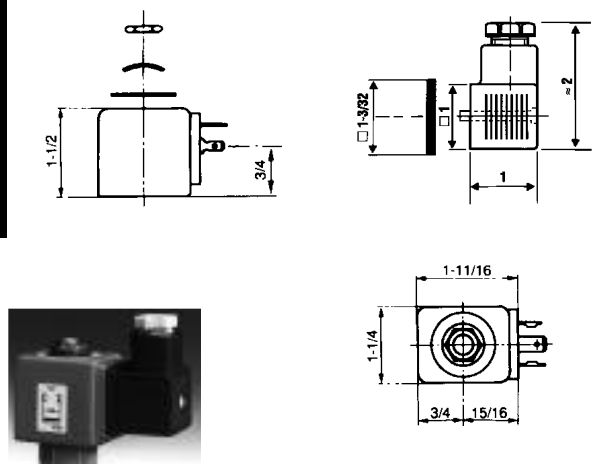
- 1/2" NPT DIN Plug Adaptor. Order part number U27-001.

Electrical Parts

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*

DRAWINGS



#70

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

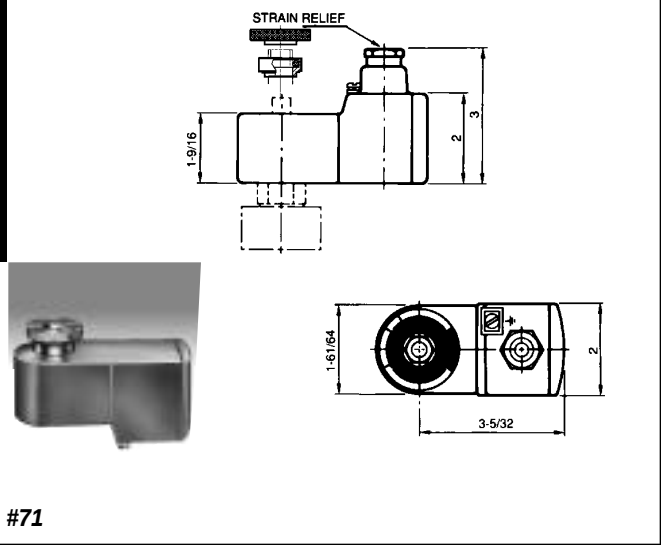
Reference Number	Approvals	Classification
490860	FM CSA	Class I, Div. 1, Grps C,D Class II, Div. 1, Grps E,F,G Class III, Div. 1
482660	PTB*	EEx ib IIB T6
483330.01	PTB*	EEx ia IIC T6

* *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



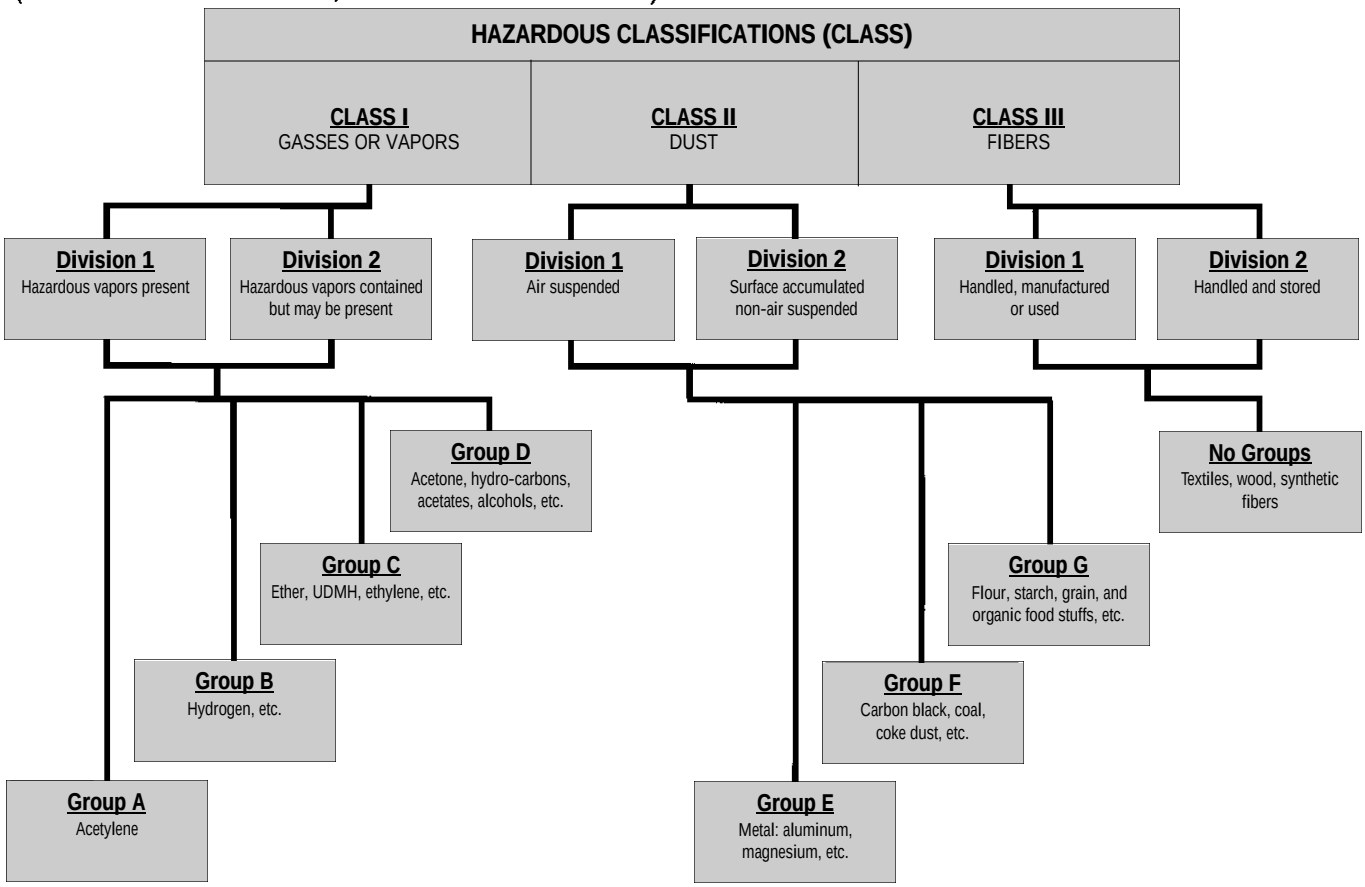
#71

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 Gasses 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